

Written for this Paper.

THE FUTURE FARM.

VII.

INTENSE FARMING.

NOTE 1. The meaning of intense farming is: On the same extent of land, and with the same amount of labor and expenditure, to produce the most valuable yield in crop; and which, according to experience and science, it is possible to bring forth from a given acreage of land.

Prosperous commonwealths are built up by the prosperity of their population. And the root to welfare lays in the richness of the returns from labor. The greater the fruits are of life-sustaining power that the same amount of labor will produce, the greater is the prosperity of the people and the nation. And as we calculate to prove, in this the last chapter of "The Future Farm," that intense farming, eventually, will solve the problem (together with a corresponding advancement in physical and chemical sciences) of ideal state prosperity and national welfare, as a Republic, and according to the spirit of our glorious Constitution.

This short article on intense farming is not calculated to set forth now to execute intense farming, but only to present its outlines.

We have in the preceding chapter, intended to prove (how successful the reader may judge) that permanency of republics necessitates an equal practical and intelligent ability in all branches of wealth-earners (laborers) and that only laborers are or can be legitimate citizens of a Republic, and therefore the necessary intelligence and practice to execute the most advanced farming is in harmony with the necessary general intelligence requisite for citizens of our Republic.

NOTE 2.—INTENSIFICATION OF OUR FARMING INDUSTRY.—The best farming we are not acquainted with, because we have not reached it, but it is, may be, faintly foreshadowed in the promising analyses of modern science, as also the increasing data of intelligent experience, open to view more and more, the unlimited field for improvements, through applied science.

By the best farming we know of today we mean the most remunerative. It is also the most satisfactory to cultivate minds. Through the blessing of God it will improve the country and make it more healthy, beautify and shape it in a character approximate to our faint ideas of paradise.

Developments of the sciences, and their practices, particularly in the last century, make it possible at the present time to arrive at a higher productiveness of the soil than perhaps ever known before. And if we are able correctly to read the providential discoveries of latter times, in science and mechanism, we would most likely also be able to see that the most ample and fitting preparations have been made for a more perfect agriculture to be built up in this era, than we were acquainted with from the past.

At the present time we should not rest satisfied with anything less than ideal farming, built up upon true science and practice, both in farming, gardening, architecture, zoology, hygiene, esthetics, etc.

We are well aware that to some ex-

tent it requires scientific men, more than empiric farmers, to prosecute unsolved scientific problems in farming, but in consideration of the thousands of young people now educated and trained at our agricultural colleges, universities etc., there is a most hopeful prospect for a speedy advancement from empiric to rational scientific farming; and it is a significant and encouraging feature the great number of young people that already have been and are now trained under the tuition of our most advanced professors in agricultural science.

NOTE 3. It is a well known fact in botany that to favor plant life, the soil must contain 1. depth, 2. looseness, 3. nourishment, 4. heat, and 5. moisture, most congenial to the kind of plant production wanted.

To conclude with we will therefore, very briefly, consider certain conditions, as above mentioned, for intense farming.

1. **Depth of soil.**—The penetrating power of roots into the soil, of cereals and fodder plants (lucerne, esparsette, and a few other kinds expected) such as belong to farming products generally, is not much over 24 inches. Wherever possible by a favorable underground it can be plowed and cultivated to that depth, it is presumable (until thoroughly tried and concluded on at our experimental stations) to be the proper depth.

2. **Looseness of the soil, and nourishment in it.** Irrigation, by leading the water on the land, to furnish necessary moisture for vegetation, has a tendency to bake and harden the soil more than rain does, if organic matter (except entire sandy) is not sufficiently contained in the soil to withstand the contraction in drying. In order to obtain this necessary consistency, by properly mixing the soil with organic etc., (both physical and chemical) matter, is necessary in order not alone to make it 1. loose enough to be favorable to the growing of roots; but also to be 2. rich enough for the most fruitful vegetation; also 3. to secure approximate evenness in temperature; and 4. moisture; and finally (there are still other considerations) 5. greatest retaining power of moisture, effecting measurably arrest of evaporation. Altogether this will be of the most costly and improving features towards more remunerative and perfect farming. It will probably more than double the present cost of land while it is sure to enrich it several hundred per cent. How much percentage of organic matter, and how much chemical effect, if any, it will require to reach this high character of soil will be an exceedingly interesting problem to solve by our western agricultural experiment stations. But in doubling the cost of land, it is certain it will more than treble its producing value.

3. **Nourishment or strength of soil.**—Necessarily, in improving the physical qualities of the soil by adding organic matter, for the object of retaining that looseness most favorable for vegetation, the chemical conditions for the same purpose should also be imparted. We will not risk to forestall the future outcome of this very interesting and most important national problem. But we are certain that these proposed intensive improvements carried out with practical economy will give an average interest on cost, enough to make a good living for a family, on from ten to fifteen acres.

Always providing that plutocracy does not rule over the nation; that the equilibrium of true values be re-established, and honest government prevail in our Republic. We expect it to be of great economic value that particular accent be put on the prosecution of solving this agricultural problem, at our western experiment stations; and that liberal appropriations be provided for answering these important questions. We have reason to look for the greatest agricultural achievements of our experiment stations, in our era, in a true solution of these all important subjects.

4. **Heat.** Another point in intense farming is the preservation of, as much as possible, an even temperature in the soil during the growing time. It is as yet uncertain to what extent are the effects of expansion and contraction of the soil, on the tender roots, caused by variation in temperature, but empirically it is considered to be very injurious. It is a fact that by drill culture and surface cultivation the most remunerative crops are produced. The pulverized condition of the cultivated surface, between the drills, being a less effective leader of heat and cold, may partly account for the very favorable results of drill culture and surface cultivation. It is most likely that for various reasons, and particularly in connection with irrigation of the farm, that this mode of agriculture will prevail with the future farm as one of the main levers in intense farming. We recommend, as a most important economic question to be answered by our experiment station: If it would be profitable, together with intense farming, to supply the ground, when needed, with artificial heat, during growing time? And, if it can be made remunerative, then, in what way to do it?

5. **Moisture.**—Since farming with irrigation was introduced on the Western slope, mountain streams and rivers became of great value. And through experience and increase of population the application of irrigation on the growing crops has more and more increased the value of these streams, until now our well populated valleys cause us to study up, and practically try, to what extent irrigating water can be economized. It is by this time a certainty that old-fashioned farming loses more than half the water used by evaporation, giving only a small amount of its benefit to the crop while evaporating. Shallow plowing, light crops, and only a small amount, if any, of organic matter in the soil, causing the surface (more so on clay land) easy to harden or bake together; such contraction, through drying sun heat, altogether facilitating evaporation. By the above hinted at improvements in farming, it is most probable that the same amount of irrigation water will be made from three to four times more profitable, both by arresting a great deal of evaporation and open for cultivation more than twice the amount of farming land now irrigated with the same streams.

It may also be of importance for the experiment stations to solve the problem: If underground irrigation, through piping or otherwise, can be made profitable? as there are known features connected with this question, seemingly, of importance in agricultural economy.

CONCLUSION ON THE FUTURE FARM.

NOTE 4. In the above few hints in