## THE FARMER'S ADVOCATE.

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prospects of a rise in land values owing to an increase of population. Thus interest must be low. However, as in the present condition of our agricultural affairs, the prospects are towards a decline, caused partly by reaction from specula-

tive prices and partly by reaction non operative tive prices and partly from decreased fertility of the soil. These facts have prevented mortgagors, whose mortgages are of long standing, from obtaining value for the money borrowed at high rates of interest, and as the keen competition with other countries in our leading markets forbids bright prospects for the future, the losses may be regarded as permanent, not only for those farmers who mortgaged their farms; but also for those who paid cash for the land purchased.

This solution applies to the majority of cases, mortgages having been given for the purchase of more land, but many mortgages have been given for money borrowed for permanent improvements, in which cases skilful and bushness-like farmers have usually received satisfactory returns. We do not consider it a pertinent question to discuss mortgages given by reckless farmers who muddle their business in every transaction, and, out of the generosity of their hearts, pay too much for everything they buy.

We have been at a loss to understand why the writers on this subject have spoken of farm mortgages instead of farm debts, especially when the reference is to the condition of the farmer. The only difference between mortgage debts and those contracted by other securities is in the degree of the security. In many lines of business a distinction might be drawn between mortgages and other securities; but as most farmers pay all their debts, the word debt, instead of mortgage, should be used in discussing the condition of our farmers.

Having given the subject our serious consideration, we have come to the following conclusions concerning the condition of our farmers:

1. In their eagerness for more land for themselves or their families, farms rose to speculative prices, and the system of extensive farming was thus largely followed, thereby causing a double loss, one arising from the speculative prices of land, and the other arising from the wasteful

## Potato Tests on our Experiment Grounds—Fertilizers and Methods of Planting Tested.

In our last issue we gave the analyses of the principal fertilizers applied to our experimental plot, and we now give the results of our experiments with the potatoes to which these fertilizers were applied, including the quantities of the fertilizers per acre. It will be seen by the table that the yield was not large, caused by the great drought which occurred during the most important season of the growth, a result also being that the percentage of small potatoes was large.

TABLE SHOWING THE YIELD OF POTATOES PER ACRE AND THE QUANTITIES OF FERTILIZERS APPLED :

			· · ·			
* 1000	Fertilizer.	Pounds per acre.	Fertilizer.	Pounds per acre.	Total yield in bush. per acre.	Percent of small.
	No manure Farmyard " Gen'l Fertil'r. Wheat bran Wheat bran Wheat bran Wheat bran Ground bone. Apatite Ground bone. Apatite Witrate soda. *S. ammonia. *S. ammonia. *S. armonia. *B. s'ph'ate. Ground bone. Bone black No manure Bone black	20000 580 1875 1875 1875 1875 1875 551 331 1000 400 400 114 429  482	(top dressed). and gypsum. and ashes (top dressed). and ashes and ashes and ashes and ashes planted 2½ in. deep planted 4 in. deep		154 130 161.6 152 167.5 162 158.6 179 155.8 140 126.6 155.8 140 126.6 151.5 162 152.8 140 126.6 151.5 162 152.8 152.6 152.6 152.5 148.6 172.5 148.6	21 44 27.2 22.8 28.5 16.8 27.5 20.7 20 20 31.2 31 28.1 30 24.1 23 24.2 25.0 21.4 28.2 16.4 28.1 20 24.2 24.2 26.6 21.4 22.5 26.6 20 24.2 24.2 25.6 20 24.5 26.6 20 24.5 20 24.5 20 24.5 20 20 20 20 20 20 20 20 20 20 20 20 20
	Bone black *Ground ap'e *Mur. potash *Sul. potash *Ground ap'e. Bone black Ground bone.	482 400 400 169 215 1333 400 482 666	and salt and salt and salt *& sul. potash *& sul. potash *& sul. potash	400 400 400  215 215 215 215	135 148 149.5 188.6 178.6 176.6 186 171.3 178	39.8 27.2 29 31.0 34 22.1 29.2 19 25
	No manure		seed uncut, 18 in. apart seed cut, 18 in. apart seed, 12 bush. per acre seed. 20 bush.		136 141.6 84 95	19 21.4 20.5
			· · · · · · · · · · · · · · · · · · ·		10.10	

and the figures given are the averages of the two plots. Although the soil was as even as was possible to obtain, yet there were slight variations in the yields of the duplicated plots, so that there may be a difference of four or five bushels per acre which may not be attributed to the action of the fertilizers.

Barnyard manure and humus being both rich in nitrogen, it will be seen, in comparing plots 1 and 2, that the farmyard manure produced injurious results, but the difference was no doubt partly caused by the fact that the manure was somewhat coarse, and, when cultivated into the soil, injured its mechanical texture. Compare also plots 13 and 14, and it will be seen that the nitrogenous fertilizers used on these plots also produced injurious results, undoubtedly because the soil was already too rich in nitrogen. The general fertilizers (plots 3 and 4) produced good results, although they contained some nitrogen in addition to the phosphoric acid and potash. It is a striking fact that the so-called fertilizers which are commonly used by farmers, viz., gypsum (landplaster) and salt have produced ineffectual, if not injurious results. (Compare plots 5, 12, 23, 24, 25 and 26.) There are some good reasons for these effects, the main one being that the season was very dry, and then it must be remembered that gypsum and salt possess the property of dissolving mineral plant food, especially potash salts, and carrying them down into the lower strata of the soil, which might have been done by the rains of the early part of the season, and as our soil is shallow, having only 8 or 9 inches of organic matter on the surface, with a sandy subsoil, it is quite probable that the fertilizers applied with the salt and plaster were carried down below the reach of the potato roots. In previous experiments on a clayey soil, we obtained better results from planting the potatoes 6 inches than 4 inches deep, but plot 21 shows the best results from shallow planting with the hoe, the other trenches having been dug about 4 inches deep with the spade. This fact also convinces us that the salt and plaster proved unsatisfactory by carrying the other salts down too deep. Lime with superphosphate (plot 20) naturally produced unsatisfactory results, because the lime united with the phosphoric acid and made it insoluble. Otherwise lime (plot 6) has produced good results by aiding to decompose the organic matter.

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system of extensive farming. The latter loss has been prevented by farmers who mortgaged their farms for permanent improvements, the intensive system of farming being the more profitable of the two methods. 2. The lack of organization or combined effort on the part of our farmers, permitting themselves to be despoiled on every hand by rings, corporations, monopolies and other organized forces; the accumulation of an immense public debt, and all sorts of profitless political expenditures, many of them being nominally for the advancement of agriculture. 3. The devotion of farmers to profitless political issues, and the neglect of agricultural studies. whereby they suffer loss by every agricultural boom that sweeps over the land.

Unless these grave obstacles, or a majority of them, are removed, the degradation of our farmers will continue, and an irremediable state of misery and suffering will be their fate.

ANOTHER INSECT PEST.—It is stated that another agricultural pest, the "ribbon-footed corn fly," has made its appearance in East Yorkshire, England, and several fields near Hunsley have been badly affected to the extent of fully onethird of the produce. It has also been found in large quantities at South Dalton.

	seed, 57 bush.	176 6 17.7
Gen. fertilizer 58	seed, 12 bush.	110.0
-	per acre	105.8 17.6
Gen. fertilizer 5	18 in. apart	240 14.6

\* EXPLANATION OF ABBREVIATIONS.- Ap'e = apatite. M. s'ph'ate = mineral superphosphate. B. s'ph'ate = bone superphosphate. S. ammonia = sulphate of ammonia. Sul. potash = sulphate of potash. Mur. potash = muriate of potash.

The variety used was the White Star, and the quantity of seed planted per acre, except where otherwise stated, was 30 bushels.

What we desired specially to emphasize and prove was the folly of applying barnyard manure to a soil rich in humus (decomposed vegetable matter). Barnyard manure and humus are practically the same thing, and when the former is applied a manure is used which the soil already contains in too great abundance. Bran is also a form of vegetable matter, but its superiority as a fertilizer lies in the fact that it contains a large percentage of mineral constituents. On all vegetable soils, mineral fertilizers, such as bone, ashes, superphosphates, and potash salts, should only be applied, but small percentages of nitrogen sometimes also produce favorable results. Although these facts are already well known, they have been proved by the foregoing experiments. A number of the plots were planted in duplicate

Phosphoric acid alone (plots 16, 17, 18 and 19) have produced very satisfactory results, except the latter, but in connection with potash (plot 9) it has succeeded better, although in plot 10 the ashes seem to have had little effect in dissolving the insoluble apatite. We can scarcely account for the lime producing such injurious results in plot 11; probably the dry season and the lack of fertilizing salts in the soil may have had something to do with it.

All the potash fertilizers (plots 27, 28 and 29), used alone, have produced excellent results, showing clearly the soil is very deficient in potash; and phosphoric acid and potash (plots 30, 31 and 32) have done splendidly together. 10

It did not require an expert to find out that phosphoric acid and potash were the fertilizers which our soil most needed, and we were convinced of this fact from the very first, but we desired to apply other fertilizers to demonstrate to our readers the futility of applying manures or fertilizers to land without study and caution. However, there are some soils which we could