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HOW TO GET RICH LANDS

III.—Climatic and Other Natural Conditions Affecting Southern Soil Fertility

By TAIT BUTLER

IF WE would have rich lands we must reckon with those climatic influences which tend to deplete soils, as well as with those which enable us to economically increase soil fertility.

We have seen that climatic agencies like rainfall, the movement of water, winds, freezing, etc., are important forces in soil-making. According as they operate or are used, they may tend to soil destruction or to soil improvement. That they are chiefly destructive in the South when left to operate without interference from man is well shown by our large areas of washed and gullied lands and by the fact that even our virgin uplands, or those which do not receive the washings from other lands, are generally poor and non-productive.

Make Our Climate Help

IT IS the duty of the Southern farmer to utilize or bring to his aid those climatic conditions which will enable him to build up his soils and increase their production; but it is none the less his duty and even more important that he counteract or reduce, as far as possible, those climatic forces which tend to lessen or deplete his soil fertility.

We must first study carefully those climatic conditions which tend to reduce soil fertility and strive to lessen their effects, and then take careful stock of those climatic conditions which will aid us in soil building. A failure to do these two things, or even to appreciate their basic importance, is, in the opinion of the writer, the chief reason for our low average crop yields. Not even the leaders in agricultural teaching and practice have seemed to fully appreciate the force and importance of climatic influences in soil depletion.

A long growing season means a long period of nitrification, or a long period during which nitrogen is being made soluble in the soil. Our long periods of warm weather mean long periods during which conditions are favorable for the setting free of plant foods. If crops are growing on the land during these long periods the results are constructive. Plant foods are being formed into crops, which is the highest aim of the farmer, but if crops are not growing during these periods the results are destructive; that is, the heavy rainfall which we have operates to leach out and wash away the plant foods which are set free.

Our heavy rainfall, when the land is properly drained and occupied by a growing crop, is a constructive factor in soil building; that is, it is favorable to the production of crops; but when the land is not well drained or is bare of a useful crop it is a destructive force or tends to deplete soil fertility.

The lack of freezing and the absence of a covering of snow may be a constructive climatic advantage when the mild weather of our late fall and winter is used for the growing of a legume crop for the gathering of nitrogen, but this same lack of freezing weather may be a destructive influence if the lands are left bare and allowed to wash and leach away.

The pulverization of the soil which results from severe freezing is a positive and mighty force for setting free plant foods, which the South enjoys only to a limited extent; but the little freezing we have, if assisted by the powers of growing plant roots to set free plant foods, may easily make up for the lack of severe frosts to pulverize our soils. The power of plant roots to dissolve, take up and hold plant foods is well shown by the benefits resulting from the growing

and turning under of a crop like rye, for instance, which adds no plant foods to the soil.

The two most potent forces of a climatic nature affecting soil fertility in the South are our average high temperatures and heavy rainfall. The first mean the rapid decay of organic matter and the setting free of plant foods, and the second means the leaching and washing away of these available plant foods and the soil itself when it is left bare and unprotected by a growing crop of some sort.

Not only does our heavy rainfall, added to our warm weather, mean the leaching out of soluble plant foods, but it also means the actual washing away of our soils in large and destructive quantities.

If we could once appreciate the full meaning of the facts, that those climatic conditions which are peculiar to the South and tend to deplete and destroy our soils are the very climatic conditions required for the economical improvement of these soils, the South would soon double her present low crop yields. We have but to take advantage of those climatic conditions which permit of late fall, winter and early spring growing cover crops to double our average yields in five to ten years; but until we do take advantage of these climatic conditions they will continue to be the chief means by which our soils are being destroyed.

Other Agencies in Soil-building

NATURAL forces in soil building other than those of a climatic nature, have also operated to affect the fertility of Southern soils. The large amount of Coastal Plain or sandy soils means a proportionate amount of land of low soil fertility. Sandy soils are generally deficient in the plant foods, nitrogen, phosphorus, potassium and "lime." They hold water poorly and consequently hold plant foods poorly. The soil particles are large, compared with those of other soils, and consequently such mineral plant foods as the original rock from which they are formed contained are not easily dissolved and made available for feeding crops.

Located as we are largely in the newer and lower sections, we have large areas which need drainage, and this need is increased by our heavy rainfall. There are also areas of these low lands which are peaty or made up largely of large accumulations of organic matter in which rapid decomposition has been arrested. Drainage and lime, in which it is deficient are required to start anew the necessary decomposition. Potassium is also frequently deficient in these soils. Our soils because of their origin as well as from the heavy rainfall and leaching are also generally deficient in lime. Lime is an important factor in soil fertility, not so much as a plant food as in bringing about suitable conditions for the growing of grasses and legumes. Legumes which gather nitrogen from the air and sod-forming grasses are nature's soil builders. The conditions under which our soils were formed, the climatic influences and the farming methods practiced have combined to give us soils generally deficient in plant foods, but these same climatic conditions under better farming practices are the splendid assets which the South will some day learn to use. She will use them just as soon as she appreciates their full value and when she does a mighty and far-reaching change will take place, not alone in our agricultural practices but also in our rural life and development.

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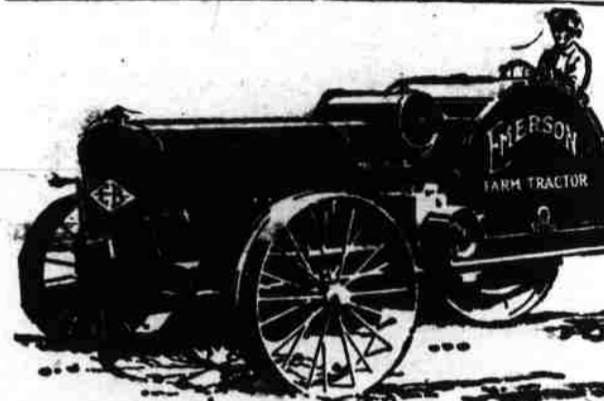
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