ARMS 2 - Presentations

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Introduction and Purpose

Amber Elliott-Whisnant

Eastern Mountain Regional Field Office

Introduction and Purpose

- Production Practices Report
  - Potatoes

- Production Practices and Costs Report
  - Wheat

Introduction and Purpose

- Basic guidance on ARMS II
- Will not cover all scenarios
- Study manual
- Work with supervisors
- Participate in mini-schools
- Practice exercises

What is ARMS?

- Agricultural Resource Management Survey is a project conducted in cooperation with USDA's Economic Research Service (ERS)
- Primary source of information for agricultural resource use, costs, and farm finance
- Supports key uses of enterprise, farm, and household data that correspond with mandated activities required by the U.S. Congress.

Motivation for Collecting these Data

Agricultural and Consumer Protection Act of 1973

"The Secretary of Agriculture…shall conduct a cost of production study of the wheat, feed grain, cotton, and dairy commodities under the various production practices and **establish a current national weighted average cost of production**. This study shall be updated annually and shall include all typical variable costs, including interest costs, a return on fixed costs, and a return for management."

Mandated reporting of these data is part of permanent Farm Bill legislation

ARMS: Data Collection Phases

- Phase I (May – July): Screens list frame operations for in-business status, operating arrangement, and presence of targeted commodities.
- Phase II: (Oct – Dec): Collects data on chemical use, production practices, and variable input costs for targeted commodities.
- Phase III: (January – April): Focuses on farm economics and risk management practices; typically includes the entire ARMS II sample and a general sample.

What is special about ARMS II?

- Two Main Versions
  - Production Practices Report (PPR – Short)
  - Production Practices and Cost Report (PPCR – Long)
- Provides Reported Data on Actual Pesticide Use
  - Crop Treated
  - Acreage Treated
  - Rates and Number of Treatments
  - Identify Alternatives Used

What is special about ARMS II?

- Provides ability to conduct economic and environmental analyses relating to:
  - Field crop chemical use,
  - Crop Production practices, and
  - Integrated Pest Management (IPM) practices and adoption levels.
- The need by data users for farm financial data corresponding with field crop chemical use, production practices, and IPM information has been increasing for a number of years.

What is special about ARMS II?

- Detailed field-level information...
- Tied to production outcomes, to commodity costs and returns, and to whole-farm finances and farm operator and household attributes
- Tied to program participation, and policies...
- With a large and nationally-representative sample of farms

EPA is the Primary User of ARMS Data

- The Water Quality Initiative
  - Data needed for assessing issue
  - Mandated development of database
- USDA Pesticide Data Program (PDP)
  - NASS & ERS responsibility
  - NASS begins chemical surveys
- Food Quality Protection Act
  - EPA mandated to review tolerance levels
  - NASS provides actual usage data

What is special about ARMS II?

- Without ARMS II Data:
  - Loss of minor uses of chemicals
- With ARMS II Data:
  - Changes in labeling and usage
    - Increased re-entry or pre-harvest intervals
    - Change protective equipment requirements
    - Reduce the use rate or number of sprays

Who Else Uses This Information?

- National and agricultural media
- Input providers
- Farmers and their advisors
- Policy stakeholders
  - Farm organizations and commodity groups

Who Else Uses This Information?

- **Policymakers**
  - Policy Decisions Will be Made with or Without ARMS
  - Some Policymakers have farm backgrounds, most don't
  - Those that do can't - just rely on background, experience
  - They're all busy, so they rely on others for information
- ARMS provides accurate data on U.S. agriculture
- Better information makes for better decisions

Benefits to Farms

- Farmers benefit indirectly
  - Extension advisors, magazines, newspaper, radio
  - Farm org., commodity groups, agribusiness
  - Congress, USDA
- Growers chance to tell their story
- Establish facts about chemical use
- Decision-making for Product re-registration
- Impact/Consequences of cancellation

How ARMS Phase II Data are Disseminated

- ERS reports on policy-relevant topics
  - And related Amber Waves magazine articles
  - And related daily ERS Charts of Note
- Data releases on our website
  - ARMS crop production practices
  - Commodity costs and returns
  - NASS Quick Stats (chemical use)
- Staff analyses for policymakers (not public)

ARMS II/Chemical Use Background

- Target commodities rotated:
  - 2015 – Cotton, Oats, Soybeans, Wheat, Fruit
  - 2016 – Corn, Potatoes, Vegetables
  - 2017 – Cotton, Soybeans, Wheat, Fruit
  - 2018 – Soybeans, Corn, Peanuts, Vegetables
  - 2019 – Wheat, Barley, Cotton, Sorghum, Fruit
  - 2020 – Soybeans, ~~Corn, Rice~~, Vegetables
  - 2021 – Corn, Rice, Cotton, Fruit
  - **2022 – Wheat, Potatoes, Vegetables**
- Wheat – PPCR (Long Form)
- Potatoes – PPR (Short Form)

Additional Information

- The Phase II Interviewers Manual
- ERS website: www.ers.usda.gov
- Charts of Note: read and sign up for free distribution at
  - http://www.ers.usda.gov/data-products/charts-of-note.aspx
- ARMS Cropping Practices Data Summary
  - http://www.ers.usda.gov/data-products/arms-farm-financial-and-crop-production-practices/tailored-reports-crop-production-practices.aspx
- ERS Commodity Costs and Returns Estimates
  - http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx

Thanks for Watching!

Getting Started with the Survey

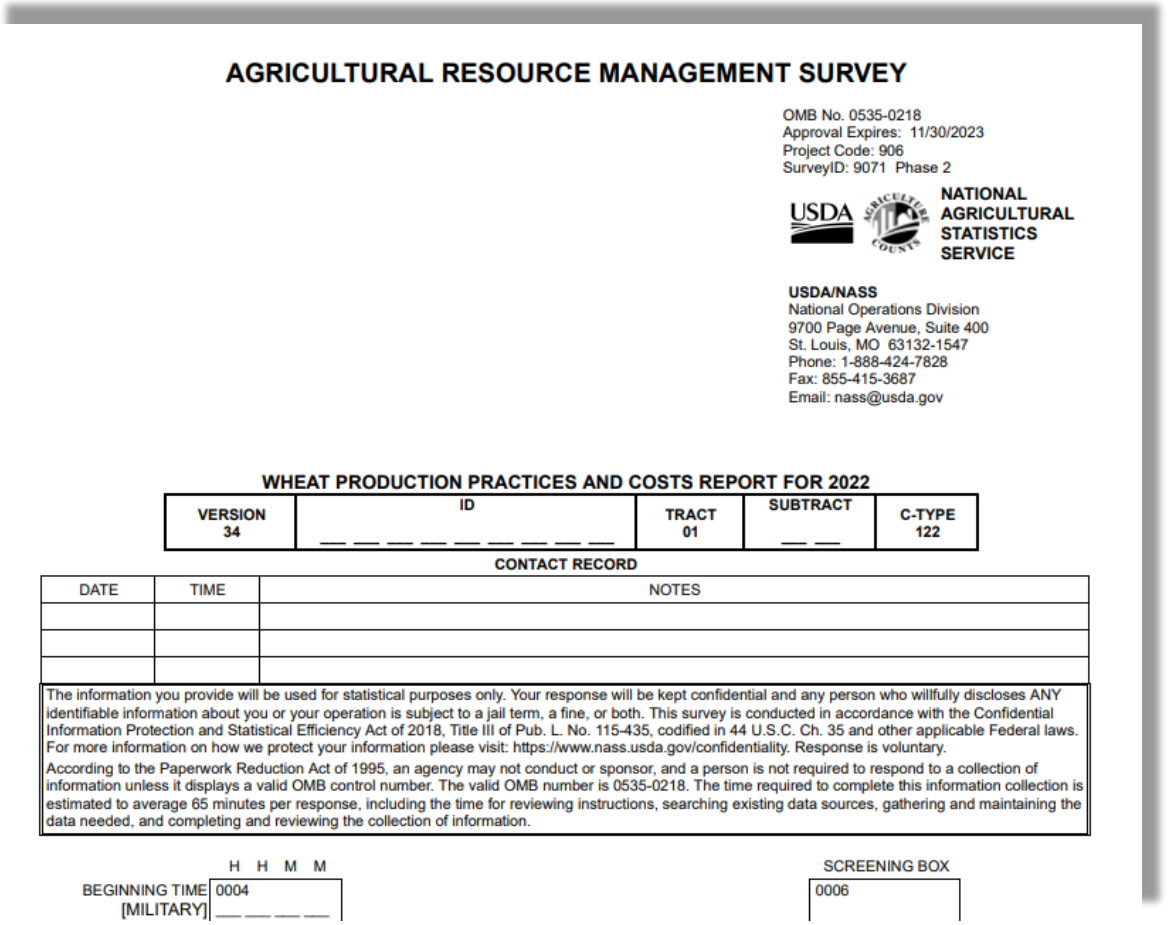
Click Here to
return to Index

Lisa Prickett

Southern Plains

What Did the Operator Receive?

- Information Copy of Questionnaire
- Respondent Booklet
- Pre-Survey Letter



AGRICULTURAL RESOURCE MANAGEMENT SURVEY

OMB No. 0535-0218
Approval Expires: 11/30/2023
Project Code: 906
SurveyID: 9071 Phase 2

USDA NATIONAL AGRICULTURAL STATISTICS SERVICE

USDA/NASS
National Operations Division
9700 Page Avenue, Suite 400
St. Louis, MO 63132-1547
Phone: 1-888-424-7828
Fax: 855-415-3687
Email: nass@usda.gov

WHEAT PRODUCTION PRACTICES AND COSTS REPORT FOR 2022

VERSION	ID	TRACT	SUBTRACT	C-TYPE
34		01		122

CONTACT RECORD

DATE	TIME	NOTES

The information you provide will be used for statistical purposes only. Your response will be kept confidential and any person who willfully discloses ANY identifiable information about you or your operation is subject to a jail term, a fine, or both. This survey is conducted in accordance with the Confidential Information Protection and Statistical Efficiency Act of 2018, Title III of Pub. L. No. 115-435, codified in 44 U.S.C. Ch. 35 and other applicable Federal laws. For more information on how we protect your information please visit: https://www.nass.usda.gov/confidentiality. Response is voluntary.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB number is 0535-0218. The time required to complete this information collection is estimated to average 65 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

H H M M

BEGINNING TIME [MILITARY] 0004 ____

SCREENING BOX 0006

Introduction

- Introduce Yourself:
  - Practice your introduction to get comfortable.
  - Include who you are and whom you represent.
- Make sure you understand and can explain the purpose of the survey and why it is important.
- Want to encourage participation.
- Remind the respondent that the data are confidential and are used only to make state and national level estimates.
- Be prepared to set up an interview time.

Explaining the Process

- Get operator to agree to survey
- Explain the major sections (field selection, fertilizer, pesticides, pest management practices).
- Make sure operator has copy of form
- Encourage the use of farm records

Using Interview Time Wisely

- Verify contact information, target crop acres
- Check Screening Survey Information Form
- Work through field selection process
- Collect what you can by phone
  - Only a refusal if they give us nothing
- Determine best way to get spray records.

How Long Should This Take?

- OMB expected time to complete one questionnaire?
  - Wheat (PPCR) 65 minutes
- It is vital that both the Phase II and Phase III questionnaires be completed for these operations.
- Data from both phases provide the link between agricultural resource use and farm financial conditions.

Data Recording Reminders

- Make all entries clear and easy to read in PENCIL
- Follow Instructions regarding “NO” or “NONE”
  - Most yes/no questions now require 1 = Yes and 3 = No
  - Watch for appropriate Yes/No Check Boxes
  - Enter a dash (–) if the answer to a question is “NONE”
- Don’t Know = DK, Refused = RF

Other Data Recording Reminders

- Read instructions and questions exactly as written
- Follow the Skip Instructions
- Don’t forget Start Time and End Time!
- Make notes about answers in the margins
- Look for pre-printed decimal places
  - Acreage to one place, Chemical application to two places
- Notes about unusual situations should be complete
  - Put on Blank Page, Back Page, Comment Sheet, Other Inserts
- Please enter both yes and no responses into CAPI.

Thanks for Watching!

Click Here to return to Index

Face Page, ARMS I Acreage Insert Sheet and Section A

Lisa Prickett

Southern Plains

Face Page

- Verify the name and address of the operator and any partners
- Record the starting time of the interview using military time
  - Example: 2:30 pm = 1430
  - Measures respondent burden

Burden Statement

Wheat

The information you provide will be used for statistical purposes only. Your response will be kept confidential and any person who willfully discloses ANY identifiable information about you or your operation is subject to a jail term, a fine, or both. This survey is conducted in accordance with the Confidential Information Protection and Statistical Efficiency Act of 2018, Title III of Pub. L. No. 115-435, codified in 44 U.S.C. Ch. 35 and other applicable Federal laws. For more information on how we protect your information please visit: https://www.nass.usda.gov/confidentiality. Response is voluntary.

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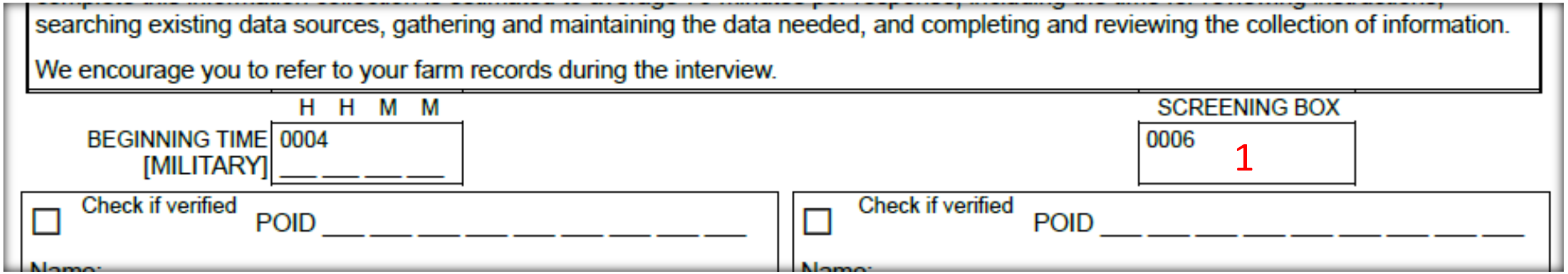
Screening


searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

We encourage you to refer to your farm records during the interview.

H H M M

BEGINNING TIME [MILITARY] 0004 ___ ___ ___ ___

SCREENING BOX 0006 1

☐ Check if verified POID ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Name:

☐ Check if verified POID ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Name:

Screening

- Verify if operator is still in business
  - Including CRP
- Verify if target name grew the target crop this year
  - Including all operations
- Out of Business of Landlord only
  - Conclude interview
- Record all acres operated including
  - Cropland in other states
  - Abandoned target crop acres
- Collect data for addition individual ops or partnerships
- Take good notes

ARMS I Acreage Insert Sheet

AGRICULTURAL RESOURCE MANAGEMENT SURVEY FOR 2022
SCREENING INFORMATION FORM

STATE	VERSION	ID	TRACT	SUBTRACT
99	77	999999990	01	01

SAMPLE SEQUENCE NUMBER: 0105
OPDOM STATUS: 00

B. A. FARMER
1234 DIRT RD
ANYWHERE, ST 56789
(987) 654-3210

INFORMATION FROM SCREENING:

ARMS I Acreage Insert Sheet

```
INFORMATION FROM SCREENING:

         TYPE OF OPERATION REPORTED: PARTNERSHIP WITH 3 PARTNERS
         RESPONDENT: OPERATOR OR MANAGER

         THIS OPERATION IS SELECTED FOR THE  CROP :CROP – PPCR or PPR
         THE SCREENING PHASE DATA ARE FROM COMPLETE RESPONSE.
         DATA WERE COLLECTED BY ENUMERATOR: 99999


Total Acres Of Land Operated:                    1,820.0

Total Acres Of Crop Land:                        1,700.0

=============================================================================
```

Sources of Data:

Operator

Spouse

Partner

Previously Reported Data

ARMS I Acreage Insert Sheet

==========

Total Acres Of CROP Planted For 2022 : 700.0

PLEASE WRITE A NOTE TO EXPLAIN IF DATA REPORTED IN SECTION A (FIELD SELECTION SECTION), ITEM 1 FOR CROP ACRES PLANTED IS LESS THAN 525.0 OR GREATER THAN 875.0.

Sources of Data:

Operator

Spouse

Partner

Previously Reported Data

ARMS I Acreage Insert Sheet

THIS OPERATION IS SELECTED FOR THE CROP :CROP – PPCR or PPR
THE SCREENING PHASE DATA ARE FROM 7 RESPONSE.
DATA WERE COLLECTED BY ENUMERATOR:.

Total Acres Of Land Operated: UNKNOWN

Total Acres Of Crop Land: UNKNOWN

==========

Total Acres Of **CROP** Planted For 2022 118.0

PLEASE WRITE A NOTE TO EXPLAIN IF DATA REPORTED IN SECTION A
(FIELD SELECTION SECTION), ITEM 1 FOR WHEAT ACRES PLANTED
IS LESS THAN 88.5 OR GREATER THAN 147.5.

Section A: Field Selection

- Targeted crop (Wheat) acres planted
  - Compare to ARMS I Acreage Insert Sheet
  - If the acres differ by +/-25%, please leave a note.
- Total number of targeted crop fields planted
- Target crop is printed on the label, and each questionnaire will only refer to that particular type of wheat as the target crop, and not all wheat.

Section A: Field Selection

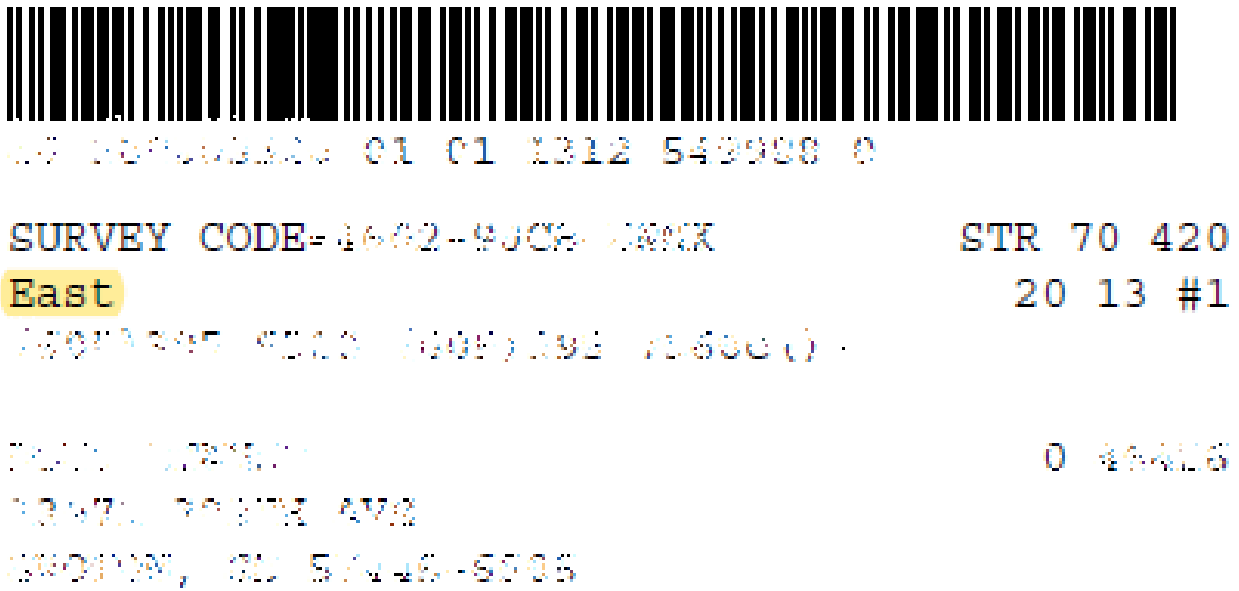
- **Cardinal & Inter-Cardinal Directions**

➢ Direction will be on the questionnaire label and CAPI

➢ For each operation, the field has already been randomly selected using the eight cardinal and inter-cardinal directions

➢ Field selection is irrespective of the location of the homestead on the operation

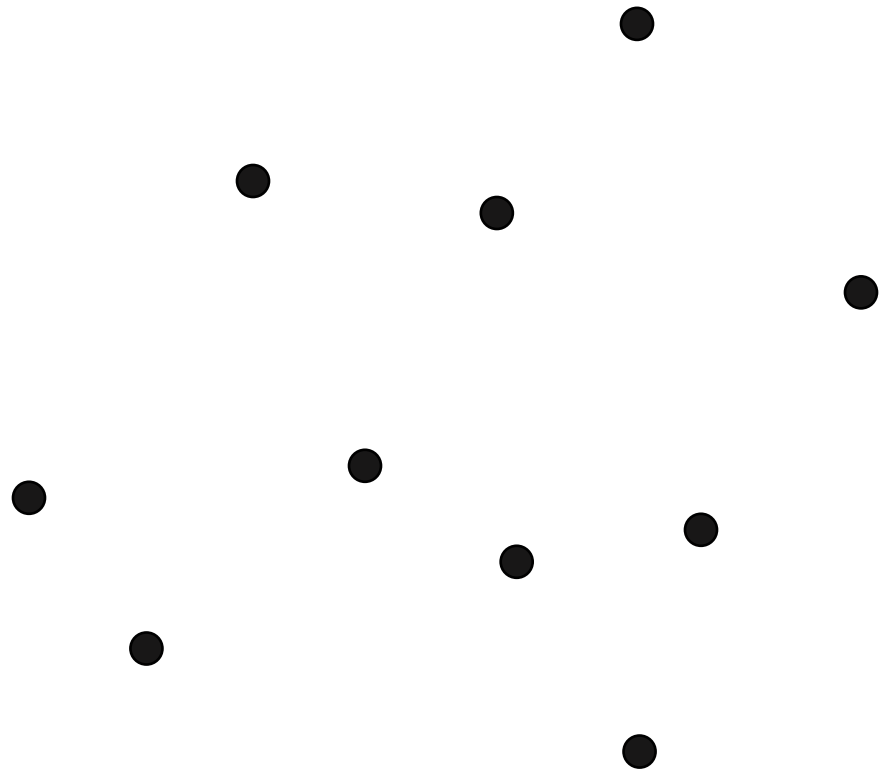
Section A: Field Selection



Furthest target crop field in the given direction

Northern-most target crop field
Southern-most target crop field
Eastern-most target crop field
Western-most target crop field
Northeastern-most target crop field
Southeastern-most target crop field
Northwestern-most target crop field
Southwestern-most target crop field

Section A: Field Selection

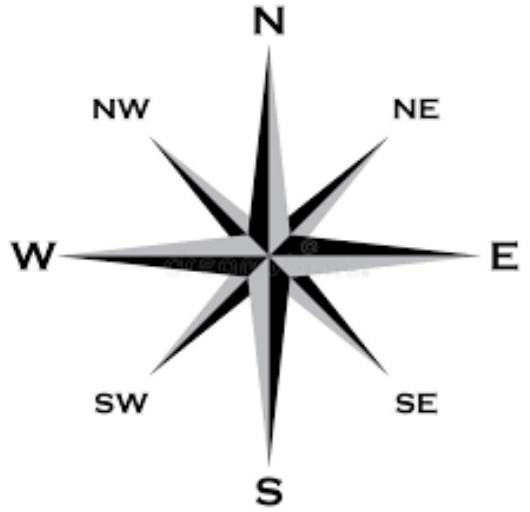


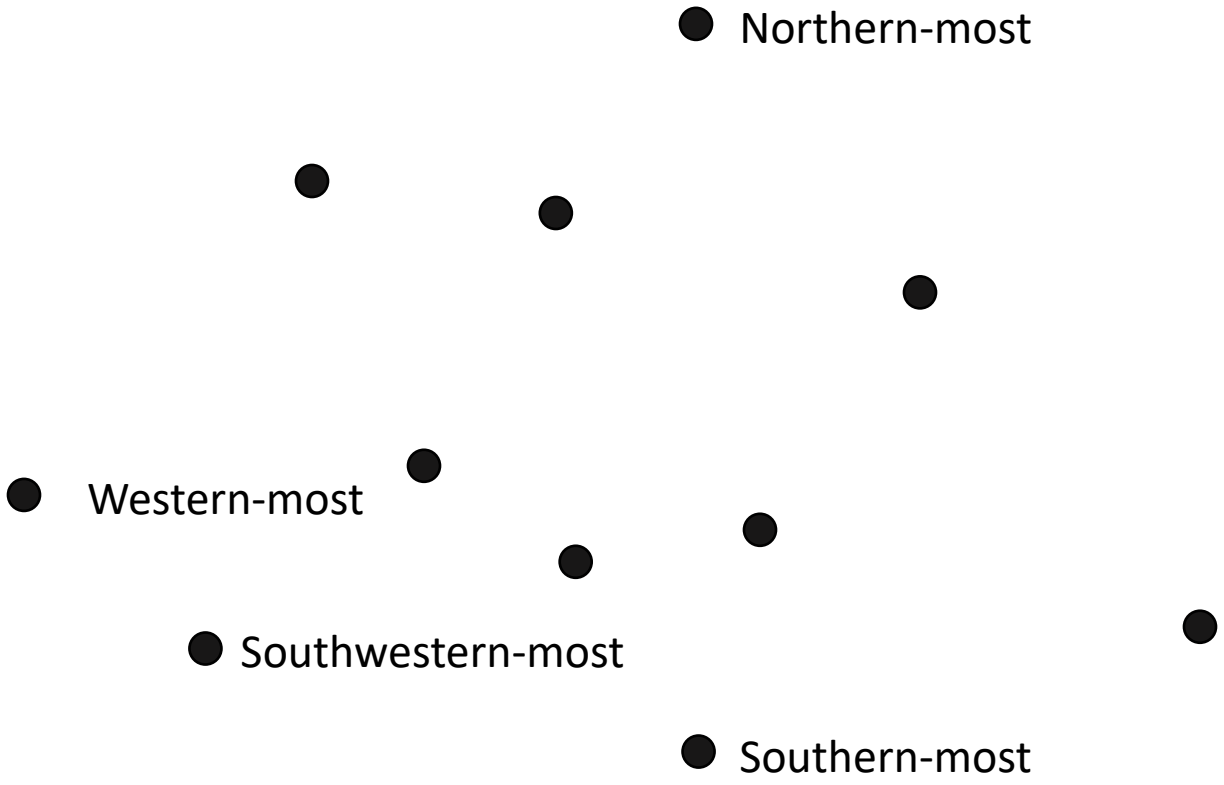
Eastern-most

Legend

Targeted Crop Field

Section A: Field Selection

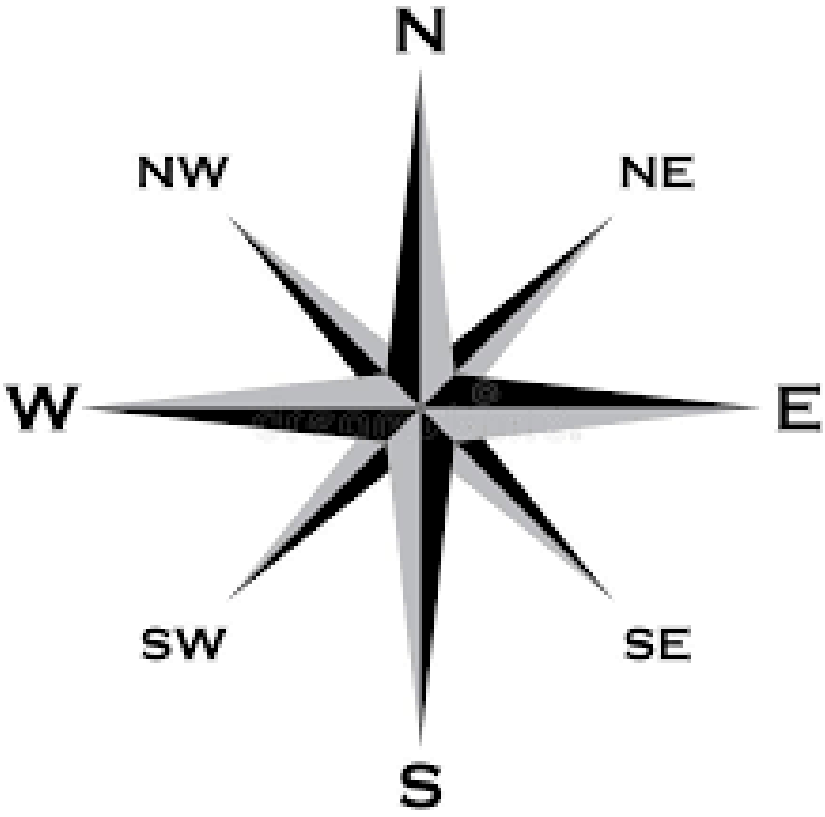




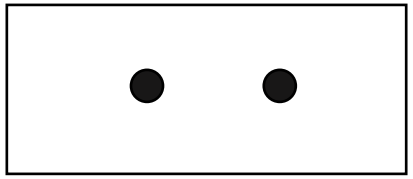
Legend
- Targeted Crop Field

Section A: Field Selection

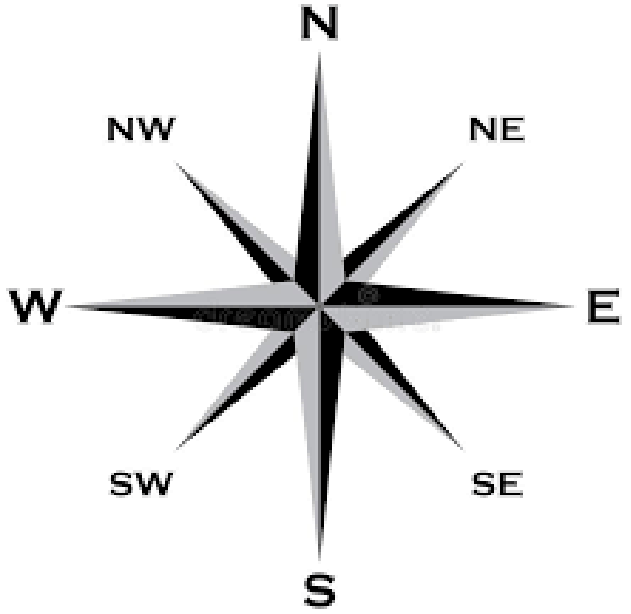
- Northern-most field?
  - no
- Northeastern-most field?
  - no
- Eastern-most field?
  - yes
    - Select field

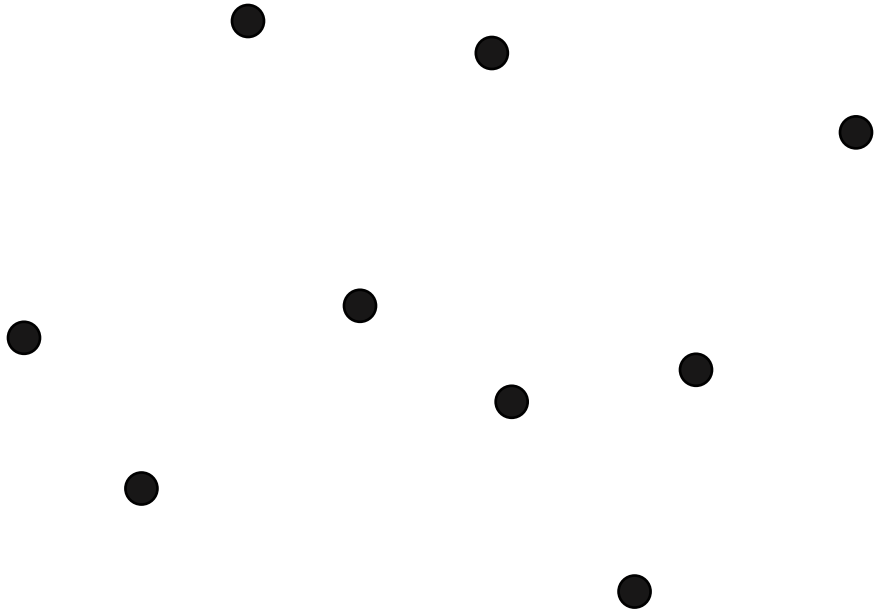


Section A: Field Selection



Both are Northern-most





Legend
- Targeted Crop Field

Section A: Field Selection

Click Here to return to Index

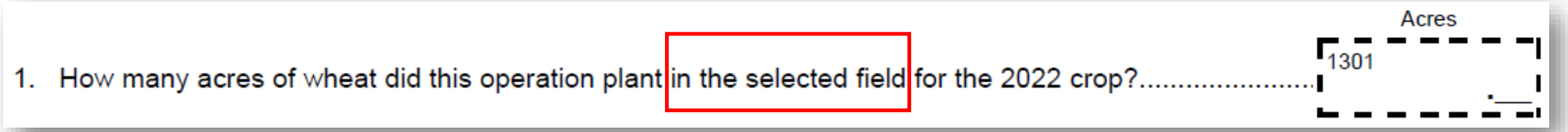
Section B
Field Characteristics
For the Wheat version ONLY

The Purpose of Section B

- To obtain information used to calculate the production cost per acre
- To study conservation practices, land tenure, and the adaptation of new technologies
- The estimation of residue levels and determination of tillage systems that are used to evaluate water quality and soil erosion

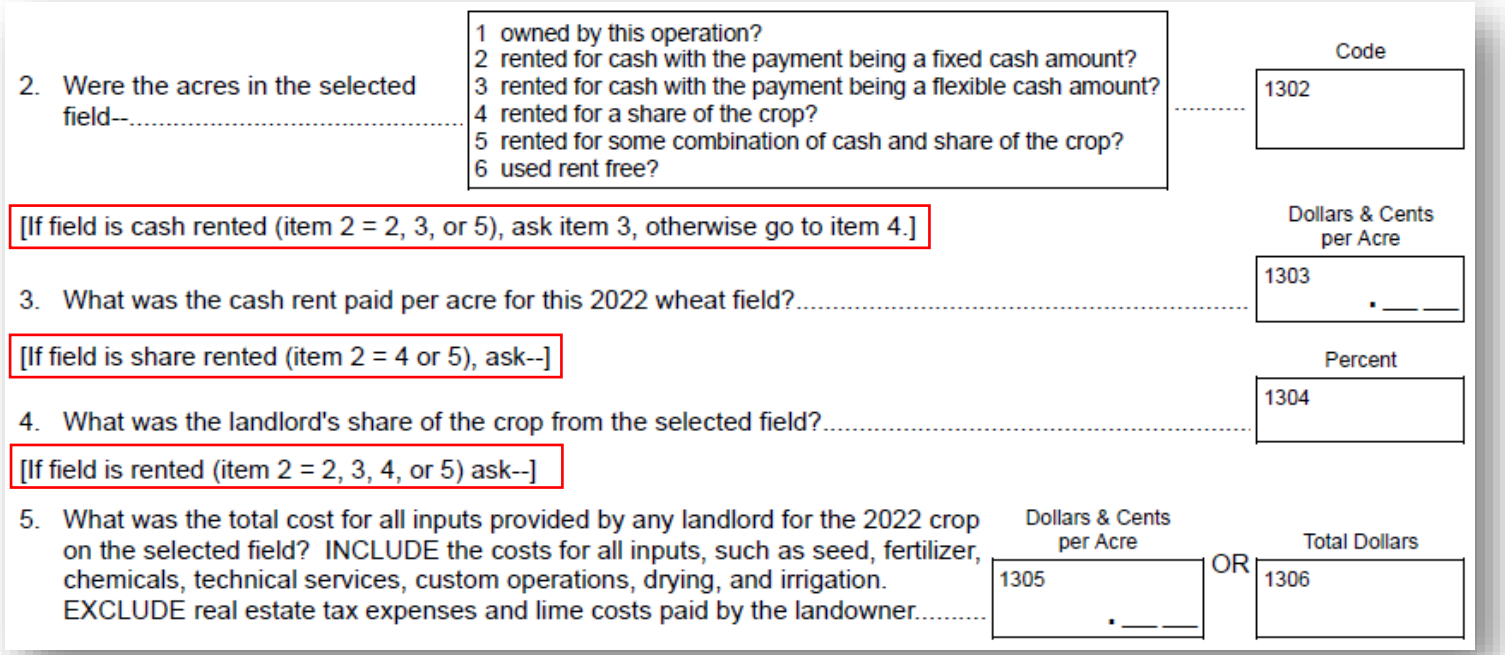
Talking about the selected field

- Section B and the rest of the questionnaire only refer to the selected field.



Skip Instructions

- Be aware of skip instructions as questions are no longer bolded or italicized



2. Were the acres in the selected field--

1 owned by this operation?
2 rented for cash with the payment being a fixed cash amount?
3 rented for cash with the payment being a flexible cash amount?
4 rented for a share of the crop?
5 rented for some combination of cash and share of the crop?
6 used rent free?

Code: 1302

[If field is cash rented (item 2 = 2, 3, or 5), ask item 3, otherwise go to item 4.]

3. What was the cash rent paid per acre for this 2022 wheat field?

Dollars & Cents per Acre: 1303 . ___ ___

[If field is share rented (item 2 = 4 or 5), ask--]

4. What was the landlord's share of the crop from the selected field?

Percent: 1304

[If field is rented (item 2 = 2, 3, 4, or 5) ask--]

5. What was the total cost for all inputs provided by any landlord for the 2022 crop on the selected field? INCLUDE the costs for all inputs, such as seed, fertilizer, chemicals, technical services, custom operations, drying, and irrigation. EXCLUDE real estate tax expenses and lime costs paid by the landowner.

Dollars & Cents per Acre: 1305 . ___ ___ OR Total Dollars: 1306

Landlord and Contractor

[If field is share rented (item 2 = 4 or 5), ask--]

	Percent
4. What was the landlord's share of the crop from the selected field?	1304

[If field is rented (item 2 = 2, 3, 4, or 5) ask--]

	Dollars & Cents per Acre		Total Dollars
5. What was the total cost for all inputs provided by any landlord for the 2022 crop on the selected field? INCLUDE the costs for all inputs, such as seed, fertilizer, chemicals, technical services, custom operations, drying, and irrigation. EXCLUDE real estate tax expenses and lime costs paid by the landowner	1305 . ___ ___	OR	1306
6. What was the total cost for all inputs provided by any contractor for the 2022 crop on the selected field? INCLUDE the costs for all inputs, such as seed, fertilizer, chemicals, technical services, custom operations, drying, and irrigation	1309 . ___ ___	OR	1310

Seeding Rates

- The seeding rate determines the planting cost
- This allows ERS to use adjust seed expenses from previous years using annual prices provided by NASS

[If any seed purchased (item 9 = 1 or 3), ask--]

	Dollars & Cents per Unit	Unit Code 1=Pounds 2=Cwt 3=Tons 4=Bushels 22=Acres 23=50 lb. Bags
10. What was the total cost per unit of purchased seed for the selected field? INCLUDE operator, landlord, and contractor costs, cost of seed treatment, and technology fee....	1319 .__ __	1320
	Units	**Unit Code** 1=Pounds/Acre 2=Cwt/Acre 3=Tons/Acre 4=Bushels/Acre 23=50 lb. Bags/Acre
11. What was the seeding rate per acre the first time the selected field was planted?.....	1313 .__	2314

Seed Treatment

- Respondent booklet has seed treatment codes

13. For the 2022 wheat crop, was the wheat seed--.....

1	Treated with a pesticide prior to purchase?
2	Treated with a pesticide after purchase?
3	Not treated with a pesticide?

..... Code 3062

[If item 13 = 1 or 2, continue, otherwise go to item 14.]

Seed Treatment Name

a. What was the name of the seed treatment? [Write seed treatment name in the box provided.]..... 1289

b. What was the seed treatment code? [Enter the appropriate seed treatment code from the Respondent Booklet. Enter "999" if a seed treatment was applied but is not listed. Enter "-1" if the seed treatment is not known.]..... Code 2325

Field Use

[Now I need information about the acres harvested or to be harvested and the yields from the selected field.]

17. How many acres in this wheat field were or will be--	Acres	What yield per acre did you get or do you expect to get for wheat-- Units per Acre	Unit Code 1=Pounds 2=Cwt 3=Tons 4=Bushels Code
a. harvested for grain, first crop?	1346 .___	1347	1348
b. harvested for hay, silage, or green chop?	1349 .___	1350	TONS
c. harvested for commercial seed contract?	1431 .___	1432	1433
d. abandoned?	1351 .___		
e. used for some other purpose?	1439 .___		

Straw Harvest

18. Was straw harvested from the selected field?

1520 1 ☐ Yes – Continue 3 ☐ No – [go to item 20]

Acres

19. How many acres of this wheat field were harvested for straw?..... 1521 .__

Total Tons

a. How many total tons of wheat straw were harvested from these wheat acres?..... 1522

2.0 (Tons per Acre) x 100 (Acres) = 200 (Total Tons) **OR** 360 (Bales) x 1100 (Lbs per Bale) ÷ 2000 (Lbs per Ton) = 198 (Total Tons)

Crop History

1 What crops were planted on the selected field in-- [For perennial crops, (1, 11, 292, 302, and 311) report the crop code in all seasons when the crop was growing.]			2 Was this a cover crop?	3 If a cover crop was planted, how did you terminate this cover crop? 1 Tilled-In 2 Herbicide 3 Rolled 4 Grazed 5 Harvested for forage 6 Harvested for grain 7 Winter killed	4 Was the selected field no-till or strip-tilled?[1/]
Season and Year	Crop Name	Crop Code	Yes=1 No=3	Code	Yes=1 No=3
a. Spring/Summer of 2022?.....					1344
b. Fall of 2021?.....	Winter Wheat	1343 165	1470 3	1471	1345 3
c. Spring/Summer of 2021?.....	Soybeans	1369 26	1472 3	1473	1371 3
d. Fall of 2020?.....	No crop	1372 318	1474	1475	1374
e. Spring/Summer of 2020?.....	No crop	1375 318	1476	1477	1377
f. Fall of 2019?.....	Winter Wheat	1378 165	1478 3	1479	1380 3
g. Spring/Summer of 2019?.....	Alfalfa	1381 1	1480 3	1481	1383 3
h. Fall of 2018?.....	Alfalfa	1366 1	1482 3	1483	1368 3
i. Spring/Summer of 2018?.....	Alfalfa	1340 1	1484 3	1485	1342 3

Crop History Example 2- Began operating land in Spring 2021

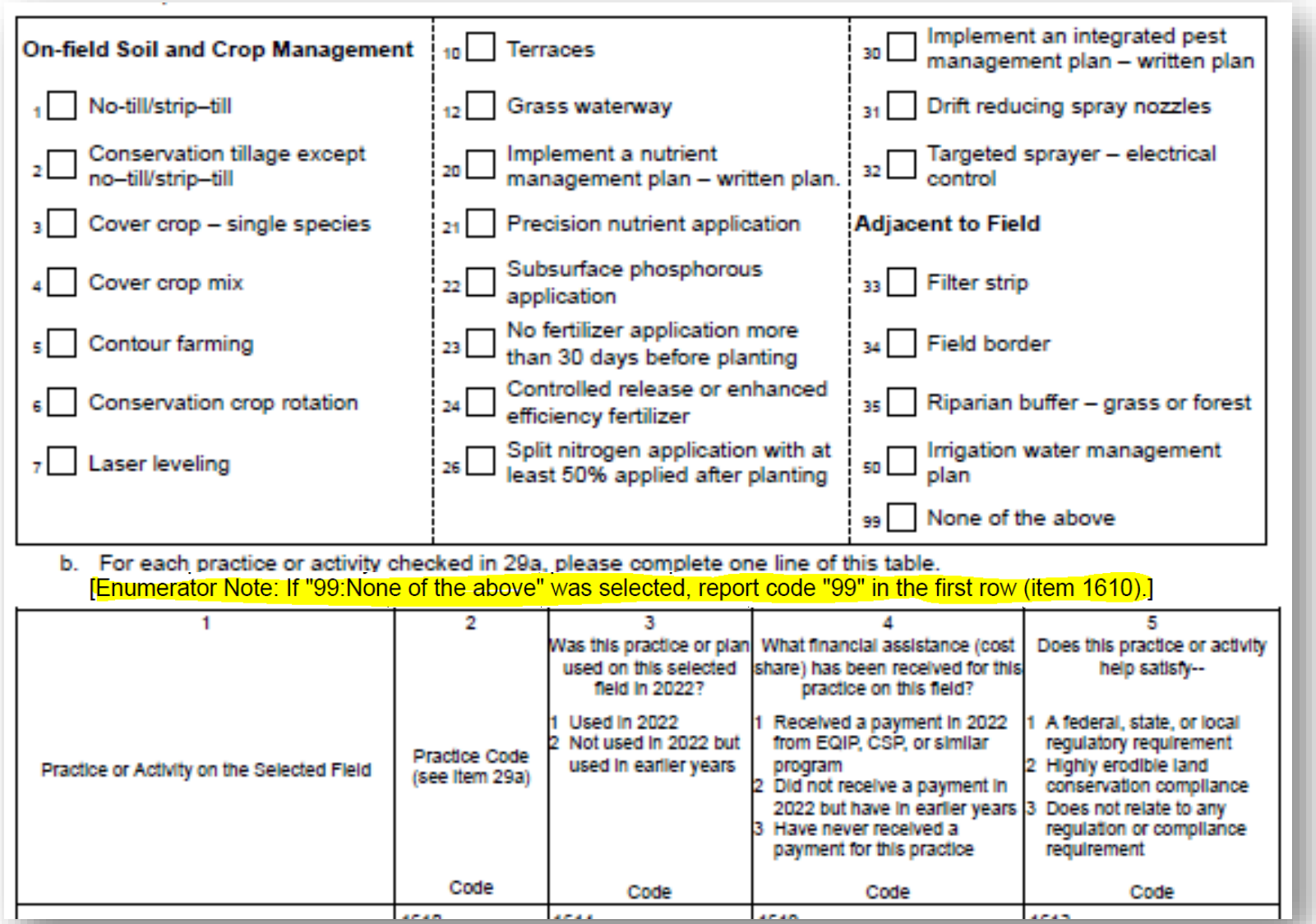
1 What crops were planted on the selected field in-- [For perennial crops, (1, 11, 292, 302, and 311) report the crop code in all seasons when the crop was growing.]			2 Was this a cover crop?	3 If a cover crop was planted, how did you terminate this cover crop? 1 Tilled-in 2 Herbicide 3 Rolled 4 Grazed 5 Harvested for forage 6 Harvested for grain 7 Winter killed	4 Was the selected field no-till or strip-tilled?[1/]
Season and Year	Crop Name	Crop Code	Yes=1 No=3	Code	Yes=1 No=3
a. Spring/Summer of 2022?.....					1344
b. Fall of 2021?.....	Winter Wheat	1343 165	1470 3	1471	1345 3
c. Spring/Summer of 2021?.....	Soybeans	1369 26	1472 3	1473	1371 3
d. Fall of 2020?.....		1372	1474	1475	1374
e. Spring/Summer of 2020?.....		1375	1476	1477	1377
f. Fall of 2019?.....		1378	1478	1479	1380
g. Spring/Summer of 2019?.....		1381	1480	1481	1383
h. Fall of 2018?.....		1366	1482	1483	1368
i. Spring/Summer of 2018?.....		1340	1484	1485	1342

Field Concerns

[Next we will ask about soil and water concerns that you have on the selected field.]

1	2	3	
26. In the selected field, are any of the following currently or historically a concern?	1 Currently a concern 2 A concern in the past but not anymore 3 Not a concern Code	Have you received technical assistance from any of the following sources to evaluate this resource concern? Report up to 2 sources that you received assistance from: 1 USDA - NRCS 2 Cooperative Extension Service 3 Other USDA staff, including Forest Service 4 Other (e.g. Soil and Water Conservation District, state agency) 5 None Source 1	Source 2
a. Water–driven erosion.....	2407	2417	2427
g. Other concerns.....	2413	2423	2433
i. If the answer to all of the above was "Not a Concern", is it the case that there are no significant concerns on this field? ..... Yes=1 No=3	2414		

Soil and Crop Management Table



On-field Soil and Crop Management		
1 ☐ No-till/strip–till	10 ☐ Terraces	30 ☐ Implement an integrated pest management plan – written plan
2 ☐ Conservation tillage except no–till/strip–till	12 ☐ Grass waterway	31 ☐ Drift reducing spray nozzles
3 ☐ Cover crop – single species	20 ☐ Implement a nutrient management plan – written plan.	32 ☐ Targeted sprayer – electrical control
4 ☐ Cover crop mix	21 ☐ Precision nutrient application	**Adjacent to Field**
5 ☐ Contour farming	22 ☐ Subsurface phosphorous application	33 ☐ Filter strip
6 ☐ Conservation crop rotation	23 ☐ No fertilizer application more than 30 days before planting	34 ☐ Field border
7 ☐ Laser leveling	24 ☐ Controlled release or enhanced efficiency fertilizer	35 ☐ Riparian buffer – grass or forest
	26 ☐ Split nitrogen application with at least 50% applied after planting	50 ☐ Irrigation water management plan
		99 ☐ None of the above

b. For each practice or activity checked in 29a, please complete one line of this table.
[Enumerator Note: If "99:None of the above" was selected, report code "99" in the first row (item 1610).]

1 Practice or Activity on the Selected Field	2 Practice Code (see item 29a) Code	3 Was this practice or plan used on this selected field in 2022? 1 Used in 2022 2 Not used in 2022 but used in earlier years Code	4 What financial assistance (cost share) has been received for this practice on this field? 1 Received a payment in 2022 from EQIP, CSP, or similar program 2 Did not receive a payment in 2022 but have in earlier years 3 Have never received a payment for this practice Code	5 Does this practice or activity help satisfy-- 1 A federal, state, or local regulatory requirement 2 Highly erodible land conservation compliance 3 Does not relate to any regulation or compliance requirement Code

Soil and Crop Management Table

On-field Soil and Crop Management		
1 ☐ No-till/strip–till	10 ☐ Terraces	30 ☐ Implement an integrated pest management plan – written plan
2 ☐ Conservation tillage except no–till/strip–till	12 ☐ Grass waterway	31 ☐ Drift reducing spray nozzles
3 ☐ Cover crop – single species	20 ☑ Implement a nutrient management plan – written plan.	32 ☐ Targeted sprayer – electrical control
4 ☐ Cover crop mix	21 ☐ Precision nutrient application	**Adjacent to Field**
5 ☐ Contour farming	22 ☐ Subsurface phosphorous application	33 ☐ Filter strip
6 ☐ Conservation crop rotation	23 ☐ No fertilizer application more than 30 days before planting	34 ☐ Field border
7 ☐ Laser leveling	24 ☐ Controlled release or enhanced efficiency fertilizer	35 ☐ Riparian buffer – grass or forest
	26 ☐ Split nitrogen application with at least 50% applied after planting	50 ☐ Irrigation water management plan
		99 ☐ None of the above

b. For each practice or activity checked in 29a, please complete one line of this table.
[Enumerator Note: If "99:None of the above" was selected, report code "99" in the first row (item 1610).]

1 Practice or Activity on the Selected Field	2 Practice Code (see item 29a) Code	3 Was this practice or plan used on this selected field in 2022? 1 Used in 2022 2 Not used in 2022 but used in earlier years Code	4 What financial assistance (cost share) has been received for this practice on this field? 1 Received a payment in 2022 from EQIP, CSP, or similar program 2 Did not receive a payment in 2022 but have in earlier years 3 Have never received a payment for this practice Code	5 Does this practice or activity help satisfy-- 1 A federal, state, or local regulatory requirement 2 Highly erodible land conservation compliance 3 Does not relate to any regulation or compliance requirement Code
Nutrient Plan	1610 20	1614 2	1612 2	1613 1

The field is also included in a nutrient management plan that was first implemented in 2006 up until 2016.

Soil and Crop Management Table

On-field Soil and Crop Management		
1 ☐ No-till/strip–till	10 ☐ Terraces	30 ☐ Implement an integrated pest management plan – written plan
2 ☐ Conservation tillage except no–till/strip–till	12 ☐ Grass waterway	31 ☐ Drift reducing spray nozzles
3 ☐ Cover crop – single species	20 ☑ Implement a nutrient management plan – written plan.	32 ☐ Targeted sprayer – electrical control
4 ☐ Cover crop mix	21 ☐ Precision nutrient application	**Adjacent to Field**
5 ☐ Contour farming	22 ☐ Subsurface phosphorous application	33 ☐ Filter strip
6 ☐ Conservation crop rotation	23 ☐ No fertilizer application more than 30 days before planting	34 ☐ Field border
7 ☐ Laser leveling	24 ☐ Controlled release or enhanced efficiency fertilizer	35 ☐ Riparian buffer – grass or forest
	26 ☐ Split nitrogen application with at least 50% applied after planting	50 ☐ Irrigation water management plan
		99 ☐ None of the above

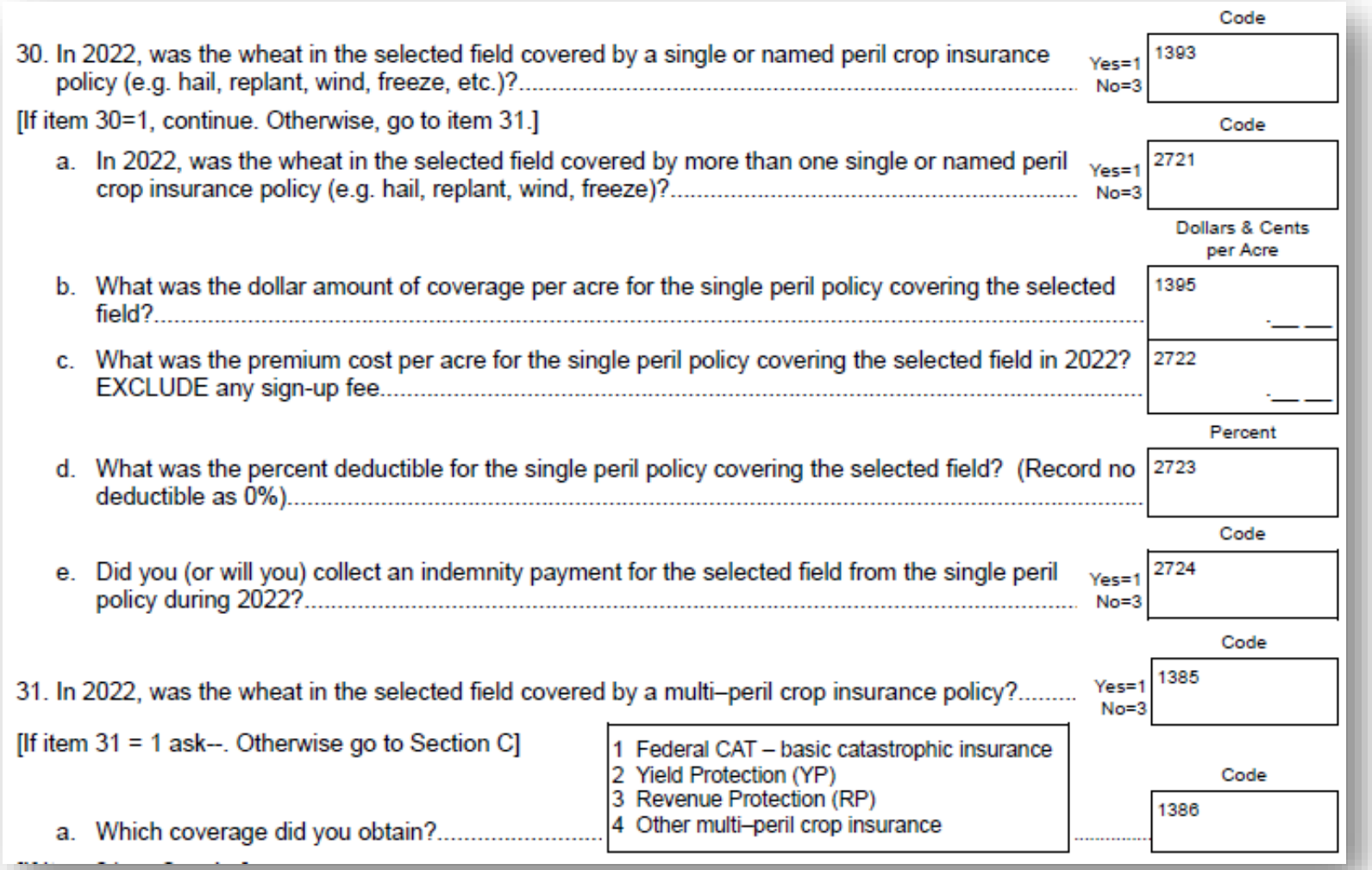
b. For each practice or activity checked in 29a, please complete one line of this table.
[Enumerator Note: If "99:None of the above" was selected, report code "99" in the first row (item 1610).]

1 Practice or Activity on the Selected Field	2 Practice Code (see item 29a) Code	3 Was this practice or plan used on this selected field in 2022? 1 Used in 2022 2 Not used in 2022 but used in earlier years Code	4 What financial assistance (cost share) has been received for this practice on this field? 1 Received a payment in 2022 from EQIP, CSP, or similar program 2 Did not receive a payment in 2022 but have in earlier years 3 Have never received a payment for this practice Code	5 Does this practice or activity help satisfy-- 1 A federal, state, or local regulatory requirement 2 Highly erodible land conservation compliance 3 Does not relate to any regulation or compliance requirement Code
Nutrient Plan	1610 20	1614 2	1612 2	1613 1

Past financial assistance from the Environmental Quality Incentives Program (EQIP), but not in 2022.

Practice satisfies federal regulatory requirements.

Crop Insurance



		Code
30. In 2022, was the wheat in the selected field covered by a single or named peril crop insurance policy (e.g. hail, replant, wind, freeze, etc.)?	Yes=1 No=3	1393
[If item 30=1, continue. Otherwise, go to item 31.]		
a. In 2022, was the wheat in the selected field covered by more than one single or named peril crop insurance policy (e.g. hail, replant, wind, freeze)?	Yes=1 No=3	2721
		Dollars & Cents per Acre
b. What was the dollar amount of coverage per acre for the single peril policy covering the selected field?		1395 .__ __
c. What was the premium cost per acre for the single peril policy covering the selected field in 2022? EXCLUDE any sign-up fee		2722 .__ __
		Percent
d. What was the percent deductible for the single peril policy covering the selected field? (Record no deductible as 0%)		2723
		Code
e. Did you (or will you) collect an indemnity payment for the selected field from the single peril policy during 2022?	Yes=1 No=3	2724
		Code
31. In 2022, was the wheat in the selected field covered by a multi–peril crop insurance policy?	Yes=1 No=3	1385
[If item 31 = 1 ask--. Otherwise go to Section C]		
a. Which coverage did you obtain?	1 Federal CAT – basic catastrophic insurance 2 Yield Protection (YP) 3 Revenue Protection (RP) 4 Other multi–peril crop insurance	Code 1386

That’s All Folks!

Our big takeaways:

- Follow your skip codes- especially in the tables
- Be familiar with the terms and questionnaire before you start calling
- Take good notes

Nutrient or Fertilizer Applications

Click Here to return to Index

David Biar

Northern Plains Region

Section Purpose

- Identify nutrients or fertilizer used to produce the 2022 Wheat crop on the selected field.
- Fertilizer application data is used to analyze water quality and agricultural productivity issues and policies.
- Nutrient Management practices help farmers adjust fertilizer applications to crop needs and reduce costs and losses to the environment.

Getting Started In Section C

C **NUTRIENT or FERTILIZER APPLICATIONS -** SELECTED FIELD **C**

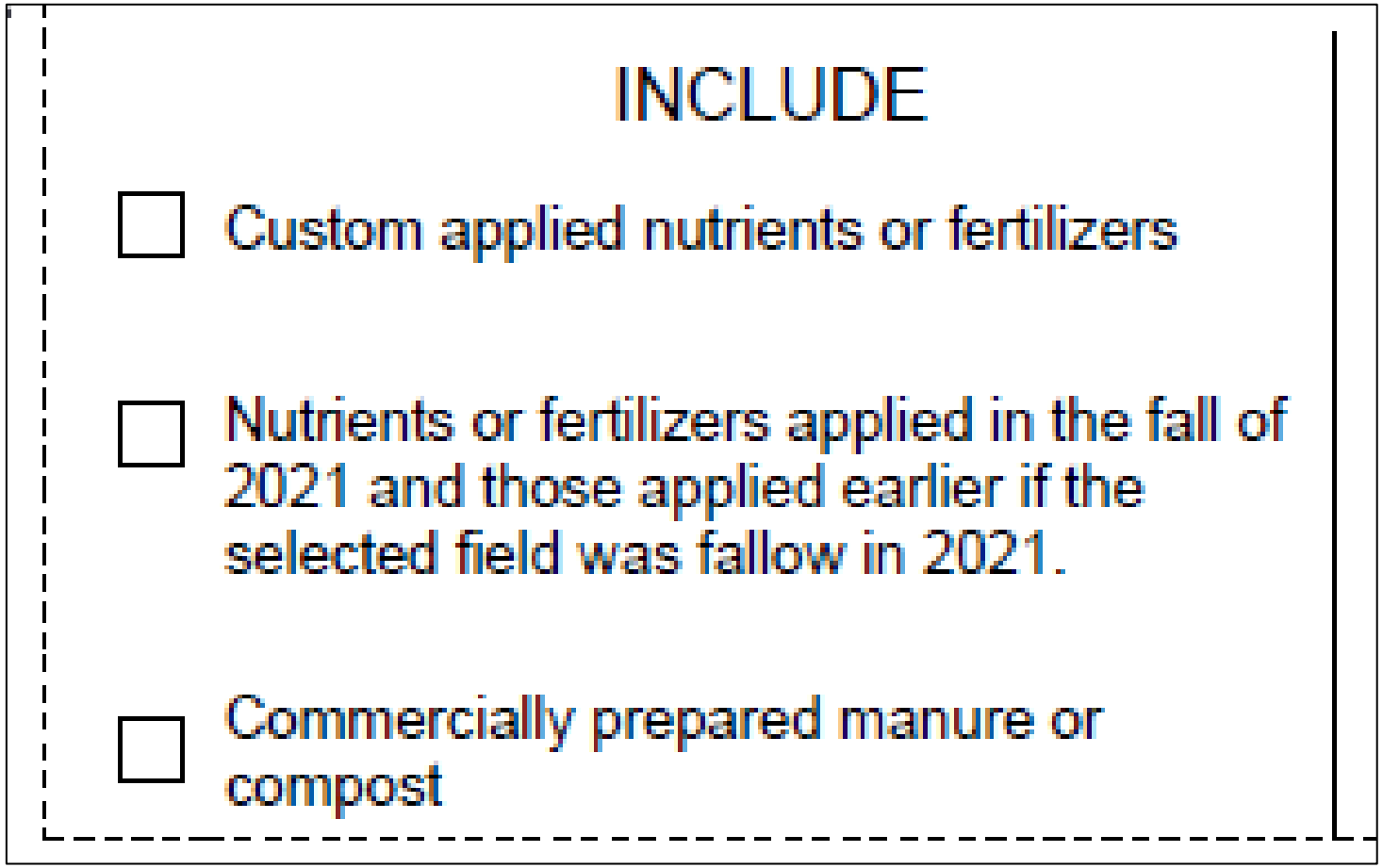
		Code	Office Use Edit Table
1. Were commercial nutrients or fertilizers applied to the selected field for the 2022 wheat crop? INCLUDE those from operators, landlords, and contractors.	Yes=1 No=3	0202	0200

[If item 1 = 1 continue. Otherwise go to item 6]

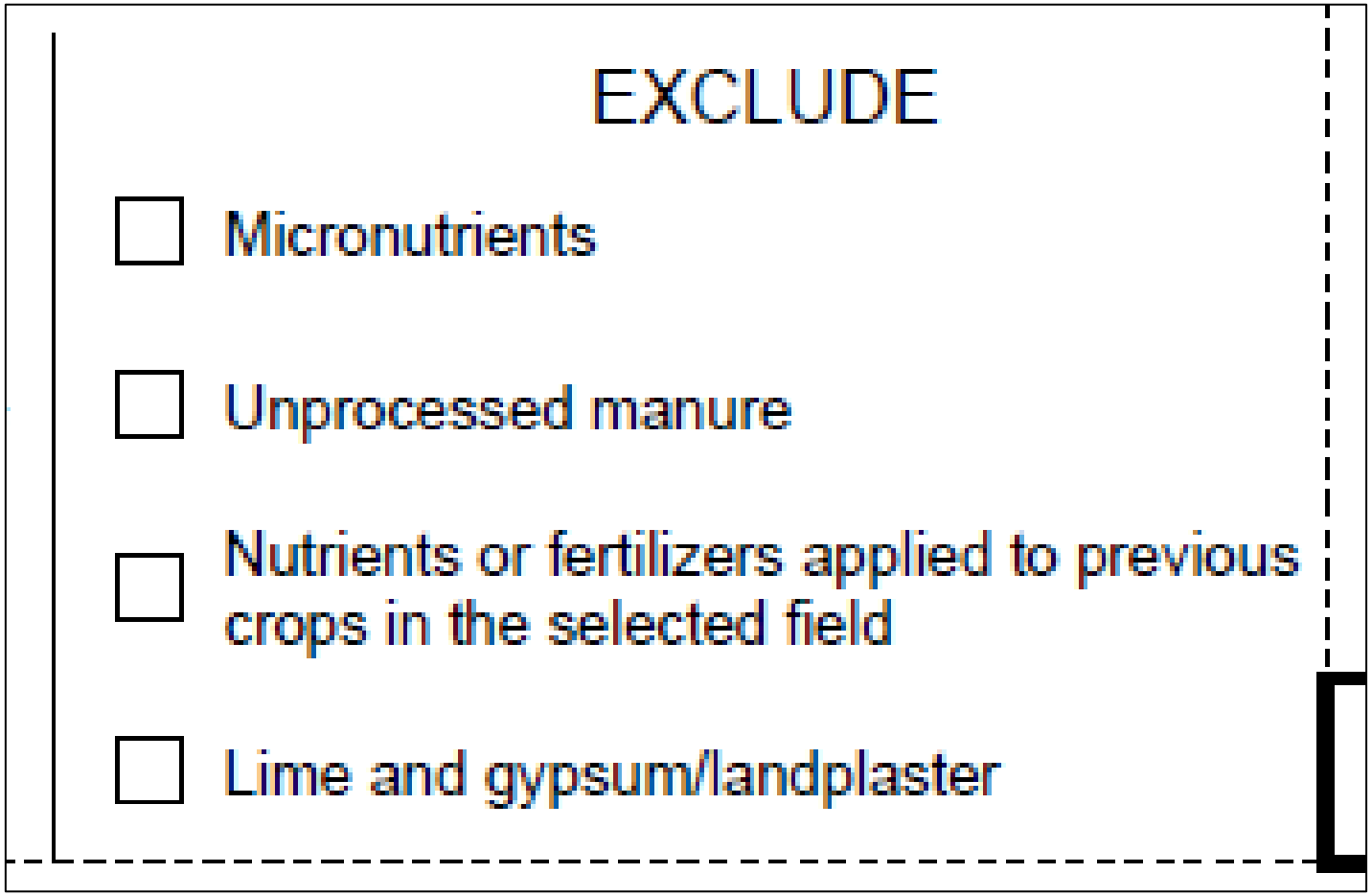
	Number
2. How many commercial nutrient or fertilizer applications were made to the selected field for the 2022 crop? INCLUDE applications made by airplanes and custom applicators.....	0203

Code Yes=1 if Applied Fertilizers and No=3
Record the number of applications

What is Included



What is Excluded



Nutrient or Fertilizer Applications Table

Nitrogen Codes for Column 2

1 Anhydrous ammonia
2 Nitrogen solution (UAN)
3 Urea
4 Ammonium nitrate
5 Sodium nitrate
6 Ammonia sulfate
7 Potassium nitrate, magnesium nitrate, and calcium nitrate
8 Other nitrogen fertilizer material [specify:_____]

Application Codes for Column 6

1 Broadcast, ground without incorporation
2 Broadcast, ground with incorporation
3 Broadcast, by aircraft
4 In seed furrow
5 In irrigation water
6 Chisel/injected or knifed in
7 Banded in or over row
8 Foliar or directed spray

LINE	2 Materials Used [Enter percentage analysis or actual pounds of plant nutrients applied per acre.] [Show Common Nutrients or Fertilizers in Respondent Booklet] [Refer to nitrogen list above for type of nitrogen used.]					3 What quantity was applied per acre? [Leave this column blank if actual nutrients were reported]	4 [Enter material code] 1 Pounds 12 Gallons 13 Quarts 19 Pounds of actual nutrients	5 When was this applied? 1 In the fall before seeding 2 In the spring before seeding 3 At seeding 4 After seeding	6 How was this applied? [Refer to code list above]	7 How many acres in the selected field were treated in this application? Acres
	N Nitrogen	P_2O_5 Phosphate	K_2O Potash	S Sulfur	Type of N Used					
01	31	32	33	34	35	36	37	38	39	40 .___
02	31	32	33	34	35	36	37	38	39	40 .___
03	31	32	33	34	35	36	37	38	39	40 .___

Fertilizer is made up of 2 things:

- **Actual Nutrients**
  - N: Nitrogen
  - P: Phosphorus
  - K: Potassium
  - S: Sulfur
  - And many others
- **Carrier Material**
  - Filler - other stuff

Example Nutrients to grow a crop…

- 105 pounds of Nitrogen per acre
- 35 pounds of Phosphorus per acre
- 55 pounds of Potassium per acre

2 Ways to Record Nutrient or Fertilizer Applications:

- **<u>Percent Analysis – most common & preferred</u>**
- **<u>Pounds of Actual Nutrients</u>**

LINE	2 Materials Used [Enter percentage analysis or actual pounds of plant nutrients applied per acre.] [Show Common Nutrients or Fertilizers in Respondent Booklet] [Refer to nitrogen list above for type of nitrogen used.]					3 What quantity was applied per acre? [Leave this column blank if actual nutrients were reported]	4 [Enter material code] 1 Pounds 12 Gallons 13 Quarts 19 Pounds of actual nutrients	5 When was this applied? 1 In the fall before seeding 2 In the spring before seeding 3 At seeding 4 After seeding	6 How was this applied? [Refer to code list above]	7 How many acres in the selected field were treated in this application? Acres
	N Nitrogen	P_2O_5 Phosphate	K_2O Potash	S Sulfur	Type of N Used					
01	31	32	33	34	35	36	37	38	39	40 .___
02	31	32	33	34	35	36	37	38	39	40 .___
03	31	32	33	34	35	36	37	38	39	40 .___

2 Ways to Record Nutrient or Fertilizer Applications:

- Percent Analysis – most common & preferred
  - **A Complete Product**

- Pounds of Actual Nutrients
  - **Individual Ingredients Of A Complete Product**

2 Ways to Record Nutrient or Fertilizer Applications:

- **<u>Percent Analysis - A Complete Product</u>**
- Urea 46-0-0
- 10-34-0
- MAP 11-52-0
- DAP 18-46-0

- **<u>Pounds of Actual Nutrients - Individual Ingredients</u>**
- Nitrogen
- Phosphorus
- Potassium
- Sulfur

It is written with numbers and dashes

- 26 - 5 - 10

  N - P - K
- First number listed is Nitrogen
- Second number listed is Phosphorus
- Third number listed is Potassium
- If a Fourth number is present: 26 - 5 - 10 - 7 that is Sulfur

Numbers represent the Percentage

- 26-5-10
- For any given quantity of this fertilizer,
  - 26% of it will be Nitrogen
  - 5% of it will be Phosphorus
  - 10% of it will be Potassium
  - The remaining 59% will be carrier material

Percent Analysis Method

- 150 Pounds of 26-5-10:
  - 150 lbs. x 26% = 39 pounds Nitrogen
  - 150 lbs. x 5% = 8 pounds of Phosphorus
  - 150 lbs. x 10% = 15 pounds of Potassium
  - The rest will be carrier material
  - 150 lbs. x 59% = 88 pounds of carrier material

Peanut M&Ms

46%

54%

Peanut M&Ms vs Urea

46%

54%

Snickers

18%

46%

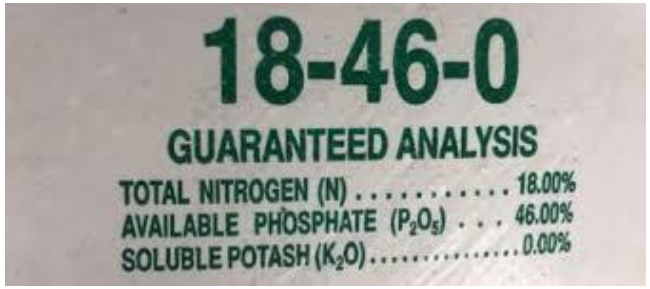
36%

Snickers vs DAP

18%

46%

36%



Sprite

10%

34%

56%

Sprite vs 10-34-0

10%

34%

56%

10-34-0	
Guaranteed Analysis	
Total Nitrogen (N)	10%
Available Phosphate (P_2O_5)	34%

Lemonade

32%

68%

Lemonade vs UAN 32-0-0

32%

UAN SOLUTION

32%

68%

Air Freshener

82%

18%

Air Freshener vs Anhydrous

82%

18%

Percent Analysis

LINE	2 Materials Used [Enter percentage analysis or actual pounds of plant nutrients applied per acre.] [Show Common Nutrients or Fertilizers in Respondent Booklet] [Refer to nitrogen list above for type of nitrogen used.]					3 What quantity was applied per acre? [Leave this column blank if actual nutrients were reported]	4 [Enter material code] 1 Pounds 12 Gallons [redacted] nutrients
	N Nitrogen	P_2O_5 Phosphate	K_2O Potash	S Sulfur	Type of N Used		
01	31 **11**	32 **52**	33	34	35 **4**	36 **85**	37 **1**
02	31 **10**	32 **34**	33	34	35 **4**	36 **5**	37 **12**
03	31	32	33 **60**	34	35	36 **120**	37 **1**

Percent Analysis Method

- 10-34-0 11-52-0 18-46-0 28-0-0 46-0-0 82-0-0 0-0-60
- If you add the N-P-K together, it will not be greater than 85
  - If Sulfur is included in the mix, then this does not hold true.

Pounds of Actual Nutrients

LINE	2 Materials Used [Enter percentage analysis or actual pounds of plant nutrients applied per acre.] [Show Common Nutrients or Fertilizers in Respondent Booklet] [Refer to nitrogen list above for type of nitrogen used.]					3 What quantity was applied per acre? [Leave this column blank if actual nutrients were reported]	4 [Enter material code] 19 Pounds of actual nutrients
	N Nitrogen	P_2O_5 Phosphate	K_2O Potash	S Sulfur	Type of N Used		
01	31 10	32 44	33 72	34	35 4	36	37 19
02	31	32	33	34	35	36	37
03	31	32	33	34	35	36	37

2 Ways to Record Nutrient or Fertilizer Applications:

- **<u>Percent Analysis – most common & preferred</u>**
  - 5 gallons of 10-34-0
  - 85 pounds of 11-52-0
  - 120 pounds of 0-0-60

- **<u>Pounds of Actual Nutrients</u>**
  - 10 pounds of Nitrogen
  - 44 pounds of Phosphorus
  - 72 pounds of Potassium

2 Ways to Record Nutrient or Fertilizer Applications:

- **<u>Percent Analysis – most common & preferred</u>**
  - 5 gallons of 10-34-0
  - 85 pounds of 11-52-0
  - 120 pounds of 0-0-60
  - **Column 3 must be complete**
  - **Column 4 must be coded 1 or 12**

- **<u>Pounds of Actual Nutrients</u>**
  - 10 pounds of Nitrogen
  - 44 pounds of Phosphorus
  - 72 pounds of potassium
  - **Column 3 must be blank**
  - **Column 4 must be coded 19**

3	4
What quantity was applied per acre? [Leave this column blank if actual nutrients were reported]	[Enter material code] 1 Pounds 12 Gallons 13 Quarts 19 Pounds of actual nutrients
36	37

Types of Nitrogen Used

Nitrogen Codes for Column 2

1 Anhydrous ammonia	6 Ammonia sulfate
2 Nitrogen solution (UAN)	7 Potassium nitrate, magnesium nitrate, and calcium nitrate
3 Urea	
4 Ammonium nitrate	
5 Sodium nitrate	8 Other nitrogen fertilizer material [specify:_____

LINE	2 Materials Used [Enter percentage analysis or actual pounds of plant nutrients applied per acre.] [Show Common Nutrients or Fertilizers in Respondent Booklet] [Refer to nitrogen list above for type of nitrogen used.]				
	N Nitrogen	P_2O_5 Phosphate	K_2O Potash	S Sulfur	Type of N Used
01	31	32	33	34	35

Custom Application and Cost of Fertilizer

Code

4. Were any nutrients or fertilizers applied by custom applicators?..... Yes=1 No=3 | 0214

[If item 4=1 continue. Otherwise go to item 5.]

Code

a. Are you able to report the cost of nutrient or fertilizer materials and custom application separately?..... Yes=1 No=3 | 2216

[If item 4a = 1 continue. Otherwise go to item 5.]

Office Use

0215

b. Excluding the cost of the nutrient or fertilizer materials, how much was spent for custom application of nutrients or fertilizers on the selected field?

INCLUDE
- operator, landlord, and contractor costs
- costs for sulfur and micronutrients

EXCLUDE custom application of lime, gypsum, purchased manure and purchased compost.....

Dollars & Cents per Acre: 0219 .___ ___ OR Total Dollars: 0220

[If material and application costs can't be separated, exclude them here and record the total in item 5.]

5. What was the total cost of all nutrient or fertilizer products applied to the selected field?

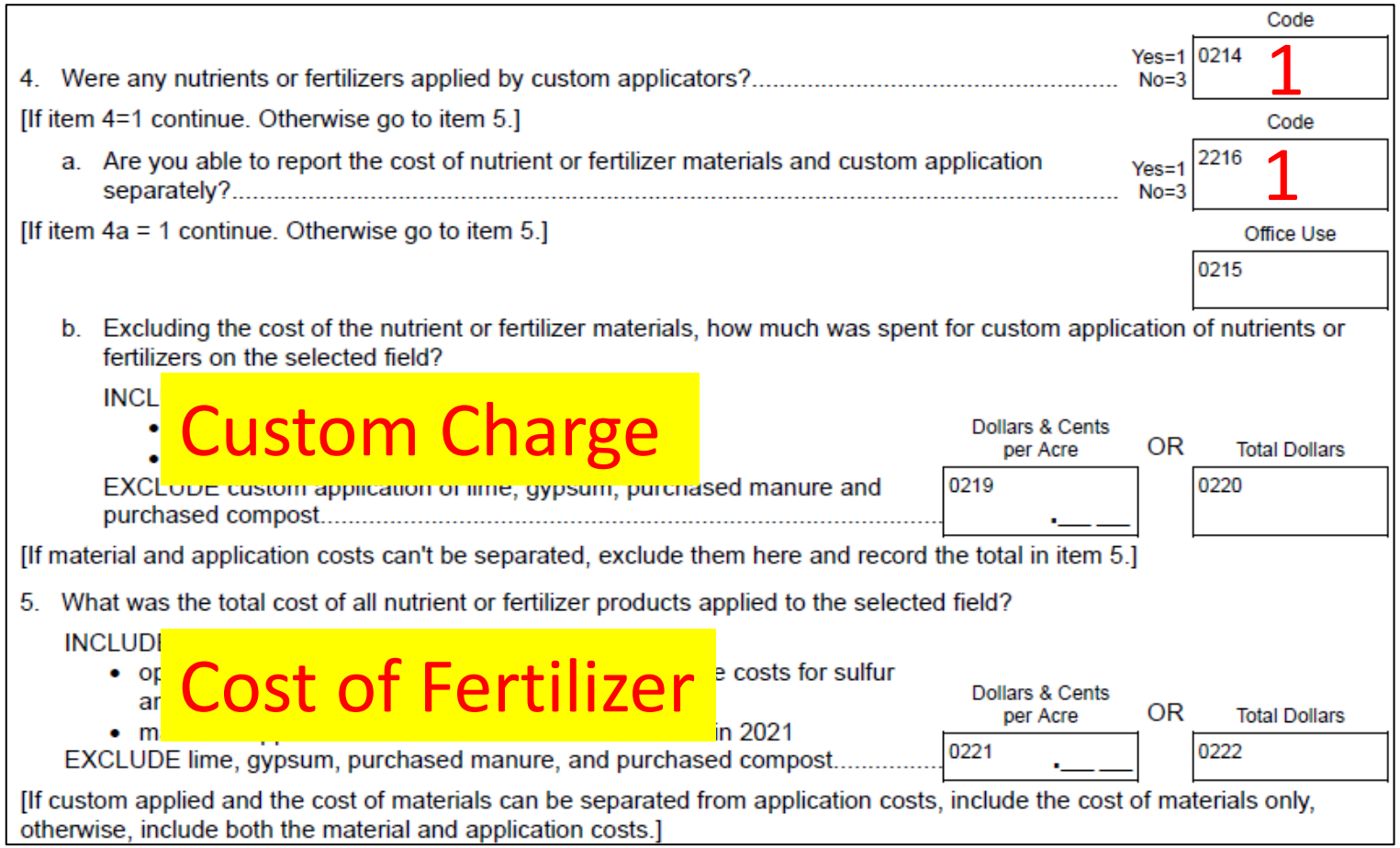
INCLUDE
- operator, landlord, and contractor costs as well as the costs for sulfur and micronutrients
- materials applied to the selected field if it was fallow in 2021

EXCLUDE lime, gypsum, purchased manure, and purchased compost.....

Dollars & Cents per Acre: 0221 .___ ___ OR Total Dollars: 0222

[If custom applied and the cost of materials can be separated from application costs, include the cost of materials only, otherwise, include both the material and application costs.]

Custom Application and Can Separate Costs



Code

4. Were any nutrients or fertilizers applied by custom applicators?..... Yes=1 No=3 | 0214 | 1

[If item 4=1 continue. Otherwise go to item 5.]

Code

a. Are you able to report the cost of nutrient or fertilizer materials and custom application separately?..... Yes=1 No=3 | 2216 | 1

[If item 4a = 1 continue. Otherwise go to item 5.]

Office Use

0215

b. Excluding the cost of the nutrient or fertilizer materials, how much was spent for custom application of nutrients or fertilizers on the selected field?

INCL

- •
- •

Custom Charge

EXCLUDE custom application of lime, gypsum, purchased manure and purchased compost..... Dollars & Cents per Acre: 0219 .___ ___ OR Total Dollars: 0220

[If material and application costs can't be separated, exclude them here and record the total in item 5.]

5. What was the total cost of all nutrient or fertilizer products applied to the selected field?

INCLUDE

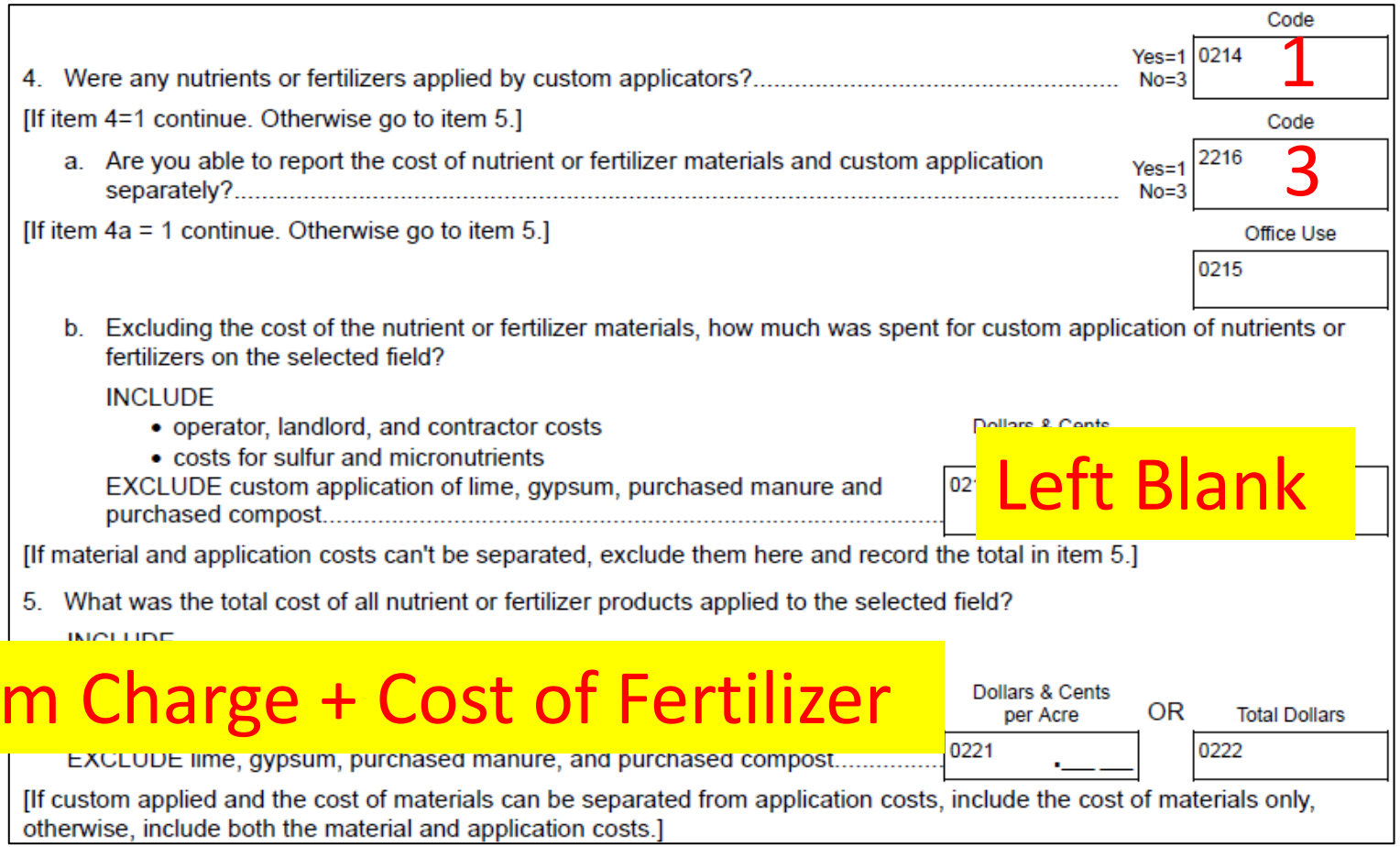
- op e costs for sulfur ar
- m in 2021

Cost of Fertilizer

EXCLUDE lime, gypsum, purchased manure, and purchased compost..... Dollars & Cents per Acre: 0221 .___ ___ OR Total Dollars: 0222

[If custom applied and the cost of materials can be separated from application costs, include the cost of materials only, otherwise, include both the material and application costs.]

Custom Application and Cannot Separate Costs



Code

4. Were any nutrients or fertilizers applied by custom applicators?..... Yes=1 No=3 | 0214 | 1

[If item 4=1 continue. Otherwise go to item 5.]

Code

a. Are you able to report the cost of nutrient or fertilizer materials and custom application separately?..... Yes=1 No=3 | 2216 | 3

[If item 4a = 1 continue. Otherwise go to item 5.]

Office Use

0215

b. Excluding the cost of the nutrient or fertilizer materials, how much was spent for custom application of nutrients or fertilizers on the selected field?

INCLUDE
- operator, landlord, and contractor costs
- costs for sulfur and micronutrients

EXCLUDE custom application of lime, gypsum, purchased manure and purchased compost.....

Dollars & Cents | 02

Left Blank

[If material and application costs can't be separated, exclude them here and record the total in item 5.]

5. What was the total cost of all nutrient or fertilizer products applied to the selected field?

INCLUDE

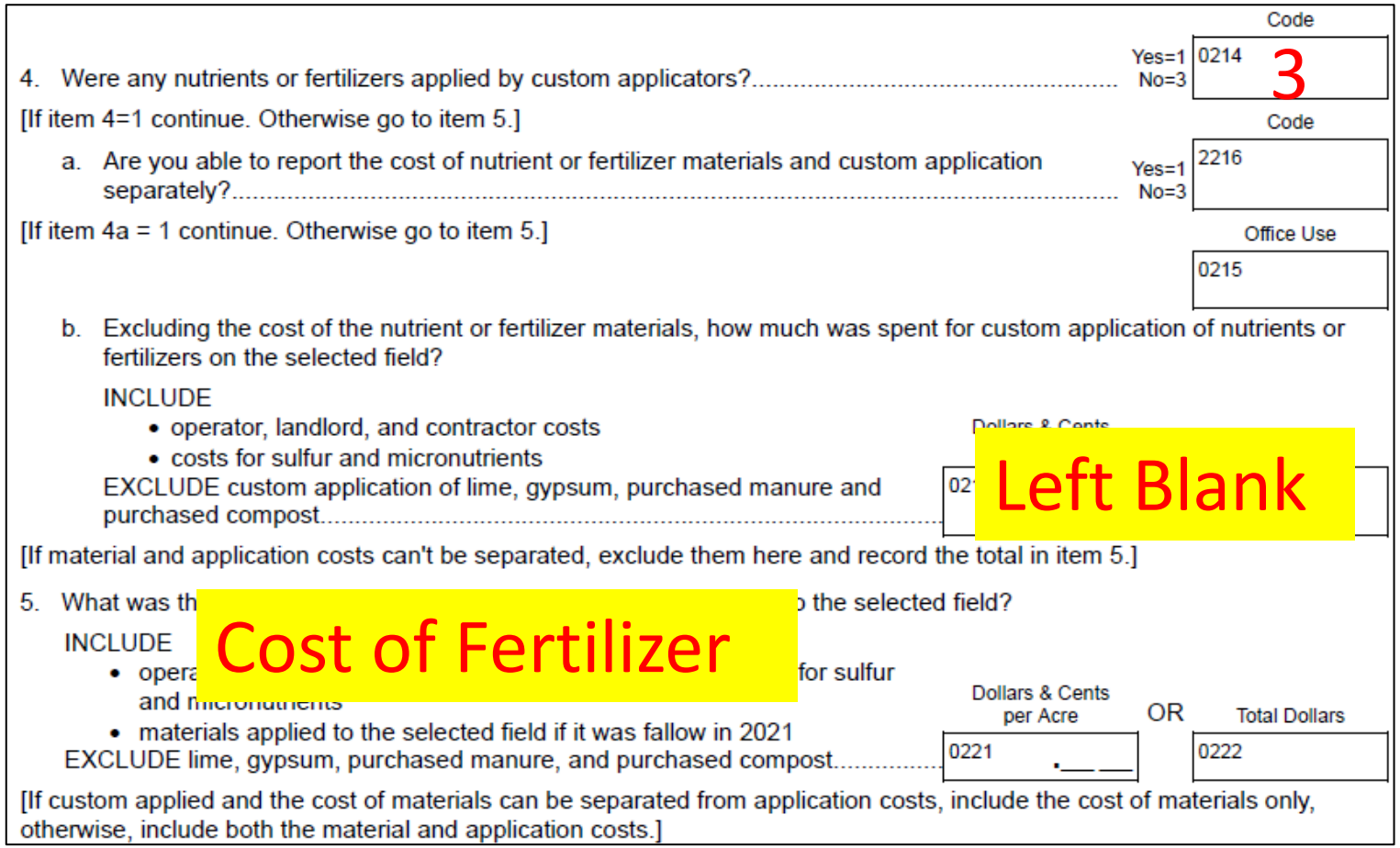
Custom Charge + Cost of Fertilizer

EXCLUDE lime, gypsum, purchased manure, and purchased compost.....

Dollars & Cents per Acre | 0221 .__ __ | OR | Total Dollars | 0222

[If custom applied and the cost of materials can be separated from application costs, include the cost of materials only, otherwise, include both the material and application costs.]

No Custom Application
Only Cost of Fertilizer



Code

4. Were any nutrients or fertilizers applied by custom applicators?..... Yes=1 No=3 | 0214 | 3

[If item 4=1 continue. Otherwise go to item 5.]

Code

a. Are you able to report the cost of nutrient or fertilizer materials and custom application separately?..... Yes=1 No=3 | 2216 |

[If item 4a = 1 continue. Otherwise go to item 5.]

Office Use | 0215 |

b. Excluding the cost of the nutrient or fertilizer materials, how much was spent for custom application of nutrients or fertilizers on the selected field?

INCLUDE
- operator, landlord, and contractor costs
- costs for sulfur and micronutrients

EXCLUDE custom application of lime, gypsum, purchased manure and purchased compost.....

Dollars & Cents | 02 |

Left Blank

[If material and application costs can't be separated, exclude them here and record the total in item 5.]

5. What was th ... the selected field?

Cost of Fertilizer

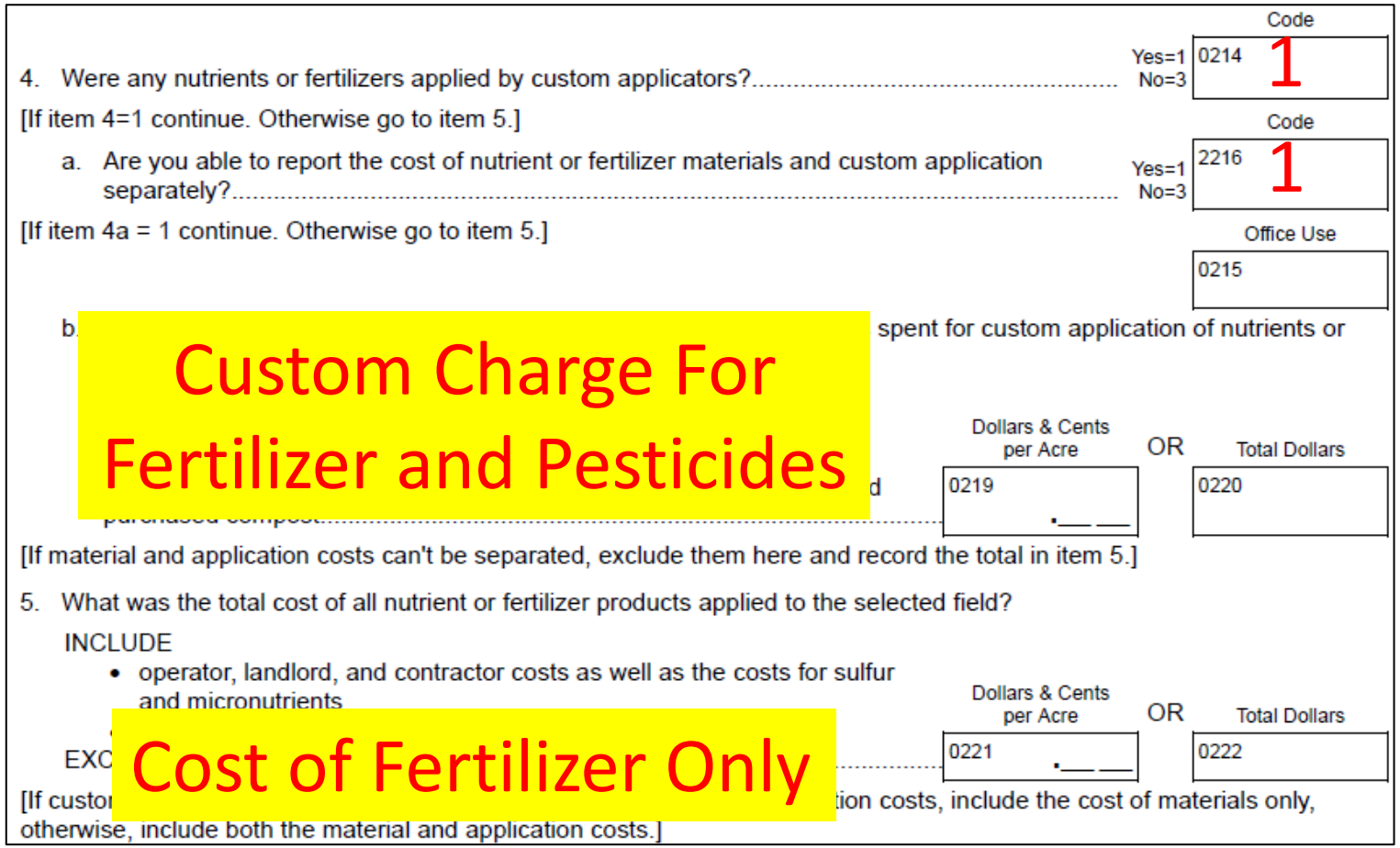
INCLUDE
- opera ... for sulfur and micronutrients
- materials applied to the selected field if it was fallow in 2021

EXCLUDE lime, gypsum, purchased manure, and purchased compost.....

Dollars & Cents per Acre | 0221 .___ ___ | OR | Total Dollars | 0222 |

[If custom applied and the cost of materials can be separated from application costs, include the cost of materials only, otherwise, include both the material and application costs.]

Custom Applied Fertilizer and Pesticides



Code

4. Were any nutrients or fertilizers applied by custom applicators?..... Yes=1 No=3 | 0214 | 1

[If item 4=1 continue. Otherwise go to item 5.]

Code

a. Are you able to report the cost of nutrient or fertilizer materials and custom application separately?..... Yes=1 No=3 | 2216 | 1

[If item 4a = 1 continue. Otherwise go to item 5.]

Office Use

0215

b. [redacted] spent for custom application of nutrients or [redacted] d [redacted]

Dollars & Cents per Acre | OR | Total Dollars

0219 .__ __ | 0220

[If material and application costs can't be separated, exclude them here and record the total in item 5.]

5. What was the total cost of all nutrient or fertilizer products applied to the selected field?

INCLUDE

- operator, landlord, and contractor costs as well as the costs for sulfur and micronutrients

EXC [redacted]

Dollars & Cents per Acre | OR | Total Dollars

0221 .__ __ | 0222

[If custo[redacted]ion costs, include the cost of materials only, otherwise, include both the material and application costs.]

Custom Charge For Fertilizer and Pesticides

Cost of Fertilizer Only

Soil Organic Matter

7. Was a soil test for soil organic matter performed on this corn field at some point in the last 10 years? ..... Yes=1 No=3 — 3225

[If item 7 = 1, ask--]

a. What was the percentage of soil organic matter on the field for the most recent test? ..... — Percent — 3226

Range Less than 1% up to 6%

b. How many times have you tested the selected field for soil organic matter in the last 10 years? ..... — Number — 3227

[If item 7b is more than 1, ask--]

c. Based on these tests, is your soil organic matter content... 1 Increasing? 2 Decreasing? 3 Staying roughly the same? ..... — Code — 3228

To answer 7c, Item 7b. must be more than 1.

Soil or Plant Tissue Tests

- Items 8-12
  - If tests were done
    - What was the recommendation
    - What was the cost of the tests

Nitrogen Applied

- Item 13 Decision on amount to apply
- Item 14 Nitrogen Inhibitors
  - Rate per acre
  - Cost of Inhibitor

Instinct®
NITROGEN STABILIZER

N-Serve®
NITROGEN STABILIZER

Manure

- Acres
- Rate
- When
- Type
- Method Applied
- Source

- Any Costs for Manure or Custom Application
- Testing and Any Changes Made

Thank You!

- Be sure to follow all skips
- Answer YES=1 NO=3

Section D – Pesticide Applications

Click Here to return to Index

Jessica Lemenager

Northwest Region

Pesticide Applications

- Include:
  - Herbicides
  - Insecticides
  - Fungicides
  - Defoliants
  - Other Pesticides
- Exclude
  - Fertilizer Applications
  - Seed Treatments
  - Adjuvants/Surfactants
  - Applications to fence rows, ponds, canals, and ditches

Pesticide Applications

Time Frame: From the harvest of the last harvested crop until the harvest of the current crop.

Pesticide Applications

D **BIOCONTROL or PESTICIDE APPLICATIONS** - SELECTED FIELD **D**

Now I have some questions about all the biocontrols or pesticides used on the selected field for the 2022 wheat crop, including both custom applications and applications made by this operation.

		Code	Office Use Edit Table
1. Were any herbicides, insecticides, fungicides or other biocontrols or pesticides used on this wheat field for the 2022 crop?.....	Yes=1 No=3	0302	0300

[Probe for applications made in the fall of 2021 and those made earlier if the selected field was fallow.]

If no biocontrols or pesticides applied, go to Section E.

Pesticide Applications Table

- Obtain the trade name and formulation
- Respondent Booklet
  - Formulation (Liquid or Dry)
  - Type or Class of each product

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 How much was applied per acre per application?	OR 7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
	01	61	62	63	64	65 .__ __	73 .__ __	74
	02	61	62	63	64	65 .__ __	73 .__ __	74

Pesticide Applications Table

- Verify Product with EPA Number

L	H	41725	GF-3335	62719-695	L	H	41306	LEXAR EZ HERBICIDE	100-1414
L	H	41198	GLY STAR GRASS AND WEED KILLER CONCENTRATE	42750-67	L	H	41052	LEXAR HERBICIDE	100-1201
L	H	41508	GLY-4 PLUS HERBICIDE	84009-12	L	H	41575	LIBERTY 2,4-D ESTER 6	89168-5
L	H	41067	GLYPHO 648	34704-929	L	H	41817	LIBERTY 280 SL HERBICIDE	7969-448
L	H	40910	GLYPHOMAX	62719-323	L	F	71065	LIBERTY AZOXY-TET	89168-52
L	H	40950	GLYPHOSATE	34704-866	L	I	11399	LIBERTY BIFENTHRIN 2 EC	89168-19
L	H	40977	GLYPHOSATE 4 HERBICIDE	51036-312	L	H	41356	LIBERTY CLETHODIM 2EC	89168-11
L	H	41180	GLYPHOSATE 4 PLUS	81927-9	L	H	41366	LIBERTY GLYPHOSATE PLUS	89168-17
L	H	41023	GLYPHOSATE 41%	42750-60	L	H	41814	LIBERTY HERBICIDE	7969-447
L	H	41420	GLYPHOSATE 41% HERBICIDE	87659-3	L	H	41762	LIBERTY MESOTRIONE 4SC	89168-54
L	H	41053	GLYPHOSATE 41% PLUS	42750-61	D	H	41484	LIBERTY METRIBUZIN 75DF	89168-30
L	H	41011	GLYPHOSATE 53.8%	42750-59	L	H	41479	LIFELINE HERBICIDE	70506-310

Pesticide Applications Table

- Product Code
  - Found in the Respondent Booklet
  - Record each product on a separate line

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 OR 7 6: How much was applied per acre per application? 7: What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
	01	61	62	63	64	65 .__ __ 73 .__ __	74
	02	61	62	63	64	65 .__ __ 73 .__ __	74

Pesticide Applications Table

- Product Form
  - Liquid or Dry
  - Key word “BOUGHT”

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 OR 7 6 How much was applied per acre per application?	7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
	01	61	62	63	64	65 .__ __	73 .__ __	74
	02	61	62	63	64	65 .__ __	73 .__ __	74

Pesticide Applications Table

- Tank Mix
  - Two products applied in a single application
  - Enter different products on a separate line.
  - Enter the line number of the first product in the mix for all products in the mix

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 How much was applied per acre per application? OR	7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
	01	61	62	63	64	65 •__ __	73 •__ __	74
	02	61	62	63	64	65 •__ __	73 •__ __	74

Pesticide Applications Table

- Tank Mix
  - Two products applied in a single application
  - Enter different products on a separate line.
  - Enter the line number of the first product in the mix for all products in the mix

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 How much was applied per acre per application? OR	7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
Product A	01	61 40745	62 L	63 1	64 1	65 1.00	73 .__ __	74 14
	02	61	62	63	64	65 .__ __	73 .__ __	74

Pesticide Applications Table

- Tank Mix
  - Two products applied in a single application
  - Enter different products on a separate line.
  - Enter the line number of the first product in the mix for all products in the mix

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 How much was applied per acre per application? OR 7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
Product A	01	61 40745	62 L	63 1	64 1	65 1.00 / 73 .__	74 14
Product B	02	61 41061	62 L	63 1	64 1	65 1.50 / 73 .__	74 14

Pesticide Applications Table

- When Applied

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 How much was applied per acre per application? OR	7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
Product A	01	61 40745	62 L	63 1	64 1	65 1.00	73 .__ __	74 14
Product B	02	61 41061	62 L	63 1	64 1	65 1.50	73 .__ __	74 14

Pesticide Applications Table

- Application Rate
  - Total amount OR amount per acre

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 OR How much was applied per acre per application?	7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
Product A	01	61 40745	62 L	63 1	64 1	65 1.00	73 .	74 14
Product B	02	61 41061	62 L	63 1	64 1	65 1.50	73 .	74 14

Pesticide Applications Table

- Unit Code
  - Must match the product form

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 How much was applied per acre per application? OR	7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
Product A	01	61 40745	62 L	63 1	64 1	65 1.00	73 .__ __	74 14
Product B	02	61 41061	62 L	63 1	64 1	65 1.50	73 .__ __	74 14

Pesticide Applications Table

- How Applied

  Interviewer Manual gives a in-depth description of application methods.

APPLICATIONS CODES for column 9	
1 Broadcast, ground without incorporation	6 Chisel/injected or knifed in
2 Broadcast, ground with incorporation	7 Banded in or over row
3 Broadcast, by aircraft	8 Foliar or directed spray
4 In seed furrow	9 Spot treatments
5 In irrigation water	

	LINE	9 How was this product applied? [Enter code from above.]	10 How many acres in the selected field were treated with this product? ACRES	11 How many times was it applied? NUMBER	12 Were these applications made by--- 1 Operator, partner or family member? 2 Custom applicator? 3 Employee/Other?
Product A	01	76 1	77 20.0	79 1	80 1
Product B	02	76 1	77 20.0	79 1	80 1

Pesticide Applications Table

- Acres Treated

	LINE	9 How was this product applied? [Enter code from above.]	10 How many acres in the selected field were treated with this product? ACRES	11 How many times was it applied? NUMBER	12 Were these applications made by--- 1 Operator, partner or family member? 2 Custom applicator? 3 Employee/Other?
Product A	01	76 1	77 20 0	79 1	80 1
Product B	02	76 1	77 20 0	79 1	80 1

Pesticide Applications Table

- Number of Applications
  - If everything else is the same (rate, who/when/how applied, etc)

	LINE	9 How was this product applied? [Enter code from above.]	10 How many acres in the selected field were treated with this product? ACRES	11 How many times was it applied? NUMBER	12 Were these applications made by--- 1 Operator, partner or family member? 2 Custom applicator? 3 Employee/Other?
Product A	01	76 1	77 20 0	79 1	80 1
Product B	02	76 1	77 20 0	79 1	80 1

Pesticide Applications Table

- Who made applications

	LINE	9 How was this product applied? [Enter code from above.]	10 How many acres in the selected field were treated with this product? ACRES	11 How many times was it applied? NUMBER	12 Were these applications made by--- 1 Operator, partner or family member? 2 Custom applicator? 3 Employee/Other?
Product A	01	76 1	77 20 0	79 1	80 1
Product B	02	76 1	77 20 0	79 1	80 1

Pesticide Applications Table

Chemical Product Name	LINE	2 What products were applied to the selected field? [Show product codes from Respondent Booklet.]	3 Was this product bought in liquid or dry form? [Enter L or D]	4 If this was part of a tank mix, enter line number of first product in mix.	5 When was this applied? 1 Before planting 3 At planting 4 After planting 5 Defoliation prior to harvest	6 How much was applied per acre per application? OR	7 What was the total amount applied per application in the selected field?	8 [Enter unit code] 1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams
Roundup Ultra	01	61 *41159*	62 *L*	63 *—*	64 *4*	65 *4.00*	73 .__ __	74 *15*
Banvel+Atrazine	02	61 *41061*	62 *L*	63 *2*	64 *4*	65 *6.00*	73 .__ __	74 *15*
Clarity	03	61 *40570*	62 *L*	63 *2*	64 *4*	65 *2.00*	73 .__ __	74 *15*
Aztec 2.1	04	61 *11310*	62 *D*	63 *—*	64 *5*	65 *2.00*	73 .__ __	74 *28*

Pesticide Applications Table

APPLICATIONS CODES for column 9	
1 Broadcast, ground without incorporation	6 Chisel/injected or knifed in
2 Broadcast, ground with incorporation	7 Banded in or over row
3 Broadcast, by aircraft	8 Foliar or directed spray
4 In seed furrow	9 Spot treatments
5 In irrigation water	

LINE	9 How was this product applied? [*Enter code from above.*]	10 How many acres in the selected field were treated with this product? ACRES	11 How many times was it applied? NUMBER	12 Were these applications made by--- 1 Operator, partner or family member? 2 Custom applicator? 3 Employee/Other?
01	76 ***3***	77 ***50.0***	79 ***1***	80 ***2***
02	76 ***8***	77 ***50.0***	79 ***1***	80 ***1***
03	76 ***8***	77 ***50.0***	79 ***1***	80 ***1***
04	76 ***1***	77 ***50.0***	79 ***1***	80 ***1***

Pesticide Applications Table

EXAMPLE

2. For biocontrols or pesticides not listed in Respondent Booklet, specify--

Line	Pesticide Type (Herbicide, Insecticide, Fungicide, etc.)	EPA No. or Trade Name and Formulation	Form Purchased (Liquid or Dry)	Where Purchased (Ask only if EPA No. cannot be reported)
06	*Insecticide*	*Danitol 2.4EC, EPA #39398-17*	*Liquid*	*Midland Chem Supply*

Some formulations (2, 3)

A	Aerosol
B	Bait
D	Dust
DF	Dry flowable
E, EC	Emulsifiable concentrate
FL	Flowable
G	Granule
M	Microencapsulated
P	Pellet
RTU	Ready-to-use
SP	Soluble powder
ULV	Ultralow-volume concentrate
WP	Wettable powder
WDG	Water-dispersible granule

Pesticide Applications

13 What was the cost per unit of the product? Dollars & Cents per Unit	14 Unit Code 1 Pounds 15 Liquid Ounces 12 Gallons 28 Dry Ounces 13 Quarts 30 Grams 14 Pints
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82
81 .__ __	82

3. Were any chemicals, biocontrols, or pesticides applied by custom applicators?..... Yes=1 No=3 — Code 0323

[If item 3 = 1 ask--. Otherwise go to item 4.]

a. Are you able to report the cost of chemical, biocontrol, and pesticide products and custom application separately?..... Yes=1 No=3 — Code 0324

[If item 3a = 1, ask--]

b. Excluding the cost of the chemical, biocontrol, and pesticide products, how much was spent for custom application of such materials on the selected field? INCLUDE operator, landlord, and contractor costs..... Dollars & Cents per Acre 0331 .__ __ OR Total Dollars 0332

4. What was the total cost of all chemical, biocontrol, or pesticide products applied to the selected field? INCLUDE operator, landlord, and contractor costs, defoliants, herbicides, insecticides, fungicides, surfactants, wetting agents, growth regulators, and materials applied before planting and during 2021 fallow period. EXCLUDE seed treatments..... Dollars & Cents per Acre 0334 .__ __ OR Total Dollars 0335

a. How much was spent for herbicide products applied to the selected field? INCLUDE operator, landlord, and contractor costs..... Dollars & Cents per Acre 3034 .__ __ OR Total Dollars 3035

b. How much was spent for insecticide products applied to the selected field? INCLUDE operator, landlord, and contractor costs..... Dollars & Cents per Acre 3036 .__ __ OR Total Dollars 3037

c. How much was spent for fungicide products applied to the selected field? INCLUDE operator, landlord, and contractor costs..... Dollars & Cents per Acre 3038 .__ __ OR Total Dollars 3039

Note: If custom applied and the costs for materials can be separated from application costs, include the cost for materials only. Otherwise, report both the material and application costs in item 4.

Things to help…

- Supplements
- Use of farm records
- Respondent Booklet

Section D – Helpful Hints

- Restricted Use Pesticides (RUP's) - record keeping requirements for RUP's can help the respondent report pesticide applications.
- Please circle the pesticides that the farmer used on the specified field in a Respondent Booklet.
- Leave any marked up respondent booklets inside the questionnaire – no PII!
- IMPORTANT: We want to collect all pesticide applications through harvest.

Section D – Helpful Hints

- Do not record the spray volume applied to the field.
- Do not record the inclusion of adjuvants, etc.
- Do not record liquid fertilizer solutions applied in conjunction with a pesticide. Put this information in the fertilizer table.
- Use the conversion table in the respondent booklet, if necessary, if other units are offered
  - (2 tablespoons = 1 ounce dry).
- Unit code and formulation code must be consistent.

Thanks for Watching!!

Click Here to return to Index

Section E - Pest Management

Wheat

Nia Gianino

Heartland Regional Field Office

Section E: Purpose

- To provide data about pest management practices that growers use on their crops.
  - Alternative to pesticides
  - Practices which improve the effectiveness of pesticides

Section E: Pest Management

- Important to Define Pests
  - WEEDS
  - INSECTS
  - DISEASES
  - FUNGUS

In this section, “Pests” refers to all FOUR.

Section E: Pest Management

- Prevention
- Avoidance
- Monitoring
- Suppression

Filling out the Questionnaire

- Skip codes!

8. In 2022, how was the selected field primarily scouted for insects, weeds, diseases, and/or beneficial organisms?.....

1 By deliberately going to the field specifically for scouting activities [Enter code 1 and go to item 9.]	.....	Code
2 By conducting general observations while performing routine tasks [Enter code 2 and go to item 10.]		0808
3 The selected field was not scouted. [Enter code 3 and go to item 14.]		Code

“Specific Purpose” Questions: Intent of operator is key.

Did you do any of the following other types of pest management for the specific purpose of managing or reducing the spread of pests in the selected field?

		Code
a. Use the services of a diagnostic laboratory for pest identification or soil plant tissue pest analysis for the selected field?	Yes=1 No=3	0841
b. Plow down crop residue using conventional tillage?	Yes=1 No=3	0842
c. Remove/burn down crop residue?	Yes=1 No=3	0843
d. Rotate crops in the selected field during the past three years?	Yes=1 No=3	0844
e. Maintain ground covers, mulches, or other physical barriers?	Yes=1 No=3	0845

“Economic threshold?”

1	2	3
13. Do you believe that the selected field was infested with any of the following insects?	Yes=1 No=3	[If column 2 = 1, ask--] Do you believe that the infestation/population level was higher than the economic threshold for treatment? 1 Much higher (over 1.5 times the threshold) 2 Higher (between 1 and 1.5 times threshold) 3 Lower (between 1 and .5 times the threshold) 4 Much lower (between .5 and 0 times the threshold) 99 Don't Know Code
a. Aphids	2266	2267
b. Armyworm	2278	2279
c. Cereal Leaf Beetle	2280	2281

Section E: Key Points

- Remember how we define pest for this survey
- Be careful with your skip codes
- Leave detailed notes
- If you have questions, ask them

Click Here to return to Index

Section F: Field Operations

Andy Cochran

Mountain Region

Overview

- Field Operations Table
- Labor
- Precision Agriculture

Field Operations Table

- Time frame
- Types of field operations
- Order/sequence
- Respondent booklet codes

FIELD OPERATIONS - SELECTED FIELD

1. Including custom operations, I need to list field work performed by machines on the selected field for the 2022 wheat crop. Please...
   - begin with the first field operation after harvest of the previous crop, including operations for a cover crop established since the previous crop was harvested. If fallow during 2021, list operations starting with fall 2020.
   - list the operations in order through harvest and hauling of this crop to storage or first point of sale; and
   - maintain the order of tandem hook-ups.

Codes for Column 5
1 You (the Operator)
2 Partner
3 Unpaid Worker
4 Paid Part-time or Seasonal Worker
5 Paid Full-time Worker
6 Custom Applicator

Office Use Lines in Table
0499

Check List

INCLUDE all field work using machines for--

- ☐ Land forming/Levee Building
- ☐ Tillage
- ☐ Preparing for Irrigation
- ☐ Planting
- ☐ Fertilizer & Pesticide applications
- ☐ Harvesting & Hauling to storage or first point of sale

EXCLUDE

- ☐ Lime & Gypsum/land plaster applications
- ☐ Compost & Non-commercial manure applications

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1		88	89
02	87 2		88	89
03	87 3		88	89
04	87 4		88	89
05	87 5		88	89
06	87 6		88	89
07	87 7		88	89

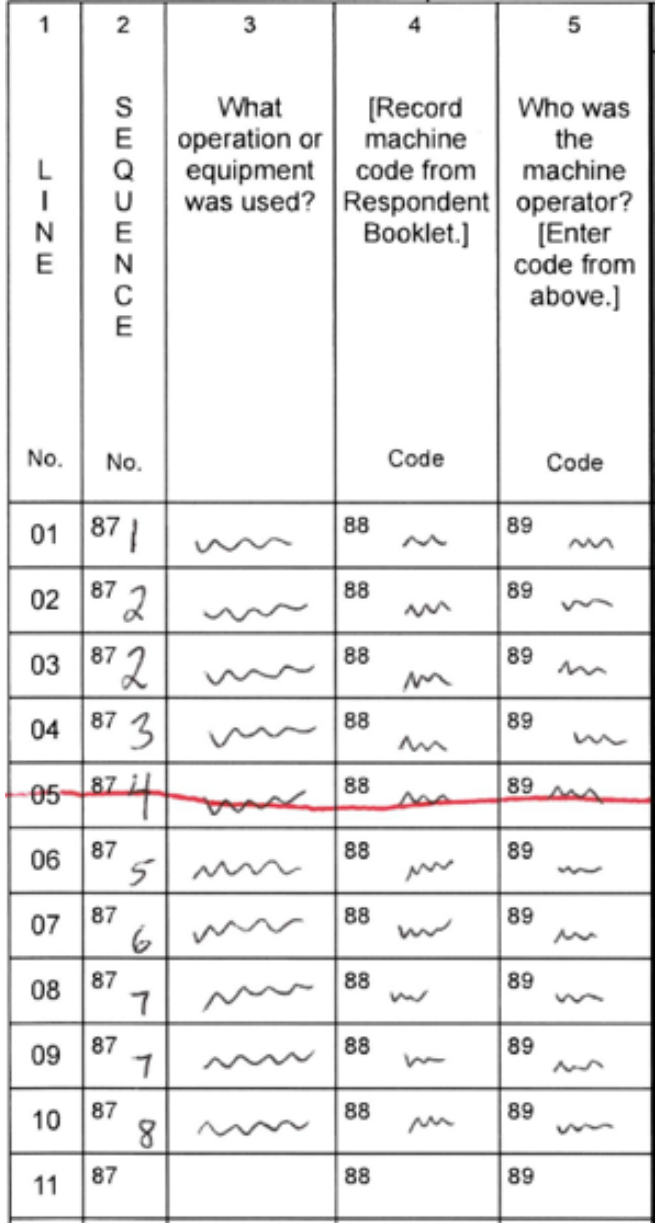
Line vs. Sequence

- Line numbers are administrative identifiers
- Sequence numbers are for you to fill out
  - Indicate relative order of operations
  - Begin with 1
  - Do not skip any sequence numbers

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1		88	89
02	87 2		88	89
03	87 3		88	89
04	87 **4**		88	89
05	87 **4**		88	89
06	87 5		88	89
07	87 6		88	89

Tandem operations

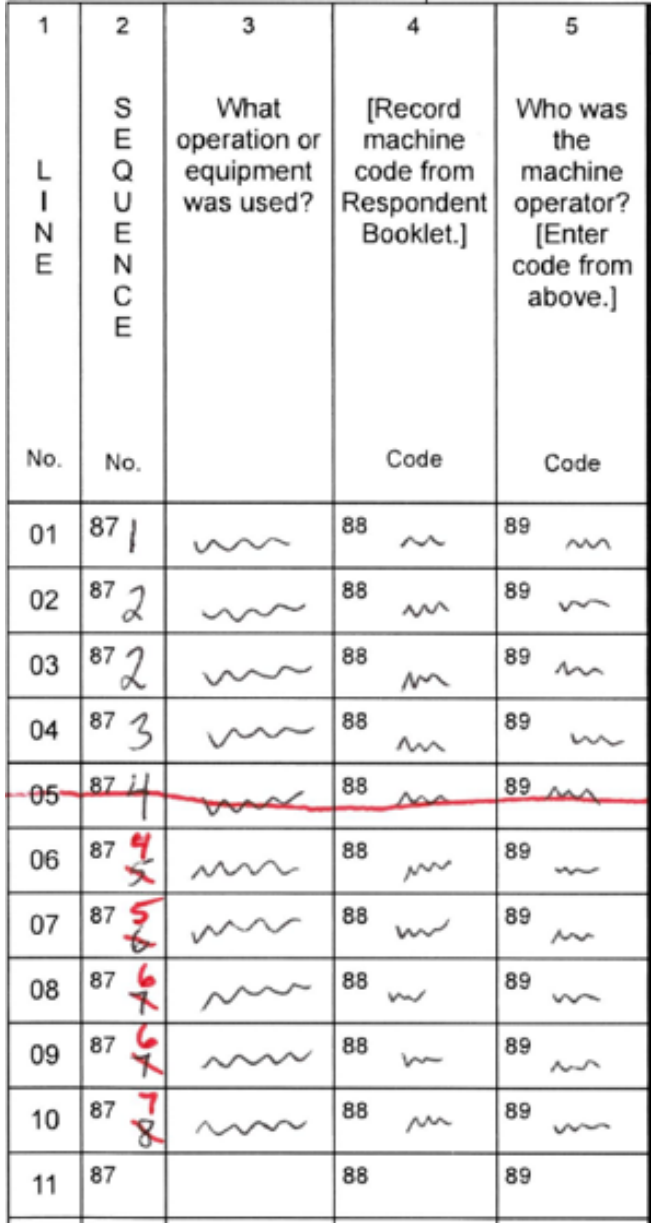
- Two or more field operations
- At the same time
- Powered by the same machine



1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1		88	89
02	87 2		88	89
03	87 2		88	89
04	87 3		88	89
05	87 4		88	89
06	87 5		88	89
07	87 6		88	89
08	87 7		88	89
09	87 7		88	89
10	87 8		88	89
11	87		88	89

See a problem?

- After the correction, a sequence number is skipped



1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1		88	89
02	87 2		88	89
03	87 2		88	89
04	87 3		88	89
05	87 4		88	89
06	87 5		88	89
07	87 6		88	89
08	87 6		88	89
09	87 6		88	89
10	87 7		88	89
11	87		88	89

See a problem?

- After the correction, a sequence number is skipped
- Update the later sequence numbers so none is skipped
- Follow-up question: Which of these lines are **Tandem Operations**?
  - Lines 2 and 3
  - Lines 8 and 9

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1	Pesticide	88 92	89
02	87 2	Fertilized	88 72	89
03	87 3	Planted	88 113	89
04	87 4	Pesticide	88 91	89
05	87 5	Harvest	88 123	89
06	87 6	Grain Cart	88 209	89
07	87 7	Semi	88 304	89

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1	Pesticide	88 92	89
02	87 2	Fertilized	88 72	89
03	87 3	Planted	88 113	89
04	87 4	Pesticide	88 91	89
05	87 5	Harvest	88 123	89
06	87 6	Grain Cart	88 209	89
07	87 7	Semi	88 304	89

MACHINERY and IMPLEMENT CODES

Section F, Item 1, Columns 3 & 4

PLOWS and DISKS

01 Chisel Plow (Big Ox)
02 Coulter Plow (Coulter Chisel, Soil Saver, Soil Conserver)
03 Deep Ripper (Knife, Bed knife, Slide)
04 Disk Plow

Moldboard
05 Regular
06 Two Way
07 Stubble-mulch (Noble, Sweeps, Hoeme Plow, Muckeroy Plow)
08 Subsoiler (Chisel, Ripper, V-ripper)
09 Disk-chisel (Mulch Tiller)

Offset Disk
10 Heavy Disk
11 Light Disk
12 One-way Disk (Disk Tiller)
13 Single Disk

Tandem Disk
14 Plowing
15 Regular
16 Paraplow

MISCELLANEOUS TILLAGE

61 Land-all, Do-all, Mix-n-till, Till-all (Disk, Shovels, Reel & Spikes)
62 Mulch Treader, Picker, Treader, Skew
63 Roto-tiller
64 Roterra (Roto-spike, Lely)
65 Sand-fighter
66 Soil Finisher (Finishing Tool, Mulch Finisher Tri-tiller, Task Master)
67 Root Crown Puller
68 Stalk Puller/Chopper
69 Vertical Tiller
70 Strip Tiller

BEDDERS-SHAPERS

41 Bedder (Shaper) (Bedshaper, Crowder)
42 Bed Shaper

Disk
43 Hipper
44 Row
45 Float
46 Lister (Middle-buster)
47 Rorovator-bedder
48 Seedbed Roller

HARROWS (DRAGS)

30 Heavy Harrow
31 Field Conditioner (Scratcher, Seed Bed Conditioner, Soil Conditioner, Ground Hog)
32 Finishing (Harrogator, Spiral, Roller, Knives, Shanks, Pegs, Smoother)
33 Flex-tine Tooth (Coil Tine)
34 Multi-weeder (Cultivator & Harrow)
35 Rail, Pipe, Log, Plank
36 Rod Weeder
37 Roller (Culti-mulcher, Pulvi-mulcher, Crumbler, Packer-mulcher, Packer & Shanks)
38 Spike Tooth
39 Spring Tooth
40 Powered Spike Tooth Harrow

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1	Pesticide	88 92	89
02	87 2	Fertilized	88 72	89
03	87 3	Planted	88 113	89
04	87 4	Pesticide	88 91	89
05	87 5	Harvest	88 123	89
06	87 6	Grain Cart	88 209	89
07	87 7	Semi	88 304	89

(Mulch Tiller)

Offset Disk
10 Heavy Disk
11 Light Disk
12 One-way Disk (Disk Tiller)
13 Single Disk

Tandem Disk
14 Plowing
15 Regular
16 Paraplow

PACKERS
51 Culti-packer (Pulverizer, Crow-foot, Serrated, Ring, Spiral)

Roller-packer
52 Attachment
53 Smooth & Flat

PLANTERS
111 Bedder-shaper Planter
112 Lister-bedder
113 No-till, Minimum Till, (Ripper Planter)
114 Conventional, Regular (Tye, Flex)
115 Air Delivery/vacuum
116 Ridge till

BEDDERS-SHAPERS
41 Bedder (Shaper) (Bedshaper, Crowder)
42 Bed Shaper

Disk
43 Hipper
44 Row
45 Float
46 Lister (Middle-buster)
47 Rorovator-bedder
48 Seedbed Roller (Flat Roller)
49 Sub-soil Bedder (Ripper-hipper)
50 Discovator

FERTILIZER APPLICATORS
71 Aerial (Airplane)
72 Attachment to implement
73 Manure Spreader
74 Self-propelled
75 Truck Spreader

Tractor Mounted
76 Anhydrous
77 Dry
78 Liquid

Trailer Mounted
79 Anhydrous
80 Dry
81 Liquid

(Cultivator & Harrow)
35 Rail, Pipe, Log, Plank
36 Rod Weeder
37 Roller (Culti-mulcher, Pulvi-mulcher, Crumbler, Packer-mulcher, Packer & Shanks)
38 Spike Tooth
39 Spring Tooth
40 Powered Spike Tooth Harrow

CULTIVATORS

Field Cultivators
21 Regular Digger, Triple K, Danish Tined, Swedish Tined, Incorporated, S-tine, Cultivator, Vibra-shank Harrow, Lilliston Tiller
26 Heavy Duty (Duckfoot Cultivator)
27 Marker
28 Fallow Master
22 Furrow-out Cultivator
23 Rotary Hoe (Crust Buster)

Row Cultivators
24 Disk Sweep, Shovel
25 Rolling, Rotary

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1	Pesticide	88 92	89
02	87 2	Fertilized	88 72	89
03	87 3	Planted	88 113	89
04	87 4	Pesticide	88 91	89
05	87 5	Harvest	88 123	89
06	87 6	Grain Cart	88 209	89
07	87 7	Semi	88 304	89

CHEMICAL APPLICATIONS

91	Aerial (Airplane)
92	Attachment to implement
93	Largest Self propelled (or Large Truck)
94	Motorcycle/atv Sprayer
95	Small Self-propelled (Spray-coupe, Hi-cycle)
96	Small Truck (Skid Mounted)
97	Tractor Mounted
98	Trailer Mounted

DRILLS and SEEDERS

101	Aerial Seeding
102	Broadcast Seeder
Drill	
103	Air Delivery
104	Lister Disk
105	No-till or minimum till
106	Plain
107	Press, Disk or Hoe

HARVESTING EQUIPMENT

Small Grains/Row Crops Combine

121	Hillside
122	Self propelled, 2wd

LAND FORMING EQUIPMENT

171	Backhoe
172	Disk Border Maker
173	Ditch Closer
174	Ditcher
175	Levee Plow Disk
176	Quarter Drain Machine
177	Rear Mounted Blade
178	Corrugator (Furrow Dicer, Dammar Dicer, Dicer)
180	Land Plane Leveler (Water Leveler)
181	Laser Planer, Laser Leveler
182	Gate Setter
183	Bull Dozer
184	Polypipe roller
197	Rock Picker

ENUMERATOR NOTE:

For Land Forming Equipment codes 171 – 184, enter Total Hours Operated in column 9.

MOWERS and BALERS

141	Amish Harvester
Baler	
145	Motor Mounted
146	PTO (Large)
147	PTO (Small)
148	Self-propelled
159	Stacker, Automatic

HAULING EQUIPMENT

Bale wagon/mover	
142	Bale wagon (PTO)
143	Bale Wagon (Self-propelled)
144	Bale Loader
158	Stack Mover
160	Front End Loader
161	Round Bale Mover
195	Hay wagon
224	Forklift
Trailers	
194	General Purpose Wagon or Cart
195	Hay Wagon
208	Gravity Wagon
209	Grain Cart with Auger
210	Grain Cart with Auger (Self-Propelled)
221	Forage Wagon
222	Dump Wagon
229	Bin Trailer
228	Other Trailers
Trucks	
301	Single Axle
302	Tandem Axle
303	Tri Axle
304	Semi
305	Other Trucks

ENUMERATOR NOTE:

For Hauling Equipment codes above, enter Total Hours Operated in column 9.

OTHER IMPLEMENTS

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1	Pesticide	88 92	89
02	87 2	Fertilized	88 72	89
03	87 3	Planted	88 113	89
04	87 4	Pesticide	88 91	89
05	87 5	Harvest	88 123	89
06	87 6	Grain Cart	88 209	89
07	87 7	Semi	88 304	89

101 Aerial Seeding
102 Broadcast Seeder

Drill
103 Air Delivery
104 Lister Disk
105 No-till or minimum till
106 Plain
107 Press, Disk or Hoe

HARVESTING EQUIPMENT

Small Grains/Row Crops Combine
121 Hillside
122 Self propelled, 2wd
123 Self-propelled, 4wd
124 Track
125 PTO/motor Mounted

Windrower-swather
126 (Grain/hay)PTO
127 (Grain/hay) self-propelled

134 Hand Harvesting

PTO Power Take-off
WD Wheel Drive

ENUMERATOR NOTE:
For Land Forming Equipment codes 171 – 184, enter Total Hours Operated in column 9.

MOWERS and BALERS
141 Amish Harvester

Baler
145 Motor Mounted
146 PTO (Large)
147 PTO (Small)
148 Self-propelled
159 Stacker, Automatic

Mowers
149 Mower-chopper-Rotary
150 Conditioner/PTO
151 Self-propelled
152 Drum disk
153 Flail
154 Sickle

Rake
155 Dump
156 Side Delivery
157 Wheel
162 Hay Tedder
234 Brush Rake Sweeper

229 Bin Trailer
228 Other Trailers

Trucks
301 Single Axle
302 Tandem Axle
303 Tri Axle
304 Semi
305 Other Trucks

ENUMERATOR NOTE:
For Hauling Equipment codes above, enter Total Hours Operated in column 9.

OTHER IMPLEMENTS
191 Burn Buggy
192 Chaff/straw Saver
193 Electric-discharge Weed Killer
196 Off-field Thresher
198 Rock Windower or Rake
199 Rodent (Gopher) Killer
200 Roller Groover
201 Rubber-wheeled Weed Puller
202 Flail Shredder
203 Rotary Shredder
204 Silage Harvester
205 Stalk Shredder, Stalk Cutter
206 Swath Roller
207 Tractor or Truck–No attachments
223 Flame Thrower

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code
01	87 1	Pesticide	88 92	89
02	87 2	Fertilized	88 72	89
03	87 3	Planted	88 113	89
04	87 4	Pesticide	88 91	89
05	87 5	Harvest	88 123	89
06	87 6	Grain Cart	88 209	89
07	87 7	Semi	88 304	89

Check List

INCLUDE all field work using machines for--

- ☐ Land forming/Levee Building
- ☐ Tillage
- ☐ Preparing for Irrigation
- ☐ Planting
- ☐ Fertilizer & Pesticide applications
- ☐ Harvesting & Hauling to storage or first point of sale

EXCLUDE

- ☐ Lime & Gypsum/land plaster applications
- ☐ Compost & Non-commercial manure applications

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the Code	7 [Record size unit code.] 1 Feet Code	8 OR 9 How many acres were covered? Acres	How many total hours were spent on land forming Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Pesticide	88 92	89 4	90	91	92 .___	93	94	95
02	87 2	Fertilized	88 72	89 4	90	91	92 .___	93	94	95
03	87 3	Planted	88 113	89 1	90	91	92 .___	93	94	95
04	87 4	Pesticide	88 91	89 6	90	91	92 .___	93	94	95
05	87 5	Harvest	88 123	89 1	90	91	92 .___	93	94	95
06	87 6	Grain Cart	88 209	89 4	90	91	92 .___	93	94	95
07	87 7	Semi	88 304	89 6	90	91	92 .___	93	94	95

Codes for Column 5
1 You (the Operator)
2 Partner
3 Unpaid Worker
4 Paid Part-time or Seasonal Worker
5 Paid Full-time Worker
6 Custom Applicator

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 OR 9 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Pesticide	88 92	89 4	90 120	91 1	92 .___	93	94	95
02	87 2	Fertilized	88 72	89 4	90 35	91 1	92 .___	93	94	95
03	87 3	Planted	88 113	89 1	90 30	91 1	92 .___	93	94	95
04	87 4	Pesticide	88 91	89 6	90 --	91 --	92 .___	93	94	95
05	87 5	Harvest	88 123	89 1	90 30	91 1	92 .___	93	94	95
06	87 6	Grain Cart	88 209	89 4	90 20	91 6	92 .___	93	94	95
07	87 7	Semi	88 304	89 6	90 --	91 --	92 .___	93	94	95

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11]					
					6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 OR 9 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	8 OR 9 How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Pesticide	88 92	89 4	90 120	91 1	92 .___		93	94	95
02	87 2	Fertilized	88 72	89 4	90 35	91 1	92 .___		93	94	95
03	87 3	Planted	88 113	89 1	90 30	91 1	92 .___		93	94	95
04	87 4	Pesticide	88 91	89 6	90 --	91 --	92 .___		93	94	95
05	87 5	Harvest	88 123	89 1	90 30	91 1	92 .___		93	94	95
06	87 6	Grain Cart	88 209	89 4	90 20	91 6	92 .___		93	94	95
07	87 7	Semi	88 304	89 6	90 --	91 --	92 .___		93	94	95

1	2	3	4	5	[If Column 5 = code 6, skip columns 6 thru 11]				
LINE No.					d size code.]	8 OR 9 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	9 How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01						92 .___	93	94	95
02						92 .___	93	94	95
03						92 .___	93	94	95
04						92 .___	93	94	95
05						92 .___	93	94	95
06						92 .___	93	94	95
07						92 .___	93	94	95

LAND FORMING EQUIPMENT

171	Backhoe
172	Disk Border Maker
173	Ditch Closer
174	Ditcher
175	Levee Plow Disk
176	Quarter Drain Machine
177	Rear Mounted Blade
178	Corrugator (Furrow Dicer, Dammar Dicer, Dicer)
180	Land Plane Leveler (Water Leveler)
181	Laser Planer, Laser Leveler
182	Gate Setter
183	Bull Dozer
184	Polypipe roller
197	Rock Picker

ENUMERATOR NOTE:

For Land Forming Equipment codes 171 – 184, enter Total Hours Operated in column 9.

MOWERS and BALERS

141	Amish Harvester

Baler

145	Motor Mounted
146	PTO (Large)

HAULING EQUIPMENT

Bale wagon/mover

142	Bale wagon (PTO)
143	Bale Wagon (Self-propelled)
144	Bale Loader
158	Stack Mover
160	Front End Loader
161	Round Bale Mover
195	Hay wagon
224	Forklift

Trailers

194	General Purpose Wagon or Cart
195	Hay Wagon
208	Gravity Wagon
209	Grain Cart with Auger
210	Grain Cart with Auger (Self-Propelled)
221	Forage Wagon
222	Dump Wagon
229	Bin Trailer
228	Other Trailers

Trucks

301	Single Axle
302	Tandem Axle
303	Tri Axle
304	Semi
305	Other Trucks

ENUMERATOR NOTE:

For Hauling Equipment codes above, enter Total Hours Operated in column 9.

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	OR 9 How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Pesticide	88 92	89 4	90 120	91 1	92 160.0	93	94	95
02	87 2	Fertilized	88 72	89 4	90 35	91 1	92 160.0	93	94	95
03	87 3	Planted	88 113	89 1	90 30	91 1	92 160.0	93	94	95
04	87 4	Pesticide	88 91	89 6	90 --	91 --	92 --.	93	94	95
05	87 5	Harvest	88 123	89 1	90 30	91 1	92 160.0	93	94	95
06	87 6	Grain Cart	88 209	89 4	90 20	91 6	92 --.	93 11	94	95
07	87 7	Semi	88 304	89 6	90 --	91 --	92 --.	93	94	95

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 OR 9 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Pesticide	88 92	89 4	90 120	91 1	92 160.0	93	94 3	95 1
02	87 2	Fertilized	88 72	89 4	90 35	91 1	92 160.0	93	94 3	95 1
03	87 3	Planted	88 113	89 1	90 30	91 1	92 160.0	93	94 4	95 1
04	87 4	Pesticide	88 91	89 6	90 --	91 --	92 --.	93	94 --	95 --
05	87 5	Harvest	88 123	89 1	90 30	91 1	92 160.0	93	94 99	95 --
06	87 6	Grain Cart	88 209	89 4	90 20	91 6	92 --.	93 11	94 5	95 1
07	87 7	Semi	88 304	89 6	90 --	91 --	92 --.	93	94 --	95 --

CHEMICAL APPLICATIONS

91	Aerial (Airplane)
92	Attachment to implement
93	Largest Self propelled (or Large Truck)
94	Motorcycle/atv Sprayer
95	Small Self-propelled (Spray-coupe, Hi-cycle)
96	Small Truck (Skid Mounted)
97	Tractor Mounted
98	Trailer Mounted

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	OR 9 How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Tractor	88	89 4	90	91 1	92 .__	93	94 5	95 1
02	87 1	Spray Pest	88 92	89 4	90 60	91 1	92 160.0	93	94 5	95 1
03	87 2	Spray Pest	88 93	89 4	90 60	91 1	92 160.0	93	94 99	95
04	87		88	89	90	91	92 .__	93	94	95
05	87		88	89	90	91	92 .__	93	94	95
06	87		88	89	90	91	92 .__	93	94	95
07	87		88	89	90	91	92 .__	93	94	95

CHEMICAL APPLICATIONS

91	Aerial (Airplane)
92	Attachment to implement
93	Largest Self propelled (or Large Truck)
94	Motorcycle/atv Sprayer
95	Small Self-propelled (Spray-coupe, Hi-cycle)
96	Small Truck (Skid Mounted)
97	Tractor Mounted
98	Trailer Mounted

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	OR 9 How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Sprayed P	88 92	89 4	90 120	91 1	92 160.0	93	94 3	95 1
02	87 2	Disc Plow	88 4	89 4	90 120	91 1	92 160.0	93	94 3	95 1
03	87 3	Planted	88 115	89 1	90 30	91 1	92 160.0	93	94 4	95 1
04	87 3	Fertilized	88 78	89 1	90 30	91 1	92 160.0	93	94 4	95 1
05	87		88	89	90	91	92 .	93	94	95
06	87		88	89	90	91	92 .	93	94	95
07	87		88	89	90	91	92 .	93	94	95

Example: Planting and Fertilizing are done in Tandem

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	OR 9 How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Sprayed P	88 92	89 4	90 120	91 1	92 160.0	93	94 3	95 1
02	87 2	Disc Plow	88 4	89 4	90 120	91 1	92 160.0	93	94 3	95 1
03	87 3	Planted	88 115	89 1	90 30	91 1	92 160.0	93	94 4	95 1
04	87 3	Fertilized	88 78	89	90	91	92 .	93	94	95
05	87 4	Harvest	88 123	89 1	90 30	91 1	92 160.0	93	94 99	95
06	87 4	Grain Cart	88 209	89	90 20	91 6	92 .	93	94	95
07	87		88	89	90	91	92 .	93	94	95

Example: Grain Cart attached to Combine Harvester in Tandem

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	OR 9 How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Sprayed P	88 92	89 4	90 120	91 1	92 160.0	93	94 3	95 1
02	87 2	Disc Plow	88 4	89 4	90 120	91 1	92 160.0	93	94 3	95 1
03	87 3	Planted	88 115	89 1	90 30	91 1	92 160.0	93	94 4	95 1
04	87 3	Fertilized	88 78	89	90	91	92 .	93	94	95
05	87 4	Harvest	88 123	89 1	90 30	91 1	92 160.0	93	94 99	95
06	87 5	Grain Cart	88 209	89 4	90 20	91 6	92 160.0	93 11	94 5	95 1
07	87 6	Semi	88 304	89 6	90	91	92 .	93	94	95

Example: Grain Cart is simultaneous to Combine, but NOT in tandem.

1 LINE No.	2 SEQUENCE No.	3 What operation or equipment was used?	4 [Record machine code from Respondent Booklet.] Code	5 Who was the machine operator? [Enter code from above.] Code	[If Column 5 = code 6, skip columns 6 thru 11] 6 What was the size or swath of the [machine] used?	7 [Record size unit code.] 1 Feet 2 Row 3 Moldboard bottoms Hauling 4 Pounds 5 Bushels 6 Tons Code	8 OR 9 How many acres were covered? EXCLUDE land forming and hauling operations. Acres	How many total hours were spent on land forming and hauling? [Example: backhoes, disk border maker, ditcher, rear mounted blade, trucks, wagons, forklift etc.] Hours	10 What power source was used? Tractors 1 <40 HP 2 40-99 HP 3 100-149 HP 4 150-199 HP 5 >=200 HP OR 66 Animal Drawn 77 Pick up[1/] 99 Self-Propelled Code	11 What was the fuel type of the tractor? [Record fuel type only if Column 10 equals 1-5] 1 diesel 2 gasoline 3 LP gas 4 other Code
01	87 1	Planted	88 115	89 4	90 16	91 2	92 300.0	93	94 3	95 1
02	87 2	Planted	88 115	89 4	90 16	91 2	92 300.0	93	94 3	95 1
03	87		88	89	90	91	92 .	93	94	95
04	87		88	89	90	91	92 .	93	94	95
05	87		88	89	90	91	92 .	93	94	95
06	87		88	89	90	91	92 .	93	94	95
07	87		88	89	90	91	92 .	93	94	95

Example: Two planters each simultaneously planted half of a 600 acre field.

Labor and Services

- Hours spent on various activities
- Wages
- Custom work expense
- Technical or consultant services

2. Now I need some additional information about your labor.
Please report the paid and unpaid labor that worked on the selected field to produce the 2022 wheat crop.
EXCLUDE labor that was reported for field work performed by machines.

Type of Workers	How many hours did (type of worker) spend on the selected field-- 1 scouting for weeds, insects and diseases? Hours	2 irrigating? Hours	3 performing other work by hand? Hours
You (the operator)	1101	1102	1103
Partner(s)	1104	1105	1106
Unpaid workers	1107	1108	1109
Paid part-time or seasonal workers EXCLUDE custom and contract labor	1110	1111	1112
Paid full-time workers EXCLUDE custom and contract labor	1113	1114	1115

3. What was the average hourly wage rate paid to part-time or seasonal hired workers on the selected field? Part-time workers are defined as those who worked for wages or salaries for less than 30 hours a week on average. EXCLUDE custom and contract workers, payroll taxes and benefits.....

Dollars & Cents Per Hour	OR	Total Dollars per Week	AND	Number of Hours Worked Each Week
1119 .___ ___		2119		3119

4. What was the average hourly wage rate paid to full-time hired workers on the selected field? EXCLUDE custom and contract workers, payroll taxes and benefits.....

Dollars & Cents Per Hour	OR	Total Dollars per Week	AND	Number of Hours Worked Each Week
1118 .___ ___		2118		3118

5. Was any contract labor used on the selected field?..... Yes=1 No=3 — Code: 1116

[If item 5 = 1, continue. Otherwise go to item 6.]

a. What was the average cost per acre for this contract labor? INCLUDE operator, landlord, and contractor costs..... — Dollars & Cents Per Acre: 1117 .___ ___

6. What percent of the total number of unpaid hours worked on the selected field was performed by workers under 16 years of age? Estimates of labor costs for unpaid workers are based on off-farm wage rates, which are different for workers under 16 relative to those 16 and older..... — Percent: 1120

7. Now I need some information on how much was spent or will be spent for custom services used on the selected field for the 2022 wheat crop.

	1 Custom Service Which of the following services were performed for the 2022 wheat crop on the selected field? [Check box for each service performed; refer to item 1 if necessary.]	2 Including operator, landlord, and contractor costs, how much was spent for [column1] on the selected field for the 2022 wheat crop? Dollars & Cents per Acre
☐	a. Custom land preparation, shaping and/or leveling?.....	1121 .___ ___
☐	b. Custom cultivating?.....	1122 .___ ___
☐	c. Custom planting and/or reseeding?.....	1123 .___ ___
☐	d. Custom harvesting?.....	1124 .___ ___
☐	e. Custom hauling to storage or point of first sale? __ __.__ __ x _____ ÷ _____ = __ __.__ __ (Dollars & cents per unit x Total units hauled from field ÷ Acres harvested in field = Dollars & cents per acre)	1126 .___ ___
☐	f. Custom harvesting and hauling from field to storage or point of first sale? __ __.__ __ x _____ ÷ _____ = __ __.__ __ (Dollars & cents per unit x Total units hauled from field ÷ Acres harvested in field = Dollars & cents per acre)	1127 .___ ___
☐	g. Custom raking, baling, and hauling the straw from the selected field? __ __.__ __ x _____ ÷ _____ = __ __.__ __ (Dollars & cents per unit x Total units hauled from field ÷ Acres harvested in field = Dollars & cents per acre)	1128 .___ ___

		Code
8. Was the wheat harvested and hauled from the selected field dried (or will be dried) before it was sold or stored?	Yes=1 No=3	2748
9. Did you hire any technical or consultant services to make recommendations such as for nutrient, pest control, irrigation, or precision farming for the selected field?	Yes=1 No=3	1196

[If item 9 = 1, continue. Otherwise, go to item 12.]

10. Which of the following technical or consultant services did you obtain to make recommendations for the selected field?

		Code
a. Nutrient recommendations/management service?	Yes=1 No=3	1129
b. Soil or tissue sample collection?	Yes=1 No=3	1130
c. Pest control recommendations/management service?	Yes=1 No=3	1131
d. Pest scouting?	Yes=1 No=3	1132
e. Irrigation management service (i.e. irrigation scheduling)?	Yes=1 No=3	1133
f. Yield map or remote sensing map development/interpretation?	Yes=1 No=3	1134
g. Other custom or technical service? [Specify:_____]	Yes=1 No=3	1135

[If any item in 10a–g = 1, continue. Otherwise go to item 12.]

11. What was the cost for any technical or consultant services reported in item 10, on previous page. INCLUDE operator, landlord, and contractor costs. EXCLUDE cost of soil or tissue tests or scouting costs previously reported. Do not report costs for any of these services reported above if they were previously reported as part of the cost of materials and/or application.....

Dollars & Cents per Acre		OR	Total Dollars
1136	.__ __		1137

12. Please report how any data from the selected field in 2022 will be stored and accessed.

		Code
a. Did you access the data collected from the selected field on a --		
i. Paper hard copy?.....	Yes=1 No=3	2485
ii. Personal computer?.....	Yes=1 No=3	2486
iii. Mobile device?.....	Yes=1 No=3	2487
b. Did you access the data collected from the selected field through an agricultural technology provider website?.....	Yes=1 No=3	2488

[If item 12b = 1, continue. Otherwise, go to item 13.]

		Code
c. Did you opt out of allowing your agricultural technology provider website to share data collected from the selected field with any third party?.....	Yes=1 No=3	2489
d. Did you share any of the data collected from the selected field with a third party through an agricultural technology provider website?.....	Yes=1 No=3	2490

		Code
13. Were there or will there be any data collection tools such as yield monitors, GPS mapping, etc. used during field operations on this wheat field?.....	Yes=1 No=3	2460

13. Were there or will there be any data collection tools such as yield monitors, GPS mapping, etc. used during field operations on this wheat field?..... Yes=1 No=3 | 2460 |

[If item 13 = 1, continue. Otherwise go to item 17.]

1 Data Collection Tool	2 Tool Used Yes=1 No=3	3 Collected GPS coordinates Yes=1 No=3	4 Data was/will be used to create a map Yes=1 No=3	5 Replacement Cost Total Dollars	6 Annual Fee Total dollars
a. Yield monitor.....	2461 1	2462	2463	2570	2571
b. Soil tests on core sample performed on–farm or sent out to a laboratory.....	2464 3	2465	2466	2572	2573
c. Soil sensor tests.....	2467	2468	2469	2574	2575
d. Hard-wired crop condition sensors.....	2470	2471	2472	2576	2577
e. Wireless crop condition sensors.....	2473	2474	2475	2578	2579
f. Aircraft or satellites.....	xxxx	xxxx	xxxx	xxxx	xxxx
g. Drones or Unmanned Aerial Vehicles (UAV)	xxxx	xxxx	xxxx	xxxx	xxxx
h. Custom service applications – data from completed work on your field.....	2479	2480	2481	2582	2583
i. Public data downloaded from online sources.	2482	2483	2484		

[If item 13a column 2 = 1, continue. Otherwise go to item 16.]

14. Did you use the yield monitor information to--

		Code
a. add/improve tile drainage?	Yes=1 No=3	1141
b. negotiate new crop leases?	Yes=1 No=3	1144
c. help determine chemical input use?	Yes=1 No=3	1143

[If any item 13 column 2 = 1, continue. Otherwise go to item 16.]

15. Using data collected from the previous tools table in item 13, did you obtain crop management recommendations, such as data interpretation, in 2022 for the selected field from any of the following--

		Code
a. input dealers without other fee–for–services?	Yes=1 No=3	2491
b. input dealers with other fee–for–services?	Yes=1 No=3	2492
c. custom service providers?	Yes=1 No=3	2493
d. USDA/university extension services?	Yes=1 No=3	2494

[If any item 15a–d = 1, ask--]

e. What was the cost for all of these services? INCLUDE operator, landlord and contractor costs. EXCLUDE costs for any of these services if they were previously reported as part of the costs of materials and/or application.....

Dollars & Cents per Acre	OR	Total Dollars
3150 .__ __		3151

[If item 13g column 2 = 1, continue. Otherwise go to item 17.]

16. In the selected field, did you use the UAV for any of the following purposes?

		Code
a. Weed analysis?	Yes=1 No=3	3161
b. Spraying herbicide or fungicide?	Yes=1 No=3	3162
c. Insect analysis?	Yes=1 No=3	3163
d. Insect control?	Yes=1 No=3	3164
e. Yield analysis?	Yes=1 No=3	3165
f. Moisture analysis?	Yes=1 No=3	3166
g. Equipment check?	Yes=1 No=3	3167

17. Was any of the following GPS–enabled (Global Positioning System) equipment used to produce wheat on the selected field in 2022?

		Code
a. Mounted in–cab heads–up displays?	Yes=1 No=3	2155
b. Smart phones or computer tablets?	Yes=1 No=3	2156
c. Automatic section control, such as auto sprayer boom controls or automatic section shut offs?	Yes=1 No=3	2165

18. If any GPS–enabled equipment was used, what was the cost to purchase and install all GPS–enabled equipment, not including guidance auto–steering equipment? INCLUDE cost for GPS receiver and annual GPS subscription fee, and operator, landlord, and contractor costs. EXCLUDE costs for any of this equipment if they were previously reported as part of the costs of materials and/or application.....

Dollars & Cents per Acre	OR	Total Dollars
2166 .__ __		2167

Code

19. Was any guidance auto–steering equipment, excluding Light Bar, used on the selected field?..... Yes=1 No=3 [2148]

[If item 19 = 1 continue, otherwise go to item 20.]

a. Was the guidance auto–steering equipment..... [1 New, owned? 2 Used, owned? 3 Leased?] ..... Code [2158]

b. What year was guidance auto–steering equipment first purchased?..... Year [2159 ___ ___ ___ ___]

	Dollars & Cents per Acre	OR	Total Dollars
c. What is the replacement cost for guidance auto–steering equipment?.....	2160 .__ __		2161
d. What is the annual fee for guidance auto–steering?.....	2162 .__ __		2163

	Code
20. Was a variable rate applicator used on the selected field?..... Yes=1 No=3	2164

[If item 20 = 1 continue, otherwise go to Section G]

Please report the variable rate applicator types you used on the selected field to produce this crop. If a particular row's variable rate applicator was not used, leave that row blank.

1 Was a variable rate applicator used on the selected field for--	2 Tool Used Yes=1 No=3	3 Was this applicator?- 1 Sensor-based 2 GPS-based 3 Both 4 Neither Code	4 Was this applicator?- 1 New, owned 2 Used, owned 3 Leased Code	5 What year was the applicator first used? Year	6 Premium paid for the applicator Total Dollars
a. seeding.....	1158	2170	2171	2172	2173
b. fertilizer/lime applications.....	1152	2174	2175	2176	2177
c. pesticide applications.....	1159	2178	2179	2180	2181
d. irrigation applications.....	1197	2182	2183	2184	2185

Closing Remarks

Click Here to return to Index

Section G: Irrigation

Andy Cochran

Mountain Region

Key Topics

- For the SELECTED FIELD
- Irrigation System Type Codes
  - Use respondent booklet
- [Follow skip instructions]

Irrigation Profile

- Wheat in United States:
  - Only about 8% of wheat is irrigated (92% is dryland)
  - What irrigation systems do you see in your area?

	Acres
1. How many acres in the selected field were irrigated for the 2022 wheat crop?.....	1160 .__

[If none, go to Conclusion]

2. Now I have some questions about the irrigation systems and water used on the selected field for the 2022 wheat crop.

	Unit	System
a. What type(s) of irrigation system(s) was (or were) used to irrigate the selected field? [Show System Type Codes in the Respondent Booklet. Enter System Type Code for the system covering the most field acres.].....	System Type Code	1161
b. What was the total quantity of water applied to the selected field during the entire growing season? INCLUDE all water used from both on–farm and off–farm sources.....	Inches per Acre OR Total Acre Feet	1162 / 1163

[If operator cannot provide item 2b, ask (i) and (ii). Otherwise go to 2c]

IRRIGATION TYPE CODES

Section G, Item 2

PRESSURE SYSTEMS	GRAVITY SYSTEMS
1 HAND-MOVE	10 SIPHON TUBE from unlined ditches
2 SOLID or PERMANENT SET	11 SIPHON TUBE from lined ditches
3 SIDE ROLL or WHEEL LINE	12 PORTAL SYSTEM from unlined ditches
4 CENTER PIVOT or LINEAR MOVE with sprinklers on main line	13 PORTAL SYSTEM from lined ditches
5 CENTER PIVOT or LINEAR MOVE with sprinklers below main line, but more than 2 feet above ground	14 ANY POLY PIPE SYSTEM
6 CENTER PIVOT or LINEAR MOVE with sprinklers less than 2 feet above ground	15 GATED PIPE (not poly pipe)
7 BIG GUN	16 IMPROVED GATED PIPE (surge flow or cablegation not poly pipe)
8 LOW FLOW IRRIGATION (drip, trickle or micro sprinkler)	17 SUBIRRIGATION
9 OTHER - SPECIFY	18 OPEN DISCHARGE FROM WELL or PUMP
	19 OTHER - SPECIFY

	Acres
1. How many acres in the selected field were irrigated for the 2022 wheat crop?.....	1160 .___

[If none, go to Conclusion]

2. Now I have some questions about the irrigation systems and water used on the selected field for the 2022 wheat crop.

	Unit	System
a. What type(s) of irrigation system(s) was (or were) used to irrigate the selected field? [Show System Type Codes in the Respondent Booklet. Enter System Type Code for the system covering the most field acres.].....	System Type Code	1161
b. What was the total quantity of water applied to the selected field during the entire growing season? INCLUDE all water used from both on–farm and off–farm sources.....	Inches per Acre OR Total Acre Feet	1162 / 1163

[If operator cannot provide item 2b, ask (i) and (ii). Otherwise go to 2c]

i. What is the total number of hours this system was used to apply water to the selected field during the wheat growing season?.....	Total Hours	1164
ii. How many gallons per minute were applied?.....	Gallons per Minute	1165

c. What percent of the water used to irrigate the selected field through this system came from surface water sources?.....	Percent	1166
d. What was the number of times the selected field was irrigated during the wheat growing season using this system? INCLUDE any pre-plant irrigation.....	Number of Irrigations	1167

e. What was the pump type? [If more than one pump in the system, enter type for pump closest to water source.]..... 1 Turbine, 2 Submersible, 3 Centrifugal, 4 Booster, 5 Siphon, 99 No Pump [If code 99, go to item j.]..... Code 1168

f. What was the average pumping rate?..... Gallons per Minute 1169

[If item 2a = code 1–9 (Pressure System), ask-]

g. What was the system operating pressure?..... Pounds per Square Inch 1170

h. What was the primary motor type used to pump the water?..... 1 Diesel, 2 Gasoline, 3 LP Gas, 4 Natural Gas, 5 Electricity, 6 Solar Power ..... Code 1171

i. What was the average motor size?..... Horsepower 1172

e. What was the pump type? [If more than one pump in the system, enter type for pump closest to water source.]..... [If code 99, go to item j.].....

1	Turbine
2	Submersible
3	Centrifugal
4	Booster
5	Siphon
99	No Pump

Code	1168

f. What was the average pumping rate?.....

Gallons per Minute	1169

[If item 2a = code 1–9 (Pressure System), ask-]

g. What was the system operating pressure?.....

Pounds per Square Inch	1170

h. What was the primary motor type used to pump the water?.....

1	Diesel
2	Gasoline
3	LP Gas
4	Natural Gas
5	Electricity
6	Solar Power

.....

Code	1171

i. What was the average motor size?.....

Horsepower	1172

[If No Pump was used, item 2e = 99, ask--]

j. What was the average flow rate?.....

Gallons per Minute	1173

k. How many other acres on this operation were irrigated using the selected field's irrigation system during the 2022 growing season? EXCLUDE the selected field.....

Acres	1174 .___

	Dollars & Cents per Acre	OR	Total Dollars
3. What was the cost of the fuel or electricity used to irrigate the selected field? INCLUDE operator, landlord, and contractor costs.....	1189 .__ __		1190

	Code
4. Was any water purchased to irrigate the selected field? INCLUDE landlord's share and purchases from all sources..... (Yes=1 No=3)	1191

[If item 4 = 1 ask-- Otherwise go to item 5.]

a. What was the total cost for the water purchased for the sele
the 2022 growing season? INCLUDE operator, landlord, ar
costs and ditch maintenance costs for the selected field.....

[If siphon tubes were used, item 2a = 10 or 11, ask--]

5. What would be the total cost to replace all the siphon tubes use

[If poly pipe system was used, item 2a = 14, ask--]

6. What was the total amount spent for poly pipe used on the sele
season? INCLUDE operator, landlord, and contractor costs.....

IRRIGATION TYPE CODES

Section G, Item 2

PRESSURE SYSTEMS	GRAVITY SYSTEMS
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7 BIG GUN	16 IMPROVED GATED PIPE (surge flow or cablegation not poly pipe)
8 LOW FLOW IRRIGATION (drip, trickle or micro sprinkler)	17 SUBIRRIGATION
9 OTHER - SPECIFY	18 OPEN DISCHARGE FROM WELL or PUMP
	19 OTHER - SPECIFY

[If gated pipe system was used, item 2a = 15 or 16, ask--]

Inches

7. What was the average diameter of gated pipe used to irrigate the selected field?..... 1203

Feet

a. What was the total length of gated pipe used?..... 1204

IRRIGATION TYPE CODES

Section G, Item 2

PRESSURE SYSTEMS	GRAVITY SYSTEMS
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9 OTHER - SPECIFY	18 OPEN DISCHARGE FROM WELL or PUMP
	19 OTHER - SPECIFY

[If Pipe systems were used, item 2a 10, 11, 14, 15 or 16, ask--]

		Code
8. Were wells used to supply irrigation water for the selected field?	Yes=1 No=3	1205

[If item 8 = 1 continue. Otherwise go to item 9.]

		Number
a. How many wells were used to irrigate the selected field?		1206
		Inches
b. What was the average diameter of the outer well casing?		1207
c. What was the average pumping depth of these wells during the irrigation season? Pumping depth is the depth to water at the start of the irrigation season, plus an average decline in the water level caused by pumping during the irrigation season		Feet 1208
		Code
d. Were other fields irrigated using water pumped from wells that supplied water to the selected field?	Yes=1 No=3	1210

[If item 8d = 1 continue. Otherwise go to item 9.]

		Acres
e. Excluding the selected field, how many other acres on this operation were irrigated using the same wells during the 2022 growing season?		1211 .___

		Code
9. Was any additional mainline or lateral pipe used to carry water from the source to the system in the same wells during the 2022 growing season?	Yes=1 No=3	2211

[If item 9 = 1 continue. Otherwise go to Conclusion.]

		Inches
a. What was the average diameter in inches of the most common type of this additional pipe used?		1212

		Feet
b. How many feet of this additional pipe were used to bring water to the selected field?		1213

Closing Remarks

Click Here to return to Index

Latitude and Longitude

Teresa Green

Upper Midwest Region

Latitude and Longitude

32

CONCLUSION

Location of Selected Field

I need to locate the selected field of wheat on this map.

	County Name	Office Use State County FIPS Code
1. What county is the selected wheat field in?.....		0010 __ __ __ __ __

	LATITUDE	LONGITUDE
a. Field location.....	9854 __ __ . __ __ __ __ __ *decimal*	9855 _ __ __ __ . __ __ __ __ __ *decimal*

[Enumerator Action: Use the iPad app to find the coordinates for the center of the selected field. Confirm with the operator using the aerial imagery that this is the correct field.]

We will need additional information to complete this study. We will contact you in February or March 2023 to collect it. I'll call you then to set up a time that is good for you.

To receive the complete results of this survey on the release date, go to nass.usda.gov/results

2. To have a summary emailed to you at a later date, please enter your email address..... 1095

Office Use Only				
Ending Time (Military)		OR	Total Time	
Hours	Minutes		Hours	Minutes
0005		0008		

Latitude and Longitude