

Cotton flowering, pollination, and bees:

Cotton is a perennial plant that has been adapted to an annual crop and flowers indeterminately. Cotton is self-pollinating and does not need pollination to set a crop. The flowers open as white blooms in the morning with pollination occurring within four hours, and fertilization within the flower occurring 12 to 24 hours later. A single cotton flower opens at dawn, withers in the afternoon, closes by sunset, and does not reopen. After bloom initiation, the continuation of flowering is a function of vegetative growth; blooming takes place for a period of approximately six weeks. Earlier planting dates may have a longer bloom period, especially with late-season cultivars.

Cotton pollen is large, tends to clump, and is sticky due to pronounced spines and a viscous coating. As a result, honey bees cannot pack cotton pollen into their pollen sacs on their hind legs (corbiculae). Hence, it is not a preferred plant for honey bee foraging, and therefore, it is unlikely that any pesticide residues in the pollen would be transported to the hive. However, cotton flower nectar can be attractive to bees, although it is relatively low in sugar content. Cotton also produces nectar in extrafloral nectaries, which are frequented by pollinators due to their spatial availability and relatively high sugar content. Nectar production tends to peak between 2PM to 4PM and is best with very sunny days and mild nights and on clear calm days between 25 to 35°C.

Minimizing insecticide exposure to bees in cotton:

Broad-spectrum insecticide applications are common and needed to protect North Carolina cotton from potentially damaging insect pests during bloom, since bolls become common after the second week of bloom initiation. The most common pests are stink bugs, followed by plant bugs and bollworm.

Pollinator exposure to insecticides can be limited by:

- following recommended treatment thresholds
- treating before midday, before nectar production peaks
- 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