

# MINNESOTA BEST MANAGEMENT PRACTICES SURVEY - 2023

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The Minnesota Department of Agriculture, in cooperation with the National Agricultural Statistics Service (NASS), will conduct periodic surveys of major crop producers that collect information on pesticide and fertilizer use. Survey respondents are randomly selected, and the reported results are based on advanced standardized statistical analyses conducted by Minnesota Department of Agriculture. Your response is necessary to help provide the best statistics possible. If there are any questions, contact the Minnesota Department of Agriculture at 651-201-6336.

1. How many acres of corn and soybeans did you plant in 2022 on your operation?

	Acres
a. Corn: .....	101
b. Soybeans: .....	102

2. <sup>201</sup> Did you have any acres of corn in 2022 that were planted to soybeans in 2021?

<sup>1</sup>  Yes                      <sup>3</sup>  No (**Go to question 4**)

3. **Corn on soybean acres.** What was the AVERAGE nitrogen rate (units per acre) that was applied across all acres of corn **planted in 2022**, that were planted to soybeans in 2021? Please include any nitrogen from phosphorus sources such as MAP/DAP/MEZ, sulfur sources such as thiosulfate and ammonium sulfate, and nitrogen in the starter in addition to the main source of nitrogen such as UAN solutions, urea, or anhydrous ammonia.

Total units (actual nitrogen) applied per acre (average per acre) ..... <sup>202</sup>

4. <sup>203</sup> Did you have any acres of corn in 2022 that were planted to corn in 2021?

<sup>1</sup>  Yes                      <sup>3</sup>  No (**Go to question 6**)

5. **Corn on corn acres.** What was the AVERAGE nitrogen rate (units per acre) that was applied across all acres of corn **planted in 2022**, that were **also** planted to **corn** in 2021? Please include any nitrogen from phosphorus sources such as MAP/DAP/MEZ, sulfur sources such as thiosulfate and ammonium sulfate, and nitrogen in the stater in addition to the main source of nitrogen such as UAN solutions, urea, or anhydrous ammonia?.....

Total units (actual nitrogen) applied per acre (average per acre)
204

6. Which of the following precision agriculture tools do you use on the farm? **(Check all that apply).**

- a. <sup>205</sup>  Auto Steer
- b. <sup>206</sup>  Precision planting
- c. <sup>207</sup>  Variable rate fertilizer applications
- d. <sup>208</sup>  Precision spraying, such as auto boom shutoff
- e. <sup>209</sup>  Nitrogen applications based on zone management
- f. <sup>210</sup>  Nitrogen applications based on aerial imagery
- g. <sup>211</sup>  Nitrogen applications based on in field variables such as in season soil tests
- h. <sup>212</sup>  Nitrogen applications based on other in season variables not mentioned above

7. <sup>213</sup> How many acres of cover crops were planted in or grown after your corn or soybean fields were harvested in 2022?

- a. Cover crop on corn acres: .....
- b. Cover crop on soybean acres: .....

Acres
<sup>214</sup>
<sup>215</sup>

**If you did not grow corn in 2022, go to question 16**

8. <sup>216</sup> With the higher price of fertilizer, did you reduce your N rate on your corn acres?

- <sup>1</sup>  Yes
- <sup>3</sup>  No
- <sup>5</sup>  Don't Know

9. <sup>217</sup> Was manure used on any of your corn acres in 2022?

- <sup>1</sup>  Yes
- <sup>3</sup>  No

<sup>218</sup> **If yes**, was the manure tested **within the last five years** before application in 2022?

- <sup>1</sup>  Yes
- <sup>3</sup>  No

10. **Which** of the following factors determine the nitrogen rate calculation in the **University of Minnesota** nitrogen guidelines. - list factors?

- a. <sup>219</sup>  Soil organic matter
- b. <sup>220</sup>  Price of nitrogen
- c. <sup>221</sup>  Yield goal
- d. <sup>222</sup>  Previous crop
- e. <sup>223</sup>  Variable rate
- f. <sup>224</sup>  Price of corn
- g. <sup>225</sup>  Cation exchange capacity (CEC)
- f. <sup>226</sup>  Don't know

11. The Minnesota Department of Agriculture (MDA) has a vulnerable groundwater area map on its website that shows areas where fall nitrogen fertilizer applications are restricted:

a. How many corn acres do you have in a vulnerable groundwater area or a drinking water supply management area as defined by the MDA vulnerable groundwater area map?..... 233  Don't Know OR

Acres
234

b. 227 When was the last time you reviewed the MDA's Fall Nitrogen Fertilizer Restrictions map on the MDA website?

- 1  Date: \_\_\_\_\_
- 3  Don't Know
- 7  Never

12. 228 Do you use a nitrogen inhibitor on any of your corn acres?

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

13. 229 Do you sidedress any nitrogen on your corn acres, including top dress or irrigation?

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

14. 230 Do you use a slow release product such as ESN, Super U or other such product?

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

15. 231 How important are yields in determining your nitrogen rate on corn? 1 very important. 5 not important [Select one]

- 1       2       3       4       5

Herbicide Best Management Practices (BMP) Adoption Survey 2022

16. On your 2022 corn and/or soybean acres, did you (choose one from the list for each crop) If only one crop, check only in that column.

	Corn	Soybeans
a. Apply herbicides yourself.....	301 <input type="checkbox"/>	302 <input type="checkbox"/>
b. Have herbicides custom applied?.....	303 <input type="checkbox"/>	304 <input type="checkbox"/>
c. Apply some myself and some custom applied.....	305 <input type="checkbox"/>	306 <input type="checkbox"/>
d. Don't use herbicides	307 <input type="checkbox"/>	308 <input type="checkbox"/>

CONCLUDE interview if you did not use any herbicides on corn or soybeans in 2022.

For all the following questions, check the box if you did that practice **and** you planted that crop in 2022.

17. Who scouted your corn and/or soybean fields for weeds in 2022? **(Check all that apply.)** If only one crop check only in that column.

	Corn	Soybeans
a. Myself, family members, or an employee.....	309 <input type="checkbox"/>	310 <input type="checkbox"/>
b. Dealer/coop.....	311 <input type="checkbox"/>	312 <input type="checkbox"/>
c. Crop consultant.....	313 <input type="checkbox"/>	314 <input type="checkbox"/>
d. None of my fields were scouted.....	315 <input type="checkbox"/>	316 <input type="checkbox"/>

(two questions dropped and removed here)

18. What type of tillage did you use before planting on the majority of your corn and soybean fields in 2022 (Fall of 2021 and Spring of 2022)? **[Check one for each crop. If only one crop check only in that column.]**

	Corn	Soybeans
a. Conventional < 15% residue.....	331 <input type="checkbox"/>	332 <input type="checkbox"/>
b. Reduced Tillage 15% - 30% residue.....	333 <input type="checkbox"/>	334 <input type="checkbox"/>
c. Conservation Tillage > 30% residue.....	335 <input type="checkbox"/>	336 <input type="checkbox"/>
d. Strip Tillage.....	337 <input type="checkbox"/>	338 <input type="checkbox"/>
e. No Till.....	339 <input type="checkbox"/>	340 <input type="checkbox"/>

(one question dropped and removed here)

**If no corn acres, go to question 20**

19. On your corn acres applied with herbicides, did you use more than one mode of action (group). **This could be from two or more products with different modes of action or a premix with two or more different modes of action?**

342  All corn acres

343  Some corn acres

344  None of my corn acres

345  Don't Know

(New Questions Added)

20. Do you have surface water, such as a river, stream (intermittent or continuous), lake, or pond, in the field or within 50 feet of the outside border of any of your corn or soybean fields?

346  Yes [Go to next question]

347  No [Go to question 23]

21. Do you have non-crop vegetative buffers, such as grass or other permanent vegetation, next to the surface water?

348  Yes - All [Go to next question]

349  Yes - Some [Go to next question]

350  No [Go to question 23]

22. How many feet is the average width of the non-crop vegetative buffer next to the surface water?

351 \_\_\_\_\_ ft

23. Do you have a well or sinkhole in the field or within 50 feet outside the border of any of your corn or soybean

fields?

352  Yes - All [Go to next question]

353  Yes - Some [Go to next question]

354  No [Go to question 26]

24. Do you maintain a setback (no herbicide application) or non-crop vegetative buffer for the areas around the well or sinkhole?

355  Yes - All [Go to next question]

356  Yes - Some [Go to next question]

357  No [Go to question 28]

25. How many feet is the average width of the setback or non-crop vegetative buffer to the well or sinkhole?

358 \_\_\_\_\_ ft

26. Do you mix or load herbicides in any of your corn or soybean fields?

359  Yes

360  No

361  Don't Know

## Atrazine Use in Corn

27. <sup>401</sup> Was atrazine applied on any of your corn acres in 2022, premixes included?

1  Yes - Go to question 29.

3  No - Go to question 33.

5  Don't Know - Go to next question.

7  No corn acres in 2022 - Go to question 38.

28. Were any of the following atrazine products applied to your corn fields? [Check the box if the product was applied]

a. <sup>402</sup>  Acruron

b. <sup>403</sup>  Callisto Xtra

c. <sup>404</sup>  Atrazine 4L or 90DF

d. <sup>405</sup>  Keystone LA NXT

e. <sup>406</sup>  Harness Xtra

f. <sup>407</sup>  Aatrex

g. <sup>408</sup>  Breakfree NXT ATZ

h. <sup>409</sup>  Cadence ATZ or LA NXT

i. <sup>410</sup>  Lumax E

j. <sup>411</sup>  Volley NXT

If you have selected one or more of these atrazine products, **then go to then next question.** If not, **skip to question 33.**

29. <sup>412</sup> When did you apply atrazine on the majority of your corn acres? **[Only check one]**

- 1  Crop preplant or preemergence
- 2  Crop post emergence - **Go to question to 31**
- 3  Split application (both pre and post on the same field)

30. <sup>413</sup> Was atrazine incorporated through tillage?

- 1  All corn acres
- 3  Some corn acres
- 4  None
- 5  Don't Know

31. <sup>414</sup> Did you apply one pound or less per acre of the active ingredient (atrazine) on the majority your corn acres in the 2022 crop year?

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

32. Which of the following factors **were** considered when choosing the rate of atrazine on your corn fields in 2022 **besides cost?** **(Select all that apply)**

- k. <sup>415</sup>  Soil Texture
- l. <sup>416</sup>  Soil Organic Matter
- m. <sup>417</sup>  Weed Species
- n. <sup>418</sup>  Weed Pressure
- o. <sup>419</sup>  Effectiveness
- p. <sup>420</sup>  Other
- q. <sup>421</sup>  Don't Know

## **Acetochlor Use in Corn**

33. <sup>501</sup> Was acetochlor applied on any of your corn acres in 2022, premixes included?

- 1  Yes - **Go to question 35**
- 3  No - **Go to question 38**
- 5  Don't Know - **Go to next question**

34. Were any of the following acetochlor products applied to your corn fields? **[Check the box if the product was applied.]**

- a. <sup>502</sup>  Resicore
- b. <sup>503</sup>  Tripleflex
- c. <sup>504</sup>  Surestart
- d. <sup>505</sup>  Harness
- e. <sup>506</sup>  Staunch
- f. <sup>507</sup>  Surpass
- g. <sup>508</sup>  Volley or Volley NXT
- h. <sup>509</sup>  Keystone

i.  Warrant

If you have selected one or more of these acetochlor products, then **go to then next question**. If not, **skip to question 38**

35.  When did you apply acetochlor on the majority of your corn acres? [**Only check one**]

- 1  Crop preplant or preemergence
- 2  Crop post emergence - **Go to question 37**
- 3  Split application(both pre and post on the same field)

36.  Was acetochlor incorporated through tillage?

- 1  All corn acres
- 3  Some corn acres
- 4  None
- 5  Don't Know

37. Which of the following factors were considered when choosing the rate of acetochlor on your corn fields in 2022 besides cost? (**Select all that apply**)

- a.  Soil Texture
- b.  Soil Organic Matter
- c.  Weed Species
- d.  Weed Pressure
- e.  Effectiveness
- f.  Other
- g.  Don't Know

## **Acetochlor Use in Soybeans**

38.  Was Warrant or Warrant Ultra applied to your soybean fields?

- 1  Yes - **Go to next question**
- 3  No - **Conclude survey**
- 5  Don't Know - **Conclude survey**

39.  When did you apply acetochlor on the majority of your soybean acres? [**Only choose one**]

- 1  Crop preplant or preemergence
- 2  Crop post emergence - **Go to question to 41**
- 3  Split application (both pre and post on the same field)

40.  Was acetochlor incorporated through tillage?

- 1  All soybean acres
- 2  Some soybean acres
- 3  None
- 5  Don't Know

41. Which of the following factors were considered when choosing the rate of acetochlor on your soybean fields in 2022 besides cost? (**Select all that apply**)

- r. 604  Soil Texture
- s. 605  Soil Organic Matter
- t. 606  Weed Species
- u. 607  Weed Pressure
- v. 608  Effectiveness
- w. 609  Other
- x. 610  Don't Know

Response		Respondent		Mode		Enum.	Eval.	Change	Office Use for POID			
1-Comp	9901	1-Op/Mgr	9902	1-PASI (Mail)	9903	9998	9900	9985	9989			
2-R		2-Sp		2-PATI (Tel)					_____ - _____ - _____			
3-Inac		3-Acct/Bkpr		3-PAPI (Face-to-Face)					<b>Optional Use</b>			
4-Office Hold		4-Partner		6-Email					9907	9908	9906	9916
5-R -- Est		9-Oth		7-Fax								
6-Inac --Est				19-Other								
7-Off Hold --Est												
S/E Name:												







