

Farm Manure is Most Effective Its Conservation and Use—By F. T. Shutt, D. Sc.

FARM manures constitute the cheapest and most effective of all forms of fertilizers, no matter what the character of the land. For increasing soil fertility this by any means is unequalled. It may be rightly considered as one of the most valuable assets of the farm. "The more manure the more crops, the more crops the more cattle, the more cattle the more manure." This adage tells an absolutely true and valuable explanation of the fact that mixed farming is the most rational and economical system of agriculture, the one best suited to keep up the productivity of the soil and the one under the most intelligent management most likely to give the greatest profit.

The greater part of the manure applied to the land is produced in barn, stable and pigery between autumn and spring. It is the winter's manure that the farmer mainly depends on for the corn and root crops of the rotation. How can this manure be handled that the best possible returns may be obtained from it?

First the liquid excrement (urine) must be saved. It is far richer in nitrogen and phosphorus than the valuable fertilizing constituents, than the solid excrement (dung), as the following data clearly show.

COMPOSITION OF SOLID AND LIQUID EXCRETA.

		Phosphoric		
		Nitrogen	Acid	Potash.
Horse:	Solid	1.55	.30	1.25
	Liquid	1.35	traces	1.25
Cow:	Solid	.40	.29	.19
	Liquid	1.09	traces	1.35
Pig:	Solid	.25	.50	.40
	Liquid	.40	.19	.40
Sheep:	Solid	.75	.50	.45
	Liquid	1.35	.95	2.10

Thus it will be seen that, weight for weight, the liquid manure, except in the case of the pig, contains much higher percentages of nitrogen and potash than the solid excrement. Furthermore, these elements are in an immediately available condition for crop use, which greatly enhances their value. Averaging results we find from 40 to 45 per cent. of the total nitrogen excreted by farm animals is in the liquid portion; in the case of the cow the proportion frequently exceeds 50 per cent.

Tight Floors and Gutters.

Thousands of dollars' worth of food lie beneath old barns and stables in the Dominion due to leaky floors and gutters. The first step towards saving the liquid manure is to see that the floor upon which the animal rests and the gutter behind are sound and liquid-tight. A concrete floor and gutter solves the problem in the most complete and satisfactory way, but if this is not practicable at present, put the plank flooring and gutter in the best possible state of repair. Litter cannot perform its function of absorbing the liquid if the floor and gutter are faulty.

The second step is to use sufficient litter or bedding material to take up all free liquid. Straw is the bedding material almost universally used on the farm. It will absorb from two to three times its weight of liquid. If the supply is scanty—and the past season has been a poor one for straw in many districts—it will pay to cut all the straw used as litter, for finally it will absorb about three times as much liquid as uncut. The sawdust and fine shavings can be recommended as clean and satisfactory bedding materials. Peat moss, commonly known as moss-litter (sphagnum) makes admirable bedding. Muck and peat when air-dried make excellent absorbents.

The Application of Manure.

In so far as it may be practicable the manure should be drawn daily, fresh and direct, from the barn and stable to the land. For this purpose, as long as the condition of the soil permits, it is better to use as little or no snow, use the manure-spreader (into which the manure from the carrier has been directed) and distribute at once. This practice means not only a saving in manure, but also the prevention of losses in plant food and humus-forming materials that inevitably follow the accumulation of manure in the yard or piling in the field. It means also an equable and uniform distribution on the land—a matter of great importance.

When the snow lies deep upon the ground, still draw out the manure to the fields—daily if possible—but instead of spreading pile in small heaps of 200 to 400 pounds each. Fifty heaps of 400 pounds or one hundred heaps of 200 pounds each to the acre would mean an application of 10 tons.

With the advance of spring and the disappearance of the snow or the piles of manure, now possibly elevated a foot or more on a foundation of snow, are turned over, and mixed with the soil. The advice given in this article as to the winter application of manure is based on the results of ex-

perimental work conducted chiefly at the Central Experimental Farm, Ottawa. These experiments provide the following facts:

1. That manure left in a loose pile in the yard suffered very considerable losses, chiefly through the leaching away of soluble nitrogen and potash compounds, but partly through fermentation (heating) and consequent destruction of organic matter with its nitrogen. In the course of a few weeks these losses may amount to one-third or more of the initial value of the manure.

2. That manure in large heaps or piles—whether in yard or field—heated rapidly, even in the coldest weather. In the course of three months—January to March—manure so piled lost, chiefly through excessive fermentation, 60 per cent. of its original organic matter and, nearly 90 per cent. of its nitrogen.

3. That heaps of 400 pounds each, put out on the fields fresh from the barn and stable (mixed man-

ure) at least four crops of roots and potatoes and consider the fertilizers paid me well. Besides I was able to spread the stable manure over a greater acreage.

Since the war we are unable to get anything but superphosphate and basic slag. There is some nitrate of soda to be had, but price is so high I am afraid it will not pay. In the season of 1914, I used superphosphate and basic slag on roots with good results. As the basic slag gave as good yield as superphosphate and is somewhat cheaper I decided last season to use basic slag altogether. When I got it I found it lower priced than I expected, although the price was no lower, in fact higher, and I only had a light crop, although I applied 200 weight more per acre. That was the only time that I found fertilizers not to pay. With that exception I consider the fertilizers paid me when the price of potatoes was from 25 to 30c per bushel, and if we could only get it now at reasonable price I believe it would be a great boon to P. E. I. farmers.

Ready for the Spring Rush

There should be no lost time in the field this year. Help is going to be scarce and every move should count. The forerunner farmer will see that the seed is cleaned and treated before the land is put to seed. He will also see that the implements needed are ready for work before the frost is out of the ground. Prompt seeding when the season opens is one of the essentials in securing a good crop.

Farmers are not the only ones who are going to be short of help this year. Mechanics and shop men, as well as farmers, are in demand in the army. This means that there may be delay in getting repairs when they are wanted. For this reason one should look over all of his machines during the winter season and order the extras or parts that are needed to put the machine in good working order.

In preparing for the season's work it would be well to bear in mind that it is better to have an extra part or two left over waiting than it is to lose two or three days waiting during the harvest time for repairs. In other words, order parts that are likely to break, whether they are actually broken at the time of ordering or not. This is the sort of preparedness that counts in getting early crop production.

Seed cleaning, repair ordering and putting the machines in condition for work should be the order of the day as soon as the summer's wood pile and supply of ice have been provided.—Andrew Boss.

ure) showed no sign of heating throughout the experimental run up to March. For the greater part of the period these small heaps were frozen through and careful analysis made immediately before scattering them in the spring showed that while frozen there had been absolutely no loss, either in plant food constituents or organic matter.

Experience With Commercial Fertilizer

In Prince Edward Island—By Edgar G. Geddings

I BEGAN the use of commercial fertilizers about 20 years ago, for the most part on roots and potatoes. I began with mixed fertilizer, however, a Massachusetts brand, being the first. I also used a fertilizer made in Halifax, N.S. The common practice here in growing roots is to apply about 60 one-horse loads of stable manure per acre. I found half that amount with 400 to 600 weight of fertilizer gave as good results. In applying mixed fertilizers I generally put it in the drill, leaving one or two drills without any as a check. In every case the yield was much larger than when no fertilizer was applied.

For potatoes I usually used it on summer fallow sod land, without any stable manure, and always had from fair to good yields. Later on unmixcd fertilizer was placed on the market and I used that as it cost less; I used nitrate of soda, muriate of potash, and superphosphate; applying for roots nitrate of soda 100 lbs., muriate of potash 75 lbs., superphosphate 300 lbs. For potatoes, nitrate of soda 75 lbs., muriate of potash 150 lbs., and superphosphate 300 lbs. I mixed potash and superphosphate and applied as soon as I could get land ready. The nitrate of soda I put on in two applications first, just as the crop appeared above ground, and second, about 10 days later. For roots I used it with a light coat of manure as before; for potatoes, without manure as with the mixed fertilizer. I have always had

A Jersey View of R. O. P. A Change in Regulations Not Desired

Duncan C. Bull, Brampton, Ont.

IN Farm and Dairy of January 31st is published an interview dealing with "Proposed changes in R. O. P. Standard." In the first place I believe that no breeders' association should make any change affecting the length of test or content of milk. The test is made unless the same has been placed before the other dairy breeders' associations, and meets with the approval of the majority of the breeders and testers. It seems hardly fair for one man to state that he believes a radical change should be made, and that any person that does not agree with him is actuated by selfish motives and seeks to gain some personal advantage.

Speaking for myself as a breeder and tester and on behalf of the C. J. C. C., of which I have the honor of being president, after having discussed this matter at our annual meeting, we do not believe in the proposed changes. According to the present ruling a breeder has the option of having his cows freshen again anywhere between 9 and 15 months after commencement of test. According to the proposed changes the cows must freshen within 13 months. Any person who wishes to have their cows freshen every 12 months should so mention in referring to the record of the cow that the test was made in a stated number of days and that she freshened again at such a time. In fact, every R. O. P. certificate that is issued states the number of days that the cow was in milk.

When Short Period Would be Detriment.

I would like to point out two special cases wherein the proposed changes would not work to advantage. First, that it is our belief that heifers should not have their second calf until about 18 months after they have had their first one. By milking heifers 13 or 14 months with their first calf it has a great tendency to develop them persistent milkers and thereby add great value to the cow as a dairy animal over her future years. It also gives the heifer a chance to grow and develop. Secondly, there would be many good cows that would not be able to obtain certificates if they were required to freshen again within 13 months. For example, if one wished to have their cows freshen 13 months and so breed them if the cow returned once or twice she would not be able to receive her R. O. P. certificate. This the margin upon which one would be operating would be entirely too small.

As to how much time after a cow was milked, I am of the opinion that this would have to be left to the decision of the owner of the animals as it appears that any effort to curtail a breeder's rights to feed and milk his cows according to his own judgment would not be more in his interest. For example, the Champion Jersey cow, "Sunbeam of Edgelye," produced 18,744 lbs. of milk and 926 lbs. of butter fat in a year and milked as high as 77 lbs. per day. She produced more butter than any other cow of any breed that has qualified for R. O. P. It seems hardly fair to ask this cow to produce 77 lbs. of milk per day with only two milkings as she would be uncomfortable most of the time.

A very Real Farmer.

This test was not conducted by men of the extremely wealthy class referred to in your article, but by farmers and breeders who looked after their cows themselves, and who are making their money exclusively out of farming and dairy produce. It might also be stated that this cow has made better record in a three days' competitive public dairy test than that of any other cow of any breed in the province. There are plenty of cows of other dairy breeds that would be milked as well as this. Another objection to the change would be that our "short time records" would not compare favorably with the records made to the south of us, seeing that a cow in some associations can receive an R. O. P. certificate for her year's work, even though she may never freshen again. If one listens to many of those who

have been convinced there is no advantage. At the close of war, the American Live Stock change program was unopposed by representatives of the great dairy trust, the way from Wisconsin to attempt to take his cows, persistent develop, with the number increase.

Finish It

Prof. G. C.

IN normal our beef sending is not stable to the. At the present time the world is in a state of confusion and the investigation sent to which the four of ability for h. If it becomes necessary to change up of the question we should not rest possible in the field extension our cattle.

One f. Some years secured a gain fattening steers barley and 72 than one pound of gain in we made up of hation of 1, 2 at this experiment gains they made 1½ lbs. per st. The cattle we and dressed a live weight, but superior to a to consume in out, it was quantity of m assumption.

One thing is mum amount same time, pro human con the part of wist grains in the fe the fullest exte