Selecting Soybean Varieties for Maturity

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As the earth revolves around the sun, length of photoperiod changes each day.

Length of photoperiod is related to latitude.
Length of Photoperiods as Affected by Date

- Vernal Equinox
- Summertime Solstice
- Autumnal Equinox
- Winter Solstice

Columbia
Length of Photoperiods as Affected by Latitude
Photoperiod Length in Missouri

23 minutes
Photoperiod/dark period sensed by a chemical in the leaves. So, leaves are necessary to induce flowering

Inducing signal is from leaf to bud at the nodes

Temperature interacts with photoperiod (dark period) to regulate soybean flowering and maturity
Logic for Selection of Maturity Group

Soybean yield is product of number of days of seed filling and the rate at which seeds fill.

Vegetative growth before and after flowering begins builds photosynthesis factory; more leaves greater rate of seed fill.

Later maturing varieties will produce more leaves before flowering starts.

Later maturing varieties will possess greater number of days for seed-filling.

Later maturing varieties may have faster rate of fill for more days, so may yield more.
Project to Study Ultra Early Soybean Maturity

2 years: 2005, 2006
3 locations: Columbia, Albany, Portageville
4 maturity groups: III, IV, V in Columbia
3 varieties in each maturity group
3 planting dates: mid-April, mid-May, mid-June
Soybean Yield for Four Maturity Groups

average of 2 years and 3 varieties

Portageville, MO

mid-April

mid-May

III  IV  V

43.4b  56a  60.9a

46.9b  58.5a  58.6a
Project to determine effect of maturity group on soybean yield

Two years: 2013 and 2014
10 southern locations including Columbia, MO
Four maturity groups: III, IV, V, VI
Four varieties within each MG: seven brands represented for the 16 varieties
Four planting dates: Late April, Mid May, Early June, Late June (DC)
Funded by Mid-South Soybean Board & MSMC
Soybean Yield for Four Maturity Groups
average of 2 years and 4 varieties
Late April PD, Portageville, MO, Vories & Shannon

III: 67.2 b
IV: 78.4 a
V: 68.4 b
VI: 59.0 c
MU Variety Testing Program

4 regions: North, Central, Southwest, Southeast
Entries separated into two maturity groups in each region
MG III and IV in North and Central
MG IV and V in Southwest and Southeast
Average Yields for all MG III and MG IV Varieties Entered in MU Variety Testing Program

Average of 5 locations in Southeast Region

<table>
<thead>
<tr>
<th>Year</th>
<th>MG IV Yield (bu/ac)</th>
<th>MG V Yield (bu/ac)</th>
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<tbody>
<tr>
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<td>2016</td>
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Average Yields:
- MG IV: 58.0 bushels/acre
- MG V: 56.0 bushels/acre
Average Yields for Groups of MG IV and MG V Varieties Entered in MU Variety Testing Program
Average of 5 locations in Southeast Region

<table>
<thead>
<tr>
<th></th>
<th>All varieties</th>
<th>Top 3 varieties</th>
<th>Top 1 variety</th>
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</thead>
<tbody>
<tr>
<td>MG IV</td>
<td>58.0</td>
<td>65.6</td>
<td>66.8</td>
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<tr>
<td>MG V</td>
<td>56.0</td>
<td>62.6</td>
<td>63.6</td>
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<tr>
<td>Adv IV</td>
<td>3.6%</td>
<td>4.8%</td>
<td>5.0%</td>
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Varieties differ for yield potential, but that yield difference is not related to maturity group (if not widely unadapted).

Opens up additional variety choices.

In some regions, selecting varieties with a range of maturities may add yield stability.
Proposed Maturity Group Boundaries
Mourtzinis, Gaska, and Conley
Double Cropping and Other Late Planted Situations

Shorter growing season, especially in north range of where double cropping is feasible

Plants induced to flower almost immediately after emergence
Soybean Yield for Four Maturity Groups
average of 2 years and 4 varieties
Mid-June PD, Portageville, MO, Vories & Shannon

III: 55.3 a
IV: 57.6 a
V: 54.7 a
VI: 49.1 b
Use “normal” maturity for region

If planting delayed to ultra late, maybe earlier ½

Increase seeding rate
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New “Missouri Soybean Center”
soybeancenter.missouri.edu