AGRICULTURE

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CHEMICAL PROBLEMS.

Soil Fertility a Fundamental Question

The question of soil fertility is a fundamental one and is of far more importance than is commonly supposed. The department of agricultural extension of the Iowa State College believes that one or more of the following topics should occupy a prominent place upon the program of every Farmers' Institute in the State of Iowa:

1. Methods of maintaining the fertility of Iowa soils.
2. Plant food—What is it, where it comes from, and where it goes.
3. Farm manures—How best preserved and applied.
4. Crop rotation—What it can and cannot accomplish.
5. Soil drainage and the problems arising after the land is drained.
6. Preparation of the seed-bed and methods of cultivation.
7. Soil experiments in Iowa; the lessons which they teach Iowa farmers.

Population is increasing rapidly and every acre must feed more people. There are no longer vast areas of fertile prairie which the government can open up at a few cents per acre, which will in a few years and with but little expenditure become exceedingly productive and valuable. "Westward the course of empire takes its way" was a good motto for our forefathers, but it is useless for us. Not only ourselves, but our children and our children's children must obtain their livelihood from the soil which we now cultivate. They cannot become wealthy by rapid increase in the value of land as has been the case with the average well-to-do farmer of the present day. Now is the crucial time in the agriculture of Iowa. The eastern states are already compelled to expend millions of dollars every year for plant-food and unless a radical change is made from the wasteful practices now employed in Iowa the day of commercial fertilizers is nearer at hand than we think. The soils of Iowa are new and have been under cultivation but comparatively few years. For centuries Nature has been storing up fertility in these soils for the use of man. But, notwithstanding their great native fertility, it cannot be too strongly emphasized that wasteful methods may in a few years greatly reduce the productive capacity of Iowa soils, for there is no soil so fertile that its producing power cannot be rapidly decreased by wasteful methods. This fact is so clearly shown by the history of older states a little further east that its truth cannot be questioned. In Ohio, Indiana and Illinois, large portions of which are covered with glacial drift, in many respects resembling the glacial drift which forms a large area of Iowa, vast sums are now expended annually for commercial fertilizers. The twelfth census estimates that in 1899 Ohio spent $2,695,470 for commercial fertilizers; Indiana spent $1,553,710; and Illinois spent $830,660. Later data is not available, but it is known that the amount expended has increased rapidly during the past seven years. Thus, we see that in Illinois, our nearest neighbor, the commercial fertilizer man has gained a strong foothold and is even now knocking at the door of our own state.

A ton of the average soil of Iowa contains less than four pounds of actual fertility or plant food. The remainder is simply waste material and cannot be used by plants as food.

When this fertility has once been exhausted, remember that it is gone forever and will not return to our soil except as it is purchased in one form or another, mostly as high priced commercial fertilizers. It is either commercial fertilizers for Iowa in the future or else there must be more clover, more stock, better care of manure and a more systematic rotation of crops. There is no escape from these facts. Which shall it be? Let us not become merely soil robbers. Let each of us now while it is not yet too late adopt those methods which will enable us to turn our farms over to our children not less but more productive than when we received them; then also let us do what we can to establish the better methods in the whole community.

The value, preservation and application of farm manures deserve special emphasis. There is probably no material on the farms of Iowa whose