	U.S. ENVIRONMENTAL PROTECTION AGENCY Office of Pesticide Programs Biopesticides and Pollution Prevention Division (7511P) Ariel Rios Building 1200 Pennsylvania Ave., NW Washington, D.C. 20460		EPA Reg. Number: 524-522	Date of Issuance: 6/1/07
	NOTICE OF PESTICIDE: <input checked="" type="checkbox"/> Registration <input type="checkbox"/> Reregistration (under FIFRA, as amended)		Term of Issuance: Unconditional	Name of Pesticide Product: Bollgard II Cotton
Name and Address of Registrant (include ZIP Code): Monsanto Company 800 North Lindbergh Blvd St. Louis, MO 63167				
<p>Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.</p> <p>On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act. Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.</p> <p>This registration does not eliminate the need for continual reassessment of the pesticide. If EPA determines at any time, that additional data are required to maintain in effect an existing registration, the Agency will require submission of such data under section 3(c)(2)(B) of FIFRA.</p> <p>This product is registered in accordance with FIFRA section 3(c)(5) and is subject to the following terms and conditions:</p> <ol style="list-style-type: none"> 1. Submit/cite all data required for registration of your product under FIFRA section 3(c)(5) when the Agency requires all registrants of similar products to submit such data. 2. The following information regarding commercial production must be included in the grower guide for Bollgard II® cotton and is a term of this registration: <ol style="list-style-type: none"> a) No planting or sale for commercial planting of Bollgard II cotton is permitted south of Route 60 (near Tampa) in Florida. b) No planting or sale for commercial planting of Bollgard II cotton is permitted in Hawaii, Puerto Rico, and the U.S. Virgin Islands. c) No planting or sale for commercial planting of Bollgard II cotton is permitted in the following counties in the Texas panhandle: Dallam, Sherman, Hansford, Ochiltree, Lipscomb, Hartley, Moore, Hutchinson, Roberts, and Carson. 				
Signature of Approving Official: <i>GZH see last page</i>			Date: 6/1/07	

3. The following information regarding test plots and seed production must occur on bags of Bollgard II cotton intended for these purposes and is a term of this registration:

- a) Test plots or breeding nurseries, regardless of the plot size, established in Hawaii must not be planted within 3 miles of *Gossypium tomentosum* and must be surrounded by 24 border rows of a suitable pollinator trap crop.
- b) Experimental plots and breeding nurseries of Bollgard II cotton are prohibited on the U.S. Virgin Islands, and
- c) Test plots or breeding nurseries, regardless of the plot size, established on the island of Puerto Rico may be established without restriction if insecticide applications are used to effectively mitigate gene flow. Otherwise, established test plots or breeding nurseries, regardless of the plot size, established on the island of Puerto Rico must not be planted within 3 miles of feral cotton plants and must be surrounded by 24 border rows of a suitable pollinator trap crop.

Upon approval by EPA, test plots and/or breeding nurseries in Hawaii, the U.S. Virgin Islands, and Puerto Rico may be established without restrictions if alternative measures, such as insecticide applications, are shown to effectively mitigate gene flow.

4. Insect Resistance Management Program Elements. The required IRM program for Bollgard II cotton must have the following elements:

- a. Requirements for a non-*Bt* cotton refuge in conjunction with the planting of any acreage of Bollgard II cotton in the states of Arizona, California, and New Mexico and in the following Texas counties: Brewster, Crane, Crockett, Culberson, El Paso, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Terrell, Val Verde, Ward, and Winkler;
- b. Requirements for Monsanto to prepare and require Bollgard II cotton users to sign "grower agreements" which impose binding contractual obligations on the grower to comply with the IRM requirements;
- c. Requirements for Monsanto to develop, implement, and report to EPA on programs to educate growers about IRM requirements;
- d. Requirements for Monsanto to develop, implement, and report to EPA on programs to evaluate and promote growers' compliance with IRM requirements in the states of Arizona, California, and New Mexico and in the following Texas counties: Brewster, Crane, Crockett, Culberson, El Paso, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Terrell, Val Verde, Ward, and Winkler;
- e. Requirements for Monsanto to develop, implement, and report to EPA on programs to evaluate whether there are statistically significant and biologically relevant changes in susceptibility to Cry1Ac and Cry2Ab2 proteins in the target insects;

f. Requirements for Monsanto to develop, and if triggered, to implement a “remedial action plan” which would contain measures Monsanto would take in the event that any insect resistance was detected as well as to report on activity under the plan to EPA;

g. Requirements for annual reports on or before January 31st each year for compliance assurance (including grower education) and sales. The tobacco budworm and cotton bollworm annual resistance monitoring reports must be submitted to EPA on or before June 30th each year and for pink bollworm, the annual resistance monitoring report must be submitted to EPA on or before December 31st each year. See Annual Reports section below.

5. Insect Resistance Management Requirements

a. Refuge Requirements for Pink Bollworm Resistance Management only in the states of Arizona, California, and New Mexico and in the following Texas counties: Brewster, Crane, Crockett, Culberson, El Paso, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Terrell, Val Verde, Ward, and Winkler.

All growers of Bollgard II® cotton must employ one of the following structured refuge options:

1) External, Unsprayed Refuge

Ensure that at least 5 acres of non-*Bt* cotton (refuge cotton) is planted for every 95 acres of Bollgard II cotton. The size of the refuge must be at least 150 feet wide, but preferably 300 feet wide. This refuge may not be treated with sterile insects, pheromone, or any insecticide (except listed below) labeled for the control of tobacco budworm, cotton bollworm, or pink bollworm. At the pre-squaring cotton stage only, the refuge may be treated with any lepidopteran insecticide to control foliage feeding caterpillars. The refuge may be treated with acephate or methyl parathion at rates which will not control tobacco budworm or cotton bollworm (equal to or less than 0.5 lbs active ingredient per acre). The variety of cotton planted in the refuge must be comparable to Bollgard II cotton, especially in the maturity date, and the refuge must be managed (e.g., planting time, use of fertilizer, weed control, irrigation, termination, and management of other pests) similarly to Bollgard II cotton. Ensure that a non-*Bt* cotton refuge is maintained within at least ½ linear mile (preferably adjacent to or within 1/4 mile or closer) from the Bollgard II cotton fields.

2) External Sprayed Refuge

Ensure that at least 20 acres of non-*Bt* cotton are planted as a refuge for every 80 acres of Bollgard II® cotton (total of 100A). The variety of cotton planted in the refuge must be comparable to Bollgard II cotton, especially in the maturity date, and the refuge must be managed (e.g., planting time, use of fertilizer, weed control, irrigation, termination, and management of other pests) similarly to Bollgard II cotton. The non-*Bt* cotton may be treated with sterile insects, insecticides (excluding foliar *Btk* products), or pheromones labeled for control of the tobacco budworm, cotton bollworm, or pink bollworm. Ensure that a non-*Bt*

cotton refuge is maintained within at least 1 linear mile (preferably within ½ mile or closer) from the Bollgard II cotton fields.

3) Embedded Refuge

Plant the refuge cotton as at least one single non-*Bt* cotton row for every six to ten rows of Bollgard II cotton. The refuge may be treated with sterile insects, any insecticide (excluding foliar *Btk* products), or pheromone labeled for the control of pink bollworm whenever the entire field is treated. The in-field refuge rows may not be treated independently of the surrounding Bollgard II cotton field in which it is embedded. The refuge must be managed (fertilizer, weed control, etc.) identically to the Bollgard II cotton.

b. Natural Refuge Requirements for Tobacco Budworm and Cotton Bollworm Resistance Management only in the states of Alabama, Arkansas, Florida, Georgia, Kansas, Kentucky, Louisiana, Maryland, Missouri, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas (excluding the following counties: Brewster, Crane, Crockett, Culberson, El Paso, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Terrell, Val Verde, Ward, and Winkler), and Virginia.

1) Tobacco budworm sampling must be conducted for at least one year in west Texas, Alabama, and Tennessee. An appropriate gossypol analysis, statistical analysis, calculation of effective and natural refuge, and simulation modeling must be performed to determine the likelihood of tobacco budworm resistance to the Cry1Ac and Cry2Ab2 proteins expressed in Bollgard II® cotton using natural refuge. Previously, these states had only a single year of sampling data and analysis to support the natural refuge. The new data collected in 2007 and/or 2008 must be compared with previously collected data (2004 to 2006, depending on the location) to confirm the effectiveness of a natural refuge.

A report of these findings must be submitted to EPA on or before January 31st following the year of collection.

2) Monsanto must submit data to EPA by January 31st, 2012, and every five years thereafter, to support an EPA reassessment of the natural refuge and to confirm its effectiveness with tobacco budworm and cotton bollworm. The data must include: resistance monitoring data, cropping pattern analysis, and simulation modeling to reexamine levels of effective refuge in the states of Alabama, Arkansas, Florida, Georgia, Kansas, Kentucky, Louisiana, Maryland, Missouri, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. Both cropping and land use patterns can change over time, which could impact the amount of natural refuge available to tobacco budworm and cotton bollworm relative to cotton. If based on this reassessment, EPA determines that additional tobacco budworm and/or cotton bollworm sampling, gossypol analysis, statistical analysis, and simulation modeling are needed to justify continuation of the natural refuge, Monsanto must submit these data within the EPA requested timeframe. If EPA's assessment concludes that the natural refuge is no longer scientifically supported, Monsanto has agreed and must submit an application to amend the registration to restore the structured refuge requirements previously required for tobacco budworm and cotton bollworm uses.

- 3) It is recommended that Monsanto develop a more complex, spatial model of resistance for Bollgard II cotton that further considers the evolution of resistance "hotspots" (i.e. localized areas of resistance) and provide EPA with this information. Key issues like spatial structure, linkage disequilibrium, and differential movement of males and females have not yet been explored in detail for pyramided Bt proteins. Such models would be more desirable to examine the resistance evolution at the local level where natural refuge may be limited for one or more generations of tobacco budworm.

c. Grower Agreements

While Monsanto will have flexibility to design its program to fit its own business practices, the registration is specifically conditioned on meeting the following requirements.

- 1) Persons purchasing the Bollgard II cotton product must sign a grower agreement. The term "grower agreement" refers to any grower purchase contract, license agreement, or similar legal document.
- 2) The grower agreement and/or specific stewardship documents referenced in the grower agreement must clearly set forth the terms of the current IRM program. By signing the grower agreement, a grower must be contractually bound to comply with the requirements of the IRM program.
- 3) Monsanto must continue to implement an approved system which is reasonably likely to assure that persons purchasing the Bollgard II® cotton product will affirm annually that they are contractually bound to comply with the requirements of the IRM program.
- 4) Monsanto must continue to use an approved grower agreement. If Monsanto wishes to change any part of the grower agreement that would affect either the content of the IRM program or the legal enforceability of the provisions of the agreement relating to the IRM program, thirty days prior to implementing a proposed change, Monsanto must submit to EPA the text of such changes to ensure the agreement is consistent with the terms and conditions of this registration.
- 5) Monsanto must continue an approved system which is reasonably likely to assure that persons purchasing the Bollgard II cotton sign grower agreement(s).
- 6) Monsanto shall maintain records of all Bollgard II cotton grower agreements for a period of three years from December 31st of the year in which the agreement was signed.
- 7) Beginning January 31, 2008 and annually thereafter, Monsanto shall provide EPA with a report on the number of units of the Bollgard II cotton seed shipped and not returned and the number of such units that were sold to persons who have signed grower agreements. The report shall cover the time frame of the twelve-month period covering the prior October through September.

8) Monsanto must allow a review of the grower agreements and grower agreement records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that the names, personal information, and grower license number will be kept as confidential business information.

d. IRM Education and IRM Compliance Monitoring Programs

Monsanto must implement the following IRM education and compliance monitoring programs:

1) Monsanto must design and implement a comprehensive, ongoing IRM education program designed to convey to Bollgard II cotton users the importance of complying with the IRM program. The program shall include information encouraging Bollgard II cotton users to pursue optional elements of the IRM program relating to refuge configuration and proximity to Bollgard II cotton fields. The education program shall involve the use of multiple media, e.g. face-to-face meetings, mailing written materials, and electronic communications such as by internet or television commercials. The program shall involve at least one written communication annually to each Bollgard II® cotton grower separate from the grower agreement. Monsanto shall coordinate its education program with educational efforts of other organizations, such as the National Cotton Council and state extension programs.

2) Annually, Monsanto shall revise, and expand as necessary, its education program to take into account the information collected through the compliance survey required under paragraph 6 and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high.

3) Annually, Monsanto shall provide a report to EPA any substantive changes to the grower education activities as a part of the overall IRM compliance assurance program report.

4) Monsanto shall continue to implement an ongoing, approved IRM compliance assurance program in the states of Arizona, California, and New Mexico and in the following Texas Counties: Brewster, Crane, Crockett, Culberson, El Paso, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Terrell, Val Verde, Ward, and Winkler. The program is designed to evaluate the extent to which growers are complying with the IRM program and that takes such actions as are reasonably needed to assure that growers who have not complied with the program either do so in the future or lose their access to the Bollgard II® cotton product. Other required features of the program are described in paragraphs 5 - 12 below.

5) Monsanto shall establish and publicize a "phased compliance approach," i.e., a guidance document that indicates how Monsanto will address instances of non-compliance with the terms of the IRM program and general criteria for choosing among options for responding to any non-compliant growers. The options shall include withdrawal of the right to purchase Bollgard II cotton for an

individual grower or for all growers in a specific region. An individual grower found to be significantly out of compliance two years in a row would be denied sales of the product the next year.

6) The IRM compliance assurance program shall include an annual survey of a statistically representative sample of Bollgard II cotton growers conducted by an independent third party. The survey shall measure the degree of compliance with the IRM program by growers in different regions of the country and consider the potential impact of non-response. Monsanto shall provide a written summary of the results of the prior year's survey to EPA by January 31st of each year. Monsanto shall confer with EPA on the design and content of the survey prior to its implementation.

7) Annually, Monsanto shall revise, and expand as necessary, its compliance assurance program to take into account the information collected through the compliance survey required under paragraph 6) and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high. Monsanto will confer with the Agency prior to adopting any changes.

8) Monsanto must conduct an annual on-farm assessment program. Monsanto shall train its representatives who make on-farm visits with Bollgard II® cotton growers to perform assessments of compliance with IRM requirements. There is no minimum cotton acreage size for this program. Therefore, growers will be selected for this program from across all farm sizes. In the event that any of these visits results in the identification of a grower who is not in compliance with the IRM program, Monsanto shall take appropriate action, consistent with its "phased compliance approach," to promote compliance.

9) Monsanto shall carry out a program for investigating "tips and complaints" that an individual grower or growers is/are not in compliance with the IRM program. Whenever an investigation results in the identification of a grower who is not in compliance with the IRM program, Monsanto shall take appropriate action, consistent with its "phased compliance approach."

10) If a grower, who purchases Bollgard II cotton for planting, was specifically identified as not being in compliance during the previous year, Monsanto shall visit the grower and evaluate whether the grower is in compliance with the IRM program for the current year.

11) Beginning January 31, 2008 and annually thereafter, Monsanto shall provide a report to EPA summarizing the activities it carried out under its compliance assurance program for the prior year and its plans for its compliance assurance program during the current year. Included in that report will be the percent of growers using each refuge option (or combination of options) by region, the approximate number or percent of growers visited on farm by Monsanto, the number of tips investigated, the percent of growers who were not complying with the IRM requirements, and the follow-up actions taken.

12) Monsanto must allow a review of the compliance records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that the names, personal information, and grower license number of the growers will be kept as confidential business information.

e. Insect Resistance Monitoring.

Monsanto must conduct an annual resistance monitoring program for *Heliothis virescens* (tobacco budworm) *Helicoverpa zea* (cotton bollworm), and *Gossypiella pectinophora* (pink bollworm) for the Cry1Ac and Cry2Ab2 toxins expressed in Bollgard II cotton as early as possible. Resistance monitoring programs must include: surveying insects for potential resistance and collection of information from growers about events that may indicate resistance. The Agency is imposing the following terms and conditions:

- 1) Monsanto must submit a revised Bollgard II cotton (Cry2Ab2 and Cry1Ac toxins) resistance monitoring plan for *Heliothis virescens* (tobacco budworm) and *Helicoverpa zea* (cotton bollworm) to EPA by September 1, 2007. A revised resistance monitoring plan approved by EPA must be used beginning in the 2008 growing season. The monitoring program must include increased sampling for tobacco budworm and cotton bollworm in the areas that have the greatest variability and potentially lowest levels of effective natural refuge. Sampling efforts should include all of the "worst-case" counties identified in Monsanto's 2004 to 2006 analyses of natural refuge in the states of Texas, Tennessee, Mississippi, Louisiana, Arkansas, Alabama, Georgia, and North Carolina. BPPD believes that resistance monitoring for tobacco budworm and cotton bollworm resistance to Cry1Ac and Cry2Ab2 will have added importance with adoption of a natural refuge as a resistance management strategy.
- 2) Monsanto must continue to develop and ensure the implementation of a plan for resistance monitoring for *Pectinophora gossypiella* (pink bollworm). The plan shall include provision for conducting annual studies to evaluate any potential change in susceptibility of pink bollworm populations to the Cry1Ac and Cry2Ab2 proteins using the discriminating dose, diagnostic dose, F₂ screen, DNA markers, or other appropriate method. Collection sites must be focused in areas of high adoption, with the goal of including all states where pink bollworm is an economic pest.
- 3) The following testing scheme for survivors of the diagnostic or discriminating concentrations (or identified survivors of any resistance detection method) must be implemented: 1) Determine if the observed effect is heritable; 2) Determine if the increased tolerance can be observed in the field (i.e., survive on Bollgard II® cotton plants); 3) Determine if the effect is due to resistance, 4) Determine the nature of resistance (dominant, recessive), 5) Determine the resistance allele frequency, 6) Determine, in subsequent years, whether the resistance allele frequency is increasing, and 7) Determine the geographic extent of the resistance allele (or alleles) distribution. Should the resistance allele frequency be increasing and spreading, a specific remedial action plan should be designed to mitigate the extent of Bt resistance. See section f. ("Remedial Action Plans") below.

- 4) Monsanto must also follow up on grower, extension specialist or consultant reports of less than expected results or control failures (such as increases in damaged squares or bolls) for the target lepidopteran pests (*Heliothis virescens* (TBW) and *Helicoverpa zea* (CBW), *Pectinophora gossypiella* (PBW)) as well as for cabbage looper, soybean looper, saltmarsh caterpillar, cotton leafperforator and European corn borer. Monsanto will instruct its customers (growers and seed distributors) to contact them (e.g., via a toll-free customer service number) if incidents of unexpected levels of tobacco budworm, cotton bollworm, or pink bollworm damage occur. Monsanto will investigate all damage reports. See Remedial Action Plans section below.
- 5) Monsanto must provide to EPA for review and approval any revisions to the tobacco budworm, cotton bollworm, and pink bollworm resistance monitoring plans prior to their implementation.
- 6) A report on results of resistance monitoring and investigations of damage reports must be submitted to the Agency annually by June 30th each year for tobacco budworm and cotton bollworm and by December 31st each year for pink bollworm for the duration of this registration.

f. Remedial Action Plans

Specific remedial action plans are required for Bollgard II® cotton for the purpose of containing resistance and perhaps eliminating resistance if it develops. One remedial action plan is for the area where pink bollworm is the predominate pest and the other is for the area where tobacco budworm and cotton bollworm are the predominate pests.

1) Remedial (Mitigation) Action Plan for Tobacco Budworm and Cotton Bollworm (Attachment I)

If resistance involves the tobacco budworm (*Heliothis virescens*) and/or the cotton bollworm (*Helicoverpa zea*), Monsanto must implement the Remedial Action Plan approved by EPA. Monsanto must obtain approval from EPA before modifying the Remedial Action Plan for Cotton Bollworm and Tobacco Budworm.

2) Remedial Action Plan for Pink Bollworm (Attachment II)

If resistance involves the pink bollworm (*Pectinophora gossypiella*), Monsanto must implement the Arizona *Bt* Cotton Working Group's Remedial Action Plan. Monsanto must obtain approval from EPA before modifying the Arizona *Bt* Cotton Working Group's Remedial Action Strategy.

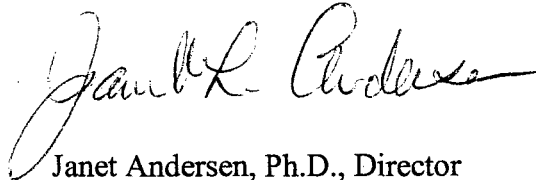
g. Annual Reports for Sales, Grower Education, Compliance Assurance, Grower Agreements, and Resistance Monitoring.

Annually by January 31st, Monsanto will provide EPA a report that contains the following information: number of units of the Bollgard II® cotton seed shipped and not returned and the number of such units that were sold to persons who have signed grower agreements, results of the compliance assurance program including any substantive changes to the grower education program, and a sales report. The annual sales report should contain a summary of all Bollgard II cotton sales summarized by state (county level information available upon request) except for the ten restricted counties in Texas; in those counties, Monsanto must provide county-level sales information.

A report on results of resistance monitoring and investigations of damage reports must be submitted to the Agency annually by June 30th each year for tobacco budworm and cotton bollworm and by December 31st each year for pink bollworm for the duration of this registration.

A stamped copy of the label is enclosed for your record

Sincerely,



Janet Andersen, Ph.D., Director
Biopesticides and Pollution
Prevention Division (7511P)

11 8 13

Bollgard II[®] Cotton

Bacillus thuringiensis subsp. *kurstaki* Insect Control Protein

Active Ingredients:

Bacillus thuringiensis Cry2Ab2 protein and the genetic material necessary for its production
[PV-GHBK11] in event MON 15985 cotton0.003-0.009%*

Bacillus thuringiensis Cry1Ac protein and the genetic material necessary for its production
[PV-GHBK04] in event MON 15985 cotton0.00004 - 0.00052%*

Other Ingredients:

Substance produced by the marker genes and the genetic material necessary for their production
[PV-GHBK04 and PV-GHBK11] in event MON 15985 cotton.....0.0022-0.0304%*

*Percentage (wt/wt) on a dry weight basis.

PRECAUTIONARY STATEMENT

CAUTION

KEEP OUT OF REACH OF CHILDREN

Net (Contents) _____

[®] Bollgard II is a registered trademark of Monsanto Technology LLC.

EPA Registration Number 524-522
EPA Establishment Number 524-MO-002

Monsanto Company
800 North Lindbergh Blvd.
St. Louis, Missouri 63167

ACCEPTED
with COMMENTS
In EPA Letter Dated
JUN 01 2007
Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.
524-522

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Cotton has been transformed to express the *Bacillus thuringiensis* subsp. *kurstaki* (*B.t.k.*) delta endotoxin Cry1Ac and Cry2Ab2 proteins for the control of the following lepidopteran cotton insect pests:

Bollgard II cotton controls or suppresses the following cotton lepidopteran insect pests:

Tobacco Budworm	<i>Heliothis virescens</i>
Pink Bollworm	<i>Pectinophora gossypiella</i>
Cotton Bollworm	<i>Helicoverpa zea</i>
Cabbage Looper	<i>Trichoplusia ni</i>
Saltmarsh Caterpillar	<i>Estigmene acrea</i>
Cotton Leaf Perforator	<i>Bucculatrix thurbeiella</i>
Soybean Looper	<i>Pseudoplusia includens</i>
Beet Armyworm	<i>Spodoptera exigua</i>
Fall Armyworm	<i>Spodoptera frugiperda</i>
Yellowstriped Armyworm	<i>Spodoptera ornithogolli</i>
European Corn Borer	<i>Ostrinia nubilalis</i>

Transformed cotton must be accompanied by the Grower Guide which contains the following:

1. The *B.t.k* delta endotoxin proteins expressed in this cotton control the above listed lepidopteran cotton insect pests.
2. Routine applications of insecticides to control these insects are usually unnecessary when cotton containing the *B.t.k* delta endotoxin proteins is planted.
3. Instruction for growers to read the product Grower Guide prior to planting for information on planting, production, and insect-resistance management.
4. Bollgard II must not be planted nor sold for commercial planting in Hawaii, Puerto Rico, U.S. Virgin Islands, south of Route 60 (near Tampa) in Florida, and in the following counties in the Texas panhandle: Dallam, Sherman, Hansford, Ochiltree, Lipscomb, Hartley, Moore, Hutchinson, Roberts, and Carson.

The following information regarding test plots and seed production must occur on bags of Bollgard II cotton seed intended for these purposes:

- a) Test plots or breeding nurseries, regardless of the plot size, established in Hawaii must not be planted within 3 miles of *Gossypium tomentosum* and must be surrounded by 24 border rows of a suitable pollinator trap crop.
- b) Experimental plots and breeding nurseries of Bollgard II cotton are prohibited on the U.S. Virgin Islands, and
- c) Test plots or breeding nurseries, regardless of plot size, established on the island of Puerto Rico may be established without restriction if insecticide applications are used to effectively mitigate gene flow. Otherwise, established test plots or breeding nurseries, regardless of plot size, established on the island of Puerto Rico must not be planted within 3 miles of feral cotton and must be surrounded by 24 border rows of a suitable pollinator trap crop.

The following information regarding commercial production must be included in the Grower Guide:

In the states of Arizona, California, and New Mexico and in the following Texas counties: Brewster, Crane, Crockett, Culberson, El Paso, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Terrell, Val Verde, Ward, and Winkler, all growers of Bollgard II cotton must employ one of the following structured refuge options:

1) External, Unsprayed Refuge:

Ensure that at least 5 acres of non-*B.t.k.* cotton (refuge cotton) is planted for every 95 acres of Bollgard II cotton. The size of the refuge must be at least 150 feet wide, but preferably 300 feet wide. This refuge may not be treated with sterile insects, pheromone, or any insecticide (except listed below) labeled for the control of tobacco budworm, cotton bollworm, or pink bollworm. At the pre-squaring cotton stage only, the refuge may be treated with any lepidopteran insecticide to control foliage feeding caterpillars. The refuge may be treated with acephate or methyl parathion at rates which will not control tobacco budworm or the cotton bollworm (equal to or less than 0.5 lbs. active ingredient per acre). The variety of cotton planted in the refuge must be comparable to Bollgard II cotton, especially in the maturity date, and the refuge must be managed (e.g., planting time, use of fertilizer, weed control, irrigation, termination, and management of other pests) similarly to Bollgard II cotton. Ensure that a non-*B.t.k.* cotton refuge is maintained within at least ½ linear mile (preferably adjacent to or within ¼ mile or closer) from the Bollgard II cotton fields.

2) External Sprayed Refuge:

Ensure that at least 20 acres of non-*B.t.k.* cotton are planted as a refuge for every 80 acres of Bollgard II cotton (total of 100A). The variety of cotton planted in the refuge must be comparable to Bollgard II cotton, especially in the maturity date, and the refuge must be managed (e.g., planting time, use of fertilizer, weed control, irrigation, termination, and management of other pests) similarly to Bollgard II cotton. The non-*B.t.k.* cotton may be treated with sterile insects, insecticides (excluding foliar *B.t.k.* products) or pheromones labeled for control of the tobacco budworm, cotton bollworm, or pink bollworm. Ensure that a non-*B.t.k.* refuge is maintained within at least 1 linear mile (preferably within ½ mile or closer) from the Bollgard II cotton fields.

3) Embedded Refuge:

Plant the refuge cotton as at least one single non-*B.t.k.* cotton row for every 6 to 10 rows of Bollgard II cotton. The refuge may be treated with sterile insects, any insecticide (excluding foliar *B.t.k.* products), or pheromone labeled for the control of pink bollworm whenever the entire field is treated. The in-field refuge rows may not be treated independently of the surrounding Bollgard II cotton field in which it is embedded. The refuge must be managed (fertilizer, weed control, etc.) identically at the Bollgard II cotton.