



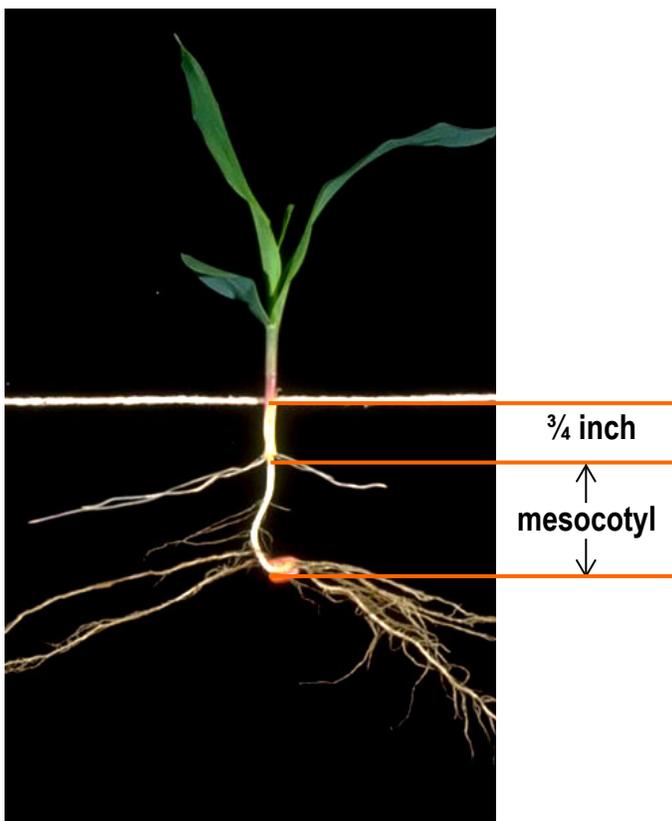
Corn Planting Depth and Spacing

Planting corn to a depth of 1½ to 2 inches is optimum for nodal root development

- 2 inches – best under normal conditions
- 1½ inches – may be favorable when planting early into cool soils
- **Never plant shallower than 1½ inches**

Determining Planting Depth

- Planting depth can easily be determined after seedling emergence.
- The nodal root area (crown or growing point) typically develops about ¾ of an inch beneath the soil surface regardless of the seeding depth.
- Measure the mesocotyl length (the area between the seed and crown or growing point, then add ¾ inch to determine the planting depth.



Corn planted too shallow:

- Is less able to uptake water and nutrients through the roots. Shallow-rooted corn plants suffer dramatically during periods of summer drought.
- Can develop a condition called “rootless corn syndrome”. Plants will fall over due to the lack of nodal root development in dry soil.
- Can expose corn seedlings to herbicide residues increasing the potential for herbicide injury.
- Late-season root lodging concerns are reduced with improved nodal root systems.



Symptoms of Irregular Planting Depth:

- Uneven emergence.
- Non-uniform mesocotyl length.
- Varying plant height.
- More severe root-lodging in summer wind events

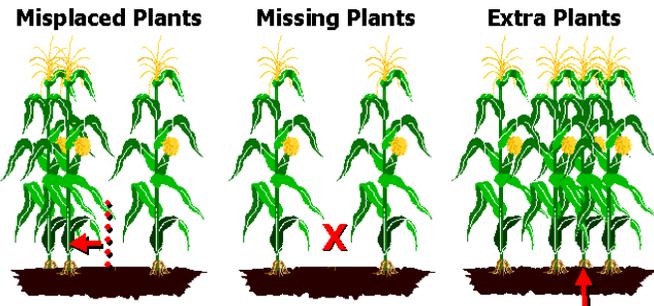
Planting Depth Recommendations

- Set the planting depth in the field, with the planter being pulled at full operating speed.
- Check for good seed-soil contact; strive for firm seedbeds that promote uniform emergence and stronger root systems.
- Slower planting speeds between 4 to 5 mph achieve more uniform planting depths.
- Utilize in-row residue managers where needed; especially in corn-following-corn rotations.
- Utilize a planter down-pressure control system.

Pioneer on-farm surveys have shown that uniform plant spacing maximizes yield.

Types of non-uniform plant spacing:

- Misplaced plants due to worn planter parts
- Missing plants (skips)
- Extra plants (doubles)



Misplaced plants

- May decrease yield relative to a uniform stand

Missing plants

- Will decrease yield relative to a uniform stand
- Yield of adjacent plants will increase, but not enough to compensate for the missing plant

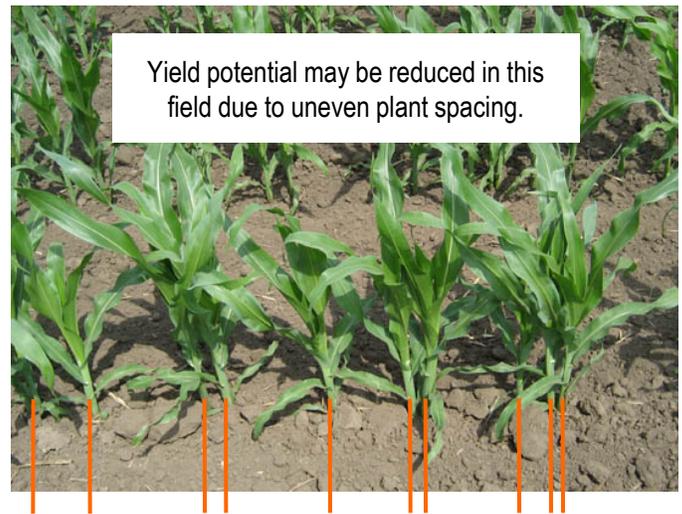
Extra Plants

- May increase yield slightly if stand is below optimum
- Yield of doubled plants as well as adjacent plants will decrease, but the yield of the extra plant will compensate for this reduction

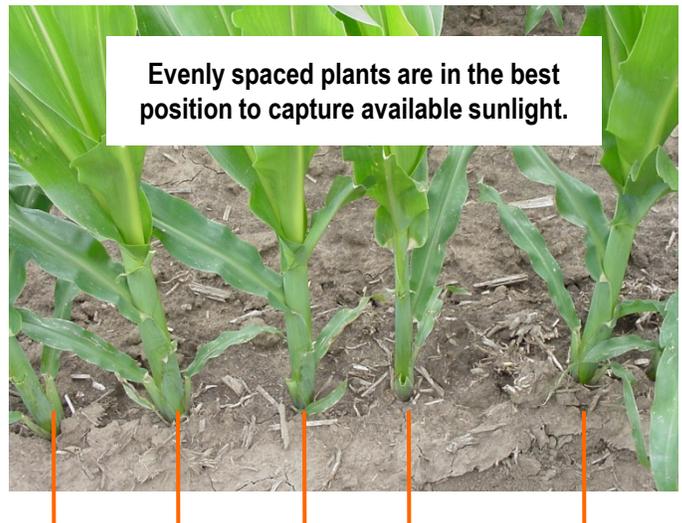
Grain yield of individual plants by position relative to skips and doubles (30,000 plants/acre)

Plant Position	Plant Yield (lbs)
Next to skip	0.43
2 nd from skip	0.40
Control	0.39
Next to double	0.35
Double	0.33

Nafziger, E. D. 1996. Effects of missing and two-plant hills on corn grain yield. Journal of Production Agriculture 9:238-240.



Pioneer studies show that individual plant yield is maximized when plants are within 2 to 3 inches of perfect equidistant spacing (see image below).



Management Tips

- Make sure the target plant population is high enough to maximize profitability.
- Typical seed corn germination is about 95%. Overplant by at least 5% to reduce the effects of germination-induced skips in corn following corn.
- Overplant for expected reductions due to insects and more stressful soil conditions (cold and wet).
- Be sure to check that the planter is properly adjusted and calibrated by digging behind the planter in every field.