

CROP PRODUCTION

BY

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SOIL CULTIVATION.

We cultivate our fields and sow our seed to produce crops. The quality and quantity of our yields depend upon the strength and rapidity of the growth made by the crop. The requirements of strong, rapid plant growth are (1) Moisture, (2) Warmth, (3) Plant Food.

Let us briefly consider these requirements and the extent to which they may be controlled or influenced by the farmer through cultural or other farming operations.

MOISTURE.

The moisture supply depends primarily on precipitation. Precipitation, or rainfall, is, however, not controllable. It is necessary, therefore, to so handle soils as to enable them to conserve or retain the moisture received until required for crop production.

Drainage a Factor in Moisture Conservation.—Several factors influence moisture conservation in soils. Of these, good drainage is probably the most important. Well drained soils are free from the danger of baking or puddling; that is, they are friable and loose on the surface, so preventing evaporation. Well drained soils being free from hydrostatic or free water to a considerable depth are in shape to absorb rain as it falls and preserve it in the form of capillary or hygroscopic water. It is only as capillary or hygroscopic water that moisture can be retained for any length of time in the soil in dry weather, hence good drainage is an absolute necessity where moisture conservation is a matter of importance, just as it is an indispensable condition where seasons are short or rainfall very great in order to carry off the surplus water and allow air to enter the earth to reach plant roots and raise the soil temperature.

Ploughing and Cultivating as Methods of Controlling Soil Moisture.—Shallow ploughing and deep cultivation are, after drainage, probably the most important influences making for moisture conservation. Shallow ploughing by keeping the humus near the surface greatly increases the moisture-holding power of that, the most important soil layer. Deep cultivation by stirring the lower stratum of soil helps disintegrate the stiff and probably water-logged upper subsoil, and so very greatly increases the amount of capillary water readily available near the surface layer for crop requirements.

Surface Cultivation Conserves Moisture.—No matter what the condition of the surface soil and upper subsoil as influenced by ploughing and subsoil stirring, no matter how well drained the lower subsoil, if no precaution be taken to prevent evaporation, a very large amount of moisture is sure to be carried off from the surface by every faintest breeze and weakest sun ray. To prevent this, the maintenance of a soil mulch on such surfaces as are exposed to the moving air or direct sunshine is a necessary precaution. A soil mulch may

DOMINION EXPERIMENTAL FARMS

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