

And there are those—almost as ignorant of the principles of agricultural science as those just referred to—who argue that if fertilizers are a source of available plant food, all that is necessary is to apply them generously and we must obtain increased crop yields. There is an element of truth in both view points, but taken as working hypotheses both are false and wrong. We are endeavouring to give our farmers information respecting the functions, uses and limitations of fertilizers from a sane and scientific standpoint. Fertilizers are no panacea to remedy the evils of poor farming, but they can be so used as to increase the farmer's profits. The advocacy in this war-time campaign, of a large and practically indiscriminate employment as urged by some well meaning persons, would I am sure be fraught with failure and loss.

We begin, then, this study of the profitable use of fertilizers by a consideration of the factors that limit crop growth, other than that of available plant food. First, are the conditions that are under our control so favourable that the fertilizer can perform its function of nourishing the crop? The nature and physical condition of the soil, its moisture-holding capacity (dependent on texture and humus content), its degree of aeration, its drainage, etc., are to be considered. Next, the seasonal conditions of the district likely to prevail are to be taken into account, the distribution of rain, the temperature, the hours of sunshine, etc. The probability is that over the larger part of the Dominion seasonal conditions are the most potent of all the determinative factors in crop yields.

And, lastly, there is the nature of the crop, its special requirements, its inherited capacity for growth and reproduction. All these factors have an important bearing on the scheme of fertilization, profoundly modifying the influence and effect of fertilizers. We cannot now stay to elaborate these factors, but one or two illustrations may be given to emphasize their rôle and importance. Remembering that the soil must be a comfortable habitat for the crop's root system, well aerated, moist and mellow, what opportunity has a fertilizer to play its part successfully in nourishing the crop in a stiff, heavy, plastic, undrained clay? Or, again, if the light and sandy soil, deficient in humus, dries up with a few days' drought, how can fertilizers feed the crop, for plants can only absorb their soil plant food in a soluble form? If there is danger of early autumnal frost, the fertilizing scheme must be towards hastening the ripening of the crop. And, lastly, if we are sowing a variety of oats the prolificness of which is measured by say, forty bushels per acre, can we make it yield sixty bushels by simply feeding the crop? Thus, soil, season and seed must all receive attention if the fertilizer application is to be rational and with a fair expectation of profits.