

Crop Tech Cafe Preharvest Soybean Yield Estimator

(Derived from the Simplified Method by Dr. Shaun Casteel, Purdue University)

How-to-video, step-by-step guide, and Excel estimator tool available at:

<http://croptechcafe.org/soybeanyieldestimator/>

Step 1: Recommended time of year or growth stage for yield estimates

- Typically the end of August
- R5.5 or later. Picture to the right shows that the last pods are set on the plant. At R5.5, soybean have reached max plant height and they have the maximum amount of pods.
- Ideal growth stage is R6, full seed, growth stage so you can get a better idea on the number of seeds per pod and seed size.



Step 2: Determining the length of row to cut for 1/10,000 of an acre

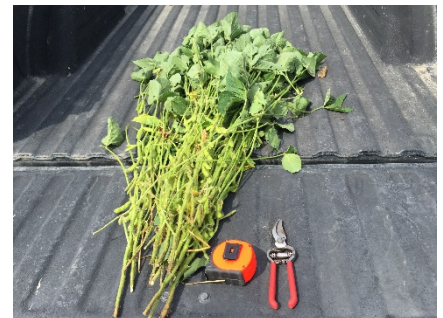
Length of row to cut for 1/10,000 ac: $627.26 / \text{row spacing in inches}$

- 30" rows = 21 inches, 1 row
- 20" rows = 31 inches, 1 row
- 15" rows = 21 inches, 2 rows
- 10" rows = 31 inches, 2 rows
- 7.5" rows = 21 inches, 4 rows



Step 3: Counting pods and seeds per pod

- Count the total number of pods for the area cut
 - Example from the 2015 Dodge County Crop Tour: 338 to 692 pods per 1/10,000 of an acre
 - NOTE: Range in the number of pods per plant was 0 to 71.
- Count the number of seeds per pod on two representative plants
 - Range can easily vary from 2.0 to 3.0 seeds per pod



Step 4: Estimating seed weight

Seeds/lbs	Size	Division Factor
2500	Large	15
2666		16
2833		17
3000	Normal	18
3166		19
3333		20
3500	Small	21



Step 5: Adjusting for post yield estimation losses

- Post yield estimate losses including aborted pod and arrested seed development.
- Preharvest losses including shattering and lodging
- Harvest losses: <http://extension.missouri.edu/p/G1280>
 - Shatter losses at combine header, cylinder loss, separation loss
 - Stubble height losses and lodged or loose stalks
- Adjust for post yield estimation losses
 - Minimum = 5%
 - Average = 10-15%
 - High = 20%
- Adjust for moisture losses
 - Soybeans are rarely all harvested at 13%
 - Suggest using 8-10%



Step 6: Estimating location yields and field averages

- Pods x seeds per pod / seed weight division factor = Total yield
 - $500 \times 2.5/18 = 69 \text{ bu/ac}$
- Seed losses: Total yield x (100 - preharvest/harvest losses)/100 = Harvested yield
 - $69 \text{ bu/ac} \times 0.90 = 62 \text{ bu/ac}$
- Moisture correction: Harvested yield x (100-13)/(100-Harvest Moisture) = Location Yield
 - $62 \text{ bu/ac} \times (87)/(100-9) = 59 \text{ bu/ac}$
- Average the yield from 3 or more locations
- Weight yield estimates by management zone acreage



Step 7: Keep track of your values.

- Compare yield estimates to actual harvested yield and moisture
- Good to have a historical perspective on pod counts and seeds per pod for future years to calibrate for your area of Nebraska and your fields.



For more information on estimating soybean yield prior to harvest, contact me:

Nathan Mueller, PhD, CCA
Nebraska Cropping Systems Extension Educator
Saline, Jefferson, and Gage counties
nathan.mueller@unl.edu