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PLANTING THE CORN CROP

by

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Corn is America's leading cereal crop and it is indeed necessary that there be adequate machinery for handling this crop. However, it is only by continuous efforts to insure good yields that modern corn machinery has been produced. Among these improved machines the corn planter is very important. To get the seed corn planted is of the greatest importance in securing a good crop. The corn grower must have equipment which is unexcelled to use for this operation. The modern farmer who is up-to-date assures himself that all seed corn used has a germination test of at least 98%. The present day farmer who is the successful corn grower is also just as particular about getting that seed into the ground. The corn planter must be mechanically accurate and serviceable.

The planting methods of the modern corn grower are considerably different from the primitive corn planting methods in vogue among the Indians. The three most common methods were called (1) The Hopi Method; (2) The Omaha, or Mound Method; and (3) the usual "Hill" method.

The Hopi method for planting corn makes use of a planting stick. This stick is about three feet in length and has a stilt-like projection about 10 or 12 inches from the lower end. The stick is forced into the soil with the foot and holes are made from 8 to 12 inches in depth. Usually about 20 kernels were dropped into these holes and the hills were about 10 feet apart.

The Omaha, or Mound Method was used by the Omaha Indians of Nebraska. In this method the earth was pulveriz-

ed and heaped into mounds about 18 to 24 inches in area. The northern side of the mound was 18 inches high and sloping to the south, the south end being level with the ground. The mounds were 2 to 3 feet apart on all sides, and seven kernels were planted to the mound.

The "hill" method of planting was the one usually followed by most of the tribes. Ground was selected, as a rule, along the banks of streams, trees were cut down and removed, weeds and rubbish cleared away. Land where weeds grew was preferred because it was the easiest to prepare and thought to be the most fertile. The whole field was not plowed but enough area was dug up to plant one hill and they were placed 2 to 5 feet apart.

A. Corn Planters:

Two methods of planting corn are in general practice, the surface or level planting method, and the listing or furrow system. The two implements used for these methods are called planters and listers.

Surface planting is most widely practiced throughout the middle west, central and northern states. The two methods of surface planting include the drilling in rows one way and also the planting of 2 or 3 kernels in each hill with rows both ways. This latter method is known as checking. Checking allows the corn to be cross cultivated and more easily kept free from weeds. Extensive trials prove that there is little or no difference in the yield between the two methods of planting where the same amount of seed is used and the corn kept equally clean. Usually, however, it is a little more difficult to keep the drilled corn clean. However, when it is desired to plant corn thicker than usual for silage or for forage the drilling method may be preferred. It requires a little less care to drill corn than to check it and for sloping land where rows should often be curved to conform with the slopes and in fields containing stumps, trees or other obstructions, drilling should be practiced rather than checking.

Listing is a common method of planting corn in the West and Southwest. In this method the furrows are made and the corn is planted in the furrows at a single operation. In light soils where moisture supply is limited the furrows are usually about 3½ feet apart and are about 6 inches deep. If a subsoiler is used it penetrates two or three inches below the furrow share. About 1½ or 2 inches of soil is thrown over the seed. The covering shovels should make shallow trenches on either side of

the furrow bottom in order to catch the rain. This tends to prevent the forming of a crust over the sprouting seed and hinders washing by heavy rains.

In thin soil or cold soil the lister should be run shallow, just deep enough to plant the seed in the richest soil and throw enough dirt on the ridges to cover all weeds between the rows. In order to get the greatest advantage from the sun's heat, corn should be listed North and South.

Advantages of Listing: For dry climate and warm soil, listing is usually superior to surface planting.

1. Less expensive preparation of the ground.
2. Corn more easily cultivated and kept free from weeds.
3. Listed corn stands up better and does not lodge during the later stages of growth, since the roots lie deeper in the soil and the stalks are better braced than surface planted corn.
4. Listed corn stands dry weather better than surface planted corn, due to several reasons:
 - a. The listed corn roots lie deeper in the soil and are less liable to be injured by cultivation and are more protected from heat and drouth than the roots of surface planted corn.
 - b. Corn planted in the bottom of a furrow starts more slowly and does not produce so much or so tender or succulent foliage early in the season as surface planted corn. Thus, in time of summer drouth, the listed corn makes less draft on the soil moisture and is more apt to escape injury than the larger, more succulent surface planted corn.
 - c. It is a fact, also, that the listed soil usually absorbs more of the rainfall and retains its subsoil moisture better than land which is worked by the level planting system. Thus the listed land actually yields more moisture to the crop during the season, and also conserves the moisture and extends its period of usefulness to the growing corn. The later, slower use of the conserved moisture in the list-

ed ground will often tide the corn over the drouth period and maintain its growth until it reaches full maturity.

It should be carefully noticed that listing is usually practiced in dry climates. A very large per cent of the corn in Eastern South Dakota is not listed but for Western South Dakota the practice of listing is often best. However, local conditions should be thoughtfully considered.

B. Testing the Planter:

After the seed corn is graded and ready the next preparation is to test the planter to make sure it is working alright. This can be done by driving over a hard road or yard with the planter in gear and ready to plant, but without letting the planter shoes enter the ground. In this way you can count the number of kernels dropped for each hill and see whether it is dropping the right number of kernels each time. If it is dropping too many, a plate with smaller holes should be used. If too few, use a plate with larger holes. If it seems to miss several hills at a time the clutch may not be working right or the tube or valves which are between the planter box and the ground may be plugged with dirt. If the planter needs fixing it is better to do it before you start to the field than after you have wasted considerable time and seed doing a poor job of planting before you discover the planter is out of order.

C. Time and Rate of Planting:

The time of planting corn will vary with the season and the locality. Corn should be planted as soon as the ground is sufficiently warm to insure germination, after danger of severe frosts is past. That would mean from May 10th to 31st in this state. The following table shows the best season for corn planting in various parts of the United States:

Region	: Beginning	: General	: Ending	: Planting period in days.
Gulf States	March 15	April 5	May 10	55
Central States (Virginia to Kentucky) .	April 15	May 1	May 25	40
Northern States (New York to Minnesota) .	May 10	May 20	June 1	20

"Conditions are usually best about May 20th over the greater part of the state, although planting is often finished a few days earlier in the Southern part and a week or ten days later in the Northern part. On the College Experiment farms, corn is planted as near May 15th each year as possible. Usually it has not been necessary to vary the date of planting more than three or four days. Planting ear tested seed at this time has always resulted in a good stand of corn, which has never been lost by frost damage at any of the five farms.

"The usual rate of planting corn is one bushel of shelled and graded seed to eight acres. This will furnish three kernels per hill 44 inches apart each way. It has been shown by practical experience throughout the corn belt that a stand of three stalks to the hill, as a rule, gives as large yields as can be expected. Four stalks per hill might give a larger yield under exceptionally favorable climatic conditions, and in a very dry season two stalks would be preferable, but with the usual climatic conditions in this state three per hill seems to be the best rate of planting if the corn is intended for a grain crop. Some tests have been started to secure data regarding this point and the results obtained at Highmore are included in the following chart. When the crop is to be used for fodder and is planted on rich soil, it is advisable to plant a bushel on six acres." (S.D.Bul.181.)

CHART SHOWING COMPARATIVE YIELDS IN STALKS PER HILL TEST
AT HIGHMORE

Stalks:
per : Average for three years.
hill. :

1.	18.0 bu.
2.	25.2 bu.
3.	27.4 bu.
4.	19.1 bu. (2 yr. average.)

D. Depth of Planting:

Corn should be well covered and the soil pressed firmly about the seed in order to bring the kernels in direct contact with the soil moisture and insure rapid germination. The double press wheel is an advantage in covering, since it leaves the soil mellow directly over the seed and hinders crusting and baking of the surface which is liable to impede the sprouting of the young plants. The proper depth to plant will depend upon the condition of the seed bed. If the soil is light or dry, planting three to four inches deep may give the best results. In mellow, moist soil, two inches is about the right depth to plant. Too deep planting should be avoided. More corn is planted too deep than too shallow. When the soil is very mellow, there is danger of putting the seed down four or five inches deep. Corn is often planted deeper than we intended. The planter wheels may sink into the ground two inches or more and the planter shoes two inches deeper than the wheels. If the planter tracks are filled by harrowing as is the common practice, then the corn is covered four to five inches deep and in cold wet weather or in heavy soil, such deep planting is likely to result in weak plants and a poor stand.

Too deep planting is especially bad when the spring is cold and backward. If corn is planted deeper than four inches, much of the food supply stored in the seed will be consumed before the young plant can reach the surface and expand its leaves, which is likely to result in weak plants which may bear no ears, and even though the stand may be good, the result will be a lower yield from too deep planting than would have been produced by shallower planting. Many trials have proven this fact.

Corn cannot be made to root deeply in the soil by deep planting. Experiments have shown that the permanent roots form about two inches under the surface, whatever the depth of planting. The only successful way to make corn roots grow deeper, which is an advantage in a dry climate, is by planting the seed in a furrow and covering it lightly and then gradually cultivating the furrow full of soil as the plant grows. This requires

some care also, since too rapid filling of the furrow will check the growth of the corn and cause the plant to develop a new set of roots nearer to the surface.

It is well to have planter shoes which can be adjusted to run at a regular depth, even when the soil varies considerably in mellowness, thus planting and covering the corn at a proper and uniform depth throughout the field, which will insure more uniform sprouting and an even stand.

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