

Expert Discusses How to Grow Corn--Tells of Soil Variations

Professor Scudder of Oregon Agricultural College Gives Pointers to Farmers.

It is not so long ago that "It can't be done" was the general attitude in the Northwest when the discussion turned to raising and growing corn. But even the men from Missouri have been shown. Conditions in Oregon are duplicated in other sections of the Northwest, hence Professor Scudder's interesting article with the accompanying illustration is worth more than cursory attention. This article was written specially for the Home and Farm Magazine Section.

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FROM the physical standpoint, corn must have a well drained, well aerated soil, sufficiently loamy and mellow, with abundance of organic matter, to warm up quickly in the spring and permit rapid growth throughout the season. In Western Oregon, particularly, corn should not be planted on poorly drained, wet, heavy, cold soils, for in combination with the cold nights of this part of the state, this condition will prevent a successful crop. The lighter, warmer soils are the better type in every part of the state since they offset to a certain extent the low temperatures of the growing season.

In the Willamette Valley the sandy river loams well manured, or the well-drained silt loams of the valley floor, if deeply plowed, thoroughly cultivated and amply manured, afford excellent soil conditions for corn. The "beaverdam" of the valley, if well drained, will produce excellent silage crops, while the red hill soils, if deeply plowed and manured and kept thoroughly cultivated to conserve moisture, will give very good results. The sticky soils or "adobe," while very difficult to handle, as a rule produce excellent crops of corn. Under these favorable soil conditions, a properly grown crop in the Willamette Valley should produce corn at the rate of 40 to 100 bushels per acre (although of course this would not necessarily be fully ripened and well matured corn), or from 10 to 20 tons per acre of first class silage.

Types of Sandy Loams.

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H. D. Scudder, Agronomist at Oregon Experiment Station and Author of the Interesting Article Herewith.

er types of sandy loams, which, if kept well supplied with organic matter, and in some cases with phosphorus in the form of commercial applications, will produce yields of from 50 to 100 bushels per acre of matured corn, and excellent yields of silage.

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Rough Relief Map of Oregon Showing Natural, Geographical and Agricultural Divisions, Boundaries of Willamette County Lines. (From Portland Branch Weather Bureau Model).

bushels per acre of matured corn, and excellent yields of silage.

In the Coast division, the sandy loams along the rivers, or the marshland mucks, or the red hill loams, where they are sheltered from the wind, are all soils and favor corn production. Added to this, there is the long growing season and abundant summer rains, the result being that very heavy yields of silage and silage corn can be grown—from 15 to 25 tons per acre—but the maturing of grain is practically impossible. On this account, late-maturing fodder-producing varieties should be avoided. Locations protected from the winds are also advantageous.

Columbia Basin.

In the Columbia-Basin the two chief soil types, the sandy loams and the silt loams, are both very favorable for corn production. The coarse sandy types can not be used successfully, however, except when very heavily manured, or increased in organic matter in other ways. Corn matures nicely throughout this section, and 50 bushels per acre of ripened grain may be obtained on the irrigated lands, or 15 to 25 bushels may be secured on the dry farming lands—according to the rainfall—which ranges from 10 to 25 inches.

In the Blue Mountain and Central Oregon regions, both the sandy loams and the black silt loams are well adapted to corn production, but in these divisions the climatic conditions are the limiting factors. Indeed, in the Willamette, Grande Ronde and Baker Valleys, in the Harney and Klamath countries, the crop has not yet been successfully established, although trials of the hardier varieties give promise of success up to elevations of 3,500 feet. It will not be possible to mature corn well in any part of these regions, but excellent yields of green feed and silage have been obtained.

Plant Food Requirement.

The special plant food requirement for corn is an excess of nitrogen. In soils very rich in nitrogen, such as new marsh soils or rich black bottom lands or clover or alfalfa sods heavily manured, where wheat or other cereals would make so excessive a growth of straw as to prevent a satisfactory yield of grain, corn finds just the conditions it thrives upon. The corn crop is what we may call a "gross feeder;" that is, it wants an amplitude of coarse organic matter, such as barnyard manure, to give its maximum return. Abundance of organic matter has a marked effect upon corn for several reasons. It produces the physical conditions desired—a quick warming, well aerated mellow seed bed that absorbs

and retains moisture and is easily cultivated. On the other hand, it has a very marked effect in making available the mineral plant food elements of the soil, which corn requires, and, perhaps even more important, stimulates these bacterial activities which bring about nitrification, thus causing the manufacture of large amounts of the soluble nitrates which become available in midsummer just at the time when corn is making its maximum growth, when other cereals have practically matured. Then, too, organic matter such as barnyard manure contains in itself large amounts of the important plant foods required by the crop in a readily available form. A 50-bushel crop of corn takes from the soil 74 pounds of nitrogen, 26 pounds of phosphoric acid and 42 pounds of potash.

Next in importance to the need of the corn crop for organic matter and nitrogen is its requirement for phosphorus. On soils that have been long and heavily cropped, or on sandy soils that are naturally rather low in phosphorus, the application of 100 pounds per acre of superphosphate or 200 pounds of steamed bone meal, once every three or four years in the rotation, will likely prove profitable and decidedly worth trying, if the fertility of the soil is low. It should be fully understood, however, that applications of phosphorus alone are not recommended; that is, such an application should be made only as a supplement to barnyard manures or other sources of organic matter, such as clover or alfalfa residues. An excellent method for the use of phosphorus applications to corn is to add 40 pounds of acid phosphate to every ton of manure applied.

Advice on Soils.

On beaverdam soils, or the very sandy irrigated soils of Eastern Oregon, application of potash in commercial form will prove of value. It might be made in the same way as phosphorus, by adding 40 pounds of kainit to every ton of manure applied, or in the case of the beaverdam giving a straight application of 300 or 400 pounds of kainit per acre every third or fourth year, when the crop comes around in the rotation.

On the soils of the Willamette Valley and Coast divisions, which are almost universally lacking in lime and therefore sour, the application of this soil amendment will prove of value to the corn crop directly, and indirectly through the effect upon the preceding leguminous crop. The effect of lime in correcting acidity, in making the potassium and phosphorus of the soil more readily available, in increasing

bacterial activities, and in increasing the friability of the heavier soils—all of these are beneficial to the corn crop, while for the preceding legume, upon which the corn crop is so dependent, the effect upon the nitrogen gathering bacteria is of paramount importance. The application of 2 to 3 tons of the ground limestone every six or eight years in these two divisions of the state will unquestionably prove profitable wherever the ground limestone may be secured and laid down at the farmer's station for an outlay of approximately \$2.50 per ton. Lime is seldom required in the Southern Oregon division, and not at all through the Eastern Oregon divisions.

Speak gently to the horse, and do not swear or yell at him. He is a gentleman by instinct, and should be treated as such.

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