

NEW BOLLGARD REFUGE REQUIREMENTS FOR 2001

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Abstract

EPA has announced new required refuge options for growing Bollgard cotton for 2001. The purpose of this document is to more fully explain the new options. A 2001 Bollgard IRM Brochure that further explains these options is available upon request. This brochure will be distributed throughout the cotton industry, including growers, consultants, university research and extension personnel, retailers, seed dealers and seed companies. Monsanto and the National Cotton Council will conduct an extensive educational campaign to ensure that all segments of the cotton industry are informed of these new requirements. We request that the state extension organizations and private consultants assist in this educational effort.

Discussion

The new refuge options for 2001 are as follows:

1. **20% Sprayed Option** - This option amends the existing 20% (or 25 acres of nonBollgard for every 100 acres of Bollgard) option with the additional requirement that **all** Bollgard fields must be **within one mile (preferably one-half mile)** of the associated refuge.
2. **5% Unsprayed Option** - the requirement for the unsprayed option has been increased from approximately 4% (or 4 acres of nonBollgard for every 100 acres of Bollgard) to a **true 5%**, or 5 acres of unsprayed nonBollgard refuge for every 95 acres of Bollgard. Additionally, the unsprayed refuge **must be at least 150 feet wide** (approximately 48 rows in conventional row width cotton) **and all** associated Bollgard fields must be within **one-half mile** of the unsprayed refuge. These requirements apply to all 5% unsprayed option users regardless of the percent of cotton acres in that county planted to Bollgard. The treatment restrictions for the unsprayed option remain the same as was in place for the 4% unsprayed option in 2000.
3. **5% Embedded Option** - a third option has been added for 2001 which is the "embedded" option. Unlike the 5% Unsprayed Option, this option allows the refuge to be treated with any insecticide **at the same time as the Bollgard is treated**, as long as the refuge is "embedded" in the field or the "field unit".

For Large Fields, 5% of the field would be planted to a non-Bollgard variety, the rest with Bollgard. If the Bollgard field needed treatment for bollworms (or any other pest), the entire field, including the refuge, **could be sprayed with the same insecticide at the same time (i.e., within the same 24 hr period). The refuge could not be treated with any insecticide labeled for lepidopteran control independently of the associated Bollgard field(s).** For very large fields (more than one mile long or wide), multiple refuge blocks across the field should be used.

For Smaller Field Situations, fields could be grouped into "field units" so that one of the smaller fields, or a portion of one of the fields, would serve as the "embedded" nonBollgard

refuge. Likewise, this embedded refuge could be treated with the same insecticide at the same time that all of the associated Bollgard fields were sprayed, but could not be treated with any insecticide labeled for lepidopteran control independently of the associated Bollgard fields. **Any fields contained within a one mile square area (one mile by one mile) can be considered a "field unit".**

As required for the 5% untreated option, the embedded refuge within a field or "field unit" **must be at least 150 feet wide** in all areas where cotton bollworms or tobacco budworms are a potential pest.

For areas in California, Arizona and New Mexico, where pink bollworm is the only pest of concern (such as central Arizona), growers are allowed to mix individual rows of nonBollgard with Bollgard rows to embed their refuge, as long as the nonBollgard rows represent at least 5% of the total Bollgard cotton. An example of how this "embedded" option would be planted is placing a nonBollgard variety in one seed hopper and putting Bollgard seed in the remaining seed hoppers, resulting in interspersed rows of a nonBollgard variety across a Bollgard field. Growers should be cautioned to confirm the appropriateness of interspersing different varieties within a field with their respective seed company(s) and crop advisors. **Interspersing rows of nonBollgard varieties and Bollgard varieties within a field is NOT allowed where cotton bollworms or tobacco budworm can be significant pests.** This practice is not allowed for cotton grown in Texas or east of Texas.

Community Refuge

As distance-to-refuge requirements become more specific, Monsanto recognizes that growers who farm across broad areas on noncontiguous fields may have difficulty in meeting those requirements with all field configurations. Particularly where smaller, isolated fields are involved, it may be impossible for an individual grower to have an associated refuge within one-half to one mile without placing the refuge within the individual field. Placing a refuge within these smaller, isolated fields is often impractical because of the requirement that the refuge must be at least 150 feet wide.

Additionally, there is merit to the concept of multiple growers in an area working together to ensure that the Bollgard cotton and refuge fields are appropriately sized and placed to provide optimum insect resistance management (IRM) value, while providing for more flexibility in refuge field placement than can be achieved by the individual grower working alone. Monsanto recommends the following community refuge plan to address the situations described above:

Community Refuge Plan

A group of growers who farm in a contiguous area (a "community") may agree to implement a single IRM plan for the entire area managed by those growers. The Community IRM plan must meet the requirements of either the 5% unsprayed option or the 20% sprayed option, or an appropriate combination of the two options. For 2001 growers will not be allowed to use the 5% embedded option within a community. The larger area bounding the entire group of farms would form a geographic "community" and the refuge requirements would apply to the community of growers and the geographic community exactly as they apply to a single grower. The community refuge agreement among the growers must require that an appropriate amount of refuge (depending on the option chosen) is associated with the **total** amount of Bollgard grown by the community **and** all distance requirements are met for all Bollgard fields included in the community. A community refuge plan will require cooperative planning

by all growers involved *prior* to the season to ensure that all Bollgard fields planted have associated refuge of the proper size and within the proper distance. All growers participating in a community refuge plan will be required to complete and sign a form of Community Refuge Agreement provided by Monsanto. Completed forms will be faxed to Monsanto. Individual participating growers must maintain a copy of the Community Refuge Agreement and field maps that show field identity by grower, field size, crop planted, and location and proximity of Bollgard and nonBollgard refuge cotton fields.

Each community must designate a coordinator for the total community refuge plan. This coordinator must be knowledgeable on all of the requirements of the community plan and agree to represent the group to explain the plan. This coordinator will act as a facilitator and/or spokesperson for the community refuge group, but as the coordinator, is not responsible or personally liable for the acts or omissions of other members of the community. The coordinator must maintain a copy of the community refuge plan and the field maps describing the individual grower participation the community refuge plan for the entire community and must make them available upon request by a Monsanto representative. If Monsanto requests a grower visit to monitor IRM plan compliance with a community member, the individual grower is responsible to meet with the Monsanto representative and present the entire community plan, or to arrange for the coordinator to meet with the Monsanto representative.

The following section (or similar language) will be included in the 2001 Bollgard Refuge Guide (available upon request) to describe the individual grower's responsibility if one or more growers within the community group does not meet his/her obligations to the rest of the group:

All growers participating in a Community Refuge Plan as described in the Technology Use Guide and 2001 Bollgard IRM Brochure agree to be responsible for the proper implementation of that plan. The "community" and all the growers in that community are responsible for any instance of noncompliance. If any community plan member is visited by a Monsanto representative and it is determined that refuge fields are of insufficient size, not within the proper distance from the Bollgard fields, or are improperly managed agronomically or according to the plan, then either all of the members of that community will be denied the option of a Community Refuge Plan the following year or, at a minimum, **all** of the members of that community plan will be inspected the following year by a Monsanto representative to ensure community compliance. If there are any instances of noncompliance in that community the second year, all the members of the community will be ineligible to license Monsanto technologies the next year.

Conclusion

Successful implementation of a Community Refuge Plan will require careful planning and coordination among community members. The future availability of this option, as well as the success of managing insect resistance, will be determined by the degree to which growers adhere to the requirements and properly implement this strategy. It is also imperative that Bollgard growers who are not involved in community plans make every effort to understand and properly implement the new refuge options in 2001. If there are any questions regarding the Community Refuge Plan or any of the three refuge options, please contact a Monsanto representative, seed company representative or seed dealer for further clarification.