What is LAI? Leaf area index (LAI) is the ratio of leaf area to land area. Soybean requires LAI values of at least 3.5 to 4.0 by early to mid-reproductive developmental stages to achieve maximum yield for that year and environment. A soybean crop that does not achieve adequate LAI could be at risk to yield loss from insect leaf-feeders, whereas, fields with high (4+) LAI can sustain significant insect feeding with little to no effect on yield. This publication will aid producers in evaluating soybean fields at risk to yield reduction from leaf-feeding insects.

Based on recent research in Virginia, soybean plants that meet or exceed the critical 3.5 to 4.0 LAI level by R3 (beginning pod) to R5 (beginning seed) have potential to achieve maximum yield. Assuming a yield potential of 46 bu/acre, there is a 10 bu/acre yield loss for every unit decrease in LAI below a critical level of 4.0. Photographs on the reverse of this page can serve as a guide for identifying LAI values.

Assuming that each trifoliate in this example has a total leaf area of 1 ft$^2$, and the area within the dotted line represents a land area of 1 ft$^2$, the LAI values of these soybean plants are 5 and 3, respectively. This is for illustration only. Actual soybean plants need more than 5 or 3 trifoliates to obtain these respective LAI values.

Insect defoliators of soybean:

- Green cloverworm
- Bean leaf beetle
- Mexican bean beetle
- Japanese beetle
Plate 1. Leaf area index (LAI) values ranging from 2.25 to 4.75 in soybean with 15-inch row spacing. As a reference, the exposed area of the stake at the front of each plot is about 10-inches high.