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IMPORTANCE OF DICROTOPHOS (BIDRIN®) IN EVOLVING COTTON INSECT MANAGEMENT PROGRAMS

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Abstract

Dicrotophos (BIDRIN) has been available to U.S. cotton producers for almost 40 years. Changes in the cotton production landscape in the last several years, including the eradication of the boll weevil, the increasing use of *Bt* cotton and a shift to target-specific insecticides has actually resulting in BIDRIN being of more value to growers today than in the past. These landscape changes have resulted in the rise of stink bugs (Pentatomidae) as a key pest in cotton. Plant bugs also remain a very serious pest of cotton in certain production areas, particularly the Midsouth states. According to *Cotton Insect Losses in 2002*, lygus (plant bugs) ranked number 2 and stink bugs ranked number 4 as pests causing the greatest economic loss to growers.

Dicrotophos has proven to be an extremely effective product for the control of stink bug species as well as plant bugs. A review of several pieces of University data indicates the following:

- BIDRIN provides both contact and residual control of stink bugs and plant bugs.
- BIDRIN is effective against all stink bug species, including the brown stink bug, which is difficult to control with pyrethroids.
- BIDRIN is effective against both stink bug adults and nymphs.
- BIDRIN is effective against both plant bug adults and nymphs.
- BIDRIN is an excellent choice when mixed populations of plant bugs and stink bugs are in the field at the same time.

Another important factor relating to dicrotophos is its value in resistance management programs. Dicrotophos used in rotation or tankmixes with pyrethroids will reduce the development of resistance in plant bugs and stink bugs. Recently, the foliar use of neonicitinoid products has increased for the control of primarily plant bugs and aphids in cotton. Dicrotophos is needed in rotation for resistance management to those pests as the use of neonicitinoids continues to increase.

Recent sales information shows an increase in the use of BIDRIN in late July and August, which corresponds to the application window for stink bug in the Midsouth and Southeastern states. A high percentage of BIDRIN is aerially applied for stink bug control because the cotton already has significant sized bolls at this time. Typical rates for stink bug applications range from 0.33 to 0.5 lb ai/ac.

Dicrotophos is currently being evaluated in the reregistration process with EPA. EPA has proposed several restrictions that if implemented, will reduce the value of BIDRIN to U.S. cotton producers. Few clear alternatives to dicrotophos are available, particularly for the control of the brown stink bug species.

The staff of the National Cotton Council prepared a "Dicrotophos Benefits Statement" and submitted it to the EPA on November 13, 2001. NCC estimated that the loss of BIDRIN would result in estimated crop losses of $24.91 million. In addition, the cost differential of the best alternative products was estimated at $19.62 million. The total impact of the loss of BIDRIN was estimated to be $44.53 million annually. NCC also made the following statement: "The value of dicrotophos as an effective tool in resistance management cannot be estimated in economic terms, but it is real and it is significant."