

Soybean flowering, pollination, and bees:

Soybean flowers self-pollinate in North Carolina and do not need pollination to set a crop. However, flowering soybean is attractive to bees, primarily because of their relatively prolific nectar production that is high in sugar content. Soybean nectar is secreted usually between 9AM and 3PM, with the volume that is produced decreasing during the day. Bee exposure to insecticides is most likely when soybeans are flowering, but this can vary depending on conditions.

Soybean growers use maturity groups and planting date to manage growth and bloom time of soybeans. Maturity group is measured by the relative time between plant emergence to the time of flowering. If soybean plants have made adequate growth to enable flowering, then they will flower soon following the summer solstice. Night temperature also has an effect on when flowering begins; if nights in late June are warm, flowering may start within a few days of the solstice.

In determinate cultivars, flowering occurs more or less simultaneously on racemes located on all stem nodes. In North Carolina, both indeterminate and determinate cultivars are grown. Indeterminate cultivars, which are generally maturity groups <5, flower first at the lower nodes, with flowering continuing as new nodes develop. Determinate cultivars, which are generally maturity groups >4, flower simultaneously on racemes located on all stem nodes. New flowers may appear over a period of around 20 days in determinate cultivars and around 34 days in indeterminate cultivars, although this varies.

Minimizing insecticide exposure to bees in soybean:

Insecticide applications are rarely needed during soybean flowering to manage insect pests, since the plant produces many more flowers than are needed to produce a high-yielding crop. Pollinator exposure to insecticides can be limited by:

- following recommended treatment thresholds
- making insecticide applications during the morning (before 9AM) or during the afternoon (after 3PM), when nectar volume and production is lower
- avoiding insecticide applications when honey bees or wild bees are actively foraging
- applying selective insecticides that are not toxic to bees, when possible
- avoiding insecticide tank mixes or pre-mixed products that contain insecticides that are not needed for the target insect pest
- contacting beekeepers in the area to make them aware of when insecticides are going to be applied