THE CANADA FARMER

VOL. XI. No. IV. (NEW SERIES) | TORONTO, CANADA, FEBRUARY 16, 1874. | $1.50 PER ANNUM. SINGLE COPIES 5 CTS.

The Field.

Experiments in Barley-Growing.

In ordinary farm practice, there can be no question that a well-managed rotation of crops is the best system to adopt. It has however, been often and thoroughly demonstrated, that the same crop may be raised year after year, provided a sufficient quantity of plant-food is regularly and constantly supplied It has also been proved, that quite a respectable yield may be maintained on unmanured land, when thorough tillage and scrupulously clean culture are given The soil kept porous and open to the sun and air, none of its strength wasted in growing weeds, is productive up to and even beyond the average of common farming.

Messrs. Lawes and Gilbert, prominent English agriculturists, have devoted a large amount of time and money to experiments designed to ascertain the relative productiveness of manured and unmanured land, and also the comparative efficacy of barn-yard and other fertilizers. Their tables of results as to wheat-growing, are well-known, and of great value They have recently made public the results of twenty years' experiments in raising barley continuously on the same land. Twenty-eight separate plots of ground have been treated in the same manner, year after year, for twenty years, and drilled with barley. Two of the plots have not been manured at all during the term, the remainder have been treated with applications of farm-yard manure and various commercial and mineral fertilizers. All the manurial matter put into the soil, and all the products harvested from it, have been carefully weighed, and much of it analyzed. The results may be briefly summarized as follows :—

The two plots cultivated and sown without manure have produced on an average of twenty years, 21 bushels of barley, weighing 52 lbs to the bushel, and 12 cwt. of straw There has been no falling off either in the weight or quality of the grain, since the beginning of the experimental term. A similar course of wheat-growing on unmanured land, gave an average of 16 bushels of grain, and 14 cwts of straw, during twenty-eight consecutive years.

Twenty bushels of soil and turf ashes, harrowed in annually with the barley, gave returns very little better than those obtained from the unmanured plots.

A yearly dressing of barn yard manure at the rate of 14 tons to the acre, increased the average yield for the twenty years to 43¼ bushels of grain, and 25¼ cwt. of straw. The yield was proportionately greater during the second term of ten years than during the first, showing a gain in respect to the fertility of the soil, resulting from a constant application of this old-fashioned fertilizer. The manure applied has been three times the weight of the extra grain and straw harvested. On this department of the experiments, the *North British Agriculturist* makes a few observations well worthy of note.

"Reiterated trials appear to indicate that of 200 lbs. weight per acre of nitrogen, furnished by good farm-yard manure, only one-seventh part is appropriated by the wheat, and one-ninth by the barley. Although certain mixtures of artificial manures, such as nitrate of soda and superphosphate, produced on an average of years a heavier produce than the farm yard dung, the older fashioned fertiliser has several special properties. Its nitrogen and other constituents are in a less available condition, and hence gradually accumulate in the soil. From determinations made the nitrogenous matters are doubled. They are not so readily run off in the drains as the corresponding ingredients of ammoniacal salts and nitrate of soda. The soil fairly well dunged, besides its increased percentage of organic matter, has much greater powers of absorption. Without injury, and probably with advantage, this porosity enables it, sponge-like, to hold much more wet than unmanured or artificially manured land. Messrs. Lawes and Gilbert found that while the pipe drains from every one of the other plots in the experimental wheat field ran freely perhaps four or five or more times annually, the drain from the dunged plot seldom runs at all more than once a year, and in some seasons not at all. * * * Stated briefly, it was found that the dunged soil when saturated retained within 12 inches from the surface, an excess of water which would be equivalent to about 1¼ inch of rain more than that held to the same depth on the unmanured and the artificially manured plots in the same field. Land well dunged becomes less dependent on seasons, and its storehouse of moisture is especially serviceable in a time of protracted drouth."

An annual dressing of rape cake brought an average of 45 bushels of grain.

Mineral manures consisting of salts of potash, soda and magnesia, yielded meagre returns A mixture of sulphate of potash, 200 lbs. with 100 lbs. each of sulphate of soda and magnesia, applied annually during the twenty years, produced scarcely two bushels more of grain, on the average, more than the unmanured plots, and less than ½ a cwt. more straw.

Superphosphates alone in annual doses of 3½ cwts had but slight effect. The average yield was only 4½ bushels of grain and 1½ cwt of straw more than the unmanured plots, and it lessened rather than improved during the second decade of the experimental term

Another quotation or two from the *North British Agriculturist* may be appropriately introduced here.—"One of the chief practical lessons of these admirable experiments is the high manurial value of available nitrogen. Indeed, nitrogen within the soil may be regarded as the great condition of fertility, In all ordinary subjects there appears to be a fair store of mineral matters. Even phosphates are seldom entirely exhausted; but nitrogen in a condition suitable for plant growth is the grand desideratum The barley experiments abundantly prove this. One hundred pounds each of ammonia sulphate and muriate, maintained during twenty consecutive crops a good return of 33½ bushels of grain, at 52 lbs. per bushel, and of 28½ cwts. of straw and chaff : 275 lbs. nitrate of soda, from the condition and solubility of the nitrogen, proves even more productive than the ammonia salts, and gives fully 37 bushels of barley and 22 cwts. of straw and chaff. But still better returns are obtainable. None of the experimental plots stood superior to that which received 275 lbs. nitrate of soda and 3½ cwts. of superphosphate. Here was reaped on an average of the twenty years 49 bushels of barley and 32½ cwts. of straw and chaff. The nitrate and superphosphate together supplied in readily available form the several constituents requisite for a large barley crop, the soil, of course, providing purely mineral materials in continuous supplies for the twenty consecutive crops. Here is an increase of 20 bushels of grain and 15½ cwts of straw beyond what is grown on the unmanured plots

Referring to the practicability of raising heavy crops of cereals year after year from the same soil, provided the supply of requisite nutriment is kept up, our able and judicious contemporary says :—

"Such top-dressings give a better return for barley and oats than for wheat ; when used in spring than in autumn ; when applied whilst the crops are already growing and ready at once to appropriate it, rather than during the dead season, and whilst plant vitality languishes. Where liberal dressings are used they should moreover be put on at several different times.

"An average of about 40 per cent. of ammonia in most manures is recovered by plants About one-half is made available by barley and oats but only one-third by wheat. According to this the top-dressing of wheat is scarcely so economical as that of barley or of oats."

There is much food for thought in the foregoing facts. They make a startling disclosure as to the enormous waste entailed by the growth of weeds It would seem that pretty much all the fertility given by manure to land farmed in the common slovenly manner, is consumed by weeds ; for the average got by Messrs Lawes & Gibbot on their unmanured plots, is quite up to that obtained by the generality of Canadian and American farmers. On this point, a correspondent of the *Country Gentleman* says :—

"I have seen an estimate, and I have no doubt it is a correct one, that all the weeds grown on farms in the Union would fill a close line of waggons a ton each, around the whole circumference of the world ; and that the rag-weeds alone which grow after harvest in the State of Ohio and Indiana, would fill a similar line two thousand miles long. These two are not worse than some other States. Now, suppose instead growing worse than useless weeds, all the strength of the soil were expended in raising good clover and timothy hay, worth on an average ten dollars a ton ; how much money would those long lines of waggons loaded with weeds bring the owners of the land? The two thousand miles of Ohio and Indiana rag-weeds, calling them 300 to a mile, would be 600,000 tons, worth six million dollars' The 25,000 miles of United States weeds would be 7,500,000 tons, worth seventy-five million dollars ! all wasted, and worse than wasted every year, by our hard-working, penny-saving, liberty-loving people of these States. I have seen a farmer who would go to law for a disputed strip of land one foot wide next his neighbor's farm and in the very first twenty-acre field allowed at least five tons of rank thistles to grow without hindrance. Now, let's figure a little on these thistles The five tons, if good hay, would be worth fifty dollars ; and fifty dollars wasted every year through forty years of farming, or from thirty to seventy years of age—would be quite a snug sum. At seven per cent. it would amount to $9,980—enough to buy a good farm in many places."