

contact. A contraction of the soil soon follows and cracks are formed, beginning at the drain and extending laterally and vertically, which admit the percolation of water and conduct it to the drain. When the soil is thus brought into a state which allows the water readily to pass through it, the former difficulties of its running together and baking are obviated, the soil remains open and friable, and plants are protected against extremes of wet and drought. It is a fact that plants suffer less from drought on a friable soil than on a compact one, as may be seen by a comparison of crops on clay and loam. This results from two causes: the roots of plants have more scope in a loose soil and are thus enabled to draw support from a greater source. A mellow soil is also most moist in time of drought, pulverization favouring the ascent of moisture from below as well as its absorption from the atmosphere. A heap of moulding sand will seldom dry except to a little depth, while hard clay in the same situation will become almost destitute of moisture. And it is now a proposition regarded among the best English and Scotch farmers as completely established, that drained land is not only better in wet seasons, but in dry seasons also.

E. B.

Broadcast and Drill-Sowing.

THE following is part of a discussion on the comparative merits of broadcast and drill-sowing of grain, which took place at a recent quarterly meeting of the Morayshire Farmers' Club, as reported in *The Farmer*, (Scottish) of May 20th, 1868.

"The Chairman said it was proposed that they should have some little discussion on the merits or demerits of drill-sowing compared with broadcast sowing; and he might initiate the discussion by stating his own experience and opinion. He had had a drill-sower in use for several years, and he thought it particularly well adapted for the generality of soils in Morayshire, and especially so for the farm of Spynie. In light soils the drill-sower deposited the seed equally and at a uniform depth. The braid comes up very regularly, and so equally distributed that for himself he was satisfied it was of great advantage to use the drill machine, provided they got a good implement. The one he used was made by Mr. Ben. Reid, Aberdeen. They made some little blunders at first, and even the second year, by making little bits of slips when turning the machine; but since then they had had the work most excellently done. There was a great saving of seed—about a bushel per acre. He thought they might calculate upon the same return after saving a bushel of seed upon what they would use with broadcast sowing.

"Mr. Walker, of Altyre, said he had no experience in drill-sowing, but he should like to hear the difference in seed and crop from the two systems. There was said to be a very considerable saving of seed, but he should like to hear the time and labour occupied by the drill-sower, so that they could know what actually was the profit of working it, and whether, by sowing thinner the crop is much heavier or lighter than it would be otherwise. Those who have experience might give them information on this point.

"Mr. Harris, Earnhill, said that for the last four years he had sown his wheat with a drill machine eight feet broad, and with the rods four inches asunder. He had gradually decreased the quantity of seed, and he must say his crop had as gradually increased in weight and quality. He had never used the drill for spring corn, for which he did not think it was of so much advantage, because it certainly took a long time to sow the drill, and whatever way they put down spring corn, it would grow. The seed took only a short time to germinate, and the land was so late in being prepared after turnips that there was really no time to lose. As to the time taken in sowing, that depended upon the machine. If the frame measured from seven to ten feet they could sow from ten to twelve acres a day with a pair of horses, though that was certainly heavy work for the animals. He thought, however, that the time lost with the drill was thoroughly compensated for by the saving of seed effected. Before he got the drill-machine he used to give from three and a-half to four bushels of seed per acre. This year he sowed wheat with two bushels per acre. He thought he had made a great mistake when he saw the braid rising, and too much black land appearing to the sight; but that morning he walked through the field, and however the crop might turn out, he did not think it would fail for want of plants. There was one thing to take into consideration in sowing ten or twelve acres a day with the drill machine—namely, that they were conducting three operations at once. They were depositing the seed, they were packing the land, and at the same time saving a harrowing; so that he did not know that the labour would be found to be greater than by sowing with a broadcast machine or in any other manner, while certainly the saving of seed was considerable.

"Mr. Patterson, Mulben, said his practice for the last eight or nine years had been to sow with a broadcast machine, but last year on the farm of Lennox, in Dallas, he introduced a one-horse drill-sower, made by Mr. Benjamin Reid, Aberdeen. There were about three or four acres of very steep land, which the men sowed with the hand, and in which they put down six bushels to the acre. The rest of the field, about the same in breadth, was sown by the drill, and only got three bushels to the acre. Three very practical men asked his leave to go into the field and examine the two crops, and they reported to him that the part sown by the drill with three bushels of seed was a better crop, more equally grown, and thicker than the other. He had gone on with the drill this year, and so far as he could see it was an advantage. He had not, however, as yet adopted the drill machine at Mulben.

"Mr. Walker—You say the land sown by the hand was steep, but was the quality of the land equal in both cases?

"Mr. Paterson—The part sown by the hand was a much better sort than the other part. He did not thrash out the crops separately and measure them; he only took an estimate of them by the eye. The gentlemen who took the trouble to go over the field, however, were also perfectly satisfied that the difference in the crop was in favour of the part sown by the machine.

"Mr. Garden. Grangegreen, said he had sown his corn with the drill machine this year only, and he was very much pleased with the braid that was coming up. The machine saved about a bushel an acre of seed, but unless the crop turned out satisfactory he would not give much consideration to that. The drill certainly involved very much more labour, but still, with a little activity, they could get over that. He sowed about sixteen acres a day with different relays of horses. He put a man to manage the steering machine, and also a man to walk behind to see that the machine wrought properly. This supervision was very necessary to see that the work was well done, because he would not on any account have his fields sown in the way he saw some done by the drill machine.

"Mr. Yool, Coullart Bank, said he had used a drill machine for eight years, having got it from East Lothian. It had eight inches between the coulters. He had made no rigid experiments to ascertain whether the broadcast or drill-sowing was most profitable, or made the greatest returns; but, judging from the appearance on fair good land in good condition, he had no hesitation in saying that the eight-inch drill had been satisfactory and amply remunerative. On very light land he thought eight inches was too great a distance for the drills to be apart. They could not make the seed cover the land where the soil was light, but where there was good land they could cover it. There was certainly a saving of one bushel per acre on the seed. He did not think that the labour was very much more; and he quite agreed with Mr. Harris that the drill-sower accomplishes one or two other operations. It consolidated the land and saved harrowing. If they could get the drill machine, with a frame attached to the back containing a grass-sower, as he believed they had in Aberdeen, it would be a great saving. The grass being deposited at the same time as the grain, would save an after broadcast sowing with a machine or by hand. He intended to get next year a machine with a narrow drill for his light land. He had a very good example of the advantage of sowing with the drill on a field verging on a piece of blowing sand. He drilled the good land, and sowed the light land broadcast. Two or three days afterwards, a very strong breeze set in, and very soon the broadcast sown seed was left bare; while on the drill-sown part immediately verging upon it there was not so much as a single seed visible on the surface, and on scraping away the earth to the depth of about half an inch the braid was found coming on finely. If the part where the seed was blown had been drilled with a narrow drill, it would have been all saved. He had no doubt that much of the seed thus exposed would never germinate, for it was just beginning to spring when several dry days came, which, together with the exposure, would prevent it germinating. He found with drill-sowing that though the corn did lodge, it did not go down so flat as it would do if sown broadcast. The root had a firmer hold on the ground, and though the crop was blown over, it did not lie so closely at the root as to let it lodge compactly on the ground, and prevent it from ripening. That was a very considerable advantage on a farm with a quantity of good land. He thought it would be very desirable that some members should make rigid experiments on as good land as could be got. Impressions from merely looking at the crops were all very well, but until they got the thing measured and weighed they could not be sure. He might say that he sowed spring corn as well as wheat in the autumn with the drill, and he thought it was a great advantage in both cases."

Cultivation of the Beet for Sugar.

A French literary *savant*, M. Merais, lately presented to the Academy of Sciences of Paris, a paper on the cultivation of the beet for sugar, which propounds a theory worthy to be labelled "important if true." Moreover there is great probability that it is true, for it seems reasonable. The leading features of this scientific theory are given as follows in *The Grocer*:

"The results at which M. Merais arrives are, that if in the choice of seed plants care be taken to reproduce those roots which are richest in sugar, the result will be the production of a radical type somewhat concave in form, with large hollow neck, carrying several heads; such in fact are the characteristics which distinguish the variety obtained under such conditions by M. Louis Vilmorin. But if such roots possess the grand advantage of richness in sugar, they have the grave inconvenience of yielding but a poor weight per acre, and also of striking many lateral roots, which are equally inconvenient for cultivation and sugar-making. If, on the other hand, those beets are chosen for seed which are roundest, heaviest, and have the fewest roots, which is the common practice of farmers in order to obtain as heavy a crop as possible, the result will be the finest roots to look at and the poorest in sugar.

"The grand object, says M. Merais, in order to improve the beet with a view both to the culture and the manufacture, is to obtain at the lowest cost possible the maximum of extractible sugar per acre, and for this purpose it is necessary to study carefully all the conditions of the case:—1. The richness of the roots in sugar. 2. The weight of the crop per acre. 3. The purity of the juice, and especially the quantity of foreign salts which the roots contain. 4. The proportions of pulp to juice, taking into account the modes of extraction. 5. The convenience of cultivation and manufacture. It is very probable that in pursuing this course we may arrive at a type of beet intermediate between that which has great tap roots and that which has scarcely more than a few threads, and also perhaps at an average form of root, such as the conical or slightly bulging form."

Salt as a Manure.

A CORRESPONDENT sends in the following clipping from a local paper, with a request that we would give it a wider circulation by inserting it in the CANADA FARMER. The communication is addressed to the *Goderich Signal*, and is as follows:—

Thinking the following extracts from Mr. Johnston's book of lectures on Agricultural Chemistry would be beneficial to the Farmers of Huron, by showing them experiments which have been actually tried in the old country—I send you them. Mr. Johnston says:—The use of salt as a manure has been long recommended; it is still extensively and profitably applied to the land. Some of the most carefully observed results which have hitherto been published are contained in the following table:—

Locality & Grower.	Produce per acre.		Quantity per acre and kind of soil.
	Unsalted.	Salted.	
Essex; G. Sinclair, Upon Wheat.....	16½ bushels	22¼ bus	11 after Barley.
	11½ "	21 "	5½ " Beans.
	16 "	17¾ "	Sown with seed after Peas.
	12 "	28½ "	5½ applied after sowing—after turnips.
Suffolk; Wm. Ransom on Barley....	30 "	51 "	16.
Near Richmond, at Aska Hall. on hay.	2 tons. cwt.	3 12 "	8, on thin light soil, with clay sub-soil.
	2 10 "	2 12 "	5, light soil on gr'l.

Now, there are certain localities in which we can say beforehand that salt is likely to be abundant in the soil. Such are the lands that lie along the sea coast, or which are exposed to the action of prevailing sea winds. Over such districts the spray of the sea is constantly borne by the winds, and strewed upon the land, or is lifted high in the air, from which it descends afterwards in the rain. (Dr. Madden has calculated that the quantity of rain which falls at Penicuik in a year brings down upon each acre more than six hundred pounds of salt.) This consideration, therefore, affords us the important practical rule with regard to the application of salt as a manure, viz:—that it is most likely to be beneficial in spots which are remote from the sea, or are sheltered from the prevailing sea winds.

THOS. WEATHERALD.

Goderich, June 4, 1868.