

Helping Solve Farm Problems

The Place of the Agricultural College in the Solution of the Field Problems on the Farm

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Success in every walk of life depends upon the ability of the man to solve the many problems that he finds confronting him in his endeavor to make his life work more beneficial to himself and all mankind. The farmer is no exception to this rule, but is different to the men in other vocations in that he has a greater number of problems to contend with. They may be divided into three classes: Social, economic, and production.

Sometimes we hear the farmers as a class criticized because they do not organize and solve their economic problems as successfully as the commercial classes in the towns and cities. This criticism is very unjust, because these people have only economic problems to consider and can, therefore, concentrate on their solution, while the farmer must grapple with his social and production problems as well. The economic and social difficulties are those that are met with outside of the farm itself, and, therefore, concern not so much the individual as the community. The solution of these difficulties will depend upon: First, co-operative or community movements among farmers, and second, the co-operation of the community with the government and rural leaders. The production problems, on the other hand, are individual difficulties that are met with on each single farm. The solution of these will require experimentation, and this is expensive. Agriculturalists, therefore, conceived the idea of having the government conduct farms or stations for the purpose of determining the solution of the more general problems in production. The results of these experiments are then given to the farmer, and he is re-



Variety test of fodder corn at the Manitoba Agricultural College

fertility of the soil, and (4) how to reduce or maintain the cost of production.

When the virgin soil is first put under cultivation there is not much more to be desired in regard to yield, quality of the grain, fertility of the soil and cheapness of production, so that the problem in the newer districts is to maintain the standard rather than improve. In the older districts the yield in many places is so low that some farmers even contemplate abandoning the farm. This lowness of yield may be brought about by noxious weeds or impoverished conditions of the soil. The quality is also very inferior; the fertility of the soil could not be worse and the cost of production is so great that no profits, and quite frequent losses, are obtained, so that if farming is to be continued in these districts the yield per acre must be increased, the quality improved, the fertility of the soil increased and the cost of production reduced. The solution of these difficulties depends upon the ability of the farmer to control or accommodate his farming to suit in the following six factors: Weather or climate, soil, crops, weeds, plant diseases, and insects, etc.

That the weather plays a large part in the control of crop production is proven by the magnificent crop we had last year, and that the farmer has no control over the weather is shown by the fact we have not a crop similar to this every year, so that in this it is not a case of the farmer controlling the weather, but accommodating his crops and cultivation to suit the climate. In reference to crop production the weather may be considered from two standpoints: Temperature and rainfall.

Early Maturity the Aim

The temperature of the air presents its biggest problem in this country in overcoming the danger from fall frosts, and the injury from hot winds during the ripening period. The solution will not be sought in endeavoring to prevent the frosts or hot winds, but upon selecting crops and giving cultivation to offset these adverse conditions. The Field Husbandry department is endeavoring to assist here by producing varieties of crops that will mature sufficiently early to prevent freezing and at the same time will be resistant to the effect of the hot winds. That much can be accomplished along this line has been amply demonstrated by our experimental farms in producing Marquis wheat. This wheat has all the desirable characteristics of

our standard Red Fife, but combines with it the ability to mature from a week to ten days earlier, which often means a crop free from frost and sometimes a crop sufficiently mature when the hot winds come in the latter part of July that no damage is done. This is not true of all crops, however. Corn last year was badly frozen, but on the experimental plots two new selections ripened and produced comparatively good grain. Then, again, we are endeavoring to determine the methods of cultivation that will hasten maturity and overcome the difficulty met with at blossoming and ripening time. In this connection it is interesting to note that we have found that packing the soil has hastened maturity from three to four days.

The temperature of the soil is not similar to the temperature of the air, but presents a problem that is nearly as important. It is interesting to note that certain crops will germinate when the soil is at a much lower temperature than others. A striking example of this is found between wheat and corn, the former will germinate at a minimum temperature of about 40 deg. F., while the latter requires over 50 deg. F., so that the first problem we have to consider is the determination of the temperature at which different crops will make their quickest germination, and then endeavor to discover the average temperature of the soil at different periods during seeding time. This work is being checked up by sowing the different crops at different dates, and at the end of five years the most suitable date will have been ascertained. We are also endeavoring to discover the effect the different methods of cultivation and



Harvesting the field plots

lieved of the expense. This makes the solving of these difficulties cheaper to the community, because there is only the cost of conducting one test where there would have to be thousands if it were done individually. It does not, as might be thought, destroy the individuality of the man, because only the underlying principles can be discovered at the station, and the individual will have to exert his own initiative in applying them to the local conditions on his farm. The problems in production may be roughly divided into four classes: Animal production, dairy production, horticultural production and crop production.

As a field husbandman I can only discuss the problems that are met with in the field in the production of crops. From my own experience as a farmer in Manitoba, my conversation with farmers in the different parts of the province and my correspondence with farmers all over the West, I have come to the conclusion that the field problems are innumerable.

Four Problems of Production

An analysis, however, will show that there are only four main problems, and in the solution of these the innumerable minor problems are met. The four main problems are: (1) How to increase or maintain the yield per acre; (2) how to improve or maintain the quality of the crop; (3) how to increase or maintain the



Showing effect of superphosphate on corn

manuring have upon the soil temperature. When this information is all collected and compiled it should assist in solving some of the problems in regard to the proper time to sow crops and the proper method of cultivation to induce early germination.

The moisture or annual rainfall varies considerably in different districts, but in most places throughout the West it is not sufficient for the needs of any crop if we allow a large loss thru evaporation, so that the problem in regard to moisture is largely one of conservation. In this connection we are endeavoring to discover the methods of cultivation that will conserve the largest amount, thus in summer-fallowing alone we are trying out about twenty to twenty-five different methods with this object in view. We find that fallow plowed in June contains considerably more moisture than that plowed in July. The next method by which we attack this problem is in the selection of crops that are suited to dry climates. At the present time we have not got a pasture crop that will produce equal to the pasture crops in the East where they have a more abundant rainfall; therefore we are endeavoring to discover or produce by hybridization both grasses and clovers that are more suited to Manitoba climatic conditions. At the present time our agronomist has a cross between alfalfa and sweet clover

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Bird's-eye view of the field husbandry field in which the carbon tests are made