



2023 Irrigation and Water Management Survey

Questionnaire Guide

Project Code: 656

Last Day to Mail to NPC: May 24



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Purpose

- Agricultural production relies on water supplies for irrigation. Surface water supply, ground water use, water quality, and competition for available water supplies are consistent national concerns. Therefore, high quality data on agricultural water uses are needed to help public and private sector officials understand and manage this important national resource.
- Selected farm irrigation data have been collected in the Census of Agriculture since 1890. Since 1979, a survey of irrigation has been conducted every five years as a supplement to the Census of Agriculture.
- This irrigation series has provided the only source of nationally consistent data on water management practices and water use in American agriculture.
- The 2023 Irrigation and Water Management Survey's aim is to supplement the basic irrigation data collected from all farm and ranch operators, including nursery, greenhouse, and other horticulture operations on the 2022 Census of Agriculture.
- The data items collected include:
 - Acres Irrigated
 - Equipped for Irrigation
 - Acres of Irrigated Crops
 - Quantity of Water Used and Method of Application
 - Infrastructure
 - Economic Measures

Sample Size by State (as of 1/22/24):

IN - 447 total, 32 field

MI - 529 total, 60 field

OH - 431 total, 56 field

more records will be coordinated later

Strata Breakdown:

1: 601

2: 209

3: 152

97: 74 (extreme opers/must records)

100+: 371 (horticulture opers)

Examples of Data Uses

- Numerous government agencies, research organizations, irrigation industries, Land Grant Universities, and many farm operators/managers are extensively using the data this survey provides.
- The Economic Research Service (ERS) of the United States Department of Agriculture (USDA) relies on irrigation data to assist policy makers and to provide essential data for economic models which are used to analyze the impact of alternative farm policies on the irrigated sector.
- The Natural Resource Conservation Service (NRCS) of the USDA uses the data (in addition to that of the Census of Agriculture) for appraising the status and condition of water and water-use trends on non-federal lands. Also, NRCS uses the data to plan and evaluate a national water conservation program.
- The United States Geological Survey (USGS) uses the data for preparing national water summaries, which are used by the Environmental Protection Agency, the Army Corps of Engineers, and other agencies for developing water-related programs. The Bureau of Reclamation of the United States Department of the Interior relies on the data for conducting feasibility studies of irrigation projects.
- State water resource agencies use the survey results to develop programs and prepare descriptive information.
- Irrigation system manufacturers and related businesses use the data to monitor trends in equipment use, irrigation expansion, and other market production related activities.
- Growers use the economic data to determine the feasibility of investing in irrigation systems. Examples of these data include investing in irrigation equipment, facilities, and land improvements; and figuring maintenance and repair expenditures of irrigation equipment and facilities.

Overview and Survey Processes

Survey Overview

- The 2023 Irrigation and Water Management Survey is primarily a mailout/mail back survey, except for records that need special enumerator handling.

Survey Processes

- All IWMS operators were mailed a questionnaire on January 3.
- Non-response operators will be mailed an IWMS questionnaire February 26.
- Operators have the option to complete the survey via mail or online.
- Authorized under the Census of Agriculture Act of 1997 and is therefore required by law. Responding is **mandatory**.

Enumerator Notes and Comments

- Please read all comments before contacting the operator.
- Phones: Not all phone numbers are listed on the front page of the questionnaire. To see all known phone numbers, review the assignment listing in CAPI.
 - Potential new phones may be in the comments. If phone # in comments is valid, make updates on the Face Page.
- To add or remove a permanent comment associated with the record, please write the comment on the face page

Questionnaire Notes

- Follow skip codes and navigations in the questionnaire.
- Code “Yes”/”No” boxes appropriately.
- Check “None” boxes when provided.
- If answer is unknown, write ‘dk’ outside the item code box.
- Does the questionnaire make sense?
 - Leave notes on irregular situations; notes need to be in margins.

Questionnaire Guide Legend

- Yellow Highlight: Skip Options
- Green Highlight: Information to be INCLUDED
- Red Highlight: Information to be EXCLUDED
- Purple Highlight: Important Information

2023 IRRIGATION AND WATER MANAGEMENT SURVEY

Form Number: 23-A621
(09/13/23)



National Agricultural
Statistics Service

Return your
completed report to:

Census of Agriculture
1201 East 10th Street
Jeffersonville, IN 47132

OFFICE USE ONLY 0010

If the operator **did not irrigate** in 2023, complete sections 1, 2, 16, 17, and 18.

Check "Yes/No" and "None" boxes where applicable.

Follow **skips** to the correct section/item.

If an operation **stopped farming during 2023**, complete the questionnaire for the portion of 2023 that was farmed. Write "Stopped farming in 2023", the date the operator stopped farming, and a detailed comment on the face page

Acres Irrigated by State:

- IN - 3.7%
- MI - 6.7%
- OH - 0.4%

Make corrections to name, address, and ZIP Code if necessary.

Complete your report by mail or via the internet at www.agcounts.usda.gov

- **Your mandatory report is due by February 15, 2024** – Everyone, including nursery, greenhouse, and other horticultural crop producers, must return this form by this date.
- To fill out the paper form, use a black or blue ballpoint pen.
- **Questions** – Call us toll-free at 1-888-424-7828. Thank you for your cooperation.

SECTION 1 ACREAGE IN 2023

- Report land owned, rented, or used by you, your spouse, or the partnership, corporation, or organization printed above.
- Round to whole acres.
- **Include ALL LAND**, regardless of location or use – cropland, pastureland, rangeland, woodland, idle land, **greenhouses or other area under protection**, farmsteads, Conservation Reserve Program (CRP) land, etc.

	None		Number of Acres
1. All land owned 0025	<input type="checkbox"/>		
2. All land rented or leased from others , including land worked by you on shares, used rent free, in exchange for services, payment of taxes, etc. Include Federal, state and railroad land leased on a per-acre basis. Exclude leased land (e.g., private, Federal, state, railroad) used on a per-head or animal unit month (AUM) basis under a grazing permit 0026	<input type="checkbox"/>	+	
3. All land rented or leased to others , including land worked on shares by others and land subleased. 0027	<input type="checkbox"/>	-	
4. TOTAL ACRES in this operation (items 1 + 2 - 3 = BOX A). 0028	=		BOX A

The information you provide will be used for statistical purposes only. Your responses 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: www.nass.usda.gov/confidentiality. Response to this survey is required by law under Title 7 USC 2204(g) Public Law 105-113.

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 0535-0234. The time required to complete this information collection is estimated to average 60 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.

SECTION 2 LAND IN 2023

- Of the acres reported in **BOX A** on the previous page, indicate how all of the land was used in 2023 in column 1 below. If the same land had more than one use, report that land only once in items 1 through 3.
- Report the acres that had irrigation equipment in 2023 in Column 2. Acres with access to irrigation systems or equipment, also known as acres equipped for irrigation, include all irrigated acres and all acres that could have been irrigated in 2023, regardless of water rights. Examples include acres covered by sprinklers, drip, trickle, down rows, and controlled flooding irrigation systems.
- Report the acres that were irrigated in 2023 in Column 3. Irrigation supplemental, or preplant irrigation, by any artificial or controlled means suitable for irrigation purposes.
- Area under protection includes crops grown under glass, rigid plastic, and hoop houses. Crops covered temporarily, such as for frost protection, should be reported as cropland harvested in the open.

Column 2 refers to **equipped acres**, which is land that has irrigation infrastructure **in place and functional**. It has the potential to be irrigated regardless of water rights and/or availability.

1. **Cropland** – Exclude cropland used only for pasture.

	Column 1	Column 2	Column 3
a. Cropland harvested in the open – Include harvested field crops and hay; and land in vegetables, orchards, citrus groves, vineyards, berries, nuts, Christmas trees, short rotation woody crops, nursery and other horticultural crops in the open	None <input type="checkbox"/> 0029	None <input type="checkbox"/> 1128	None <input type="checkbox"/> 0030
b. Area under protection – Include nursery, greenhouse, and other horticulture under protection. Round to the nearest whole acre	<input type="checkbox"/> 0077	<input type="checkbox"/> 1129	<input type="checkbox"/> 0078
c. Cropland not harvested or grazed – Include cropland on which all crops failed, cropland idle, cropland used for cover crops or CRP, and cropland in summer fallow.	<input type="checkbox"/> 0033	<input type="checkbox"/> 1130	<input type="checkbox"/> 0034

2. **Pasture**

a. Permanent pasture and rangeland	<input type="checkbox"/> 0135	<input type="checkbox"/> 1131	<input type="checkbox"/> 0136
b. Woodland pastured.	<input type="checkbox"/> 0137		
c. Other pasture and grazing land (including rotational pasture) that could have been used for crops without additional improvements	<input type="checkbox"/> 0107	<input type="checkbox"/> 1132	<input type="checkbox"/> 0108

3. **All other land** – Include land not reported above. Include woodland not pastured, farmsteads, home, buildings, livestock facilities, ponds, roads, wasteland, etc.

0039

Total Acres on this Operation

BOX B
0041

Total Acres with Access to Irrigation Systems or Equipment

BOX C
1133

Total Acres Irrigated

BOX D
0042

4. **TOTAL ACRES** – Add acres in each column and enter the totals

(BOX B above should be the same as BOX A on page 1.)

Check:
 1. Col 1 >= Col 2 >= Col 3
 2. Total acres in item 4 should match sums of items 1-3

5. Was any area irrigated on this operation in 2023? (Is **BOX D** positive?)
- Include all irrigated land in the open and all area under protection in 2023.
 - Exclude land equipped for irrigation that did not receive irrigation in 2023.

0003 1 **Yes** – Continue

3 **No** – Go to Section 16 on page 19

SECTION 3 GROUND WATER FROM WELLS

An **acre-foot** is the quantity of water needed to cover one acre to the depth of one foot, or approximately 326,000 gal.

1. Did this operation irrigate with ground water from wells on this operation in 2023?

0760

1 **Yes - Continue**

3 **No - Go to Section 4**

If exact amounts are not available, provide your best estimate for quantity of water applied. If total area irrigated in the open is less than one acre, report as one acre in item 2. If the wells are not on the operation, such as a municipal or rural water system, report this as off-farm water in Section 5.

2. Report acres in the open irrigated with ground water and the amount of water applied in 2023. **Include** irrigated horticultural crops grown in the open, irrigated summer fallow, and irrigated pastureland.

None

Ground water - water from a well located on the operation

Acres in the Open Irrigated by Ground Water	Quantity of Ground Water Applied	Enter Code for Unit of Measure 1 = Total Acre-Feet 2 = Total Gallons 3 = Inches/Acre
---	----------------------------------	---

3. Report the area under protection irrigated with ground water in 2023. Under protection includes nursery, greenhouse, floriculture, mushrooms, vegetable seeds, and propagative materials grown under glass, rigid plastic, plastic film, shade cloth, fiberglass, "tunnel" protection, and hoop houses.

None

Square Feet Under Protection Irrigated with Ground Water
0455

Number of Wells
0460

4. How many wells on this operation were used for irrigation in 2023?

a. Of the (item 4) wells, how many used backflow prevention devices (check valves) and how many acres and/or square feet under protection were irrigated with these wells in 2023?

None

Number of Wells	Acres in the Open	Square Feet Under Protection
0770	0771	0679

b. Of the (item 4) wells, how many had flow meters or other flow measurement devices and how many acres and/or square feet under protection were irrigated with these wells in 2023?

0683

c. Of the (item 4) wells, how many were free flowing wells that did not require a pump?

0486

Item 4c asks about free-flowing wells, which does not require the use of a pump to get water because it flows to the surface due to natural pressure. Item 4c should usually be zero for the GLR.

5. Report for the first three primary wells pumped in 2023.

	Depth of Well (Feet)	Depth to Bowls or Impellers (Feet)	Depth to Water at Start of Irrigation Season (Feet)	Pump Capacity - Discharge From Well (GPM)	Operating Pressure at Well Head (PSI)	Horsepower of Engines or Motors, Including Electric (HP)
Well #1	0461					0761
Well #2	0465					0763
Well #3	0469	0471	0470	0472	0678	0765

The 3 primary wells reported should be those with the **most water** pumped in 2023. If less than 3 wells were pumped in 2023, then only report for those wells used.

a. Report averages for all **other** wells pumped in 2023

	Average Well Depth (ft)	Average Depth to Water (ft)	Average Depth to Bowls (ft)	Average Pumping Capacity (gal)	Average Operating Pressure (psi)	Average Engine Size (hp)
Average Depth (ft) (0481)	Characteristics of Wells on Farms in 2018					
				Indiana	Michigan	Ohio
		96	121	103	Average horsepower of Engines or Motors, Including Electric (HP)	
		31	44	45		
		64	77	69		
		669	462	139		
	48	59	55			
	58	52	25	s? Increased		

6. For the wells used on Mark (X) one.

0487

1 Depth to

SECTION 4 ON-FARM SURFACE WATER

1. Did this operation irrigate with on-farm surface water, **including** recycled water and on-farm reclaimed water, in 2023?

Recycled water is reused surface or groundwater that was previously used to irrigate a crop (e.g. water from a tailwater reuse pit used for irrigation).

On-farm reclaimed water is **on-farm livestock wastewater that has been treated for non-potable reuse purposes.** (For the purposes of this irrigation survey, to be considered an irrigation application of reclaimed water, **at least 0.5 inches** of reclaimed water must be applied on the area during the growing season.)

0438 1 **Yes - Continue** 3 **No - Go to Section 5**

If exact amounts are not available, provide your best estimate for quantity of open is less than one acre, report as one acre in item 2.

On-farm surface water - water not controlled by a water supply organization, for example, streams or ponds on/next to the operation.

2. Report acres in the open irrigated with on-farm surface water and the amount of water applied in 2023. **Include** irrigated horticultural crops grown in the open, irrigated summer fallow, and irrigated pastureland. None

Acres in the Open Irrigated by On-Farm Surface Water		Quantity of On-Farm Surface Water Applied		Enter Code for Unit of Measure 1 = Total Acre-Feet 2 = Total Gallons 3 = Inches/Acre	
0449		0451		0452	

3. Report the area under protection irrigated with on-farm surface water in 2023. Under protection includes nursery, greenhouse, floriculture, mushrooms, vegetable seeds, and propagative materials grown under glass, rigid plastic, plastic film, shade cloth, fiberglass, "tunnel" protection, and hoop houses. None

Square Feet Under Protection Irrigated with On-Farm Surface Water	
0458	

4. Did this operation use **on-farm recycled water** to irrigate any crops, **including** horticultural crops, grown during 2023?

0600 1 **Yes - Continue** 3 **No - Go to item 5 below**

a. How many acres in the open and square feet under protection were irrigated with **on-farm recycled water** during 2023?

Acres in the Open		Square Feet Under Protection	
0601		0936	

5. Did this operation use **reclaimed water from on-farm livestock facilities** to irrigate any crops, **including** horticultural crops, grown during 2023? (For the purposes of this irrigation survey, to be considered an irrigation application of reclaimed water, **at least 0.5 inches of reclaimed water** must be applied on the area during the growing season. **If this minimum amount is not met, mark (X) "No" below.**)

0543 1 **Yes - Continue** 3 **No - Go to Section 5**

a. How many acres in the open and/or square feet under protection were irrigated with one or more applications of **reclaimed water from on-farm livestock facilities** during 2023?

Acres in the Open		Square Feet Under Protection	
0587		0588	

b. How much **reclaimed water from on-farm livestock facilities** was used for irrigation during 2023?

Acre-Feet		OR	Gallons	
0599			0561	

SECTION 5 OFF-FARM WATER

1. Did this operation irrigate with off-farm water in 2023?

INCLUDE

- acres in the open and area under protection irrigated with off-farm water from all suppliers
- all off-farm surface water, municipal (such as town or city) water, and rural water suppliers
- area irrigated with reclaimed water from off-farm sources such as treated municipal sewer water (blue water), industrial, off-farm livestock operations, or other off-farm sources

0457 1 **Yes - Continue** 3 **No - Go to Section 6**

If exact amounts are not available, provide your best estimate for quantity of water applied. If total area irrigated in the open is less than one acre, report as one acre in item 2.

2. Report acres in the open irrigated with off-farm water and the amount of water applied in 2023. **Include** irrigated horticultural crops grown in the open, irrigated summer fallow, and irrigated pastureland

None <input type="checkbox"/>	Acres in the Open Irrigated by Off-Farm Water	Quantity of Off-Farm Water Applied	Enter Code for Unit of Measure 1 = Total Acre-Feet 2 = Total Gallons 3 = Inches/Acre
	0454		0968

3. Report the area under protection irrigated with off-farm water in 2023. Under protection includes nursery, greenhouse, floriculture, mushrooms, vegetable seeds, and propagative materials grown under glass, rigid plastic, plastic film, shade cloth, fiberglass, "tunnel" protection, and hoop houses

None <input type="checkbox"/>	Square Feet Under Protection Irrigated with Off-Farm Water
	0428

4. Did you pay for the off-farm water received on this operation?

0675 1 **Yes - Report the total dollars paid for the off-farm water** 0456 \$.00
 3 **No - Continue**

5. How much of this operation's off-farm water was supplied, delivered, or transferred through a project financed, constructed, or managed by –

- a. U.S. Bureau of Reclamation? **Include** reclamation water delivered through a local district
- 0664 1 None 2 Some 3 All
- b. Other Federal agencies such as the U.S. Army Corp of Engineers, Bureau of Indian Affairs, and USDA small watershed project?
- 0665 1 None 2 Some 3 All
- c. All other suppliers? **Include** town and city water. Specify:
- 0666 1 None 2 Some 3 All

6. Did this operation use **reclaimed water from off-farm sources** such as municipal reclaimed water, industrial, off-farm livestock operations, or other off-farm sources to irrigate any crops in 2023? Off-farm reclaimed water is wastewater that has been treated for non-potable reuse purposes. (For the purposes of this irrigation survey, to be considered an irrigation application of reclaimed water, **at least 0.5 inches** of reclaimed water must be applied on the area during the growing season. **If this minimum amount is not met, mark (X) "No" below.**)

0602 1 **Yes - Continue** 3 **No - Go to Section 6**

Reclaimed Water - wastewater that has been treated for non-potable reuse

a. How many acres in the open and/or square feet under protection were irrigated with one or more applications of **reclaimed water from off-farm sources** during 2023?

Acres in the Open	Square Feet Under Protection
0597	0598

b. How much **reclaimed water from off-farm sources** was used for irrigation during 2023?

Acre-Feet	Gallons
0644	0645

OR

c. What sources of reclaimed water were used on this operation in 2023? Mark (X) all that apply.

- 1001 Municipal 1002 Industrial
 1003 Off-farm livestock operation 1004 Other - Specify: 1005

SECTION 6 PUMPS USED FOR IRRIGATION AND PUMP EXPENSES

1. Were any pumps used on this operation for irrigation during 2023?

INCLUDE

- all pumps supplying irrigation to or through any distribution system (e.g., gravity, sprinkler, drip)
- all pumps moving water into tanks or reservoirs on the operation for irrigation in 2023

EXCLUDE

- any pumps used exclusively for **non-irrigation** applications such as home use or aquaculture
- any pumps **not owned** or rented by this operation, such as pumps operated by a water company

0488 1 **Yes - Continue**

3 **No - Go to Section 7**

2. Report pumps by use. If the same pump has multiple uses, report that pump only once in items a through d.

None	Number of Pumps Used	Vertical Lift (Average Feet)	Discharge Capacity (Average GPM)	Discharge Operating Pressure (Average PSI)
	1135			
a. Well pumps	<input type="checkbox"/>			
	0490			
b. Tailwater pits (pits that hold water previously used for irrigation)	<input type="checkbox"/>			
	0492			
c. Ponds, lakes, reservoirs, rivers, canals, etc.	<input type="checkbox"/>			
d. Relifting or boosting water within system (pumps providing additional lift, pressure, or lateral movement)	<input type="checkbox"/>			
	0494			

Vertical lift - the average surface-level feet-of-lift the pumps must raise the water to distribute the water through the field irrigation system
Discharge capacity - average pumping capacity in gallons per minute (GPM)
Discharge operating pressure - the average operating pressure in pounds per square inch at the point of discharge

3. Report the energy expense by power source. Report the fuel used and power expense for pumping irrigation water for the pumps reported above. Report energy expense for acres in the open and area under protection. If both exist for a single energy source, report their combined expenses. **Include** the cost of any additional charges such as the fuel adjustment charge or any other type of charge which was based on the amount of power or fuel purchased. **Include** landlord's share. If irrigated acres in the open were less than one acre, round to one acre.

POWER SOURCE	None	Number of Wells and Other Pumps Used (Reported Above)	Cost of Energy Used to Power Pumps (Dollars)	Area Irrigated with Water Pumped from Wells		Area Irrigated with Pumped Surface Water (Both on- and off-farm)	
				Acres in the Open (Whole Acres)	Square Feet Under Protection	Acres in the Open (Whole Acres)	Square Feet Under Protection
		0495	0496	0497	0124	0781	0537
a. Electricity	<input type="checkbox"/>		\$.00				
		0498	0499	0500	0125	0782	0538
b. Natural gas	<input type="checkbox"/>		\$.00				
		0501	0502	0503	0126	0783	0539
c. LP gas, propane, or butane	<input type="checkbox"/>		\$.00				
		0504	0505	0506	0127	0784	0540
d. Diesel and biodiesel fuel	<input type="checkbox"/>		\$.00				
		0507	0508	0509	0128	0890	0541
e. Gasoline, ethanol, and blends	<input type="checkbox"/>		\$.00				
		0779		0780	0129	0786	0542
f. Solar and other pumps without direct energy expense	<input type="checkbox"/>						

SECTION 7 EXPENDITURES FOR IRRIGATION INFRASTRUCTURE

EXPENDITURE AND FUNDING ASSISTANCE CODES – USE IN THE TABLE BELOW

CODE	PRIMARY PURPOSE OF EXPENDITURE
1	New expansion
2	Water conservation
3	Energy conservation
4	Scheduled replacement or maintenance

CODE	PRIMARY SOURCE OF FUNDING ASSISTANCE
1	No funding assistance or loans
2	NRCS Environmental Quality Incentives Program (EQIP)
3	Other USDA financial assistance or loans
4	Non-USDA and all other financial assistance or loans

Report the 2023 expenditure cost, acres affected (rounded to the nearest acre), primary purpose of expenditure, and primary source of funding assistance by expenditure category using the Expenditure and Funding Assistance Code in the table above. **Include** the portion of the expenditures made by or shared with others (landlords or government agencies), including programs such as Environmental Quality Incentives Program (EQIP).

EXPENDITURE TYPE	None	Total Cost of Expenditure (Include amount financed)	Irrigated Acres Affected by Expenditure (Acres)	Enter Code from Above for Primary Purpose of Expenditure	Enter Code from Above for Primary Source of Funding Assistance
1. Purchase of new or replacement irrigation equipment and machinery – Include sprinklers, pipes, siphons, nozzles, pumps, engines, motors, filtration equipment, etc. Exclude computers, computer control panels, and software	<input type="checkbox"/>	\$.00		0512	0513
2. New well construction or deepening of existing wells – Include drilling costs, cost of casing, and any costs to prepare well for installation of pump. Exclude cost of pumps or motors	<input type="checkbox"/>	\$.00		0516	0517
3. Construction or improvement of permanent storage and distribution systems – Include dams, ponds, reservoirs, permanent ditches, canals, flumes, etc.	<input type="checkbox"/>	\$.00		0520	0521
4. Computers, control panels, computer controlled valves, software, and software-controlled hardware for irrigation water management	<input type="checkbox"/>	\$.00		0545	0546
5. Clearing or leveling non-irrigated land for new irrigation acres (the primary purpose is expansion of irrigation acres)	<input type="checkbox"/>	\$.00			0549
6. Land leveling of previously irrigated land (the primary purpose cannot be new expansion)	<input type="checkbox"/>	\$.00		0557	0558

SECTION 8 METHODS OF WATER DISTRIBUTION IN THE OPEN

1. Did this operation irrigate any land in the open in 2023?
- **Include** acres of horticultural crops grown in the open or under natural shade.
 - **Exclude** crops grown under protection: glass, rigid plastic, plastic film, including "tunnel" protection. (Methods for crops grown under protection will be reported in Section 13.)

0489 1 **Yes - Continue** 3 **No - Go to Section 13**

Report acres irrigated by each type of FIELD distribution system listed below. If the same land was irrigated by more than one method of distribution, report acres irrigated by each method used. Report information for the field distribution system, NOT for the delivery system used to convey water from the source to the field, if different.

		Acres in the Open Irrigated by Gravity System (Field Water Conveyance System)					
		Total Acres	Unlined Open Ditch	Lined Open Ditch	Poly Pipe (or other single-year use, lay-flat tubing)	Above Ground Pipe (except poly pipe) ¹	Underground Pipe ²
2. Gravity irrigation	None						
a. Down rows or furrows	<input type="checkbox"/>	Row crops are generally irrigated by water flowing down furrows. However, gravity irrigation systems in general are uncommon for our region at 1% for IN and MI and 3% for OH in 2017.					
b. Controlled flooding (within borders, levees, or basins) . . .	<input type="checkbox"/>	Not expected for our region (no rice, cranberry production)					
c. Uncontrolled flooding (rangeland, pastureland, etc.)	<input type="checkbox"/>	0875					
d. Other gravity systems, including water seepage	<input type="checkbox"/>	0885					

¹ **Include** gated pipe and riser or hydrant systems connected to above ground pipe.
² **Include** riser or hydrant systems connected to underground pipe.

		Acres In the Open Irrigated by Sprinkler System			
		Very Low Pressure (Under 15 PSI)	Low Pressure (15 to 29 PSI)	Medium Pressure (30 to 59 PSI)	High Pressure (60 PSI or more)
3. Sprinkler irrigation – Inlet pressure	None				
a. Center pivot systems (circle)	<input type="checkbox"/>	In 2017, center pivot systems made up over half of irrigation systems in IN (57%) but only 26% in MI and 11% in OH. Most CPS are medium pressure.			
b. Linear move tower systems (and other linear continuous move drive systems)	<input type="checkbox"/>	0568	0565	0566	0567
c. Solid set or permanent systems (except low-flow micro systems)	<input type="checkbox"/>				
d. Mechanical move systems		Acres Irrigated (all pressures)			
i. Side roll, wheel move, or other mechanical move systems and other discrete move systems	<input type="checkbox"/>	None			
ii. Big gun or traveler systems	<input type="checkbox"/>	Big Gun made up 11% of irrigation systems in MI and ~5% in IN/OH			
e. Hand-move systems, including hand watered nursery and other horticultural crops grown in the open	<input type="checkbox"/>	0242			
f. Other sprinkler systems	<input type="checkbox"/>	0243			
4. Drip, trickle, or low-flow micro irrigation					
a. Surface drip (on or above ground)	<input type="checkbox"/>	0248			
b. Sub-surface drip (root zone)	<input type="checkbox"/>	0246			
c. Low-flow micro sprinklers or sprays (these systems apply water at low pressure and are not self-propelled or easily moved)	<input type="checkbox"/>	0247			
d. Other drip, trickle, or low-flow micro systems	<input type="checkbox"/>	0249			

5. Hydroponics . . . **Hydroponics - growing plants using a water-based nutrient solution rather than soil**

IRRIGATION SYSTEMS

Pressure Systems



Hand-move



Solid/Permanent Set



Side Roll



Center Pivot



Linear move



Big Gun



Low-Flow or Drip

Gravity Systems



Siphon Tubes



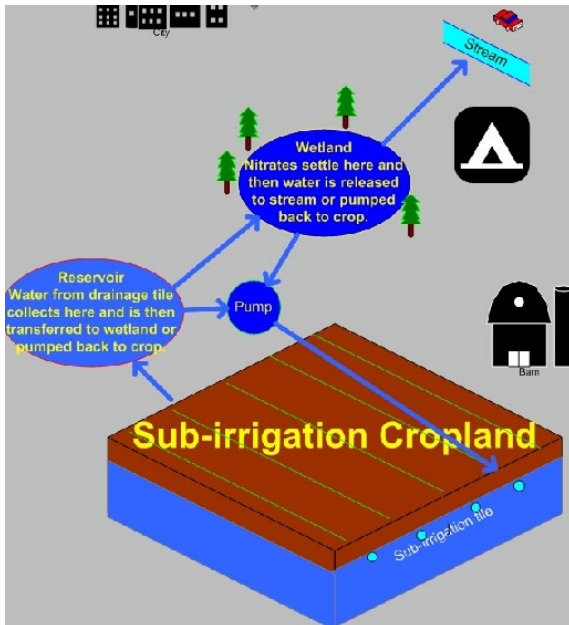
Ditch-gate



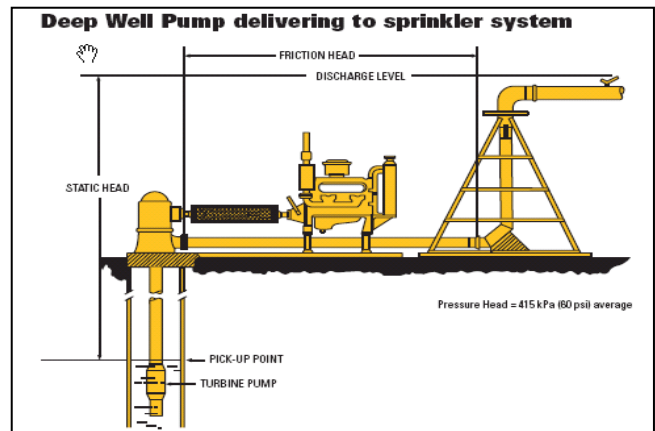
Poly-pipe



Gated-pipe



Sub-irrigation



Open discharge from well

SECTION 9 ADDITIONAL PRACTICES FOR IRRIGATION METHODS IN THE OPEN

1. Did this operation use gravity irrigation systems or equipment to irrigate any acres in the open in 2023? (Refer to Section 8, item 2.)

1137 1 **Yes - Continue** 3 **No - Go to Section 10**

2. On how many acres in the open did you use the following practices?

- a. Capture irrigation runoff in tailwater pits, restrict runoff by diking end of the field, limit irrigation set times or number of irrigations, or irrigate only alternative rows
- b. Use any precision-leveling
 - i. How many acres of precision-leveling were considered zero grade (fields with a zero percent/degree decline)?
- c. Shorten the furrow length; use water-soluble polyacrylamide (PAM); or use special furrowing practices such as wide-spaced bed furrowing, compacted furrows, or furrow diking
- d. Use surge flow or a surge irrigation system (intermittent application of water to a furrow)
- e. Use a cablegation system (constant slow flow application to a furrow)
- f. Apply mulch or other types of row covers.

None	Number of Acres	
<input type="checkbox"/>	0404	
<input type="checkbox"/>	0406	
<input type="checkbox"/>	1138	
<input type="checkbox"/>	0409	
<input type="checkbox"/>	1139	
<input type="checkbox"/>	1140	
<input type="checkbox"/>	1141	

3. Did this operation use any computer software for the measuring or planning of their gravity irrigation system's pipes or tubes in any way? Software features include determining the location for the pipes or tubes, the location for drilling holes into the pipes or tubes, the diameter of the holes, and the distance between holes for optimal irrigation.

1142 1 **Yes** 3 **No**

SECTION 10 ACRES IRRIGATED IN THE OPEN

1. Did this operation irrigate any land **in the open** in 2023?
 • **Include** irrigated harvested cropland, pastureland, summer fallow, and failed cropland.

1134 1 **Yes - Continue** 3 **No - Go to Section 13**

For each item listed, report the irrigated harvested acres or acres irrigated for non-harvested items in the first column. For selected crops, report the average yield from the irrigated harvested acres in the second column. Then report the average irrigation water applied per acre for the entire year in either acre-feet or inches/acre for the acres reported in column one. Report the crop as irrigated if water was applied to supplement rainfall, even if the amount of water applied was not sufficient to obtain maximum yields. **Report nursery and other horticultural crops grown in the open in item 18.**

Irrigated Crops, Pastureland, and Other Land		Irrigated Land Include preplant and supplemental or semi-irrigation						
		Irrigated Acres Harvested	Average Yield per Irrigated Acre Harvested			Average Estimated Quantity of Water Applied per Acre in 2023		
						Acre-Feet	Tenths	OR
2. Corn for grain or seed – Exclude popcorn and sweet corn	<input type="checkbox"/>	0050	0051			0052		0053
				Bu.	report water applied in acre-feet or inches/acre but not both			
		0060	0061	Tenths				
3. Corn for silage or greenchop – Exclude popcorn and sweet corn	<input type="checkbox"/>			Tons				
		0070	0071			0072		0073
4. Sorghum for grain or seed.	<input type="checkbox"/>			Bu.	report acre-feet to the nearest tenth NOT acre-feet and inches			
		0080	0081					
5. Wheat for grain or seed.	<input type="checkbox"/>			Bu.	report 10 acre-feet and 6 inches as 10.5 acre feet NOT 10' 6"			
		0106	0101					
6. Soybeans for beans	<input type="checkbox"/>			Bu.	inches/acre to the nearest whole inch (ex. 10)			
		0110	0111					
7. Beans, dry edible	<input type="checkbox"/>			Cwt.				
		0120	0121					
8. Rice – Include post harvest water applied to improve residue decomposition	<input type="checkbox"/>			Cwt.				
		0130			0132	OR	0133	
9. Other small grains (barley, oats, rye, etc.)	<input type="checkbox"/>							
		0140	0141	Tenths	0142	OR	0143	
10. Alfalfa and alfalfa mixtures (dry hay, greenchop, and silage).	<input type="checkbox"/>			Tons, dry				

SECTION 10 CONTINUED -

Irrigated Crops, Pastureland, and Other Land		Irrigated Land <small>Include preplant and supplemental or semi-irrigation</small>					
		Irrigated Acres Harvested	Average Yield per Irrigated Acre Harvested		Average Estimated Quantity of Water Applied per Acre in 2023		
					Acres-Feet	Tenths	OR
11. All other hay and haylage including small grain, other tame, and wild hay (dry hay, greenchop, and silage)	None <input type="checkbox"/>	0150	0151	Tenths	0152		0153
	<input type="checkbox"/>			Tons, dry			
12. Peanuts	<input type="checkbox"/>	0550	0551		0552		0553
	<input type="checkbox"/>			Lbs.			
13. Cotton	<input type="checkbox"/>	0160	0161		0162		0163
	<input type="checkbox"/>			Lbs. lint			
14. All land from which vegetables, potatoes, and melons were harvested	<input type="checkbox"/>	0186	Tenths		0187		0188
	<input type="checkbox"/>						
a. Sweet corn	<input type="checkbox"/>	0850	Tenths	0851	0852		0853
	<input type="checkbox"/>			Cwt.			
b. Tomatoes in the open	<input type="checkbox"/>	0860	Tenths	0861	0862		0863
	<input type="checkbox"/>			Cwt.			
c. Lettuce and romaine	<input type="checkbox"/>	0870	Tenths	0871	0872		0873
	<input type="checkbox"/>			Cwt.			
d. Potatoes - Exclude sweet potatoes	<input type="checkbox"/>	0190	Tenths	0191	0192		0193
	<input type="checkbox"/>			Cwt.			
15. All other crops grown in the open and not listed - Specify:		0621			0622		0623
0620 <input type="checkbox"/>	<input type="checkbox"/>						
	<input type="checkbox"/>	Specify crop in the box above					
16. All berries	<input type="checkbox"/>	0560	Tenths		0562		0563
	<input type="checkbox"/>						
17. Land in bearing and non-bearing fruit orchards, citrus or other groves, vineyards, and nut trees	<input type="checkbox"/>	0210	Tenths		0212		0213
	<input type="checkbox"/>						
18. Nursery and other horticultural crops grown in the open (Note: Nursery, greenhouse, and other horticultural crops grown under protection will be reported in a later section.)	<input type="checkbox"/>	0690	Tenths		0691		0692
	<input type="checkbox"/>						
19. Irrigated pastureland, all types	<input type="checkbox"/>	0230			0232		0233
	<input type="checkbox"/>						
20. All other irrigated land types such as failed cropland, idle land, and land in summer fallow	<input type="checkbox"/>	1144			1145		1146
	<input type="checkbox"/>						

SECTION 11 WATER DISTRIBUTION METHODS AND SOURCES USED IN THE OPEN

1. Did this operation irrigate any land **in the open** in 2023?
 • **Include** irrigated harvested cropland, pastureland, summer fallow, and failed cropland.

1143 **Yes** – Continue 3 **No** – **Go to Section 13**

WATER DISTRIBUTION CODES – USE IN THE TABLE BELOW

CODE	PRESSURE SYSTEM	CODE	GRAVITY SYSTEM
01 = Hand-move system	<div style="border: 2px solid red; padding: 5px; display: inline-block;"> If more than one irrigation method was used, then select the primary one. </div>	15 = Down rows or furrows from unlined open ditches	1006 <input style="width: 150px; height: 20px;" type="text"/>
02 = Solid set or permanent system		16 = Down rows or furrows from lined open ditches	
03 = Side roll or wheel line system		17 = Down rows or furrows from poly pipe, lay-flat tubing, or above ground or underground pipe	
04 = Big gun or traveling gun system		18 = Controlled flooding within borders, levees, or basins from unlined open ditches	
05 = Linear move system (under 15 PSI)		19 = Controlled flooding within borders, levees, or basins from lined open ditches	
06 = Linear move system (15 to 29 PSI)		20 = Controlled flooding within borders, levees, or basins from poly pipe, lay-flat tubing, or above ground pipe	
07 = Linear move system (30 to 59 PSI)		21 = Controlled flooding within borders, levees, or basins from underground pipe	
08 = Linear move system (60 PSI or more)		22 = Uncontrolled flooding (rangeland, pastureland, etc.) including open discharge from a well or pump	
09 = Center pivot system (under 15 PSI)		23 = Other gravity system – Specify:	
10 = Center pivot system (15 to 29 PSI)			
11 = Center pivot system (30 to 59 PSI)			
12 = Center pivot system (60 PSI or more)			
13 = Low-flow irrigation (drip, trickle, or micro sprinkler system)			
14 = Other pressure system including hydroponics – Specify:			
1007 <input style="width: 150px; height: 20px;" type="text"/>			

Report for irrigated acres in the open. For each irrigated crop in the open, report the primary field distribution method, acres irrigated by water source, and acres on which chemigation was used in the irrigation system. Refer to the table above for the water distribution codes.

Irrigated Crops, Pastureland, and Other Land	Enter Code from Above for Primary Method of Field Water Distribution	Water Source (Column totals may exceed irrigated crop acres reported in Section 10 when more than one water source was used.)			Acres on which chemigation was applied through the irrigation system	
		Ground Water from Wells (Acres)	On-Farm Surface Water ¹ (Acres)	Off-Farm Water (All Suppliers) ² (Acres)	Commercial Fertilizer (Acres)	Pesticide Application (Acres)
2. Corn for grain or seed – Exclude popcorn and sweet corn <input type="checkbox"/>	0250	0255	0254	0256	0252	0253
3. Corn for silage or greenchop – Exclude popcorn and sweet corn <input type="checkbox"/>	0260	0265	0264	0266		
4. Sorghum for grain or seed <input type="checkbox"/>	0270	0275	0274	0276		
5. Wheat for grain or seed. <input type="checkbox"/>	0280	0285	0284	0286	0282	0283
6. Soybeans for beans <input type="checkbox"/>	0300	0305	0304	0306	0302	0303
7. Beans, dry edible <input type="checkbox"/>	0310	0315	0314	0316	0312	0313
8. Rice. <input type="checkbox"/>	0320	0325	0324	0326	0322	0323
9. Other small grains (barley, oats, rye, etc.) <input type="checkbox"/>	0330	0335	0334	0336	0332	0333
10. Alfalfa and alfalfa mixtures (dry hay, greenchop, and silage). <input type="checkbox"/>	0340	0345	0344	0346	0342	0343

Chemigation- the application of fertilizers or pesticides through the irrigation water

¹ On-farm water source includes recycled water and reclaimed water from on-farm livestock operations.
² Off-farm water supplies may **include** water purchased from the U.S. Bureau of Reclamation; a state, county, or local district; mutual, private, cooperative, or neighborhood ditches; or commercial or municipal water systems.

SECTION 11 CONTINUED –

Irrigated Crops, Pastureland, and Other Land	Enter Code from Previous Page for Primary Method of Field Water Distribution	Water Source (Column totals may exceed irrigated crop acres reported in Section 10 when more than one water source was used.)						Acres on which chemigation was applied through the irrigation system			
		Ground Water from Wells (Acres)		On-Farm Surface Water ¹ (Acres)		Off-Farm Water (All Suppliers) ² (Acres)		Commercial Fertilizer (Acres)		Pesticide Application (Acres)	
11. All other hay including small grain, other tame, and wild hay (dry hay, greenchop, and silage) <input type="checkbox"/>	None 0350	0355		0354		0356		0352		0353	
12. Peanuts <input type="checkbox"/>	0580	0585		0584		0586		0582		0583	
13. Cotton <input type="checkbox"/>	0360	0365		0364		0366		0362		0363	
14. All acres in the open from which vegetables, potatoes, and melons were harvested <input type="checkbox"/>	0474	0479	Tenths	0478	Tenths	0480	Tenths	0476	Tenths	0477	Tenths
a. Sweet corn <input type="checkbox"/>	0900	0905	Tenths	0904	Tenths	0906	Tenths	0902	Tenths	0903	Tenths
b. Tomatoes in the open <input type="checkbox"/>	0910	0915	Tenths	0914	Tenths	0916	Tenths	0912	Tenths	0913	Tenths
c. Lettuce and romaine <input type="checkbox"/>	0920	0925	Tenths	0924	Tenths	0926	Tenths	0922	Tenths	0923	Tenths
d. Potatoes – Exclude sweet potatoes <input type="checkbox"/>	0390	0395	Tenths	0394	Tenths	0396	Tenths	0392	Tenths	0393	Tenths
15. All other crops grown in the open and not listed – Specify: <input type="checkbox"/>	1120	1125		1124		1126		1122		1123	
1119 <input type="text"/> Specify crop in this box <input type="checkbox"/>	0590	0595	Tenths	0594	Tenths	0596	Tenths	0592	Tenths	0593	Tenths
16. All berries <input type="checkbox"/>	0410	0415	Tenths	0414	Tenths	0416	Tenths	0412	Tenths	0413	Tenths
17. Land in bearing and non-bearing fruit orchards, citrus or other groves, vineyards, and nut trees <input type="checkbox"/>	1110	1115	Tenths	1114	Tenths	1116	Tenths	1112	Tenths	1113	Tenths
18. Nursery and other horticultural crops grown in the open (Note: Nursery, greenhouse, and other horticultural crops grown under protection will be reported in a later section.) <input type="checkbox"/>	0430	0435		0434		0436		0432		0433	
19. Irrigated pastureland, all types <input type="checkbox"/>	1148	1149		1150		1151		1152		1153	
20. All other irrigated land types such as failed cropland, idle land, and land in summer fallow <input type="checkbox"/>											

¹ On-farm water source includes recycled water and reclaimed water from on-farm livestock operations.
² Off-farm water supplies may include water purchased from the U.S. Bureau of Reclamation; a state, county, or local district; mutual, private, cooperative, or neighborhood ditches; or commercial or municipal water systems.

SECTION 12 IRRIGATION FOR NURSERY AND OTHER HORTICULTURAL CROPS GROWN IN THE OPEN

1. Were any irrigated nursery, floriculture, sod, propagative materials, Christmas trees, or other horticultural crops grown in the open (including natural shade) on this operation in 2023?

- 0751 1 **Yes - Continue** 3 **No - Go to Section 13**

Acres in the Open	
Total Acres	Irrigated Acres

2. Report total acres and irrigated acres for nursery and other horticultural crops grown in the open (including natural shade)

None **Only report acres in the open. The next section asks for acres under protection.**

3. For nursery and other horticultural crops in the open, enter the total acres and irrigated acres by crop category on this operation in 2023.

NURSERY AND OTHER HORTICULTURAL CROPS IN THE OPEN

- a. Floriculture and bedding crops
Bedding/garden plants - annuals, herbaceous perennials, vegetable plants; cut flowers and cut florist greens; indoor foliage plants; potted flowering plants; hanging baskets
- b. Nursery crops
Nursery stock - ornamentals, shrubs, flowering trees, evergreens, live Christmas trees, fruit and nut trees and plants, vines, palms, ornamental grasses, bareroot herbaceous perennials; aquatic plants
- c. Sod
- d. Propagative materials
Bulbs, corms, rhizomes, tubers, cuttings, seedlings, liners, plugs, flower seeds, tobacco plants
- e. Christmas trees and short rotation woody crops
- f. Other horticultural crops - Specify:

None

	Total Acres		Irrigated Acres	
	Tenths		Tenths	
<input type="checkbox"/> 0739			0740	
<input type="checkbox"/> 0741				
<input type="checkbox"/> 0743				
<input type="checkbox"/> 0745			0746	
<input type="checkbox"/> 0747			0748	
<input type="checkbox"/> 1010			0749	0750

For item 3, report acres of each crop harvested, even when multiple crops were harvested off the same acres.

SECTION 12 CONTINUED –

4. For nursery and other horticultural crops in the open, report area irrigated in 2023 by method used. If more than one method was used on the same area, report for all methods that apply. Report the quantity of water and the unit measure for each irrigation method used on this operation for the entire year. If the total quantity of water (column 2) is unknown, then use column 3 to report the quantity of water used instead.

IRRIGATION METHODS	None	1	2		OR	3		
		Total Acres Irrigated or Watered <small>Tenths</small>	a. Quantity of Water Applied in 2023	b. Enter Code for Unit of Measure <small>1 = Acre-Feet 2 = Gallons 3 = Inches/Acre</small>		a. Average Flow Rate <small>(Gallons per Minute) <small>Tenths</small></small>	b. Number of Hours per Week Used in 2023	c. Number of Weeks Used in 2023
		0796	0797	0798		0799	0800	0801
a. Hand watered	<input type="checkbox"/>	0802	0803	0804	OR	0805	0806	0807
b. Gravity irrigation	<input type="checkbox"/>	0808	0809	0810	OR	0811	0812	0813
c. Sprinkler	<input type="checkbox"/>	0814	0815	0816	OR	0817	0818	0819
d. Drip, trickle, or low-flow micro irrigation	<input type="checkbox"/>	1157	1158	1159	OR	1160	1161	1162
e. Hydroponics	<input type="checkbox"/>				OR			

5. For each method used to irrigate nursery and other horticultural crops in the open, report the percentage of water applied by source. If more than one source was used, report all that apply. For example, if the only source for hand watered crops was ground water, then report 100 percent in column 1, row a. If this operation used gravity irrigation and half of the water came from ground water and half came from on-farm surface water, then report 50 percent in column 1, row b and 50 percent in column 2, row b.

IRRIGATION METHODS	Water Source			
	1 Ground Water from Wells <small>(Percent)</small>	2 On-Farm Surface Water <small>(Percent)</small>	3 Off-Farm Water (All Suppliers) <small>(Percent)</small>	Total
	0832	0833	0834	

Ground water - water from a well or wells located on this farm
On-farm surface water - a water supply not controlled by a water supply organization (for example, a stream, drainage ditch, lake, pond, spring, or reservoir on or adjacent to the farm)
Off-farm water - surface or ground water from U.S. Bureau of Reclamation, other Federal agencies, or other suppliers

SECTION 13 IRRIGATION FOR NURSERY, GREENHOUSE, AND OTHER HORTICULTURAL CROPS GROWN UNDER PROTECTION

1. Were any irrigated nursery or greenhouse crops, floriculture, mushrooms, vegetable seeds, propagative materials, or other horticultural crops grown under protection on this operation in 2023? **Include** crops grown under glass, rigid plastic, plastic film, shade cloth, fiberglass, "tunnel" protection, and hoop houses. **Exclude** crops temporarily covered for early germination, frost protection, etc. Report crops grown under natural shade in Section 12.

0627 1 **Yes - Continue** 3 **No - Go to Section 14**

2. Report total area and irrigated area for nursery, greenhouse, and other horticultural crops grown under protection. None

Square Feet Under Protection	
Total Area	Irrigated Area
0628	1 acre = 43,560 sq

3. For nursery or greenhouse crops, floriculture, mushrooms, vegetable seeds, propagative materials, or other horticultural crops grown under protection, enter the total area and irrigated area by horticultural crop category on this operation in 2023.

NURSERY, GREENHOUSE, AND OTHER HORTICULTURAL CROPS UNDER PROTECTION

- a. Floriculture and bedding crops None
 Bedding/garden plants - annuals, herbaceous perennials, vegetable plants; cut flowers and cut florist greens; indoor foliage plants; potted flowering plants; hanging baskets
- b. Nursery crops
 Nursery stock - ornamentals, shrubs, flowering trees, evergreens, live Christmas trees, fruit and nut trees and plants, vines, palms, ornamental grasses, bareroot herbaceous perennials; aquatic plants
- c. Propagative materials
 Bulbs, corms, rhizomes, tubers, cuttings, seedlings, liners, plugs, flower seeds, tobacco plants, vegetable seeds, vegetable transplants to farm fields
- d. Food crops grown under protection
 Tomatoes, other vegetables and fresh cut herbs, fruits and berries.
- e. Mushrooms
- f. Other horticultural crops – Specify:
 1011

Total Area (Square Feet)	Irrigated Area (Square Feet)
0630	0631
0632	0633
0636	0637
0638	0639
0640	0641
0642	0643

For item 3, report sq. feet (not acres!) of each crop harvested, even when multiple crops were harvested off the same area.

SECTION 13 CONTINUED –

4. For nursery, greenhouse, and other horticultural crops under protection, report area irrigated in 2023 by method used. If more than one method was used on the same area, report for all methods that apply. Report the quantity of water and the unit measure for each irrigation method used on this operation for the entire year. If the total quantity of water (column 2) is unknown, then use column 3 to report the quantity of water used instead.

		1	2		3			
		Total Area Irrigated or Watered (Square Feet)	a. Quantity of Water Applied in 2023	b. Enter Code for Unit of Measure 1=Acre-Feet 2=Gallons 3=Gallons/Sq Ft 4=Inches/Sq Ft	OR	a. Average Flow Rate (Gallons per Minute) Tenths	b. Number of Hours per Week Used in 2023	c. Number of Weeks Used in 2023
IRRIGATION METHODS		0701	0702	0703	OR	0704	0705	0706
None	<input type="checkbox"/>				OR			
a. Hand watered	<input type="checkbox"/>	0707	0708	0709	OR	0710	0711	0712
b. Gravity irrigation	<input type="checkbox"/>	0713	0714	0715	OR	0716	0717	0718
c. Sprinkler	<input type="checkbox"/>	0719	0720	0721	OR	0722	0723	0724
d. Drip, trickle, or low-flow micro irrigation	<input type="checkbox"/>	1166	1167	1168	OR	1169	1170	1171
e. Hydroponics	<input type="checkbox"/>				OR			

5. For each method used to irrigate nursery, greenhouse, or other horticultural crops under protection, report the percentage of water by source applied. If more than one source was used, report all that apply. For example, if the only source for hand watered crops was ground water, then report 100 percent in column 1, row a. If this operation used gravity irrigation and half of the water came from ground water and half came from on-farm surface water, then report 50 percent in column 1, row b and 50 percent in column 2, row b.

		Water Source			
		1 Ground Water from Wells (Percent)	2 On-Farm Surface Water (Percent)	3 Off-Farm Water (All Suppliers) (Percent)	Total
IRRIGATION METHODS		0646	0647	0648	
a. Hand watered				
b. Gravity irrigation				
c. Sprinkler				
d. Drip, trickle, or low-flow micro irrigation				
e. Hydroponics				

Ground water - water from a well or wells located on this farm
On-farm surface water - a water supply not controlled by a water supply organization (for example, a stream, drainage ditch, lake, pond, spring, or reservoir on or adjacent to the farm)
Off-farm water - surface or ground water from U.S. Bureau of Reclamation, other Federal agencies, or other suppliers

For each irrigation method used, columns 1 + 2 + 3 must equal 100 percent.

SECTION 14 IRRIGATION AND WATER MANAGEMENT PRACTICES

1. How did you decide when to irrigate in 2023? Mark (X) all that apply –

- 1020 Condition of crop (observation or experience)
- 1021 Feel of the soil
- 1022 Use of soil moisture-sensing devices (moisture blocks, tensiometers, capacitance, other electronic sensors)
- 1023 Use of plant moisture-sensing devices such as pressure (chamber) bombs or infrared (IR) thermometer
- 1024 Use of irrigation scheduling service, including commercial and government
- 1025 Reports on daily crop-water evapotranspiration (ET) use (Internet, newspapers, radio, TV, fax, or email)
- 1026 When water was delivered or available by irrigation water supplier (no choice by water user)
- 1027 Personal calendar schedule
- 1028 Computer simulation models (not from a commercial service)
- 1029 When neighbors began to irrigate

2. Did you have to discontinue irrigation during 2023 long enough to affect crop yields?

- 0669 1 **Yes** – Continue 3 **No** – **Go to item 3**

	None	Number of Acres
a. On how many acres did you discontinue irrigation long enough to affect crop yields for any reason during 2023?	<input type="checkbox"/>	1039

b. What were the reasons for discontinuing irrigation? Mark (X) all that apply –

- 1030 Shortage of surface water (water from reservoirs, lakes, streams, water supply organizations, etc.)
- 1031 Shortage of ground water (lowering water level of wells or depletion of ground water)
- 1032 Irrigation equipment failure
- 1033 Energy price increases or energy shortage
- 1034 Water salinity too high
- 1035 Loss of water rights not due to voluntary transfers
- 1036 Cost of purchased water
- 1037 Other – Specify: 1038

3. What sources of information does this operation rely on for guidance in reducing irrigation costs or to conserve water used for irrigation? Mark (X) all that apply –

- 1040 Extension agents or university specialists
- 1041 Private irrigation specialists or crop consultants hired by owner or operator
- 1042 Irrigation equipment dealers
- 1043 Local irrigation district employees or others hired by the water supplier
- 1044 Government specialists from the Natural Resources Conservation Service, local conservation district, Bureau of Reclamation, or other Federal or state agencies
- 1045 Media reports or information in the press
- 1046 Neighboring farmers
- 1047 Electronic information services (Internet, DTN, Internet links to private or public data sources, etc.)
- 1048 None

4. Did this operation participate in on-farm groundwater recharge by applying excess water to irrigated fields or other recharge sites such as basins, ditches, and ponds?

- 1154 1 **Yes** 3 **No**

SECTION 14 CONTINUED –

5. Did any of the following prevent you from implementing improvements that would have reduced energy and/or conserved water in your irrigation system during the past five years? Mark (X) all that apply –
- 1070 Investigating improvements is not a priority at this time
 - 1071 Risk of reduced yield or poorer quality crop from not meeting water needs
 - 1072 Physical field or crop conditions limit system improvements
 - 1073 Improvements will reduce costs, but not enough to recover implementation costs
 - 1074 Cannot finance improvements
 - 1075 Landlord(s) will not share cost of improvements
 - 1076 Uncertainty about future availability of water
 - 1077 Will not be farming this operation long enough to justify new improvements
 - 1078 Improvements will increase management time or cost
6. Has this operation made irrigation and/or drainage improvements above regular maintenance in the past five years?
- 0209 1 **Yes - Continue** 3 **No - Go to Section 15**

7. Did you receive any technical or financial assistance for these irrigation and/or drainage improvements?

- 0211 1 **Yes - Continue** 3 **No - Go to Section 15**

a. From which of the following sources did you receive technical or financial assistance for these improvements? Mark (X) all that apply –

SOURCE OF ASSISTANCE

- i. USDA programs for water conservation and environmental improvements (CTA, EQIP, RCPP, AMA, WMB, CIG, etc.).....
- ii. Other USDA programs for stewardship (such as CSP) or easements (ACEP/WRP, CRP (including CREP), etc.)
- iii. Non-USDA Federal programs from agencies such as the Bureau of Reclamation and EPA
- iv. State programs, local water management, or water supply districts
- v. Private businesses such as equipment dealers, bankers, or lenders

Technical Assistance		Financial Assistance	
0215	<input type="checkbox"/>	0216	<input type="checkbox"/>
0217	<input type="checkbox"/>	0218	<input type="checkbox"/>
0219	<input type="checkbox"/>	0235	<input type="checkbox"/>
0236	<input type="checkbox"/>	0237	<input type="checkbox"/>
0238	<input type="checkbox"/>	0239	<input type="checkbox"/>

SECTION 15 LABOR USED FOR IRRIGATION

1. Report the number of hours that hired workers performed irrigation work on this operation in 2023 and the average hourly wage. (Exclude contract labor.).....

None

Total Hours of Paid Irrigation Labor per Year	Average Hourly Wage Cents
0732	Exclude custom and contract labor

Examples of **contract labor**: pruning, weeding, harvesting fruit/veg
 Examples of **custom labor**: combining, pesticide and fertilizer application

2. Report contract irrigation labor expenses on this operation in 2023

SECTION 16 NO IRRIGATED LAND OR LAND WITH UNUSED IRRIGATION SYSTEMS

- 1. Complete this section if you did not irrigate any land or if you had acres with access to irrigation systems or equipment that did not receive any irrigation in 2023. If you did irrigate all of your equipped land in 2023, skip to Section 17.
- 2. Was there any land on this operation with access to irrigation systems or equipment in 2022, regardless of water rights and availability? **Include** all land that was irrigated and all land that could have been irrigated during 2022.

- 1155 1 **Yes - Continue** 3 **No - Go to Section 17**

Only complete section 16 if operator did not irrigate in 2023.

SECTION 16 CONTINUED –

3. Was any of the land with access to irrigation systems in the previous question irrigated in 2022?

1156 1 **Yes** 3 **No**

4. What were the reasons for not irrigating in 2023? Mark (X) all that apply –

1050 <input type="checkbox"/> Sufficient soil moisture – no irrigation needed	1057 <input type="checkbox"/> Sold or leased irrigated land or irrigated area under protection to others
1052 <input type="checkbox"/> Shortage of surface water (water from reservoirs, lakes, streams, water supply organizations, etc.)	1058 <input type="checkbox"/> Restrictions on water use
1053 <input type="checkbox"/> Shortage of ground water (lowering water level of wells or depletion of ground water)	1059 <input type="checkbox"/> Converted to non-agricultural use
1054 <input type="checkbox"/> Irrigation uneconomical due to high fuel and power costs and/or low commodity prices	1060 <input type="checkbox"/> Converted to an agricultural enterprise not requiring irrigation
1055 <input type="checkbox"/> Loss of water rights not due to voluntary transfers	1061 <input type="checkbox"/> Available surface water too salty
1056 <input type="checkbox"/> Sold or leased water rights or annual water allocation	1062 <input type="checkbox"/> Other Specify: 1063 <input type="text"/>

5. Has this operation ceased irrigation permanently? 0530 1 **Yes** 3 **No**

SECTION 17 VALUE OF SALES IN 2023

1. Which range includes the gross value of all agricultural products sold from this operation in 2023 including landlord's share? Mark (X) only one –

0980 1 \$0 - \$9,999 2 \$10,000 - \$24,999 3 \$25,000 - \$49,999 4 \$50,000 - \$99,999
 5 \$100,000 - \$249,999 6 \$250,000 - \$499,999 7 \$500,000 - \$999,999 8 \$1,000,000 and over

2. What percent of total sales were from irrigated crop sales, including irrigated nursery or greenhouse crops, floriculture, sod, mushrooms, vegetable seeds, and propagative materials?

3. What percent of total sales were from non-irrigated crop sales and livestock sales?

Percent
sales of irrigated crops + sales of non-irrigated crops must equal 100%
100%

SECTION 18 PERSON COMPLETING THIS FORM – Please print

Name Area Code and Phone Number - - check if cell phone Date (MM DD YY)
 9912 9911 9910

E-mail
1095

Thank you for your cooperation.
 The complete report will be available on the Internet at <http://www.nass.usda.gov> in fall of 2024.

OFFICE USE

Response	Respondent	Mode	Enum.	Eval.	R. Unit	Change	Optional Use
1-Comp 2-R 3-Inac	9901 1-Op/Mgr 2-Sp 3-Acct/Bkpr 4-Partner 9-Oth	9902 1-PASI (Mail) 2-PATI (Tel) 3-PAPI (Face-to-Face)	9903 9998	9900	9921	9985	9907 9908 9906 9916

S/E Name