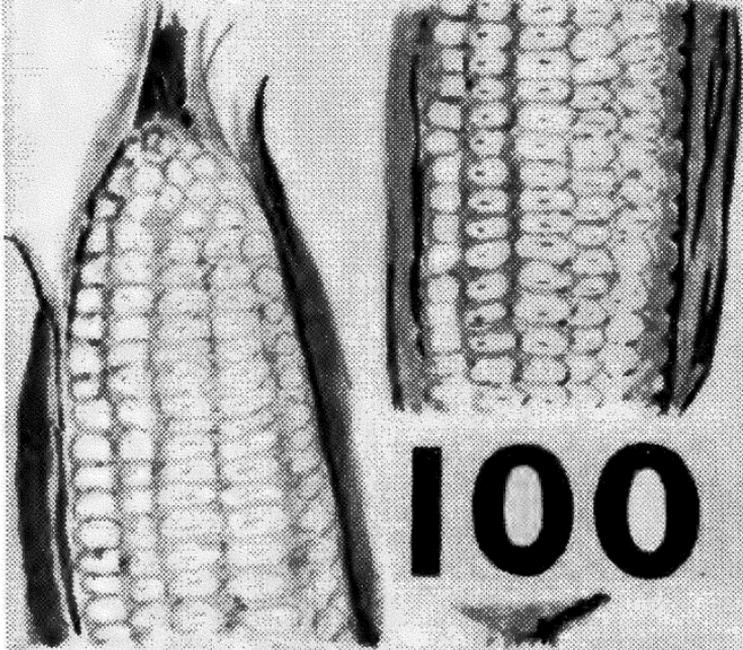


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VIRGINIA POLYTECHNIC INSTITUTE  
BLACKSBURG, VIRGINIA

Why Settle  
For Less?



100  
BUSHELS  
PER ACRE

Circular 541

Revised —January, 1961

V. P. I. Agricultural Extension Service  
Blacksburg, Virginia

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# CORN IN VIRGINIA

Why settle for 40 bushels of corn to the acre when you can grow around 100 bushels? It costs you just as much to plow, harrow, plant, and cultivate to grow 40 bushels per acre as it does to grow 100 bushels. Generally higher yields of crops mean higher profit per acre.

On a typical farm, labor, tractor, and machine use, seed cost, plus land rent, will total about \$35 for each acre. With the addition of a light fertilizer application, the cost would increase to around \$42.50 per acre. If the yield of the field is only 40 bushels per acre, the cost per bushel is \$1.06. By applying \$20 to \$25 worth of fertilizer, most producers can grow around 100 bushels of corn per acre in a good season. This reduces the cost per bushel to 55 to 62 cents and increases your profit. Due to variation in soils, previous treatment, and other factors, results may vary from these figures.

Following are a few suggestions which should help you get into the 100 bushel-per-acre corn class.

## **Choose Good Soil**

Corn does best on fertile well-drained soils. Soils that are moderately well to somewhat poorly drained may be used for corn with certain limitations. The hazards of late planting and cultivation are greater on less well-drained soils. Droughty soils and soils on steep slopes should not be used for corn. Keep corn off steep land where plowing and cultivating will cause serious soil erosion. On slopes, strip cropping, grass waterways, and other soil conserving practices should be used. The chances of success in corn production generally decrease with increase in slope and with decrease from desirable water holding capacity of soils.

## **Lime Your Soil**

Your soil should test between 6.0 and 6.5 pH. In the Tidewater area where peanuts and soybeans are grown in the rotation, the pH should not exceed 6.2. Have soil tested to determine lime needs. Your county agent or other agricultural workers in your county have soil boxes, soil record sheets, and instructions for taking a soil sample. Be sure to take the soil sample correctly.

## **Preparation of Seedbed**

A poorly prepared seedbed is the forerunner to a poor stand and poor crop. A firm seedbed in the row is important for good production. Land should not be worked more than is necessary to prepare for planting. Continuous packing with machinery tends to cause less desirable soil structure.

Turn under cover crops from 3 to 4 weeks before planting. Seedbed preparation on sodland and heavy clay soils may be benefited by plowing during the winter or early spring before the end of freezing weather. Freezing and thawing will help pulverize the clods.

A thorough disking and harrowing just before planting will help to control weeds. If it should rain after disking, but before planting, disk or harrow again before planting.

Recent research indicates that minimum tillage with wheel-track planting is adapted to certain areas (or soil conditions) in Virginia. The mellow, easily prepared sandy soils such as those in Eastern Virginia seem best adapted to this practice. For further information, ask your county agent for V. P. I. Extension Service Leaflet No. 97, "The Wheel-Track Method — A New Way to Plant and Grow Corn."

### **Fertilizer Guide**

Corn is usually grown in a rotation with other crops. The amount and analysis of fertilizer applied will depend largely on the amount and analysis of fertilizer used on other crops in the rotation, the quantity and quality of manure used, whether or not a legume crop immediately preceded and was turned under before corn, and the fertility level of the soil. Recommendations are based on the application of 150 to 180 pounds of nitrogen, 120 to 150 pounds of phosphate and 120 to 150 pounds of potash per acre in a 3-year rotation. The rotation used may necessitate varying the amounts of nutrients.

You cannot expect high yields unless your soil has an adequate supply of available plant food.

### **How Much Fertilizer To Use — What Kind**

Apply 20 to 120 pounds of nitrogen, 60 to 100 pounds of phosphate and 60 to 100 pounds of potash per acre. This can be supplied by using 600 to 1000 pounds to the acre of a complete fertilizer such as 5-10-10, 10-10-10, 3-9-18, or equivalent, plus nitrogen as needed.

A soil test with additional information on the soil and the past history of the field will help determine the best analysis and method of application. The principal methods of placement of fertilizer on corn are (1) all fertilizer broadcast, (2) part broadcast and part in row, and (3) fertilizer banded. For further details, ask your county agent for a copy of V. P. I. Extension Service Leaflet No. 99, "Placement of Fertilizer on Corn at Planting."

A row application of 100 to 300 pounds as part of the fertilizer application per acre will help the corn get started. Analyses such as 5-20-10 or 5-10-5 are less likely to injure germination in the row application than analyses high in nitro-

gen and potash. Nitrogen and potash may reduce or destroy germination if placed in contact with the seed. Do not apply over 100 to 150 pounds per acre of higher analysis fertilizer such as 10-10-10 in contact with the seed due to possible injury to germination. Reasonable amounts of phosphate in the row encourage seedling vigor and helps the young plants get started. The best placement for a row application is 2 inches below and 2 inches to the side of the seed.

Broadcast the rest of the fertilizer on the land and either plow, disc or harrow it in before planting. Additional nitrogen may be needed.

### **Use Adequate Nitrogen**

The amount of nitrogen needed will depend upon (1) the nitrogen level of the soil, (2) the amount and analysis of fertilizer used, (3) what crop was plowed under, (4) whether or not manure was used, and (5) on sandy soils the amount of rainfall after application of fertilizer. For a 100-bushel corn crop, there must be available approximately 140 pounds of nitrogen when it is needed during the growing season. A general recommendation would be to apply 20 to 120 pounds of nitrogen per acre, depending upon the soil need.

**On fine textured (clay) soils,** all of the nitrogen above the row application may either be plowed under or worked into the seedbed before planting with the other fertilizer. This method gives just as good results as side-dressing. On lighter soils in Piedmont, side-dress with nitrogen when corn is knee high. In eastern Virginia on coarse textured (sandy) soils, the nitrogen above the row application should be used as a side-dressing through the period of cultivation.

**Where manure used—**Ten tons of high-quality manure will add about 80 to 100 pounds of nitrogen to the soil. A 10-ton application of high quality manure with 500 pounds of 20% super-phosphate added, plus a row application of 100 to 300 pounds of a complete fertilizer on soils with a high fertility may be sufficient for the corn crop. On soils of medium or low fertility, the fertilizer application should be from 400 to 600 pounds per acre broadcast in addition to the reinforced manure. The use of 20 to 40 pounds of additional nitrogen may be beneficial unless the soil has a high fertility level. If corn begins to turn yellow anytime before last cultivation, use nitrogen immediately.

**Legume Turned.—**If a good stand and 12 to 18 inch growth of Crimson clover, Vetch or Red Clover is turned, 500 to 700 pounds of a complete fertilizer such as 5-10-10 or 5-20-10 or equivalent, may be needed.

Following well fertilized stands of alfalfa or ladino clover, 200 to 300 pounds of 5-10-10 or 5-

20-10 to the acre in the row at planting, plus 20 to 30 pounds of nitrogen may be sufficient.

Red clover or lespedeza stubble where hay has been removed or grazed will not add a great deal of nitrogen.

### Use An Adapted Hybrid

Plant a variety of corn hybrid adapted to your county or locality. Adapted hybrids are available in the early, medium and full-season groups. Your county agent or other agricultural workers in your county can supply you information about corn hybrid varieties.

### Use High Quality Seed

Check the tag on the bag to see that you are getting high quality seed of the variety adapted to your locality. The analysis tag should show a germination of 90% or better. If germination is below 90%, the planting rate should be adjusted accordingly. High quality seed is dry, well graded and treated with a fungicide. The label should also show seed size, seed analysis, date of germination, and name of seedsmen or producer.

### Time of Planting

Due to the wide variation in climate it is difficult to make a corn planting date recommendation. Corn should be planted late enough in the spring to miss late frost and cold seedbeds. Generally this is about 10 days or 2 weeks after the average date of the last killing frost for the locality. Corn should mature before the fall frost.

### Plant Thick

For a full-season hybrid, plant at the rate of 14,000 to 16,000 kernels per acre. For an early variety, plant at the rate of 16,000 to 18,000 kernels per acre. The final plant stand is expected to be 10 to 20% less than the number of seed planted.

### Kernels Per Acre (How To Plant)

14,000		16,000		18,000	
Row	Space	Row	Space	Row	Space
Width	Between Seed	Width	Between Seed	Width	Between Seed
38"	12"	38"	10½"	38"	9½"
40"	11"	40"	10"	40"	8¾"
42"	10½"	42"	9½"	42"	8½"

The number of kernels per pound in grades will vary according to the variety. Generally the kernels per pound according to the grades are:

Grade	Kernels Per Pound
Large flat -----	1300
Medium flat or regular flat -----	1500
Small flat -----	1700
Medium thick flat -----	1200
Large round -----	1200
Medium round -----	1300

All grades will produce a satisfactory crop. There is a relationship between size of kernel and seedling vigor. The larger kernels have the more vigorous seedlings.

**Use Right Planter Plate.**—Use the right planter plate for the grade used so that the kernels will drop the desired distance apart. Make a trial run to see that kernels are dropping properly.

**Plant at Proper Depth.**—Avoid deep planting. From 1 to 2 inches deep is sufficient. Seed should be placed in contact with warm moist soil.

**Watch Speed of Planter.**—Speed of planter can affect the planting rate. If planter speed is too fast, kernels will not drop regularly.

### **Cultivate Shallow**

Cultivate shallow and do not destroy corn roots. Use a spike-tooth harrow or rotary hoe from time corn starts to come up until it is 2 to 3 inches high. This operation will greatly reduce weeds.

Two to 3 shallow and level cultivations at intervals of about 2 weeks will generally be enough. After corn is 18 inches high, cultivating more than 2 to 3 inches deep will destroy corn roots and reduce yield.

Chemical weed control is practical if properly done in connection with cultivation. For further information on chemical weed control, ask your county agent for the latest V. P. I. Extension Service publication on weed control in corn.

### **Harvesting and Storing**

Corn should be picked at the time when the harvesting equipment will do the cleanest job with a minimum of both field and mechanical losses.

The optimum moisture for field shelling seems to be between 22% to 26% considering both field losses and mechanical damage. Above 26% moisture the mechanical damage increases and as the moisture content drops below 20% field losses increase. Whenever field shelling is practical, a drier is essential for safe storage.

For ear corn without drying facilities, harvesting should begin when corn reaches 21% moisture. With this amount of moisture, you will need good ventilation for proper curing. If shelled corn is to be stored, the moisture content should be about 13 per cent.

For further information, ask your county agent for V. P. I. Extension Service Circular No. 558, "Give Your Corn Air."

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