The initiation of flowering on a soybean means that the plant is transitioning into the reproductive growth stage. Most full-season soybeans enter reproductive growth approximately 45 to 55 days after planting. Double crop soybeans will typically enter reproductive growth approximately 34 to 38 days after planting. During this time, the plant has the ability to compensate for any plant injury or adverse growing conditions. Soybeans are prolific flower producers, although more than half are typically aborted prior to pod development.

**Soybeans Have Two Different Growth Habits:**

- **Indeterminate Soybeans:** They continue to produce vegetative growth and new nodes while the reproductive stages are occurring until approximately the R5 growth stage.
- **Determinate Soybeans:** In this instance, the vegetative growth is complete prior to or shortly after flowering occurs.

**R1 Growth Stage**

The R1 growth stage occurs once one open flower is visible at any node on the main stem. Flowering will typically start midway up the plant, and will then progress up and downward. Petals will fall off, and pods will begin to elongate three to four days after the flower opens. Any short term environmental stress typically has a minimal effect on yield during this stage.

Figure 1: Soybean flowering begins mid-canopy and progresses up and down the stem.

**R2 Growth Stage**

The R2 growth stage, or full flowering, occurs when a flower on the main stem is visible at one of the top two nodes with a fully developed trifoliate leaf. Soybeans rapidly produce flowers from R2 to R3, and N-fixation increases in the roots. This period is the beginning of rapid growth and nutrient accumulation in the plant to prepare for pod fill.

Figure 2: Soybean plant at R2 growth stage.

**R3 Growth Stage**

The R3 growth stage, or beginning pod, has a 3/16-inch pod at one of the top four nodes on the main stem with a fully developed trifoliate leaf. According to our PFR research, this is also the ideal time to apply a fungicide, if one is needed. This growth stage will occur around two weeks after the beginning of flower.

Figure 3: A R3 Soybean plant with leaves removed to show the pods.
R4 Growth Stage

At the R4 growth stage (or full pod) the soybean plant has a ¾-inch pod at one of the top four nodes on the main stem. During this time, rapid pod growth and the beginning of seed development is occurring. This stage is also the most sensitive period for soybean yields. Any environmental stress or plant injury at this time could have an effect on yields due to reduced pod numbers.

Figure 4: Soybean plant at R4 growth stage.

At the R5 growth stage the seeds are at least 1/8 in. long inside the pods at one of the four uppermost nodes on the main stem. It’s at this time that rapid seed filling and redistribution of dry matter/nutrients occurs and root growth slows as seed growth begins. During this stage, the plant reaches maximum height, node number, and leaf area, and N-fixation rate peaks then rapidly decreases.

At full seed (or R6) a pod containing a green seed fills the pod capacity that is located at one of the top four nodes on the main stem. The total plant pod weight is maximized during this stage and the rate of dry weight and nutrient accumulation slows.

At the R7 growth stage the soybean plant reaches the beginning of maturity. The growth stage occurs when one normal pod on the main stem has turned brown or tan. At R7, the soybean seed has essentially reached physiological maturity. Studies have shown that, when at approximately 13% moisture, soybean yields at R7 harvests do not differ from those at harvest.

When the soybean plant reaches R8, or full maturity, 95% of the pods have turned brown. Harvest typically starts when seed moisture is between 13 to 15%, although harvesting above 13% moisture will require some drying time. Harvesting below 13% moisture can increase your risk of harvest loss due to pod shattering and split soybeans, so finding the sweet spot is important.

Days Between Growth Stages

- R1-R2: Approximately 4 Days
- R2-R3: Approximately 10 Days
- R3-R4: Approximately 9 Days
- R4-R5: Approximately 9 Days
- R5-R6: Approximately 15 Days
- R6-R7: Approximately 18 Days
- R7-R8: Approximately 9 Days

Above: R8 soybeans are at full maturity. Seeds will continue to dry down in preparation for harvest.