

SOYBEAN STATION

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Double Crop Soybean Planting Decisions

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Wheat development was delayed this season with the extension of the cooler temperatures into the spring. The cool and wet spring benefited many fields of wheat with extended period of grain fill. Unfortunately, the rain cycle continued for many of our areas as the wheat matured in June and now, into July. As of Monday, July 8, Indiana has only harvested 32% of the wheat crop compared to the five year average of 69% (USDA-NASS, 2013). Needless to say, this year's wheat harvest is a polar opposite compared to 2012 when nearly every acre was already harvested. Delayed wheat harvest directly affects our double crop soybeans.

Double crop soybean production is typically successful in the southern half of Indiana with mixed results in the central and northern areas. The primary source of success is the number of days from emergence to maturation before a freeze kills the crop. In general, the southern areas experience the first fall freeze later than the northern areas (Fig. 1). The other major factor in double crop soybean success is soil moisture, especially during establishment. Fortunately, the lack of soil moisture should not be a limitation this year.

Planting Date

The rule of thumb for delayed planting of soybean is 90 days. Soybean needs at least 90 days prior to the fall freeze to mature enough for a harvestable crop. The soybean could mature completely in some years. While in other years, the soybean is nearing the end of seed fill (R6 – full seed) or leaves are dropping and pods are turning yellow-brown (R7 – first signs of physiological maturity). In the latter cases, the freeze could arrest seed fill resulting in small seeds that are sometimes green in color, but are still harvestable.

If the median fall freeze date (i.e., 2 out of 4 times the freeze will occur at this date) is October 15, then the last planting date for your soybean would be near July 15 (~90 days prior to the freeze). Many areas in southern Indiana typically do not experience the first freeze until October 26 (Fig. 1), so the latest planting date would be close the July 26. Please remember that these are estimates based on a 50% probability of the fall freeze, so earlier or later freezes are possible. You can use Fig. 1 or the fall freeze table in the Corn & Soybean Field Guide (ID-179, p. 292-295) as a reference point.

The timeline of 90 days is more accurately described from soybean emergence rather than planting date. If you have adequate soil moisture, double crop soybeans should emerge within five to seven days. However, soybeans could take several weeks to emerge waiting for a timely rain because the soil is too dry. Some double crop soybeans took nearly six weeks to emerge last year during the drought. You will need to assess your field conditions and adjust accordingly.

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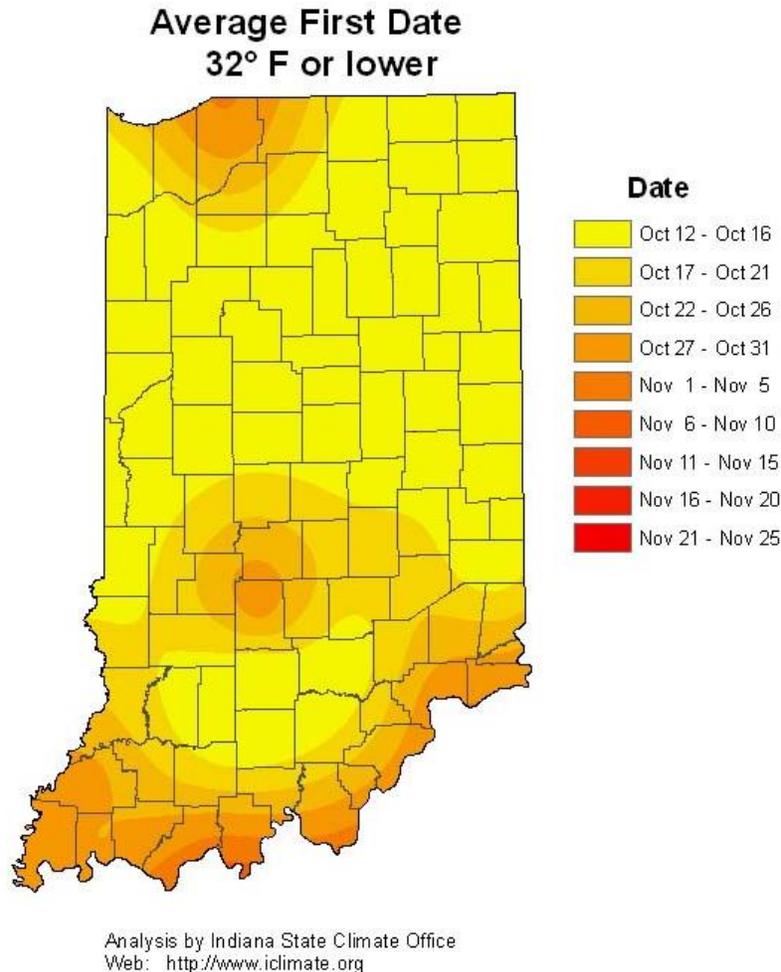


Figure 1. Average first fall freeze (32°F or lower) in Indiana. (www.iclimate.org)

Maturity Group

Planting dates and maturity groups is a fairly regular topic of discussion for first crop soybeans across Indiana, but not as common in double crop soybean. We have been conducting maturity group studies of double crop soybean at our Southwest Purdue Ag Center near Vincennes for the past four years (Fig. 2). Fortunately, we have also determined reproductive growth stages that support the 90-day rule of thumb.

The maturity groups ranged from 3.1 to 4.6 (Figs. 2 and 3) with 4.0 to 4.5 as the typical choice for double crop soybean in that region. We did not take note of the emergence date, but it was probably within 5 to 7 days due to adequate soil moisture. You will notice the time to full seed (R6) was ~80 days for early 3 maturity group to 85 days for the mid 4 maturity group. The time to full maturity (95% harvest colored pods, R8) ranged from ~100 to 110 days in 2010 and ~110 to 120 days in 2011. Our rule of thumb of 90 days placed the full season cultivars halfway between R6 and R8; whereas, the shorter season cultivars were much closer to R8 (Fig. 3).

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Figure 2. Double crop soybean maturation in 2009 at Vincennes. Picture taken Oct 19, 2009. Maturity group 4.0 is the plot on the left and maturity group 4.6 is on the right.

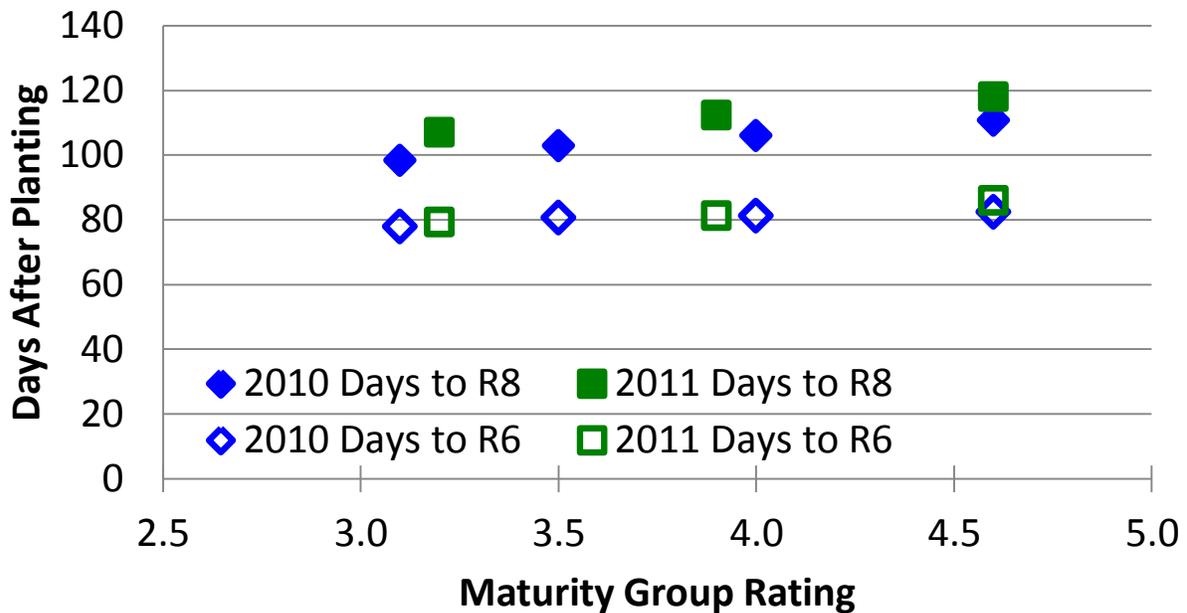


Figure 3. Time to reach R6 (full seed) and R8 (full maturity) based on maturity group when planted as double crop in southwestern Indiana (Vincennes) in 2010 and 2011.

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The yield potential is typically higher with full season cultivars provided there is enough time to mature the crop. Over the past four years at Vincennes, the late 3 to 4.0 maturity group yielded the best as double crop (Fig. 4). In light of this summer's rain patterns and the harvest timing of the wheat, the performance of the mid 3s is impressive with yields that are 95 to 100% of the top yielder. If the calendar is approaching our 90-day tipping point, you might consider switching to a shorter season cultivar (0.5 to 1.0 maturity group unit less) in order to mature ~4 to 8 days sooner (Fig. 3) and still yield relative good (Fig. 4). You can plant an even shorter season cultivar, but the yield potential would certainly be less. It all about what you are willing to risk – length of growing season vs. yield potential.

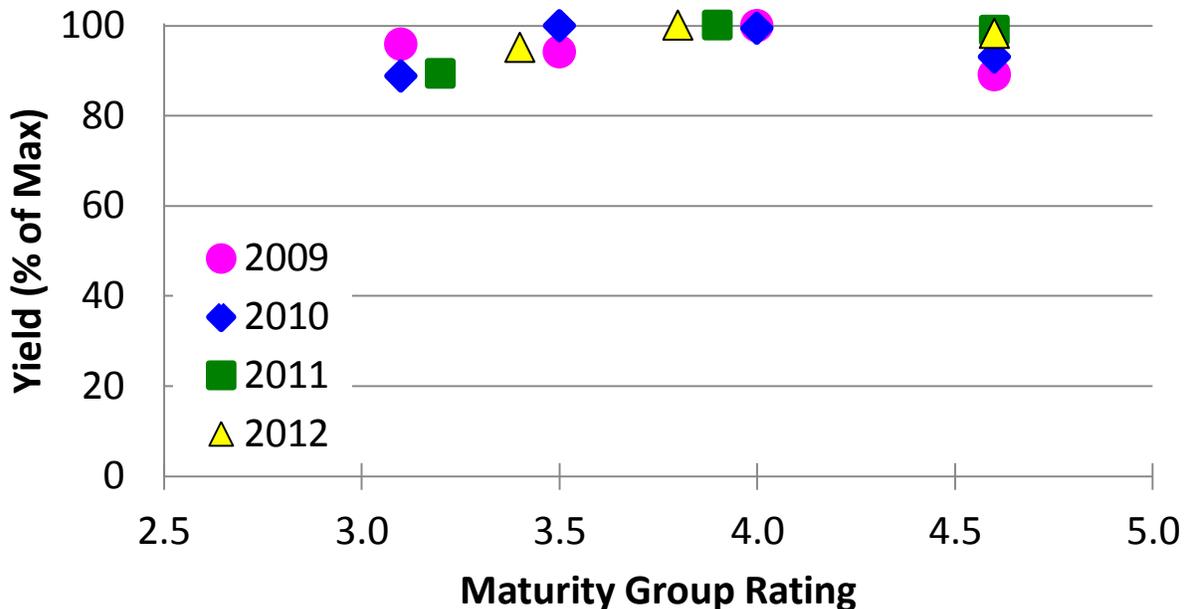


Figure 4. Relative yield of maturity groups planted as double crop southwestern Indiana (Vincennes) in 2009, 2010, 2011, and 2012.

Seeding Rate

My final bit of advice is to be certain that your seeding rates are high to make up for the limited vegetative growth that will occur with these delayed plantings. The concept is to make up nodal development (and presumably pod development) on individual plants with more plants. Secondly, high plant populations will “push” the height of the first pod higher to aid at harvest. Seeding rates of 180 to 220 thousand seeds per acre will be general targets with the higher rates for later plantings and for shorter season cultivars.

References:

USDA-NASS. 2013. Crop Progress and Condition. USDA, National Agricultural Statistics Service. [Online]. Available at http://www.nass.usda.gov/Statistics_by_State/Indiana/Publications/Crop_Progress_&_Condition/2013/index13.asp [URL accessed June 2013].