

# \$500 More a Year Farming: How to Get It

## BY UNDERSTANDING THE PART WATER PLAYS IN CROP GROWING.

By Tait Butler.

**F**EW PEOPLE truly and fully appreciate the part which water plays in crop production. In certain sections of light rainfall the water problems are limited to those involved in supplying a sufficient quantity to meet the requirements of the plants; but in the South, where the rainfall is usually abundant and frequently excessive, other and equally difficult problems are encountered in preventing an excess of water remaining in the soil to the detriment of the growing crops. Our problems are two-fold in that, while we frequently have an excess of water on all except well drained lands, we also very frequently suffer from insufficient moisture in the soil to meet the full needs of the growing crops.

The season of 1909 gave a good example of our two-fold problem. Early in the season the excess of water reached such an extreme as to nearly ruin the crops in many sections; but later in the season practically all crops suffered because of a lack of sufficient moisture. At the outset, however, it may be well to offer the opinion that our rainfall is sufficiently abundant and equitably distributed to meet the needs of large crop production, when such means for its control, as are within the reach of the intelligent farmer, are properly used for that purpose.

### Handling an Excess of Water.

The problems which confront the Southern farmer because of our large rainfall are many. The first one generally considered is the proper removal of the excess of moisture from the soil, but when this is done great progress has also been made towards solving the other water problems which confront us.

It is a well known fact that most farm crops suffer severely when water stands over the surface of the land for more than a few hours and it is universally conceded that such lands need draining, but even the prompt removal of this visible surface water does not necessarily mean proper drainage. To follow this matter a little further, it may be stated that an excess of free water in any part of the soil into which the roots of crops penetrate is also injurious to these crops.

Each soil particle, however dry the land may naturally become, is surrounded by a film of moisture. When this moisture becomes so reduced, or this film becomes so thin, that the roots of the growing plants can no longer obtain their needed supply of water, the crops suffer; but on the other hand, free water, which fills up those spaces between the soil particles into which the roots penetrate, has much the same effect, except in degree, as water covering the top surface of the soil. In many soils, therefore, under-draining is as important as surface drainage and this holds true for all soils under which the subsoil is of such a nature as to prevent the excess of water, or free water, promptly draining out of that portion of the soil penetrated by the feeding roots of our farm crops.

### Why Too Much Water Means Poor Crops.

The air cannot enter freely into any soil in which the spaces are spaces between the soil particles are

filled with water and this is probably the chief reason why farm crops do not thrive on such soils; but there are many other reasons why such soils are not productive. It is a well-known fact that soil fertility is largely a question of bacterial activity. Loose soils filled with decaying organic matter maintain a large and varied bacterial life and these are fertile soils; but when farm crops will not grow on land because the spaces between the soil particles are filled with free water other plants, such as bacteria, are also likely to find conditions unsuitable for their growth and work; and yet, this germ life in the soil is essential as a means of breaking down and making soluble the plant foods in the soil. Too much water kills a soil by killing bacterial life.

These are important problems, but the removal of surface water and the under-draining of our soils are not the solution of all our excess-water problems. The manner in which this excess of water is removed is of scarcely less importance. The heavy rainfalls during both winter and summer, when crops are growing and when the land is bare, are the cause of rapid decay of organic nitrogen compounds and the means of leaching large quantities of nitrogen from the soil. This loss of nitrogen by leaching is added to through the same heavy rainfalls by the washing away of our soils and plant foods from all rolling lands.

Not only must we drain our lands, but we must also reduce leaching and washing to a minimum, and these combined make the question of controlling our excess of moisture one of the greatest problems confronting the Southern farmer.

### Our Crops Should Not Suffer From Lack of Moisture.

No lands which are properly drained and contain humus to support the needed bacterial, or germ life, should suffer for lack of moisture, with a well distributed annual rainfall of from 50 to 60 inches, and yet it is the land which suffers most from excess of moisture in wet weather that usually suffers most from lack of moisture in dry weather.

To prevent crops suffering for lack of moisture we must have well-drained soils. Not alone those on which surface water is not allowed to stand, but also those properly under-drained. If these conditions do not naturally exist because of the lay of the land and the nature of the subsoil, they must be brought about by man. The soils must also be well-filled with humus so that they will hold large quantities of water and permit water to pass freely downward by gravitation and upward by capillary action. They must also be deeply broken and receive shallow cultivation; but we leave a further discussion of the direct relation of water supply to the production of crops to be discussed in the next article of this series.

### GOVERNMENT "CULTURAL METHODS."

Simply Methods Advocated by The Progressive Farmer and Gazette and Other Agricultural Workers.

We are in frequent receipt of inquiries asking to be informed of the government methods of cultivating

cotton and corn as carried out in the Farm Demonstration Work being conducted by the United States Department of Agriculture under the direction of Dr. S. A. Knapp. In answer to these inquiries we may state that the "government cultural methods" are simply those methods which have been advocated or taught by The Progressive Farmer and Gazette and other teachers and leaders in agricultural matters for the past fifteen years. The methods of cultivating cotton and corn which have been editorially advocated in this paper during the past year are the cultural methods advocated and used by the government. Any man who has read the best agricultural papers and Experiment Station Bulletins during the past, is entirely familiar with the best methods of cultivating crops now known to the agricultural world and these are the methods which the government demonstration agents are using to the best of their ability to induce farmers to adopt.

The present condition of our agriculture is not so much due to a lack of knowledge among the farmers as to indifference and a non-progressive conservatism on the part of those tilling the soil.

The best methods of cultivation are known by a majority of our farmers, but they do not believe in these strongly enough to cause them to break away from the old easy one-horse plow and the purchase of soil

fertility ready-made for easy application.

Those who think the demonstration work is going to bring them a new and easy way of making large crops or enable them to get something for nothing are doomed to disappointment. This demonstration work is one of the best ideas that has been developed in agricultural education work in this country, but neither the idea, nor the methods used, are new. They have not been devised or invented by Dr. Knapp; but the work is exerting a wonderful influence for the extension of better methods and must receive the full and active support of all working for or interested in the advancement of agricultural interests. It carries to the farms themselves, to the soil, the methods advocated by the agricultural press and all agricultural teachers of standing in the South for the last ten or fifteen years.

We hope the work may be extended to every section of the South as rapidly as possible, but no one need wait for the arrival of the government agent to put in operation the so-called government "Cultural methods." Follow those methods advised by this paper, by the Bulletins of the United States Department of Agriculture and the Experiment Station of your State and you will be using the approved Government Cultural Methods.

*"It should be placed by the States in every public school in the land and every boy and girl should be required to read it."*

## So Writes One Enthusiastic Georgia Reader Concerning "A Southerner in Europe"

By CLARENCE POE

Associate Editor and Manager The Progressive Farmer and Gazette

And thousands of other readers re-echo the sentiment. One reader wants permission to reprint the chapters in his county paper; a prominent teacher is using it as a text-book; one reader says: "It's the only book of travels ever written for the farmer and his family." A few other typical new comments are given herewith.

### What the Whole South Says About the Book:

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#### MARYLAND

*Baltimore American:* "It is a book not only of readable and interesting travel sketches, but even more notable as a vigorous and thought-provoking review of the needs and opportunities of our Southern people as seen in the light of Old World conditions."

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