FARMER'S FORUM.

Devoted to and For the Use of Those Who Guide the Plough.

Cooking Hog Feed.

We have received several enquiries recently with reference to the benefits derived from cooking feed for hogs. Inasmuch as the crop of hog feed in some portions of the country is short this year, it is desirable to make the most out of that on hand. Many experiments have been made both in this country and England, in this line, to determine whether or not the value of the food was enhanced by cooking, and if so, to what extent. A number of feeders throughout the country have practiced cooking the feed for their pigs for several years, and believe it to be profitable. This class of persons is constantly increasing. When experiments have been made with pure corn meal cooked into a solid mush, the results in feeding have not been satisfory, as it became so impacted in the stomach that the natural functions of the digestive apparatus failed to operate upon it. It became wasted. When pumpkins, potatoes and other vegetables, or short cut clover hay or other hay is boiled up with it and mixed through it the greatest benefits are derived. Raspail, a writer upon the chemistry of foods, says: "Starch is not actually nutritive to man till it has been boiled or cooked. The heat of the stomach is not sufficient to burst all the grains of the feculent mass, which is subjected to the rapid action of the organ; and recent experiments prove the advantage that results from boiling the potatos and grain which are given to graminivorous animals for food, for a large porportion, when given whole, in the raw state, passes through the intestine perfectly unaffected as when swallowed. Every housewife is familiar with the fact that starch will not disolve in cold water. It follows, then, that those grains containing the largest porportion of starch will be most benefited by cooking, and these (corn, rye, oats, barley) are most used as fattening, food for pigs. Corn, especially, is considered the standard fattening food, and that contains about 64 per cent of starch; rye, 54 per cent; barley, 47 per cent; and oats, 40 per cent of starch.

When corn meal is well cooked it is something more than doubled in bulk—the bursting of the grains of starch causes it to swell and occupy twice its former space—and some feeders have considered it as valuable, bulk for bulk, as before cooking; or in other words, that its value is doubled by cooking.

Hon. George Geddes, of New York, a farmer of long experience, said: "I find if I take ten bushels of meal and wet it in cold water and feed twenty-five hogs with it they eat it well; but if I take the same quantity and cook it, it doubles the bulk, and will take the same number of hogs twice as long to eat it up, and I think they fatten twice as fast in the same length of time. By cooking you double the bulk and value of the meal."

Mr. Stewart offers a complete, comparative experiment of his own as illustrating this point. On the 1st day of October he divided six pigs, of the same litter, into two lots of three each, they being of the same weight and thrift—225 pounds each lot—placing them in seperate pens. Lot No. 1 was fed upon corn-meal, soaked about twelve hous in cold water—all they would eat—with a little early-cut clover hay thrown into the pen for them to chew, to promote health. Lot No. 2 was fed corn-meal, thoroughly cooked, and fed lukewarm, ad libitum, with a lock of clover hay. This experiment continued till the 8th of January, or 100 days. Lot I consumed 2,111 pounds of meal and gained 420 pounds; average 140 pounds each. Lot 2 consumed 2,040 pounds and gained 600 pounds; average 200 pounds each. This gives eleven pounds gain for one bushel of meal by lot No. 1; and 16.47 pounds gain for a bushel of meal by lot No. 2. Lot 1 ate on an average 7.04 pounds of meal per day, and gained 140 pounds. Lot 2 ate on an average 6.80 pounds of meal per day and gained two pounds. He has no doubt the gain would have been slightly larger in each lot if the meal had been mixed with the clover hay. He has reached with a larger lot of hogs 17.20 pounds to each bushel of cooked meal consumed, mixed, before, cooking, with a little cut clover hay. This is however, a larger average than can be counted upon in any large operation.

Mr. Joseph Sullivan, who made a thorough examination of all available statistics, summed up the evidence as follows: "conclude that nine pounds of pork from a bushel, fed on the ear, twelve pounds from raw meal, thirteen and one-half pounds of pork from boiled corn, sixteen a half pounds from cooked meal, is no more than a moderate average which the feed may expect to realize from a bushel of corn, under ordinary circumstances of weather, with dry, warm and clean feeding pens."

Leguminous Meadows.

It has been known for centuries that a crop of clover, alfalfa or other legume improves the soil for a wheat, corn or root crop. It has only recently been discovered how the legume improves the soil. It does so by adding to the soil nitrogen, taken from the atmosphere. Grasses, grain plants and root crops generally depend upon the soil for their entire supply of food. These add nothing of much value so the soil which they did not take from it before.

But legumes, while depending upon the soil for lime, phosphoric acid and potash, take nitrogen in large quantities from the atmosphere. When the roots, leaves or stems of legumes decay in the soil, or are returned to the soil in the form of stable manure or animals' droppings, the nitrogen is given up to the soil in the form of ammonia. Extra experiments have shown that one acre of alfalfa can in one years growth draw down from the atmosphere $161 worth of nitrogen. That is to say, as much nitrogen as $161 would buy in the form of nitrate of soda. The cow pea will, during four months' growth, draw down nitrogen which would cost to buy over $50. Red clover soy bean, vetches and other legumes act in the same way. The manurial value of legumes is in addition to their feeding value. By plowing under the entire growth of a leguminous crop we return at once all the mineral food—lime, phosphoric acid and potash—which the plant absorbed from the soil. We add in addition to this the nitrogen which the legume took from the air. This may be worth $50. But we lose the feeding value of the crop which for four tons of good clover or cow pea hay is about $50.

If instead of plowing under the entire growth we feed it and return the droppings of the animals, which ate the hay, we get back in the droppings about four-fifths of the plant food contained in the hay. By combining the feeding and fertilizing value we may under the theoretically most favorable circumstances make every acre of clover, cow peas or alfalfa pay from $100 to $200 annually. This may appear over stated, but it is not.

In other words, if we had to buy the feed and the fertilizer at market prices, we would have to pay for the sums just needed. In practice a farmer may waste the feeding value of the crop upon animals which neither grow nor fatten; and waste the fertilizer by allowing it to leach into some stream or pond. But this is not the fault of the theory. The best farmer is he who in practice most nearly obtains the theoretical value of his crops.

Legumes add largely to the value of the land upon which they grow and at the same time yield a great deal of value and nutritious forage. Grasses and grains add nothing to the soil upon which they grow. The forage they yield is less valuable and nutritious than that of legumes. It is, therefore, certain and reasonable that it is better and more profiable for the land owner to grow legumes than grasses or grains. Grains must, however, be grown for human consumption because the public taste and custom demands them. But there is no reason why grass, hay, oats and other animal foods should not be wholly replaced by legumes. There are many reasons why this should not be done. There is no reason but the force of habit why farmers should continue at a loss to lay down land to grass when a large profit can be made from legume meadows and pastures.

It must always be remembered that though legumes can draw abundance of nitrogen from the atmosphere, they depend wholly upon the soil for their mineral food—lime, phosphoric acid and potash. Without p'enty of mineral food the plants will be unable to draw to their fullest capacity upon the atmospheric nitrogen. The exact amount of mineral food necessary to supply any particular leguminous crop upon any particular field can be determined only by special trials upon the field and crop in question. These trials are best done by means of trial plots of 1-10 acre each. The tree mineral foods above named can be be tried upon these plots alone and in various combinations untils the most profitable combination is discovered.

In practice, however, we should not be particular about the lowe limit of plant food. The best ruis to give the plants more mineral food than they can assimilate and to repeat the dose every year. The excess fertilizer is not lost but remains stored up in the soil. When after a number of years the leguminous turf is broken up and grain or roots grown on the field all the plant food stores in the soil by previous fertilization will be recovered in the new crops. Mineral plant food is comparatively cheap Lime costs about $5 per ton. Phosphoric acid as superphosphate about $12 per ton. Potash as muriate of potash about $45 per ton.

A good general formula for all legumes is given below, but this is to be increased as many times as tons of the legumes are expected. In other words, the food given is sufficient for one ton of growth only.

Muriate of potash	80	pounds
Superphosphate	100	"
Lime	75	"

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