

**BOLLGARD®COTTON- THREE YEARS
OF RESISTANCE MANAGEMENT
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Abstract

Lepidopteran cotton pests have demonstrated an ability to develop resistance to many chemical insecticides. As a preemptive measure, cotton with the Bollgard gene must be managed in ways that will retard resistance development. Refuges ensure that some lepidopteran populations are not exposed to the *B.t.k.* protein so they can reintroduce susceptibility into the selected populations. Growers who plant Bollgard cotton are required to plant a refuge on their farm. They may choose one of the following options or a combination of the following two options: 100/25 Option- For every 100 acres of Bollgard, plant an additional 25 acres of non-Bollgard (20% refuge). No foliar Bts can be applied to the refuge. 100/4 Option- For every 100 acres of Bollgard plant an additional 4 acres of non-Bollgard (3.8% refuge). Do not treat the refuge with foliar Bts or any foliar insecticide active against target lepidopterans. Refuges must also be managed for optimum growth and development and should be planted in close proximity to Bollgard cotton.

On-farm visits were made to randomly selected Bollgard growers in 1996, 1997 and 1998. The results of these on farm surveys indicate that approximately 99%, 98% and 91% of the growers in 1996, 1997 and 1998 respectively were following the refuge guidelines. The following reasons were cited for not following the refuge guidelines: (a) refuge lost due to environmental conditions, (b) using a neighbor's refuge, (c) not enough refuge acres, (d) interplanting the refuge, (e) not aware of refuge requirements, (f) spraying the 4/100 refuge option for lepidopterans, (g) no refuge planted and (h) uncooperative.

Based on three years of on-farm visits with Bollgard growers, the vast majority of the growers appear to be following the refuge guidelines. Even though 91% of the growers in 1998 appear to be following the refuge guidelines we are concerned about the drop in compliance in 1998 compared to 1996 and 1997. We are implementing a number of action items in 1999 to help improve the resistance management program for 1999. Some of the action items include: (a) a letter to growers stressing the importance of resistance management and reminding them of the requirement for a refuge if they choose to grow Bollgard, (b) licenses withheld from abusers, (c) media awareness tour and (d) continue on farm visits in 1999 to evaluate compliance.