

Determining When to Begin Corn and Soybean Planting

- Early planting may help to maximize yield potential for corn and soybeans, but planting too early can be detrimental to the crop.
- Planting should be accomplished according to soil temperature and conditions as opposed to the calendar date.
- When soils warm up, a correct planting depth can help in establishing a good stand.

Ideal Planting Temperatures

Growers may anticipate an early planting season if spring temperatures are above average. However, for optimum germination, corn requires a soil temperature of at least 50° F, and soybeans require a soil temperature of 55° F.^{1,2} If planting occurs before these optimal soil temperatures, seeds may remain dormant in the soil and become increasingly vulnerable to diseases, insects, and animal predators. Planting into cold and/or wet soils can lead to numerous problems. Imbibitional chilling injury can occur to both corn and soybean seedlings. Seed imbibition is a two-step process where water is absorbed into the seed and the seed swells. Water intake activates enzymatic processes, such as increased respiration and cell duplication, which eventually result in germination and emergence. Imbibitional chilling injury can occur when the imbibed moisture comes from a cold source, such as chilling rain, causing cell membranes to become rigid and rupture. This may result in damaged or aborted radicles, lower germination, and delayed seedling growth. Such damage may limit or prevent nutrient uptake, restrict normal seedling development, and allow for soil disease and pest entry. Symptoms similar to chilling injury can also be caused by other factors and may be compounded by additional stresses during germination. These stresses may include herbicide injury, disease, or soil crusting. Since these symptoms are not unique to chilling injury, they can be hard to decipher. Typical symptoms of chilling injury may include a swollen seed that has not germinated and a fragile or absent primary root.

Corn Planting

Corn planting dates can range greatly depending on the region. Refer to the United States Department of Agriculture Field Crop Usual Planting and Harvest Dates (Handbook 628) for a range of planting dates for your state. This information can be located at <http://www.nass.usda.gov/> by searching for "Planting Date". In the United States, corn planting can begin as early as March 1 in extreme southern regions and run as late as June 4 in far northern areas.³ The following tips can help in establishing a good corn stand:

- **Do not plant corn seed too shallow.** Planting less than 1.5 inches deep can result in rootless corn plants or root lodging.⁴ Shallow planting can also increase the risk of injury from some soil-applied herbicides.
- **Do not plant corn seed too deep.** When soil moisture is abundant, plant around 1.5 to 2 inches deep. In high residue systems, planting slightly deeper puts seed into a buffered soil environment with more uniform soil temperature and soil moisture which can help to

improve emergence.⁵ If soil is dry, planting at 2.5 to 3 inches into moisture is less risky than planting shallow in anticipation of rain.

Soybean Planting

According to the USDA Field Crop Usual Planting and Harvest Dates Agricultural Handbook, soybean is usually planted from late March in the South to mid-July in the Northeast.³ Soybean seed requires different planting conditions than corn seed. Young soybean seedlings can be more sensitive to environmental conditions after emergence as the growing point is immediately exposed to the elements; whereas, the growing point for corn is underground until the V6 growth stage.

- **Do not plant soybean seed too deep.** Soybean seed should be planted at 1 to 1.75 inches deep and no deeper than 2.5 inches.^{6,7} Planting too deep can use up energy that could be used later by the plant. In addition, planting too deep can inhibit emergence in stressful situations, such as soil crusting and compaction.

Waiting for optimum soil conditions and warmer temperatures can help in establishing a healthy corn and soybean crop.

Sources

- ¹ Abendroth, L. and Elmore, R. Corn planting: consider soil temperature and date. Integrated Crop Management. Iowa State University. <http://www.ipm.iastate.edu>.
 - ² Pedersen, P. Soybean planting date. 2006. Integrated Crop Management. Iowa State University. <http://www.ipm.iastate.edu>.
 - ³ Field crop usual planting and harvest date. October 2010. United States Department of Agriculture. National Agriculture Statistic Service.
 - ⁴ Crook, W. 2011. Planting depth for corn. University of Missouri Cooperative Extension. <http://extension.missouri.edu>.
 - ⁵ Jasa, P. 2013. No-till planting tips for a dry year. University of Nebraska-Lincoln Crop Watch. <http://cropwatch.unl.edu>.
 - ⁶ Heisel, Z. R. and Minor, H.C. 1993. Soybean production in Missouri. University of Missouri Extension. G4410. <http://extension.missouri.edu>.
 - ⁷ Specht, J., Rees, J., Glewen, K., and Grassini, P. 2014. Soybean planting depth: Consider planting deeper. University of Nebraska-Lincoln Crop Watch. <http://cropwatch.unl.edu>.
- Web sources verified 03/09/17. 140331080210 030817SEK

For additional agronomic information, please contact your local seed representative. Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. ©2017 Monsanto Company. 140331080210 030817SEK

