



## BEST MANAGEMENT PRACTICES FOR PLANT BUGS IN MIDSOUTH COTTON

- **Concentrate cotton acreage into contiguous blocks to reduce cotton borders with other crops and noncrop areas.** Many plants serve as hosts for plant bugs. Plant bug populations will often build to high levels on these hosts then move into cotton as the host matures.

Reducing the amount of borders between cotton and alternate plant bug hosts helps reduce the number of insecticide applications required for plant bug control. Two borders that often exhibit high plant bug densities are cotton borders with corn or CRP set aside.

- **Plant an early maturing variety.** Planting an early maturing variety is not a specific means of managing plant bug populations, but it helps reduce the amount of time cotton is exposed to plant bugs. This will reduce the number of insecticide applications required for plant bug control. Several high-yielding early maturing varieties are currently available for all areas of the Midsouth. Select one of these varieties that fits your soil type and irrigation needs.
- **Manage vegetation around fields to promote growth of nonhost plants, such as Bermuda grass.** Turn-row

vegetation can serve as a host for plant bug populations. Chemical or mechanical (mowing) management will promote the growth of nonhost plants such as Bermuda grass and will reduce the number of plant bugs that eventually infest a field. Controlling broadleaf weeds in the spring has been shown to reduce the number of plant bug insecticide applications eventually required in cotton.

Plant bugs have become a very serious insect pest of cotton in the Midsouth. Control is often difficult because of high population densities and resistance. Reliance to older insecticides has also increased significantly, but no new control options are available. Recognizing these and other issues, the following best management practices were developed to reduce the cost of plant bug control. There is no "magic bullet" for plant bug control but the more of these practices that are adopted, the less severe plant bug damage will be.

- **Avoid planting within 50 feet of trees or any other obstacle that may reduce insecticide coverage.** Impediments, such as trees and power lines, limit the ability of application equipment to reach some areas with an insecticide. These areas receive either reduced rates of insecticides or are totally untreated. These areas can serve as a reservoir for plant bugs to re-infest fields after treatment.

- **Monitor multiple areas in fields away from objects that may reduce spray deposition.** Many objects extraneous to a field, such as trees, power lines, etc., can significantly restrict treatment deposition. Insect densities in these areas are often much higher than the remainder of the field. Avoid checking near these areas to avoid potential bias treatment decisions toward treatment.

- **Consider border sprays 100 to 200 feet in field areas adjacent to alternate plant bug hosts.** Insecticide applications for plant bug control on cotton borders with other hosts helps reduce the number of plant bugs that infest the remainder of the field. Thus, border applications reduce the total number of insecticide applications required for the whole field. Time applications when plant bugs begin to infest cotton fields. Also consider the option of a Temik sidedress application in lieu of foliar sprays.
- **Use aircraft equipped with GPS guidance systems and automatic flow rate controllers.** Aircraft ground speed can vary as much as 20 percent to 25 percent during an application. Thus, applied insecticide rates can vary 20 percent to 25 percent. A flow rate controller adjusts the aircrafts output flow rates such that the applied insecticide rates are similar regardless of ground speed. Furthermore, GPS guidance systems help pilots avoid skips and overlaps.
- **Supply enough insecticide to spray 120 percent of the total acreage by air or 110 percent by ground.** Purchased insecticide quantities often equal the exact acreage of the field, with spray overages not taken into account. These overages (caused by trimming, treating outside field, slowing down for water furrows, etc.) can be quite significant, especially as field size declines. These overages cause a direct reduction in insecticide rate applied to the field. The amount of insecticide or the mixture size should equal 120 percent by air or 110 percent by ground of the total field acreage to account for these overages.
- **Increase reliance on ground application as field sizes decline below 50 acres.** Aircraft sizes and ground speeds have increased significantly over the past 10 years. These aircraft can treat considerable acreage today because of increases in aircraft size and speed. As aircraft size and speed increases, however, the ability to accurately spray small fields has decreased. Ground applicators can provide better coverage on these smaller fields.
- **Use flat fans or twin flat fan nozzles at 50 to 60 psi for ground applications.** Spray droplet atomization is important factor to increase spray coverage. Small droplets increase insecticide efficiency by increasing plant coverage. Low drift tips should not be used for insecticide applications.
- **Check water ph to prevent insecticide breakdown.** High ph water can cause breakdown of many insecticides. Check water ph regularly and maintain ph levels at 6 or less.
- **Limit the use of late-season plant bug insecticides to late-season applications only.** Populations of tarnished plant bugs have expressed resistance to several insecticide classes. Insecticides used for late-season plant bug control should not be used during the early season to limit plant bug exposure to resistance selection from these insecticides. Late-season insecticides include acephate and Bidrin.
- **Base early season treatments on sweep net sampling data and square retention.** Excessive pre-bloom insecticide applications have been shown to occasionally decrease lint yield (reason unknown). Basing pre-bloom treatment decisions on recommended treatment thresholds reduces the probability of decreased yields associated with excessive treatments.
- **Base mid- and late-season treatments on sampling, usually with a black drop cloth, for nymphs.** Nymphs generally compose the majority of plant bug populations after first bloom. Basing treatment decisions on drop cloth counts will increase the probability of a correct treatment decision based on need. Nymphs are more visible on black than on white drop cloths.
- **Manage treatment expectations.** Don't expect too much from an insecticide application. Insects are mobile and will move in and out of treated areas. Therefore, 100 percent control is an unreasonable expectation. Residual activity is also an area to manage expectation. No insecticide currently on the market for plant bug control provides acceptable residual activity longer than 48 hours, most are effective for less than 12 hours. To expect an insecticide to be active five days after application is unrealistic.

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