

QUESTIONS REMOVED FROM PRODUCTION PRACTICES REPORT – JULY 2022

Below are the questions that were removed from previous Production Practices Report versions. They were previously requested by the USDA Office of Pest Management Policy (OPMP). This applies to the 2022 Potato Production Practices Report.

17. For the selected field, were any of the following pesticide spraying practices or activities used in 2019? Pesticides include insecticides, fungicides, herbicides and plant growth regulators (PGR).

| | (1) | (2) | (3) (Complete column for every YES in Column 1) | (4) (Complete column for every NO in Column 1) |
|---|-------------------------------------|---|--|---|
| | Was this used in 2019? | Was it specifically used to keep pesticide application(s) on-target (i.e., reduce pesticide drift)? | Considering labor, training, capital expenditures, and other costs, how easy or difficult was it to implement this practice or activity? | Why was this practice or activity NOT used? Check all that apply. |
| Pesticide Spraying Practice or Activity | Yes = 1 No = 3 Don't Know = 2 | Yes = 1 No = 3 Don't Know = 2 | 1 – Very Easy 2 – Somewhat Easy 3 – Somewhat Difficult 4 – Very Difficult | 1 – Cost of labor/training 2 – Cost of associated equipment/products 3 – Incompatible with current production practices (e.g., topography, equipment limitations) 4 – General time management issues/too busy 5 – Unfamiliar with activity or practice 6 – Other, specify: |
| a. Altering spray time(s) depending on weather conditions (e.g., wind speed, wind direction) | | | | |
| b. Drift reducing adjuvant(s) | | | | |
| c. Drift reducing nozzle(s) | | | | |
| d. Increased GPA spray solution | | | | |
| e. Calibrate sprayer before the season | | | | |
| f. Calibrate sprayer during the season | | | | |
| g. Manually altering sprayer settings to improve the spray precision (e.g., altering spray pressure, ground speed, and/or boom height) | | | | |
| h. Adopting the use of technologies to improve the spray precision (e.g., on/off nozzle spray technology, GPS boom section controls, automatic boom height stabilization, and/or infrared technology) | | | | |
| i. Shielded sprayers | | | | |

| | | | | |
|--|--|--|--|--|
| j. Pulse Width Modulation (PWM) (e.g. Aim Command, Raven's Hawk Eye, John Deere's Exact Apply, etc.) | | | | |
| k. Other - Specify: _____ | | | | |

[Enumerator Notes: Question 18 pertains to pre-emergence pesticide applications, regardless of pesticide type. Questions 19 and 20 are specific to post-emergence applications, Question 19 addressing herbicide applications and Question 20 addressing insecticide/fungicide applications.]

18. **Pre-emergence** pesticide applications are pesticides that are applied BOTH prior to planting and/or before the emergence of the wheat for early-season pest management. For the selected field, did this operation make any **pre-emergence** pesticide applications using aerial sprayers and/or ground boom sprayers in 2019?

- Yes, made pre-emergence pesticide applications using aerial sprayers - Go to Item 19
 Yes, made pre-emergence pesticide applications using ground boom sprayers – Complete table below
 No, did not make pre-emergence pesticide applications - Go to Item 19

| | Pre-emergence Pesticide Applications Using Ground Boom Sprayers | | Code |
|---|--|--|------|
| a. What was the typical spray volume (gallons per acre-GPA) for pre-emergence pesticide applications? | 1 <input type="checkbox"/> < 5 GPA 2 <input type="checkbox"/> 5 to < 7.5 GPA 3 <input type="checkbox"/> 7.5 to < 10 GPA 4 <input type="checkbox"/> 10 to < 15 GPA | 5 <input type="checkbox"/> 15 to < 20 GPA 6 <input type="checkbox"/> 20 to < 25 GPA 7 <input type="checkbox"/> 25 GPA or greater 99 <input type="checkbox"/> Don't know | |
| b. What is the typical operating pressure for pre-emergence pesticide applications (PSI)? | 1 <input type="checkbox"/> < 10 PSI 2 <input type="checkbox"/> 10 to < 20 PSI 3 <input type="checkbox"/> 20 to < 30 PSI 4 <input type="checkbox"/> 30 to < 40 PSI 5 <input type="checkbox"/> 40 to < 50 PSI 6 <input type="checkbox"/> 50 to < 60 PSI | 7 <input type="checkbox"/> 60 to < 70 PSI 8 <input type="checkbox"/> 70 to < 80 PSI 9 <input type="checkbox"/> 80 to < 90 PSI 10 <input type="checkbox"/> 90 to < 100 PSI 11 <input type="checkbox"/> 100 PSI or greater 99 <input type="checkbox"/> Don't know | |
| d. c. What nozzles were typically used most often for any pre-emergence pesticide applications? | 1 <input type="checkbox"/> Hollow Cone 2 <input type="checkbox"/> Full Cone 3 <input type="checkbox"/> Disc/Core Nozzle 4 <input type="checkbox"/> Flat (e.g., flat fan) | 5 <input type="checkbox"/> Air-inclusion (AI), Air-induction, Venturi 6 <input type="checkbox"/> Other, specify: _____ 99 <input type="checkbox"/> Don't Know | |
| e. d. At what ground speed was this ground boom sprayer(s) typically driven during pre-emergence pesticide applications? | 1 <input type="checkbox"/> < 5 MPH 2 <input type="checkbox"/> 5 to < 10 MPH 3 <input type="checkbox"/> 10 to < 15 MPH | 4 <input type="checkbox"/> 15 to < 20 MPH 5 <input type="checkbox"/> 20 MPH or greater 99 <input type="checkbox"/> Don't know | |
| f. e. At what boom height above ground or crop canopy did this operation typically spray during pre-emergence pesticide applications? | 1 <input type="checkbox"/> < 24 inches 2 <input type="checkbox"/> 24 to < 36 inches | 3 <input type="checkbox"/> 36 inches or greater 99 <input type="checkbox"/> Don't know | |
| g. f. What is the target droplet size spectrum for pre-emergence pesticide applications? | 1 <input type="checkbox"/> Less than 106 microns (Extremely Fine or Very Fine) 2 <input type="checkbox"/> 106-235 microns (Fine) 3 <input type="checkbox"/> 236-340 microns (Medium) 4 <input type="checkbox"/> 341-403 microns (Coarse) | 5 <input type="checkbox"/> 404-502 microns (Very Coarse) 6 <input type="checkbox"/> 503-665 microns (Extremely Coarse) 7 <input type="checkbox"/> Greater than 665 microns (Ultra Coarse) 99 <input type="checkbox"/> Don't Know | |

19. **Post-emergence** herbicide applications are made to control weeds that occur after emergence of the wheat. For this selected field, did this operation make any **post-emergence** herbicide applications using aerial sprayers and/or ground boom sprayers in 2019?

- Yes, made post-emergence herbicide applications using aerial sprayers - Go to Item 20
 Yes, made post-emergence herbicide applications using ground boom sprayers – Complete table below
 No, did not make post-emergence herbicide applications - Go to Item 20

| | Post-emergence Herbicide Applications Using Ground Broom Sprayers | | Code |
|--|--|--|------|
| a. What was the typical spray volume (gallons per acre-GPA) for post-emergence herbicide applications? | 1 <input type="checkbox"/> < 5 GPA 2 <input type="checkbox"/> 5 to < 7.5 GPA 3 <input type="checkbox"/> 7.5 to < 10 GPA 4 <input type="checkbox"/> 10 to < 15 GPA | 5 <input type="checkbox"/> 15 to < 20 GPA 6 <input type="checkbox"/> 20 to < 25 GPA 7 <input type="checkbox"/> 25 GPA or greater 99 <input type="checkbox"/> Don't know | |
| b. What is the typical operating pressure for post-emergence herbicide applications (PSI)? | 1 <input type="checkbox"/> < 10 PSI 2 <input type="checkbox"/> 10 to < 20 PSI 3 <input type="checkbox"/> 20 to < 30 PSI 4 <input type="checkbox"/> 30 to < 40 PSI 5 <input type="checkbox"/> 40 to < 50 PSI 6 <input type="checkbox"/> 50 to < 60 PSI | 7 <input type="checkbox"/> 60 to < 70 PSI 8 <input type="checkbox"/> 70 to < 80 PSI 9 <input type="checkbox"/> 80 to < 90 PSI 10 <input type="checkbox"/> 90 to < 100 PSI 11 <input type="checkbox"/> 100 PSI or greater 99 <input type="checkbox"/> Don't know | |
| d. c. What nozzles were typically used most often for any post-emergence herbicide applications? | 1 <input type="checkbox"/> Hollow Cone 2 <input type="checkbox"/> Full Cone 3 <input type="checkbox"/> Disc/Core 4 <input type="checkbox"/> Flat (e.g., flat fan) | 5 <input type="checkbox"/> Air-inclusion (AI), Air-induction, Venturi 6 <input type="checkbox"/> Other, specify: _____ 99 <input type="checkbox"/> Don't Know | |
| e. d. At what ground speed was this ground boom sprayer(s) typically driven during post-emergence herbicide applications? | 1 <input type="checkbox"/> < 5 MPH 2 <input type="checkbox"/> 5 to < 10 MPH 3 <input type="checkbox"/> 10 to <15 MPH | 4 <input type="checkbox"/> 15 to <20 MPH 5 <input type="checkbox"/> 20 MPH or greater 99 <input type="checkbox"/> Don't know | |
| f. e. At what boom height above ground or crop canopy did this operation typically spray during post-emergence herbicide applications? | 1 <input type="checkbox"/> < 24 inches 2 <input type="checkbox"/> 24 to < 36 inches | 3 <input type="checkbox"/> 36 inches or greater 99 <input type="checkbox"/> Don't know | |
| g. f. What is the target droplet size spectrum for post-emergence herbicide applications? | 1 <input type="checkbox"/> Less than 106 microns (Extremely Fine or Very Fine) 2 <input type="checkbox"/> 106-235 microns (Fine) 3 <input type="checkbox"/> 236-340 microns (Medium) 4 <input type="checkbox"/> 341-403 microns (Coarse) | 5 <input type="checkbox"/> 404-502 microns (Very Coarse) 6 <input type="checkbox"/> 503-665 microns (Extremely Coarse) 7 <input type="checkbox"/> Greater than 665 microns (Ultra Coarse) 99 <input type="checkbox"/> Don't Know | |

20. **Post-emergence** insecticide and/or fungicide applications are made to control pests that occur after emergence of the wheat. For the selected field, did this operation make any **post-emergence** insecticide and/or fungicide applications using aerial sprayers and/or ground boom sprayers in 2019?

- Yes, made post-emergence insecticide/fungicide applications using aerial sprayers - Go to Item 21
 Yes, made post-emergence insecticide/fungicide applications using ground boom sprayers – Complete table below
 No, did not make pre-emergence pesticide applications - Go to Item 21

| | Post-emergence Insecticide/Fungicide Applications Using Ground Boom Sprayers | | Code |
|--|--|--|------|
| a. What was the typical spray volume (gallons per acre-GPA) for post-emergence insecticide/fungicide applications? | 1 <input type="checkbox"/> < 5 GPA 2 <input type="checkbox"/> 5 to < 7.5 GPA 3 <input type="checkbox"/> 7.5 to < 10 GPA 4 <input type="checkbox"/> 10 to < 15 GPA | 5 <input type="checkbox"/> 15 to < 20 GPA 6 <input type="checkbox"/> 20 to < 25 GPA 7 <input type="checkbox"/> 25 GPA or greater 99 <input type="checkbox"/> Don't know | |
| b. What is the typical operating pressure for post-emergence insecticide/fungicide applications (PSI)? | 1 <input type="checkbox"/> < 10 PSI 2 <input type="checkbox"/> 10 to < 20 PSI 3 <input type="checkbox"/> 20 to < 30 PSI 4 <input type="checkbox"/> 30 to < 40 PSI 5 <input type="checkbox"/> 40 to < 50 PSI 6 <input type="checkbox"/> 50 to < 60 PSI | 7 <input type="checkbox"/> 60 to < 70 PSI 8 <input type="checkbox"/> 70 to < 80 PSI 9 <input type="checkbox"/> 80 to < 90 PSI 10 <input type="checkbox"/> 90 to < 100 PSI 11 <input type="checkbox"/> 100 PSI or greater 99 <input type="checkbox"/> Don't know | |
| d. c. What nozzles were typically used most often for any post-emergence insecticide/fungicide applications? | 1 <input type="checkbox"/> Hollow Cone 2 <input type="checkbox"/> Full Cone 3 <input type="checkbox"/> Disc/Core Nozzle 4 <input type="checkbox"/> Flat (e.g., flat fan) | 5 <input type="checkbox"/> Air-inclusion (AI), Air-induction, Venturi 6 <input type="checkbox"/> Other, specify: _____ 99 <input type="checkbox"/> Don't Know | |
| e. d. At what ground speed was this ground boom sprayer(s) typically driven during post-emergence insecticide/fungicide applications? | 1 <input type="checkbox"/> < 5 MPH 2 <input type="checkbox"/> 5 to < 10 MPH 3 <input type="checkbox"/> 10 to < 15 MPH | 4 <input type="checkbox"/> 15 to < 20 MPH 5 <input type="checkbox"/> 20 MPH or greater 99 <input type="checkbox"/> Don't know | |
| f. e. At what boom height above ground or crop canopy did this operation typically spray during post-emergence insecticide/fungicide applications? | 1 <input type="checkbox"/> < 24 inches 2 <input type="checkbox"/> 24 to < 36 inches | 3 <input type="checkbox"/> 36 inches or greater 99 <input type="checkbox"/> Don't know | |
| g. f. What is the target droplet size spectrum for post-emergence insecticide/fungicide applications? | 1 <input type="checkbox"/> Less than 106 microns (Extremely Fine or Very Fine) 2 <input type="checkbox"/> 106-235 microns (Fine) 3 <input type="checkbox"/> 236-340 microns (Medium) 4 <input type="checkbox"/> 341-403 microns (Coarse) | 5 <input type="checkbox"/> 404-502 microns (Very Coarse) 6 <input type="checkbox"/> 503-665 microns (Extremely Coarse) 7 <input type="checkbox"/> Greater than 665 microns (Ultra Coarse) 99 <input type="checkbox"/> Don't Know | |

21. Which of the following spraying practices resulted in a sprayer re-calibration in 2019? Check all that apply.

- a. Computer calibration alert system
- b. Change in product being applied
- c. Observed change in spray pattern or Gallons per Acre (GPA) output (e.g., from worn nozzles)
- d. Scheduled calibration (e.g., daily, monthly, annually)
- e. When moving to a different block or crop
- f. Other, specify: _____
- g. None of the above

22. For the selected field, how often did this operation clean the ground boom sprayer tank system in 2019? Check all that apply.....

- 1 Before the season
- 2 After the season
- 3 Depended on the product(s)
- 4 Regularly scheduled cleaning
- 5 Other, specify: _____
- 6 Never

[Enumerator Note: If Respondent answered code 1 - 5 for Item 22, answer Item 22a and 22b; else skip to Item 23]

22a. For each time that the ground boom sprayer was cleaned, how often was a tank cleaner used?

- 1 Always (100%)
- 2 Often (51% or more)
- 3 Sometimes (50% or less)
- 4 Never (0%)
- 99. Don't Know

22b. Did this operation use separate spray rigs for herbicide applications?

- 1 Yes
- 3 No
- 2 Don't Know

23. For the selected field, what material were a **majority** of the nozzles made of that were used across all pesticide applications made in 2019? Select one.

- a. Plastic, such as Polypropylene (i.e. Poly or PP) or other types
- b. Aluminum, brass, or other soft metal(s)
- c. Stainless steel (including hardened stainless steel)
- d. Porcelain or other ceramic materials
- e. Other, specify: _____

24. For the selected field, what were the most common reasons for replacing the nozzles on the sprayers in 2019? Check all that apply.

- a. Regularly scheduled calendar-based replacement (i.e., annually, twice annually, monthly, etc.)
- b. Regularly scheduled replacement based on operating time (i.e., sprayer operating hours)
- c. Sporadic replacement based on area covered or general intuition (i.e., it feels like the right time to change nozzles)
- d. Calibration problems (i.e., too high or too low a flow rate)
- e. Observed nozzle damage (e.g., change in spray pattern or leaks)
- f. Availability of new nozzle technologies
- g. Expert and/or consultant recommendations (e.g., Cooperative Extension, crop consultants, etc.)
- h. Other, please specify: _____
- i. None of the above

25. For the selected field, on what proportion did this operation use hedge rows or other wind-breaking structures (that are at least one and a half times the height of the crop canopy) for drift reduction in 2019?

- a. 0%
 b. 1% to 25%
 c. 26% to 50%
 d. 51% to 75%
 e. 76% to 100%
 f. Don't know

26. How often were the following sources of information used to inform pest management decisions in 2019?

| Sources of Information | (1) How often was this source of information used? 1 - Always (100%) 2 - Often (51% or more) 3 - Sometimes (50% or less) 4 - Never (0%) 99 Don't Know | (2) Which of these sources was this operation's PRIMARY source of pest management decisions? Select one. 1 = Primary 3 = Not Primary |
|---|---|--|
| a. Pesticide Product Labels | | |
| b. University and/or Agricultural Cooperative Extension Resources/Recommendations | | |
| c. Non-University literature, such as magazines or newspapers | | |
| d. Grower/Trade Groups | | |
| e. Pesticide Sales Representatives and/or Farm Supply Distributors | | |
| Crop Consultants Paid for by the Operation | | |
| a. Other Grower(s) | | |
| b. Non-University Decision Tools | | |
| c. Weather Forecasting Tools | | |
| d. Other, Specify: _____ | | |

27. (If 26b, column 1 equals 1, 2, 3) Which of the following types of services offered by the University and/or Agricultural Cooperative Extension were most often used as sources of pest management decisions in 2019?

| University and/or Agricultural Cooperative Extension Services | How often was this source of information used? 1- Always (100%) 2 - Often (51% or more) 3 - Sometimes (50% or less) 4 - Never (0%) 99 - Don't Know |
|--|---|
| a. Formal presentations (e.g., annual meetings, educational trainings) | |
| b. Field days/ demonstration workshops | |
| c. Farm visits and/or one-on-one consultation | |
| d. Email lists | |
| e. Newsletters | |
| f. Crop and/or Pest Protection Handbook | |
| g. Other publications (e.g. Fact sheets) | |
| h. Decision tools | |
| i. Other, Specify: _____ | |

28. For the selected field, how often were the following practices used during the season to manage herbicide, fungicide and insecticide resistance in 2019?

| Practices to Manage Resistance for Herbicide, Fungicide and Insecticide | (Only complete if operation uses herbicides) How often was each practice used on this field to manage herbicide resistance? 1 Always (100%) 2 Often (51% or more) 3 Sometimes (50% or less) 4 Never (0%) 99. Don't Know | (Only complete if operation uses fungicides) How often was each practice used on this field to manage fungicide resistance? 1 Always (100%) 2 Often (51% or more) 3 Sometimes (50% or less) 4 Never (0%) 99. Don't Know | (Only complete if operation uses insecticides) How often was each practice used on this field to manage insecticide resistance? 1 Always (100%) 2 Often (51% or more) 3 Sometimes (50% or less) 4 Never (0%) 99. Don't Know |
|--|---|---|---|
| a. Field mapping weeds and/or keeping records of field history and pesticide use to assist pesticide decisions | | | |
| b. Field Management/Sanitation Practices: | | | |
| i. For weed control (e.g., crop rotation, tillage, planting cover crops, managing field borders, preventing field-to-field and within field movement of weed seed) | | | |
| ii. For disease control (e.g., removing or incorporating field residue to reduce potential disease infestations, managing field borders) | | | |
| iii. For insect control (e.g., removing or incorporating field residue to reduce potential insect infestations, managing field borders) | | | |
| c. Planting insect-resistant and/or disease-resistant varieties of wheat | | | |
| d. Pre-harvest and/or post-harvest control of weeds and/or disease to reduce the return of weed seeds and/or seed-borne diseases | | | |
| e. Use of pest diagnostic tools [e.g., Integrated Pest Management (IPM) treatment thresholds; predictive weather models (e.g., degree day models); pest forecasting systems, and/or assistance from diagnostic networks] | | | |
| e. Pesticide Mode of Action (MOA) rotation | | | |
| f. Pesticide Mode of Action (MOA) combination (i.e., tank mix or pre-mix product) | | | |

29. In an effort to reduce off-target impacts to plants, pollinators, and/or beneficial insects, did this operation communicate with or consult any of the following sources in 2019? Check all that apply.

- a. Neighboring crop producers
- b. Nearby beekeepers
- c. A local expert, such as an Agricultural Cooperative Extension agent
- d. State Managed Pollinator Protection Plans, or MP3s (MP3s are state-developed efforts that intend to reduce pesticide exposure through timely communication and coordination among beekeepers, growers, pesticide applicators, and landowners)
- e. Driftwatch (Driftwatch is a voluntary communication tool that enables crop producers, beekeepers, and pesticide applicators to work together to protect crops and apiaries through the use of mapping programs.)
- f. Other communication tool(s), specify: _____
- g. Other, specify: _____

30. Are the spraying practices for *other fields* on this operation similar to the spraying practices for *this selected field*?

- a. Yes
- b. No – Please explain the difference: _____
- c. Don't Know

43. Which of the following auditing systems, if any, did this operation participate in in 2019? Check all that apply.

- a. GLOBALG.A.P.
 - b. Safe Quality Food (SQF) Program
 - c. Other, specify: _____
 - d. This operation did not participate in an auditing system
 - e. Don't know
-