UNIVERSITY OF MISSOURI
Extension

Estimating Soybean Yields Prior To Harvest

Agronomy Technical Bulletin

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Soybeans are indeterminant plants which means there are several reproductive stages that overlap during the life of the soybean plant. Flowers, pods, and seed fill may be occurring at the same time. Indeterminant growth habit of soybeans allows the plant to compensate for poor growing conditions.

Soybean yield consists of plants per acre, pods per plant, seed per pod. Only at growth stage R6 can soybean yields be reasonably estimated. This is when one of the upper 4 most nodes on the main stem have a pod in which the seed completely fills the pod cavity. However, pods can still abort at this stage.

The soybean plant at each node produces a raceme which is a group of flowers that bloom at each node. Each plant has three racemes at each node. The flowers will abort during drought and fail to set pods. If this happens, then the next set of flowers bloom within the raceme or moves to the next raceme for blooms.

There is a point in which all flowers will be expended. Growers should follow soybeans closely to determine when flowers stop and pods form. The time between flowers ceasing to bloom causing limited pod set and leaf drop is narrow. One should evaluate the nodes throughout the plant to evaluate blooming and pod set. Typically, flowers will continue at the top 4 nodes of the main stem of the soybean plants because of the indeterminate growth habit. However, these nodes should not be considered unless the variety is a Group IV or late planted variety. Growers needing to utilize drought damaged soybeans should monitor fields twice per week at a minimum.

Typically, seed set occurs with Group III soybeans the first couple of weeks of August so time is getting short. Failure to set pods and seed within pods is an indication of low yields.

1. Determine plant population by selecting the row spacing that equals 1/1000th of an acre.

6 inch rows = 87 feet—1inch

7 inch rows = 74 feet-8 inches

7.5 inch rows = 69 feet - 8 inches

15 inch rows = 34 feet—10 inches

30 inch rows = 17 feet—5 inches

2. Determine the pods per plant. This will vary with plant spacing and weather. Count a minimum of 10 randomly selected plants.

3. Determine the seeds per pod. Soybeans typically average 2.5 seeds per pod. In dry conditions, these can drop to 1 or 2 seeds per pod.

4. Determine the seeds per pound. This varies with genetics and I would start with the seed size listed on the seed tag from spring planting. Adjust up or down based on environmental conditions. If drought conditions exist, the seeds per pound would be greater.

5. Use the following formula:

(Plants per acre) X (pods per plant) X (seeds per pod) / (seeds per pound) / (pounds per bushel)=(bushels per acre)

Example: (150,000) X (20) X (2.5) / 3000 = 2500 then: 2500/60 = 41.6 or 42 bushels per acre.