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## Corn Planting FAQs

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## **Abstract**

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## **Keywords**

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## Corn Planting FAQs

By Roger Elmore, Department of Agronomy

Winter ISU Extension and Outreach meetings provided premium-grade fodder for reflection and thought. The January 2013 U.S. drought monitor maps showed drought still persisted across Iowa to a greater extent than in 2012. Thankfully, March and now April rains and snow helped reduce drought severity in many parts of Iowa. This week's [U.S. Drought Monitor](#) reflects significant improvement. Topsoil moisture conditions have subsequently improved, but subsoils in many areas remain short or very short in moisture ([NASS](#)). As we ramp up for the 2013 growing season, let's address some frequently asked questions and concerns discussed over the long 2012-2013 winter.

### Tillage

Every tillage pass results in soil moisture loss through evaporation. If dry conditions persist at planting in your area, excessive tillage may evaporate precious soil moisture. Keep tillage to a minimum if climatologists forecast dry weather for the rest of the growing season. No-till operators will likely not have a problem finding good soil moisture conditions at normal seeding depths; however, those with some degree of tillage may need to consider deeper seeding depths to reach moisture (see the discussion below) unless their topsoil has been replenished with recent rain and or snow.

### Hybrid

As discussed in an [earlier ICM News article](#), producers in more southern Corn Belt locations often plant very early maturities to avoid heat and drought normally experienced in August. If dry conditions persist at planting in your part of Iowa, stick with adapted, high-yielding hybrids that show some yield stability over locations and years. Planting much earlier hybrids will likely result in reduced yields.

### Row spacing

Responses to corn row spacing are related to light interception. What I understand about this is that yield is optimized if corn canopies intercept 95 percent of sunlight at silking. Interestingly, modern Iowa corn hybrids in 30-inch rows at normal plant populations intercept 95 percent of the light at silking. That explains why we rarely see row spacings narrower than 30 inches improving corn yields over those of 30 inches. That means that row spacings of 20 inches, 15 inches, 12 inches and/or twin rows rarely improve Iowa corn yields. On the other hand, yields are rarely reduced with row spacings narrower than 30 inches. Remember though, yields are likely reduced in rows wider than 30 inches. *However*, if early-season stress of

some kind reduces canopy closure of corn in 30-inch rows, narrow rows may out-yield those of 30-inch rows. Dry conditions during vegetative development could do this.

## Planting date

[Optimum corn planting dates](#) vary across Iowa, depending on soil moisture and temperature, from April 11 to May 13 in southern Iowa; April 15 to May 2 in central and northwest Iowa; and April 12 to May 2 in northeast Iowa. Although corn kernels absorb soil moisture when soil temperatures are less than 50°F, they will not begin germination until soil temperatures reach almost 50°F or higher.

If the sun is shining and the calendar date for your part of Iowa lies on the early side of the range listed above, and if soil temperatures are in the high forties or higher and climbing, checkout the 5 to 7 day forecast. Plant corn if the forecast calls for more of the same. If, on the other hand, the 5 to 7 day forecast calls for a good chance of cold wet weather settling back in for a while, keep the seed in the bag.

## Soil conditions

Mahdi Al-Kaisi addressed soil conditions for planting in [ICM News a few weeks ago](#). Field-capacity soils at planting depth are ideal for corn germination and early seedling growth. Beware of soils that are too wet. Side-wall compaction stymies early seedling growth both below and above ground and reduces yield potential. Deeper compaction from planting, spraying and harvesting equipment reduces yields for years. Ensure that soil conditions are optimum at planting.

## Seeding rates

Optimum plant populations for normal Iowa conditions range between 34,500 and 37,000 plants per acre. Make sure to add in your normal attrition rate - failure to germinate and/or produce a plant - to compute your seeding rate. Attrition rates in our studies range from three to seven percent. If your attrition rate is much greater than that, investigate the causes carefully!

One more note on seeding rates: *if conditions are dry at planting and you expect them to persist*, this is the year to be conservative when adjusting the planter. On your higher-yielding fields, plant on the average or high end of what you've done before - or up to the range suggested in the last paragraph. On fields with less yield potential, I'd back off a bit on seeding rates. Remember though, modern hybrids are more able to tolerate stress than older hybrids.

## Seeding depth

Standard corn seeding depth recommendations for Iowa are 1.5 to 2 inches. As we mentioned in the [early March ICM News](#), this seeding depth allows for quick emergence and maximum emergence rates as well as proper root system development. As discussed above, soils with moisture levels at field capacity provide the moisture level adequate to germinate seeds.

If soils at 1.5 to 2 inches are drier than field capacity, you could: plant deeper, adjust planter down pressure differently, or plant at 1.5 to 2-inch depths and hope for rain (see [Mark Hanna's ICM New article](#) for more information). The first two options are most reasonable unless you are certain of timely rain, then the third option may be best.

Corn can emerge from fairly deep planting depths depending on soil texture. For example, if necessary to reach adequate moisture, plant corn as deep as

3 to 3.5 inches on clay soils, 4 to 4.5 inches on loam soils, and 5 to 6 inches on sandy soils. Remember though, if soil moisture is adequate at shallower planting depths, there is no reason to plant that deep. An array of problems accompanies unnecessarily deep planting: slower and more variable emergence, increased vulnerability to soil crusting and seedling diseases and insects. All of these reduce yield potential...and the crop is hardly out of the starting blocks!

Allow me to add one more thing on seeding depth. Seeding depth that varies among plants, especially in the same row, reduces yield through uneven emergence and thus uneven competition. This sets up a pecking order that chips away at yields all season long. In my experience, planting too fast is a major contributor to this. Time spent carefully adjusting your planter *and* speed for conditions specific to each of your fields will pay!

## Summary

Spring soil and environmental conditions in mid- to late-April and early May usually get corn off to a great start toward maximum yield potential. Full-capacity soil profiles are like a savings account that pays high interest and provides through tough economic times. That is a 'textbook' Iowa spring: our full soil profiles at planting carry us through the vegetative period even during a drought. However, if soil profiles are short of moisture at planting – and it still looks like that in some parts of Iowa - be prepared for conditions we don't normally experience...and thus for situations for which we can only guess at recommendations.

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