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# **Conservation Effects Assessment Project (CEAP)**

## **Interviewer's Manual**

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## **Chapter 1 - CEAP Purpose**

### **Purpose of CEAP**

The purpose of the Conservation Effects Assessment Project (CEAP) is to evaluate the environmental impacts of conservation practices that have been installed on cultivated cropland. CEAP will provide the farming community, the public, legislators, and others involved with environmental policy issues an accounting of the environmental benefits obtained from the U.S. Department of Agriculture (USDA) conservation program expenditures. A highlights report will be produced by NASS at the conclusion of the 2024 CEAP cycle.

Reports summarizing the benefits of conservation programs will be produced by the Natural Resources Conservation Service (NRCS) after the 2026 CEAP and will be available at: [www.nrcs.usda.gov/ceap/croplands](http://www.nrcs.usda.gov/ceap/croplands).

### **Overview of CEAP**

In recent decades, Congress has demonstrated strong support for conservation programs through Farm Bill legislation. The intent of this legislation is to ensure the nation's farmlands remain healthy and productive and help farmers and ranchers meet the challenges they face in preventing soil erosion, maintaining water quality, and protecting natural resources such as fish and wildlife habitat.

The Agricultural Improvement Act of 2018 ("2018 Farm Bill") provides support, certainty, and stability to our nation's farmers, ranchers, and forest managers by enhancing farm support programs, improving crop insurance, maintaining disaster programs, and promoting and supporting voluntary conservation.

With the expiration of the 2018 Farm Bill in the fall of 2023, the Further Continuing Appropriations and Other Extensions Act of 2024 extended the 2018 Farm Bill allowing the authorized programs to continue through the end of September 2024. The 2018 Farm Bill reauthorized the Conservation Reserve Program (CRP), including the Conservation Reserve Enhancement Program (CREP) and the Farmable Wetlands Program (FWP), and authorized two new CRP pilot programs, CLEAR 30 devoted to the Clean Lakes, Estuaries, and Rivers (CLEAR) priority of the 2018 Farm Bill and the Soil Health and Income Protection Pilot Program (SHIPP).

The goal of these conservation programs is to save millions of acres from soil erosion, enhance water and air quality, restore, and protect wetlands and wildlife habitat, and conserve agricultural water use. Private landowners benefit from a portfolio of assistance, including cost-share, land rental, and incentive payments, and technical assistance for conservation practices.

The CEAP questionnaire is designed to collect information from a sample of farmers who will be asked about conservation practices and farm management activities on a

specific field. The sample is drawn from the NRCS NRI area frame, which contains information about soils and climate.

Combining the information from the CEAP farmer survey and the NRI database creates a substantive picture of environmental and management conditions associated with that field. Conservation benefits are then estimated using sophisticated environmental effects models. These models are used to estimate the reduction in soil erosion, and nitrogen, phosphorus, and pesticide runoff from each sample field. This information is combined with data from other sample fields to produce an estimate for an entire area or watershed.

You will find that conservation practices may not be used on all fields in the survey. Knowing that conservation practices are not used is just as important to the modeling as knowing that conservation practices are used. Fields without conservation practices allow researchers to compare environmental impacts from fields with conservation practices. The models can be used to estimate the environmental benefits if additional conservation practices are implemented and to determine where they will produce the maximum benefit. This allows program managers to best target limited technical and financial resources.

After the data collection is complete, NRCS will use the survey data in model simulations to estimate the benefits provided by conservation practices currently implemented on cultivated cropland, as well as estimate conservation treatment needs based on soil vulnerabilities and other field characteristics using alternative conservation model scenarios.

The CEAP Cropland Assessment will provide the farming community, general public, legislators, and policymakers accounting of the environmental benefits obtained from conservation program expenditures. They will have information needed to assess and modify existing programs and design new programs to more effectively and efficiently meet the goals of Congress.

## **Questions and Answers**

### **1. What are the benefits associated with conservation programs on agricultural lands?**

Conservation programs in the United States provide assistance to reduce soil erosion, enhance water and air quality, conserve energy, and promote wetland and wildlife habitat preservation and restoration.

In addition to the environmental benefits, producers may receive financial incentives such as annual rental payments, incentive payments, or cost-sharing payments to offset the cost of establishing certain conservation practices through State and Federal programs.

**2. How much financial assistance does the agricultural community receive for promoting conservation practices?**

Under the 2018 Farm Bill, over \$29.5 billion dollars was provided for conservation and conservation practices.

**3. Why is it important for an agricultural producer to respond to this survey?**

The CEAP survey is an attempt by USDA to quantify the benefits of good environmental practices. By responding to the survey, a producer provides tangible information that shows just how they are being a good steward of the land. While USDA records conservation practices adopted through administration of its conservation programs, this survey provides opportunities to document additional conservation efforts by producers, with or without Federal financial assistance.

By demonstrating the valuable contribution made by America's farmers and ranchers to the environment, respondents ensure that conservation programs will continue to provide America's working lands with the assistance needed to be both productive and environmentally friendly in the future.

Even if the producer is not presently participating in any conservation programs, information in this survey about their operation will be used in conjunction with all other responses to estimate the potential benefits that could be achieved by expanding these conservation programs.

**4. What are some of the conservation programs that farmers currently practice under?**

Programs offered by the USDA include:

- Environmental Quality Incentives Program (EQIP)
- Wetlands Reserve Program (WRP)
- Conservation Reserve Program (CRP)
- Conservation Reserve Enhancement Program (CREP)
- Conservation Stewardship Program (CSP)
- Agricultural Conservation Easement Program (ACEP)
- Agricultural Water Enhancement Program (AWEP: replaced in 2023 by the RCPP)
- Regional Conservation Partnership Program (RCPP)
- Agricultural Management Assistance (AMA) Program
- Farmable Wetlands (FWP)

There are many additional programs offered by State and local governments, private industries, and non-profit organizations.

**5. How will the information collected in this survey be used?**

Data collected from an individual operation will be combined with other data sources. Information from NRCS hydrologic, climate, and soil databases will be added to create a complete picture of environmental and management conditions within the area of interest. The combined data will be used to estimate the benefits derived from conservation programs.

## **Chapter 2 – Terms**

### **Terms Needed For CEAP**

Enumerators working on the CEAP should be familiar with the definitions of the terms listed below. Definitions to these terms are listed in the manual.

Actual nutrients	Fertilizer analysis
Active ingredients	Field
Adjuvant	Filter strip
Anhydrous ammonia	Fungicide
Beneficial insects	Gallons per minute
Buffer strip	Grassed waterway
Commodity	Harvested Acres
Confidentiality	Hay
Conservation tillage	Highly erodible land (HEL)
Contour farming	Herbicide
Conservation Reserve Program (CRP)	Hundredweight (cwt)
Conservation Reserve Enhancement Program (CREP)	
Conventional tillage	Idle land
Cover crop	Implement
Crop rotation	Inaccessible
Cultivated cropland	Input
Date, reference	Insecticide
Defoliant	Integrated pest management (IPM)
Double crop	Irrigation set
Fallow	Landlord
Farm	Lime
Farm Service Agency	Manure
Fertilizer	Mulch till
N-P-K	Sample probability
Natural Resources Conservation Service (NRCS)	Sampling frame
National Resources Inventory (NRI)	Sampling unit
Nitrogen (N)	Scouting
Non-response	Seed
No-till	Strip cropping
	Sub-irrigation

Operator	Surface water sources
Out-of-business	Survey
	Survey period
Partner	
Pesticide	Tank mix
Phosphate (P2O5)	Terrace
Plant tissue test	
Potash (K2O)	Underground outlets
Questionnaire	Wetting agent
	Worker
Refusal	Wetlands
Rent, cash	
Rent, share	Yield map
Respondent	Yield monitor
Ridge tillage	



## **Chapter 3 - Survey Procedures**

### **Survey Procedures to Follow for CEAP**

This chapter provides an overview of the CEAP survey materials and general guidelines for collecting data. The NASDA Enumerator Handbook covers administrative matters.

#### **The Regional Field Office will provide the following:**

- Copies of survey publicity materials
- Aerial photography for each NRI sample point location
- FSA Name & Address Sheet
- Questionnaires with labels
- Extra questionnaires without labels
- CEAP Operator Cards (1 per operator/not preassigned)
- Respondent booklets containing code tables and a presurvey letter
- Supplements for questionnaires (Cropping History, Pesticide, Manure, Fertilizer, and Field Operations)
- Interviewer's Manual
- Envelopes for mailing completed questionnaires to NOD

#### **You should already have these items on hand:**

- iPad
- iPad Charger
- iPad Stylus
- Blue or black pens
- Name tag
- NASDA Identification Card
- NASDA Enumerator Handbook
- Calculator

### **General**

The CEAP survey has two data collection phases. The initial screening phase (CEAP Phase I) determines eligible operations and will be conducted from August to September 2024. CEAP Phase II will be conducted from November 2024 to March 2025 with focuses on production practices, including fertilizer, irrigation, manure, and chemical use; cropping history; tillage information; and use of conservation practices.

## PII

PII or personally identifiable information is not allowed anywhere in the Screener application (described later in this manual) or in the Phase II questionnaire. This includes first or last names, nicknames, addresses, phone numbers or any information that could be used to identify a person.

## Phase I Questionnaire

CEAP Phase I screening data will be collected via a special web based application that will be accessed via iPad. The application is called the NRI Screener and is administered by Iowa State University's (ISU) Center of Survey Statistics & Methodology (CSSM). This NRI Screener application will be used to draw off sample field boundaries and collect screening information. Phase I paper questionnaires and a paper aerial map will be provided as a back up to the iPad. A NRI Screener instruction guide will be provided. This guide will be posted on the NASDA website, upon completion. CAPI will be used for assignment listings and to submit name and address changes.

## Phase II Questionnaire

The CEAP Phase II data will be collected via a paper questionnaire. All interviews will be in person. More details regarding completing the Phase II questionnaire will follow in Chapter 5.

## Respondent Booklet

The Respondent Booklet provides information respondents need to reference when answering some survey questions, such as code lists. Often this information does not appear in the questionnaire. Using the Respondent Booklet can prevent confusion and save interview time.

Occasionally the respondent may need help in becoming familiar with how to use the booklet. This is especially important when using the longer code lists, such as the pesticide list.

While conducting the interview, take a moment when suitable, to show the respondent how to reference the appropriate code lists in the booklet. This should help the interview go more quickly.

Some lists in the Respondent Booklet are there to let the respondent know what type of response we are looking for to certain questions.

For example, in Section F, when asking the respondent "How was this (pest control) product applied?", show the respondent the Application Method Code List

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printed in the Respondent Booklet. Otherwise, the respondent may take additional time explaining in detail how the material was applied, when all you really wanted to know was that the material was applied as “Broadcast, ground, incorporated” (method code 21).

### Aerial Photographs

You will be provided an aerial photograph for each of the sample points. The CEAP NRI Point will be marked with a red ‘X’ on the aerial photograph.

Note: the aerial photograph can also be viewed on the CEAP iPad application.

### CEAP Operator Card

You will be provided a CEAP Operator Card with a nine-digit number (ex.123-123-123). The purpose of the card is to reduce respondent burden by linking all area-based points operated by the operator with one nine-digit number. Each operator should receive a card the first time they are surveyed by an enumerator. Each time an enumerator surveys an operator, the enumerator should ask if another enumerator has given them a CEAP Operator Card. If they have already received an operator card, the enumerator should ask for them to provide the card. The operator’s nine-digit number should then be recorded in the iPad screener. For security purposes, the card is not pre-assigned and is not linked to the operator’s name on the iPad screener. Further explanation will be listed in Chapter 4. For Phase II an operator will have only one point. If they operate other points, one point will be selected at random for moving to Phase II.

### FSA Name & Address Sheets

Since the CEAP survey is an area-based survey, this means the field surrounding the sample point is the ‘target’ of the CEAP data collection. You will be provided a listing of all individuals who were registered at FSA during the 2023 or 2024 sign-up periods for each sample location, as a starting point for locating the operator at the sample point.

Some sampled points may not have been located in the FSA database. Also, in some cases, the name(s) on the Name and Address sheet may not turn out to be the operator at the sample point location. The operator of these points must be located. Finding the “unknown” operators for sample points will be explained in Chapter 4.

### Data Collection from NRCS County Offices

Due to the complexity of conservation plans and structural practices, the local NRCS office will be required to provide supplemental information about sample point locations.

After data collection for the CEAP Phase II survey is complete, Regional Field Offices will be required to go back into a special disposition application to let NRCS know that the producer survey has been completed.

Once NRCS has been notified of the completed survey points, the NRCS supplemental survey, which includes conservation plan and contract information for the sampled field, will be completed by local NRCS offices. Enumerators will not visit the NRCS office to collect this information.

## Enumerator Screening Responsibilities

Enumerators are responsible for assuring the following items are complete:

- Confirming that the field boundaries surrounding the sample point are drawn correctly on the iPad aerial photographic image.
- The name and contact information of the person who completed the field interview is recorded correctly in the iPad CAPI application.

As previously stated, the CEAP survey will use the NRI Screener application to screen for eligibility. The field information gathered through the NRI Screener application will be used by NRCS county offices when they complete the supplemental information about the field.

The following websites provide information about the survey and can be shared with the survey respondent.

### **NASS CEAP Page:**

[https://www.nass.usda.gov/Surveys/Guide to NASS Surveys/Conservation Effects Assessment Project/](https://www.nass.usda.gov/Surveys/Guide%20to%20NASS%20Surveys/Conservation%20Effects%20Assessment%20Project/)

### **NRCS CEAP Page:**

<https://www.nrcs.usda.gov/ceap>

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### Planning Your Work

The State FIPS code, county FIPS code, and the NRI point number will appear on each questionnaire, aerial photographic image and FSA Name & Address sheet. It is very important that you review all materials and confirm that the correct questionnaire is matched with the materials for the same point.

Next, review the FSA Name & Address sheet to determine if there was a match with a farm operator. Remember, the farm operator may or may not live near the sampled field. Mark the home address of each operator you need to contact on a highway map before you start to interview. Plot the "unknown" operator points at the actual field location. Use this map to plan your daily travel; this will keep travel expenses down and save time.

It is important to locate all operators as soon as possible in the enumeration period. Tell your supervisor about any sampled point for which you cannot locate an operator and any operator whose home or office you cannot find.

### Respondent Burden

Be aware of the estimate of average completion time in the Burden Statement. The estimated average completion time is based on experience with previous CEAP surveys and the Office of Management and Budget (OMB). OMB is an agency that approves all surveys conducted by the federal government. The combined expected average interview length for both phases I and II of CEAP is **74 minutes**. Burden statements are printed on both the questionnaire and the Respondent Booklet.

Respondents often ask how long the interview will take. Never contradict the burden statement printed on the Respondent Booklet; however, adding to it is okay. For example, you might say something like this: "The official nationwide average for this survey is 74 minutes, but the interviews I have done in this area averaged about \_\_\_ minutes." Be honest about the average time, even if your interviews average longer than the time estimate in the burden statement.

### Screener Application Link

Prior to data collection, the following web-links should be bookmarked on your iPad, so that they can be readily accessed during screening enumeration.

This is the site that will be used for training and practice.

<https://www.nrisurvey.org/ceapTrain/>

This is the site that will be used to collect data. (Production)

<https://www.nrisurvey.org/ceap/>

## Phase I Screening Steps

On the initial visit to the operation, you will

- Confirm you have located the current operator at the sample point.
- Ask the operator to draw off the field boundaries surrounding the sample point on the paper map and then you will transfer it to the map in the NRI Screener application.
- Screen to make sure the current land use will qualify as “cropland” using the NRI Screener application.
  - The Phase II interview must be scheduled after harvest of the 2024 crop is complete, as all field activities for the 2024 crop year must be recorded on the questionnaire.
  - Ask the respondent for a harvest time estimate for this field. Most will have an idea if it will be first or last field with ideal harvest conditions. You will need to pay attention to the harvest progress in your area to schedule a return visit.
- Present the operator with a CEAP Operator Card and note the number in the screening application.

Whenever possible, schedule the interview with the farm operator, as information collected from other people is often less accurate. If the operator says someone else is more knowledgeable, interview that person.

For the CEAP survey, we will only collect information for the years in which the current (2024 crop year) operator has made the day-to-day decisions on the selected field location.

If the operator is not present when you stop by to screen, but is expected soon, wait for the operator, or make other contacts nearby and return a little later. If the operator is too busy to be screened at that time, set up an appointment at his or her convenience. Be sure to keep the appointment and be on time.

If the operator will not be available before the survey is over, try to interview someone who is well informed about the operation. A partner, family member or an employee may know enough about the aspects of the farm operation covered in the questionnaire to give you the information needed.

Primary mode of data collection for CEAP is in person. Use RFO guidance for contact guidance. If you need assistance, contact your supervisor promptly.

**Encourage respondents to have farm records on hand at the time of the interview.** Records that will be useful during the interview include farm conservation plans, nutrient management plans, records of field operations,

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records of pesticides, fertilizer, and manure applications, soil tests, and irrigation records. Using records increases the accuracy of the information reported and reduces the time to complete the interview.

### Interviewing

Following are general guidelines. Although many of the guidelines below pertain to any questionnaire interview, most of these guidelines pertain to the Phase II interview.

The first time you ask a question, always read the question exactly as worded in the questionnaire. If the respondent did not hear or did not understand the question, repeat it using the same wording. Use any include statements or explanations printed with the question in the questionnaire. If the respondent still doesn't understand, or asks you to explain, use what you learned in training and information from this manual to explain.

Ask questions in the order they appear in the questionnaire. Do not skip any questions unless skip instructions printed in the questionnaire allow you to do so.

Sometimes, a respondent will volunteer information before you ask a question. When you get to a question the respondent already answered, take the opportunity to verify the information. Say something like, "I think you told me this earlier, but let me be sure I got it right." Then ask the question exactly as worded. This doesn't make you look like you weren't listening. On the contrary, it emphasizes to the respondent the need to get things right.

Sometimes you will need to probe to get an adequate answer to a question. You should probe when the respondent cannot answer the question, when the answer isn't exact enough to record, when you think the answer may be incorrect because it doesn't fit with information you've already obtained, or when you think the respondent didn't understand the question.

The purpose of probing is to verify unusual data or to correct misreported data. You must be careful when you phrase your probing questions that you do not influence the respondent's answers. Probes should be "neutral", that is, they should not suggest one answer over another.

For example, don't say things like, "Use beneficial organisms in this field; you didn't do any of that, did you?" Instead, say, "Did you use any beneficial organisms to control pests in this field?" If the respondent asks for more information, explain that "Beneficial organisms include insects like green lacewings or ladybugs that are natural enemies of crop pests."

As another example, if a respondent tells you that a value is between two amounts, such as, "Oh, I had a yield of between 40 and 50 bushels per acre," you should ask,

“Would you say it was closer to 40 bushels per acre or 50 bushels per acre, or what amount exactly?”

Probes should also be “nonthreatening”. Be careful that you don’t appear to be questioning or challenging the respondent’s answers. Don’t say, “That can’t be right, 50 bushels per acre is way too much!” Instead, say, “Is that 50 bushels per acre the average yield for the field or was that what was measured by the yield monitor in a few spots in the field?” Then make corrections to data items if necessary or make notes of the respondent’s answer if it is correct.

## Notes

Be sure to make good notes. This is especially important when you find unusual situations, or the respondent explains why information that seems incorrect is correct. Also, write down any complicated calculations you used to compute an answer.

The notes you record in the questionnaire will help the survey statistician understand this operation when reviewing the questionnaire. Make sure the notes are clear and can be read.

**Notes can be the single most valuable editing tool  
available to the office statistician.**

**NEVER erase a note unless it is wrong!**

**Notes should never contain PII - including first names or nick names.**

After completing each interview, be sure to review the questionnaire while the interview is still fresh in your mind. Make sure you recorded all answers correctly and the questionnaire is complete. Check your calculations. Make sure all notes are clear.

## Entering Phase II Data

For the Phase II paper questionnaire, use a blue or black pen to record data and notes; do not use lead pencil on the questionnaire. Pencil does not always scan well. All questionnaires will be scanned and viewed as online images; therefore, it is critical that entries are clear and easy to read. Entries in check boxes and item code boxes must be entirely inside the boxes. It is very important to write legibly. For mistakes, cross them out with a single line.

Record responses in the unit shown in the questionnaire (i.e. acres, bushels, or inches). If a respondent gives an answer in a different unit, write the answer



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outside the printed box, convert it to the required unit, and record the converted data in the box.

If the respondent answers "none" to a question, since the CEAP questionnaire does not have "none" check boxes, enter a **dash** (-----) in the box, and **not** a zero.

For questions answered with a code number, enter the number that goes with the respondent's answer. If the respondent answers using only the code number, verify that the code is correct by repeating the answer assigned to the code in words.

The Regional Field Office must be able to tell the difference between questions asked and the answer was NO or ZERO, and questions asked, but the respondent could not answer (DK) or did not answer (REFUSED or REF).

For any question, if the respondent doesn't know the answer, then record DK or DON'T KNOW next to the question.

If the respondent refuses to answer, write REFUSED or REF next to the question. Do not write "DK", "REFUSED", OR "REF" inside answer boxes.

Record data to the nearest whole number, unless a decimal point is preprinted in the box. Place numbers correctly in relation to decimal points and fill in every space printed after them. Use zeros as fill when answers are not given to as many decimal places as required by the data cell.

If answers appear unusual, but really are correct, make notes in the margins to explain.

Do not write notes or put a "0" inside answer boxes.

### Reference Period for Reporting Data

The CEAP questionnaire is designed to collect information about production practices used for 2024, 2023, and 2022 crops on the selected field. Annual conservation management practices are asked for the same time frame.

The pest management questions apply only to the 2024 crop year.

Data will only be collected for the crop year(s) in which the 2024 crop year (current year) operator of the selected field made the day-to-day decisions.

A situation may arise when an operator of the selected field can provide data for the most recent crop year but may not have records to provide data for earlier crop year(s). In this case, collect information for the current year and make detailed notes about why the earlier crop year(s) were unavailable.

Fertilizer, manure, and pesticide data for each crop year cover a period of *immediately after harvest of the preceding crop* and continue through all applications made for the specific crop year.

**Exclude post-harvest pesticide applications to the harvested crop once it has been removed from the field, such as for pest control in grain storage.**

Exclude applications of fertilizer, manure, or pesticides to the field surveyed after 2024 harvest, as they would be considered part of the 2025 crop year.

Field operations data for each crop year are reported *beginning with the first tillage operation after removal of the previous year's crop* from this field and *ending with the harvest of the crop*.

**Small grains planted in the fall are considered part of the next year's crop.**

For example, winter wheat planted in the fall of 2023 is counted as a crop for 2024 when it is harvested. If the small grain is harvested for grain and again for straw, include operations data for both harvests. Field operations for small grains that are planted for cover crop should also be included.

**Do not record hauling activities from the edge of the field to the first point of storage on the CEAP questionnaire.**

## Non-response

Most farmers are willing to furnish the information asked for in NASS surveys, but in every survey, some will refuse to do so. The key to reducing the chances of getting refusals is to be courteous and friendly, but persistent.

Try to get cooperation by explaining the purpose of the survey, the need for accurate agricultural statistics, and the confidentiality of the data. Make use of materials explaining the survey purpose provided by your Regional Field Office.

If you are unable to conduct an interview, note the reason on the questionnaire, remembering not to include PII.

## Completion Code and Lines in Table Boxes

The following shows valid codes with their respective definitions for important questionnaire administration cells enumerators need to code.

### Conservation Practices Completion Code Box (code 700)

Blank = Data present for this section.  
1 = Data incomplete or refused

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### Cropping History and & Conservation Practices Completion Code Boxes (codes 1004, 1003, 1002)

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

### Fertilizer Applications Completion Code Boxes (codes 0234, 0233, 0232)

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

### Manure Applications Completion Code Boxes (codes 0454, 0453, 0452)

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

### Pesticide Applications Completion Code Boxes (codes 0344, 0343, 0342)

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

### Pest Management Completion Code Boxes (code 1700)

Blank = Data present for this section.

1 = Data incomplete or refused

**Irrigation Completion Code Boxes  
(codes 1504, 1503, 1502)**

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

**Field Operations Completion Code Boxes  
(codes 3004, 3003, 3002)**

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

**Lines in Table Code Boxes  
(codes 299, 399, 499, 599)**

For the Fertilizer, Manure, Pesticides and Field Operations tables, for any year the operator has positive entries, the number of table lines must be entered in the respective table code box.

**Back Page Administrative Codes**

**Response Code Valid Codes  
(code 9901)**

1 = Complete

2 = Refusal

3 = Inaccessible

There are other codes listed but these are the only valid codes for enumerator use.

**Respondent Code  
(code 9902)**

1 = Operator/Manager

2 = Spouse

3 = Accountant/Bookkeeper

4 = Partner

9 = Other

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### Mode Code (code 9903)

3 = Face-to-Face

There are other mode codes listed but code 3 is the only valid mode code for enumerator use.

### Enumerator ID (code 9998)

Enter your enumerator identification number

### Eval/R. Unit/Change/Office Use for POID/Optional Use Completion Code Boxes (codes 9900, 9921, 9985, 9989, 9907, 9908, 9906, 9916)

**Do not code these boxes**

### Confidentiality

The following information is considered confidential and should be handled accordingly.

- Location of NRI sample points found on aerial photographs
- Information listed on the FSA Name & Address Sheet
- Information reported on the questionnaires and supplements
- Aerial images
- **Do not record any PII (names/address/phone) on the questionnaires, supplements, in the NRI Screener Application, or aerial photography map to maintain confidentiality across agencies.**

Retain the items below until directed by the Regional Field Office to destroy them.

- Aerial photograph
- FSA Name & Address Sheet
- Comment sheet (if any)
- Phase 1 questionnaires that may contain data

**Important:** The aerial images that are provided for each cropland point **must be DESTROYED** at the end of the survey period according to your RFOs instructions.

**If you used a paper questionnaire for Phase I screening for your own use, ensure that it is also destroyed at the end of the survey period. The paper aerial image maps are confidential. It is imperative that these images be accounted for at all times.**

## UPS Tracking Number Record

Keep a record of when you completed each Phase II questionnaire noting the date you mailed it to the NOD and the UPS tracking number. Keeping the UPS tracking number to help the office find survey materials if they are delayed.

**Prior to shipping, confirm that the State FIPS, county FIPS, CEAP and NRI point number (on the Phase II questionnaire and in CAPI) match the respective CAPI record and for all pieces being shipped to NOD.**

## Wrapping Things Up For Phase II

- ✓ Review the Phase II questionnaire carefully to make sure you have collected and recorded all survey items correctly.
- ✓ Comments should be clear, legible and contain NO PII.
- ✓ Ensure the proper CEAP ID (aka CEAP POID) is written on the questionnaire and all supplements. Double check the CEAP ID and other identifiers.
- ✓ **Confirm you recorded matching State FIPS, county FIPS, CEAP ID and NRI Sample Point number on the Phase II questionnaire and all supplements shipped to NOD.**
- ✓ Remove any comment sheets, sticky notes, staples, or paper clips from the questionnaire.
- ✓ Place supplements in the back of the questionnaire prior to shipping.
- ✓ Do not ship blank supplements.
- ✓ Use CAPI to submit **Name and Address updates**
- ✓ Ship ALL Phase II questionnaires (including inaccessible and refusals) and supplements to the NOD in St. Louis.
- ✓ Important: Make sure that there is no PII anywhere on the questionnaire. Questionnaires will be scanned and viewed by NRCS.
- ✓ Keep a record of the date and tracking numbers used to ship completed questionnaires to either your supervisor or the NOD.

## Chapter 4 - Identification and Screening

### Identifying the Sampled NRI Point Location and Operator

#### NRI Point Location

The NRI divides non-federally owned lands in the United States into roughly 160-acre segments called Primary Sampling Units (PSU). Within each PSU, three points were randomly selected to become permanent sample locations.

All points are classified by a Land Use Category. The CEAP cropland assessment makes use of these permanent sample locations to select from fields classified as "cultivated" cropland.

All points selected for the CEAP survey will be displayed on an aerial image with a "X" indicating the location of the sampled NRI point.

Topographical maps may be used in some western States, where aerial images are not available.

#### Identifying the NRI Sample Point

The NRI sample point is identified by a number, consisting of a combination of the State FIPS, County FIPS, PSU ID and NRI Point ID number.

For example, NRI Sample Point 19169\_999999R1 is

State = 19 (Iowa)  
County = 169 (Story County)  
PSU ID = 999999R  
NRI Point Number = 1

It is important to remember that the State and county FIPS numbers are included, because there may be a point designated 999999R1 in another county in Iowa.

In CAPI, the label field, inside the operator information pop up box, will contain the PSU ID + Point number.

In CAPI the PSU ID + NRI Point Number above would be 999999R1 and shown as **LABELS: 999999R1**

**Use the extra identification of state and county from the CAPI listing to ensure that you have the correct point. You would find ST = 19 and the CTY = 169 in your CAPI listing to complete the NRI Sample Point combination of 19169\_999999R1.**

You will be checking out these points in the NRI Screening application.

It is very important that when screening is completed that points be checked back into the NRI Screening application.

**The location of the NRI sample point and information contained on the aerial photograph is considered strictly confidential.**

**Post survey, the aerial photograph paper MUST be destroyed according to your Regional Field Office directions.**

### Identifying the Operator of the Selected NRI Point

Since CEAP is an area-based survey, this means the field surrounding the sample point is the 'target' of the CEAP data collection. To collect information about the field, you must first determine the current operator of the field.

NASS HQ staff, through an interagency agreement, determine the operator of the selected field through use of the Farm Service Agency (FSA) Common Land Unit (CLU) geospatial database.

If the selected field was registered at FSA during the 2024 or 2023 sign-up periods, the name(s) of the individuals associated with that field was found in the database.

These names will be provided to you in a separate listing for each point.

**As with our list of NASS farm operators, the information contained in the FSA list is considered strictly confidential.**

**The FSA list of farm operators MUST be destroyed according to your Regional Field Office directions.**

In some cases, there may be more than one name listed for the sample point because the farm operation signed up more than one individual.

As with other NASS surveys, the person who makes the day-to-day decisions for the field containing the sample point is considered the operator and the person who should be interviewed.

If there is more than one name listed for the sample point, the Name & Address listing will indicate a "Best Guess" name for the operator of the point. This is the person who should be your first point of contact.



## **2024 CEAP Interviewer's Manual**

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If it turns out that the “Best Guess” name is not the operator, ask if they know who the operator of the field is. If they do not know, try to contact other names on the FSA Name & Address list.

**Under no circumstances should you show anyone the Name & Address list.**

**Reminder: names, addresses, and phone numbers are PII, personal information, and are strictly confidential.**

Some sampled points may not have been in the FSA database, so there will be no Name & Address Listing for these points.

In CAPI these sampled points that may not have been in the FSA database will be designated as UNKNOWN.

**Use CAPI to make all updates to names, addresses and phone numbers.**

Also, in some cases, the name(s) on the Name and Address Sheet may not turn out to be the operator at the sampled point location. You will need to locate the operator of these points.

Follow the general guidelines that are used during the June Area Survey for locating the operator, including checking with FSA offices, county agents, feed dealers, and neighboring farmers.

The following table describes the FSA name and address listing elements.

## FSA Name & Address Listing Descriptions

<b>FSA Name &amp; Address Listing</b>	
<b>Header</b>	
NRI Point Location –	State where sample point is physically
NRI Point Location -	County where point is physically located
NRI Point	NRI point ID number
<b>Data Fields</b>	
Field	Definition
FSA Admin State	State where FSA signup took place
FSA Admin County	County where FSA signup took place
FSA Farm Number	FSA Farm Number
FSA Tract Number	FSA Farm Tract Number
FSA Field Number	FSA Farm Field Number
Best Name?	Y= “Best Guess” operator
Name Type	OW = Owner OP = Operator OO = Owner/Operator OT = Other
Whole Name	Name of operator or operation
Address, City, State, Zip	Address, City, State, Zip
Phone	Telephone number
Source Year	Year of FSA Signup

### Introduction

Before approaching the farm operator, develop an introduction you are comfortable using. In the introduction include who you are, whom you represent, and the purpose of the visit. You should be familiar with the information in Chapter One of this manual.

Some operators may have already heard about CEAP on radio or television farm show broadcasts or short spots. They may also have read about the survey in publicity materials. When making your introduction, remind the respondent that the data they report will be kept strictly confidential. All information they provide will be used only to create state and regional estimates by NRCS.

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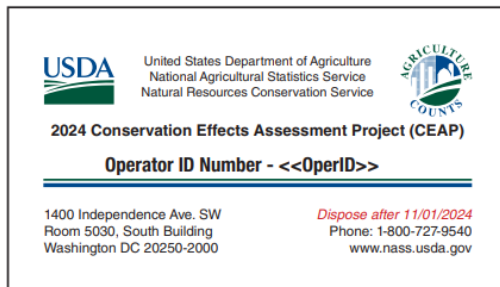
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Be prepared to answer questions the respondent may have about the purpose of the survey and uses of the data.

### CEAP Operator Card

Due to the unknown factor with each area-based point; during the screening phase, each operator should receive a CEAP Operator Card. Enumerators should include the CEAP Operator Card in their introduction. Our goal is to screen all the points potentially operated by that producer at once.

Since the CEAP survey is area-based, each operator regardless of the number of points operated in various locations, should receive one card.



*Example of CEAP Operator Card*

Example 1: Farmer Brown **operates** 4 points in 2 counties; therefore, the operator should receive 1 card for all 4 points operated. The enumerator should then separately draw off all 4 fields and record the same nine-digit number on each of the 4 points.

Example 2: Farmer Brown operates 2 points; however, he points out that one point is a partnership. The enumerator then asks the producer if he could answer the questions for the operation if they were selected for the survey.

If the answer is **YES, he can answer for both operations, the operator receives 1 card for 2 points.** The enumerator should then separately draw off both points and record the same nine-digit number for both points.

If the answer is **NO, he cannot answer for the partnership, then the enumerator should give the operator 1 card for 1 point.** Then draw off his one field with the assigned nine-digit number. The enumerator must also ask for the partner's contact information and update the contact information in CAPI for the point the partner is the main operator and conduct a separate screening process with the partner for the partnership point.

*CEAP Operator card scenario: During your introduction to Farmer Brown, ask if they have completed the screening process and received a CEAP operator card by another enumerator.*

**Answer = NO:** Give the operator a card and ask that they keep it until November 1 (can be discarded after that day) in a safe place. Instruct your operator to provide the card to any enumerator if they are approached about the CEAP survey again (emphasis on CEAP). Please assure your operator that their name is not linked to the card. You also want to emphasize the importance of keeping the card. Begin the screening process in your iPad and record the nine-digit number in the appropriate slot. Double check the number for accuracy.

**Answer = YES:** Assure the operator that they will not have to answer multiple questionnaires when the data collection phase starts. Also assure your operator that their personal information is not linked to the card. Multiple questionnaires will not be required, however, you will have to draw off the conservation area and field for the selected point. Ask your operator for the CEAP Operator Card. If the operator can locate his card record the nine-digit number in the appropriate slot. Double check the number for accuracy.

**If the card is lost record 999-999-999 (dashes not required) in the appropriate slot.**

**If your card does not validate in the NRI Screener application, choose another card for the operator.**

### **CEAP Materials**

A confidentiality envelope may be used to hold all forms and materials for each CEAP record. The envelope may also be used to ensure materials not sent to the NOD are kept confidential until destroyed. After the completion of Phase II, destroy the FSA listing and the NRI sample map as directed by your Regional Field Office. Remember, no PII should be recorded on the Phase II questionnaire.

## **Screening**

The CEAP survey will make use of an iPad NRI Screening application to confirm that the operation is in scope. A complete guide containing more instructions on how to use the NRI Screener entitled "2024 NRI Screener Application Users Guide" will be uploaded to NASDA website and you will also receive a paper copy from your RFO. This manual gives a broad overview and important points regarding using the NRI Screener.

The NRI Screening application includes the aerial photograph with the sample point indicated and some screening questions.

All points should be checked out while you are in a service area before you arrive at the operator's field. The screener can be completed without service, however,

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when service is available all points must be saved and submitted. More details on checking out points may be found in the 2024 NRI Screener Application Users Guide.

### Accessing the Screener

The screener can be accessed at <https://www.nrisurvey.org/ceap/>.

The training website can be accessed at <https://www.nrisurvey.org/ceapTrain/>

The training website has been made purple. All training before data collection should be completed in the Training website. A complete guide to the screener entitled "2024 NRI Screener Application Users Guide" will be uploaded to NASDA website and you will also receive a paper copy from your RFO.

### Screener Questions

#### Item 1: Prescreening Operator Identification Status:

The operator identification status serves as a summary of the actions in correlation to the point. At the end of the screening phase, each point must have an operator identification status. The operator identification status, in addition to the screening questions, will determine which points continue to the Phase II data collection phase.

An operator identification status must be selected for all situations.

#### Operator Identification Options:

**1. *Potential operator identified and agrees to screening***

- This option should be selected when the operator of the selected field has agreed to outline his field and answer the screening questions.

**2. *All efforts to identify or contact the operator were unsuccessful***

- This option should be selected when all attempts to contact the operator were unsuccessful. Contact your regional office for guidance on contact attempts.

**3. *Operator identified but refused screening***

- This option should be selected when the operator was successfully identified but refused to define the field and answer the screening questions.

**4. *Site changed since photograph was taken - point now falls on urban developed land.***

- This option should be selected when the selected point is clearly non ag (highways, recently developed land, schools, etc.) and out of scope for CEAP.

**5. *Some other issue prevented screening***

- This option should be selected sparingly, and notes should be made in the NRI Screener Application (No PII). Notes may also be entered into CAPI.

**You will record an operator identification status for ALL NRI points assigned.**

**To begin SCREENING**, show the operator the aerial photograph on the iPad, and ask:

**Item 1: Did you make any of the day-to-day farming/ranching decisions for the field containing this point in 2024?**

The purpose of this question is to determine if we have identified the current operator for the field surrounding the sample point. Ask the question and enter “YES” or “No” on the iPad.

If NO, you will be prompted to ask the respondent to assist you in locating the current operator of the field. Locate the new operator and repeat the screening process for the new operator.

If YES, ask the respondent to draw off the boundaries for the field on the iPad. It is possible that on some aerial images, the entire field may not be shown.

A lack of a signal should not be a problem, as points can be checked out when you have service. Make sure you save the point when service becomes available. Be very careful to outline the field exactly as the operator has instructed.

**Determining and Drawing Field and Conservation Area Boundaries**

Using the aerial image on the iPad, you will assist the operator in drawing off the area that will be included in the questionnaire. The objective is to identify the field containing the NRI point (**selected field**) AND identify any area(s) adjoining the field that has conservation practice(s) in place (**conservation area**).

For purposes of CEAP, the definition of a **selected field** is a continuous area of land devoted to one crop or land use, except where strip cropping occurs, and includes areas that are not cropped such as grassed waterways.

**For purposes of CEAP, a conservation area is defined as an area of land adjoining or adjacent to the selected field, such as field borders, buffers, or other land areas that are in conservation practices that the operator associates with the selected field.**

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If the operator is unsure whether the conservation area adjoining the selected field is associated with the selected field, the best practice is to include the conservation area within the field border. Identifying the corresponding acres that the conservation practices cover is critical to the survey results and demonstrating land stewardship.

If the sampled point happens to fall in a field border, buffer, or other use associated with a conservation practice, the field will include the field border, buffer, etc. and include the cropped area adjacent to the area of the conservation practice.

See Chapter 5, Section A for an example of field borders.

The status is not complete until the border is drawn.

**Enumerator Note: With the respondent, draw off the entire area that can be identified as the selected field and associated conservation area, then answer the following.**

**Item 2: In 2024, was any part of the field planted to a crop? (Include hay. Include summer fallow. Exclude orchards, vineyards, permanent pasture, greenhouse, and nursery crops).**

The area considered to be the field (including the conservation area) must be completely drawn off before field border status is complete. Remember if you are working without service the point cannot be returned until after you have service.

**The 2024 CEAP focuses on land classified as cultivated cropland.**

Cultivated cropland is tillable land currently in crop production during 2024.

Summer fallow is land purposely kept out of production during the regular growing season. Under this practice, the seed bed is tilled or sprayed with herbicides periodically during the growing season to control weeds and conserve moisture. No crops are planted for harvest during the current year on summer fallowed land.

Additionally, crawfish ponds without Rice or a Conservation Practice should be excluded.

For Item 2 include:

- Cultivated land where crops were planted and harvested.
- Non-cultivated cropland where crops were planted or harvested.
- Land in permanent hay.

- Grassland with management practices
- Land where crops were planted but not harvested (abandoned).
- Vegetables, melon crops, and other specialty food crops.
- Floriculture crops grown in the open.
- Small grains pastured.
- Land in summer fallow.
- Cropland with no crops planted during the current year (idle).

**Item 3 (If the answer is “NO” to question 2): In 2024, was the field idle cropland? If “YES”, enter 1 and go to Item 4: If “NO”, enter 3 and go to Item 8.**

**Continuing to Item 4**

**Item 4. Was the field also idle cropland in BOTH 2022 AND 2023? If YES, go to Item 8: If “NO”, enter 3 and go to Item 5.**

**Continuing to Item 5**

**Item 5 (If the answer is “NO” to question 4): During 2024, was the entire field enrolled in continuous conservation cover? (Include General or Continuous Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), or any other type of continuous cover conservation program offered by State, local, or non-profit organizations).**

Federal programs such as CRP and CREP require the acreage to be planted in long-term resources-conserving cover that will improve water quality, control soil erosion, and enhance wildlife habitat. Producers are required to remove the land from crop production and maintain the area in continuous cover for the time period specified in the contract, usually 10 to 15 years. In return, the producer will receive an annual payment for the length of the contract period.

The continuous CRP program is different from the general CRP program, in that there is a specific time frame when contracts are approved for the general CRP program. Conservation practices may be enrolled at any time under CRP continuous sign-up and for the CREP.

In addition to federal programs, there are State and local conservation programs, and programs sponsored by non-profit organizations that encourage producers to plant long-term conservation cover.



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If the **entire** field was planted in continuous conservation cover, as part of a federal, State, local, or non-profit program at any time during the 2024 crop year enter 1 for 'YES' and go to Item 8. If it was not, enter 3 for 'NO' and go to Item 6.

### Item 6 (If the answer is “YES” to question 2 or “NO” to question 5): Is the FSA Farm/Tract/Field information (in the NRI Screener) correct for the field we just identified?

This question is asked to confirm the FSA farm, tract, and field information. If the farm, tract, or field information is correct, then NRCS can use it to easily look up the FSA records associated with the point location. If it is not correct, then NRCS must use alternative sources to find the required information for the point location. NRCS office staff needs the information supplied in this question to complete the CEAP NRCS Supplement.

- If the FSA Farm/Tract/Field information was correct for 2024, select “YES”.
- If the FSA Farm/Tract/Field information was not correct for 2024, select “NO”
- If the operator is unsure, select “NO”.

### Item 7 (regardless of answer to question 6): Does the owner/operator name on the FSA name and address sheet match the operator for this field?

This question is asked to confirm the FSA operator names.

- If the FSA operator name information was correct for 2024, select “YES”.
- If the FSA name is not correct, select “NO”. If you have not updated the operator's name and address in CAPI, do so at this time.

### Item 8 (If “NO” to question 3 or YES to questions 4 or 5): Have you been previously contacted by NASS/NASDA in regard to another field for the 2024 CEAP Survey?

This question is an effort to reduce possible duplication during the questionnaire data collection phase. Due to the unknown area-based factor of the CEAP survey, there could be operators with multiple points (fields) selected.

#### **Remember that all points must be screened.**

- If the operator has been previously contacted by NASS/NASDA regarding another field for the 2024 CEAP Survey, select “YES”.
  - If the operator responds, “YES”, it is vital that you probe to distinguish the CEAP survey from June Area or Objective Yield (surveys with maps).

- If the operator has not been previously contacted by NASS/NASDA regarding another field for the 2024 CEAP Survey, select “NO”.

**Item 8 (If the answer to question 5 is “YES”): Ask the operator for their card (CEAP Operator Card) and enter the operator id in the screener and in the name and address sheet. Return the card to the operator when complete.**

Operators should receive a CEAP operator card during the interview. If an operator has previously received a card, ask the operator for the card and record the nine-digit number (select validate).

If the operator has been interviewed before, and has lost the card, enter “999999999” and then select validate. Also ask the operator if he or she can remember the enumerator’s name. If the operator can remember the enumerator’s name, ask your supervisor to contact the regional office with the CEAP ID and operator name. The regional office should then contact the first enumerator and ask for the card number. For specific examples see Chapter 4, CEAP Operator Card section.

**Item 8 (If the answer to question 5 is “NO”): Give the operator a new card and enter the operator ID in the screener. As a backup, in case of signal issues, enter the operator ID from the operator card in CAPI in the Notes block in the Operator Information pop up box. You may also note it on a paper copy of the Phase I Screener questionnaire as an alternative backup.**

Operators should receive a CEAP operator card during the interview. Type in the nine-digit number found on the card and select validate. If the card does not validate, choose another card for the operator. For specific examples see Chapter 4, CEAP Operator Card section.

## Chapter 5 - Completing the Phase II Questionnaire

### Overview of the Phase II Questionnaire

Chapter 5 details the CEAP questionnaire item by item.

#### Exhibit 5.1: Questionnaire Sections

<b><u>Section</u></b>	<b><u>Section Title</u></b>
	Face Page
A	Field Characteristics
B	Conservation Plan
C	Cropping History and Conservation Practices
D	Commercial Fertilizer Application
E	Manure Applications
F	Pest Control Applications
G	Pest Management Practices
H	Irrigation
I	Field Operations
J	Whole Farm
K	Operator and Operation Characteristics
	Conclusion (Back Cover)

### CEAP Questionnaire - Face Page

#### Questionnaire Label

HQ will provide a labeled questionnaire for each sampled NRI point. The label will contain a CEAP ID, which will be a nine-digit number beginning with "69...". Also included on the label will be the State and county FIPS code of the sampled point location and the NRI Sample Point Number.

The NRI Sample Point Number is a 13-digit number consisting of the State FIPS, county FIPS, PSU ID and NRI point ID number.

For example, NRI Sample Point Number 19169\_999999R1 represents:

State = 19  
County = 169  
PSU ID = 999999R  
Point Number = 1

It is important to remember that the State and county FIPS numbers are included because **there may be a point designated 999999R1 in another county in the same State.**

**It is critical that the point number on the aerial photo matches with the point number on the questionnaire so that we collect the information for the specified sample field location.**

**DO NOT WRITE PII ON THE LABEL OR ANYWHERE ON THE QUESTIONNAIRE.**

## Beginning Time

Record the beginning time (military) when you start the interview. We use interview times to find out how much time is required by the respondent to complete the questionnaire as a measure of respondent burden.

Record in military time, i.e. 1:30 p.m. as 1330.

## Section A - Field Characteristics – Selected Field

### What is Section A for?

The purpose of Section A is to set the stage for the rest of the CEAP questionnaire. In this section the **selected field** and **conservation areas adjacent to or adjoining the selected field** are confirmed, the acreage associated with the field and conservation areas are identified, and the tenure of the selected field is captured.

### Field and Conservation Area Boundaries

For purposes of the 2024 CEAP Survey, the definition of a **selected field** is a continuous area of land devoted to one crop or land use, except where strip cropping occurs, and includes conservation areas that are not cropped such as grassed waterways.

For purposes of the CEAP survey, a **conservation area** is defined as any area of land adjoining or adjacent to the **selected field**, such as field borders, buffers, or other land areas that are in conservation practices **that the operator associates with the selected field or provides benefits to the selected field**. For example, if a windbreak is planted across the road from the selected field, but provides protection to the field, indicate the windbreak as a conservation practice. A note can be made that the windbreak is across the road from the selected field.

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The boundaries of the **selected field** and the associated **conservation area** should have been identified by the operator on the iPad aerial image during the initial screening (and drawn with a pencil (*preferably red*) on the aerial photograph). Before you begin Section A, show the operator the boundaries that were drawn. Confirm that the boundaries are correct, and they contain all land areas that the operator associates with the selected field.

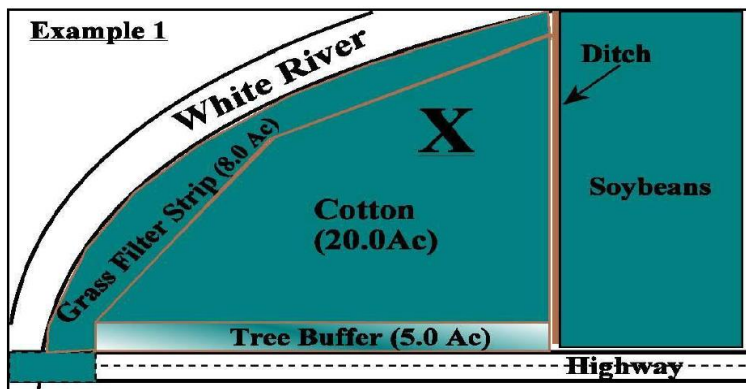
If necessary, redraw the boundaries. Confirming the boundaries of the entire area of interest on the aerial image will help both you and the respondent keep in mind the exact area that is the focus of the survey questions.

During the interview, it is *crucial* to remind the operator that we want to include any land, in or adjacent to the cropped field, that is part of a conservation practice.

Review the following examples.

**Example 1:** A sampled point (X) falls on a 20.0 acre cotton field which has a 5.0 acre tree buffer between the cotton field and a highway. There is also an 8.0 acre grass filter strip between the cotton field and the White River. The total cropped acres of the selected field is 20.0 acres. Total acres in conservation practice but not cropped is 13.0 acres (8.0 + 5.0).

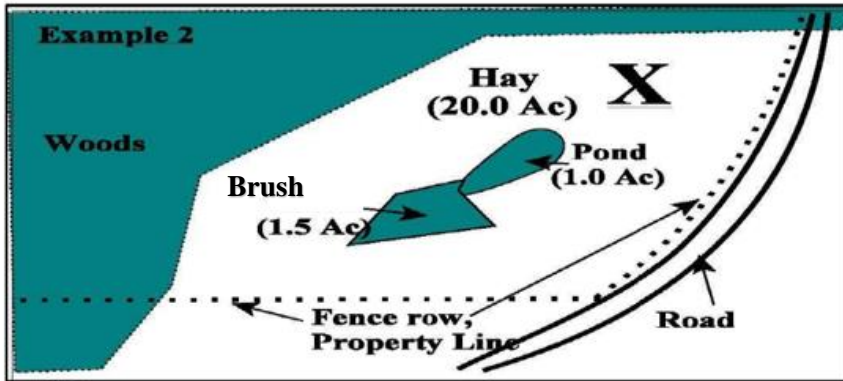
The total acres in the area of interest is 33.0 (20.0 + 8.0 + 5.0) acres.



*Fields are separate for example purposes only. One field should be drawn during the screener phase*

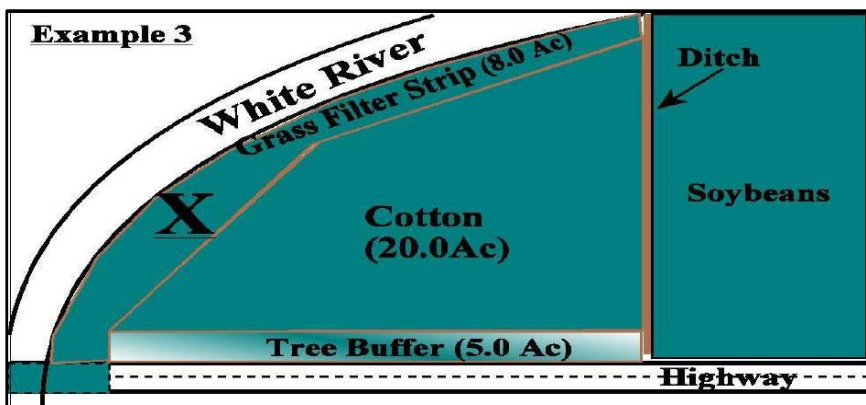
**Example 2:** A sampled point (X) falls into a newly established 20.0 acre hay field. The field contains a 1.0 acre pond, and a 1.5 acre area of brush that is not cut for hay. The total cropped acres of the selected field is 17.5 acres (20.0 - 1.0 - 1.5). The total non-ag land is 2.5 acres (1.0 + 1.5).

Total acres in the area of interest is 20.0 acres (17.5 + 2.5).



**Example 3:** A sampled point (X) falls into the 8.0 acre grass filter strip adjacent to a 20.0 acre cotton field which has a 5.0 acre tree buffer between the cotton field and a highway. Total acres in the selected field are 20.0 acres. Total acres in conservation practices are 13.0 acres.

The total acres in the area of interest are 33.0 acres (20.0 + (5.0 + 8.0)).

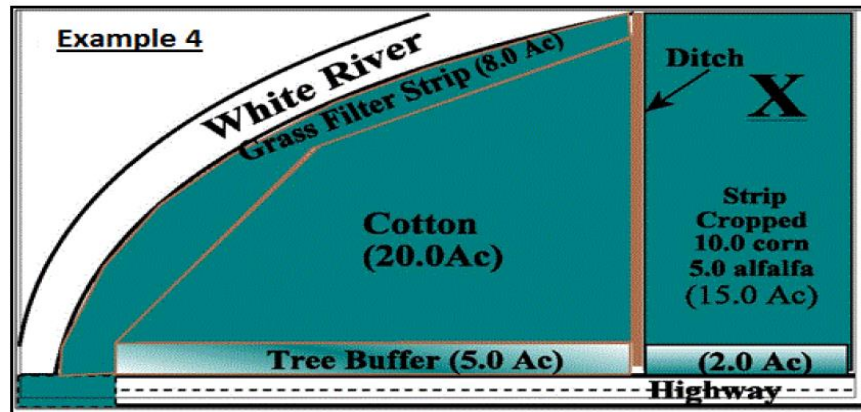


*Fields are separate for example purposes only. One field should be drawn during the screener phase*

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**Example 4:** A sampled point (X) falls into a 15.0 acre field that is strip cropped in alfalfa and corn. A 2.0 acre tree buffer is in place on the south side of the field. Of the 15.0 acres cropped, corn is planted on 10.0 acres of strips throughout the field and alfalfa is planted on 5.0 acres throughout the field.



Overall, each strip of both crops are treated the same. The selected field is 15.0 acres (10.0 acres of corn and 5.0 acres of alfalfa). The 2.0 acre tree buffer is recorded as a conservation practice, not cropped.

The total area of interest is 17.0 acres.

**Item 1: In 2024, how many acres in the selected field and conservation area containing the sample point were –**

Item 1a - Planted or cropped (excluding greenhouse and nursery crops)?

Include:

- Land where crops were planted and harvested.
- Vegetables, melon crops, and other specialty food crops.
- Land in hay.
- Cropland pastured in current year but cropped in previous two years.
- Pastured small grains
- Cropland seeded for any perennial crop use, such as new strawberry plantings, new alfalfa seedings, etc. even if these crops will not be harvested this year.

Exclude:

- Pastured grassland
- Nursery crops, turf grass, sod, and Christmas trees.
- Idle cropland (no crops planted or harvested in current year).
- Cropland diverted for government programs (including CRP, CREP, etc.).
- Fruit Orchards, vineyards, nut trees and citrus groves.
  - Abandoned orchards and vineyard are to be recorded as non-ag (Item 1g)

Record the acres planted to the nearest tenth (1/10)

### Item 1b - In field borders, grassed waterways, buffers, and other uses associated with conservation practices but not cropped?

Include:

- Any acreage inside the tract boundaries that is not cropped and is associated with some conservation practice.
- Any land associated with conservation practices such as field borders, grassed waterways, or conservation buffers, including wetlands.
- Land in CRP (Continuous Conservation Reserve Program) and CREP (Conservation Reserve Enhancement Program) designed for establishing conservation practices requiring small units of land.

Exclude:

- Woodland or other land not in any conservation practice.

Record the acres planted to the nearest tenth (1/10).

Land established to permanent grass and trees under the CRP, FWP and similar programs, generally involves larger land units and is considered continuous conservation cover (Item 1f).

### Item 1c - Idle cropland or summer fallow?

Idle cropland is land not used for crops during the current year.

Summer fallow is land devoted to storing up moisture during alternate years by controlling weeds with tillage equipment and/or herbicides. No crops are planted for harvest during the current year on summer fallowed land.



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Include:

- Cropland with no crops planted during the current year.
- Acres tilled in the past which could be plowed and planted again without clearing brush.

Exclude:

- Cropland seeded for any perennial crop use, such as new strawberry plantings, new alfalfa seedings, etc. even if these crops will not be harvested this year. They should be recorded as cropland (in Item 1a).
- Acreage planted to a crop that failed or was abandoned. These acres should be reported as cropland acres (in Item 1a).
- Small grain crops planted the previous Fall, abandoned, plowed under, or grazed off. These acres will be recorded as acres cropped (in Item 1a).
- Permanent pasture that is not harvested for hay (in Item 1e)

Record the acres planted to the nearest tenth (1/10).

### Item 1d - Greenhouse and Nursery Crops?

Include:

- Nursery crops, turf grass, sod, and Christmas trees.
- Acres covered with greenhouses or shade structures for floriculture crops.

Exclude:

- Unmaintained orchards, vineyards, groves, or nut trees. These acres should be recorded as non-ag (Item 1g) for CEAP.

Record the acres planted to the nearest tenth (1/10).

### Item 1e - Pasture?

Pasture is land normally grazed by livestock. These lands are not involved in crop rotations. Also, livestock does not have to graze the land during the current year.

Include:

- Permanent pasture
- Open grassland, brush land, and browse
- Woodland used as pasture.

Exclude:

- Small grains pastured or grazed.
- Record the acres planted to the nearest tenth (1/10).

### Item 1f – Continuous Conservation Cover?

Continuous conservation cover crops are never harvested, but are in place, growing and providing protection to the soil surface.

Include:

Land established in permanent cover under government programs such as CRP and FWP. CREP program land may be included here if it involves a large parcel of land.

- The producer can “self-certify” that the area is continuous conservation cover as long as it is not grazed, and it does not fit into any other category. It does not necessarily need to be part of Wetland Reserve Program (WRP) or CRP to qualify.
- Record the acres planted to the nearest tenth (1/10).
- Example: if an orchard or vineyard contains strips of grass cover understory in between rows of trees or vines, the understory would NOT be considered continuous conservation cover. Those areas are part of the field and would be counted as planted or cropped in 1a. In later sections of the survey, specific data for that grass cover should be reported.

### Item 1g - Non-ag (such as dwellings, buildings, structures, roads, and woodland and wasteland not in a conservation practice)?

Non-ag acres include woodland, and other land that is not cropped and is not associated with a conservation practice such as a field buffer.

Include:

- Land covered primarily in woodland or timber.
- Woodland that is not grazed.
- Timberland to be harvested for lumber or pulp wood.
- Abandoned fruit orchards, groves, or tree nuts.
- Native acres of maple trees which may be tapped for maple syrup.
- Homestead, barns, grain bins, confinement livestock facilities, or any other structure.
- Any acreage that is not tillable, not pastured, and not in any form of government program or conservation practice.

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Exclude:

- Land diverted to government programs planted to trees.
- Woodland with grazing capacity.

Record the acres planted to the nearest tenth (1/10).

### Item 2: Total acres in the Selected Field and Conservation Area

Sum the acres recorded in Item 1. This total will represent the designated area of interest. The selected field will be the acreage recorded in Items 1a and/or 1c, and 1f. Record the total acres that make up the area of interest. This should encompass the total acres drawn off on the aerial photo or map. This item should be the sum of all field utilization in Items 1a through 1g.

Record the field acres to the nearest tenth (1/10).

If any acres are reported in Item 2 are recorded in 1a (cropped) or 1c (idle cropland, summer fallow, continue the interview with the respondent.

**Remember, if none of the acres reported in Item 1 are recorded in 1a or 1c conclude the interview. Go to the Ending Time on page 43 and continue through page 44.**

### Item 3: Enrollment in Continuous Conservation Reserve Program (CRP), the Farmable Wetlands Program (FWP) or the Conservation Reserve Enhancement Program (CREP)

The Conservation Reserve Program (CRP) is a voluntary program available to agricultural landowners. Enrollment in CRP requires the producer to plant the acreage in long-term resources-conserving covers such as grasses or trees to improve water quality, control soil erosion, and enhance wildlife habitat. In exchange, the producer receives annual payments for taking the land out of crop production.

There are two types of CRP - the general signup CRP and the continuous signup CRP. The general CRP has a specific, limited enrollment period during which producers may apply to the program. There is no set enrollment period for the continuous CRP.

CREP is an offshoot of the continuous CRP. CREP partners federal resources with tribal and State governments and, in some cases, private groups to address specific

conservation issues, such as stream restoration and critical habitat for fish and wildlife populations.

The Farmable Wetlands Program (FWP) is a program designed to restore wetlands and associated buffers through improving the land's hydrology and vegetation.

Producers can enroll eligible land in the FWP through the continuous CRP.

- If any portion of the conservation tract is enrolled in continuous CRP, FWP, or CREP, check the "YES" box, enter a "1" in the code box and continue.
- If none of the acres in the selected field are currently signed-up in continuous CRP, FWP, or CREP, check the "NO" box, enter a "3" in the code box and continue.

#### **Item 4: Organic Acreage**

Organic refers to the way agricultural products are grown and processed. Organic farming standards differ fundamentally from conventional ones in their management practices. For example, organic production is based on a system of farming that maintains and replenishes soil fertility without the use of synthetic fertilizers. Certified organic crops cannot be seeded with genetically modified seed nor treated with synthetic pesticides.

**"Certified Organic"** means the crop has been grown according to strict uniform standards set forth by the USDA National Organic Program (NOP) for organically produced agricultural products sold in the United States. This is a federally regulated program.

If the field has already gone through the process of gaining organic certification through the USDA National Organic Program, enter "1" for the years it was deemed "Certified Organic". If the field is transitioning to organic farming practices in order to gain organic certification or is in the process of getting certified, enter "2" in the box(es) for the years this status pertains to. If the field was not certified organic and is not transitioning to organic farming, enter "3" in the box(es) corresponding to the appropriate years.

#### **Item 5: Land Tenure**

This item is used to determine the tenure arrangement of the sampled field. This question will help determine whether production and conservation practices used for owned fields differ from those on rented fields. In most cases, the entire field will either be owned, rented or used rent free. You will record the appropriate code for

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the type of tenure arrangement. If the field contains acreage of different tenure types, record the code that reflects the tenure of the majority of the acres in the field.

Include:

- Acres in the field which are owned by the operation (CODE=1).
- Acres in the field for which the operator paid a predetermined fixed cash rent (CODE=2).
- Acres in the field for which the operator paid a flexible cash rent (CODE=3). The cash rent may have depended upon the resulting yield, market price, or some other factor.
- Acres in the field for which the operator paid the landlord a share of the crop (either standing or harvested), (CODE=4). Make sure the rental agreement specified the rental fee was to be a share of the crop grown.
- Acres in the field for which the operator paid some combination of cash and a share of the crop (CODE=5). The rent may include a fixed or flexible cash payment supplemented with a share of the crop.
- Acres in the field belonging to others (private individuals, federal, state, railroad, etc.) which the operator used rent free (CODE=6). If the rental agreement specifies the landlord only receives a share of the government payments, and no share of the crop, then this should be counted as land used rent free.
- Acres in the field if not operated in 2023 and 2022 (CODE=7). Not valid for 2024.

**Note:** If option 7 is selected for 2024, verify that the respondent did in fact operate the selected field in 2024 and select option 1-6 to identify the operating arrangement.

**If the respondent did not operate the field in 2024, conclude the interview and locate the correct operator.**

## Section B - Conservation Plan – Selected Field

### What's Section B for? How is the information used?

Section B identifies conservation programs and practices associated with the selected field and obtains information about the written conservation plan.

All conservation practices that are in place should be considered - whether they were installed as part of a Federal or State program, a program offered by an industry or non-profit organization, or by the operator with no outside support.

Some producers may have more than one conservation plan, each associated with a different government program. In many cases, the producer will be receiving incentive payments or cost share payments (i.e. part of the cost is paid for by a government program) for implementing these practices. We need to know whether payments were received in order to match environmental benefits to program costs.

Section B also collects information on common structural practices that the producer may have installed on the field, such as terraces, buffers, and drainage features. These practices have an effect on erosion and nutrient and pesticide loss.

All conservation practices that are in place should be considered, whether they were installed as part of a Federal or State program, a non-profit organization, or by the operator with no outside help. More detailed information about specific practices in the conservation plans will be obtained later in the questionnaire. Additional information will also be supplied by NRCS county offices.

### Item 1: Written Conservation Plan(s) for Field

A conservation plan is a formal document customized for the individual producer that outlines in detail the overall use and best management of the natural resources on the land that they farm.

If a producer has a plan, it will have been designed to mitigate environmental impacts associated with agricultural production. Usually, a plan addresses multiple fields on a farm, identifying specific practices for each field. The conservation plan describes the schedule of operations and activities needed to address the identified natural resource concerns.

In most cases, the conservation plan will be drawn up with technical assistance from NRCS or the conservation district. These plans detail practice standards as described in the NRCS Field Office Technical Guide (FOTG). In order to receive financial payments, the producer must sign a conservation program contract.

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Conservation plans may also be produced through State or local government agencies, private individuals, or firms (known as Technical Service Providers), or non-profit organizations.

In some States, a specific type of plan known as a nutrient management plan (NMP) may be required by law for agricultural operations of a certain size or type. Requirements vary by State. The primary purpose of the required nutrient management plan is to reduce the amount of excess nutrients that move from the land into groundwater and streams.

A producer may have a conservation plan or conservation compliance plan and not be participating in one of the listed programs. In this case, check "YES".

- Check "YES" and enter a "1" if the producer has a written conservation plan, for the selected field, and continue.
- Check DON'T KNOW and enter a "2" if the respondent is unsure if they have a written plan and go to Item 2.
- Check "NO" and enter a "3" if the producer does not have a written conservation plan for the selected field and go to Item 2.

### Item 1a: Practices included in the Conservation Plan

Practices included in a conservation plan target resource concerns or specific issues. Identify the practices that are included in the conservation plan from the list provided.

- Enter a "1" for all that apply.
- Enter a "3" for all that do not apply.

### Item 2: Cost share or incentive payments for conservation practices implemented on the selected field and/or conservation area.

Ask the respondent if cost share or incentive payments were received in 2024, 2023, or 2022 for conservation practices implemented on the selected field and/or conservation area.

Cost share payments are payments received by the producer to offset the cost of establishing a particular conservation practice.

Incentive payments are usually annual payments made for a specified number of years, as stated in the conservation program contract. Incentive payments make conservation practices economically attractive to the producer.

This item can be used as a check for Item 1, “Did you have a written conservation plan?” If the respondent reports having received cost share or incentive payments, then they likely would have a written conservation plan or contract.

The respondent may not recall a written conservation plan but may remember receiving cost share and/or incentive payments for the selected field.

- Check “YES” and enter a “1” if the operator received cost share and/or incentive payments for the conservation practices implemented on the selected field. If Item 2 = 1, then Item 1 must be equal to 1.
  - Update Item 1, if necessary, then continue to Item 2a to identify which programs funded the conservation practices implemented.
- Check “NO” and enter a “3” if the operator did not receive cost share and/or incentive practices for the conservation programs implemented on the selected field and go to Item 3.

### Item 2a: Programs for Cost Share or Incentive Payment

Payments are issued after the practice(s) are installed, and eligible costs are verified. Identify the programs that were the basis of the funding for the cost share/incentive payments. Cost share payments may come from more than one source for the same practice.

- Enter a “1” for all that apply.
- Enter a “3” for all that do not apply.

### Item 3: Assistance for Developing the Plan or Conservation Practices

If conservation practices or a conservation plan exist for the selected field, the source of assistance to develop the plan and/or develop or install the conservation practice must be identified.

For Item 3a, if the respondent answered “YES” to Item 1, ask if they received help or assistance with the development of the conservation plan. Check the “YES” box if they received help or assistance with their Conservation Plan or “No” if they did not receive help or assistance with their Conservation Plan. Continue to Item 3b.

For Item 3b, ask if the respondent received help or assistance with the development of conservation practices currently in place on the field or conservation area. If the respondent received assistance or help with the development or implementation of conservation practices, check the “YES”



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box and continue to Item 3c. If the respondent did not receive help or assistance with the development or implementation of conservation practices on this field or conservation area, check "NO" and continue to Item 4.

Assistance includes any person or agency that helped develop or write the plan or to plan, install, or maintain a practice.

For Item 3c, indicate who provided assistance for the conservation plan or who provided the planning for any conservation practice implemented. It is possible to have more than one source of assistance if several practices are implemented at different times.

The options are:

- NRCS
- Conservation District
- Technical Service Providers (NRCS Certified)
- Private Consultant (not NRCS Certified)
- Trade Organizations
- University Extension
- State Agencies
- Other (specify)

### Column 1: Source of Assistance

Enter a "1" for each source of assistance. If "other" is selected, use the space provided to write in the source.

### Column 2: Charged a Fee for the Service

For each source that charged the respondent for assistance, enter a "1".

### Column 3: Primary Source of Assistance

Select the provider who was the primary source of assistance for the development of the conservation plan from the 8 sources.

- Enter a "1" in the corresponding cell for the PRIMARY assistance provider.

### Completion Code for Conservation Plan

- Enter a “1” for Incomplete tables or refusals

### Item 4: Conservation Practices

The presence of structural conservation practices has an impact on soil, nutrient, and chemical loss from agricultural fields. To obtain the required information, you will ask if certain practices were established. Determine whether the land use practices listed in Items 4a – 4u were used on the selected field and/or conservation area during 2024.

The operator may use more than one of the practices listed. Include all structural practices, whether they were part of a conservation plan or not.

#### Item 4a: Terraces

Terraces are earth embankments, channels, or a combination of ridges and channels constructed across the slope to intercept runoff water. Terraces break long slopes into shorter ones. As water makes its way down a hill, terraces serve as small dams to intercept water and guide it to an outlet.

- If the selected field has terraces enter, “1” for “YES”.
- If “No”, enter “3”.

#### Item 4a (i): Type of Terrace

Ask the respondent if the terraces were:

- primarily grassed
- primarily cropped

Record the code in the corresponding cell.

#### Item 4b: Riparian (stream side) Forest Buffer

A riparian forest buffer (or stream side forest buffer) is an area of trees and shrubs located adjacent to a body of water, including streams, lakes, ponds, sinkholes, and wetlands.

Riparian forest buffers intercept sediment, nutrients, pesticides, and other materials in surface runoff and reduce nutrients and other pollutants in subsurface water flow.

Woody vegetation also provides food and cover for wildlife and slows out-of-bank flood flows.

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- If a riparian (stream side) forest buffers exist, enter "1" for "YES" and continue. If "No", enter "3" and skip to Item 4c.

### Item 4b (i) Width of Buffer

- Record the width of the buffer to the nearest foot.

### Item 4b (ii) Species

- Indicate the primary type of vegetation planted in the buffer. Valid codes for species are:
  - Evergreen trees and shrubs
  - Deciduous trees and shrubs
  - Mixed evergreen and deciduous trees and shrubs

### Item 4c: Riparian (Stream Side) Herbaceous Buffer

A riparian herbaceous buffer (stream side herbaceous buffer) is an area of herbaceous cover established adjacent to a body of water, including streams, lakes, ponds, and wetlands.

Herbaceous means that the plant grows from its roots in the spring (perennial) or from a seed (annual). Their growth is soft and fleshy, and the above ground growth dies back each fall.

Herbaceous vegetation may include grasses, sedges, rushes, ferns, legumes, forbs, and other non-woody vegetation that is tolerant of intermittent flooding.

Riparian herbaceous buffers intercept sediment, nutrients, pesticides, and other materials in surface runoff and reduce nutrients and other pollutants in subsurface water flow. They also provide food and cover for wildlife.

- If riparian herbaceous buffers exist, enter "1" for "YES" and continue. If "No", enter "3" and skip to Item 4d.

### Item 4c (i): Width of Buffer

- Record the width of the buffer to the nearest foot.

### Item 4c (ii): Buffer Maintenance

If the buffer is actively maintained by mowing, fertilizing, and/or repairing gullies, enter "1" for "YES". If "NO", enter "3".

### Item 4c (iii): Buffer Design

Buffers are designed for specific objectives, such as to capture sediment, nutrients, and/or pesticide residues. Their construction will vary based on these objectives.

- Enter "1" for "YES" for all items the buffer is designed to address. If the buffer is not designed for a specified objective, select "NO" and enter "3" in the corresponding box.

### Item 4d: Field Borders

A field border is a strip of permanent vegetation (grasses, legumes, forbs, or shrubs) established at the outside edge or around the perimeter of a field.

Field borders may be used with contour farming, terraces, buffer strips and contour strip cropping systems. The vegetation in the strip protects field edges from soil erosion and provides turning and travel lanes around the field.

- If field borders exist, enter "1" for "YES" and continue.
- If "NO", enter "3" and skip to Item 4e.

#### Item 4d (i) Width of Border

- Record the width of the border to the nearest foot.

#### Item 4d (ii) Border Maintenance

- If the border is actively maintained by mowing, fertilizing, and repairing gullies, record "1" for "YES", if "NO", enter "3".

#### Item 4d (iii) Border Design

Field borders are designed for specific objectives, such as to capture sediment, nutrients, and/or pesticide residues. Their construction will vary based on these objectives.

- Enter "1" for "YES" for all items the buffer is designed to address.
- If "NO", enter "3".

### Item 4e: Filter Strips

A filter strip is an area of permanent vegetation established for the purpose of removing sediment, organic material, and other contaminants from field runoff. Filter strips are generally located at the lower edge(s) of a field and are designed to serve as a buffer between a field and environmentally sensitive areas such as streams,

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lakes, wetlands, and other areas susceptible to damage by sediment and waterborne pollutants. Filter strips slow the velocity of water, allowing suspended soil particles and soluble pollutants to settle out and infiltrate the ground.

- If filter strips exist, enter "1" for "YES" and continue.
- If "NO", enter 3 and skip to Item 4f.

### Item 4e (i): Width of Filter strip

- Record the width of the filter strip to the nearest foot.

### Item 4e (ii): Filter strip Maintenance

- If the filter strip is actively maintained by mowing, fertilizing, and repairing gullies, record "1" for "YES", if "NO", enter "3".

### Item 4e (iii): Filter strip Design

- Filter strips are designed for specific objectives, such as to capture sediment, nutrients, and/or pesticide residues. Their construction will vary based on these objectives.
- Enter "1" for "YES" for all items the filter strip is designed to address. If "NO", enter a "3".

### Item 4f: Grassed Waterways

Grassed waterways are natural or constructed water drainage channels in or at the edge of a field. Often, they have been shaped or graded, and a permanent cover of vegetation has been established.

Include waterways that are used as outlets for terraces and for disposing of runoff from diversion channels, stabilization structures, contoured rows, and natural depressions.

- If grassed waterways exist, enter "1" for "YES".
- If "NO", enter "3".

### Item 4g: Vegetative Barriers

Vegetative barriers are narrow, permanent strips of dense, tall, erect perennial vegetation established across the dominate slope of the field. Vegetative barriers slow runoff and trap sediment, pesticides, and other potential pollutants.

- If a vegetative barrier exists, enter "1" for "YES".
- If "NO", enter "3".

#### Item 4h: Hedgerow Plantings

A hedgerow planting involves establishing vegetation in a dense row at the edge of a field. Hedgerows are established using woody plants or perennial bunch grasses that produce erect stems of at least 3 feet in height that will persist over winter.

The purpose of a hedgerow planting is to delineate field boundaries, serve as fences, establish contour guidelines, provide wildlife cover, provide screens, or improve the landscape.

- If hedgerow planting exists, enter "1" for "YES".
- If "NO", enter "3".

#### Item 4i: Windbreak

Windbreaks are single to multiple rows of trees and possibly shrubs planted in a linear fashion to protect a farmstead or feedlot from wind and blowing snow. Windbreaks can also be planted to reduce wind speed in open fields.

- If windbreak exists, enter "1" for "YES".
- If "NO", enter "3".

#### Item 4j: Herbaceous Wind Barrier

Herbaceous wind barriers are narrow strips of grass or other non-woody species established at designated intervals across the field and perpendicular to the prevailing wind direction.

- If herbaceous wind barrier exists, enter "1" for "YES".
- If "NO", enter "3".

#### Item 4k: Contour Buffers

Contour buffers are narrow strips of perennial vegetation established across the hill slope and alternated with wider strips of cultivated cropland.

Contour buffer strips slow water runoff and trap sediments.

- If contour buffers exist, enter "1" for "YES".
- If "NO", enter "3".

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### Item 4l: Critical Area Planting

Critical area plantings involve establishing permanent vegetation on eroding or denuded areas that require extraordinary treatment to get vegetation established and maintained. The vegetation provides surface cover to stop the splash from rain drops and slow water flow.

Critical area plantings reduce soil erosion, improve water quality by reducing the amount of sediment, nutrients, and chemicals in runoff, and provide small areas of nesting cover for birds and small animals.

- If critical area planting exists, enter "1" for "YES".
- If "NO", enter "3".

### Item 4m: Grade Stabilization Structure

A grade stabilization structure, or grade control structure, is an earthen, wooden, concrete, or other structure built across a drainage way. The structure drops water from one stabilized grade to another and prevents gullies from advancing.

Grade stabilization structures are often used at the outlet of a grassed waterway to prevent erosion. Structures can be constructed to store water in order to provide a water source and habitat for wildlife.

- If grade stabilization structures exist, enter "1" for "YES".
- If "NO", enter "3".

### Item 4n: Drainage Water Management

Drainage water management is the practice of using water control structures to manage water discharged from surface and/or subsurface drainage systems. The structures are designed to be raised and lowered during the growing season to limit or reduce the flow of pollutants to ditches and streams.

- If drainage water management structures are present, enter "1" for "YES".
- If "NO", enter "3".

### Item 4o: Irrigation Tailwater Recovery System

An irrigation tailwater recovery system is a planned irrigation system designed to collect, store, and transport irrigation tailwater and/or rainfall for reuse.

- If an irrigation tailwater recovery system is present, enter "1" for "YES".
- If "NO", enter "3".

### Item 4p: Contour Farming

Contour farming is when producers perform tillage operations and plant crop rows by following the natural contours of the land, across the hill slope. Contour farming is using ridges, furrows, and roughness formed by tillage, planting and other farming operations at a grade near the contour to alter the velocity or the direction of water flow.

Furrows and crop rows across the slope help slow water flow so that it can infiltrate into the soil instead of running off and taking loose topsoil with it. On more steeply sloped fields, contour farming is used with terraces to control erosion.

Determine if the operator used contour farming at any time in the selected field during the 2024, 2023, or 2022 crop years.

- If contour farming was used, enter “1” for “YES”.
- If “NO”, enter “3”.

### Item 4q: Strip Cropping

Strip cropping is growing different crops in a systematic alternate arrangement planted across the slope of the land. The purpose of strip cropping is to reduce soil erosion by wind and water, reduce particulate emissions into the air, and improve water quality. Strip cropping can include multiple crops and may include winter cover crops on some strips.

If strip cropping was used, Item 1a-c of Section C would show that multiple crops were grown simultaneously in the selected field and what portion of the field was planted to each crop.

Determine if the operator used strip cropping at any time in the selected field during the 2024, 2023, or 2022 crop years.

- If strip cropping was used, enter “1” for “YES”.If “NO”, enter “3”.

### Item 4r: Alley Cropping

Alley cropping is an agroforestry practice where agricultural or horticultural crops are grown in the alleyways between widely spaced rows of woody plants.

By combining annual and perennial crops that yield varied products and profits at different times, a landowner can more effectively use available space, time, and resources.

Determine if the operator used alley cropping at any time in the selected field during the 2024, 2023, or 2022 crop years.



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- If alley cropping was used, enter “1” for “YES”.  
If “NO”, enter “3”.

### Item 4s: Continuous No-Till

No-till is a tillage system in which crop residue is left on the soil surface. The soil is left undisturbed from prior harvest, except for no-till planting and nutrient application.

No-till is sometimes referred to as “zero till” or “direct seed” in some regions of the country. Crops are planted and grown in narrow slots or tilled strips established in the untilled seedbed of the previous crop.

The common characteristic of this practice is that the only tillage performed is a very narrow strip prepared by coulters, sweeps, or similar devices attached to the front of the planter.

Determine if the operator used continuous No-till at any time in the selected field during the 2024, 2023, or 2022 crop years.

- If “YES”, enter a code “1” in the box and continue to item (i)
- If “NO”, enter a code “3” in the box and skip to Item 4t.

### Item 4s (i): Years of continuous no-till

Ask Item (i.) How many years has the land been continuously managed as a no-till system

- Enter number of years in the box, then go to item u.

### Item 4t: Reduced, Mulch Till, or Seasonal No-Till

Reduced tillage refers to managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round, while limiting the soil disturbing activities used to grow and harvest crops in systems where the field surface is tilled prior to planting.

This includes tillage methods commonly referred to as mulch tillage or conservation tillage where the entire soil surface is disturbed by non-inversion (NIT) tillage operations such as chisel plowing, field cultivating, tandem disking, or vertical tillage.

It also includes tillage/planting systems with few tillage operations (e.g., ridge till), but that do not meet the no-till definition.

- If “YES”, enter a code “1” in the box and continue to item (i).
- If “NO”, enter a code “3” in the box and continue to item 5.

Item 4t (i): Years of continuous reduced, mulch till, or seasonal no-till

Ask Item (i.) How many years has the land been continuously managed as a continuous reduced, mulch till or seasonal no-till system

- Enter number of years in the box and continue.

Item 4u: Primary purpose of shifting to conservation tillage (continuous no-till, seasonal no-till, reduced till, or mulch till)

- Indicate the primary purpose.

Valid codes are:

1. Soil health
2. Pest management
3. Cost
4. Fuel Use
5. Carbon sequestration

**Item 5: Conservation Practices Implemented SPECIFICALLY to Improve Fish or Wildlife Habitat (Including pollinators)**

Conservation practices often enhance wildlife habitat, whether by design or not. Ask the respondent if any conservation practices were modified or added to the selected field **specifically** to improve the quality of fish or wildlife habitat, this includes pollinators.

- If “YES”, check box and enter “1”. If “NO”, check box and enter a code “3”. Regardless of answer, go to Item 6.
- If the respondent did not have any conservation practices specifically to improve the quality of fish or wildlife habitat in place on the selected field, enter a code “4” for “Not Applicable” then go to Item 6.

**Item 6: Management of Vegetative Cover for Wildlife (Including pollinators)**

Vegetative cover, as part of a conservation practice, may be managed to co-exist with wildlife.

An example of such management practices would be delaying mowing until after critical bird nesting period.

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Ask the respondent if vegetative cover was managed **specifically** for wildlife purposes, this includes pollinators.

- If “YES”, check box and enter “1”. If “NO”, check box and enter a code “3”. Regardless of answer, go to item 7.
- If the respondent did not have any conservation practices in place specifically for wildlife purposes on the selected field, enter a code “4” for “Not Applicable” then go to item 7.

### Item 7: Practices installed to restore, enhance, or create wetlands

Ask the respondent if practices were installed to restore, enhance, or create wetlands.

- If “YES”, check box and enter “1”. If “NO”, check box and enter a code “3”. Regardless of answer, go to Section C.
- If the respondent did not have any conservation practices in place on the selected field, enter a code “4” for “Not Applicable” then go to Section C.

## Section C - Cropping History & Conservation Practices – Selected Field

### What is Section C for? How is the information used?

The purpose of Section C is to identify farming practices associated with the selected field that influence soil, nutrient, and pesticide losses. Some crop rotation schemes, for example, are designed to minimize nutrient loss from the field.

Tillage systems, row width, and the timing of planting and harvest has a significant effect on soil erosion and nutrient loss estimates, as does the use of a cover crop during non-growing periods. Grazing of livestock can also impact soil erosion and nutrient loss.

The cropping history and conservation practices section is used to determine farming activities on the selected field, such as tillage practices, types of crops grown, use of cover crops, and livestock grazing. Crop data is used in conjunction with the machinery data collected in Section I to estimate residue levels. The resulting information is used to evaluate soil erosion losses and soil quality.

Conservation practices in use within and adjacent to the selected field are also collected in Section C. Collecting three years of cropping practices provides information needed to analyze the impact of conservation practices.

### Item 1: Cropping History & Conservation Practices

The cropping and tillage history pages are used to collect information on land use for the past 3 crop years. Include only the acres in the selected field that were identified in Section A, Item 1.

Record all crops grown sequentially during a single crop year, including cover crops. Include all crops from fields that are strip cropped.

Record a maximum of 3 crops for each year on the questionnaire. Supplements should only be used for the Cropping Table if more than 3 crops are planted in the same field in the current year. If strip cropping occurred, record information for each crop for the crop year.

If the selected field was planted to more than one crop (field was split into multiple smaller fields and it was obviously not strip cropped) in one year, only record the information for the crop with the dominant acreage.

## Crop Year

The crop year appears at the top of each column. Each crop year has three columns in which to code the cropping and tillage information. For double cropping and year-round cropping (such as vegetable crops), record the crop in the proper crop year, not the calendar year. The crop year is considered the year in which the crop was harvested or terminated. If the crop is planted in the fall and harvested in the spring, the Crop Year = year that the crop is harvested.

Cover crops in place at the beginning of the crop year but planted the previous year should be recorded for the crop year in which they are terminated. This includes cover crops that will be mowed, burned, plowed or disked in, or killed by herbicide application or other means, in preparation for planting of a new crop in the current year. For crops such as some vegetables, which have an extended harvest period, report the Crop Year as the year harvest ended for those crops. For example, if the vegetable crop is harvested between December 2023 and January 2024, the crop would be reported as 2024.

## Crop or Land Use Line

Record the crop planted or land use for each of the 3 crop years (or number of years in which the current operator farmed the selected field if less than the 3 years). Use the Respondent Booklet if necessary to find the crop or land use name.

Include double cropping and other multiple cropping strategies for the crop year.

**Strip Cropping.** When strip cropping occurs, all crops grown simultaneously in the selected field should be reported. Multiple strips of the same crop can be combined on one column if all the lines in the table are the same for each strip. For example, during the current crop year our targeted field has four 10-acre strips of corn, and four 10-acre strips of alfalfa. For the current year, the columns can be coded with 40 acres of corn and 40 acres of alfalfa instead of listing a total of 8 strips that are each 10 acres separately.

**Nurse Crop.** If a respondent reports that more than one crop is grown together at the same time i.e. a nurse crop (an annual crop used to assist the establishment of a perennial crop) of small grain may be planted with alfalfa to protect the new seedlings), report each crop in a separate column in the Cropping History table and leave a detailed note.

(NOTE: this is not strip cropping. Details for reporting strip cropping are above)

In these situations, report all pesticide, fertilizer, and manure applications under the crop code of what the respondent deems to be the 'target' crop of the action.

If a pesticide is applied to a field to treat a condition of the nurse crop, report that application under the nurse crop code on only one line. If it is applied to treat a condition of all commodities, you must choose only one and still report the pesticide application on only one line.

For pre-plant tillage operations applied to the field, e.g., plowing or disking record them once, for the "main" crop. If alfalfa and oats are planted at the same time, report the planting of oats on one line and the planting of alfalfa on another line of the field operations table. This would be a tandem field operation.

Record crops if they were planted during the time period, even if the crop was abandoned before harvest because of drought, hail, or some other event.

If the field was replanted to the original crop, record only the information pertaining to the replanted crop throughout the survey (with the original tillage, fertilizer, manure, pesticide, and planting, plus any of those that are used for the replanting). If only a portion of the field was replanted, record the information for the crop with the most acres (Exception: in Section I, Field Operations record the information pertaining to all planting and replanting activities.)

If the field was replanted to a different crop, record the information for both crops in Section C, one column for each crop. The first crop will be recorded as "abandoned" acres on line 12 of the cropping history table. Information for the second crop will be recorded in a separate column of the table. Include any multi-year crop(s) (e.g. hay in rotation with crops, perennial vegetable crops) even if the planting date occurred in a previous year.

#### **Line a: Crop or Land Use Code**

- Enter the crop code from the Respondent Booklet (page 4) for each crop or land use recorded in the space above Line a.

#### **Line b: Intended Use Code**

- If the operator indicates more than one intended use, code as "other" and make a note listing all uses.

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Valid intended use codes include:

Code	Intended Use
1	Dual (grain/grazing)
2	Grain
3	Grazing only
4	Cover Crop
5	Other (Specify)
6	Hay
7	Human consumption or use (e.g. cotton, tobacco, vegetables)
8	Silage/Haylage
9	Seed Only
10	Nurse Crop
11	Biomass
12	Non-Bearing, Idle Land or summer Fallow
13	Wildlife
14	Cut for Dry Hay and Silage

### Line c: Acres Planted

Record the number of acres planted in each of the crop years to the nearest tenth (1/10). If idle land, summer fallow, or pasture in rotation with crops is reported, record the number of acres of the reported land use. If all or part of the selected field is **prevented planting**, enter the number of acres and make a note that those acres were prevented planting or idle.

Crops that are planted but harvested over several years should also be included in Line c. Examples of previous planted crops include alfalfa and sugarcane. For crops with permanent planting, such as a hay crop, record the number of acres for each crop year that this crop is grown, regardless of the year when it was planted.

- Record crops if they were planted during the time period, even if the crop was abandoned before harvest because of drought, hail or other events.

**Note:** If the land was **idle**, code the number of acres in the field, and skip Lines e through h and Lines j through n.

### Line d: Planting Date

Reference the calendar located in the Respondent Booklet. Record the month, day, and year the crop was planted in the selected field (MMDDYY). If the field was replanted to the same crop, record only the information pertaining to the replanted crop throughout the survey. If only a portion of the field was replanted, record the information for the crop with the most acres throughout the survey.

If planting in the selected field occurred prior to January 1, 1914 (i.e.- perennial hays), record the date planted as “999999” in Line d. On the questionnaire, write a note on the side to explain the actual date the field was planted/ established. If planting in the selected field occurred over several days, select the day that represents the approximate time when at least one-half of the field was complete.

For example, a producer planted approximately one-third of the soybeans in the selected field on May 29 and finished up the planting of the field on June 1, 2024, because of a delay, record the date planted as 060124. If the field was never planted (i.e.- wild hay, etc.), record the date that the field was established.

Refer the respondent to the calendar provided in the Respondent Booklet to assist in remembering the approximate planting date.

From an agronomic standpoint, there can be huge changes from the beginning of the month to the end of the month. The respondent’s best guess on timing of planting is more accurate than just identifying the month.

- Record month, day, and year in digits. For example, June 1, 2024, will be entered as 060124.

#### Line e: Row Width (Inches)

Some crops are planted in a continuous straight line. Rows are evenly spaced to facilitate mechanical cultivation and harvest operations. The row width (or row space) is the distance from the center of one row to the center of the next row. Examples of traditional row crops are corn, cotton, soybeans, vegetables, and tobacco.

If the respondent used a drill to plant the crop (small grains, soybeans, etc.), the row width is not necessary but can be reported.

- Enter the row width in inches to the nearest tenth (1/10) if the crop was planted in rows. Record row width regardless of crop type.

#### Line f: Was Precision Technology Used to Change Seeding Rate

- Enter a “1” for “YES” for each crop in which precision technology was used to change seeding rate throughout the field.
- Otherwise enter a “3” for “NO”.

#### Line g: Was Precision Technology Used to Change Crop Variety

- Enter a “1” for “YES” for each crop in which precision technology was used to change crop variety throughout the field.
- Otherwise enter a “3” for “NO”.



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Line h: Was a Soil Test Performed Prior to Planting to Determine Crop Nutrient or Soil Health Needs?

- Enter a “1” for “YES” for each crop that had a soil test taken prior to planting to determine crop nutrient or soil health needs.
- Otherwise enter a “3” for “NO”.

Line i: Were Carbon Amendments applied?

- Enter a “1” for “YES” for each crop where soil carbon amendments were applied to improve soil health.
- Otherwise enter a “3” for “NO”.

Line j: Irrigation

Ask if each crop reported was irrigated during the specific growing season. The crop should be counted as irrigated if any of the acres in the field had water **applied at least once during the growing season**, or if the acres were **irrigated before planting**.

- Enter a “1” for “YES” for each crop irrigated.
- Otherwise enter a “3” for “NO”.

Line k: Expected Yield (Yield Goal)

Producers have certain expectations for crop yields when making decisions to plant. They plan and make decisions based on these expectations, for example, the amount of nutrients to apply. Expected yield will likely be different from the actual harvested yield captured on Line m.

However, for understanding the day-to-day operations in the field - it is the intended, not so much the actual yield that is important. Knowing the yield goal can also help NRCS identify abnormal weather events (drought, flood, etc.) by providing a comparison to the actual yield.

HAY: For hay crops, record the expected total yield per acre for the entire year. For example, if 3 cuttings are expected and each cutting is expected to yield 1.5 tons per acre, then the expected total yield for hay is 4.5 tons per acre.

- Record the operator's expected yield at the time that the planting decisions were made. Record the expected yield per acre to the nearest tenth (1/10) of a unit on Line k and the unit code on Line k(1).

**Line k (1): Yield Unit**

Valid codes for the yield per acre units are:

<b>Code</b>	<b>Unit</b>
1	Pounds
2	Cwt (hundredweight)
3	Tons
4	Bushels
5	Other
6	Barrels
13	Quart
23	50-lb bag
24	Peck

If a producer indicates a yield unit that is not listed for k(1), make notes that will assist the Regional Field Office assigning a correct item code. For example, a producer expected a cotton crop of 2.5 bales per acre (average bale = 480 lbs), record 2.5 on Line k and specify bales on Line k(1).

Yields for grain hay should be reported in either pounds or tons. Notes may be needed to record a particular yield unit that is not listed on Line k(1).

**Line l: Acres Harvested**

Acres harvested are usually the entire field unless some portion of the field was not harvested during the crop year.

**Note:** Record the acres cut for hay only one time. Multiple harvests of the same acres will be captured in the total production recorded as harvested yield.

The same is true for other crops that are harvested multiple times within a year.

- Record the acres harvested (and remaining to be harvested at the time of the interview).

**A blank signifies that NO HARVEST occurred.** Make notes explaining the situation if no harvest occurs.

**Line l (1): Date Harvested**

Refer the respondent to the calendar provided in the Respondent Booklet to assist in remembering the approximate harvest date. From an agronomic standpoint, there can be huge changes from the beginning of the month to the end of the month. The

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respondent's best guess on timing of harvest is more accurate than just identifying the month.

Record the month, day and year each crop on the selected field was harvested or expected to be harvested. For crops that have multiple harvesting dates, such as hay crops, record the date of the last harvest of the crop year.

In the case of small grains, the harvest date reported on Line l should represent the grain harvest, not the stubble harvest.

- Record month, day, and year in digits. For example, October 23, 2024, will be entered as 1 0 2 3 2 4.

The date of harvest for a perennial crop will be the last harvest date.

### **A blank signifies that NO HARVEST occurred.**

#### Line m: Harvested (Actual) Yield per Acre

If the selected field has been harvested, record the yield per acre for the specific crop and crop year. Actual harvested yield per acre should be recorded for the crops listed on Line a. If harvest of the selected field is not complete, ask the operator to estimate the yield per acre expected at harvest.

If the reported yield seems unusual or out of line with other reports in your area, confirm with the operator and make notes explaining why.

- Record the actual yield (or estimated yield if not yet harvested) at the time that the interview is conducted. Record the yield per acre to the nearest tenth (1/10) of a unit on Line m and the unit code on Line m(1).
- For crops with permanent planting(s) but multiple harvests, such as hay crops, record the total tons per acre harvested during the crop year.

**A blank signifies that NO HARVEST occurred.** Make notes explaining the situation if no harvest occurs.

#### Line m (1): Yield Unit

If a producer indicates a yield unit that is not listed for Line m(1), make notes that will assist the Regional Field Office in assigning a correct item code.

For example, a producer expected a cotton crop of 2.5 bales per acre (average bale = 480 lbs), record 2.5 on Line m and specify bales on Line m(1). Yields for grain hay should be reported in either pounds or tons.

Valid codes for the yield per acre units are:

Code	Unit
1	Pounds
2	Cwt (hundredweight)
3	Tons
4	Bushels
5	Other
6	Barrels
13	Quart
23	50-lb bag
24	Peck

- Enter the appropriate unit code that describes the yield in Line m(1)
- Emphasize the need for correct units for harvested yield.

**A blank signifies that NO HARVEST occurred.**

**Line n: Acres Abandoned or NOT Harvested**

Record the number of acres abandoned or not harvested during the crop year. This applies only to acres that were listed on Line c (planted).

**A blank signifies that no acres were abandoned.** For crops with permanent planting(s), leave this line blank. If acres in Line l (harvested acres) is less than acres in Line c (planted acres), enter difference between planted and harvested in Line n.

**Line o: Grass Vegetation, Straw, or Stubble Harvested**

This item asks whether grass vegetation, straw, or stubble (stover) is harvested from the field after the grain is removed. Often producers will bale straw from the remains of small grains (for example, wheat, barley, oats) for use as animal bedding, ground cover on new grass seedings, etc.

Corn, grain sorghum, or soybean stubble is also sometimes baled to be used as livestock feed.

- If straw or stubble was harvested from the selected field, enter code “1” for “YES” and continue with Line p. Otherwise, enter code “3” for “NO” and go to Line p.

This does not apply for crops with permanent planting(s), such as hay. Line o should be recorded with “3” for “NO” for these crops.

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### Line p: Grazing

- If livestock grazed the selected field at any point during the year, enter a "1" for "YES" and continue with Line q, otherwise enter a "3" for "NO" and skip to Line t.

### Line q: Type of Livestock Grazed

Valid codes for types of livestock are:

Code	Livestock Type
1	Cattle
2	Sheep
3	Goats
4	Horses
6	Bison
7	Llamas
8	Elk
9	Chicken
10	Deer
99	Other (Specify)

Record the code in Line q and, if more than one type, identify the primary type of livestock that grazed the selected field.

### Line r: Head Grazed BEFORE Harvest

In some situations, for example, with small grains, livestock are allowed to graze the crop for a short period of time in late winter or early spring before the jointing crop stage begins.

- Regardless of ownership, record the average number of head of livestock that
- grazed the selected field BEFORE harvest and continue to Line r(1).
- If livestock DID NOT graze this selected field BEFORE harvest, go to Line s.
- If the field is NOT harvested, report grazing in Lines r and r (1) and skip Lines s and s (1).

### Line r (1): Days Grazed BEFORE Harvest

- Enter the total number of days in Line r(1) the selected field was grazed BEFORE harvest.

### Line s: Head Grazed AFTER Harvest

Occasionally, livestock are allowed to graze stubble, stover, or other vegetation after the crop is harvested.

- Regardless of ownership, record the average number of head of livestock that grazed the selected field AFTER harvest and continue to line s (1).

If livestock DID NOT graze this selected field AFTER harvest, go to Line t.

#### Line s (1): Days Grazed AFTER Harvest

- Enter the total number of days in Line s(1) the selected field was grazed AFTER harvest.

#### Line t: Forage Intentionally Left Behind

- If forage was intentionally left behind for wildlife use, cover, and/or shelter, enter code "1" for "YES" and continue with pages 8 and 9 for the 2023 and 2022 crop years, respectively.
- Otherwise, enter code "3" for "NO" and continue with pages 8 and 9 for the 2023 and 2022 crop years, respectively.

### **Cropping History and & Conservation Practices Completion Code Boxes (codes 1004, 1003, 1002)**

Blank = Data present for this section.

1 = Data incomplete or refused

2 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

### How to Record Replanting in the Cropping History Table

Often situations will result in a farm operator having to replant a crop or plant a different crop when weather related events (i.e. drought, hail, and flood) destroy the first crop. Both crops should be captured in the table. The example below shows how the first 14 lines (a-n) of the table would be completed if the cotton crop was destroyed by hail and soybeans were planted as a replacement crop.

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### Example: Cotton Hailed out, Soybeans Replanted

		1	2	3
Let's begin with the 2024 crop year. What was/were the:		2024	2024	2024
Crop(s) planted or Land Use?	Crop	upland cotton	soybeans	
a. Crop(s) code or Land Use Code. [See Respondent Booklet pgs. 4 - 7 for codes.]	Code	1005 108	1037 120	1069
b. Intended use of Crop(s). [See Respondent Booklet pg. 7 for codes.]	Code	1006 7	1038 2	1070
c. Acres planted? [Include previous planted crops.]	Acres	1007 189.0	1039 189.0	1071 .
d. Date planted, transplanted, or established? (MM DD YY)	Date	1008 0 4 0 1 2 4	1040 0 7 0 1 2 4	1072 _ _ _ _ _
i. Acres harvested?	Acres	1015 .	1047 189.0	1079 .
(1) Date harvested? (MM DD YY)	Date	1016 _ _ _ _ _	1048 1 0 1 1 2 4	1080 _ _ _ _ _
m. ACTUAL yield at harvest/acre?	Number	1017 .	1049 48.5	1081 .
(1) Unit: [See Respondent Booklet pg. 7 for codes.]	Code	1018	1050 4	1082
n. Acres Abandoned or NOT harvested?	Acres	1019 189.0	1051 .	1083 .

### Item 2: Planned Crop Rotation

Crop Rotation is defined as growing crops in a repeating sequence on the same land. Rotations are for two or more years. Examples include a two-year corn-soybean rotation or three-year corn-grain sorghum-winter wheat rotation. Planned rotations are often part of a conservation plan, but they are also in common use where there is no conservation plan.

Application of a crop rotation practice is used to improve or maintain good physical, chemical, and biological conditions of the soil; help reduce soil erosion; improve water use efficiency; manage plant pests (weeds, insects, diseases); provide food for domestic livestock; and/or provide food and cover for wildlife.

- Record a “1” for “YES” if a planned crop rotation is used on the selected field and continue.
- Otherwise, enter code “3” for “NO” and continue with Item 3.

#### Item 2a: Crops Within the Planned Crop Rotation

A planned crop rotation is a reoccurring pattern of crop plantings. Examples include a two-year corn-soybean rotation or three-year corn-grain sorghum-winter wheat rotation. Ask the respondent what cropping pattern best represents the planned crop rotation for the sampled field.

In most cases, crop rotations involve changing the crop from year to year; however, it is possible to have several years of one crop followed by another crop. An example of

this could include a corn-corn-soybean rotation or an alfalfa-alfalfa-alfalfa-corn rotation. Record the crops and crop codes in the rotation. Record only the number of years needed (**i.e. all lines do not have to be completed**).

For example, a producer may have a two-year crop rotation pattern of corn one year, and soybeans the next. This pattern would be repeated in subsequent years. In this example, corn is recorded on line i for the 1<sup>st</sup> year of the rotation, soybeans are recorded on line ii for the 2<sup>nd</sup> year of the rotation, and all other lines will be blank.

If hay is in rotation with crops, record the rotation from the time that hay was established to when it was plowed under to convert to a crop.

Include a double cropping system if it is followed in a planned crop rotation pattern. Cover crops may also be part of a planned rotation.

For example, if a producer plants a winter wheat-soybean double crop pattern in year one and sorghum in year two, record both the winter wheat and soybean crop names and crop codes for year one. Use the 2<sup>nd</sup> and 3<sup>rd</sup> columns to record double cropping and/or cover crops that are part of a planned rotation. Record all applicable crop codes in the corresponding line.

### **Item 3: Cover Crop**

Cover crops are crops planted to increase soil structure and fertility, maintain water quality, and sometimes, to reduce weeds, pests, or diseases in crop fields. Cover crops reduce soil erosion by providing a physical barrier on the soil surface and underground through their root network. As a result, soils and plant nutrients are retained and recycled and not discharged into streams through runoff or leaching.

Farmers choose to grow specific types of cover crops based on their own goals and objectives. The use of cover crops has been encouraged in recent years, as a means to provide protection for the soil during the winter months.

Winter cover crops are planted in the fall after harvest of the previous year's crop and killed back just prior to spring planting by mowing, burning, plowing or disking in, applying an herbicide, or other means.

- Mark the "YES" box if a cover crop was planted in one or more of the survey years and continue.
- If "NO", mark the "NO" box and go to Item 4.

Record the following items for any year(s) between 2022 and 2024 that a cover crop was planted on the selected field. Winter cover crops should be recorded as a "crop" in the year that it was terminated.



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### Item 3a. Date planted

Refer the respondent to the calendar provided in the Respondent Booklet to assist in remembering the approximate planting date.

The respondent's best guess on timing of planting is more accurate than just identifying the month.

Record the month, day and year the cover crop on the selected field was planted.

- Record month, day, and year in digits. For example, October 23, 2023, will be entered as 1 0 2 3 2 3.

### Item 3b. Type of cover crop planted

Various crops may be planted as cover crops to control soil erosion and maintain water quality. Small grains such as wheat and rye are commonly planted, as well as various legumes. If a crop is planted other than those listed for codes 1-5, make a note on the questionnaire.

Valid cover crops type codes are:

Code	Crop
1	Wheat
2	Ryegrass
3	Rye
4	Other small grain or winter annual
5	Legume (such as clover, cowpeas, etc.)
6	Other (write in the crop name as a note, if 'other')
7	Mixed (write mixture)

### Item 3c. Primary intended benefit

Cover crops are planted for various reasons. In Item 3c, ask the respondent to identify the PRIMARY benefit for which they planted the cover crop.

Valid responses include:

1	Soil fertility
2	Soil quality
3	Soil cover
4	Controlling weeds, insects, & diseases
5	Carbon sequestration
6	Other

Items 3d. – 3h. ask each and:

- Record a “1” for “YES” and continue.
- If “NO”, enter a “3” and continue.

**Item 3i. Date terminated**

Refer the respondent to the calendar provided in the Respondent Booklet to assist in remembering the date the cover crop was terminated.

- Record month, day, and year in digits.
- For example, October 23, 2023, will be entered as 1 0 2 3 2 3.

**Item 3j. How terminated**

Valid codes for method of termination are:

<b>Code Termination Type</b>	
1	Herbicide
2	Mowed
3	Harvested for forage
4	Tilled in
5	Rolled/Crimped
6	Harvested for grain
7	Burned (fire)
8	Winter Kill

**Item 4: Adjacent to a Water Body**

Field runoff and leaching have more of an impact when a source of water, either moving or non-moving, is located next to the field. If the selected field touches a water body, including a lake, pond, river, stream (including ephemeral or intermittent stream), wetland, or man-made drainage ditch or channel, runoff from the field may carry materials directly into the adjoining water.

Systems of conservation practices for these fields are designed to meet a higher standard than conservation systems for other fields.

If a moving or non-moving body of water is adjacent (within 100 feet down slope) to the sampled field code a “1” for “YES” and continue.

If “NO”, enter a “3” and continue.

### **Item 5: Irrigation/Drainage Ditches Lined or Vegetated**

Irrigation/Drainage ditches are sometimes lined or vegetated to maintain a stable channel. Lined irrigation ditches are made of concrete or any other type of impervious material.

Vegetated drainage ditches are planted with a selection of plants which act as a binding site for pesticides and fertilizers that have run off fields during irrigation or storm events.

- Enter a “1” for “YES” if irrigation/drainage ditches were either lined or vegetated to maintain a stable channel.
- Enter a “3” for “No” and continue.

### **Agricultural Drainage**

Agricultural drainage is the removal of excess water from the soil surface or soil profile for the purpose of enhancing crop production and to improve access to the field by farm equipment. There are two primary types of drainage systems, surface and subsurface. Producers often install a combination of the two types.

### **Item 6: Subsurface (Tile) Drainage**

Subsurface or tile drainage is designed to remove standing water from the plant root zone by artificially lowering the water table level. The water is drained through the soil profile via a series of perforated drainage pipes (normally clay tile or plastic tubes) that are installed below the soil surface. Subsurface drains are typically installed at a depth of 30 to 40 inches and 20 to 80 feet apart.

- Enter a “1” for “YES” if the field has subsurface drainage and continue.

If there is no subsurface drainage or the producer does not know, enter the appropriate response, and skip to Item 7.

### **Item 6a: Drainage System Arrangement**

Subsurface drainage (tiles) may be laid out in a specific pattern across the field or may be placed randomly to remove water from isolated wet areas as needed.

- Enter a “1” for “YES” if the tiles are arranged in a pattern, then continue.
- If “NO”, the tiles are not arranged, but are random, enter a “3” and go to Item 6c.

### Item 6b: Subsurface Drain Spacing

If the drainage system is arranged in a specific pattern, indicate the distance between drainage lines.

Valid codes for drain spacing are:

#### Code Spacing

1	Spaced less than 30 feet apart
2	Spaced 30 to 59 feet apart
3	Spaced 60 to 100 feet apart
4	Spaced more than 100 feet apart

### Item 6c: Subsurface Connections to Surface Systems

Subsurface drainage often connects to surface drainage systems through tile risers, culverts, or pipes. If the subsurface drainage in this field connects to surface drainage systems *in this field*:

- Enter a “1” for “YES” or if there is no connection to surface drainage systems in this field, enter a “3” for “NO” and continue question 7.

### Item 6d: Subsurface Tile Drain Depth

Subsurface drains are typically installed at a depth of 30 to 40 inches, however, this can vary from field to field and region to region. Enter the depth from the soil surface to the subsurface tile drains in inches.

### Item 7: Surface Drainage Structures

Surface drainage system structures are designed to remove standing water from the soil surface. Surface drainage structures include ditches, diversions, grass waterways, and surface water inlets to subsurface drains.

- Enter a “1” for “YES” if a surface drainage structure is in the sampled field and continue to Section D.
- Enter a “3” for “NO” if a surface drainage structure is not present in the sampled field and continue to Section D.

## **Section D - Commercial Fertilizer Applications - Selected Field**

### **What is Section D for? How is the Information Used?**

The purpose of this section is to identify fertilizers and nutrients used on the selected field for the 2024, 2023, and 2022 crop years. Fertilizer application data are used to analyze water quality and agricultural productivity issues and policies. NRCS will use this section to estimate commercial fertilizer losses from farm fields.

Nutrient management practices help farmers adjust fertilizer application to crop needs and reduce losses to the environment. Legume production, storage and use of livestock and poultry manure, and soil, plant, and tissue testing are part of the information needed in order to compute nutrient balances that establish the basis of sound nutrient management.

Year specific tables for fertilizer applications are included in section D. Each year should be captured on the year-specific table. Use the fertilizer supplement if additional lines are required to capture all the fertilizer applications. Please note that supplements should also be year specific.

### **Use of Supplements**

Use a FERTILIZER SUPPLEMENT if more lines are needed to record fertilizer applications than the number of lines available in the table. Copy the identification number as it appears on the questionnaire to the identification box on the supplement. For example: in 2024, if a supplement is used, then assign the next year-specific Table number (101, 102, 103, etc.) to each additional supplement used.

Begin numbering the supplements with Table 101 because Table 100 appears in the questionnaire for the 2024 fertilizer applications. For 2023, if a supplement is used, then assign the next year-specific table number (201, 202, 203, etc.) to each additional supplement used. Use as many supplements as you need.

### **Item 1a, b, c: Screening for Fertilizer Applications**

Determine if commercial chemical fertilizers (nitrogen, phosphate, potassium, or sulfur) were applied to the selected field for the 2024, 2023, and/or 2022 crop years. Do not include commercial manure applications. This information will be gathered in the next section.

**Include:**

- all chemical fertilizer materials applied specifically for the 2024, 2023, or 2022 crop years
- fertilizer applied in the fall if no crop was grown
- fertilizer applied during the summer if the selected field was fallow in that year
- fertilizers applied by custom applicators
- nitrogen products applied with herbicides to make the herbicide more effective
- fertilizers included in tank mixes of pesticides reported in Section F

**Exclude:**

- micro-nutrients, such as iron, zinc, and boron, lime and gypsum
- commercially prepared manure products (Report these in Section E)
- unprocessed manure produced and used on the operation or received from another farm operation (Report on farm unprocessed manure used in Section E)
- For each year ask if any commercial fertilizers were applied, enter Code "1" for "YES" and continue.
- If "NO", enter Code "3".

**Fertilizer Applications Completion Code Boxes  
(codes 0234, 0233, 0232)**

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with "3" if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

***If fertilizer was not applied in any of the 3 years, then go to Question 2.***

**Include:**

- all chemical fertilizer materials applied specifically for the 2024, 2023, or 2022 crop years
- fertilizer applied in the fall if no crop was grown
- fertilizer applied during the summer if the selected field was fallow in that year

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- fertilizers applied by custom applicators
- nitrogen products applied with herbicides to make the herbicide more effective
- fertilizers included in tank mixes of pesticides reported in Section F

### **Exclude:**

- micro-nutrients, such as iron, zinc, and boron, lime and gypsum
- commercially prepared manure products (Report these in Section E)
- unprocessed manure produced and used on the operation or received from another farm operation. (Report on farm unprocessed manure used in Section E)

### **Item 2: Elevated Soil Phosphorus Level**

Some soils have unusually high levels of soil phosphorus, often due to the application of manure over many years. If excess phosphorus is discharged into nearby streams, this may cause water quality problems related to excess growth of algae and aquatic plants.

In some localities, nutrient management regulations prohibit additional application of phosphorus nutrients once soil phosphorus levels reach a certain threshold. A soil test will measure the amount of phosphorus in the soil. Some soil tests also provide a phosphorus “index” value.

If a soil test has been performed which indicates the soil phosphorus level is elevated to a point where no additional phosphorus can be applied for the 2024 crop year, enter a “1” for “YES” in the box. If your soil phosphorus level is not elevated to a point where additional phosphorus can be applied, enter a “3” for “NO”.

### **Item 3: Phosphorus Applications**

Multi-year phosphorus application (also known as phosphorus nutrient banking) is a practice whereby phosphorus is applied (either as manure or commercial fertilizer) at rates in excess of the phosphorus requirements of the current year's crops. In subsequent years, no phosphorus is applied until the amount applied in the single year has been removed through plant uptake and harvest.

It is important to record whether phosphorus nutrients were applied prior to 2022 to properly account for all of the nutrients needed for the current crop rotation.

- If phosphorus nutrients were applied as either manure or fertilizer in excess of the amount needed for the year for that crop (phosphorus nutrient banking), check

the box and enter a "1" for "YES" and continue. If not, check the box and enter a "3" for "NO" and go to Item 4.

### Item 3a: Date applied

Record the approximate month, day and year prior to 2022 when the phosphorus nutrients were applied to the selected field.

- Record month, day, and year in digits. For example, October 23, 2021, will be entered as 1 0 2 3 2 1.

### Items 4a:-f Information Used to Make Fertilizer Application Decisions

Ask the respondent if they used each of the options to inform their fertilizer application decisions.

- If "YES", for a type of information, enter a "1" in the corresponding box, if "NO" enter 3. Ask each type then continue to Item 5.

### Item 5: Soil Amendments Other than Nutrients Added

Soil amendments are materials which are worked into the soil to enhance the soil's properties. Examples of soil amendments include lime and gypsum which are used to improve soil properties which help to improve crop production.

- If "YES", enter a "1" in the box for the appropriate year, and continue to 5a. If "NO" for all years, go to Item 6.

### Item 5a: Why Amendments Were Added

If soil amendments were added to address either pH, soil structure, or micronutrient related problems, enter a "1" for "YES" in the box for the appropriate year. If amendments were not added for these purposes, enter a "3" for "NO" in the box for the appropriate year.

### Item 6: Soil or Tissue Tests

Various types of tests can be used to measure plant nutrient needs besides the standard soil test. These tests are mostly used to measure the crop's need for nitrogen. They allow the farmer to adjust nutrient applications precisely within each field, thereby reducing wasteful applications in excess of what is required by the crop.



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### Item 6a: Pre-plant or pre-side dress nitrate-nitrogen

The pre-plant soil nitrate test is conducted before the crop is planted and measures the amount of residual or carryover nitrate in the root zone. The pre-side dress soil nitrate test (PSNT) is conducted in late spring before the period of major nitrogen demand. The level of nitrate-nitrogen available in the soil at the time the test is performed is used to determine the amount of nitrogen that should be applied to the field.

- If a pre-plant or pre-side dress nitrate-nitrogen test was performed, enter Code “1” for “YES” or Code “3” for “NO” and continue.

### Item 6b: Deep soil profile nitrate-nitrogen test

The deep soil profile nitrogen test measures the amount of nitrogen available in the plant root zone. Soil is removed from at least one foot below the soil surface for the nitrogen test. The test may be carried out before seeding or any time during the crop season to determine the level of crop available nitrogen.

- If a deep soil profile nitrate-nitrogen test was performed, enter Code “1” for “YES” or Code “3” for “NO” and continue.

### Item 6c: Leaf petiole or leaf tissue tests

Leaf petiole and leaf tissue tests are conducted on plant material gathered at a particular growth stage of the crop. The leaf material is evaluated to determine any nutritional deficiencies of the crop and to recommend specific nutrient applications.

- If a leaf petiole or leaf tissue test was performed, enter Code “1” for “YES” or Code “3” for “NO” and continue.

### Item 6d: Post-harvest stalk test

The post-harvest stalk test is conducted after the crop is harvested and provides feedback to the producer on that year's fertilization regime. The amount of nitrate-N remaining in the stalk of the plant at maturity can be compared to benchmark values to indicate whether the crop was inadequately, excessively or appropriately fertilized with nitrogen.

This information can be used to make fertilization decisions for future years. One common post-harvest stalk test is the Corn Stalk Nitrate Test (CSNT).

- If a post-harvest stalk test was performed, enter Code “1” for “YES”.
- Enter Code “3” for “NO” and continue.

### Item 6e: Chlorophyll analysis

Various types of tests based on chlorophyll analysis ("crop greenness") allow for precise application of nitrogen fertilizer. Types of chlorophyll analysis include leaf color charts, chlorophyll meters, optical sensors, and remote aerial sensing. All are based on the chlorophyll content of the plant relative to the plant age.

This measure of "crop greenness" provides an estimate of the crop nitrogen status. If a grower determines the crop is nitrogen deficient, an additional nitrogen application is an option. On the other hand, the test may show that no additional nitrogen is needed. This can greatly improve fertilizer use efficiency.

- If a chlorophyll analysis test was performed, enter Code "1" for "YES".
- Enter Code "3" for "NO" and continue.

### Item 7: Global Positioning System (GPS)

New technologies such as geo-mapping rely on Global Positioning System (GPS) information to identify soil properties and to map soil types. This technology provides accuracy in capturing soil properties.

- Enter "1" for "YES" if GPS was used (or will be used) to geo-reference and/or produce a map of soil properties for each year.
- Enter Code "3" for "NO".
- If "YES" for 2022, 2023, or 2024 continue; if "No" for all years, go to Item 8.

#### Item 7a: Map based on random sampling

- Enter "1" for "YES" for each year where a map was (or will be) produced from soil tests based on random sampling from the selected field.
- Enter Code "3" for "NO".

#### Item 7b: Map based on grid sampling

- Enter "1" for "YES" for each year where a map was (or will be) produced for the selected field from soil tests based on grid sampling from the selected field.
- Enter Code "3" for "NO".

#### Item 7c: Map Based on Electrical Conductivity Instrumentation

- Enter "1" for "YES" for each year a map was (or will be) produced for the selected field based on the use of an instrument designed to measure electrical conductivity of the soil.
- Enter Code "3" for "NO".

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### Item 8: Yield Monitoring Data Used

- Enter “1” for “YES” if yield monitoring data used to adjust fertilizer application rates within the field.
- Enter Code “3” for “NO”.

### Item 9: In-Soil Fertilizer Placement Adjusted

- Enter “1” for “YES” for each year fertilizer placement was adjusted in relation to the plant root zone.
- Enter Code “3” for “NO”.

### Item 10: Remote Sensing Used

- Enter “1” for “YES” for each year remote sensing was used to monitor nutrient needs.
- Enter Code “3” for “NO”.

### Item 11 a.- c.: Fertilizer Applications Tables

#### Lines in Table Code Boxes (code 299)

For the Fertilizer tables, for any year the operator applied fertilizer, the number of table lines must be entered in the respective table code box.

#### Column 1: Crop Year

Note that the crop year is printed on each year-specific table. It is critical that fertilizer applications are recorded on the correct year-specific table.

If fertilizer was applied in the previous fall for a crop to be harvested during the next calendar year, include that application for the crop year of harvest.

For example, if fertilizer was applied during the fall of 2023 for the 2024 crop, include this on the 2024 table.

#### Column 2: Crop Name

- Record the primary crop for which the nutrients applied were intended. Use the Respondent Booklet to complete Columns 2 and 3. The crops listed in this table must also appear on the table in Section C.

### Column 3: Crop Code

- Enter the crop code for the crop listed in Column 2. Use the Respondent Booklet to complete Columns 2 and 3.

### Column 4: Materials Used

Record the plant nutrients (nitrogen (N), phosphorus ( $P_2O_5$ ), potassium ( $K_2O$ ), and sulfur (S)) of each fertilizer material applied to the select field. Note: For this survey, the terms phosphorus and phosphate are used interchangeably.

**Note: Potassium is sometimes referred to as “Potash”.**

These nutrients can be reported in either of two ways:

#### 1. Percent analysis

- a. This is the composition of the product applied, expressed as a percentage, often referred to as a blend. Example: 10-10-10 which means the fertilizer contains 10% N, 10%  $P_2O_5$ , and 10%  $K_2O$ . The respondent might say “I put on 200 lbs./Ac of 20-20-20”, or they might say “I applied 300 gallons/Ac of 32-0-0”. They might also say “I applied 100 pounds of urea per acre.” The percent analysis (percent active ingredients) for urea can be found in the Respondent Booklet starting on page 8 along with various other common fertilizers.
- b. As indicated in the directions in the “Materials Used” column (4), if the respondent reports the fertilizer percent analysis, enter the percent analysis in this column, enter the quantity applied per acre in column 5, and then enter the material unit code in column 6.

#### 2. Pounds of actual plant nutrients

- a. This refers to the actual pounds of each nutrient that was applied per acre to the selected field. Record the fertilizer application data applied PER ACRE.
  - Be careful that the respondent does not give you the total amount of fertilizer applied to the entire field. If a respondent knows only the total pounds of fertilizer or plant nutrients applied to the field, you must calculate rate per acre and enter it in the table. In this case a respondent might say “I applied 100 lbs./Ac of nitrogen and 40 lbs./Ac of phosphate”.

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- b. **Rate per acre is calculated** as the total quantity applied divided by the acres to which the application was made. Show the computations for deriving the rate per acre in the margin of the form.
- c. As indicated in the directions in the "Materials Used" column (4), enter the actual pounds of each plant nutrient (N, P, K, and S) applied per acre and indicate "19" in column 6. **Leave column 5 blank.**

**Important:** Record each individual fertilizer application made to the selected field on a separate line.

When fertilizer materials are bulk blended for application (for example, 10-10-10-3 combined with 21-0-0-24), record each product on a separate line in the fertilizer table, even though the fertilizer blend was applied in one trip over the field.

If fertilizer was applied as part of a tank mix with pesticide, only report the fertilizer portion of the mix in Section D. Make sure that the pesticides are reported in Section F.

If the producer applies fertilizer multiple times (e.g. same application rate every three days throughout the growing season), record each fertilizer event. It is best to complete this while sitting with the producer; however, if the producer is impatient or short on time, make a note in the margin regarding the number of additional like-fertilizer applications and the last application date of these like-fertilizer events. Then fill in the survey at a later time.

### Percent Analysis (Percent active ingredients)

A common method for reporting fertilizer materials is by percent analysis of their content. Percent analysis is always expressed as Nitrogen (N), Phosphorus ( $P_2O_5$ ), Potassium ( $K_2O$ ), and Sulfur (S), in that order.

For example, 13-13-13-5 is 13 percent Nitrogen, 13 percent Phosphate, 13 percent Potash and 5 percent Sulfur.

This means that forty-four ( $13+13+13+5=44$ ) out of every one hundred pounds of this fertilizer is active ingredients (N,  $P_2O_5$ ,  $K_2O$ , S). Fifty-six ( $100 - 44=56$ ) pounds of every one hundred pounds of this fertilizer is carrier material (inert ingredients).

Two of the more common fertilizers used in crop production are 18-46-0-0 (diammonium phosphate or DAP) and 82-0-0-0 (anhydrous ammonia). If 18-46-0-0 was reported, record 18 in Column 4 under N (nitrogen), 46 under  $P_2O_5$  (phosphate), 0 under  $K_2O$  (potassium), and 0 under S (sulfur).

For anhydrous ammonia (82-0-0-0), record 82 under N in column 4. Since there is no phosphorus, potassium, or sulfur in anhydrous ammonia, record 0 under the phosphorus, potassium, and sulfur columns.

Some fertilizer materials are applied in liquid form. A common liquid fertilizer material used in crop production is 32-0-0-0 (nitrogen solution). For this material, you would record a 32 under N for nitrogen and 0 in the columns for phosphate, potassium, and sulfur.

**In general, fertilizer reported by analysis will not have a total N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O analysis of more than 85.**

**The sulfur and carrier or filler material make up the rest of the total analysis for commercial fertilizers.**

If all four ingredients N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and S are added together, the total should never exceed 100.

Under most situations, if the total of the first three values exceeds 85, the farmer is probably reporting actual nutrients rather than percent analysis.

For example, if a farmer reports 35-45-20-0, he's probably reporting pounds of actual nutrients instead of analysis since the three values (35 + 45 + 20) add to more than 85 percent.

For fertilizer applications reported by percent analysis, record the quantity applied per acre (including carrier) in Column 5 and the appropriate unit of measure, pounds (code 1), tons (code 3), quarts (code 13) or gallons (code 12), in Column 6.

### **Bulk Blends**

For bulk blended fertilizer materials, use a separate line for each of the fertilizers that the dealer blended in the mixture.

Example:

If the dealer mixed 150 pounds of 18-46-1-1 and 250 pounds of 0-0-21-23 together, record each on a separate line.

**DO NOT just add it up and record it on one line as 400 pounds of 18-46-21-23.**

This would be a major error, because the correct analysis of this fertilizer is different for 400 pounds of product versus 150 and 250 pounds applied separately.

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### Actual Plant Nutrients

Another way farmers might report fertilizer use is in terms of Actual Plant Nutrients (APN) applied per acre. This may also be called pounds of active ingredients. If the farmer knows he applied 60 pounds of nitrogen; 35 pounds of phosphorus; 40 pounds of potassium; and 35 pounds of sulfur **PER ACRE**, record this information in Column 4 and record code 1 in Column 6.

**Column 5 should be blank since we know the actual amount applied for each of the three materials, so we don't need to calculate it from percentages.**

When farmers report "units" of N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, or S, this is usually a clue that they are reporting pounds of actual nutrients. Fertilizer materials will amount to more than the actual nutrient contents of the products applied, because part of the materials applied is carrier material, just like when the farmer reports by percent analysis.

For example, if the farmer reports that he applied 100 units of Nitrogen in the form of anhydrous ammonia, he would have applied about 122 pounds of 82% nitrogen ( $100 \div .82 = 122$ ). If this were reported by percent analysis, 82 would be recorded in the N column, 122 in Column 5 and 1 in Column 6 ( $122 \times .82 = 100$  pounds of actual N). **If the nitrogen in this example were reported as pounds of actual nutrients, then the nitrogen would be recorded as 100 in the N column and 19 for the unit in Column 6 and Column 5 would be left blank.**

When actual plant nutrients (active ingredients) or "units" of a fertilizer are reported, you should probe to be sure the quantity applied is correct. One way to do this is to ask (when units were reported) if the actual weight of material applied was more than the number of units reported. For example, "You said you put down 100 units of UAN32 per acre. Did the material you applied actually weigh more than 100 pounds per acre?"

### Other Methods of Reporting Fertilizer Use

Farmers may also report fertilizers by name. The Respondent Booklet shows some of the more common fertilizers with their usual analysis.

**Anhydrous ammonia** is the strongest nitrogen fertilizer available. It must be stored in a tank under pressure. It is applied by injection into the ground or into irrigation water. Anhydrous is a liquid when under pressure but turns into a gas when released and is lost if not injected into the soil. Anhydrous ammonia is a very popular fertilizer because it is often cheaper (per pound of nutrient) than other forms. It may be reported as "anhydrous", "gas", "NH<sub>3</sub>", "82-0-0-0", "units of nitrogen", or "pounds of actual nitrogen" (N).

**Aqua ammonia** is one of the more common types of liquid nitrogen fertilizers. It is made up of anhydrous ammonia and water and is often used in Western states. It may

be reported in pounds (actual N) or gallons (material or product). Although it is a liquid, it is usually reported in pounds of actual N.

**Urea** is another commonly used nitrogen fertilizer because it has a high nitrogen analysis. It may be added through an irrigation system, usually as a nitrogen solution.

**Calcium nitrate** contains not less than 15 percent nitrogen and 19 percent calcium. If 200 pounds per acre of calcium nitrate were applied to the selected field, "15" would be recorded in column 4 (Nitrogen), "200" in column 5 (quantity) and a "1" in column 6 (pounds).

With many of the other fertilizers listed in the Respondent Booklet, the analysis may vary. Probe to find out if the farmer knows the analysis or the pounds of actual nutrients applied. If he doesn't know the analysis, but knows the name, use the analysis shown in the Respondent Booklet.

### Examples of recording fertilizer by analysis versus by pounds of actual nutrients

LINE	1		2		3		4				5		6	
	Crop Year	Primary crop for which nutrients were intended	Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	MATERIALS USED				What quantity was applied per acre?  [Leave the column blank if pounds of actual nutrients were reported in column 4.]	Enter material code.  1 Pounds 3 Tons 12 Gallons 13 Quarts 19 Pounds of actual nutrients					
				[Show Common Fertilizers in Respondent Booklet pgs. 8 - 9.]										
				Nitrogen N	Phosphorus P <sub>2</sub> O <sub>5</sub>	Potassium K <sub>2</sub> O	Sulfur S						CODE	
01	28 22	Corn, grain	188	31 18	32 46	33 0	34	36 300	37 1					
02	28 22	Corn, grain	188	31 54	32 138	33 0	34	36	37 19					
03	28 22	Corn, grain	188	31 30	32 0	33 0	34	36 20	37 12					
04	28 22	Corn, grain	188	31 82	32 0	33 0	34	36 200	37 1					
05	28 22	Corn, grain	188	31 164	32 0	33 0	34	36	37 19					

**Lines 1 & 2 show two ways of reporting 54 lbs of nitrogen and 138 lbs of phosphorus.**

**Line 1 illustrates entering percent analysis (18-46-0) in column 4 and the quantity applied per acre (300 lbs) in column 5.**

- Column 6 is set to 1 because 300 POUNDS of 18-46-0 was applied per acre.



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**Line 2 illustrates entering pounds of actual nutrients (N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O) applied per acre.**

- 54 pounds of nitrogen and 138 pounds of phosphorus were indicated in column 4.
- Because these are the actual pounds for each nutrient applied, column 5 is left blank and column 6 is set to 19.

**Line 3 shows applying liquid fertilizer**

- Line 3 illustrates applying a liquid fertilizer. In this example, the producer applied a liquid fertilizer with the percent analysis of 30-0-0 (column 4). The producer applied 20 (column 5 = 20) gallons (column 6 = 12) per acre.

**Lines 4 & 5 shows two ways to report applying the same amount of Anhydrous Ammonia**

- Line 4 shows entering Anhydrous Ammonia as percent analysis (82-0-0) in col. 4.
- The producer applied 200 (column 5 = 200) pounds (column 6 = 1) of the product.
- Line 5 illustrates entering Anhydrous Ammonia as actual nutrients applied (164 lbs N, 0 lbs P<sub>2</sub>O<sub>5</sub>, 0 lbs K<sub>2</sub>O) (column 4).
- Leave column 5 blank and enter 19 for column 6.

### Column 5: Quantity Applied per Acre

If percent analysis is reported, record the amount of material applied to the selected field in terms of pounds, gallons, or tons applied per acre. If pounds of actual nutrients were reported in Column 4, **leave column 5 blank**.

**Be careful that the respondent does not give you the total amount of fertilizer applied to the entire field.**

If a respondent knows only the total pounds of fertilizer or plant nutrients applied to the field and not the rate per acre, you must calculate rate per acre and enter it in the table. In the margin, show the computations for deriving the rate per acre.

$$\text{Total Pounds} \div \text{Acres} = \text{Rate per Acre}$$

For example:

If the farmer applied a total of 1200 pounds to a sixty-acre field, the rate per acre is calculated as:

$$1200 \text{ pounds} \div 60 \text{ acres} = 20 \text{ pounds per acre}$$

**Column 6: Material Unit Code**

- If percent analysis is reported in Column 4, record the unit.

Code	Unit
1	Pounds
3	Tons
12	Gallons
13	Quarts

- If pounds of actual plant nutrients are reported in Column 4, enter code 19 in Column 6 and leave Column 5 blank.

**Column 7: Date Applied**

Record the date on which the fertilizer application was made. For example, if an application was made in April, have the respondent provide the approximate date of the application and record in Column 7.

For example:

April 27, 2024, will be entered as 0 4 2 7 2 4.

**Column 8: How Applied**

Show the respondent the Fertilizer Applications Method Codes in the box at the top of the page labeled “Application codes for Column 8”. Ask the respondent which of the application methods was used to apply the fertilizer to the selected field.

The Application Method codes are:

<b>Code 1</b>	<b>Broadcast, Ground without Incorporation:</b> Fertilizer material is applied to the entire surface area by land application equipment. Application may occur either before or after planting, usually before crop emergence. No mixing of the fertilizer material into the upper soil surface is done or planned as part of the application.
<b>Code 2</b>	<b>Broadcast, Ground with Incorporation:</b> Fertilizer material is applied to the entire surface area by land application equipment. Application usually occurs before planting. A planned mixing of the fertilizer into the upper soil surface is completed at the time of application or shortly thereafter. Incorporation of the fertilizer into the upper soil surface is often performed with a field cultivator, disk, or other tillage implement.

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<b>Code 3</b>	<b>Broadcast by Aircraft:</b> Fertilizer material is applied to the entire surface area by air application equipment. Include only those applications made by airplane, helicopter, or drone (UAV).
<b>Code 4</b>	<b>In Seed Furrow:</b> Fertilizer material is placed in the seed furrow <b>at planting</b> time, generally through a separate attachment on the grain drill or row planter
<b>Code 5</b>	<b>In Irrigation Water:</b> Fertilizer material is mixed with water in either sprinkler or gravity fed irrigation systems. The term used for this procedure is fertigation. The product is metered into the water delivery system (generally a sprinkler irrigation system) and is distributed across the field in the irrigation water.
<b>Code 6</b>	<b>Chiseled, Injected or Knifed-in:</b> Fertilizer material is injected under pressure into the soil. This application method (using high pressure) is often used to apply anhydrous ammonia.
<b>Code 7</b>	<b>Banded or Side Dressed on the Soil Surface:</b> This method is mainly used for row crops. Products are applied at or after planting. The area between the rows is not treated. Fertilizer products applied at planting are generally granular formulations and are placed in a 3 to 4 inch band on either side or above the seed. Early growing-season applications are also applied (either liquid or granular) on either side of the crop row.
<b>Code 8</b>	<b>Foliar or Directed Spray:</b> After planting, fertilizer material is sprayed on or under the plant foliage to be absorbed by the plant through the leaves.

**Column 9: Acres Treated**

Record the number of acres in the selected field that were treated with the fertilizer materials recorded in Column 4. Acres and tenths of acres must be reported in Column 9. Zero must be recorded after the decimal point if whole acres are recorded.

For example, if the operator treated exactly 25 acres, the entry in Column 9 must be 25.0. Otherwise, the edit will consider the entry to be 2.5 and serious errors will result when we summarize the amount of nutrient applied.

The number entered in Column 9 for acres treated should never be greater than the number of acres in the field from Section C.

**Example of reporting different types of fertilizer products**

In the example:

**Line 1** shows an application in the 2022 crop year of 100 pounds per acre of diammonium phosphate sulfate (16-20-0 percent analysis) broadcast without incorporation in the fall (October 2022), before seeding to 50 acres in the spring.

**Line 2** shows an application of 120 pounds per acre of anhydrous ammonia (82-0-0 percent analysis) injected in the fall (November 2022), before seeding to 50 acres.

**Line 3** shows an application of a 125 pounds per acre of a 28 percent nitrogen solution (28-0-0 percent analysis) broadcast without incorporation after seeding (April) to 50 acres during the 2022 crop year.

**Line 4** shows an application of 60 pounds of nitrogen, 35 pounds of phosphate, and 40 pounds of potassium per acre (actual pounds of nutrients), banded/side dressed after seeding (April) to 50 acres during the 2022 crop year.

LINE	1		2	3	4				5		6	
	Crop Year		Primary crop for which nutrients were intended	Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	MATERIALS USED Enter actual pounds of plant nutrients applied per acre and indicate "19" in column 6 (leave column 5 blank). If only fertilizer analysis is known, enter percent analysis in this column, quantity applied per acre in column 5, and the material code in column 6.  [Show Common Fertilizers in Respondent Booklet pgs. 8 - 9.]				What quantity was applied per acre?  [Leave the column blank if pounds of actual nutrients were reported in column 4.]		Enter material code. 1 Pounds 3 Tons 12 Gallons 13 Quarts 19 Pounds of actual nutrients	
	28	22		188	31 Nitrogen N	32 Phosphorus P <sub>2</sub> O <sub>5</sub>	33 Potassium K <sub>2</sub> O	34 Sulfur S	36		37	CODE
01	28	22	Corn, grain	188	31 16	32 20	33 0	34	36 100	37	1	
02	28	22	Corn, grain	188	31 82	32 0	33 0	34	36 120	37	1	
03	28	22	Corn, grain	188	31 28	32 0	33 0	34	36 125	37	1	
04	28	22	Corn, grain	188	31 60	32 35	33 40	34	36	37	19	

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LINE	7	8	9	10	11	12
	When was this applied?  MM DD YY	How was this applied?  [Enter code from box above.]	How many acres were treated in this application?  Acres	Was variable rate technology (VRT) used?  [Include "on-the-go" sensing.]  Yes = 1 No = 3	Nitrogen slow-breakdown product  [Enter code from box above.]	Fertilizer form  [Enter code from box above.]
01	30 1 0 2 7 2 2	39 1	40 50 0	29 1	26 2	27 1
02	30 1 1 0 1 2 2	39 6	40 50 0	29 1	26	27 1
03	30 0 4 0 3 2 3	39 1	40 50 0	29 1	26	27 1
04	30 0 4 2 2 2 3	39 7	40 50 0	29 1	26	27 1

### Recording a partial field fertilizer treatment

When only a portion of the field area is treated it is called a **partial field treatment**.

For example, if a farmer applied 320 pounds of 16-20-1-15 on only 20 acres of corn within a 40-acre field, the line of the fertilizer table would be completed as shown below.

Note the amount per acre is calculated as 320 pounds ÷ 20.0 acres treated = 16 pounds per acre.

### Example - Partial Field Treatment

LINE	1	2	3	4				5	6
	Crop Year	Primary crop for which nutrients were intended	Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	MATERIALS USED Enter actual pounds of plant nutrients applied per acre and indicate "19" in column 6 (leave column 5 blank). If only fertilizer analysis is known, enter percent analysis in this column, quantity applied per acre in column 5, and the material code in column 6.  [Show Common Fertilizers in Respondent Booklet pgs. 8 - 9.]				What quantity was applied per acre?  [Leave the column blank if pounds of actual nutrients were reported in column 4.]	Enter material code.  1 Pounds 3 Tons 12 Gallons 13 Quarts 19 Pounds of actual nutrients
				Nitrogen N	Phosphorus P <sub>2</sub> O <sub>5</sub>	Potassium K <sub>2</sub> O	Sulfur S		CODE
01	28 22	Corn, grain	188	31 16	32 20	33 1	34 15	36 16	37 1

### Column 10: Variable Rate Technology Used

New technologies such as variable rate applications that rely on Global Positioning System (GPS) information to control the precise application of fertilizer create unique situations. It is possible for an applicator to have one or more products applied unequally across a field depending on the specific needs of each small area.

Using the total pounds applied on the field divided by field acres will provide the rate per acre (Column 5).

- If you encounter variable rate technology used for fertilizer applications, put a code 1 in Column 10 for that application.

### Column 11: Use of Product to Slow Breakdown of Nitrogen

Nitrogen is taken from the soil by the crop, but there is also nitrate loss through leaching, runoff, and soil erosion. Two groups of soil bacteria rapidly oxidize  $\text{NH}_4$  (ammonium form of nitrogen) to  $\text{NO}_3$  (nitrate form of nitrogen) in warm, aerated soils. This process is called nitrification. While crops can uptake either form of nitrogen (N), the  $\text{NO}_3$  form is much more mobile and considered a significant contaminant to water.

There are many nitrification inhibitor products available which slow down the transformation of  $\text{NH}_4$  to  $\text{NO}_3$ .

Indicate which products, if any, were used to slow the breakdown of nitrogen:

Valid codes are:

Code	Product
1	Nitrification Inhibitor
2	Urease Inhibitor
3	Chemical-coated Fertilizers
4	Other Inhibitors (specify)
5	None

### Column 12: Fertilizer Form

- If the fertilizer is an Ammonia-based fertilizer code Column 12 as "1"
- If Not, code Column 12 as "2"

## **Section E - Manure Applications – Selected Field**

### **What is Section E for? How is the Information Used?**

The purpose of this section is to identify manure applications on the selected field for the 2024, 2023, and 2022 crop years.

One of the outcomes of widespread adoption of nutrient management plans, which are a major emphasis in the Farm Bill programs, is that it is necessary to estimate the extent to which land is available and able to receive manure applications.

In order to meet increasing State and Federal guidelines for manure applications and to avoid adverse action, operators are becoming more vigilant in their handling and disposal of manure. NRCS will use the data from this section to estimate manure nutrient additions, and as input to modeling strategies to estimate nutrient losses from farm fields.

### **Use of Supplements**

You will use a MANURE SUPPLEMENT if more lines are needed to record applications than the number of lines available in the table.

Copy the identification number as it appears on the questionnaire to the identification box on the supplement. Assign the next Table number (002, 003, 004, etc.) to each additional supplement used. You begin numbering the supplements with Table 002 because Table 001 appears in the questionnaire. Use as many supplements as you need.

Note: There are no year specific tables for manure applications. All three years can be put into the same table within the questionnaire and on the supplement if additional lines are required to capture all the manure applications. The order in which you report the data does not matter, you can start with any of the 3 years.

### **Enumerator Notes**

Enumerator notes are very important to explain any situation where the operator's manure handling procedures seem to be atypical. For example - if more than one type of manure is stored and applied together or if more than one type of storage system is used. It is also important to show all calculations. When in doubt, make a note! NRCS carefully reviews the questionnaires and can often make use of the notes to explain unusual responses. Making a note is particularly important if the "Other" category is selected for any of the items, such as Manure Source, Column 12. Describe the "Other" in as much detail as practical.

## Item 1: Screening for Manure Applications

Determine if any type of manure including livestock or poultry manure, commercially prepared manure, or biosolids were applied to the selected field during the 2024, 2023, and/or 2022 crop years. Include solids and effluents from waste lagoons, waste holding ponds, and waste runoff storage ponds.

Probe for applications made in the fall of 2021, 2022, and 2023 (and those made earlier if this field was fallow) for the 2022, 2023, and 2024 crop years.

- If manure or biosolids were applied, enter code “1” for “YES”
- If “NO”, enter “3” and continue to Section F

### **Include:**

- manure produced on the operation
- manure purchased from other farms
- manure obtained with compensation
- commercially prepared manure or compost products
- biosolids, such as municipal solids and food wastes
- manure, prepared manure and biosolids applied to the selected field in the fall of the previous year for the following crop year

### **Lines in Table Code Boxes (code 599)**

For the Manure tables, for any year the operator has positive entries, the number of table lines must be entered in the respective table code box.

## Item 2: Completing the Manure Applications Table

Complete the table for all manure applications made in the 2024, 2023, and/or 2022 crop years.

### **Manure Applications Completion Code Boxes (codes 0454, 0453, 0452)**

- Blank = Data present for this section.  
1 = Data incomplete or refused  
3 = Valid zero data for this crop year

***The completion code box must be coded with “3” if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***



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### Column 1: Crop Year

Record the last two digits of the crop year for which the manure application was made. For example, if a product was applied during the 2024 crop year, code the cell with "24". If it was applied in the fall of 2023 for the 2024 crop, code the cell with "24".

### Column 2: Crop Name

Record the primary crop for which the manure was intended. Use the Respondent Booklet to complete Columns 2 and 3. The crops listed in this table should appear in the table in Section C. Make sure you record the crop name with the correct crop year.

If manure is applied in the fall and then a cover crop is planted later that fall, code the manure application as being applied to the cover crop because that will be the first crop that will have access to the nutrients even if the producer had the intentions the manure would be used by the next cash crop.

### Column 3: Crop Code

Enter the crop code for the crop listed in Column 2. Use the Respondent Booklet to complete Columns 2 and 3.

### Column 4: Quantity Applied per Acre

For every manure application, record the amount of manure applied to the selected field in terms of pounds, tons, bushels, gallons, or acre-inches applied per acre.

If the operator tells you that part of the total amount applied was dry, measured in tons, and part of the amount applied was liquid, measured in gallons, split the application into two lines because it is likely the dry and liquid manures have a different nutrient analysis. On one line enter the dry manure as applied in tons/acre, and on another line enter the liquid manure as applied in gallons/acre.

If the operator does not know the amount of manure applied to the field and it cannot be estimated, instead find out the type and number of animals that produced the manure, and for what time period (all or just part of a year).

Also find out how many other acres besides the acres of this field were covered with manure produced on the operation. Make good notes of all this information. The Regional Field Office and/ or NRCS can often estimate the amount of manure applied using this information.

**Be careful that the respondent does not give you the total amount of manure applied to the entire field.**

If a respondent knows only the total pounds or gallons of manure or plant nutrients applied to the field and not the rate per acre, you must calculate rate per acre and enter it in the table. In the margin of the form, show the computations for deriving the rate per acre.

$$\text{Total Tons} \div \text{Acres} = \text{Rate per Acre}$$

For example, if the farmer applied a total of 120 tons to a sixty-acre field, the rate per acre is calculated as:

$$120 \text{ tons} \div 60 \text{ acres} = 2 \text{ tons per acre}$$

**Column 4 is not tied to columns 10 and 11 for manure reporting.** Columns 4 and 5 reflect the amount of manure applied to the field. Columns 10 and 11 are based on the nutrient values in the laboratory report.

The source of the manure will be used in conjunction with the handling and quantity per acre for further analysis.

### **Column 5: Material Unit Code**

Valid unit codes are:

- 1 Pounds
- 3 Tons
- 4 Bushels
- 12 Gallons
- 14 Acre-inches

There should be consistency in how the manure is handled (Column 7) and the Material Unit Code. For example, manure solids could be reported as pounds, tons, or bushels. Likewise, liquid and slurry manure would most likely be reported as gallons or acre-inches.

### **Column 6: Where Produced**

Use the source codes listed on the questionnaire to record the source of the manure applied to the field. If an operation receives manure from more than one source, ask the respondent to indicate from which source the majority of the manure was acquired.

If the respondent states the majority of the manure was produced on this operation, take special care to complete Items 6 and 7.

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The source codes are:

- 1 Produced on this operation
- 2 Purchased
- 3 Obtained at no cost from off the operation
- 4 Obtained with compensation. (Paid to take the manure.)
- 5 Commercially prepared manure.

### Column 7: Handling of Manure

Column 7 should reflect how the manure was handled. Manure may be handled in the form of solid, liquid, or slurry. The amount of bedding or dilution water mixed in the manure influences manure consistency.

Manure consistency influences collection, transfer, storage, and type of spreading equipment used.

Record the primary form of the manure applied.

Typically, different manure consistencies are not mixed due to spreading equipment being different for the different consistencies; however, if the operator claims they mixed manure of different types, first ask the respondent if the manures were applied in two separate applications. In this case, enter one manure consistency on one line and the other manure consistency on another line.

If the respondent answers that the two manure consistencies were applied as one application, ask the respondent for the form which describes the majority of manure applied - but be sure to make a note describing the situation.

The manure management systems are:

<b>Code 1</b>	<b>Solid:</b> Solid manure is a combination of urine, bedding, and feces with no extra water added. Solid manure is typically generated in systems where bedding is added to manure to absorb moisture or can result from drying conditions such as found on the surface of a feedlot. Solid manure can be stacked for storage and applied to the land using a spreader.
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<b>Code 2</b>	<b>Liquid:</b> Liquid manure is any manure to which a great amount of water is added in the collection, storage, or treatment process. Liquid manure typically contains no more than 5% solids and is most often 1-2% solids or less. Liquid manure has a greater water content than slurry manure; that is, it is more diluted. It is usually associated with a flush system, or a system where <b>large</b> volumes of water are used to clean the manure from the production facility. Liquid manure is also typical of systems that collect a great deal of rainfall and runoff in comparison to the manure volume. Liquid manure requires large volume liquid storage facilities such as a lagoon, and it is applied to the land using a tank spreader or irrigation system. Liquid manure is lighter in color and thinner in consistency than slurry or solid manure.
<b>Code 3</b>	<b>Slurry:</b> Slurry manure is typically generated in systems where little or no bedding is added. Most of excreted manures are slurry in form. Slurry manure is typically between 5% and 15% solids. It is "thicker" than liquid manure but cannot be stacked or handled the same way as solid manure. It is usually applied to the land using a tank spreader or specialized irrigation system. It is also darker in color than liquid manure.

### Column 8: Manure Test

Manure, ready for field application, varies considerably in nutrient content from one operation to the next. Variables are animal species, stage of growth, feed rations, added water and bedding, type of storage, plus other factors.

- If a manure nutrient test was completed to determine the composition of the manure applied, code the cell with a "1", and ask the respondent to provide the results from the manure analysis test and, if possible, for you to view the report. These results are usually expressed, depending on how the manure is handled, in lbs/1000 gallons, lbs/ton, or lbs/acre-inch, or sometimes as percent by weight based on the wet weight of the manure. In addition, where the manure is supplied by another, they may only know the total nutrients per acre applied.
- If the respondent does not know if a manure nutrient test was completed on the manure applied, code the cell with a "2".
- If a manure nutrient test was not completed on the manure applied, code the cell with a "3".

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### Column 9: Nitrogen Inhibitor Applied with Manure

Much like with commercial fertilizers, nitrogen inhibitors can be applied with the manure to help slow the breakdown of nitrogen and ultimately reduce nitrogen loss.

Valid codes are:

Code	Product
1	Nitrification Inhibitor
2	Urease Inhibitor
3	None

### Column 10: Manure Analysis

If a manure test was taken before application, ask the respondent to provide the test results. Record the amount of nutrients (nitrogen (N), phosphate ( $P_2O_5$ ), and potassium ( $K_2O$ )) of each manure application to the selected field.

Hopefully, the operator will be able to provide a manure analysis report from a testing laboratory. Operators may not know the analysis of materials used and as a result, the response for Column 10 may be unknown. This is not uncommon. Note that the format of the report will vary by laboratory. Pay careful attention to the units as well as the amounts recorded on the report.

Sometimes values are reported more than one way, for example, pounds per ton AND percent by weight - it is critical that you record the correct unit for the values you record on the questionnaire.

The amount must be reported to two decimal places for all items reported in Column 10. Be sure to record to exactly two decimal places and round where needed. Zeros must be recorded after the decimal point if whole numbers are recorded. For example, if the operator reports exactly 25 lbs/ton for Nitrogen, the entry in Column 10 must be 25.00. Otherwise, the editor will consider the entry to be 0.25 and serious errors will result when we summarize the amount of nutrient applied.

**Important:** Record each individual manure application made to the sampled field on a separate line.

Pounds of Nutrients per Unit

Preferably, the operator can report the manure analysis as pounds of nutrients per unit. Typically, the unit will be pounds per ton, pounds per 1000 gallons, or pounds per acre-inch.

### Actual Nutrients

Another way a farmer might report manure applied is in terms of actual nutrients applied per acre.

If the farmer knew for each application of manure that he applied a total of 500 pounds of nitrogen and 250 pounds phosphorus on their 10 acre field, then divide the applied nutrients by the number of acres and enter the appropriate values (50 pounds/acre of N and 25 pounds/acre of P<sub>2</sub>O<sub>5</sub>) in Column 10 and record column 11 as "19".

### Percent Nutrient by Weight

Some laboratories report N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O as a percentage by wet weight of the manure. Values reported as a percentage are typically small and are reported to one or more decimal places.

Values reported for liquid dairy manure, for example, would typically be less than 0.1% for all nutrients. Depending on the form, the value can be as low as 0.01%.

### Column 11: Material Unit Code

If the nutrient concentrate from a manure test can be reported, record as either pounds/ton of material (code 31), lbs/1000 gallons of material (code 121) or pounds/acre-inch of material (code 15).

If actual nutrients can be recorded, record as actual nutrients (code 19).

If the laboratory reports nutrients by percent weight, use code 29.

Code	Unit
15	lbs/acre-inch
19	lbs of actual nutrients/acres
29	% by weight
31	lbs/ton
121	lbs/gallons

### Column 12: Manure Source

The nutrient content of the manure will vary depending on the type of livestock from which it was produced. Record the major source of the manure applied to the selected field.

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Code	Livestock
1	Beef Cattle
2	Dairy Cattle
3	Hogs
4	Sheep/Goats
5	Broiler
6	Layer
7	Poultry Breeder
8	Turkey
9	Poultry (other)
10	Equine
11	Biosolids (food waste, municipal sludge, etc.)
12	Other (record the type of manure or nutrient in a note)
13	Don't Know

This information will be used to validate the N, P, and K reported in Column 10 and to estimate values of N, P, and K if the respondent does not know the information.

### Column 13: Composted Manure

Composting is the aerobic decomposition of manure or other organic materials. The composted material is odorless, fine-textured, low-moisture and can be bagged and sold for use in gardens or nurseries. Composted manure can also be used as fertilizer on cropland with little odor. Composting improves the handling characteristics of the manure and reduces viability of pathogens and weed seeds.

Determine if the respondent knows if the manure applied to the selected field was composted.

- Enter a "1" if "YES" and continue to column 14.
- Enter a "2" if they do not know and skip to column 15.
- Enter a "3" if "NO" and skip to column 15.

### Column 14: Composting Method

There are various methods for composting manure. The primary types are windrowing, static pile, and in-vessel.

<b>Code 1</b>	<b>Windrow.</b> Windrow composting may be active or passive. <b>Active windrow composting</b> is the production of compost in windrows using mechanical aeration produced by a front-end loader or a specially designed windrow turner. <b>Passive windrow composting</b> is the production of compost in piles or windrows by natural aeration over long periods of time, with little or no turning. Passive aeration is used most often to compost manure from poultry, dairy cattle, and sheep.
<b>Code 2</b>	<b>Static pile.</b> Aerated static pile composting makes use of an air source such as perforated plastic pipes, aeration cones, or a perforated floor to force or draw air through the compost pile. Aeration systems can be relatively simple using electrical motors, fans, and ducting, or they can be more sophisticated incorporating various sensors and alarms.
<b>Code 3</b>	<b>In-Vessel.</b> In-vessel composting is the production of compost in drums, silos, or channels using a controlled aeration system. Aeration of the material is accomplished by continuous agitation using aerating machines or fans which provide air flow. In-vessel systems are efficient composting processes that maintain rapid decomposition year-round and reduce the number of pathogens in the product.
<b>Code 4</b>	<b>Other.</b> Other methods of composting include bin composting, silos, rotating drums, vermicompost (using earthworms), etc.

- Enter the code in column 14 for the primary method of composting used to process the manure applied to this field.
- Make a note describing the compost system. There is much variability in how producers process their compost. Notes are essential to understanding unexpected situations.

### Column 15: When Applied

Ask the respondent what date the manure or biosolids were applied to the selected field. Record each application made during each crop year on a separate line. If the respondent cleaned out storage facilities every spring, and then applied the manure to his field over several days, list this as one application and report the date when the process was completed.

- Record month, date, and year, in digits. For example, January 27, 2024, will be entered as 0 1 2 7 2 4. Refer to the calendar in the Respondent Booklet for reference.



### **Column 16: How Applied**

Show the respondent the Manure Applications Method Codes in the Respondent Booklet or the box at the top of the page labeled "Codes for Application Column 16".

Ask the respondent which of the application methods was used to apply the manure to the selected field.

The Application Method codes are:

**Code 1** - Dry Broadcast, without Incorporation: Dry manure is applied to the surface by land application equipment. Application may occur either before or after planting, usually before crop emergence.

No mixing of the material into the upper soil surface is planned as part of the application. This is a common practice for hay and pasture fields.

**Code 2** - Dry Broadcast, with Incorporation: Dry manure is applied to the soil surface by land application equipment. Application usually occurs before planting. A planned mixing of the manure into the upper soil surface is completed at the time or shortly after the time of application (no more than 24 hours after application).

Incorporation of the manure into the upper soil surface is often performed with a field cultivator, disk, or other tillage implement. This is a common practice for fields planted to row crops.

**Code 3** - Liquid Broadcast, without Incorporation: Liquid manure is applied to the entire surface area by land application equipment. Application may occur either before or after planting, usually before crop emergence.

No mixing of the material into the upper soil surface is planned as part of the application. This is a common practice for hay and pasture fields.

**Code 4** - Liquid Broadcast, with Incorporation: Liquid manure is applied to the soil surface by land application equipment. Application usually occurs before planting.

A planned mixing of the manure into the upper soil surface is completed at the time or shortly after the time of application (no more than 24 hours after application).

Incorporation of the manure into the upper soil surface is often performed with a field cultivator, disk, or other tillage implement. This is a common practice for fields planted to row crops.

**Code 5** - Chiseled, Injected or Knifed-in: Manure is injected under pressure into the soil. This application method (using high pressure) is rare for manure applications and is mostly used near residential areas to keep odor to a minimum.

Also, a knifing technique known as poultry litter subsurfer for incorporating poultry manure deep into the soil is used in some areas of the country where there is concentrated poultry production.

**Code 6** - Furrow or Basin Irrigation: Manure is mixed with water in gravity fed irrigation systems. The term used for this procedure is fertigation. The product is metered into the water delivery system and is distributed across the field in the irrigation water.

**Code 7** - Sprinkler Irrigation: Manure is mixed with water in sprinkler irrigation systems. The term used for this procedure is fertigation. The product is metered into the water delivery system (generally a specially adapted irrigation system) and is distributed across the field in the irrigation water.

### **Column 17: Acres Treated**

Record the number of acres in the selected field that were treated with the manure recorded in Column 4. If only part of a field was treated, record only those acres.

For example, if the operator made a particular manure application to only 25 acres in a 40-acre field, enter 25.0 in Column 17. Since each individual application of manure must be recorded on separate lines, the figure entered in Column 17 can never be greater than the number of acres in the field.

Acres and tenths of acres must be reported in Column 17. Zero must be recorded after the decimal point if whole acres are recorded.

For example, if the operator treated exactly 25 acres, the entry in Column 17 must be 25.0. Otherwise, the edit will consider the entry to be 2.5 and serious errors will result when we summarize the amount of nutrient applied.

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### Example for filling out Item 2

In line 1, the farmer had manure tested and knows the nutrient content percentages which is indicated in column 10 (1-1-1) and the unit in column 11 is indicated as “% by weight”.

LINE	1	2	3	4	5	6	7	8	9
	Crop Year  YY	Primary crop for which nutrients were intended	Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]  Code	What quantity of manure was applied per acre?  Code	Unit (column 4 only) 1 Pounds 3 Tons 4 Bushels 12 Gallons 14 Acre - inches  Code	Where was the manure produced?  Code	How was the manure handled? 1 Solid 2 Liquid 3 Slurry  Code	Was manure tested before application? 1 Yes 2 Don't Know (DK) 3 No  Code	Nitrogen inhibitor applied with manure 1 Nitrification inhibitor 2 Urease inhibitor 3 None  Code
01	42 <u>2 3</u>	Corn, grain	188	44 <u>5 0</u>	45 3	46 1	47 1	48 1	59 3

LINE	10 Results from manure analysis test OR actual amount of nutrients applied  [Leave this column blank if column 8=2 or 3.]			11 Unit (column 10 only)  [Enter code from box above.]	12 Major source of manure  [Enter code from box above.]	13 Was manure composted before application?  1 Yes 2 DK 3 No	14 Composting Method? [Leave this column blank if column 13 = 2 or 3.] 1 Windrow 2 Static pile 3 In-Vessel 4 Other	15 When was this applied?  MM DD YY	16 How was this applied?  [Enter code from box above.]	17 How many acres were treated in this application?
	Nitrogen N	Phosphorus P <sub>2</sub> O <sub>5</sub>	Potassium K <sub>2</sub> O	Code	Code	Code	Code	Code	Acres	
01	49 <u>1 0 0</u>	50 <u>1 0 0</u>	51 <u>1 0 0</u>	52 29	53 1	54 3	55	56 <u>03 12 23</u>	57 2	58 <u>20 0</u>

### Item 3: Application Influenced by Conservation Plans or Restrictions

Growers may voluntarily reduce the amount of manure they apply to their land based on recommendations in their Conservation Plan, Nutrient Management Plan (NMP), or Comprehensive Nutrient Management Plan (CNMP).

In some locations, manure application may be regulated or restricted by State and/or local governments. Application rules or laws are generally based on the amount of nutrients that will be used by the crop during the growing season, so that excess nutrients will not wash off the land.

In some localities, a nitrogen rate standard is used to recommend or restrict the amount of manure that may be applied. In other localities, a phosphorus rate

standard is used. A phosphorus rate standard will have lower rates of manure applications (tons/acre of manure) than a nitrogen rate standard.

For this Item, respondents will identify to what extent manure applications are being governed by nitrogen or phosphorus application rate protocols.

- If the application rate applied to this field was influenced by State or Local restrictions, the operator's conservation plan or nutrient management plan enter a code "1" for "YES" and continue with Item 3a.
- If "NO", enter code "3" and go to Item 4.

### Item 3a: Basis Used to Determine Manure Applications

Ask the producer which nutrient requirement basis was used to determine the manure application rates.

- If nitrogen was the nutrient that determined the manure application rate, enter a "1"
- If phosphorus was the nutrient that determined the manure application rate, enter a "2"

### Item 3b: Soil Phosphorus Level before Manure Application

Record the value for phosphorus from the soil test completed prior to the last application of manure.

This may or may not be the same value for soil test phosphorus as reported in Section D, Item 2, depending on whether manure has been applied to the field since that soil test was conducted.

- Record the soil test value for phosphorus in the first box ("Soil Test P") and the unit of measure for this value in the second box ("Code").

Valid unit codes are:

Code	Unit
1	Milligrams per kilograms phosphorus (mg/kg P)
2	Parts per million phosphorus (ppm P)
3	Pounds per acre (lbs/acre)

If multiple manure applications were made, the soil test should be from before the first application of the year.

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### Item 4: Adjustment of Commercial Fertilizers Due to Applying Manure

Ask the respondent if the amount of commercial fertilizer applied to the selected field was reduced because of the nutrients supplied by manure applications.

- Enter a code “1” in the cell, if “YES”, there was a reduction of commercial fertilizers applied to the selected field due to the manure nutrients applied and then continue with Item 4a.
- If “NO”, enter code “3” and go to Item 5.

#### Item 4a: Commercial Nitrogen Reduced

Ask the respondent if applications of commercial nitrogen fertilizer were reduced due to manure application.

- If “YES”, enter code “1”, otherwise enter code = “3”.

#### Item 4b: Commercial Phosphorus Reduced

Ask the respondent if applications of commercial phosphorus fertilizer were reduced due to manure application.

- If “YES”, enter code “1”, otherwise enter code = “3”.

### Item 5: Frequency of Future Manure Applications

Ask the respondent how often he/she plans to apply manure to the selected field in future years.

The timing codes are:

Code Timing	
1	No plans to apply manure again
2	At least once per month
3	4 times per year
4	Twice a year
5	Once a year
6	Once every two years
7	Once every 3 or more years

- Enter the indicated timing code for future manure applications.

### Item 6: Origin of Manure Applied to Selected Field

Refer back to the Manure Table Column 6 (page 20 of the questionnaire)

- If a '1' was entered in Column 6 in the Manure Table (manure applied was produced on this operation) for any of the manure applications, then enter "1" for Item 6 and continue.
- If a '1' was not entered in Column 6 in the Manure Table, then enter "3" for Item 6 and go to Question 8.

### Item 7: Type of Manure Storage System

Record what type of manure storage system the operator uses to handle the manure type applied to the selected field. If more than one type of storage system is used for a specific manure type (i.e., solid, slurry or liquid), record the storage system type that handled the majority of the manure.

- Use item code 468 to record the type of storage system used for solid.
- Use item code 469 to record the type of storage system used for slurry.
- Use item code 470 to record the type of storage system used for liquid.

In addition, you should circle all that apply and make a note on the questionnaire of the particular situation, and if the type of storage is unknown, write "DK" beside the box (it will be very rare that the respondent will NOT know the type of system used to handle manure on their operation).

The types of storage system for coding this question are:

#### Solid Manure

- Code 1 Stacking Slab (open storage):** A concrete or compacted soil slab or pad used for stacking manure until it can be spread on the land or hauled away.
- Code 2 Covered Slab:** A concrete or compacted soil slab or pad used for stacking manure which has a cover placed over the stacked manure, such as a tarp or temporary shelter.
- Code 3 Manure Pack:** Solid manure is accumulated in feedlots until it is spread on the land or hauled away.
- Code 4 Barn, Shed, or House:** A structure with a roof, such as a barn, shed, or a poultry house used to store manure until it can be spread on the land or hauled away.
- Code 5 Other (Solid), Specify.**
- Code 6 None**

### **Slurry Manure**

**Code 7 Concrete or Steel Tank, Basin, or Pit:** A storage structure, whether under the production building or a separate structure that is constructed of something other than earth (usually concrete).

Examples include concrete pits under slatted floors and settling basins with concrete bottoms.

**Code 8 Earthen Storage Facility:** An impoundment made by excavation or earth fill for temporary storage of manure. The impoundment may or may not have a synthetic liner of some type.

**Code 9 Other (Slurry),** Specify

### **Liquid Manure**

**Code 10 Single stage lagoon:** A single stage lagoon.

**Code 11 Single stage holding pond:** A single stage holding pond.

**Code 12 2-stage lagoon system with the 2<sup>nd</sup> stage being a lagoon:** A storage or treatment system that consists of two cells (lagoons/storage) connected in series. The first cell is a lagoon that provides treatment, and the second cell is a lagoon primarily used as storage.

**Code 13 2-stage lagoon system with the 2<sup>nd</sup> stage being a holding pond:** A storage or treatment system that consists of two cells (lagoons/storage) connected in series. The first cell is a lagoon that provides treatment, and the second cell is a holding pond primarily used as storage.

**Code 14 Run off storage pond used only for collection of open-lot run off:** A storage pond that collects open-lot runoff.

**Code 15 Other (Liquid),** Specify

### **Item 8: Methane Digester Used**

A methane digester is a part of a waste management system in which biological treatment breaks down animal manure and other organic materials in the absence of oxygen. Use of this practice is to improve air quality by reducing greenhouse gas emissions and objectionable odors from manure or agricultural waste and reduce transport of pathogens to surface water.

- Enter code “1” for “YES” in the box if a methane digester was used for liquid manure stored in a lagoon.
- Otherwise enter code = “3”.

### **Item 9: Bulking Agents Used**

Bulking agents are sometimes used to enhance compost composition. Bulking agents may be sawdust, rice husk, mushroom residues, straw, wood chips, etc.

Bulking agents may increase temperature, reduce pathogenic bacteria, and increase beneficial enzymes, and reduce antibiotics residue in the manure.

- Enter code “1” for “YES” in the box if bulking agents were added to the manure.
- Otherwise enter code = “3”.



## Section F - Pest Control Applications – Selected Field

### What is Section F for? How is the Information Used?

Pesticide data are collected to estimate the amounts of pesticides used in crop production. These data will be used with other information collected in the questionnaire to estimate the amount of pesticide residue that is transported from farm fields to surface and ground water and the impact of conservation practices on pesticide movement from fields.

Complete the pesticide table for all chemical applications made on the selected field during the 2024, 2023, and 2022 crop years. Include custom applications made by a custom applicator and applications made by the operator.

### Use of Supplements

The Pesticide Applications tables are year specific and provide 15 lines to record pesticide applications to the selected field. Having year specific tables should reduce the need for supplements.

If more than 15 lines are needed to record the pesticide applications to the selected field for the 2024, 2023, and/or 2022 crop years, use a **Pest Control Applications Supplement**.

Copy the CEAP ID as it appears on the face page of the questionnaire to the CEAP ID box on the supplement. You begin numbering the supplements with Table 201 because Table 200 appears in the questionnaire for the 2023 pesticide applications. For example, in 2023, if a supplement is used, then assign the next year specific Table number (201, 202, 203, etc.) to each additional supplement used. Use as many supplements as you need.

### Use of Records

Because of record keeping requirements for Restricted Use Pesticides (sometimes called RUP's), most operators will have records of chemical applications for each field. Encourage the respondent to use these records if they are available.

Respondents can answer many of these questions for the current crop year without records. Records help most in jogging the farmer's memory on past crop year's applications, spot treatments, rare and irregular applications, or deviations of chemical mixes from usual spray schedules or rates of application.

## Use of Respondent Booklet

Use the Respondent Booklet when completing Section F with the respondent. A comprehensive list of pesticide products is in the Respondent Booklet.

It is very important to obtain not only the correct product trade name (i.e. Roundup), but also the correct formulation of the product to ensure the correct product code is recorded.

Different formulations of the same product trade name often have different amounts of the active ingredient (chemical). Matching by the EPA registration number might be helpful. It is listed in the respondent booklet and will be on the pesticide label.

Encourage the respondent to use the Respondent Booklet since it makes the job of enumeration easier as well as making reporting faster and more accurate.

To aid in identification of the correct product applied, the products in the Respondent Booklet are categorized as LIQUID (L) or DRY (D) formulations. **We want the form of the product when it was purchased, not the form when it was applied.**

The Respondent Booklet also lists the type or class of each product:

- Herbicide (H),
- Insecticide (I),
- Fungicide (F),
- Other, Miscellaneous (O),
- Miscellaneous Growth Regulator (MG),
- Miscellaneous Soil Fumigant (MS),
- Miscellaneous Defoliant (MD), and
- Miscellaneous Biological/ Pheromone (MB)
- Rodenticide (MR)

Some chemicals and pesticides have more than one use. Some products with more than one use will be listed twice with separate product codes.

For example: Ascend

L H	40560	Ascend	9779-335
L O	90779	Ascend SL	1381-253

For products that are listed more than once, be sure to probe for what it was used for (i.e., Herbicide or Defoliant) and record the product code associated with that use.

Note that each product code listed in the Respondent Booklet specifies the corresponding trade name and formulation. The numbers and letters help identify the concentration and form.

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Examples:

Captan 80 WDG: Captan is the trade name and the 80 WDG indicates the formulation. The 80 indicates the concentration as the percent of active ingredient in a pound of product (in this case, 80%), and the WDG indicates that the form of the product is Water Dispersible Granules.

Atrazine (4L): Atrazine is the trade name and the 4L indicates the formulation. The 4 indicates 4 pounds of active ingredient in a gallon of product and the L indicates a liquid concentrate.

Also note that for several products there is more than one formulation for a given trade name.

For example, Diazinon is listed as Diazinon 50W, Diazinon AG500, and Diazinon AG600.

Different formulations of a product have different concentrations of the active ingredient and percent of inert materials.

It is extremely important that you get the correct product code because active ingredient concentrations for different products and different formulations vary greatly. Since we summarize by active ingredient in the product, recording a product or its formulation incorrectly will make a difference when the active ingredient application rate per acre is calculated.

For example, if you record the code for Glyphosate 53.8% (41011) when you really should have recorded the code for Glyphosate 41% (41023), then we will summarize 13 percent more of active ingredient than we should. That will make it look like operators apply more chemicals to crops than they actually apply.

Also, if you record the Glyphosate 41% (41023) code when you really should have recorded the code for Glyphosate 53.8% (41011), we will summarize 13 percent less active ingredient as we should. This is not good either. We need the correct information listed in the questionnaire.

If you cannot find a reported product in the Respondent Booklet, complete the information below the table to classify and summarize unlisted products. There are several lines at the bottom of each table to list chemicals not found in the code list. Be sure to list the products in the appropriate year.

**Herbicides** may be applied before weeds emerge or after weeds have emerged. Some herbicides are used to “burn down” or kill weeds prior to planting in no-till systems. Herbicides applied at time of planting are generally applied to the entire soil surface (broadcast). Herbicides are also commonly used to terminate a cover crop.

Herbicides requiring soil incorporation may be mixed into the soil by the action of the planter or by attachments which are part of the planter. Incorporation also may be accomplished by a tandem hook-up of a tillage implement(s) behind the applicator or planter. Other herbicides are effective by being left on the surface without incorporation. Some herbicides may also be used to defoliate the crop prior to harvest.

**Insecticide** materials are applied to control insects that damage plants by feeding on plant tissues. Granular insecticides are sometimes applied at planting and placed in the seed row (in-furrow) by a separate attachment. Other insecticides are sprayed directly on the plant. Insecticides may be applied as a seed treatment, and these should be included in the pest control applications record of Section F when the operator treats the seeds themselves before planting.

**Fungicides** are applied to control disease organisms which affect the growth and development of the crop, such as pod-and-stem blight, anthracnose, brown spot, etc. Fungicides may be applied as a seed treatment, and these should be included in the pest control applications record of Section F when the operator treats the seeds themselves before planting.

**Other Chemicals** are used to fumigate the soil, regulate the growth of the crop, defoliate the crop prior to harvest, etc.

### **Completion Code for Pesticide Tables**

- Enter a "1" for Incomplete tables or refusals

### **Item 1: Pest Control and Crop Growth Altering Chemical Applications**

If any pest control products were applied to the field for the 2024, 2023, or 2022 crop years, enter code "1" for "YES" or "3" for "NO". Pests include any undesirable organism, such as weeds, insects, mites, diseases, nematodes, rodents, etc. Products used to control these organisms include pesticides (herbicides, insecticides, fungicides, nematicides, miticides), defoliant, biocontrol agents, seed treatments, and other conventional or organic products. Also include any growth regulators, chemicals for burn down (or killing/termination applications), and any applications that impact growth habit, flowering, or fruiting.

#### **IMPORTANT NOTE:**

If the field has not yet been harvested for the 2024 crop year, you must be sure to probe the respondent for any pesticide applications they plan to make to this field prior to harvest and record them in this table.

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- For each year, if any pest control, plant growth regulators, defoliants, or other chemical products were applied, enter “1” for “YES”, and continue.
- If no pest control, plant growth regulators, defoliants, or other chemical products were applied, enter “3” for “NO” for the correct year.
- If no pest control, plant growth regulators, defoliants, or other chemical products were applied in any of the 3 crop years, continue to Section G.

### **Pesticide Applications Completion Code Boxes (codes 0344, 0343, 0342)**

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with “3” if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

### **Item 2: Crop Cultivars Chosen for Genetically Engineered (GE) Traits**

Ask the operator if they based crop cultivar choice on tolerances to specific herbicides or insect resistance (Bt). For example, many of these crop varieties have a GE tolerance to the herbicides glyphosate and glufosinate. Farmers can thereby easily control weeds in fields where these crops are planted, as the herbicide will kill the weeds but not the crop.

- For item 2 a, ask the respondent if they chose to plant specific crop cultivars based on the GE trait of tolerances to specific herbicides. Enter “1” for “YES” or a “3” for “NO”.
- For item 2 b, ask the respondent if they chose to plant specific crop cultivars based on the GE trait of insect resistance (Bt). Enter “1” for “YES” or a “3” for “NO”.

### **Item 3: Alter Pesticide Application to Protect Pollinators**

The application of pesticides may have unintended consequences, such as killing beneficial insects like honeybees and other plant pollinators. However, producers may reduce or eliminate impacts on pollinators by altering the way in which pesticides are applied (for example, spraying at night or avoiding application during the bloom period).

Ask the operator if they altered their pest applications in any way to protect honeybees or native pollinators for the 2024, 2023, and/or 2022 crop years.

- If the operator altered their pest applications to protect honeybees or native pollinators, enter “1” for “YES” or a “3” for “NO”.

#### **Item 4: Pesticides Rotated to Prevent Pest Resistance**

A common pest management practice is to rotate pesticides with different mechanisms of action from one year to another. By “different mechanisms of action” we are talking about HOW the chemical kills the pest (attacks the nervous system, digestive system, etc.).

- If the operator rotated chemicals for the primary purpose of slowing the development of pest resistance in the 2024, 2023, and/or 2022 crop years, enter “1” for “YES” or a “3” for “NO”.

#### **Item 5: Pesticides Tank Mixed to Prevent Pest Resistance**

A common pest management practice is to tank mix chemicals with different mechanisms of action. By “different mechanisms of action” we are talking about HOW the chemical kills the pest (attacks the nervous system, digestive system, etc.).

- If the operator tank mixed chemicals for the primary purpose of slowing the development of pest resistance in the 2024, 2023, and/or 2022 crop years, enter “1” for “YES” or a “3” for “NO”.

#### **Item 6: Use of Treated Seed**

Treated seeds have been coated with products meant to increase yield potential by protecting plants from certain diseases or insects.

- If the operator purchased certain crop seeds specifically because they were pre-treated with fungicides or insecticides in the 2024, 2023, and/or 2022 crop years, record a “1” for “YES” or a “3” for “NO”.

#### **Item 7: Reduction of drift, runoff, or leaching**

Practices such as considering wind speed, weather conditions, nozzle size, and distance to bodies of water is often implemented practices to reduce potential drift, runoff, and/or leaching.

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- If the operator implemented practices to reduce drift, runoff, or leaching in the 2024, 2023, and/or 2022 crop years, record a "1" for "YES" or a "3" for "NO".

### Item 8: Use of Precision Technology

Precision technology can help farm operators gather information on soils, crop yields, and other production practices. Precision technology equipment includes global positioning systems (GPS), yield mapping systems, and variable-rate input applications (VRT).

- If the operator used precision technology to apply pesticides in the 2024, 2023, and/or 2022 crop years, record a "1" for "YES" or a "3" for "NO".

### Item 9: Other Factors Considered

- Only consider pest control products applied in 2024 when answering questions 9a-9g.
- For each source listed record a "1" for "YES" or a "3" for "NO".
- The answer to question 9g may only be "YES" if the answers to questions 9a-9f are "NO".

### Item 10: Pesticide Application Tables

Year-specific pesticide tables, Items 10a (2024), 10b (2023) and 10c (2022) are provided. The year-specific tables should reduce the number of supplements that are required to collect all the pesticide data for each of the crop years.

If "1" ("YES") was coded for any of the three years in Item 1, the corresponding pesticide table should be completed. The response recorded in Item 1 should correspond with data recorded in the pesticide application tables.

**IMPORTANT NOTE:** If the field has not yet been harvested, you must be sure to probe the respondent for any pesticide or other chemical applications that may be made to this field prior to harvest. Examples of this may include applying a defoliant to cotton to remove leaves or applying Roundup as a drying agent for wheat or oats in preparation for harvesting. They must be recorded in the 2024 table.

To help the respondent, start by asking if any pest control products were applied after the previous crop was harvested or plowed down. Next, ask about other preplant applications and then follow with products applied at planting and then after planting.

Remind the operator to report all types of pesticides, including herbicides, insecticides, fungicides, defoliants, growth regulators, rodenticides, nematicides, seed treatments, miticides, soil fumigants, and desiccants. Also include any biological or botanical pest control products. Record the applications for the years in which the operator made the day-to-day decisions for the selected field.

Be aware that the products applied do not have to be listed in the order of application. If the operator remembers a preplanting application, it can be added to the next available line with its appropriate application date.

Include custom applications made by a custom applicator and applications made by the operator.

### **Include:**

**Seed Treatments.** Most crop seed is treated with an insecticide/fungicide product. Seed treatment done by the respondent AFTER the seed is purchased should be reported in the year specific pesticide table. However, do not report the seed treatment if the seed is treated by the seed company prior to delivery to the operator.

When reporting seed treatments use code "10" in Column 11. The total amount applied should be entered in column 9. Column 8 must be left "blank". The objective of including seed treatments is to identify any additional pesticide applied to the seed. Field seed treatment consists of coating the seed with the insecticide or fungicide product just prior to planting.

### **Exclude:**

**Adjuvants.** An adjuvant is used when mixing pesticides to improve such characteristics as how well the product sticks to the plant material or to improve compatibility for mixing pesticides in a tank mix. By using the proper adjuvant, it is often possible to use certain chemical pesticides in a tank mix that otherwise would not mix well.

Adjuvants include such materials as wetting agents, spreaders, emulsifiers, dispersing agents, foaming agents, foam suppressants, penetrants, surfactants, solvents, solubilizers, buffering agents, and stickers.

If you, or the respondent, are in doubt about whether a product should be included, record it anyway and write notes to explain the situation.

**Fertilizers.** The respondent may report foliar fertilizer sprays, especially if they were part of a tank mix. Fertilizer applications should not be recorded in this section; they should have been recorded in the fertilizer Section D.



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**Product Name.** You should record the **complete** product name on the far left of the line being used in the pesticide table. This makes it easier to refer to the product by name while asking the remaining questions across the table. It also aids in enumeration if the same product/code is reported more than once with different application rates per acre in the same year or for a different crop year. Recording the **complete** product name also assists the Regional Field Office in editing the questionnaire.

### Lines in Table Code Boxes (code 399)

For the for the Pest Control application table any year the operator applied pest control, the number of table lines must be entered in the respective table code box.

### Column 1: Crop Year

The last two digits of the crop year in which the pesticide was applied are pre-printed in each year-specific table. For example, for products applied during the 2024 crop year, use the 2024 crop-specific table (coded with "24"). Start with the 2024 applications table and then complete the 2023 and 2022 applications table.

**NOTE:** The last two digits of the crop year must be handwritten into the supplement only. Supplement tables should be crop-year specific. A separate supplement must be used for each year additional pesticides lines are required.

### Column 2: Crop Name

Record the primary crop for which the pesticides applied were intended. The crops listed in this table should also appear in the table in Section C, Item 1. Make sure you record the correct crop name with the correct crop code in Column 3. Use the Respondent Booklet to complete Columns 2 and 3.

In a case such as a strip cropped field where there is more than one crop in the same field being surveyed and no clear "primary" crop, both crops in the field should be listed, on separate lines with the same application information in the other fields. Where this applies, **note that Column 12 should reflect "part of field" (coded with "2")** for both crops to prevent overestimate of the amount of pesticide applied and column 13 should indicate the appropriate number of acres for each application.

### Column 3: Crop Code

Enter the code in Column 3 for the crop to which the pesticide(s) was applied. Use the Respondent Booklet to complete Columns 2 and 3. The crops listed in this table should appear in the table in Section C, Item 1 for each of the 3 crop years. Make sure you record the correct crop code with the correct crop name listed in Column 2.

#### Column 4: Product Code

Ask the operator to identify the chemical or pest control product applied to the crop coded in Column 3. Record the product code for each chemical from the Pesticide Code List found in the Respondent Booklet starting on page 10. If two or more products are applied with a single application (i.e., as a tank mix) a separate line must be used for each product. Use Column 6 to identify products applied in a tank mix.

#### Column 5: Product Form (Liquid/Dry)

Ask the respondent if the product was in a liquid or dry state **when it was purchased**. Record an "L" or a "D" in this column to indicate Liquid or Dry, respectively. Probe for clarification if the liquid or dry designation listed by the product code selected from the Respondent Booklet does not agree with what you record here for the product.

Common formulation abbreviations include:

**D (Dust)** - Dusts contain a low percentage of active ingredients on a very fine dry inert carrier such as talc, chalk, or clay. Dust formulations are usually applied directly as purchased, and the concentration of the active ingredient(s) is expressed as a percent. Dusts are dry products.

**DF (Dry Flowable), WSG (Water Soluble Granules)** - Also known as water dispersible granules, these DF or WSG products are small pellets formulated to reduce dust. They are like wettable powders except that the active ingredient is formulated in a granule instead of a powder. The product pours easily into spray tanks for mixing with water. Their concentrations are expressed as a percentage. These formulations are dry products.

**E or EC (Emulsifiable Concentrates)** - These formulations are usually thicker than water and are mixed with water and applied as sprays. They contain one or more active ingredients, one or more solvents, and an emulsifier. Their concentrations are generally indicated in pounds per gallon. This formulation is considered a liquid.

**F or FL (Flowable)** - These products are in liquid form. They contain finely ground active ingredients suspended in the liquid. They are mixed with water for application. Their concentrations are generally indicated in pounds per gallon.

**G (Granular)** - Granular products contain active ingredients coated or adsorbed onto coarse particles like clay, ground walnut shells, or ground corn cobs. The pellets are about the diameter of the lead in a pencil (or larger); during shipment the granules tend to break down and create dust. These are used as purchased. Their concentrations are expressed as percent. The granular formulation is a dry product.

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**L (Liquid)** - These products flow like water. Concentrations are usually expressed in pounds per gallon.

**S or SP, W or WP (Soluble or Wettable Powder)** - These are dry products, much like flour, which will dissolve or disperse in water. Their concentrations are indicated as a percentage.

### Column 6: Tank Mix

Most chemicals are applied to the field as single products. However, sometimes two or more individual products are mixed in the spray tank by the farmer/custom applicator and applied to the field as a tank mix. Products applied in a tank mix must be identified as tank mixes. Since there is only space in the table for one product per line, the separate products in tank mixes must be recorded on separate lines. Identify the products in a tank mix by recording in Column 6 the line number of the first product in the tank mix.

For example, consider a three chemical tank mix. You record the first product on line 6, the second product on line 7 and the last product on line 8. In Column 6 of line 6, you should record 6 so we will know this was the beginning of the list of products in that tank mix. In Column 6 of line 7, you'll record 6 so we know that this product was part of the same tank mix that you started listing on line 6. In Column 6 of line 8, you will record 6 for the same reason.

For products not applied as part of a tank mix, enter a dash in Column 6. For the first product in a tank mix, be sure to ask each question in Columns 7 – 13i. For each additional product in the tank mix after the first product, be sure to ask the questions in Columns 8 or 9 and 10 because the answers likely will be different than for the first product. Information recorded in Columns 7, 11, 12, and 13 should be the same as for the first product in the tank mix. These data can just be copied from the entries in the columns for the first product of the tank mix.

**DO NOT confuse tank mixes and packaged premixes.** A tank mix is any pesticide spray which is prepared immediately before use by mixing two or more chemicals and water in the spray tank. Packaged premixes are brand name products that contain two or more active ingredients. These are products where the manufacturer has taken individual active ingredients and combined them in a container. Examples include Ramrod/Atrazine, and Lasso/Atrazine. These manufactured mixes have their own code in the Respondent Booklet, so they should not be listed with separate codes for the chemicals included in the product.

Technologies such as variable rate applications that rely on GPS information to control the precise application of chemicals create unique situations. It is possible for an applicator to have more than one chemical product tank on the tractor at the same time and to apply different products unequally across a field depending on the specific needs of each small area. Some areas of the field may be treated with only

one of the products. Since the products are not mixed and applied consistently together across the field, these are not considered tank mixes.

Example: Product lines 2 and 3 are in a tank mix. For products mixed in a tank mix, columns 6, 7, 11, 12, and 13 must be the same.

PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs. 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
Powerflex	01	60 22	Wheat	125	61 40071	D	63 _____
Atrazine 4L	02	60 22	Corn	188	61 40136	L	63 2
Express	03	60 22	Corn	188	61 40310	D	63 2

LINE	7 When was this applied?  MM DD YY	8 How much was applied per acre per application?	OR 9 What was the total amount applied per application in this field?	10 [Enter unit code] (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	11 How was this product applied? [Enter code from box above.]  Code	12 Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?  1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers  Code	13 How many acres in this field were treated with this product?  Acres
	01	<sup>83</sup> 0 9 2 2 2 3	65 2 0 0	73 __ __	74 28	76 6	84 1
02	<sup>83</sup> 0 5 1 1 2 4	65 __ __	73 1 0 0	74 14	76 8	84 1	77 1500 0
03	<sup>83</sup> 0 5 1 1 2 4	65 0 1 3	73 __ __	74 15	76 8	84 1	77 __

### Column 7: Date Applied

Ask the respondent on what date the product was applied to the selected field, and enter the month, day, and year in the appropriate form MMDDYY. For example, if a product was applied on May 11, 2023, code the cell "051123. Use the calendar provided in the Respondent Booklet for reference.

Herbicides and soil fumigant applications may occur just prior to or up to several months before planting. Herbicide or insecticide materials are sometimes applied at the time the crop is planted.

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Herbicide, insecticide, or fungicide materials are commonly applied after planting is completed. They could be applied days, weeks, or months after planting the crop.

### Column 8 or 9: Application Rate

Column 8 (rate per acre) **or** Column 9 (total amount per application in this field) should be completed for each product reported. **Don't** use both on the same line.

### Column 8: Rate per Acre per Application

Record the chemical application rate per acre for the product used on the selected field. Rate per acre is the amount of product used to treat one acre. Because rates per acre are often quite small with very toxic chemicals, rates are reported to hundredths of units. **BE SURE** that if whole numbers or rates to a tenth are reported, zero(s) are entered after the decimal point. If the operator applied  $\frac{1}{2}$  ounce of a product per acre, then record the rate as 0.50.

Be VERY careful to record the rate accurately with the correct unit.

**If an application rate per acre is obtained in Column 8, then nothing should be entered in Column 9.**

With variable rate technology and for spot treatments, application rates for a particular product or tank mix may vary across the field. In these cases, do not attempt to obtain a rate per acre; instead, obtain the total amount applied to the field using Column 9.

### Column 9: Total Amount Applied per Application

If the respondent is not able to report the application rate per acre in Column 8, use Column 9 to record the total quantity applied per application to all acres treated in the selected field. This figure should be a total quantity for one application, **NOT** the "sum total" of multiple applications. As in Column 8, enter the amount with the correct number of integers after the decimal point.

If the respondent is able to give either total quantity applied per application or rate per acre, select the option which the respondent feels will give the most accurate data. In some cases, respondents cannot report either the rate per acre or the total amount of the product applied per application. In these cases, there is one additional way you might be able to collect the total amount applied.

If the respondent knows: 1) the amount of the product mixed in every 100 gallons of water or per tank, 2) the number of gallons in each tank applied, 3) the number of tanks used to cover the acres, and 4) the number of acres covered, make a note of these figures. The survey statistician will be able to calculate the amount of product used.

Other ways of reporting include parts per million (PPM). In these cases, try to find out the amount of actual product (before mixing with water) used, and write complete notes for the survey statistician to follow.

**Do not record the spray volume applied to the field.** The purchased (concentrated) product is mixed with water and the diluted spray solution is generally applied at rates of 20 - 60 gallons per acre with ground equipment and 5 - 10 gallons per acre by air.

Do not record the inclusion of adjuvants, surfactants or carriers in the spray solution. They are added to the spray solution to enhance the ability of the pesticide to stick to the foliage and/or aid in the absorption into the plant system.

Do not record liquid fertilizer solutions applied in conjunction with a pesticide in the Pesticide Table. The information on liquid fertilizers should be recorded in the Commercial Fertilizer Table (Section D).

### Column 10: Unit Code

Record the units using the unit codes listed in Column 10. Unit codes are:

- Code 1 Pounds
- Code 12 Gallons
- Code 13 Quarts
- Code 14 Pints
- Code 15 Liquid Ounces
- Code 28 Dry Ounces
- Code 30 Grams
- Code 40 Kilograms
- Code 41 Liters

Write notes if any unit other than the ones listed is reported.  
Some conversion factors you may need to use are:

Dry Products		Liquid Products	
1 Pound	16 Dry Ounces	1 Gallon	4 Quarts
1 Ounce	28.3 Grams	1 Quart	2 Pints
1 Pound	453.6 Grams	1 Pint	16 Liquid Ounces
		2 Cups	16 Liquid Ounces
		2 Cups	1 pint
		1 Cup	8 Ounces

**BE SURE** to keep the unit code and product formulation consistent. **If the operator purchased a LIQUID pesticide product, the unit code must be ounces, pints, quarts, or gallons.**

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**If a DRY pesticide product (granular, wettable powder, or dry flowable) was used, the unit code must be dry ounces, pounds, or grams.**

If the form of product conflicts with the reported unit code, perhaps the wrong product code was recorded. Check the Respondent Booklet to see if there are other formulations for the product.

### Column 11: How Applied

Obtain the physical application method used to apply the pesticide product to the selected field. The application method codes are printed in the **APPLICATION CODES** box positioned above the pesticide table. Show the respondent the Pesticide Application Method Codes in the Respondent Booklet (Page 38).

Herbicides, insecticides, and fungicides are most often applied as broadcast treatments to cover the entire soil surface (or plant surface). Banded treatments, where a narrow band of pesticide is applied over the row covering about one-third of the soil surface, is also a common method of application. Less frequent methods include in-furrow, chemigation (in irrigation water), or spot treatments. Choose the Application Method from the list that **best** describes the application method used.

Herbicide or insecticide materials are sometimes applied at the time the crop is planted. These applications may be band treatments covering a small section of the row over the seed furrow or broadcast treatments covering the entire soil surface.

The Application Method codes are defined as follows:

**Code 4** – In Seed Furrow: Pesticide material (herbicide, insecticide, fungicide, or other) is placed in the seed furrow at planting time, generally through a separate attachment on the grain drill or row crop planter. This method is sometimes used for granular insecticide applications.

Do not confuse this with seed treatments where the seed surface is coated with a pesticide product by the farmer or seed dealer before the seed is planted.

**Code 5** - Chemigation (In Irrigation Water): Pesticide material (herbicide, insecticide, fungicide, or other) is mixed with water in either sprinkler or gravity fed irrigation systems.

The term used for this procedure is chemigation. The product is metered into the water delivery system (generally a sprinkler irrigation system) and is distributed across the field in the irrigation water.

**Code 6** - Chisel, Injected or Knifed-in: Pesticide material (herbicide, insecticide, fungicide, or other) is injected under pressure into the soil. This application method (using high pressure) is used with insecticide spray materials for nematode control.

**Code 8** - Direct Spray, Foliar: After planting, pesticide material (herbicide, insecticide, fungicide, or other) is sprayed on or under the plant foliage, with the spray directed specifically to areas where pests are located. This may be done using drop nozzles, for example. Sensor guidance equipment is sometimes used to direct the spray.

**Code 10** - Seed Treatment by producer prior to planting: In most cases, seeds are treated by the manufacturer prior to the sale of the seed. Seed treatment applied by the manufacturer should not be reported.

If seeds used in the selected field were treated with one or more pesticides after they were purchased or home-grown seeds were treated with one or more pesticides, report the pesticide(s) used to treat the seed using application code 10.

**Code 11** - Broadcast, ground, not incorporated: Pesticide material is applied to the entire surface area using land application equipment, but material is NOT incorporated into the soil. This type of application may be applied prior to planting, at planting, or shortly after planting but usually before emergence.

**Code 13** - Broadcast, ground, foliar: This is the same as code 11, except that the pesticide is applied after the crop has emerged. Application of defoliants would be considered a broadcast, ground, foliar type application.

**Code 21** - Broadcast, ground, incorporated: Pesticide material is applied to the entire soil surface area using land application equipment, but material IS incorporated into the soil at the time of application. Incorporation of the pesticide into the upper soil surface is often performed with a field cultivator, disk, or other tillage implement. Application usually occurs prior to planting. These type of applications are often associated with pre-emerge control of weeds.

**Code 31** - Broadcast by aircraft: Pesticide material is applied to the entire soil surface area using aircraft application equipment. Application would be done prior to planting, at planting, or shortly after planting before a full canopy is in place.

**Code 32** - Broadcast, foliar by aircraft: Same as code 31, but is done after the crop has emerged and developed a significant canopy.

**Code 71** - Banded/Side-dressed: Pesticide material is placed in or over the crop row, rather than broadcast over the entire surface. This method, mainly used for row crops, is usually completed prior to or at planting or after planting but prior to emergence. The area between the rows is not treated. This application method should not be confused with direct spray.



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Application rates for band treatments are to be reported on a per acre basis and not the rate that was applied to the banded segment. Band treatments with the same pesticide product normally result in lower application rates than broadcast treatments. For example, if the band only covers one-third of the row, the application rate will normally be about one-third the broadcast application rate.

**Code 73** - Banded/Side-dressed, foliar: Same as code 71, but applies to applications after the crop emerged.

**Code 76** - T-Banded (Combo of banded and injected): This type of application is made prior to or at planting. The pesticide materials are applied in or over the crop row, injecting the pesticides material into the soil.

**Code 77** - Broadcast by drone: Pesticide material is applied to the entire surface area using drone or unmanned aerial vehicle application equipment. Application would be done prior to planting, at planting, or shortly after planting before a full canopy is in place.

**Code 78** - Broadcast, foliar, by drone: Same as code 77, but is done after the crop has emerged and developed a significant canopy.

### Column 12: Spot Treatment and Partial Field Treatment

In some cases, the pesticide application may not be made to the entire field, rather the pesticide is applied to only part of a field, in small “spots” only, or to the entire field plus borders and buffers.

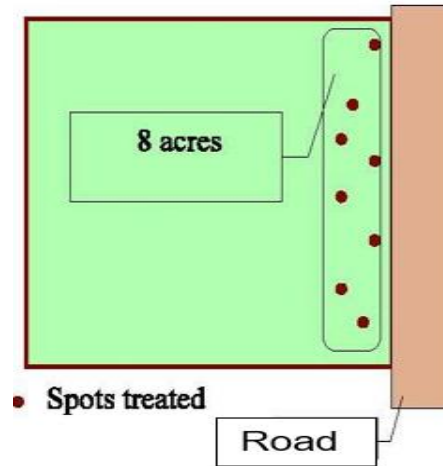
With spot treatments, acreage is difficult to determine. A spot treatment might involve walking or riding around with a tank on the applicator's back, spraying an herbicide on problem weeds.

If acres treated are not known, get the farmers best estimate of acres covered, either as acres or percent of the field covered by the spot treatments. Spot treatments to field crops are rare and should be verified.

**IMPORTANT:** For spot treatments, you must complete Column 9 (total amount applied on the field). Do not enter a rate per acre (Column 8) for spot treatments.

**Spot treatment example of recording a spot-sprayed pesticide treatment when the per acre amount is unknown:**

A farmer with a 40-acre field of soybeans identified a small area of severe thistle infestation in her field, about 8 acres, alongside a road. She decided to spot treat these areas with Roundup Ultra. She used 2 ounces to spot treat the thistles. The respondent's best guess is that she treated about 1/2 acre within the field, alongside the road.



**Recording a spot pesticide treatment alongside a road in a field**

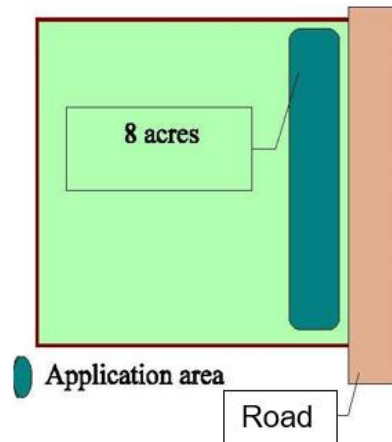
PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 -7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
Round Up Ultra	01	<sup>60</sup> 23	Soybeans	120	<sup>61</sup> 40842	L	<sup>63</sup> ----

LINE	7 When was this applied? MM DD YY	8 How much was applied per acre per application?	9 What was the total amount applied per application in this field?	10 [Enter unit code] (col. 8 or 9 only)	11 How was this product applied? [Enter code from box above.]	12 Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?	13 How many acres in this field were treated with this product?
				1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters Code	Code	1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers Code	Acres
01	<sup>63</sup> 07 02 23	<sup>65</sup> --	<sup>73</sup> 2.0 0	<sup>74</sup> 15	<sup>76</sup> 8	<sup>84</sup> 3	<sup>77</sup> 0.5

**Partial field treatment example of spraying alongside a road where the entire partial area of the field was treated:**

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These partial field spot treatments to fields are similar to the previous example but are for an *entire area* that is *within* the field. When an application is made only to a portion of a field and the treated acreage can be discerned (e.g. the north half of a 40-acre field), such partial field treatments should be reported like any other application, including acres treated and an application method from the codes listed. The portion of the field treated does not need to be contiguous to be measurable.



### Partial field treatment example:

A farmer with a 40-acre field of corn decided to treat an area of the field with 2, 4,-D Amine-4. He applied 2 pints per acre of the product to 8 acres that were affected. The product was applied foliar broadcast ground.

PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs. 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
2, 4-D	01	60 22	Corn	188	61 40480	L	63 _____

LINE	7 When was this applied? MM DD YY	8 How much was applied per acre per application?	9 What was the total amount applied per application in this field?	10 [Enter unit code] (col. 8 or 9 only) 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters Code	11 How was this product applied? [Enter code from box above.] Code	12 Was this product applied to the entire field, to only a portion of the field, or as a spot treatment? 1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers Code	13 How many acres in this field were treated with this product? Acres
	83	65	73	74	76	84	77
01	06 13 22	200		14	13	2	80

### Column 13: Acres Treated

Record the number of acres of the specified crop that were treated with the pesticide product recorded in Column 4. If the entire field is treated with the pesticide, this will be the same as the number of planted acres recorded for the field in Section C

(Cropping History and Conservation Practices, Item 1, Line 3). If only part of the selected field is treated, then enter the number of acres representing the share of the field actually treated. Record the acres treated to the nearest tenth.

It is important to know the difference between treated acres and treatment acres. Treated acres are the actual physical (land) acres of crop which were treated -- it doesn't matter how many times they were treated; they are only counted once.

Treatment acres are the total number of acres covered by applications of a product regardless of whether they are the same acres or different acres.

If the same 40 acres are treated 4 times, the number of treated acres is 40 and the treatment acres is 160 (4 x 40). In this example, **a line for each separate application** to 40.0 acres would be recorded.

### **Never record treatment acres in the CEAP questionnaires.**

We account for multiple applications of the same product and formulation by recording each application on a separate line.

Acres and tenths of acres must be reported in Column 13. Zero **MUST BE** recorded after the decimal point if whole acres are recorded. For example, if the operator treated exactly 25 acres, the entry in Column 13 must be 25.0. Otherwise, the edit will consider the entry to be 2.5 and we will get serious errors when we summarize active ingredients applied per acre.

### Information for Unlisted Pesticides

If you could not find a product in the Pesticide Code List in the Respondent Booklet, complete the area below the table to provide as much information as possible.

- Record the line number from the table that the information refers to.
- Record the type of product (herbicide, insecticide, fungicide, or other).
- Record the EPA registration number, if it is available, or the name and formulation of the product.
- Record whether the product was liquid or dry when it was purchased.
- Record where the product was purchased. This will assist the Regional Field Office if questions arise about the product and additional information is needed.

The EPA Product Registration number is printed on the product label (see the example below). EPA Product Registration numbers are not the same thing as EPA Establishment numbers. EPA Establishment numbers (EPA Est.) indicate which

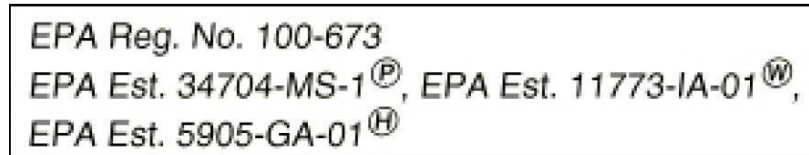
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companies are licensed to market the product, but do not uniquely identify the product.

In this example, the EPA Product Registration number is 100-673. There are three EPA Establishment numbers listed: 34704-MS-1, 11773-IA-01, and 5905-GA-01.

**Example:** EPA Numbers that appear on Pesticide Product Labels



If the respondent does not know the EPA product number or the trade name and formulation, record as much information about the product as you can, especially the "where purchased". This information will enable identification of the product in the Regional Field Office. The "where purchased" is important because if more information is needed, we can call the dealer.

For example, if the operator has a pesticide applied by a custom applicator, he/she might not know the formulation of the product, but if the "where purchased" is recorded the Regional Field Office can check to get the correct formulation.

A good, complete entry for Unlisted Products in the notes portion of the section is as follows:

**Figure 15** Providing information needed for unlisted pesticide products.

*[For pest control products not listed in Respondent Booklet, specify --]*

Line	Pest Control Product Type <i>(Herbicide, Insecticide, Fungicide, etc.)</i>	EPA No. or Tradename and Formulation	Form Purchased <i>(Liquid or Dry)</i>	Where Purchased <i>[Ask only if EPA No. cannot be reported.]</i>
6	<i>Insecticide</i>	<i>Danitol 2.4 EC, EPA # 59639-35</i>	<i>Liquid</i>	
16	<i>Fungicide</i>	<i>Regulator II</i>	<i>Liquid</i>	<i>Midland Chem</i>

## Section G - Pest Management Practices – Selected Field

### What is Section G for? How is the Information Used?

Integrated Pest Management (IPM) is an approach to control pests in an environmentally responsible manner. IPM combines physical, biological, cultural, and chemical methods of pest control.

An integrated pest management approach can:

- Be an alternative to pesticide use,
- Reduce the number of pesticide applications needed,
- Reduce the toxicity of the pesticides used by producers,
- Improve the effectiveness of the pesticides applied.

Section G collects information on the use of IPM techniques to control pests in the selected field in 2024. IPM practices may be used even if pesticides are not applied to a crop.

The information collected in Section G will be used to determine grower adoption of non-chemical pest management practices, reduction in chemicals where alternative pesticide treatment strategies are in place, and the corresponding environmental, public health, and cost benefits derived from use of these practices.

### Introduction and Definition of Pests

The introductory statement helps the respondent in two ways:

- 1) It explains you will be asking the operator about pest management practices used on the selected field in 2024 and how decisions are made regarding those practices.
- 2) It defines PESTS for the operators to include WEEDS, INSECTS, AND PLANT DISEASES. Many operators tend to focus on one kind of pest depending on the crop, but we are interested in control practices for all types of pests.

For example, soybean growers may think only about weeds as pests; cotton growers may focus only on insects as pests.

In this section, when the word PESTS is used, it refers to ALL types of WEEDS, INSECTS, AND PLANT DISEASES. If you don't introduce pests this broadly for all operators, operators may answer the questions with only one kind of pest in mind.

## **Item 1: Method of Pest Scouting**

This question serves as a screening question based on the intensity level of pest scouting. Scouting involves some means of monitoring the field for the presence of pests. Scouting is an activity, and there are differences in the ways producers scout for pests. Scouting may be done occasionally when an operator is doing fieldwork, or scouting may be done every so many days during the growing season or even daily when weather conditions favor rapid development of specific pests.

- Enter the code that represents the primary approach the respondent used to scout for pests in the selected field.
- If general scouting is done, enter code 1, then go to Item 3.
- If deliberate scouting is done, enter code 2, then go to Item 2.
- If no scouting is done, enter code 3, then go to Item 8.

### **Code 1 By conducting general observations while performing routine tasks.**

The operator does not have a structured scouting strategy where deliberate scouting trips are made to the field at determined intervals or when weather conditions favor rapid development of specific pests. Rather, the operator periodically checks for the presence of pests as field tasks are performed. The scouting approach is somewhat casual - the operator may not even get off the tractor to look more closely for pest presence. Enter code "1" for Item 1 when the operator looks for pests at random and does not attempt to make counts, as described below.

### **Code 2 By deliberately going to the field specifically for scouting activities.**

The operator has an established scouting strategy (based on time and/or method) and goes to the field deliberately for the purpose of checking for pests. The field may be scouted based on a schedule such as every four days. The operator may have some predetermined approach to how the scouting will be done (check every x number of rows and every x number of plants per row, etc.). Insect traps may be used for monitoring infestation levels. These are more deliberate approaches to scouting than conducting "general observations" or scouting only if there is field work to be done in or adjacent to the field.

### **Code 3 This field was not scouted for pests.**

## **Item 2: Established Scouting Process Used**

An established scouting process is where the operator's method of deliberately scouting the field includes using a recommended system of checking every x number of rows and every x number of plants per row, or another mathematically sound approach to accurately

determine pest levels in the field; or if pest counts are recorded at random locations in the field; or if pest traps are used to monitor insect levels.

- If an established scouting process was used, enter code “1” = “YES”.
- If an established scouting process was not used, enter code 3 = “NO”.

If the operator deliberately scouts the field for pests by randomly spot checking one or more parts of the field (not using a systematic approach) and does not keep records of pest population counts or use pest traps, the answer is “NO” and the cell is coded a code 3.

### Item 3: Why Scouting was Done

#### Item 3a: A pre-determined schedule or calendar?

Pest monitoring consists of "in- field" scouting surveys based on a calendar of when pests normally are expected to appear. Calendars may come from Extension or other Land Grant University services and are developed specifically for a geographic area and show the historic occurrence of the pest.

If the field was scouted based on information from a predetermined schedule or calendar, enter code “1” = “YES”, otherwise enter code = “3”.

#### Item 3b: A pest development model?

Pest development models are used to forecast the time and development stage of pest infestations. The models incorporate environmental factors such as growing degree days, maximum and minimum temperatures, rainfall, and humidity, and correlate them to seasonal emergence of overwintering insects, pest development, population levels, and migration. Often, a trapping network is used in conjunction with predictive models to forecast growth and development of pests and predict when growers need to scout their fields.

If the field was scouted based on information from a pest development model, enter code “1” = “YES”, otherwise = otherwise enter code = “3”.

#### Item 3c: A pest advisory warning?

Under certain climatic conditions, the potential for pest infestation is higher than normal. The County, Cooperative or University Extension advisor, Regional Pest Management Center, crop consultant or other advisory source will often issue a pest advisory warning—a recommendation that growers scout their fields for particular pests.



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- If scouting in the field was done based on a pest advisory warning, enter code "1" = "YES", otherwise enter code = "3".

### Item 4: Scouting Data Compared to Infestation Thresholds

This question is to determine if tracked scouting data from the operator's fields were compared with published information regarding infestation thresholds to determine when to take measures to manage pests in the field.

If published information was used regarding infestation thresholds to determine when to take measures to manage pests in the field enter code "1" = "YES", otherwise enter code = "3".

### Item 5: Pest Scouting

#### Column 2: Was Field Scouted for Pests

Determine if the selected field was scouted for a) weeds, b) insects or mites, c) diseases or d) other reasons.

- For each type of pest (Item 4a - weeds, Item 4b - insects, and mites Item 4c - diseases, Item 4d - other) for which the field was scouted, enter code "1" = "YES", otherwise enter code = "3".

Then complete Columns 3 and 4.

#### Column 3: Who Performed Scouting for Pests

Ask the respondent who did the majority of the scouting in the field for Item 4a (weeds), Item 4b (insects), Item 4c (diseases), and Item 4d (other). If two or more people did equal amounts and there is no clear-cut major "scouter", enter the lowest code of those scouting.

1. If the operator, a partner, or a family member did the most scouting, enter code "1".
2. If most was done by an employee (other than the operator, a partner, or a family member), enter code "2".
3. If most of the scouting was done by an employee of a farm supply or chemical company, enter code "3".
4. If a hired crop consultant or a commercial scouting service was used, enter code "4".

#### Column 4: Pest Pressure Level

IPM programs establish pest levels, called action thresholds, and recommend controls only if those thresholds are crossed.

Generally, the threshold is the point at which it would cost less to apply a chemical than would be lost due to the pest. These thresholds are pest and site specific, meaning that what may be acceptable at one site may not be acceptable at another.

Ask the respondent to rate the pest pressure in 2024 for Item 4a (weeds), Item 4b (insects), Item 4c (diseases), and Item 4d (other) based on the scouting data and compared to published information on the infestation threshold level for that pest.

The threshold codes are:

1. Low
2. Medium
3. High

### **Item 6: Scouting After Pesticide Application**

Ask if the respondent returned to the field to scout after applying a pest control product in order to evaluate the success of the application.

- Enter code “1” = “YES”, if follow-up scouting occurred, otherwise enter code = “3”.

### **Item 7: Records Kept to Track Pests**

Determine if some type of formal written, electronic, or map records were kept for this field on pest activities, counts, etc. If scouting was performed by someone outside of the farm operation (Items 5a, 5b, 5c, or 5d in Column 3 are coded “3” or “4”), some type of formal scouting records were most likely kept.

Only organized, formal records should be considered, not just notes jotted down on scraps of paper. It doesn't matter who kept the records—it can be the operator, an employee, scouting service or someone else.

- Enter code “1” = “YES” if records were kept on scouting, otherwise enter code = “3”.

An example of keeping formal pest records from a systematic scouting approach comes from the North Carolina Cooperative Extension Service.

Three steps are recommended to scout for weeds:

- 1) make at least 10 stops in each field;
- 2) at each stop, mark off approximately 30 feet of row (10 paces);
- 3) record the type and number of weeds found within a 1-foot band in the row.

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Then record the scouting results on a “weed threshold worksheet” like the one below. The information recorded on the worksheet is used with other information to determine whether an herbicide treatment is necessary.

### Example of information recorded in written scouting records.

Weed	Number Counted	Number of Stops	Number of Weeds per Stop

### Item 8: Used Field Mapping of Previous Pest Problems

Ask if this operation used field mapping of previous years' pest problems to assist in making pest management decisions on the selected field in 2024. The level of insect, weed and disease infestation is not always uniform throughout a field.

Previous years' mapping data can help an operator determine if it would be more cost efficient to treat portions of a field rather than the whole field. Operators may use a topographic map or other type map for this purpose. There are also software programs available for field mapping. By identifying trouble spots, the map can help in making future pest management decisions.

- If this practice was used, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 9: Diagnostic Laboratory Used for Pest Identification

Diagnostic laboratories can assist producers in identifying pests found in their field. For example, soil samples can be analyzed for the presence of soil borne pests, and plant tissues can be analyzed to identify diseases and pathogens. Determine if the operator had such a biological analysis performed by a diagnostic laboratory for the selected field in 2024.

- If this practice was used, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10: Activities specifically for managing or reducing the spread of pests.

Respond to Item 10 only if the practice(s) was done specifically for the purpose of pest management.

### Item 10a: Remove or Plow Down Crop Residues

By managing crop residue after a crop is harvested, a vital habitat for pests is removed. Methods of control include removing, plowing under, and/or burning crop residue.

- If the operator used this practice **to control pests**, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10b: Alter Crop Rotation to Control Pests

Find out if crops were rotated in the field during the past 3 years for the primary purpose of controlling pests. Pest control is only one of several reasons crops could have been rotated. Be sure to probe to ensure that the control of pests was the primary reason for rotating crops on this field.

- If the operator used this practice to control pests, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10c: Maintain Ground Covers

Determine if any ground covers, mulches, or physical barriers were maintained in or around the selected field to reduce pest problems.

- If the operator used this practice to control pests, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10d: No-Till or Reduced Till

Using no-till or reduced till is a practice used for weed control. The amount of weed seed germination is reduced when the soil is not disturbed. Be sure to probe to ensure that the control of pests was the primary reason for using no-till or reduced till on this field.

- If the operator used this practice to control pests, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10e: Adjust Row Spacing or Plant Density

Find out if row spacing (width) or plant density (number of seeds planted per acre) were adjusted in this field for the purpose of controlling pests.

- If the operator used this practice to control pests, enter code “1” for “YES”, otherwise enter code = “3”.

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### Item 10f: Chopping, Spraying, Mowing, Burning Edges of Fields

Eliminating habitat where pests can breed and grow is an important pest management strategy. Farmers often mow or otherwise maintain areas immediately adjacent to fields to minimize the habitat where insects live, or to reduce weeds spreading from edges into fields. Find out if practices such as mowing, spraying, burning, tilling, or chopping of field edges, lanes or roadways were used to slow or control the spreading of pests into the field.

- If the operator used this practice to control pests, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10g: Cleaning of Equipment

Cleaning of equipment used in a field prevents carrying pests (such as weeds and disease) from one field to another. Find out if the operator cleaned the harvesting and/or tillage equipment used in this field before moving to another field to reduce or prevent the spread of pests to or from the selected field.

- If the operator used this practice to control pests, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10h: Cultivation for Weed Control

Determine whether this field was cultivated for weed control during the 2024 growing season after the crop was planted.

- If the operator used this practice to control pests, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10i: Planting Location Practices

Another pest management practice is to determine where to plant a particular crop based on probability of pest activity. Crop location can have a negative or positive impact on pest populations. As an example, a field next to a wind break could create a pocket for insects or weeds. A wet shady area may harbor mold or a rot that could have a negative impact.

- If this practice was used, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 10j: Adjust Planting or Harvesting Dates

Find out if the planting or harvest date was adjusted on this field for the purpose of controlling pests.

- If this practice was used, enter code “1” for “YES”, otherwise enter code = “3”.

### Item 11: Weather data

Weather can be a factor in determining either the 'need for' or 'when to' apply a pest management practice. Monitoring weather data allows the timing of applications to be adjusted to increase effectiveness, to allow for a lower application rate, reduce drift, or decrease the number of applications needed.

For example, fungal diseases are more likely to occur during damp, cool conditions. A fungicide may not be needed when hot, dry conditions prevail. Wind speed is also an important factor in knowing when chemicals can be applied. If wind speeds are above a certain threshold, chemical drift can be a problem and application efficiency may be reduced.

- If this practice was used, enter code "1" for "YES", otherwise enter code = "3".

### Item 12: Pest Identification and Management Training

Ask if the operator has attended any training sessions on pest identification and management in the past 3 years. Training sessions could include online courses or the use of the web (internet) to identify pests and determine pest management methods, but pesticide applicator training should not be considered for this question.

- If "YES", enter code "1", otherwise enter code = "3".

### Item 13: Biological Pest Controls Used On Field

Ask if the operator used floral lures, attractants, repellants, pheromone traps, or other biological pest controls on this field.

If "YES", enter code "1", otherwise enter code = "3".

### Pest Management Completion Code Boxes (code 1700)

Blank = Data present for this section.  
3 = Data incomplete or refused

## Section H – Irrigation – Selected Field

### What is Section H for? How is the Information Used?

Questions in Section H are designed to identify characteristics of the irrigation system(s) used on the selected field for the 2024, 2023, and/or 2022 crop years. Information obtained in this section is combined with other information to estimate soil erosion and nutrient and pesticide losses from the selected field.

### Introduction

Most irrigation methods use either pressurized or gravity-flow systems. Pressurized systems include various sprinkler or low-flow drip/trickle systems. Gravity-flow systems include various flood or furrow irrigation systems and non-pressurized sub-irrigation systems.

How water is applied depends on the crop, the physical features of the land (slopes, hills, and gullies), the type of soil, the amount of water available, the applicability of specialized irrigation equipment, the source of water, and the cost. To conserve both water and money, farmers try to control the amount of water applied and the distribution of water across a field. When crops are over-watered, minerals and nutrients are washed from the soil and soil erodes. When water is not applied uniformly across a field, crop yield is reduced.

The respondent should have reported in Section C, Item 1, Line j whether a crop was irrigated during any of the crop years in question. There can be more than one type of irrigation system used on a crop field. Note: in some states, non-irrigated land may also be called "dryland".

### Item 1: Irrigation Systems

Include only the irrigation system(s) in use on the selected field for the 2024, 2023, or 2022 crop years.

**NOTE:** Don't list any system or irrigation technology that wasn't used on the selected field, even if it was used on other fields or other crops on the farm operation.

#### Item 1a: Type of System

You will record information for the primary and secondary systems used on the selected field for each crop year. If more than one system was used, record the system type code for the most-used system as the Primary System and the next most-used system as the Secondary System. In some cases, the irrigation system is switched midyear to accommodate crop growth stage and other factors. In these cases where the systems are equal in the eyes of the producer, list the system used first as the Primary system and the system used second as the Secondary System.

Refer the operator to the Irrigation System Types Codes in the Respondent Booklet and record the System Type Code for the irrigation system used to irrigate most of the acres of the selected field during the 2024, 2023, and/or 2022 growing years.

The Irrigation System Type Codes are:

### **Pressure Systems**

- Code 1** Hand-move
- Code 2** Solid or Permanent Set
- Code 3** Side Roll or Wheel Line
- Code 4** Center Pivot or Linear Move with impact sprinklers
- Code 5** Center Pivot or Linear Move low pressure spray nozzles below the tower and suspended above ground level
- Code 6** Center Pivot or Linear Move with spray or bubbler nozzles discharging on or near ground level.
- Code 7** Big Gun
- Code 8** Low-flow Irrigation (drip, trickle, or micro spray)
- Code 9** Other Pressure System -- Specify Type

### **Gravity Flow Systems**

- Code 10** Siphon-tube System from unlined ditches
- Code 11** Siphon-tube System from lined ditches
- Code 12** Portal System from unlined ditches
- Code 13** Portal System from lined ditches
- Code 14** Any PolyPipe System
- Code 15** Gated-Pipe (not polypipe)
- Code 16** Improved Gated Pipe (surge flow or cablegation, not polypipe)
  
- Code 17** Sub irrigation
- Code 18** Open Discharge from well, pump, border large scale turned structures, or large alfalfa valves
- Code 19** Other Gravity System -- Specify Type

Each of these irrigation systems is described in Exhibits 5.1 and 5.2 at the end of this section. The descriptions are designed to explain system characteristics and how the system applies the water to the field.

These systems are on-farm, field-level irrigation technologies and do not describe the water distribution systems of an irrigation district or company.

Exhibit 5.1 includes descriptions of end-tow sprinkler and carousel sprinkler-traveler systems. If either of these systems are used on the field, enter them as a side roll or wheel line system using a code "3".



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Also provided are descriptions of several big-gun systems, including self-propelled big-gun systems, reel-type hose pull, and reel-type cable pull systems that use large gun-type sprinklers. Each of these systems should be entered as a big-gun system using a code "7".

**Flood irrigation is a gravity-based irrigation system** where the water applied is allowed to flow across all or part of a field between levees, dikes, or borders. For water management and cost reasons, it is important to identify how the water is applied to the field. Therefore, the flood irrigation system type should be recorded depending on how the water is applied to the field.

For example, if the field was flood irrigated (the water applied is allowed to flow across the field between levees, dikes, or borders), and the water was applied to the field using a siphon tube or portal/ditch-gate system, then record the flood irrigation system type as either a 10, 11, 12 or 13. Record a code 10 if the field was flood irrigated by applying water from an unlined ditch using a siphon tube system, or a code 11 if the siphon tube system applied water from a lined ditch.

Record a code 12 if the field was flood irrigated by applying water from an unlined ditch using a portal/ditch-gate system, or a code 13 if the portal/ditch-gate system applied the water from a lined ditch. If water is applied to the fields through a single discharge from a well or pump and allowed to flood all or part of the field (between levees, dikes, or borders), code the irrigation system as 18.

- Enter the irrigation code for the appropriate year.

### Item 1a(i): Primary Irrigation System

- Enter the System Type code for the system most-used during irrigation as the primary system for 2024, 2023, and 2022.

### Item 1a(ii): Secondary Irrigation System

- Enter the System Type code for the next most-used system during irrigation as the secondary system for 2024, 2023, and 2022. If there is only one type of irrigation system being used, there is no need to code anything for secondary irrigation system.

In the case of simultaneously used irrigation systems, enter the larger "dominant" system or the system used for the greater part of the field as the primary system and the smaller or the system covering a lesser portion of the field as the secondary system.

Note that in crop rotation it can be common to have one system be the primary system one year, but be the secondary system the following year.

### Item 1b: Change in System

Ask the respondent if they made any major changes to the irrigation system to the selected field in 2024, 2023, or 2022. This includes a change in the type of irrigation system used,

the source of water, a major change in the timing of when the water was applied, a major change in how the system was monitored, or any other major changes that would affect the irrigation system.

Take good notes of any changes the respondent mentions regarding their irrigation system.

- If the respondent made any major changes to the way the selected field was irrigated during the years 2022 – 2024, enter code “1” for “YES”, otherwise enter code = “3”.
- If any system reported in Item 1a for any year is a gravity system (code 10-19), then continue. Otherwise go to Item 4.

## **Item 2: Gravity Irrigation Systems**

Ask Item 2 for each year that a gravity flow irrigation system (Irrigation System Type Codes 10-19) was indicated in Item 1. The options are:

- Code 1 Furrow** - Furrow irrigation is a surface irrigation system that applies water to the soil by allowing water to flow down slope, in evenly spaced channels or furrows. Furrow irrigation systems may be graded or level. Water infiltrates into the soil along the furrows.
- Code 2 Border** - Border irrigation is a system where the field is divided into strips of uniform width and grade by parallel dikes or border ridges. Each strip is irrigated separately. Water is introduced at one end and progressively covers the entire strip.
- Code 3 Basin** - Basin irrigation requires that the field be surrounded on all boundaries by a control buffer, such as a dike or levee, forming a basin that can be flooded to provide irrigation. Basin irrigation has been used for many years to irrigate orchards, alfalfa, small grains, and pastures.
- Code 4 Contour Levee** - Contour levee irrigation is similar to basin irrigation, except the water is retained by small dikes or levees within the field that are constructed generally on the contour. Rice is an example of using contour levee irrigation.
- Code 5 Meadow or Wild Flood** - Meadow or Wild Flood is a system of using seasonal runoff or high flow diverted into meadow or mountain pastures to fill the soil profile. Flows are generally diverted with minimum use of structures and may consist of contour ditches checked periodically to allow flow to overtop the ditch and flow down the slope in an uncontrolled or unregulated manner.

- Enter the correct item code for a gravity irrigation system water source and whether it was used as a primary or secondary system for 2024, 2023, 2022.

## **Item 3: Specific Irrigation Practices**

Ask the operator if they used a) mid-season drainage, b) winter flooding or c) alternate wetting and drying irrigation practices during the 2024, 2023, and/or 2022 crop years.

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- Enter a “1” for “YES” in the appropriate cell for each year any of these practices were done to allow for or encourage quicker water advance rates and manage soil profile moisture.

### Item 4: Irrigation Water Management Approaches

Ask the respondent if permanent flooding, pinpoint flooding, or delayed flooding was used as a water management strategy. Enter the appropriate code for each year irrigation was applied.

**Code 1 Permanent Flooding** – Permanent flood system is when a field is flooded for the duration of the growing season. Water is held in the field prior to planting all the way physiological maturity, at which point the field is drained for harvest. If a permanent flood system was used, enter 1.

**Code 2 Pinpoint Flooding** - Pinpoint flood system is when a field, or paddy, is flooded prior to seeding. The flood is maintained for 24 hours following seeding, drained, and re-flooded within a couple of days and held for the remainder of the season. If pinpoint flooding is the only method used, report code 2. If pinpoint flooding is used in combination with another method, report the other method.

**Code 3 Delayed Flooding** - Delayed flood system is when rice seed is grain-drilled or broadcast onto a dry seed bed. Then the field is flush irrigated, and the water is not allowed to remain on the field for more than three days. After 3-5 weeks, the field is flood irrigated through physiological maturity when the field is drained for harvest. If a delayed flood system was used, enter code 3.

**Code 4 None of the above** If none of these systems accurately captures the management approach, indicate by answering code 4 for "none of the above."

### Item 5: Field Runoff

Refer the operator to the list of field runoff options in the Respondent Booklet on page 38 and record the code that the operator indicates best describes what happens to the **majority** of the runoff from irrigation for the selected field by crop year. Field runoff is the portion of the irrigation water applied to the field that does not soak into the soil where the crop is growing. This 'extra' water flows across a field and either collects to form a pool at the end of the field, or it flows off the field. The pool of extra water is not large enough or doesn't last long enough to prevent normal farming operations for the field.

This question is a multiple-choice question. Be sure to read ALL of the items in the Runoff Code List before accepting an answer from the respondent. The respondent may want to answer before hearing all the possible answers, and one of the later codes may be the best answer. Do not ask “Was there any runoff from this field?” or “What happens to the runoff from this field?”. These questions are not correct. Many operators may initially say there

is no runoff. The respondent may not consider other acceptable answers if you don't read ALL of them before accepting an answer.

The codes describing field runoff are:

**Code 1 Retained at the End of the Field with No Reuse:** This is when the pool of extra water is held at the end of the field because the field is bordered or there is a natural basin at the end of the field. The runoff is not reused for irrigation.

**Code 2 Retained at the End of the Field and Reused to Irrigate on the Farm:** Extra irrigation water from the field collects in an on-farm lake, pond, or pit below the field, and is reused to irrigate the same field or another field on the farm.

**Code 3 Collected in Evaporation Ponds on the Farm:** The extra irrigation water collects in an on-farm pond or pit below the field and is not re-used for irrigation. Instead, it remains in the pond or pit until it evaporates. Evaporation ponds are sometimes used for disposal of poor-quality drainage flows.

**Code 4 Drains from the Farm:** Runoff drains off and away from the field through man-made drainage ditches or natural water courses. Runoff drained from a field may be recovered on farm or drain off farm where it may be used by another farm or reenter the water supply downstream as return flow.

**Code 5 No Runoff:** Irrigation water is applied to the field so that no extra water collects at the end of the field or drains from the field. It is very rare that an operator of a gravity system can apply water with a gravity system to the precision that there is no runoff.

- Enter the corresponding runoff code.

### **Item 6: Total Amount of Water Applied**

If the operator knows the amount of water that was applied to the crops in the field, then ask the operator if they know the total amount of water applied to the field.

- Report totals in inches/acre.

### **Item 7: Limit on Water Availability**

Ask the operator if there is a limit on water availability or supply for the field.

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- Enter the amount per acre in inches.

### Item 8: Irrigation Water Supply Tested for Nitrogen or Salinity?

Salinity can be defined as the concentration of dissolved salts present in the irrigation water supply.

Enter a "1" for "YES" if the irrigation water supply had been tested for either nitrogen content or salinity. Enter a "3" for "NO" if the irrigation water supply had not been tested for either nitrogen content or salinity.

- If "YES", continue to 8a; If "No" go to ENUMERATOR ACTION NOTE in the questionnaire.

#### Item 8a: Surface Water

Enter the salinity test value and the Nitrate-Nitrogen ( $\text{NO}_3\text{-N}$ ) test value for surface water that has been tested.

##### Salinity Units

- 1= Parts/Million (ppm)
- 2= Milligrams/Liters (mg/L)
- 3= Microseimens/cm

##### Nitrate-Nitrogen ( $\text{NO}_3\text{-N}$ ) Units

- 1= Parts/ Million (ppm)
- 2= Milligrams/Liters (mg/L)

#### Item 8b: Groundwater

Enter the salinity test value and the Nitrate-Nitrogen ( $\text{NO}_3\text{-N}$ ) test value for groundwater that has been tested.

##### Salinity Units

- 1= Parts/Million (ppm)
- 2= Milligrams/Liters (mg/L)
- 3= Microseimens/cm

##### Nitrate-Nitrogen ( $\text{NO}_3\text{-N}$ ) Units

- 1= Parts/ Million (ppm)
- 2= Milligrams/Liters (mg/L)

- If any system reported in Item 1a for any year is a pressure system (code 1-9), then continue. Otherwise go to Item 10.

### **Item 9: Improve Uniformity of Water Application**

Ask the producer if they took steps to evaluate or improve the uniformity of water applications of their pressure system. Note the specific steps taken.

- Enter a “1” for “YES” if the producer took steps to evaluate or improve uniformity of water applications. Enter a “3” for “NO” if the producer did not take steps to evaluate or improve uniformity of water applications.

### **Item 10: Sources of Irrigation Water**

Ask the producer which of the following are sources of their irrigation water: a) well, b) irrigation district, c) river or stream, or d) other.

- Enter a “1” for “YES” for each source of irrigation water that the producer gets their irrigation water from. Select all that apply.
- Enter a “3” for “NO” for the sources of irrigation water not received by the producer. If the producer indicates they receive irrigation water from an irrigation district (10b = “YES”), then continue. Otherwise go to Item 12.

#### **Item 10a: Well**

Well water is an excavation or structure created in the ground by digging, driving, boring, or drilling to access water in undergrounds aquifers. The well water is drawn by a pump, which is then used as irrigation.

- Enter a “1” for “YES” if a well is used for irrigation water or enter a “3” for “NO”.

#### **Item 10b: Irrigation District**

An irrigation district is a cooperative, self-governing public corporation set up as a subdivision of the State government, with definite geographic boundaries, organized, and having taxing power to obtain and distribute water for irrigation of lands within the district.

- Enter a “1” for “YES” if irrigation water is received through an irrigation district. Enter a “3” for “NO”.

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### Item 10c: River or Stream

- Enter a “1” for “YES” if a river or stream was used as a source for irrigation water. Enter a “3” for “NO”.

### Item 10d: Other

- Enter a “1” for “YES” if any other method was used as a source of irrigation water. Enter a “3” for “NO”.
- Write in the space provided if there was another method used for irrigation.
- If the producer says he used the runoff from another field to irrigate the target field, indicate the source of irrigation water as “Other” and specify that the irrigation water for the field is runoff water from another field.

### Item 11: How is Water from the Irrigation District Received?

If the respondent answered Item 10b = “1” or “YES”, then Item 11 must be answered as well, else skip to Item 12.

- Enter a “1” for “YES” for the best scenario that describes how the respondent receives water from the irrigation district. Only select one. Enter a “3” for “NO” for any that are not the best scenario.

#### Item 11a: When It is My Turn

- Enter a “1” for “YES” if the respondent receives water from the irrigation district when it's their turn or enter a “3” for “NO” if this is not the best description.

#### Item 11b: Calling One or More Days Ahead

- Enter a “1” for “YES” if the respondent receives water from the irrigation district by calling one or more days ahead of when they want to irrigate or enter a “3” for “NO” if this is not the best description.

#### Item 11c: Anytime

- Enter a “1” for “YES” if the respondent receives water from the irrigation district anytime they want it or enter a “3” for “NO” if this is not the best description.

### Item 12: Water Source Limitation of Irrigation Methods

Ask the operator if the source of their water limits the selection of irrigation methods (i.e.- conversion to a pressurized system).

- Enter a “1” for “YES” if the source of water limits the selection of irrigation methods or enter a “3” for “NO”.

### Item 13: When to Irrigate?

Operators use various reasons to decide when it is time to irrigate their crops.

- Enter a “1” for “YES” for each reason to irrigate that the operator uses. (Select all that apply). Enter a “3” for “NO” for the reasons that are not used to determine when to irrigate.

#### Item 13a: When Plants are Dry/Stressed:

- Enter a “1” for “YES” if the operator decides to irrigate when plants are dry or stressed or enter a “3” for “NO”.

#### Item 13b: Calendar

- Enter a “1” for “YES” if the operator decides to irrigate when indicated by the calendar or schedule of field operations or enter a “3” for “NO”.

#### Item 13c: When Water Available

- Enter a “1” for “YES” if the operator decides to irrigate when water is available or enter a “3” for “NO”.

#### Item 13d: Soil Appearance or General Climate Observations

- Enter a “1” for “YES” if the operator decides to irrigate based on the soil appearance or feel, or general climate observations, or enter a “3” for “NO”.

#### Item 13e: Target “Dryness”

- Enter a “1” for “YES” if the operator decides to irrigate when target “dryness” value from soil moisture monitoring devices are reached or enter a “3” for “NO”.



### Item 13f: Target Water Use

- Enter a “1” for “YES” if the operator decides to irrigate based on current weather data and when a “target” water use value from the root zone water budget is reached, or enter a “3” for “NO”.

### Item 13g: Target Measured Plant Stress Level

- Enter a “1” for “YES” if irrigation timing is tied to target measured plant stress levels (pressure bombs, canopy temperatures, etc.), or enter a “3” for “NO”.

### Item 14: How Long to Irrigate?

Operators use various reasons to decide how long to irrigate their crops.

- Enter a “1” for “YES” for each decision of how long to irrigate. (Select all that apply)  
Enter a “3” for “NO” for those that do not apply.

### Item 14a: When the Right Amount of Time Passed

- Enter a “1” for “YES” if the operator observes when the right amount of time has passed, the furrows or borders appear to be adequately wet, or the water has reached the end of the field. Enter a “3” for “NO”.

### Item 14b: Past Experience/ Schedule

- Enter a “1” for “YES” if the irrigation system run times are based on past experience and schedule of required field operations or enter a “3” for “NO”.

### Item 14c: Target Number of Inches/ Gallons

- Enter a “1” for “YES” the irrigation system moves automatically, is manually moved, or the system is turned off when the target number of inches or gallons is applied, or enter a “3” for “NO”.

### Item 14d: Field Collection Data

Enter a “1” for “YES” if field collection data such as observation well or soil moisture probe data is used to decide how long to apply water, or enter a “3” for “NO”.

### Item 15: Determining Amount of Water Applied

Operators use various factors to determine how much water has been applied to their crops.

- Enter a “1” for “YES” for each method used to determine of how much water has been applied to the crop. (Select all that apply) Enter a “3” for “NO”.

#### Item 15a: Irrigation District Record

- Enter a “1” for “YES” if Irrigation district records, reports or bills are used to determine how much water has been applied or enter a “3” for “NO”.

#### Item 15b: Flow Measuring Device

- Enter a “1” for “YES” if a flow measuring device is used to determine how much water has been applied or enter a “3” for “NO”.

#### Item 15c: Flows to the Field

- Enter a “1” for “YES” if measurement of the flow to the field was used to determine how much water has been applied or enter a “3” for “NO”.

#### Item 15d: Flows at Water Supply

- Enter a “1” for “YES” if measurement of the flow at the water supply was used to determine how much water has been applied or enter a “3” for “NO”.

#### Item 15e: Runtime Plus a Known System Application Rate

- Enter a “1” for “YES” if runtime plus a known system application rate was used to determine how much water has been applied or enter a “3” for “NO”.

#### Item 15f: Pump Test Flow Rate

- Enter a “1” for “YES” if a pump test flow rate and runtime was used to determine how much water has been applied or enter a “3” for “NO”.

### Item 16: How much Water Crops Removed from Soil?

Enter a “1” for “YES” if the operator knows how much water the crops removed from the soil. Note the method the farmer uses to determine water removal in Item 17 below.

- If the operator does not know how much water the crops removed from the soil, enter a “3” for “NO”, then go to Item 18.

### **Item 17: Factors used in Determining Crop Water Removal from Soil**

Operators use various factors to determine how much water crops remove from the soil.

- Enter a “1” for “YES” for each method used to determine how much water crops removed from the soil. (Select all that apply) Enter a “3” for “NO”.

#### **Item 17a: Real-Time Climate-Based Measurements**

The California Irrigation Management Information System (CIMIS) is a program in the Office of Water Use Efficiency (OWUE), California Department of Water Resources (DWR) that manages a network of over 120 automated weather stations in the state of California.

The primary purpose of CIMIS is to make available to the public, free of charge, information useful in estimating crop water use for irrigation scheduling.

- Enter a “1” for “YES” if current (real-time) climate-based measurements such as CIMIS or other climate data were used to determine how much water the crops removed from the soil or enter a “3” for “NO”.

#### **Item 17b: Historic ET Data**

- Enter a “1” for “YES” if historic ET data through CIMIS, Cooperative Extension publications, etc. were used to determine how much water crops removed from the soil or enter a “3” for “NO”.

#### **Item 17c: Tracking Root Zone Soil Moisture**

- Enter a “1” for “YES” if tracking root zone soil moisture changes with electronic probes or other devices was a method used to determine how much water crops removed from the soil or enter a “3” for “NO”.

### **Item 18: Additional Reasons for Irrigation**

- Enter a “1” for “YES” for each additional reason that was used as a reason for irrigation of crops or enter a “3” for “NO” (Select all that apply).

#### **Item 18a: Refill Root Zone**

- Enter a “1” for “YES” if a reason for irrigating was for pre-plant irrigation to refill the root zone or enter a “3” for “NO”.

### Item 18b: Moisture for Seed Germination and Emergence

- Enter a “1” for “YES” if a reason for irrigating was to apply moisture for seed germination and emergence or enter a “3” for “NO”.

### Item 18c: Freeze Protection

- Enter a “1” for “YES” if a reason for irrigating was for freeze protection or crop cooling or enter a “3” for “NO”.

### Item 18d: Applying Fertilizer or Other Chemicals

- Enter a “1” for “YES” if a reason for irrigating was for applying fertilizer or other chemicals or enter a “3” for “NO”.

### Item 18e: Ground Water Recharge

- Enter a “1” for “YES” if a reason for irrigating was for ground water recharge, or enter a “3” for “NO”.

## Item 19: Other Practices Used to Improve Water Applications

Ask the operator if any other practices were used to improve water applications.

Use the list provided in the Respondent Booklet on page 38.

If a practice used to improve water applications is not listed in the Respondent Booklet, write in a response below the box and the Regional Field Office will contact HQ for further instruction on coding.

- If the operator used other practices to improve water applications, ask them to select up to three primary practices and record those codes in the boxes.

## Item 20: Grazing During or After Irrigation

Ask the operator if they defer grazing animals from the field until the soil is no longer saturated (either during or after irrigation).

- If “YES”, enter a “1” in the appropriate cell, or enter a “3” for NO.

**Item 21: Managing Irrigation to Address Salinity Problems**

Ask the operator if they manage irrigation to address salinity problems in the selected field.

- Enter a “1” for “YES” if the respondent manages irrigation to address salinity problems in the field, or enter a “3” for NO.

**Irrigation Completion Code Boxes  
(codes 1504, 1503, 1502)**

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with “3” if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

**Exhibit 5.1: Types of PRESSURE Irrigation Systems**

<p><b>Hand-move Sprinkler System</b> (Code 1)</p>	<p>Portable pipe system, usually aluminum pipe, which must be moved by hand one or more times per day during irrigation periods. Irrigation requirements of the field are met by successive moves of the system to water one strip of the field at a time (an irrigation set). The system’s sprinklers can use a variety of orifice sizes and configurations. The system may be adapted to most soil types, topography, field size and shapes; however, it is not suited for all crops since tall crops, such as corn, hinder pipe movement.</p>
<p><b>Solid-set or Permanent Sprinkler Systems</b> (Code 2)</p>	<p>A buried pipe system with only the risers and sprinklers above ground, or a portable pipe system which is placed in the field at the start of the irrigation season and left in place to the season end. Both of these system types require no labor to move the system to a new location once established for the irrigation season. Adapted to most crops, soil types, topography, field sizes and shapes.</p>

<p><b>Side-roll or Wheel-line Sprinkler Systems</b> <i>(Code 3)</i></p>	<p>A wheel-move, lateral-line system which moves as a unit in fixed increments (irrigation sets) across the field. The system is powered by a small gasoline engine that is manually operated. The system is stationary while irrigation is taking place. Some variations of the system may have tow lines trailing the main lateral line with additional sprinklers on each tow line. Tow line systems irrigate a wider strip at each set, up to 180 feet compared to the 60-foot strip of standard side-roll systems.</p> <p>Wheels are generally spaced 40 feet apart and are 5-7 feet in diameter, with the main system pipe serving as an axle in the middle of the wheel. The system is designed for reasonably flat, rectangular, or square fields and is suited to crops less than 4 feet in height. The sprinkler may use flexible hose, aluminum pipe, or PVC pipe to connect to mainlines (above or below ground) or on-site pressurization pumps.</p>
<p><b>End-tow Sprinkler System</b> <i>INCLUDE as a side-roll system</i> <i>(Code 3)</i></p>	<p>Wheel or skid, lateral-line system which is end-towed via tractor to new locations in the field. The system is stationary while irrigation is taking place. The system is designed for reasonably flat or slightly rolling, rectangular or square fields with an alley through the center of the field. Designed for hay and pasture irrigation, the system may be used on some row crops and orchards.</p>
<p><b>Carousel Sprinkler-traveler System</b> <i>INCLUDE as a side-roll system</i> <i>(Code 3).</i></p>	<p>Wheel-mounted system with a rotating boom that sprinkles or sprays water. The system may be self-propelled with a mounted engine or towed via pick-up or tractor to the next field location (irrigation set). Water is supplied to the system by hose or supply ditch.</p>

<p><b>Center Pivot or Linear Move with Impact Sprinklers</b> (Code 4)</p>	<p>Self-propelled, continuous-move sprinkler system that either travels in a circle (center pivot) or laterally (linear move) across a field. Sprinklers are located <b>directly on</b> the system's main water-supply pipe, which is supported by A-frame towers. Some circle systems have features that provide coverage of most of the corners on a square field. Some systems may be towed to adjacent fields to increase system use by irrigating a different crop with different timing of water needs. Water is delivered to a fixed center point for center-pivot systems and by hose or supply ditch for lateral move systems.</p> <p>Center-pivot systems have been developed for areas from 40 to 240 acres, but most systems irrigate 128 to 132 acres of a square 160-acre field. Lateral moves require a square or rectangular field of 40 to 240 acres. These systems may be adapted to most crops, soil types, and level to gently rolling topography. Systems with sprinklers <b>directly</b> on the main water-supply line will tend to be <b>medium to higher pressure</b> (above 30 psi) and use impact sprinklers.</p>
<p><b>Center Pivot or Linear Move, with low pressure spray nozzles below the Tower and suspended above Ground Level</b> (Code 5)</p>	<p>Self-propelled, continuous-move sprinkler system that either travels in a circle (center pivot) or laterally (linear move) across a field. Sprinklers or sprayers are located on drop-tubes or booms suspended <b>below</b> the system's main water-supply pipe, but <b>more than 2 feet above the ground</b>. This includes most standard drop-tube sprinkler systems.</p> <p>Some circle systems have features that provide coverage of most of the corners on a square field. Some systems may be towed to adjacent fields to increase system use by irrigating a different crop with different timing of water needs. Water is delivered to a fixed center point for center-pivot systems and by hose or supply ditch for lateral move systems. Center-pivot systems have been developed for areas from 40 to 240 acres, but most systems irrigate 128 to 132 acres of a square 160-acre field.</p> <p>Lateral moves require a square or rectangular field of 40 to 240 acres. These systems may be adapted to most crops, soil types, and level to gently rolling topography. Systems with sprinklers <b>below</b> the main water-supply line will tend to be <b>lower pressure</b> (below 30 psi), with spray nozzles rather than impact sprinklers.</p>

<p><b>Center Pivot or Linear Move, with Spray or Bubbler Nozzles discharging on or near Ground Level</b> (Code 6)</p>	<p>Self-propelled, continuous-move sprinkler system that either travels in a circle (center pivot) or laterally (linear move) across a field. Sprinklers or sprayers are located on drop-tubes suspended <b>below</b> the system's main water-supply pipe and are located less than 2 feet above the ground. This includes low pressure precision application systems (LEPA) and other below-the-crop-canopy systems. Some circle systems have features that provide coverage of most of the corners on a square field. Some systems may be towed to adjacent fields to increase system use by irrigating a different crop with different timing of water needs. Water is delivered to a fixed center point for center-pivot systems and by hose or supply ditch for lateral move. Center-pivot systems have been developed for areas from 40 to 240 acres, but most systems irrigate 128 to 132 acres of a square 160-acre field. Lateral moves require a square or rectangular field of 40 to 240 acres. These systems may be adapted to most crops, soil types, and level to gently rolling topography. Systems with sprinklers <b>suspended to within 2 feet of the ground</b> tend to be <b>very low pressure</b> (below 15 psi) and use spray nozzles and bubblers. Some units may run water directly on the ground using a cloth-like extension attached to the drop tube.</p>
<p><b>Big Gun</b> (Code 7)</p>	<p>A single, large gun-type sprinkler mounted on a trailer, carriage, or skid. Water is supplied to the sprinkler through a flexible hose. The mounted gun sprinkler is either pulled across a field or moved across a field using a self-propelled drive system for each irrigation set. An irrigation set is the area of the field that is irrigated by the gun sprinkler as it moves across the field. When an irrigation set is completed, the entire system is moved, and the process repeated. The system is designed for straight rows, flat topography, and medium to high infiltration soils. It is best suited for crops that can withstand heavy bursts of water. Systems are high pressure, greater than 60 psi. Three specialty-type big-gun systems are defined below, including a self-propelled gun traveler system, a reel-type hose pull system, and a reel-type cable pull system.</p>
<p><b>Self-propelled Gun Traveler</b> <i>INCLUDE as a big gun system</i> (Code 7).</p>	<p>Single, large gun on a four-wheel trailer. Self-propelled by a separate engine or a hydraulic continuous move. Water is supplied through a flexible hose. Systems are high pressure, greater than 60 psi.</p>



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<p><b>Reel-type Hose Pull</b> <i>INCLUDE as a big gun system (Code 7).</i></p>	<p>Single, large gun-type sprinkler on a carriage. A flexible, but non-collapsible hose is attached to a large reel at one end of the field. The carriage and sprinkler is attached to the unrolled hose and stationed at the other end of the field. Water movement through the hose activates a drive system that rolls the hose on the reel, drawing the sprinkler and carriage across the field. When an irrigation set is completed, the reel, sprinkler, and carriage may be moved, and the process repeated. Systems are high pressure, greater than 60 psi.</p>
<p><b>Reel-type Cable Pull</b> <i>INCLUDE as a big gun system (Code 7).</i></p>	<p>Similar to hose-pull system, except a cable is used to reel the gun-type sprinkler and carriage across the field. This enables a flexible, collapsible hose to be pulled behind the carriage. When an irrigation set is completed, the cable, reel, hose, sprinkler, and carriage may be moved, and the process repeated. The system often requires a grass strip to operate on since the hose is pulled behind the unit. Systems are high pressure, greater than 60 psi.</p>
<p><b>Low-flow Irrigation System</b> (Drip, Trickle, Micro spray) <i>(Code 8)</i></p>	<p>Low-pressure systems designed for frequent water applications using small-diameter tubing and low-volume emitters to distribute water directly to the crop root zone. Tubing and emitters can be installed below ground, under plastic or mulch, or above ground, and alternatively, tubing may be installed below ground with emitters on risers above ground. While used primarily on trees, vines, and vegetable crops, these systems are only in limited use on field crops due to the high initial capital costs. Drip and trickle systems have been adapted to all crop types; micro-sprinklers are generally used on perennial crops where a larger wetted area is needed to encourage root development. These systems are adaptable to most soils and may be used on topography where slope prevents irrigation from other system types.</p>
<p><b>Other specify,</b> <i>(Code 9)</i></p>	<p>List any other pressure system used as code 9.</p>

**Exhibit 5.2: Types of GRAVITY-FLOW Irrigation Delivery Systems**

<p><b>Siphon-tube System with Unlined Ditches</b> (Code 10)</p>	<p>System uses short, curved tubes, usually aluminum or plastic, to siphon water onto a field from an <b>unlined</b> ditch across the head of the field. Siphon tubes are curved to fit over the ditch bank and most range from 1 to 3 inches in diameter and from 3 to 5 feet in length. Water, once on the field, may flow down furrows, between borders or dikes, or in corrugations. The unlined ditch is formed with mechanical operations using only the soil on the field. The ditch may be reformed each year or reused with maintenance.</p>
<p><b>Siphon-tube System with Lined Ditches</b> (Code 11)</p>	<p>System uses short, curved tubes, usually aluminum or plastic, to siphon water onto a field from a <b>lined</b> ditch across the head of the field. Siphon tubes are curved to fit over the ditch bank and most range from 1 to 3 inches in diameter and from 3 to 5 feet in length. Water, once on the field, may flow down furrows, between borders or dikes, or in corrugations. The ditch may be lined with concrete, plastic, clay, or other nonporous material. The ditch is permanent and is reused each year.</p>
<p><b>Portal- or Ditch-gate System with Unlined Ditches</b> (Code 12)</p>	<p>System uses openings in the ditch bank, either portals with covers or tubular openings closed with a gate, to discharge water onto a field from an <b>unlined</b> ditch across the head of the field. Portals in the ditch bank can be of any diameter and are covered with a metal, plastic, or wood cover to regulate water flow onto the field. Ditch openings can be any size, including openings for the entire flow of the ditch, and water-flow control gates can be made of wood, metal, plastic, or canvas. Water, once on the field, may flow down furrows, between borders or dikes, or in corrugations. The unlined ditch is formed with mechanical operations using only the soil on the field. The ditch may be reformed each year or reused with maintenance.</p>
<p><b>Portal- or Ditch gate System with Lined Ditches</b> (Code 13)</p>	<p>System uses openings in the ditch bank, either portals with covers or tubular openings closed with a gate, to discharge water onto a field from a <b>lined</b> ditch across the head of the field. Portals in the ditch bank can be of any diameter and covered with a metal, plastic, or wood cover to regulate water flow onto the field. Ditch openings can be any size, including openings for the entire flow of the ditch, and water-flow control gates can be made of wood, metal, plastic, or canvas.</p> <p>Water, once on the field, may flow down furrows, between borders or dikes, or in corrugations. The ditch may be lined with concrete, plastic, clay, or other nonporous material. The ditch is permanent and is reused each year.</p>

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<p><b>Poly Pipe System</b> (Code 14)</p>	<p>A system using a flexible, collapsible, plastic (polyethylene) tube up to 18 inches in diameter. The poly-tubing is unrolled along the head of the field and holes punched or closeable gates installed to match furrow, border, or dike width. A well or supply canal provides water to the tube. The tube is installed at the beginning of the irrigation season, and since it lays flat when not in use, can remain in the field the entire season. The tubing may be reused for more than one year, but single season use is most common.</p>
<p><b>Gated Pipe (Not Poly)</b> (Code 15)</p>	<p>A system using rigid PVC plastic or aluminum pipe with manually operated closeable gates at regular intervals. The pipe is installed at the head of the field but may need to be removed for cultural operations or moved to new field locations through the season. The gates usually match row widths so water can flow directly into rows. Gated-pipe systems may also be used on flood or corrugation water-control systems. The pipe is reused for many years.</p>
<p><b>Improved Gated Pipe System (Surge) Flow or Cabledation, Not Poly</b> (Code 16)</p>	<p>A system using rigid PVC plastic or aluminum pipe with manually operated closeable gates at regular intervals, but with an <b>automated water-control system</b>. Automated water control is achieved by (1) using a surge valve to alternate pipe sets receiving water, (2) using a moveable plug inside the gated pipe, controlled by a cable, to adjust the water flow from open gates, or (3) other automated methods using gated pipe to control water flow and improve the uniformity of water applications, such as pneumatically controlled bladders to regulate water flow on individual gates. Gated pipe is installed across the head of the field but may need to be removed for cultural operations or moved to new field locations through the season. The gates usually match row widths so water can flow directly into rows. Improved gated pipe is very unlikely to be used for flood irrigation. It would defeat the purpose of the improved system. The pipe is reused for many years</p>
<p><b>Sub-irrigation</b> (Code 17)</p>	<p>Maintenance of a water table at a predetermined depth below the field surface by using ditches or sub-surface drains and water-control structures. Water is added or removed as needed to maintain the water level of the water table at a specific depth using the ditches or drains. Lateral movement of water through the soil provides water to the crop root zone. Conditions for use of this system are limited. Land must be flat and suitable for rapid lateral water movement. The irrigation system may also be used as a drainage system.</p>

<p><b>Open discharge from well, pump, large scale turnout structures or large alfalfa valves.</b> <i>(Code 18)</i></p>	<p>Open discharge from well or pump occurs where there is only one point of discharge into the field. This system is often used in conjunction with levees or dikes to maintain an even water depth throughout the field. The water remains on the soil until irrigation needs are met, at which time the water is either drained from the field or allowed to infiltrate the soil. Land forming is often required with this system.</p>	
<p><b>Other specify,</b> <i>(Code 19)</i></p>	<p>List any other gravity system as code 19.</p>	

## Section I - Field Operations – Selected Field

### What is Section I for? How is the Information Used?

Information collected in the Field Operations section is used to identify tillage systems, timing of grazing events, and crop residue levels. Factors that are important in estimating soil erosion, as well as nutrient and pesticide losses, include the amount of disturbance to the soil during planting and tillage operations as well as the amount of ground cover present during the year.

This section will obtain the information needed to address these factors. This allows examination of the impact of the conservation compliance provisions of the most recent Farm Bill on tillage systems, cropping practices, and crop residue levels.

### Field Operations Table

**The questionnaire includes year-specific tables for each of the crop years included in the survey. The year is preprinted in column 1. If additional lines are necessary to complete the field operations for any given crop year, use the year-specific table provided in the supplement. DO NOT put 2 different crop years on one table.**

Use the checklist at the top of the field operations table to ensure the proper operations are recorded.

Obtain all equipment operations for the 2024, 2023, and 2022 crop years for the selected field. Start after the harvest of the previous crop year and continue **through harvest of the crop planted** (note that “harvest” can include grazing activities on stubble after the actual crop has been harvested).

For permanent hay, start with the first operation conducted in the field, and continue through the last operation performed in that calendar year.

See grazing examples in this section under Column 5: Operation or Equipment Used. Custom operations are included.

**Exclude** equipment used to apply lime or gypsum. **Exclude pesticide, manure and fertilizer applications.** These applications should have been included in previous sections. Exclude hauling of the harvested crop from the sampled field. Exclude work done outside the selected field, for example, in field borders.

## Where to Start?

Most operators find it easiest to report the 2024 crop year field operations first and work their way backwards to the 2022 crop year.

Introduce the topic to the respondent by reading the introductory statement and instructions (“Begin with the first field operation after harvest of the previous crop year,” etc...).

After making sure the respondent understands which operations to report, begin by asking the respondent what happened after the previous crop was harvested from this field. In most cases, this will be the first tillage operation after harvest of the previous crop from this field.

Review the checklist as data are being reported and after completing the Field Operations Table. This will ensure whole categories of field operations are not omitted.

Record the field operations in the order that they were performed by crop year. Each crop year should begin with sequence number “1”.

## Using the Field Operations Supplement

The Field Operations Supplement includes year-specific pages for the survey and should only be used if additional lines are needed to capture all field operations. Copy the identification as it appears on the questionnaire to the identification box on the supplement.

It is imperative that field operations are recorded on the corresponding year-specific table. Do not use more than one supplement per year.

### Item 1: Field Operations

Record field operations performed by equipment in the order they occurred each crop year. Record field operations related to hand work, machine work and livestock grazing.

- If a crop was grown, begin with the first operation after the previous crop year commodity was harvested.
- If the crop is planted in the fall and harvested in the spring, the Crop Year = year that the crop is harvested. Record the crop on the Operations Table of the year that the crop is harvested.

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- If a cover crop was grown, begin with the first operation after the previous year's crop was harvested. Often, cover crops are planted in the fall and terminated in the spring. Record the cover crop on the Operations Table of the year that it is removed or terminated. Include all operations required to produce the cover crop including planting, maintaining, and removing/terminating the cover crop.

Occasionally, cover crops are planted into the previous crop before that crop is harvested. In this case, record the planting date of the cover crop in the crop year in which it is terminated.

- For example, if the cover crop is planted in August 2023 before the 2023 corn crop is harvested, but the cover crop is terminated April 25, 2024, it is part of the 2024 crop year and should be reported with the 2024 operations. Make a note that states the cover crop was planted before the previous year's crop was harvested.
- If a crop was planted but abandoned, and then another crop was planted in the same crop year, record all field activities for both crops during the crop year.
- If livestock are present on the field at any time during the year, be certain to capture the dates when the livestock are turned in on the field (Start Graze) and when the livestock are removed from the field (Stop Graze). These dates should be captured in separate rows.
- If livestock are rotated on and off of the field multiple times, include each time they are turned in and removed from the field as separate operations.

Start by asking what happened after harvest of the preceding crop year and then keep going in the order that the operations were performed.

**The sequence of operations and implements must be numbered accurately because it is very important for determining residue levels.**

Each crop year should begin with a sequence number of "1". For example, in crop year 2024, the sequence numbers for field operations for our selected field had 1, 2, 3, 4, and 5 operations.

For the 2023 crop year, our numbering would begin again with a "1" being the first operation followed by the remaining sequence numbers, until we begin the 2022 crop year which again would begin with a sequence number of "1".

Try not to leave blank lines between operations because of the limited space in the table.

**NOTE:** Include field operations done by neighbors, friends, etc. on a "swap" basis or operations that were done by a custom operator (an operator that performs the cropping operation (plowing, harvesting, etc.) for a fee, usually on a per acre basis). After recording operations through planting, continue to list the operations through harvest from this field. Record operations in the order they occurred AND maintain the order of tandem hook-ups.

Enter the SEQUENCE NUMBER of each operation in the order it occurred.

List all implements used on this field ***beginning with the first trip over the field after harvest of the preceding crop and continuing through harvesting from the field.***

**Include:**

- plowing,
- corrugation,
- land preparation,
- planting,
- harvesting operations,
- hauling within field boundaries,
- custom operations,
- residue management,
- grazing management (start/stop grazing events)
- hand planting, cultivation, harvest.

**Exclude:**

- applications of lime and gypsum,
- fertilizer, manure, and pesticide applications, and
- hauling operations from field edge to storage,
- machines or equipment used at the edge of the field (bulldozers, trucks, etc.).

In sequential order, record all operations performed by tillage, land forming, and harvesting. If any of the cropped acres in the selected field were abandoned, all field work done on these acres should still be included.

**Include** the activity of plowing these acres under.

If the operator **re-seeded acres** to another crop, include all operations for the crop year.

**Exclude** hauling from field edge to barns, grain bins, dryers or cleaners, and any other location from this field.

It may help to review the checklist to ensure that no field operations were missed.

**Nurse Crops.** If a pesticide is applied to a field to treat a condition of the nurse crop, in Section C you report that application under the nurse crop code on only one line.



However, the field operation for each commodity reported in the Cropping History table must be reported in the Field Operations table.

**Lines in Table Code Boxes  
(codes 499)**

For the Field Operations tables, for any year the operator has field operations entries, the number of table lines must be entered in the respective table code box.

**Completing the Field Operations Table**

**Column 1: Crop Year**

This column is preprinted with each of the crop years included in the survey.

**Column 2: Operation Sequence Number**

Correct sequence of the operations over the selected field must be maintained. Enter the SEQUENCE NUMBER of each operation, beginning with number "1" for the first operation after harvest of the previous crop for each crop year.

Record the field operations in the order that they were performed by crop year.

**Implements in tandem hook-ups should be entered on separate lines.** For a tandem or multiple hookups of individual tillage implements, record the first implement of the set in Column 5 and its implement code in Column 6.

When you record the second implement on the next line, keep the same SEQUENCE NUMBER in Column 2 that was entered for the first implement in the set.

If more than two implements are in such a set, list them in the appropriate hookup order, each one on its own line, and record the same SEQUENCE NUMBER for all the implements in that same set.

For example, you've just enumerated the first operation (a chisel plow) on the selected field. Then for the next operation, the operator tells you that he used a flex-tine tooth connected to a field cultivator.

After this operation, the respondent reported that he planted. You would record this as follows.

**Example: Recording operation sequence numbers**

1	2	3	4	5	6
Crop Year	Sequence Number	What crop was associated with this operation?	Crop Code	What operation or equipment was used on this field?	Machine Code <i>[Record machine code from Respondent Booklet.]</i>
YEAR	Number		CODE		CODE
2024	1	soybeans	120	chisel plow	1
2024	2	soybeans	120	field cultivator	21
2024	2	soybeans	120	flex-tine tooth	33
2024	3	soybeans	120	conventional planter	114

**Correcting missed operations:**

Sometimes the respondent forgets to report an operation in its right order. When this happens, just add the forgotten operation wherever you are in the table when it is remembered and enter its correct SEQUENCE NUMBER. Then go back and change the sequence numbers you previously entered to reflect the correct order of machine operations.

BE SURE to correct all SEQUENCE NUMBERS that are affected. The cell numbers do not have to be changed to correspond to the corrected order, only the SEQUENCE NUMBER entered in Column 2.

This is much simpler than erasing and reentering in the correct order all the operations you had already recorded in Column 6.

For example, you have entered operations 1, 2 and 3 in the previous example, when the operator recalls another operation (a soil finisher) that occurred after the tandem tillage operation and before the planting operation.

Correct the SEQUENCE NUMBERS and continue recording operations in order as follows:

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*Example: Correcting operation sequence numbers*

1 Crop Year	2 Sequence Number	3 What crop was associated with this operation?	4 Crop Code	5 What operation or equipment was used on this field?	6 Machine Code  [Record machine code from Respondent Booklet.]
YEAR	Number				
2024	1	soybeans	120	chisel plow	1
2024	2	soybeans	120	field cultivator	21
2024	2	soybeans	120	flex-tine tooth	33
2024	4 3	soybeans	120	conventional	114
2024	3	soybeans	120	soil finisher	66
2024	5	soybeans	120	soil finisher	66

### Columns 3 & 4: Crop Name and Crop Code

- Record the crop name in Column 3 and the crop code from the Respondent Booklet for each field operation in Column 4. These codes should reflect the crop(s) in the selected field which were already identified in Sections C, D, E and/or F.
- Operations after harvest should be coded with the next crop unless the operation is specifically for the previous crop such as shredding cotton stalks, grazing stubble, or baling stubble.
- If a field is divided into wide strips, the farmer will know if the field is being strip cropped because it provides very specific conservation benefits, and we need to capture that.
- The strips may be narrow, 10's of feet, in the case of steeply sloping land where the issue is erosion and water flow control. The strips may be wide, 100's or possibly 1000's of feet, in the case of semi-arid land where the purpose is risk spreading, such as alternative strips of wheat and fallow land within a field, rather than following one field and wheat in another field. The strips may also simply be for other conservation or soil health issues, such as alternating small grains and forage strips.
- If it is specifically strip cropped, include the operations for each crop making sure to record the correct crop code for each operation.

- If the field is not strip cropped but is divided into several parts with different crops in each part, record the operations for the portion of the field that includes the dominant crop (crop with the most acreage).

### **Column 5: Operation or Equipment Used**

Record either the operation or the equipment the operator reported, such as a plow, disk, harrow, planter, start grazing, etc. Continue recording operations or equipment used following planting, such as a cultivator, combine, etc. If the operator reports using a machine for which a code is not available, ask the operator which one of the implements in the Respondent Booklet best describes it, or describe the machine as completely as possible in notes.

Enter the name of each implement used on a separate line. Each line entry should indicate one complete pass over the field.

If more than one harvest (e.g. baling of hay multiple times, gleaning cotton, straw harvest after grain harvest, etc.), include ALL harvest operations.

Do not leave blank lines due to limited line space. One of the last entries for each crop year should be used for harvesting the crop from the field and hauling to the field edge.

Include custom operations such as combining or baling the crop if the operator hired someone to do the work for him.

If more operations were completed on the selected field than there are lines available on the questionnaire, use the YEAR-SPECIFIC FIELD OPERATIONS SUPPLEMENT. Copy the identification as it appears on the main questionnaire to the identification box on the supplement. Continue enumerating operations (numbered in sequential order in each crop year) on the SUPPLEMENT.

## Grazing Operations

It is important to know the dates when livestock were allowed to start grazing and stop grazing especially if the livestock are turned in and pulled off of the field multiple times during the year. This also helps track nutrients applied to the field by the livestock through defecation.

**Example 1: Pre- and post- harvest grazing of winter wheat**

LINE	1 Crop Year	2 Sequence Number	3 What crop was associated with this operation?	4 Crop Code [Record from Respondent Booklet pgs. 4 - 7.]	5 What operation or equipment was used on this field?	6 Machine Code [Record from Respondent Booklet pgs. 39 - 41.]	7 Was this operation used to incorporate a fertilizer or manure application? Yes = 1 No = 3	8 What was the timing of the field operation?	9 What was the depth of tillage for tillage/planting operations?
	Year	Number	Crop Name	Code		Code	Code	MM DD YY	Inches
01	<sup>86</sup> 22	<sup>87</sup> 1	Winter Wheat	125	No Till Drill	<sup>88</sup> 105	99 3	<sup>96</sup> 1 0 1 2 2 3	<sup>97</sup> _____
02	<sup>86</sup> 22	<sup>87</sup> 2	Winter Wheat	125	Start Graze	<sup>88</sup> 409	99 3	<sup>96</sup> 0 1 1 5 2 4	<sup>97</sup> _____
03	<sup>86</sup> 22	<sup>87</sup> 3	Winter Wheat	125	Stop Graze	<sup>88</sup> 410	99 3	<sup>96</sup> 0 3 1 5 2 4	<sup>97</sup> _____
04	<sup>86</sup> 22	<sup>87</sup> 4	Winter Wheat	125	Combine	<sup>88</sup> 123	99 3	<sup>96</sup> 0 7 0 1 2 4	<sup>97</sup> _____
05	<sup>86</sup> 22	<sup>87</sup> 5	Winter Wheat	125	Start Graze	<sup>88</sup> 409	99 3	<sup>96</sup> 0 7 0 2 2 4	<sup>97</sup> _____
06	<sup>86</sup> 22	<sup>87</sup> 6	Winter Wheat		Stop Graze	<sup>88</sup> 410	99 3	<sup>96</sup> 0 7 2 3 2 4	<sup>97</sup> _____

The example above shows the livestock being turned in on the wheat in mid-January and being removed mid-March. The livestock were then turned back on the wheat after harvest in early July and taken off by the end of July.

### Column 6: Machine Code

For each operation SEQUENCE NUMBER in Column 2, record the appropriate implement in Column 5 and the corresponding code in Column 6. The codes are listed in the Respondent Booklet. If the implement is not listed in the Respondent Booklet, write a description of that implement in notes on the questionnaire. Probe to see if any names in the Respondent Booklet may be applicable.

Note that some crops may be planted, cultivated, or harvested by hand. Record these operations and refer to the Respondent Booklet for the proper code.

For a tandem or multiple hook-up of individual implements, record each implement of the set on separate lines and enter the appropriate implement code in Column 6.

Maintain the order of tandem hook-ups. Retain the same SEQUENCE NUMBER in Column 2.

Treat the attachment of two implements of the same type (for example, two plows hooked side-by-side) for the purpose of allowing wider coverage with one pass over the field as one implement, **not** as a tandem or multiple hook-up.

Implements that have several tillage components attached to a single frame should be recorded as one implement, not as a tandem or multiple hook-up. For example, a "do-all" is a single implement that has disk blades, field cultivator shanks, and some type of harrow mounted on a single frame. Enter the appropriate code for the single implement from the Machinery Code List in the Respondent Booklet.

Only one code should be entered in Column 6, for example, enter code 5 for a moldboard plow.

If an implement is not included in the Machinery Code List in the Respondent Booklet, enter the implement name on the appropriate line in Column 5, and briefly describe the implement in notes. Be as complete as possible in your description. The equipment will have to be coded in the Regional Field Office based solely on what you record.

PROBE for the specific type of implement so that it can be coded correctly (for example, plow = regular chisel plow; disk = tandem disk; harrow or drag = spike tooth harrow).

### **Column 7: Incorporated Fertilizer or Manure**

- If the field operation was used to incorporate a fertilizer or manure application, enter a "1" for "YES", or enter a "3" for "NO".

### **Column 8: Date of Operation**

Record the number of the month, day, and year when the operation was performed. Use the six-digit MM DD YY format for recording the month, day, and year number. For example, if the respondent indicates that an operation was completed in early April 2024, have the respondent reference the calendars provided in the Respondent Booklet to provide their best estimate of the date that the operation occurred.

- Once a date is indicated, record as 0 4 0 3 2 4
- If a field is so large that it takes multiple days or even a week or two to plant, preferably go with the date that the dominant acreage was planted. If the acreage associated with each planting date is approximately equal, record the earliest date. This same rule applies to tillage, harvest, and other operations.

### **Column 9: Depth of Tillage/Planting Operations**

When implements that are included in Columns 5 (operation or equipment used) and 6 (Machine Code) that disturb the soil, the depth of soil disturbance should be recorded in Column 9. This would include equipment used for cultivation, tillage, planting, and even harvesting in some cases (root crops).

Usually, the respondent can report how far down the soil is disturbed or dug for individual equipment (equipment settings) activities.

- Record the depth of the tillage operation on the sampled field to the nearest tenth of an inch (1/10).

### **How to Record Tandem Field Operations**

Often farmers perform two or more field operations at the same time. A common example of this is a spike tooth harrow connected to a regular tandem disk, pulled by one tractor.

When a farmer reports a tandem field operation:

1. Record the first piece of equipment just like any single machine field operation. Record the SEQUENCE NUMBER in Column 2 in order from the previous operation. Enter the data for all remaining columns on that line.
2. On the next line, record the tandem operation in Column 2 and the machinery code of the second piece of equipment in Column 6. Record the same SEQUENCE NUMBER as the operation entered on the previous line in Column 2.
  - All sequence numbers in the tandem should be the same.
3. If more than two pieces of equipment were used in tandem, repeat step 2 for each additional piece of equipment.

Be sure each required column is completed for every piece of tillage and/or planting equipment used to prepare and plant the selected field.

### **How to Record Replanting Situations in Field Operations**

Often farmers will replant a crop or plant a different crop when a weather-related event (i.e. drought, hailstorm, or flood) destroys the first crop. When recording either the replanting of the original crop or the planting of a substituting crop, the field

operations that occurred for both should be recorded. These same crops should be captured for the appropriate year in Section C, Item 1.

The objective is to capture all the activity that occurred on the field itself. Capturing all the machinery that moved across the field during the crop year can help identify soil compaction issues, additional (or lack of) field work because of weather conditions, erosion, etc. When combined with the weather data already available for the field, this information allows the agronomists to accurately identify all production activities.

Example: Cotton Hailed out, Soybeans planted

In this example, the cotton crop was hailed out in May. The farmer decided to replace the cotton with soybeans. He planted the soybeans in July. He also used a tandem operation of a light disk behind the planter.

1 Crop Year	2 Sequence Number	3 Crop Name	4 What crop was associated with this operation?	5 What operation or equipment was used on this field?	6 Machine Code <small>[Record machine code from Responden t Booklet.]</small>	7 What was the timing of the field operation?	8 What was the depth of tillage for tillage/ planting operation s?
YEAR	Number		CODE		CODE	MMDDYY	INCHES
2023	1	cotton	108	chisel plow	1	022123	5
2023	2	cotton	108	field cultivator	21	032923	1
2023	2	cotton	108	flex-tine tooth harrow	33	032923	0.5
2023	3	cotton	108	conventional planter	114	040123	1
2023	4	soybean	120	light disk	11	070123	3
2023	4	soybean	120	planter	114	070123	1.5
2023	5	soybean	120	harvester	123	101123	-



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The example provided below shows how to record a field that is strip cropped with alfalfa and corn. In this case the corn production practices are no-till and only one alfalfa cutting occurred. The alfalfa was planted 3 years prior.

**Example: Strip Cropping, Alfalfa & Corn**

1 Crop Year	2 Sequence Number	3 Crop Name	4 What crop was associated with this operation?	5 What operation or equipment was used on this field?	6 Machine Code <i>[Record machine code from Respondent Booklet.]</i>	7 What was the timing of the field operation ?	8 What was the depth of tillage for tillage/planting operations?
YEAR	Number	CODE			CODE	MMDDYY	INCHES
2024	1	corn	188	no-till planter	105	042024	2
2024	2	corn	188	combine	122	100224	-
2024	3	corn	188	cart	209	100224	-
2024	4	alfalfa	101	self-propelled mower	151	071124	-
2024	5	alfalfa	101	rake	157	071224	-
2024	6	alfalfa	101	baler	148	071324	-
2024	7	alfalfa	101	wagon	195	071324	-

**Field Operations Completion Code Boxes  
(codes 3004, 3003, 3002)**

Blank = Data present for this section.

1 = Data incomplete or refused

3 = Valid zero data for this crop year

***The completion code box must be coded with “3” if the respondent did not make the day-to-day decisions for the selected field for 2023 or 2022.***

## Section J - Whole Farm

### What is Section J for? How is the information used?

The questions in this section are used to categorize farms according to size.

Data in this section refers to the **entire farming operation**, not just on the selected field as in previous sections.

All questions involving acres need to be answered to the nearest tenth acre (1/10).

### Item 1: Total Acres on the Entire Farming Operation in 2024

#### ***Include:***

- all acres owned and all acres rented from others.
- all cropland, woodland, wasteland, wetland, pasture, idle land, and government program land regardless of location, **if the operator made the day-to-day decisions for that land**. If an operator living in one State made the day-to-day decisions for land across State lines, that land **should** be included in this section. Also include land for homesteads, barns, livestock pens, and ponds.
- land worked by sharecroppers. Sharecropper operations are considered part of the landlord's operation. A sharecropper is a worker who furnishes **ONLY LABOR** (his own and often that of his family) for a share of the crop. Sharecroppers generally furnish no machinery, seed, fertilizer, etc.
- all land (owned or rented) used by a son or daughter for 4-H or FFA projects if the parent's equipment is used.

### Item 1a: Acres Owned

#### ***Include:***

- land held by the operator and/or spouse and/or dependent children under title, purchase contract, homestead law, or as an heir or trustee of a divided estate.
- cropland, woodland, wasteland, wetland, pasture, idle land, government program land, orchards, and vineyards.
- land which is not currently used for agricultural purposes.
- all land owned and enrolled in government programs (acres in the Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), and other diverted land.)

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### **Exclude:**

All non-agricultural land separate from the operation that is permanently withdrawn from agricultural uses. This includes land in sub-divisions, commercial buildings, etc.

- Enter the total acres owned by this operation.

### Item 1b: Acres Rented from Others

Farm/ranch operators often do not consider non-cropland acres such as woodland, wasteland, and wetland to be part of rented acreage even though the landlord considers the whole parcel rented. Rent is usually based on the number of acres of cropland or pastureland. However, if the renter was responsible for looking out for the owner's interest in the woodland, wasteland, and/or wetland, these acres should be included as acres rented from others.

### **Include:**

All land rented from private individuals, partnerships, corporations, Federal, State or local governments, Indian Reservations, railroads, etc., if the operation:

- paid cash rent on a per acre basis.
- paid for use of the land with a share of the crops (either standing or harvested).
- paid for use of the land with a share of livestock production.
- had free use of the land.

### **Exclude:**

- any land used as pasture or for grazing livestock if payment was on a per head or Animal Unit Month (AUM) basis.
- land on which the respondent's livestock were fed under a contract (for example, commercial feedlots).
- Enter the total acres rented in by this operation.

### Item 1c: Acres Rented to Others

### **Include:**

- land that this operation owned (or rented from someone else) which was rented (or subleased) to another operation during the 2024 crop year. This land should also be included in either Item 1a or 1b.
- land rented to others for cash.
- land rented to others for a share of crop or livestock production.

- land that this operation allowed another operation to use free of charge.
- pasture or grazing land rented out on a per acre basis.
- land owned but managed for a fee or salary by someone else.

**Exclude:**

- land which this operation has enrolled in government programs (acreage in Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), and other diverted land.)
- land worked by sharecroppers on this operating unit.
- land used by a son or daughter for 4-H or FFA projects if the parent's equipment was used.
- land on which crops were grown under contract, if the landowner furnished machinery **or** controlled the seeding, growing and harvest of the crop.
- land used for pasturing someone else's livestock when payment was made on a per head or AUM basis.
- land on which the operator fed livestock under contract for someone else.

Enter the total acres rented to others by this operation.

## **Item 2: Total Acres on the Operation**

The operation's total farming or ranching operation acreage is the total of Items [1a + 1b - 1c].

Enter the total acres operated by this operation.

### **Item 2a: Verify Total Acres on the Operation**

After calculating the total acres operated during the 2024 crop year, verify with the respondent that this is the correct total for the operation.

## **Item 3: Total Cropland Acres on the Operation**

Of the “total acres operated” (Item 2), enter the number of acres considered to be cropland in cell 1905. Cropland is land currently in crop production or land that has previously been tilled and used for crops and could be tilled again without additional improvements. Report to the nearest tenth (1/10). Remember, pasture cut for hay is considered cropland.

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### **Include:**

- land in crop-pasture rotation and cropland used for pasture or grazing during the current year.
- land in summer fallow.
- idle cropland (no crops planted or harvested in current year).
- crop land diverted for government programs (including CRP), unless the land is planted to trees.
- fruit orchards, vineyards, nut trees, and citrus groves.
- vegetables, melon crops, and other specialty foods.
- nursery crops, turf grass, sod, and Christmas Trees.
- land in hay crops, **excluding** wild hay.
- pastureland tilled in the past if the land could be tilled again without first clearing brush, trees, undergrowth, etc.

### **Exclude:**

- pasture and rangeland that has never been tilled.
- wild hay land. Although wild hay is considered a crop, wild grasses cut for hay should not be included in acres of cropland.
- government program acres planted to trees. These acres are woodland.
- woodland and wasteland.

Enter the total acres of cropland operated by this operation.

## Section K - Operator and Operation Characteristics

### What is Section K for? How is the information used?

The questions in this section are used to categorize farms according to type and experience of the operator, and to test for response bias in the survey data.

Data in this section refers to the **entire farming operation**, not just to the selected field as in previous sections.

### Item 1: Legal Status of Operation

This question identifies the type of operation or proprietorship that best describes how this operation was operated in 2024. Definitions of each legal status are as follows:

- 1) **FAMILY or INDIVIDUAL operation (exclude partnership and corporation)** - Enter a "1" if this operation is operated by an individual, or an individual and family, or by spouses. This should include farms or ranches which are family operations but are not incorporated or operated as partnerships.
- 2) **PARTNERSHIP operation (include family partnerships)**- Enter a "2" if this operation was run by two or more persons in partnership. This should **not** include farms or ranches run by spouses (unless there is a formal agreement other than a marriage license or vows). It is intended to include organizations where two or more persons have agreed to share contributions (capital and effort), decision making, liabilities, and the distribution of profits.
- 3) **FAMILY-HELD CORPORATION INCORPORATED UNDER STATE LAW** - Enter a "3" if incorporated under State law. A corporation may be defined as a legal entity or artificial person created under the law of a state to carry on a business. A family corporation has more than 50 percent of its stock owned by persons related by blood or marriage.
- 4) **NON-FAMILY CORPORATION INCORPORATED UNDER STATE LAW** - Enter a "4" if incorporated under State law and the corporation has more than 50 percent of its stock owned by persons not related by blood or marriage.
- 5) **OTHER** - Enter a "5" if this operation is an estate, trust, American Indian Reservation, Cooperative Institution or Experiment Station, etc. Specify type in the response area.

For example:

- **Estate** - Undivided property still in or subject to probate.
- **Trust** - The farm is operated by a trustee for someone else who is not of age, impaired, or is otherwise unable to carry on their business. Estate or trust may be further defined as a property (or funds) administered for the benefit of another individual or organization.
- **American Indian Reservation** - The farm or ranch is owned by and/or part of an American Indian Reservation and operated for the general benefit of reservation residents. Farms or places operated by American Indians owning or having allotted land should be reported in the same manner as any other farm, ranch, or place.
- **Cooperative** - Incorporated or unincorporated enterprise or association created and formed jointly by the members.
- **Institution** - Operation that is part of a school, prison, hospital, religious organization, etc.
- **Experiment Station** - Operated primarily for research by either a public or private agency, and perhaps, but not necessarily, in conjunction with a university or school.

## **Item 2: Education Level of Operator**

- Indicate the code representing the highest level of school completed by the operator. An associate degree should be recorded as some college.

## **Item 3: Year the Operator Began Making Day-to-Day Decisions for any Farm/Ranch**

- Record the first year the operator(s) began to operate (make decisions for) any farm/ranch. Record the date as four digits (1953, 1985, etc.). This answer does not need to reflect continuous experience after that date.

## **Item 4: Hispanic, Latino, or Spanish Origin**

- Mark the appropriate box as to whether the operator is of Hispanic, Latino, or of Spanish origin or background, such as Mexican, Cuban, or Puerto Rican, regardless of race.

### **Item 5: Race**

Mark one or more race categories to indicate what the operator considers themselves to be. If “Not Listed”, ask the operator to specify their race.

### **Item 6: Military Status**

Fill in the code that most accurately indicates the operator’s military status.

### **Item 7: Years continuously managing a Forest, Farm, or Ranch**

- Record the number of years the operator(s) began to operate (make decisions for) any farm/ranch on a continuous basis. Record the date as four digits (1953, 1985, etc.).
- Note that this answer may differ from the answer given in Item 3 if the operator took a break from making day-to-day decisions for a farm/ranch.

### **Item 8: Operator’s Major Occupation**

We consider major occupation to be the occupation or work at which an individual spent more than 50 percent of his/her work time in 2024.

If the operator spent the majority (50 percent or more) of their work time in farming or ranching operations in 2024, check box 920 = 1, otherwise check box 920 = 2.

### **Item 9: Total Gross Value of Sales Classification**

Check the box next to the category that best describes the gross value of sales in 2023 for the entire operation.

#### **Include:**

- sales of products raised on the total acres operated.
- the value of any commodities given to the landlord for rented land.
- all production from 2022 and earlier years sold during 2023.
- all sales of livestock and poultry during 2023.
- sales of all types of horses.



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- sales of miscellaneous agricultural products such as honey, furs, fish, nursery and greenhouse products, rabbits, Christmas trees, etc.
- all government program payments received in 2023.
- total equity or premium payments or CCC loans transferred to others or repaid by others in 2023.
- value of products removed from the operation under production contracts.
- the estimated value of products removed from contractee operations.

### **Exclude:**

- prizes or winnings from horse racing or showing.
- any money received through the sale of commodities received as share-rent payment for land rented out.
- other farm-related income such as grazing income, timber sales, and insurance payments.

## **Item 10: Farm Type**

Have the respondent refer to the list of Farm Type Codes in the Respondent Booklet to answer this question. Ask the respondent to select the category which represents the largest portion of this operation's 2023 gross income.

Government payments should be distributed among the categories according to the type of program in which the operator participated.

When the respondent reports that sales for two of the categories are equal, ask which group is more important and is the primary production activity.

Operations primarily engaged in producing short-term woody crops should be counted as farms and classified in "Cut Christmas Trees and Short Rotation Woody Crops" category.

Short-term woody crops are softwood trees (hybrid poplar, cottonwoods, and pines) reaching maturity in 10 years or less and typically are used for paper production.

A farm primarily engaged in raising dairy heifers for herd replacements is classified as a "Cattle and Calves" operation because no milk or dairy products are being produced.

- Record the farm type code in Item 6.

## Back Cover - Conclusion

*Do not ask these remaining questions of the Respondent. They are only for administrative purposes and analysis. You should fill them out after the interview is completed.*

### Item 1a, 1b, 1c, 1d: Records Use

Analysts and other data users are interested in comparing reported data with the use of records. The use of records should indicate data are of a higher quality.

Enter a code "1" to indicate the respondent referred to and used written records when reporting the indicated items, otherwise enter a code "3".

#### Item 1a: Fertilizer Data

- If farm records were used for completing the majority of the fertilizer data items in the questionnaire, enter code "1" = "YES" in cell 0026 or a "3" for "NO".

#### Item 1b: Pest Control Data

- If farm records were used for completing the majority of the pest control data items in the questionnaire, enter code "1" in cell 0027 or a "3" for "NO".

#### Item 1c: Manure Data

- Indicate whether farm/ranch records were used for the completing most of the manure items in the questionnaire. Enter "1" in cell 0028 for "YES".

#### Item 1d: Livestock Grazing Data

- Indicate whether farm/ranch records were used for the completing most of the **livestock grazing** items in the questionnaire. Enter "1" in cell 0035 for "YES" or a "3" for "NO".

### Item 2: Conservation Plan Used

- Indicate whether a formal written conservation plan was used for completing most of the questions from Section B in the questionnaire. Enter "1" in cell 0029 for "YES" or a "3" for "NO".

### **Item 3: Supplements Used**

- Record the total number of each type of supplement used in completing this interview in the designated cell. These items are important to provide a means to check for misplaced or lost supplemental sheets during the computer edit. Be sure all the supplements are inside the questionnaire before mailing the questionnaire or turning it over to a supervisor.

## **Administrative Items**

### **Ending Time**

In cell 0005, record the ending time of the interview. Exclude the time you spend reviewing the questionnaire or verifying calculations by yourself after you have completed the interview. Be sure the ending time is after the beginning time entered on the face page. Use military time, i.e., 4:00 p.m. should be recorded as 1600.

If the interview occurred over multiple days, then beginning time (Item code 0004) and ending time (Item code 0005) should be blank. Total hours (Item code 0008) should be completed.

If more than one person was interviewed or it took more than one appointment to complete the interview, use the Time in Hours instead. The total time should reflect the approximate total time for the questionnaire.

### **Time in Hours**

The Time in Hours box, code 8, is a cell that should be used when an interview extends to cover more than one day. That is, the respondent may be interviewed from 1600 to 1800 hours on November 2 (2.0 hours), and from 0800 to 1200 hours on November 3 (4.0 hours) to collect all the information for the survey. It will be crucial that the enumerator write down these dates and times so the time in hours it took to complete the entire interview can be reported. In the case above, 6.0 hours would be recorded in cell 0008.

### **Date**

Record the date the questionnaire was completed. Enter the date the interview was completed in MMDDYY format on the lines provided in cell 9910.

## Response Code

Upon completion of the interview, enter the response code in cell 9901 on the back page of the questionnaire. There are more response codes listed than are actually valid. These are standard codes listed for all surveys.

Valid response codes for CEAP are:

**Code 1 - Complete:** Complete means you have obtained all of the data needed for the questionnaire. Also use Code 1 for operations that you have determined to be out of scope. If out of scope, write an explanation explaining the situation on the back of the questionnaire.

**Code 2 - Refusal:** The respondent refused to cooperate or grant an interview.

**Code 3 - Inaccessible:** The operator was not available throughout the survey period (inaccessible). You will also use code 3 if the respondent gave an interview but could not or would not answer a lot of the questions (incomplete questionnaire). If you determine that the target operation does not produce the selected commodity, code the questionnaire complete (code 1) and indicate the source of your information with a note. In all cases, write a note explaining the situation.

## Respondent Code

The respondent code identifies the person who was interviewed. Enter the code identifying the person who provided most of the data in cell 9902.

- Code 1 Operator or Manager
- Code 2 Operator's Spouse
- Code 3 Accountant or Bookkeeper
- Code 4 Partner
- Code 9 Other

DO NOT Record the respondent's name and phone number.

## Mode Code

All CEAP questionnaires should be conducted by personal interview.

Enter a code 3 in cell 9903. Do not use another code even if you made an appointment via telephone.

Code 3 = Face-to-Face.

## Enumerator Name

Sign the questionnaire in the S/E Name box and record your enumerator ID number in cell 9998.

**Review the entire questionnaire before forwarding it to your supervisor.**

**Make sure all items are complete, including “YES” and “NO” boxes checked, and dashes are entered in cells when the response is “None” or “No” as appropriate. Make sure notes are present and complete for unusual situations.**

**Verify that the proper identification numbers have been recorded on all supplemental forms.**

**Verify the number of supplements reported for Item 3.**

## Comments

Comments are vital and valued. Enter any and all comments that might assist with editing the questionnaire.

**DO NOT ENTER PII ANY WHERE ON THE QUESTIONNAIRE, INCLUDING COMMENTS.**

**END OF MANUAL**

Thank you for your study time and thank you in advance for your hard work on CEAP.

Be safe