

Agriculture.

Feeding Value of Oats, Beans, Maize and Bran.

Every good groom knows that sound oats and beans in due proportion, and at least a year old, are the very best food for a galloping horse; the only food on which it is possible to get the very best condition out of a race horse or a hunter. It has also recently become known that horses do slow work and get fat, indeed too fat, on maize, Indian corn, which is frequently one-third cheaper than the best oats. In the East, horses are fed on barley, and it is a popular idea with English officers who have lived in Persia and Syria, that the change of food from barley to oats often, when imported, produces blindness in Arab horses. Now, although no men understand better or so well how to get blood horses into galloping condition as English grooms, they do not, and few of their masters do, know the reason why oats and beans are the best food for putting muscular flesh on a horse. The agricultural chemist steps in here, makes the matter very plain, and shows that if you want pace, Indian corn, although nominally cheaper, is not cheap at all. According to Dr. Voelcker's and other chemists' analysis we find, in round numbers, in oats, beans, barley, and maize, the following constituents:—

	Oats.	Beans.	Barley.	Maize.
Water.....	14.3	14.5	14.3	14.4
Nitrogenous or muscle-producing compounds	12.0	25.5	9.5	10.5
Starch and other non-nitrogenous heat and fat producing compounds.....	54.4	43.0	64.1	61.0
Oil, as ready-made fat..	8.0	2.0	2.5	7.0
Indigestible woody fibre	10.3	11.5	7.0	5.5
Mineral matter (ash)...	3.0	3.5	2.6	2.1

Total.....100.0 100.0 100.0 100.0
It was a common saying in Leicestershire, before deep draining, clean-cut fences, increased sheep feeding, had improved agriculture at the expense of fox hunting, after one of those five-and-forty minute runs at best pace that are now so rare:—"it found out the horse that ate old beans and best oats." In fact, they made experiments they did not understand, which it was left for the modern chemist to explain.

When we feed a bullock, a sheep, or a pig for sale, after it has passed the store stage we want to make it fat as quickly and as cheaply as possible; but with a horse for work the object is, give him muscle—in common language, hard flesh. There are times when it is profitable to make a horse fat, as, for instance, when he is going up for sale, after a severe hunting season. For this purpose an addition of about a pound and a half of oil-cake to his ordinary food has a good effect. It is especially useful when a horse that has been closely clipped or singed is in low condition. It helps on the change to the new coat by making him fat. A horse in low condition changes his coat very slowly. Now oil-cake is composed of:—

Moisture.....	12.00
Oil.....	11.50
Nitrogenous compounds.....	29.70
Mucilage and digestible fibre.....	27.80
Woody fibre.....	12.00
Mineral matter (ash).....	7.00

Total.....100.00
When from any cause there is difficulty in getting a supply of the best oats, an excellent mixture may be made of crushed maize and beans, in the proportion of two-thirds of maize and one of beans, which exactly afford the proportions of flesh-forming and fat-forming food.

Bran is a very valuable food in a stable for reducing the inflammatory effect of oats and beans. Made into flashes, it has a cooling and laxative effect, but used in excess, especially in a dry state, it is apt to form stony secretions in the bowels of the horse. Stones produced from the excessive use of bran have been taken out of horses after death weighing many pounds. When sawn through they appear to be composed of a hard crystalline mass, deposited in regular annular rings, resembling in appearance the concentric yearly rings of wood; they prove to be composed of phosphate of magnesia and ammonia. Millers' horses are particularly subject to this malady. The best way to guard against it is to add half a pint to a pint of linseed, boiled until quite soft, to the mash of each horse.—*English Live Stock Journal.*

Potatoes an Exhausting Crop.

Potatoes are by far the most exhausting crop usually sold off the farm. Turnips come next when they are sold off. Grain crops remove a comparatively small quantity of manurial constituents. These facts show the reason why, while wheat can be grown successfully year after year on suitable soil, without the return of any of the ash constituents, the same cannot be done with either potatoes or turnips. While potatoes and turnips contain much nitrogen, a nitrogenous manure is scarcely required for their growth if the soil is in good condition. The fact that green crops are so far independent of nitrogenous matter in the soil is no doubt due to their having broad leaves to take the ammonia from the air, and keep spreading roots to gather what they require through a greater mass of soil. The same remark applies to the leguminous crops—beans, peas, vetches, clover, etc. During the growth of clover, for instance, nitrogen even accumulates in the soil. So, although leguminous crops contain much nitrogen, nitrogenous light manures are found in practice, not to be required. On the other hand, an application of phosphoric acid sulphuric acid and lime, which can cheaply be applied as a mineral superphosphate, generally produces a most marked effect.—*PROF. STEWART in North British Agriculturist.*

Harvesting Mangold Wurzels.

The harvesting and storing of mangold wurzels is among the most important of farm operations. When a crop shows signs of flagging leaves, either from lack of nourishment or from the attack of fungi, or both, it is as well to put them together as soon as may be convenient; but with regard to those which are still vigorous when frost begins, it will be well to watch the glass and other weather signs, as a few degrees of frost for one or two nights will not greatly injure the crop; and indeed we have harvested mangold as late as November, which had been visited by frosts so severe as to cause considerable alarm for its safety. If mangolds be harvested in dry days, succeeded by frosty nights, we make a point of commencing to pull until all frost has been removed from the plants, and then not to take up more than what can be conveniently carried before night sets in, as the leaving of roots exposed flat on the ground on a frosty night may cause premature rotteness. If, however, they cannot be carried, it will be well to protect them by spreading the leaves over the roots, either as they lie in rows or in gathered-up heaps.

Our mode of harvesting is to pull them up and place in ranks wide enough apart to allow of the passage of a horse and cart between the ranks, and as they all lie side by side the leaves are cut off with a short hook, or a broken hook does well for the purpose. Here, however, great caution should be used. The work people always cut them too close; in fact, they too often cut off the leaves in one bunch, thus taking with them a portion of the crowns. We therefore watch this part of the work with great care, and give directions that nearly all the life-stock (petiole) be left on; and, indeed, we are not particular as to leaving whole leaves here and there, as when the roots are caved the leaves soon dry up and act as a convenient packing to the roots.

We find, too, that dirt on the roots soon dries up, so that we are not over-particular to shake all this off before storing; at the same time we confess to a preference for yellow intermediate mangold, on account of its very smooth outline and few rootlets, because it can be pulled with half the labor of the coarser sorts, and will come up so free from dirt that the knocking together to shake off the dirt on pulling up is rendered unnecessary. This should be avoided, as it is apt to bruise the skin and so do mischief; and when these are used they scarcely require cleaning at all, or, if so, it will be of the very slightest kind. In stacking, the first point for consideration will be a convenient site for the ready utilization of the crop. This fixed upon, we choose the least exposed position; if in the field, the leeward side—"in the lew"—is chosen; if in a yard, out of the way of cutting winds. Anyhow, too near a public road should be avoided, as they are liable to be stolen at night by some carter or other person with a conveyance—"they are so useful for horse or cow or pig."

We usually place a few roots near the stable expressly for the horses, and when we have decided upon all the conflicting points of position, a cave is commenced—that is, a heap which we make about four feet at the base, on the bare ground (we do not like pitting, as the bottom of pits may become

wet). The roots are neatly stacked in a triangular form, at an angle of about 40 degrees, and this is added to for any convenient length.

As the work is carried on the stack is lightly covered with loose straw to keep out the frost, and the thatching should be carried on as soon as possible. Our thatch for this crop consists of yealmed wheat straw from the threshing machine, or we may use a thatch that has been previously employed on the corn or hay ricks. We never stint in thatch, as when well applied we think it the best protection to the mangold heap. Some of our farming friends prefer to cover over this crop with a plaster of clay; but if this be efficient to keep out the wet, it will scarcely admit of ventilation from the heap. Thatch, on the contrary, keeps out wet, keeps out cold and keeps in warmth, allowing at the same time free ventilation from below. We have always trusted to the thatching alone for protection, and must say that we are never plagued with any extent of rotten roots. We feel convinced that, if stored and protected as we have indicated, this valuable crop may be preserved in the best possible condition.—*London Field.*

Yard Manure.

Every farmer has the materials on his own farm to enrich it. How shall he apply them? How make his compost heaps? I answer, with his yard manure, and the soil mixed with it; and in the room of ashes or lime to make it decompose, give me hogs' noses. Writers may talk about their chemical or mineral agents, but for me give me hogs. Yes, keep hogs. Keep them in your manure cellars, and throw in your coarse materials; their noses will sooner decompose a soil than all the nostrils of the chemist. Hogs will work better than Irishmen, whose trade it is to spade and toss up the earth. Hogs will work seven days in the week, while you must be pretty lucky to find a human laborer who will serve you faithfully through six. If a farmer has a dozen head of cattle he may make 50 cords or 200 loads of excellent manure every year. From, say the first of July to September, he must occasionally haul in other materials. Persons living near the city may buy manures, but those living some 10 miles away cannot afford to haul it to their farms. I, for one, would not want to haul it, for I make just as good for less than half what it would cost me in Boston. Some farmers with 40 head of cattle, I am sorry to say, make less manure than others with but seven head. But I could not advise any of my friends to follow the example of the farmer with the 40 head. My advice to all is, keep cattle; make your hogs work—no labor is cheaper than hog labor, and none brings a better return.—*Massachusetts Ploughman.*

Lime for Weevil.

A correspondent of the *Country Gentleman* writes as follows:

Some years ago, hearing complaint of weevil in wheat about the close of harvest when I was rick my wheat, I got fresh slaked lime and threw it over the rick in building it, laying two courses of sheaves, then lime sufficient to whiten the stack. There was no weevil in my wheat. A neighbor who threshed his wheat from the shock came to me a few days after and said he should lose his wheat, for it was alive with weevil. I told him to throw lime over it, and shovel it through his wheat, which he did. Two days after there was not a weevil to be seen in it.

Our farmers will do well to remember the above and try it. As a precautionary means it should be tried in every stack, and can as well be tried in the cleaned wheat. An intelligent gentleman has informed us that twenty-five years ago, when the brewers in New York had large quantities of barley on hand, they found that the grain put up in large bins was almost safe from the weevil; the little creatures worked a little in the top of the bins, but did not extend down much; besides a dust accumulated where they worked and destroyed them in a few days.

The largest farm in England consists of 3,000 acres, and belongs to a man named Samuel Jones. In its cultivation he follows the "four course" system, the whole extent of the farm being divided into four great crops: 750 acres to wheat; 750 to barley and oats; 750 to seeds, beans, peas, etc.; 750 to roots. His live stock is valued as follows: Sheep, \$35,000; horses, \$15,000; bullocks, \$12,000; pigs, \$2,500. The oil-cake and corn purchased annually amount to \$20,000, and artificial fertilizers about \$8,000.