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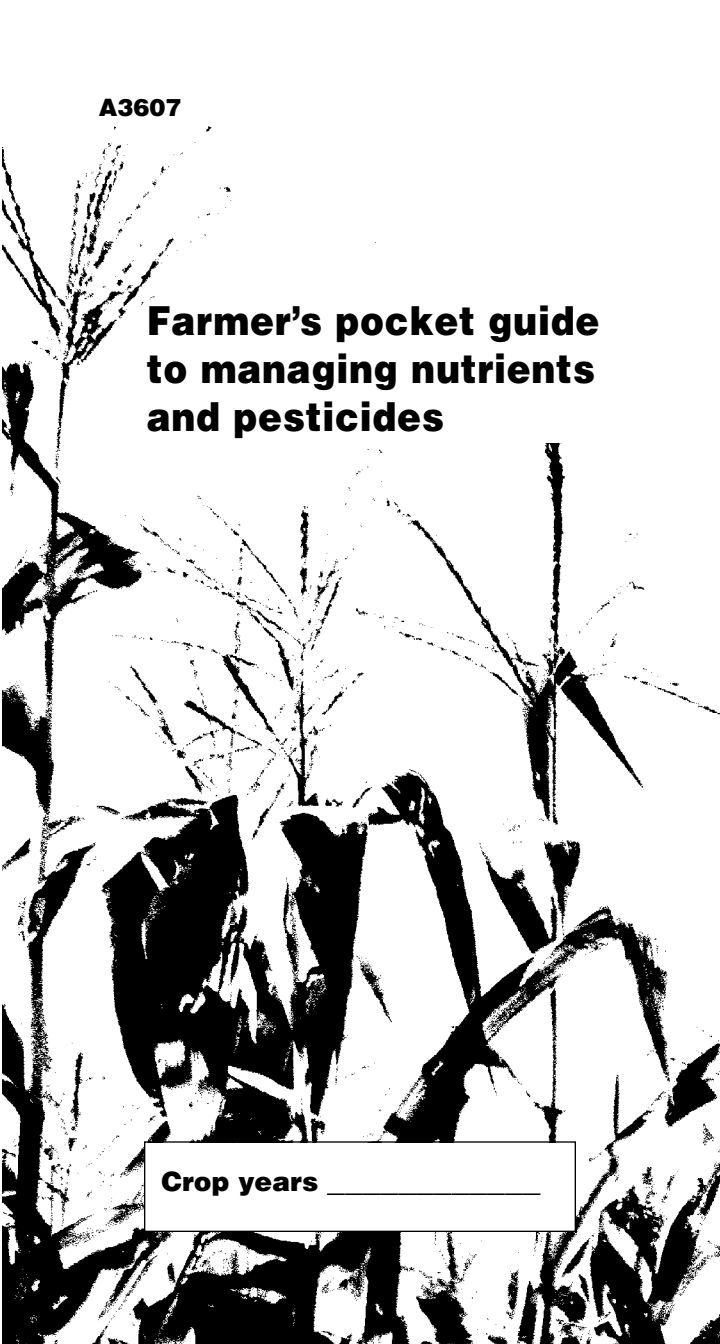
Farmer's pocket guide to managing nutrients and pesticides



Crop years _____

Personal information

Name _____

Address _____

City _____ Zip _____

Phone _____

Cert number _____

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Contents

Preface

This notebook is designed to give Wisconsin farmers information about managing nutrients and recording pesticide applications.

Nitrogen applications are essential for optimum crop yields. However, applying more nitrogen than crops need can reduce already slim profit margins. Excess nitrogen can reach groundwater, posing a potential risk to human and animal health.

Phosphorus, carried to surface water by soil or run-off, promotes algae growth and may harm fish.

This handy pocket notebook gives you a way to calculate each field's nutrient needs, and allows you to keep records of the nutrient credits and nutrients applied to each field. It also gives you information on the environmental impacts of excess nitrogen and phosphorus.

Beginning on page 38, this notebook also outlines pesticide application recordkeeping requirements and provides sample forms for you to keep those records.

If you have questions about how to use this notebook, or would like assistance in planning your nutrient and pesticide budget, contact your county Extension office.

Optimum profit rather than maximum yield

Profit margins on high nitrogen-demand crops such as corn have narrowed. Nitrogen fertilizer costs represent an important part of corn production expenses.

Over- or under-applying nitrogen fertilizer can reduce overall net profits. Extensive research has identified the optimum nitrogen fertilization rates for Wisconsin soils. This data is incorporated into the Wisconsin Soil Test Recommendation Program. Fertilization above or below these levels reduces net profits.

Nitrogen from manure and legume crops can substitute for fertilizer nitrogen. Therefore, it's important to consider all the nitrogen sources when you determine the optimum rate of fertilizer nitrogen to apply.

You can meet crop nitrogen needs by combining manure or plow-down legume crops with fertilizer nitrogen. At the same time, you will decrease your nitrogen fertilizer costs.

Environmental impacts

Nitrogen from fertilizer or on-farm sources supplied at higher rates than crops require can leach to groundwater. The potential for contamination depends on soil characteristics, amount of nitrogen available and local climate conditions.

Groundwater flows slowly underground to lowland areas where it emerges in springs, or discharges into streams, lakes or wetlands. It moves very slowly, traveling anywhere from a few inches to a few feet per day. As water seeps through the soil, it can carry substances it encounters along the way.

The Department of Natural Resources analyzed 11,396 small public water systems statewide (campgrounds, rural churches, schools, etc.) in 1979-80 and found that 311 (2.7%) contained nitrate-nitrogen that exceeded the safe drinking water standard of 10 milligrams per liter (mg/L).

People can contribute to groundwater contamination by improperly treating waste and incorrectly applying nitrogen fertilizer. Excess amounts of nitrogen fertilizer may contaminate groundwater where soils are permeable or fractured bedrock is close to the surface. Leaky septic tanks or improper application of septage can also contribute to nitrate-N groundwater contamination.

High levels of nitrate nitrogen are not known to harm adults or older children, but can be fatal to infants. Nitrate nitrogen may form and bind with hemoglobin in the blood to prevent oxygen from getting to the rest of the body. This oxygen deficiency causes “blue baby” syndrome. Although potentially fatal, the condition is easily treated. There has never been an infant death in Wisconsin related to nitrate in drinking water. Even so, we need to maintain a high quality water supply.

Another concern is phosphorus from eroded soil or run-off water which can find its way to lakes and streams. The “fertility” level of these waters increases, causing algae blooms and killing fish. The potential for phosphorus to contaminate surface water depends on the topography, soil test P levels and manure application methods and timing. If you maintain optimum soil test P level, incorporate manure and use erosion control practices, you can reduce the chances of phosphorus entering surface water.

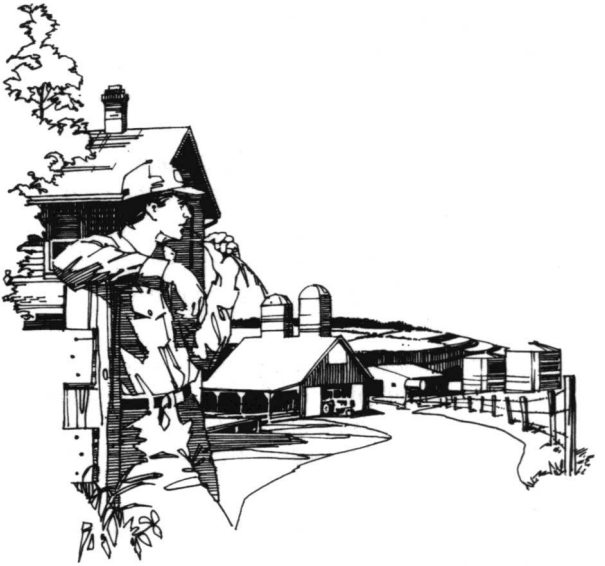
How to use this notebook

Soil testing is a must

Soil testing is an index of your soil's potential to supply nutrients needed by crops. It is a starting point and a "must" for your soil fertility management program. Your management strategies should reflect your most recent soil test.

1. If you have not recently tested your soil we encourage you to use the University of Wisconsin Soil Testing Program. Information forms and soil bags are available from your county Extension office or from University of Wisconsin or Wisconsin ASCS certified soil testing laboratories.
2. See page 8 for manure management tips.
3. Determine your manure application rate on page 13 and enter this data along with other requested field data on the manure application record on pages 20-23.
4. See page 16 for the dollar value of nutrients in manure. Determine your nutrients applied per acre (see the example on page 15). Transfer this information to the fertilizer record worksheet (pages 24-37). Enter the pounds of N, P_2O_5 and K_20 under fertilizer credits.
5. To determine nitrogen credit for legumes and/or green manure, see page 17. Transfer this information to the fertilizer record worksheet (pages 24-37). Enter the pounds of nitrogen under fertilizer credits.

6. On the fertilizer record worksheet (pages 24-37) subtract any fertilizer credits of N, P_2O_5 or K_2O contributed by manure, legumes or green manure crops from soil test recommendations to determine the amount of fertilizer to apply. If you are practicing conservation tillage, see note 2 on page 25.



Manure management tips

1. Priority locations to apply manure include:
   - high nitrogen-using crops (second-year corn, grasses)
   - fields with low soil test values
   - fields low in organic matter
2. Inject or incorporate manure within 72 hours for maximum N availability and minimum runoff.
3. If you do not incorporate manure within 72 hours, apply a maximum per acre of:
   - 8,000 gallons liquid dairy manure,
   - 25 tons solid dairy manure, or
   - the equivalent of 75 lbs. available P_2O_5 for other types of manure.
4. Do not exceed the crop's nitrogen needs by more than 20%.
5. If soil phosphorus exceeds 150 ppm, discontinue manure applications to the field.
6. Do not apply manure to:
   - areas within the 10-year floodplain, or within 200 feet of streams, unless manure is incorporated.
   - frozen or snow-covered grounds where slopes are 12% or greater (D slopes) when residue is managed and strips are in place; or where slopes are 9% or greater if these practices are not used.
   - waterways and areas of concentrated water flow unless manure is incorporated.
   - soils less than 10 inches thick over bedrock.
7. On coarse-textured soils restrict fall applications until soil temperature is below 50 degrees.

Estimating manure spreader capacity

The best way to estimate your manure spreader capacity is simply to weigh an average load. However, if a scale is not available, a good estimate can be made by measuring your spreader as described below.

Box-end, slinger spreaders

A good estimate of load weight for solid or semi-solid manure can be made by knowing your load volume in cubic feet (ft^3) and the density or weight/ft^3 of the manure.

Determining load volume. The volume of manure your spreader holds depends on the type of spreader, box dimensions, and whether the load is level or heaped above the sidewalls.

- **Box-end spreaders**

  Level load volume (ft^3) = box length (ft) x box width (ft) x side wall height (ft)

  Heaped load volume (ft^3) = box length (ft) x box width (ft) x total manure height (ft)

  Note: Do not use the bushel rated capacity because it assumes and significantly overestimates heaping.

  Your box-end spreader volume (inside dimensions)

	feet
box length	____
box width	____
sidewall ht. (level load)	____
total manure ht. (heaped load)	____
volume = ft^3	____

■ **Slinger spreaders**

$$\text{volume } (ft^3) = \frac{\text{box depth (ft)} \times \text{box length (ft)} \times \text{top width (ft)} + \text{bottom width (ft)}}{2}$$

Note: This assumes the slinger spreader is completely filled, but not heaped above the sidewalls.

Your slinger spreader volume (inside dimensions)

	feet
box depth	____
box length	____
top width	____
bottom width	____
volume = ft^3	____

Determining manure density. Weigh an empty 5-gallon bucket and record the weight; then fill the bucket with manure and weigh it again.

$$\text{density } (lbs/ft^3) = \left[\text{full bucket (lbs)} - \text{empty bucket (lbs)}\right] \times 1.5$$

Manure density values determined at the UW-Arlington Research Station for different animal types and housing are as follows:

- dairy cows — semi-solid, stanchion barn, moderate straw bedding = 55 lbs/ft^3
- dry cows, heifers — solid, bedded pack, high straw bedding = 36 lbs/ft^3
- beef steers — solid, bedded pack, sawdust/straw bedding = 30 lbs/ft^3
- sheep — solid, bedded pack, straw bedding = 23 lbs/ft^3

Compare what you determine to these values. The more bedding used, the less dense the manure will be. The more water in the manure, the more dense it will be, up to a maximum of 62 lbs/ft^3.

Manure density

	lbs
full bucket	____
empty bucket	____
density = lbs/ft^3	____

Determining load weight. Multiply load volume by manure density and convert to tons.

Estimated load weight of your spreader

$$\text{____ (tons)} = \frac{\text{your load volume ____ (ft}^3\text{)} \times \text{manure density ____ (lbs/ft}^3\text{)}}{\text{2000 lbs/ton}}$$

Example—How much does a heaped load of manure weigh in your box-end spreader?

You measure your spreader and find its inside dimensions to be 12 ft. long and 5 ft. wide. An average load is heaped 4 ft. high.

Load volume (ft^3) = (12 ft) x (5 ft) X (4 ft) = 240 ft^3

Your 5-gal bucket weighed 5 lbs. empty and 37 lbs. filled.

Density = (37 lbs - 5 lbs) x 1.5 = 48 lbs/ft^3

You estimate the weight of manure in the spreader to be:

$$\frac{(240 \text{ ft}^3) \times (48 \text{ lbs/ft}^3)}{2000 \text{ lbs/ton}} = 5.8 \text{ tons}$$

Tank spreaders

It is easier to calculate an estimate of load capacity for tank spreaders than for box-end or slinger spreaders. You can use the maximum-rated capacity in gallons to start. Remember, however, that you will probably not fill either a closed or open tank spreader to full capacity because of foaming or sloshing. Observations at the UW-Arlington Research Station have shown that the actual filled capacity is only about 80% of the maximum for which the tank is rated.

Example—How many gallons of manure do you haul to the field with your 3,000-gallon closed tank spreader?

The maximum rated capacity of your closed tank spreader is 3,000 gallons. You should assume that the tank is not completely filled because of foaming.

Hauled capacity = (3,000 gal) (0.8) = 2,400 gal

Capacity of your tank spreader	gal
Rated	____
Hauled	____

Determining your application rate

Base your application rate on the capacity of your spreader and the number of loads spread on the field. The estimate of your application rate assumes uniform spreading over the entire field.

Example—Solid manure. You make 54 trips to a 24-acre field using a spreader with an estimated load size of 5.8 ton. What is the application rate in tons per acre?

Amount applied = 54 loads X 5.8 tons per load = 313 tons

Rate applied = 313 tons ÷ 24 acres = 13 tons/acre

Example—Liquid manure. You make 40 trips to a 24-acre field using a tank spreader with a maximum rated capacity of 3,000 gallons. What is the application rate per acre?

Hauled capacity = (3,000 gal) x (0.8) = 2,400 gal

Amount applied = 40 loads x 2,400 gal = 96,000 gal

Rate applied=96,000 gal÷24 acres=4,000 gal/acre

Nutrients available for crop use the first year after spreading

	Solid manure lbs/ton		Liquid manure lbs/1,000 gal	
	surface applied	incorporated	surface applied	incorporated
Dairy manure				
N	3	4	8	10
P_2O_5	3	3	8	8
K_2O	8	8	21	21
Beef manure				
N	4	4	10	12
P_2O_5	5	5	14	14
K_2O	8	8	23	23
Hog manure (farrow)				
N	4	5	12	15
P_2O_5	3	3	6	6
K_2O	7	7	8	8
Hog manure (finish)				
N	4	5	22	28
P_2O_5	3	3	15	15
K_2O	7	7	26	26
Poultry manure				
N	15	13	41	35
P_2O_5	14	14	38	38
K_2O	9	9	25	25

Note: Manure nutrient testing can ensure more precise nutrient credits if representative samples are analyzed.

Determining the amount of manure nutrients applied per acre

You can adjust your fertilizer application rate to take advantage of nutrients in manure only if you know the amount of N, P_2O_5 and K_2O hauled per acre.

The amount of N, P_2O_5 and K_2O applied can be determined by knowing the amount of nutrients contained in each ton or 1000 gallons of manure and the amount of manure spread on each acre. Use the table on page 14 to get the average or "typical" amount of nutrients contained in each ton or 1000 gallons of dairy, beef, hog or poultry manure. Multiply the manure N, P_2O_5 and K_2O content by your manure application rate to determine the amount of nutrients applied on each acre.

lb/a = Manure nutrient content (lbs/ton) x application rate (tons/a)

Example A: How many pounds of available N, P_2O_5 and K_2O does a surface application of 13 tons/a of solid dairy manure deliver?

Nitrogen

39 lbs N/a = 3 lbs N/ton gal x 13 ton/a

Phosphate

39 lbs P_2O_5/a = 3 lbs P_2O_5/ton x 13 ton/a

Potash

104 lbs K_2O/a = 8 lbs K_2O/ton x 13 ton/a

Example B: How many pounds of N, P_2O_5 and K_2O does a surface application of 4,000 gallons of liquid dairy manure contain?

Nitrogen

32 lbs N/a=8 lbs N/1000 gal x 4000 gal/a

Phosphate

32 lbs P_2O_5/a= 8 lbs P_2O_5/1000 gal x 4000 gal/a

Potash

84 lbs K_2O/a = 21lbs K_2O/1000 gal x 4000 gal/a

Adjust the amount of fertilizer to apply by comparing the amount of nutrients you spread in manure to the rate recommended on your soil test report. If the quantity is equal or greater, apply starter only to row crops and reduce the manure application rate to more closely match crop needs. If less, apply the difference as fertilizer or addtional manure.

Dollar value of nutrients in manure

The value of a ton of manure depends on the amount of each nutrient it contains and how much of each nutrient applied that your crop needs. Every ton or 1,000 gal of manure has these maximum values:

SOLID	Dairy	$2.46 per ton
	Beef	$3.21 per ton
	Hogs	$2.59 per ton
LIQUID	Dairy	$6.25 per 1,000 gal
	Beef	$8.76 per 1,000 gal
	Hogs	$5.46 per 1,000 gal

Note: These values are based on fertilizer nutrient costs of N @ 25 cents/lb, P_2O_5 @ 25 cents/lb, and K_2O @ 12 cents/lb and assumes that your crop requires all of the nutrient applied.

Legume nitrogen credits

Plowing down legume crops can contribute substantial amounts of nitrogen to the next year's crop. The amount of nitrogen remaining depends on the type of legume, the stand quality, and your cutting schedule. The table on page 17 shows the amount of nitrogen available in specific crops.

Legume-nitrogen fertilizer replacement credits

Forages	N credit (lbs N/acre)	Exceptions
Alfalfa		
Good (70–100% stand)	190	Reduce credit by 40 lbs N/acre if harvested after Sept. 10. Reduce credit by 50 lbs N/acre on sand or loamy sand.
Fair (30-70% stand)	160	
Poor (30% stand)	130	
Red clover and birdsfoot trefoil	80% of alfalfa credit	Same as for alfalfa credit
Green manure, plowed down		
Sweet clover	80-120 lbs N/acre	If growth is less than 6 inches, use only 20 lbs N/acre
Red clover	50-80 lbs N/acre	
Alfalfa	60-100 lbs N/acre	
Soybeans	1 lb N/acre for each bu/acre harvested up to 40 bu.	No credit on sandy soils.
Snap beans, peas	20 lbs N/ acre	No credit on sandy soils

Dollar value of N fertilizer replacement credit following some legumes

Legume crop	1st year N fertilizer replacement credit	$ value per acre at N fertilizer costs of:	
	(lb N/acre)	$0.20/lb	$0.25/lb
Alfalfa			
Good stand	190	$38.00	$47.50
Fair stand	160	$32.00	$40.00
Poor stand	130	$26.00	$32.50
Red clover, birdsfoot trefoil			
Full stand	152	$30.40	$38.00
Fair stand	128	$25.60	$32.00
Poor stand	104	$20.80	$26.00
Green manure, plowed down	80	$16.00	$20.00
Soybeans (40 bu/acre)	40	$ 8.00	$10.00
Snapbeans, peas or lima beans	20	$ 4.00	$5.00

Manure application record

Field	Loads applied	x	tons or gallons/ load hauled	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=

Crop year _____

Total	÷	acres	=	rate/acre
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____

Manure application record

Field	Loads applied	x	tons or gallons/ load hauled	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=
_____	_____	x	_____	=

Crop year _____

Total	÷	acres	=	rate/acre
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____
_____	÷	_____	=	_____

Fertilizer record worksheet

Field	Upcoming crop	Soil test report recommendation lb/a	
1 a	Corn	N	160
		P_2O_5	40
		K_2O	25
1 b	Corn	N	160
		P_2O_5	40
		K_2O	25
_____	_____	N	_____
		P_2O_5	_____
		K_2O	_____
_____	_____	N	_____
		P_2O_5	_____
		K_2O	_____
_____	_____	N	_____
		P_2O_5	_____
		K_2O	_____
_____	_____	N	_____
		P_2O_5	_____
		K_2O	_____

[1]If your soil test report already accounts for nutrient credits, do not duplicate the credit adjustment.

Crop year _____

Fertilizer credits[1] lb/a			=	Fertilizer to apply[2] lb/a	
Manure	Legumes	Green manure			
0	130	0	=	30	N
0			=	40	P_2O_5
0			=	25	K_2O
40	0	0	=	120	N
40			=	0	P_2O_5
104			=	0	K_2O
_____	_____	_____	=	_____	N
_____			=	_____	P_2O_5
_____			=	_____	K_2O
_____	_____	_____	=	_____	N
_____			=	_____	P_2O_5
_____			=	_____	K_2O
_____	_____	_____	=	_____	N
_____			=	_____	P_2O_5
_____			=	_____	K_2O
_____	_____	_____	=	_____	N
_____			=	_____	P_2O_5
_____			=	_____	K_2O

[2]If practicing conservation tillage with 50% or more groundcover, add 30 lbs of additional N.

Fertilizer record worksheet

Field	Upcoming crop	Soil test report recommendation lb/a	
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______

[1]If your soil test report already accounts for nutrient credits, do not duplicate the credit adjustment.

Crop year ________

Fertilizer credits[1] lb/a			=	Fertilizer to apply[2] lb/a	
Manure	Legumes	Green manure			
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O

[2]If practicing conservation tillage with 50% or more groundcover, add 30 lbs of additional N.

Fertilizer record worksheet

Field	Upcoming crop	Soil test report recommendation lb/a	
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______

[1]If your soil test report already accounts for nutrient credits, do not duplicate the credit adjustment.

Crop year ________

Fertilizer credits[1] lb/a			=	Fertilizer to apply[2] lb/a	
Manure	Legumes	Green manure			
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O

[2]If practicing conservation tillage with 50% or more groundcover, add 30 lbs of additional N.

Fertilizer record worksheet

Field	Upcoming crop	Soil test report recommendation lb/a	
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______

[1] If your soil test report already accounts for nutrient credits, do not duplicate the credit adjustment.

Crop year ________

Fertilizer credits[1] lb/a			=	Fertilizer to apply[2] lb/a	
Manure	Legumes	Green manure			
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O

[2]If practicing conservation tillage with 50% or more groundcover, add 30 lbs of additional N.

Fertilizer record worksheet

Field	Upcoming crop	Soil test report recommendation lb/a	
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______

[1]If your soil test report already accounts for nutrient credits, do not duplicate the credit adjustment.

Crop year ________

Fertilizer credits[1] lb/a			=	Fertilizer to apply[2] lb/a	
Manure	Legumes	Green manure			
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O

[2]If practicing conservation tillage with 50% or more groundcover, add 30 lbs of additional N.

Fertilizer record worksheet

Field	Upcoming crop	Soil test report recommendation lb/a	
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______

[1]If your soil test report already accounts for nutrient credits, do not duplicate the credit adjustment.

Crop year ________

Fertilizer credits[1] lb/a			=	Fertilizer to apply[2] lb/a	
Manure	Legumes	Green manure			
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O

[2]If practicing conservation tillage with 50% or more groundcover, add 30 lbs of additional N.

Fertilizer record worksheet

Field	Upcoming crop	Soil test report recommendation lb/a	
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______
______	______	N	______
		P_2O_5	______
		K_2O	______

[1]If your soil test report already accounts for nutrient credits, do not duplicate the credit adjustment.

Crop year ________

Fertilizer credits[1] lb/a Manure	Legumes	Green manure	=	Fertilizer to apply[2] lb/a	
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O
______	______	______	=	______	N
______			=	______	P_2O_5
______			=	______	K_2O

[2]If practicing conservation tillage with 50% or more groundcover, add 30 lbs of additional N.

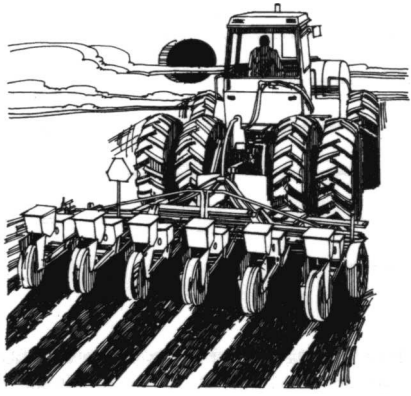
Pesticide application recordkeeping requirements

Complete the personal information on the inside front cover. Also keep on file the name, address and phone number of anyone else for whom you apply. Record this information on page 39.

Use the pesticide inventory to keep track of your stored products. Only the first 2 lines are required information.

The pesticide application record follows the inventory. Use it for all applications except pesticides that contain metam sodium. For these products, complete the information on page 52-53. Your county Extension office can provide a worksheet to help you determine the rates at which you can legally apply different atrazine products.

For each application, we recommend that you complete the optional information that follows the pesticide application record. Your calibration notes (output, nozzle type, operating pressure, travel speed, etc.) are also valuable records; we suggest you retain them along with this book.



Pesticide inventory

Trade name[1]	_____	_____
EPA reg. no.[1]	_____	_____
Manufacturer	_____	_____
Active ingredient(s)	_____	_____
Amount purchased	_____	_____
Date purchased	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Trade name[1]	_____	_____
EPA reg. no.[1]	_____	_____
Manufacturer	_____	_____
Active ingredient(s)	_____	_____
Amount purchased	_____	_____
Date purchased	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____

[1]You must record this information as part of your pesticide application record.

Pesticide inventory

Trade name[1]	_____	_____
EPA reg. no.[1]	_____	_____
Manufacturer	_____	_____
Active ingredient(s)	_____	_____
Amount purchased	_____	_____
Date purchased	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Trade name[1]	_____	_____
EPA reg. no.[1]	_____	_____
Manufacturer	_____	_____
Active ingredient(s)	_____	_____
Amount purchased	_____	_____
Date purchased	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____
Used/ remaining	_____	_____

[1]You must record this information as part of your pesticide application record.

Pesticide application record

Field ID	Date/ time	Site[1]	Size/ number	Target pests

[1]The site is the crop, commodity, structure, or animal to which you applied the pesticide.

Crop year _____

Trade name	Mixing site	Rate[2]	Total product

[2]Record the amount of product and spray volume, applied per acre, barn, grain bin, etc. (Example: 2 pounds in 20 gallons per acre.)

Optional pesticide application information

Field ID	Date/ time	Sky conditions	Air temp	Wind[1]

[1] Record the wind speed and the direction from which the wind is coming.

[2] Record information such as weed height, insect life stage, and pest population.

Crop year _____

Soil conditions	Crop stage	Pest information[2]	Other[3]

[3] Record any other information that may be valuable, such as rainfall or frost soon after the application.

Pesticide application record

Field ID	Date/ time	Site[1]	Size/ number	Target pests

[1]The site is the crop, commodity, structure, or animal to which you applied the pesticide.

Crop year _____

Trade name	Mixing site	Rate[2]	Total product

[2]Record the amount of product and spray volume, applied per acre, barn, grain bin, etc. (Example: 2 pounds in 20 gallons per acre.)

Optional pesticide application information

Field ID	Date/ time	Sky conditions	Air temp	Wind[1]

[1] Record the wind speed and the direction from which the wind is coming.

[2] Record information such as weed height, insect life stage, and pest population.

Crop year _____

Soil conditions	Crop stage	Pest information[2]	Other[3]

[3] Record any other information that may be valuable, such as rainfall or frost soon after the application.

Metam-sodium application record

Field ID	Date/ time	Site	Size/ number	Target pests
________	________	________	________	________

Soil temperature at depth of 5 to 6 inches (if you used knife rig injection or chemigation)

Time of first inspection __________ AM/PM

Results/action taken ______________________________

____

____

Field ID	Date/ time	Site	Size/ number	Target pests
________	________	________	________	________

Soil temperature at depth of 5 to 6 inches (if you used knife rig injection or chemigation)

Time of first inspection __________ AM/PM

Results/action taken ______________________________

____

____

Field ID	Date/ time	Site	Size/ number	Target pests
________	________	________	________	________

Soil temperature at depth of 5 to 6 inches (if you used knife rig injection or chemigation)

Time of first inspection __________ AM/PM

Results/action taken ______________________________

____

____

Crop year _____

Trade name	Mixing site	Rate	Total product
_____	_____	_____	_____

Time of second inspection _____ AM/PM
Results/action taken _____
_____
_____

Trade name	Mixing site	Rate	Total product
_____	_____	_____	_____

Time of second inspection _____ AM/PM
Results/action taken _____
_____
_____

Trade name	Mixing site	Rate	Total product
_____	_____	_____	_____

Time of second inspection _____ AM/PM
Results/action taken _____
_____
_____

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