MONITORING STINK BUGS IN COTTON IN SOUTH CAROLINA

M. E. Roof and Fran Arnette
Clemson University PDREC
Florence, SC

Abstract

Stink bugs have become a major pest of cotton in most southeastern states in the wake of the boll weevil eradication and the advent of *Bt* cotton. Both of these pest management strategies have resulted in fewer insecticide applications being applied by cotton farmers. This has provided more "windows of opportunity" for stink bugs to exploit cotton as a host. To further complicate matters, a succession of relatively mild winters throughout most of the 1980's and 90's has provided better overwintering conditions that have allowed more stink bugs to overwinter and produce more economic infestations in cotton as well as other cultivated host plants. By mid July, when cotton had begun to bloom and set bolls, stink bug numbers were already at high enough levels to cause economic problems.

The major stink bug pests of cotton in South Carolina are the green stink bug, *Acrosternum hilare* (Say) and the southern green stink bug (*Nezara viridula* (Linnaeus). These insects feed primarily on small green bolls. Their green coloration provides these insects with a certain degree of camouflage, that makes them difficult to see on the cotton plants. Stink bugs are often overlooked as scouts move through a field in search of bollworms and other insect pests. To facilitate monitoring fields for stink bugs, Clemson University Extension recommends using a beat cloth placed on the ground between the rows. Plants on 3 feet of row are shaken over the beat cloth and the stink bugs landing there are counted. We suggest checking at least 30 row feet per field. When an average of one or more stink bug adults or large nymphs are found per 6 feet of row, an insecticide treatment is recommended (Bidrin, methyl parathion and pyrethroids are recommended for control). Scouts are also instructed to examine at least 25 quarter-sized bolls per field. The treatment threshold for boll damage is 20%.

Stink bugs can be an elusive insect pest in cotton. Farmers often find economic damage in fields where scout have failed to report seeing stink bugs. We have heard many complaints from field practitioners about being unable to find stink bugs with the beat cloth. Stink bugs are very mobile and do tend to move about in a field, or even in and out of a field. Another reason for the lack of success in finding stink bugs may be that some scouts are not taking the time to adequately sample fields. The method is somewhat time consuming, and the tool itself a bit unhandy to carry through a field. In 1985, we developed an alternative method to scout for beneficial arthropods and plant bugs using a plastic pan. The pan is usually white or light blue and the dimensions are 11 in. wide by 13.5 in. long by 5.5 in. deep. The pan is held vertically next to a row of plants and the plants are beaten against the pan twice for each sample taken. Depending upon the numbers of beneficials present, 1-10 samples may be taken prior to stopping to count and identify the insects in the pan. The usual method is to take 40 pan samples per field. During the last several years we have used the panning method to scout for stink bugs in cotton fields. In this study we compared panning to the beat cloth for assessing stink bug numbers in cotton.

We compared the beat cloth and pan methods on several different farms in four counties (Darlington, Dillon, Lee and Marlboro) in 1999. Five sites per field were sampled by each method. Two beat cloth samples and 20 pan samples were taken at each site. After taking the beat-cloth samples, the scout walked diagonally across at least five rows before initiating the pan samples. Five quarter-sized bolls were also crushed open and examined for stink bug feeding damage at each site.

A total of 111 fields were checked on six sampling dates beginning on 26 August and ending on 8 September. An average of 1.8 and 3.5 stink bugs per field were found with the beat cloth and panning methods respectively. Stink bug damaged bolls averaged 4.8%. Stink bugs were detected in 74 of the fields checked with the beat cloth compared with 85 detections with the pan method. In 17% of the fields checked by the beat-cloth method, stink bug numbers were at or above the threshold of 1 or more per 6 feet of row. Damaged bolls were detected in 54% of the fields, and the 20% damage level was exceeded in 7% of the fields.

In summary, panning for stink bugs appeared to be a suitable alternative to the beat cloth. More stink bugs were found using the pan with a similar time commitment. In tall cotton, where the beat cloth is of little use in finding stink bugs, the pan works quite well. Less experienced scouts will be able to observe and identify insects more readily with the pan than the beat cloth. The device is also readily available in many department stores. Further studies should focus on developing a proper threshold for this method.

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