

Field Book for Manure Applicators



Idaho State Department of Agriculture

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Purpose:

This field book is provided to you by the Idaho State Department of Agriculture to assist you in the recordkeeping requirements of your Nutrient Management Plan. It is important

Use of animal waste for crop production does require careful planning. The goal should be to recycle the available nutrients in animal waste as fertilizer for crop production in amounts that are useful to crops yet will not degrade the environment. Properly applying manure decreases the potential for ground-water contamination

Land applying manure has other benefits such as adding organic material to the soil that improves soil structure and infiltration. Soil erosion is controlled and the moisture holding capacity is increased.

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Contents

Producer Education

- Nutrient Management
- Odor Management
- Soil sampling
- Manure application records

Producer Education

Nutrient Management:

The purpose of nutrient planning is to manage the amount, source, placement, form and timing of the application of nutrients and soil amendments to ensure adequate soil fertility for plant production and to minimize the potential for environmental degradation, particularly water quality impairment.

Nitrogen

- ☺ Nitrogen is found to be beneficial to plant growth and increase crop yields.
- ☹ Movement of excess nitrogen through runoff and erosion into surface waters can lead to reduced water quality, increased algae growth, and is toxic to fish.

Phosphorus

- ☺ Phosphorus is an essential nutrient for plant growth, however there is no advantage to crops to apply phosphorus above agronomic level.

- ☹ In lakes and streams phosphorus also increases plant growth. When these plants die and decompose the oxygen level depleted and results in incomplete decomposition which leads to foul tastes and odors to the water as well as problems for the aquatic life.

- * Application rates of nutrients are based on phosphorus levels due to the fact that phosphorus is not mobile in the soil, does not volatilize, is relatively stable and significant changes in levels over time can determine adequacy of plan.



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Producer Education

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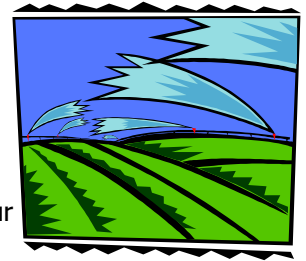
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Fertilizer Applications

- Fertilizer applications should be based on scientific information. A combination of spring soil tests, realistic crop yields, and fertilizer guide recommendation data should be used to determine the appropriate amount of fertilizer that is needed.
- Apply fertilizer to cool season crop in the spring rather than the previous fall. This will prevent fertilizer leaching through the soil profile and provide the crop with the necessary levels of nutrients.
- Use, split or multiply fertilizer applications in order to provide the crop with a pre-plant treatment and the needed nutrient levels throughout the growing season till the point of major nutrient uptake.
- Fertilizer placement can often improve the efficiency of crop uptake of nutrients. Fertilizer should be applied below and with the seed planting. This will provide the crop with the needed nutrients at the beginning of root and pop-up growth.

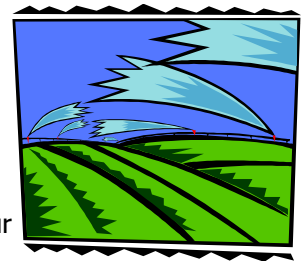


Hydraulic Balance

The hydraulic balance on land application sites is one of the most important components of your nutrient management plan. The hydraulic balance determines when a liquid effluent may be applied to irrigated cropland without adversely impacting groundwater. Each facility has an individual date based on the site specific parameters such as cropping practices, soil available water holding capacity, soil type, and method of application. It is important to note in your plan what your hydraulic balance date is. This should be located under Nutrient Management Plan Requirements in the Producers Summary of your Nutrient Management Plan. Applying liquid effluent outside of the approved window is a non-compliance issue and regulatory action can be taken.

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Waste Containment Pond

Continual maintenance of waste handling facilities and equipment will prevent unwarranted waste discharges into surface water and groundwater. It is important to clean your pond of settled solids on a regular basis as well as emptying your pond during the growing season. This will help insure your pond will contain all barn waste and runoff from the winter season. You will not be able to pump out any effluent until the hydraulic balance date indicated in your nutrient management plan.

Odor Management

Land application of manure can be managed to help reduce impact of odors to your neighbors. Listed are a few simple suggestions to take into consideration when land applying manure.

- Apply manure early in the morning during warm weather. Increasing temperatures cause air to rise and carry away odors.
- In addition manure drying during the day reduces odors before neighbors evening activities. Avoid applying before weekends and holidays.
- It is best to apply on dry windy days. Lower humidity dries manure faster. Dry manure has less odor.
- Applying manure right before or during a light rain can help control odors. Rain washes the volatile organic compounds out of the air and moves manure into the soil. This application timing must be balanced against runoff issues, since the rain may become heavier and lead to surface runoff.
- Cold weather applications produce fewer odors than warmer weather.
- Control all spills. Spills may cause long-term odor generation, even when they are contained.
- Applying manure in a quick operation limits the odor-producing time period

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Example 1. Lagoon Liquid manure sprayed on grass silageCrop Year 2002Field ID #1 Acres 30 Crop **grass silage** Seeding Date Fall 2001

Date	Crop Stage	Manure/Fertilizer Type	Amount Applied	Comments
3/01/2002	4-6"	liquid	1/2 inch	Pond agitated
04/01/02	after 1st cut	liquid	1 inch	Pond not agitated
06/01/02	after 2nd cut	liquid	1 inch	Pond agitated and mixed with water
07/31/02	after 3rd cut	liquid	2 inches	Pond agitated and mixed with water
09/15/02	after 4th cut	liquid	1/2 inch	Pond agitated and emptied

* Measured using bucket method.

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Example 2. Separated solids and waste pond applied to corn with tritcale cover crop.

Crop Year 2002

Field ID #3

Acres 50

Crop Triticale and corn

Seeding Date Triticale 10/01 - Corn 6/02

Date	Crop Stage	Manure/Fertilizer Type	Amount Applied	Comments

Manure/Fertilizer Application Records

Crop Year _____

Field ID _____

Acres _____

Crop _____

Comments _____

Date	Crop Stage	Manure/Fertilizer Type	Amount Applied	Comments

Soil Testing

Annual Testing

Soil samples **must** be taken in the spring as close as possible to planting. These results will determine crop nutrient needs and the usage of nutrients previously applied.

- Results of these spring soil samples must be available for review by your ISDA Inspector.

Regulatory Testing

Regulatory samples will be taken by ISDA employees, at no charge to you, at least once every three years to determine the efficiency of your nutrient management plan. The test are taken for comparison of the Phosphorus (P) threshold and are taken at one of two depths depending on the resource concern for each field.

- **Surface water runoff concern** exists when runoff leaves the contiguous operating unit from normal storm events; rain on snow or frozen ground, or irrigation. Samples are taken at 0-12" and the phosphorus threshold **may not exceed 40 ppm.**
- **Groundwater runoff concerns** exists when a high water table, fractured bedrock, cobbles, gravel, or coarse textured soils are conducive for the downward movement of water and the associated nutrients, Samples are taken at 18"-24" and **may not exceed 20ppm** with fractured bedrock or groundwater at less than five feet or **30 ppm** with groundwater at greater than five feet.



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Animal Waste Export Records

Third Party Receivers:

Records must be kept for all waste that is exported from your facility. These records must be available for review by inspectors.

Animal Waste Export Records

Date	# of Loads	Name	Address	City	# of Acres
06/01/2002	4	Joe Example	Example Lane	Example City	50
06/15/2002	10	Jane Example	Receiver Road	Our Town	200

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