

## HOW TO GET RICH LANDS

VIII.—Lessons Learned From the Four Preceding Articles

By E. L. MOSS

IN THE four preceding articles of this series we have dealt particularly with the problem of drainage and its relation to soil productivity, dealing especially with the relation of water to crop yields, the need for draining wet lands, how we lose by our soils washing and leaching, and how to make terraces to keep our rolling cultivated lands from washing away. Here let us glance backward for a moment and impress anew some of the more important points brought out.

### Water a Vital Factor in Crop Production

IN THE first place, we have seen how water is a vital necessity if plants are to live and grow. Of the total weight of growing crops, a very large percentage is water, which, taken up from the soil by the tiny roots, carries with it food to all parts of the plant. Without this water in the soil, and in the soil in the proper form and quantity, plants soon starve, since they are totally unable to take their food except in a liquid form. They are "soup-eaters,"—they must have their food served in liquid, not solid form.

Now soil water may occur in two forms, namely, as free water and as capillary or film water. By free water we mean the water that will rise in a hole dug in very wet ground. Water in this form occurring near the surface for any considerable period during the crop growing season is harmful to the plants and may dwarf or entirely prevent their growth, since it excludes from the plant roots the air that is necessary. Thus in a water-logged soil, however rich it may be in plant food elements, crops are actually suffocated and die for want of air. Capillary moisture, on the other hand, is the moisture held as a thin film around the tiny soil particles, and it is in this form that water is taken up and used by plants.

### How Drainage Helps

BECAUSE of our relatively heavy rainfall, we have in the South many acres needing drainage before they will produce profitable crops. In addition, there are many thousands of acres which, while producing fair crops, could be made much more productive by adequate drainage.

In draining farm lands, the object is to remove the free water in the soil or at least lower its level to a point where it will not interfere with the development of the root system of the crop grown. Tile drainage, because of its permanence and the fact that no land is wasted, is the best kind of drainage to use, though the initial cost is generally higher than for any other system. Any farmer contemplating putting in tile drains should get in touch with his state experiment station and the United States Department of Agriculture and ask for full information and assistance.

Open ditches, while not nearly so satisfactory as tile, will help greatly in rendering productive much of our at present waste lands. In digging these the aim should be to get a broad, shallow V-shaped ditch, rather than one with straight sides and the banks higher than the land surrounding. The V-shaped ditch has the advantage of allowing of the utilization of all the land, furnishes no harbor for harmful weeds, bushes and insects, and also allows the passage of implements and machinery.

### Washing and Leaching

WASHING means the actual carrying away of the soil particles by water, along with any plant food elements they contain. Unquestionably in soil washing or erosion we have

one of the most serious leaks in Southern agriculture. With a heavy annual rainfall and much of it coming in torrential downpours, coupled with the general growing of clean culture crops, it is not strange that on our rolling lands very serious washing has often occurred.

To stop this washing is the very first step in maintaining and increasing soil fertility, and, in turn, on soil fertility we must base all our efforts for a sound and prosperous agriculture. It is well to buy fertilizers and use them, well to grow summer and winter legumes; but so long as we do these things and continue to let our lands wash away, we will at best be only marking time. It will be trying to fill a barrel at the bung with the head knocked out.

Cover crops winter and summer, deeper plowing and terraces of the

right kind must all be used if our rolling lands are to be saved. A few there are who hold that cover crops and deep plowing are sufficient and that terraces are unnecessary; but successful farmers who have had experience on the rolling lands of the middle and lower South know that this is not so,—know that whatever else they may do, unless their rolling cultivated lands are terraced they will wash and wash seriously.

There is only one kind of terrace to use, and that is a broad embankment, 16 to 20 feet wide and 18 to 24 inches high, with the side slopes so gentle that the terrace does not hinder cultivation or the passage of any kind of improved farm machinery. Terraces of this kind, unlike the old-fashioned narrow kind, enable us to use every foot of land in the field, since rows are laid off on and parallel to the terrace. In fact, usually the best corn and cotton in the field are found growing on the terrace embankments.

Leaching is different from washing in that the soil water percolating through the soil and subsoil carries with it plant food elements. Leaching is of course worst on lands having a

very open, porous subsoil. It can be in part prevented by applying nitrogenous fertilizers only when the crop is ready to use them, and by growing cover crops both winter and summer.

### Eggs for Hatching

EGGS selected for hatching should weigh not less than two ounces nor more than two and one fourth ounces each.

Eggs selected for incubation should have clean, smooth, strong shells which are free from ridges, cracks, transparent spots or lime deposits.

Where all of the eggs considered are of the same variety, there is a definite correlation between the size of the egg incubated, the size of the chick when hatched and the size of the chick from 10 to 20 weeks old.

Eggs selected for hatching should be of a true type. Exceptionally long eggs and very short, rounded eggs are equally objectionable. Malformed eggs should never be incubated. These eggs are usually difficult to hatch. White eggs and brown eggs should not be incubated together.—Ohio Agriculture College.

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Moldboard has a long, slow turn which pulverizes the soil to best advantage.

In sod, it does not break up the furrow slice but laps the furrow sufficiently to bury green vegetation in loose soil, preventing further growth and hastening decay.

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### John Deere Combined Cotton and Corn Planters

John Deere Cotton and Corn Planters are highly successful. They have been thoroughly

tested out through years of satisfactory field use. A cotton picker wheel extends through the bottom of the hopper. This wheel revolves in one direction and the cotton spider in the other—separating the seed without damaging it. Change in quantity is made by turning a thumb nut on the hopper.

Hoppers are beaded. Seed plates fit perfectly. All the seed in the hopper is planted. Peanut plates or a special hopper can be furnished for planting shelled or unshelled peanuts.



Cotton seed cannot choke up in the hopper—a cotton picker wheel prevents it.

John Deere OBLIQUE SELECTION, HORIZONTAL CELL DELIVERY SEED PLATE for corn—an accurate drop.

Positive gear drive with dirt-proof gear case.

Special shaped shovel with reversible points opens furrow and pulverizes the soil without throwing it up on the face of the shovel. Soil falls behind and covers the seed.

Adjustable press wheel can be furnished. No lever used on this press wheel.

Depth of planting can be regulated with the foot while planter is in motion.



### John Deere Model "B" Disc Harrow

Using a disc harrow before plowing pulverizes surface lumps, works trash into the seed bed and prevents

the escape of moisture. Then when the furrow slice is turned, the trash decays rapidly and no large air spaces are left between bottom of furrow and the turned furrow slice. Water in the subsoil can make its way into the seed bed and plant roots can penetrate to deeper soils.

Discing after plowing removes the weeds, and makes the seed bed compact, but not hard. The discs break up lumps of soil.

The Model "B" pulverizes at even depth its entire width.

Patented spring pressure third lever—inner ends of gangs can be given light or heavy pressure to disc over ridges or cut out dead furrows without burying the harrow.

Independent gangs. All tendency of gangs to crowd to one side is easily overcome by giving them the proper relative angle.

Flexible—only that part of the Model "B" harrow passing over an obstruction is lifted out of the ground.

Rear section can be furnished to make a double action harrow.



### John Deere Syracuse Plows

Syracuse Plows have an enviable field record among farmers in chilled or combination plow territory.

Here is a feature that is appreciated by the man who buys a Syracuse Plow:

Extras ordered will be duplicates of the original parts. Bolt holes will be in the right place. Every part will fit. In fact all necessary parts that go into a Syracuse Plow could be ordered as repairs and when received built into a complete plow. Extra parts are exact duplicates—no trouble results.

Remember, Syracuse quality is uniform.



The Syracuse "Slat" moldboard plow sheds and turns sticky soil where the common moldboard plow fails.

The full chilled moldboard is cast in one piece with slats and open spaces alternating. This lessens the surface subject to the friction of the moving furrow, which slips along easier than over a solid surface. Possesses same advantage that narrow sleigh runner has over wide one.

The slat bottom also is suitable for ordinary plowing.



JOHN DEERE, MOLINE, ILLINOIS