

Economics

Since manure can be used as a fertilizer, it has considerable economic value.

Example

A sample 50-cow dairy herd with young stock produces roughly 500,000 gallons of manure per year. This can be broken down as follows:

- 7,000 lbs of nitrogen
- 3,500 lbs of phosphate
- 15,000 lbs of potash

If an effective nutrient management plan is initiated, this manure can readily replace \$6000 worth of commercial fertilizer.

Economic Value of Alberta's Livestock Manure (\$ '000's)

Livestock Type	Available N	P ₂ O ₅	K ₂ O
Layers	202.6	601.1	109.7
Broilers	128.5	196.0	59.0
Beef	7850.2	14636.2	12320.8
Dairy	220.9	265.6	305.6
Swine	311.1	668.7	232.1
Horses	605.1	800.5	710.8
Total	9318.4	17168.1	13738

AAFRD, 2000

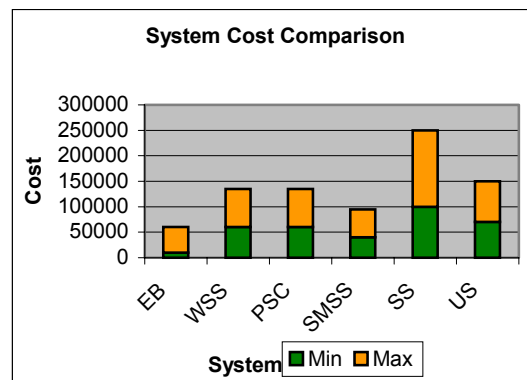
Related Costs

As can be expected, a number of costs are associated with managing manure:

- Machinery costs
- Cost of storage facilities
- Labour
- Hauling and application costs

Custom application of manure is normally more feasible for small quantities. When larger quantities are produced, it becomes economically viable for the producer to own his or her own equipment.

Cost Comparisons MacNeil & Sawyer, 1999



EB - Earth Basin

WSS - Waste Storage Structure Concrete / Below Ground

PSC - Pre-stressed Concrete Above Ground Storage

SMSS - Solid Manure Stacking Slab & Runoff Pond

SS - Slurry Storage / Steel Tank

US - Used Slurry

Based on "An Overview of the Social, Environmental, and Economic Aspects of Manure Management in Alberta's Livestock and Poultry Sectors"

University of Alberta

J. Unterschultz et al, 2000

Contact Wild Rose Agricultural Producers for more info.

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Agri-Food Canada

Administration du rétablissement agricole
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MANURE MANAGEMENT

A MANURE MANAGEMENT SERIES



**Manure
Storage &
Application**

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Storage & Spreading

Cattle Manure

Nearly all cattle producers store cattle manure in its solid form. Methods 1 and 3 (listed below) are both cost effective; however both lead to high risks of air and water pollution. Nuisance odors are prevalent as well.

Methods of Storage

1. Open Pile Without Roof
2. Open Pile With Roof
3. Manure Pack
4. Open Pad Without Containment
5. Open Pad With Containment
6. Covered Storage Pad

Poultry Manure

Poultry manure is an excellent source of nutrients for crops. 90% of nitrogen is available to crops in the first year of application. However, storage may often pose water and air pollution risks.

Methods of Storage

1. Floor Housing
 - Manure mixes in with bedding material
 - Removed at the end of cycle
2. Cage Housing
 - Pit or conveyor collection
 - Conveyor transports to lagoon or tank

Hog Manure

Nearly 90% of prairie hog producers manage hog manure in its liquid form. As such, the storage site needs to be isolated from clean water sources such as domestic water wells and nearby watercourses. Of course, isolation conditions should be site specific and based on:

- Water Table Depth
- Slope of Land
- Soil Texture
- Soil Type
- Precipitation Patterns

Methods of Storage

1. Earthen Lagoon Structure (Most Common)
 - Residence time up to several months
 - Low cost
 - Potentially high nutrient losses
 - Odor Problems
2. Floor Deep Pit Method
 - Manure collected below facility
 - Minimized nutrient losses
 - Good for small herd size
 - Odor problems (hazardous)
 - Expensive
3. Slurry Tanks
 - Manure stored above ground
 - Higher nutrient conservation
 - Limited odor problems
 - High setup and usage costs

Manure Application

Manure application is a process involving specified application rates and timing. Application in spring is recommended over winter to enhance nutrient conservation. Winter application can result in nutrient runoff in spring. Manure applied in either fresh or composted forms releases nutrient gradually. Annual over-application can lead to leaching of nutrients and environmental consequences.

Methods of Application

1. Broadcasting

- Favorable for standing crops
- High nutrient losses
- Odor and pollution problems

2. Broadcasting with Incorporation

- Good nutrient retention and incorporation into soil
- Cannot be applied to standing crops

3. Soil Injection

- Low nutrient losses, pollution and odor
- More costly investment

4. Irrigation Runoff

- Good for surrounding livestock farm
- High risk of leaching and odor

Application of untreated manure can result in unwanted results. There is a high potential for weed seed and pathogen distribution. Additionally, the high water content of manure contributes significantly to hauling costs.