MANURE IS WORTH MONEY
It deserves good care

Circular 595
UNIVERSITY OF ILLINOIS - COLLEGE OF AGRICULTURE TENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
Manure Is Worth $3 to $5 a Ton

The crop increases produced by a ton of manure were worth about $3, on the average, at prewar prices. At wartime prices the value was nearer $5 a ton. Of course these values vary considerably with the kind of soil on which the manure is used and with the crops grown.

A ton of cattle manure (solid and liquid), including bedding, contains on the average about these amounts of plant food:

- 500 pounds of organic matter
- 10 pounds of nitrogen
- 2 pounds of phosphorus
- 8 pounds of potassium

Much of this plant food is in form to be readily used by crops. That is one reason why crops respond so quickly when manure that has been well cared for is used on the soil.

Manure has still further value for the organic matter it contains, which almost all soils need and which farmers cannot buy in a sack.

Fertility Losses Not Usually Realized

There is probably no Illinois farmer who does not know what manure will do in boosting the yields of corn and other crops. Many, however, do not realize how much of the fertilizing value of manure is often lost before it is put back onto the land. It would be hard to find a farmer who would buy even fifty dollars' worth of fertilizer and then make no use of it or let it stand in the open exposed to the weather for several months. Yet it is not unusual for several hundred dollars' worth of manure to be treated in this way. Careless handling of this valuable by-product of livestock feeding takes a sizable slice out of the income of many farmers.

Manure is not only a superior fertilizer, but it costs nothing to produce and little to save.

Prepared by C. M. Linsley and F. H. Crane

Many Farmers Lose $200 a Year

It is not unusual for many farms to yield 200 tons or more of manure in a year. Eighteen to 20 dairy cattle averaging 1,000 pounds (live weight) will produce this much. Some dairy and beef-cattle farms produce several times this amount.

At $3 a ton for the crop increases which manure will produce, 200 tons would be worth $600. If one-third of this manure is lost, the farmer is out $200. Here’s what often happens:

On a farm that produces 200 tons of manure a year, at least one-third, or about 65 tons, will probably be dropped in the pasture. The plant food in this manure gets back to the soil with little loss.

Of the other 135 tons, 35 may be dropped in unpaved barnlots or feedlots. A large part of this manure, probably 20 tons or more, is usually lost. This leaves 100 tons dropped in the barns and sheds. If this manure is piled outside, half of the fertility in it may leach out and be lost. Fifty tons plus 20 tons are 70 tons, or about one-third of 200 tons.

Seventy tons of manure is enough to cover 11 acres of cropland with 6 tons to the acre.
The manure production of any farm can be estimated from the following table showing one year's production per 1,000 pounds of animal weight:

<table>
<thead>
<tr>
<th>Animal</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horse</td>
<td>8 tons</td>
</tr>
<tr>
<td>Cow</td>
<td>12 tons</td>
</tr>
<tr>
<td>Steer</td>
<td>8½ tons</td>
</tr>
<tr>
<td>Hog</td>
<td>16 tons</td>
</tr>
<tr>
<td>Sheep</td>
<td>6 tons</td>
</tr>
<tr>
<td>Chicken</td>
<td>4½ tons</td>
</tr>
</tbody>
</table>

**Most Fertility in Fed Crops Is in Manure**

If the feed crops raised on the farm are fed on the farm and the manure is carefully handled, most of the fertility taken from the soil by these crops can be returned to the soil to be used again. Three-fourths of the nitrogen, \( \% \) of the phosphorus, and \( \% \) of the potassium (K) in the feed can be returned in this way (see picture below). Also \( \% \) of the organic matter will be returned.

It is especially important to remember that a large part of the potassium taken from the soil is contained in fresh manure. By spreading the manure on the land before it loses this potassium, a
MANURE EXPOSED TO WEATHER LOSES HALF ITS FERTILITY

100 TONS OF FRESH MANURE WORTH $300

ONLY 50 TONS LEFT A FEW MONTHS LATER $150 LOST

The farmer reduces the amount of potash he will have to buy for soils already low in this element. He can also postpone the time when he will have to apply potash to other soils.

How Fertility Is Lost From Manure

**Lack of watertight floors and enough bedding.** The liquid part of manure carries about half the total plant food. It usually carries somewhat less than half the nitrogen and considerably more than half the potassium but very little of the phosphorus. The nitrogen and potassium in liquid manure are the most valuable parts of manure. They are more highly available to plants in the liquid part than in the rest of the manure. Unless stalls have watertight floors and enough bedding to absorb the liquid, most of this nitrogen and potassium is lost.

**Manure left in loose piles.** When manure is piled loosely, so that the air can circulate thru it, nitrogen from both solid and liquid manure is lost into the air and organic matter is destroyed
by decay. Decay is especially rapid when these loose piles are left exposed to wind, rain, and sun. Rains seeping down thru the pile carry away phosphorus and potassium as well as nitrogen.

**Unpaved feedlots.** When manure is dropped in muddy feedlots most of it is tramped into the mud and lost. On many farms a large tonnage badly needed on the cropland disappears in these mudhole feedlots each year.

**Large Part of Loss Can Be Prevented**

**Use plenty of bedding, tight floors.** Both in stalls and in sheds see that the floors are watertight and use enough bedding to absorb all liquid manure. Shredded fodder, the straw of small grains, soybean straw, and the leavings from clover and alfalfa hay are good for this purpose. They not only soak up and save the liquid manure but also add their own fertility to the soil.

**Haul from stalls to fields daily if practicable.** On many dairy farms the stalls are cleaned daily and the manure hauled directly to the field. It is important to spread the manure daily. If left

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A tractor manure loader and paved feedlot save labor and manure. The manure dropped in the cattle shed is stored there until a convenient time to haul and spread it on crop fields or pastures. (Kendall county)
in piles either outside or in stalls for several days, manure ferments and loses nitrogen into the air. Fermented manure may lose considerable nitrogen if it is exposed to drying or freezing for even a few hours before it is plowed under or disked in. But if rain or snow comes soon after the manure is spread, most of this nitrogen will be caught and carried down into the soil.

**Leave manure in cattle shed.** If manure is left under the cattle in sheds until a convenient time to haul it, it will be tramped on and kept moist and well packed. Little nitrogen and organic matter will be lost thru decay. The manure from the stalls also can be added to the shed manure and thus conserved.

**Store manure in a pit.** If there is no cattle shed to store the manure in, and if it is not feasible to haul it directly to the fields, a pit with a watertight floor and sidewalls will soon pay for itself in fertility saved. When stored outside or in pits, manure should be put in deep piles with straight sides in order to hold back decay and cut down the loss of nitrogen and organic matter.

**Keep livestock on good pasture.** Animals on pasture spread their own manure with little loss of its fertilizing value. Besides, keeping livestock on good pasture as much of the year as possible saves labor and is better for the stock. For example, where water and equipment are available, hogs can be wintered in individual houses or portable sheds on pasture instead of in barnlots.

**Pave the feedlots.** Because of the manure it saves, a paved feedlot soon pays for itself. Then it pays a profit in feed saved, in faster gains, and in the comfort and cleanliness of the cattle.

**When and Where to Apply Manure**

**Manure for corn.** To benefit the corn crop most, manure should be plowed under. It can, however, be applied as a top dressing after the land has been plowed. In order to cut down the loss of nitrogen, the manure should be plowed under or disked in as soon as practicable after it is spread.

**Clover and alfalfa fields.** On soils low in fertility one of the best ways to use manure is to apply it to clover and alfalfa
On this farm the manure is cleaned daily from the dairy barn and loaded into the spreader direct from the carrier. In some dairy barns a driveway thru the barn does away with the need for a carrier. (Bureau county)

fields. It can be applied during the winter as a light top dressing on wheat where clover or alfalfa is to be seeded, or it can be applied to stubble clover during the summer, fall, or winter. An old stand of alfalfa is also a good place to use manure.

Caution. Manure will not take the place of lime. Neither will it permanently substitute for phosphate or potash in clover and alfalfa fields or elsewhere. It will, however, cut down failures by supplying part of the phosphorus, potassium, and other plant foods needed by these legumes.

Permanent pastures and meadows. When it is not practicable to spread manure on other fields because of growing crops or wet weather, it can be put on pastures and meadows with profit. It should not be put on pastures, however, if diseases, parasites, or noxious weed seeds that are carried in manure are on the farm.

Caring for manure and returning it to the soil is only a part, altho an important part, of good soil management. It adds new organic matter and may, if a legume is fed, add new nitrogen. It does not add new supplies of other plant foods such as phosphorus and potassium unless feed from some other farm is fed.