

## Sections F & G:

# Pest Control Applications & Pest Management Practices



# Learning Objectives for Section F

## Part 1: Pest Control Applications

**Objective 1:** Identify the years (2024, 2023, and/or 2022) in which pesticides were applied to control weeds, insects, or diseases in the field and in which genetically engineered crop cultivars were planted for tolerance to specific herbicides or insect resistance.

**Objective 2:** Identify use of suppression-related pest management activities like adjusting applications for pollinators, using treated seed, or tank mixing applications



# What is a pest?

- Insects
- Disease
- Weeds



# Were pest control applications used?

- For each of the last 3 years, were pest control products applied?
  - Include: herbicides, insecticides, fungicides, bio-control agents, bio-pesticides, seed treatments, and other conventional or organic products
- **If none used in any year, go to Section G**

# Question 1

**F**

**PEST CONTROL APPLICATIONS — SELECTED FIELD**

**F**

1. In which of the following years (2024, 2023, and/or 2022) were any products applied to this field to control weeds, insects, or diseases? [INCLUDE herbicides, insecticides, fungicides, bio-control agents, bio-pesticides, seed treatments, and other conventional or organic products.] .....

Yes = 1  
No = 3

2024      2023      2022

0315	0345	0346
0344	0343	0342

Enumerator Action: If pesticides applied in any year, continue. Complete table for only year(s) specified, else Go to SECTION G.



# Were genetically engineered (GE) cultivars used?

Include for each of the last 3 crop years

- 2. In which of the following years (2024, 2023, and/or 2022) did you select and plant crop cultivars with genetically engineered traits for:
  - a. tolerances to specific herbicides(e.g., glyphosate, glufosinate, dicamba or 2,4-D Choline)? .....
  - b. insect resistance (Bt)? .....



# Miscellaneous Other Pest Control Practices

**\*Answer these questions for activities that happened in any of the last 3 years\***

3. Did you alter any of your pesticide applications specifically to protect honeybees and/or native pollinators?

- For example, utilize an IPM program that specifically protects pollinators, only apply insecticides outside of the bloom period, only apply insecticides at night, etc.)

6. Did you select and plant crop seeds that had been commercially treated with fungicides or insecticides?

7. Did you apply practices to reduce potential drift, runoff, or leaching?

8. Did you use precision technology such as GPS, variable rate application, or smart or robotic sprayers?



# Pest Control Application Factors

9. Other than cost and product effectiveness, which of the following factors did you consider in determining which pest control product to use in 2024?

Source		Code
a. Potential health risk to applicator or farm worker? .....	Yes = 1 No = 3	0352
b. Risk to populations of beneficial organisms (earthworms, bees, ladybugs, etc)? .....	Yes = 1 No = 3	0353
c. Risk to natural resources (drinking water, wildlife, fish, etc.)? .....	Yes = 1 No = 3	0354
d. Pest resistance management? .....	Yes = 1 No = 3	0355
e. Crop safety? .....	Yes = 1 No = 3	0356
f. Impacts on soil health? .....	Yes = 1 No = 3	0879
g. None? .....	Yes = 1 No = 3	0880

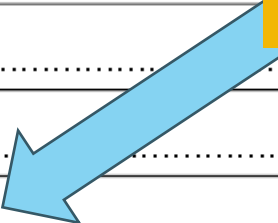


# Pest Control Application Factors

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a. Potential health risk to applicator or farm worker? .....	Yes = 1 No = 3	0352
b. Risk to populations of beneficial organisms (earthworms, bees, ladybugs, etc)? .....	Yes = 1 No = 3	0353
c. Risk to natural resources (drinking water, wildlife, fish, etc.)? .....	Yes = 1 No = 3	0354
d. Pest resistance management? .....		
e. Crop safety? .....	No = 3	
f. Impacts on soil health? .....	Yes = 1 No = 3	0879
g. None? .....	Yes = 1 No = 3	0880

**Note: If the answer "None" is provided, all other answers in this box must be "No"**





# Pest Control Applications

## In this section, you'll use:

- Operator's records—they may have them available for restricted use pesticide (RUP) requirements
  - These can help jog the memory, speed up completion of the section, and ensure that nonroutine or spot treatments are captured
- Respondent booklet
- Supplement
  - If more than 15 applications in a crop year



# Using the Respondent Booklet

- Includes list of pesticide products, which will provide the product code for input in the survey
- **Pay attention to:**
  - Accurate product name and formulation (which tells us what amount of chemical is in the product)
  - Class of product (e.g., herbicide, insecticide, fungicide, etc.)
  - Liquid or dry formulations—**we want the product form when purchased, not applied**
- EPA registration number from product label may help in identifying the correct product



# Getting Started

- **Start with:**

- Any applications after the previous crop was harvested or plowed down
- Other pre-plant applications, products at planting, and applications after planting
- Applications before harvest (including defoliant or drying agents) should be included



# Getting Started

- **Include:** herbicides, insecticides, fungicides, defoliants, growth regulators, microbial agents, miticides, nematicides, rodenticides, soil fumigants, **operator-applied seed treatments, and biological or botanical pest control products**
- **Exclude:** adjuvants (e.g., wetting agents, spreaders, emulsifiers, dispersing agents, foaming agents, foam suppressants, penetrants, surfactants, solvents, solubilizers, buffering agents, and stickers) and fertilizers



# Product Name

- Product name should be handwritten at the beginning of each line

PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs. 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
	<b>01</b>	60 24			61		63
	<b>02</b>	60 24			61		63



# Crop Year

- Crop year is **pre-printed in Column 1** for each of the three crop years covered in the survey
  - If supplement is used, crop year will be hand-written
- Any applications from when the previous crop was harvested or plowed down to the harvest of the current crop are considered part of that crop year

<b>Crop Year</b>	<b>Time Included</b>
<b>24</b>	After 2023 harvest through 2024 harvest
<b>23</b>	After 2022 harvest through 2023 harvest
<b>22</b>	After 2021 harvest through 2022 harvest



# Crop Information

- Identify the primary crop that the application was made on and write the name in Column 2
- Use the respondent booklet to select the matching crop code and record it in Column 3

PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs. 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
	<b>01</b>	60 24			61		63
	<b>02</b>	60 24			61		63

# Crop Information

- In a case where stripcropping occurred (i.e., no primary crop):
  - Both crops in the field should be listed, on **separate lines with the same application information** in the other fields.
  - Where this applies, **Column 12 should reflect “part of field” (coded with “2”)** for both crops
  - **Column 13** should indicate the appropriate number of acres for each application (portion of total)



# Product Code

- Using the respondent booklet, match the product name to the product code
- It is very important to obtain not only the correct product trade name (i.e., Roundup), but also the correct formulation of the product

PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs. 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
	<b>01</b>	60 24					63
	<b>02</b>	60 24			61		63



# Product Form

- Product form (when the product is purchased) will be listed in Column 5 as L (liquid) or D (dry)

PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs. 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
	<b>01</b>	60 24			61		63
	<b>02</b>	60 24			61		63



# Other Product Code Identification Tips

- Product form and probing for the product type can help select the correct product code for the product
- Ensuring the correct product code is critical to accurate survey data, as many similar products have different amounts of active ingredient

SECTION F					CHEMICALS AND PESTICIDES BY PRODUCT NAME				
F = Fungicide; H = Herbicide; I = Insecticide; MB = Misc. Biological/Pheromone;					MD = Misc. Defoliant; MG = Growth Regulator; MR = Rodenticide MS = Soil Fumigant; O = Other, Misc				
Form	Class	Code	Product Name	EPA #	Form	Class	Code	Product Name	EPA #
L	H	40021	2,4-D LV 6	42750-20	L	H	41917	A308.09	91234-48
L	F	71096	USF 0411	264-1207	L	H	41948	A326.02	91234-75
L	I	11644	0.3% BIFENTHRIN LIQUID CONCENTRATE	239-2685	L	H	41947	A339.01	91234-60
L	H	40480	2,4-D AMINE - 4	62575-1	D	H	41839	A363.01	91234-85
L	H	40754	2,4-D AMINE - 6 HERBICIDE	62575-8	L	I	11725	A363.03	91234-130
L	H	40538	2,4-D AMINE 4	1381-103	L	H	40128	AATREX 4L HERBICIDE	100-497
L	H	40479	2,4-D AMINE 4	42750-19	D	H	40143	AATREX NINE-O HERBICIDE	100-585
L	H	40752	2,4-D AMINE 6	42750-21	L	O	20070	ABACIDE 2	7946-27

# Product Not Listed in Respondent Booklet

- If the product used is not listed in respondent booklet, after following the steps discussed, fill out the appropriate information at the bottom of the page and indicate the corresponding line number

For pest control products not listed in Respondent Booklet please specify —

Line	Pest Control Product Type (Herbicide, Insecticide, Fungicide, etc.)	EPA Number or Trade name and Formulation	Form Purchased (Liquid or Dry)	Where Purchased (Ask only if EPA Number cannot be reported)
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____



# Tank Mixes



Where multiple products are tank mixed by the producer (not purchased as a pre-mix formula), there are a few things to keep in mind:

- Each product needs its own line in the pest control applications table
- Everything except for the treatment amount and product name/code should be the same between lines in a tank mix
- In Column 6, list the line number of the first product included in the tank mix

# Tank Mix Example

PRODUCT NAME	LINE	1 Crop Year	2 Primary crop for which control agent was intended.	3 Crop Code [Enter crop code from Respondent Booklet pgs. 4 - 7.]	4 What products were applied to this field? [Enter product code from Respondent Booklet pgs. 10 - 36.]	5 Was this product bought in liquid or dry form? [Enter L or D.]	6 Was this part of a tank mix? [If tank mix, enter line number of first product in mix.]
Powerflex	01	60 22	Wheat	125	61 40071	D	63 _____
Atrazine 4L	02	60 22	Corn	188	61 40136	L	63 2
Express	03	60 22	Corn	188	61 40310	D	63 2

# Tank Mix Example Continued

LINE	7	8	OR	9	10	11	12	13
	When was this applied?  MM DD YY	How much was applied per acre per application?		What was the total amount applied per application in this field?	[Enter unit code] (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	How was this product applied?  [Enter code from box above.]  Code	Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?  1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers  Code	How many acres in this field were treated with this product?  Acres
01	<sup>83</sup> 0 9 2 2 2 3	<sup>65</sup> 2 0 0		<sup>73</sup> _ _	<sup>74</sup> 28	<sup>76</sup> 6	<sup>84</sup> 1	<sup>77</sup> 1500 0
02	<sup>83</sup> 0 5 1 1 2 4	<sup>65</sup> _ _		<sup>73</sup> 1 0 0	<sup>74</sup> 14	<sup>76</sup> 8	<sup>84</sup> 1	<sup>77</sup> 1500 0
03	<sup>83</sup> 0 5 1 1 2 4	<sup>65</sup> 0 1 3		<sup>73</sup> _ _	<sup>74</sup> 15	<sup>76</sup> 8	<sup>84</sup> 1	<sup>77</sup> 1500 0

# Date Applied

L I N E	7	8	OR	9	10	11	12	13
	When was this applied?  MM DD YY	How much was applied per acre per application?  _____		What was the total amount applied per application in this field?  _____	[Enter unit code] (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	How was this product applied?  [Enter code from box above.]  Code	Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?  1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers  Code	How many acres in this field were treated with this product?  Acres
01		65		73	74	76	84	77
02	83 _____	65		73	74	76	84	77



# Application Rate

- Be sure to only use **one of these two columns** when entering application data- whichever the respondent can comfortably answer

L I N E	7	8	OR	9	10	11	12	13
	When was this applied?  MM DD YY	How much was applied per acre per application?		What was the total amount applied per application in this field?	[Enter unit code] (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	How was this product applied?  [Enter code from box above.]  Code	Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?  1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers  Code	How many acres in this field were treated with this product?  Acres
01	83 ____				74 ____	76 ____	84 ____	77 ____
02	83 ____	65 ____		73 ____	74 ____	76 ____	84 ____	77 ____

# Application Rate

## ➤ Per Acre (Column 8)

## ➤ Per Application (Column 9)

- This should be used when spot treatments are applied or application rates per acre vary across the field
- Ensure complete amount entry including adding **two zeroes** after the decimal point where whole numbers are indicated
- **Do not** record spray volume, but the actual amount of concentrated product





# Unit Code

- Unit code will match the product formulation

(e.g., liquid or dry)

- For liquid:

- Ounces, Pints
- Quarts, Gallons

- For dry:

- Dry ounces
- Pounds, Grams

LINE	7	8	OR	9	10	11	12	13
	When was this applied?  MM DD YY	How much was applied per acre per application?		What was the total amount applied per application in this field?	[Enter unit code]  (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	How was this product applied?  [Enter code from box above.]  Code	Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?  1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers  Code	How many acres in this field were treated with this product?  Acres
01	83 _ _ _ _ _	65 _ _ _		73 _ _ _		76	84	77 _ _ _
02	83 _ _ _ _ _	65 _ _ _		73 _ _ _	74	76	84	77 _ _ _



# Unit Code and Application Method – Page 25, 27, 29

LINE	7	8	OR	9	10	11	12
	When was this applied?  MM DD YY	How much was applied per acre per application?		What was the total amount applied per application in this field?	[Enter unit code]  (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	How was this product applied?  [Enter code from box above.]  Code	APPLICATION CODES FOR COLUMN 11  4 Seed furrow 5 Chemigation (in irrigation water) 6 Chisel/injected or knifed in 8 Direct spray, foliar 10 Seed treatment by producer prior to planting 11 Broadcast, ground, not incorporated 13 Broadcast, ground, foliar  21 Broadcast, ground, incorporated 31 Broadcast, by aircraft 32 Broadcast, foliar, by aircraft 71 Banded/side dressed 73 Banded/side-dressed, foliar 76 T-Banded (combo of banded and injected) 77 Broadcast, by drone 78 Broadcast, foliar, by drone
01	83 _ _ _ _ _	65 _ _ _		73 _ _ _	74		84
02	83 _ _ _ _ _	65 _ _ _		73 _ _ _	74	76	84



# Spot and Partial Treatment

- Column 12 indicates how much of a field was treated
  - Entire field, part of field, spot treatment, or entire field plus borders and buffers
- For spot or partial treatments, you must complete Column 9 (total amount applied on the field)
  - Do not enter a rate per acre (Column 8) for spot or partial treatments.

LINE	7	8	OR	9	10	11	12	13
	When was this applied?  MM DD YY	How much was applied per acre per application?		What was the total amount applied per application in this field?	[Enter unit code]  (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	How was this product applied?  [Enter code from box above.]  Code	Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?  1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers  Code	How many acres in this field were treated with this product?  Acres
01	83 ____	65 ____		73 ____	74	76		77 ____
02	83 ____	65 ____		73 ____	74	76	84	77 ____

# Spot and Partial Treatment

- Determine the acres treated for Column 13
- If the entire field is treated, the number of acres treated in Column 13 will match the planted acres recorded in Section C

LINE	7	8 OR 9		10	11	12	13
	When was this applied?  MM DD YY	How much was applied per acre per application?	What was the total amount applied per application in this field?	[Enter unit code] (col. 8 or 9 only)  1 Pounds 12 Gallons 13 Quarts 14 Pints 15 Liquid Ounces 28 Dry Ounces 30 Grams 40 Kilograms 41 Liters  Code	How was this product applied?  [Enter code from box above.]  Code	Was this product applied to the entire field, to only a portion of the field, or as a spot treatment?  1 Entire field 2 Part of field 3 Spot Treatment 4 Entire field plus borders and buffers  Code	How many acres in this field were treated with this product?  Acres
01	83 _ _ _ _ _	65 _ _ _	73 _ _ _	74	76	84	
02	83 _ _ _ _ _	65 _ _ _	73 _ _ _	74	76	84	77



# Don't Forget!

- Accuracy in product codes
- Properly labeled amounts (using required decimal places) and units
- Ensure tank mixes are labeled correctly
- Treated acres are the number treated with one pesticide application (line item)



# Section F Review

- What are pests?
- What is a mechanism of action and why does it matter?
- What are some special cases needing attention for pesticide application records?





# Learning Objectives for Section G

**Objective 1.** Determine pest scouting practices used on the field

**Objective 2.** Determine record keeping and other data use for pest management

**Objective 3.** Determine use of practices specifically for pest management



# Introduction to Section G – Page 30

- **Reminder:** Pest includes weeds, insects, and disease
- **\*These questions only consider activities in the 2024 crop year\***

## Method of Pest Scouting (Q1)

- By conducting general observations while performing routine tasks (casual)
- By deliberately going to the field specifically for scouting activities (serious)
- This field was not scouted for pests (none)





# Scouting Procedures

2. Was an established scouting process used?

- An established scouting process would look something like checking x number of plants in every x number of rows for a pest, or checking pest traps on a regular schedule

3a. Was scouting done according to a pre-determined schedule or calendar?

- Calendars may come from Extension or other Land Grant University (LGU) services and are developed specifically for a geographic area and show the historic occurrence of the pest



# Scouting Procedures

3b. Was scouting done according to a pest development model?

- Pest development models may also come from Extension or LGU services, and forecast pest population development based on environmental factors and trapping data

3c. Was scouting done according to a pest advisory warning?

- Extension, LGU services, a crop consultant, or other advisory source may issue a pest advisory warning—a recommendation that growers scout their fields for particular pests when they are locally detected



# Scouting Records and Thresholds – Page 30, 31

4. Were scouting data compared to infestation thresholds to determine when to take measures to manage pests in the field?

- Infestation thresholds will be crop and regionally specific, often published by Extension or LGU services

6. Was scouting for pests done in the field **after** a pest control application to evaluate degree of control?

7. Were either written or electronic records kept for this field to track the activity or numbers of weeds, insects, or disease?

- If scouting was performed by someone outside of the farm operation, formal scouting records were likely kept, but any form of formally kept record would be a positive response



# How was scouting completed? Page 30

5. Was this field scouted for:

1	2	3	4
	Yes = 1 No = 3  Code	If Column 2 = Yes, Ask—  Who did the majority of the scouting for Column 1 —  1 Operator, partner or family member 2 An employee 3 Farm supply or chemical dealer 4 Independent crop consultant or commercial scout  Code	If Column 2 = Yes, Ask—  Based on the scouting report and compared to published threshold level, rate the pest pressure as —  1 Low 2 Medium 3 High  Code
a. weeds? .....	1705	1709	1774
b. insects or mites? .....	1706	1710	1775
c. diseases? .....	1707	1711	1776
d. other (specify) 0881 _____	1708	1712	1777

# Activities for Managing Pests – Page 31

10a. Remove, plow down, or burn any crop or crop residue?

10b. Alter crop rotation?

10c. Maintain ground covers, mulches, or other physical barriers?

10d. Use no-till or reduced till?

10e. Adjust spacing or plant density?

10f. Chop, spray, mow, plow, or burn field edges, lanes, ditches, roadways, or fence lines?



# Activities for Managing Pests – Page 31

10g. Clean equipment and field implements after completing field work?

10h. Cultivate for weed control during the growing season?

10i. Choose note to plant a crop in certain areas of the field to avoid a specific pest?

10j. Adjust planting or harvesting dates?



# Miscellaneous Other IPM Questions – Page 31

8. Was field mapping data (including from drone or UAV) used for making pest management decisions on this field?
9. Were the services of a diagnostic laboratory used for pest identification or soil or plant tissue pest analysis for this field?
11. Were weather data used to assist in determining either the “need for” or “when to” apply a pest management practice?
12. Other than pesticide applicator training, has the operator attended any training sessions on pest ID and management in the past 3 years?
13. Were floral lures, attractants, repellants, pheromone traps, or other biological controls used on this field?





# Section G Review

- What is deliberate scouting?
- What does it mean to compare to scouting thresholds?
- If an operator said earlier in the survey that they used no-till, does that mean they used no-till or reduced till for managing pests?

