UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

NOV 2 7 2013

Greg L. Orr, Ph.D.
Global Regulatory Leader
Mycogen Seeds c/o Dow AgroSciences LLC
9300 Zionsville Road
Indianapolis, IN 46268

Re: Refuge Advanced Powered by SmartStax®
        EPA Registration No. 68467-16
        Amendment to terms and conditions of registration, primary brand name, label, confidential
        statement of formula (csf) and extension of expiration date of registration
        Submissions dated 7/19/2013 and 11/26/2013
        Decision No. 481510

Dear Dr. Orr:

The amendment referred to above, submitted in connection with registration under Section 3(c)(7)(A) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), is acceptable only as an extension to the current conditional, time-limited registration and provided that you comply with the updated terms and conditions as described in this letter.

1) The subject registration will automatically expire on midnight on November 30, 2018.

2) The subject registration will be limited to a field corn seed blend containing up to 95% MON 89034 x TC1507 x MON 88017 x DAS-59122-7 and a minimum of 5% non-*Bt* seed that when planted creates an interspersed refuge within the field.

3) Submit/cite all data required for registration of your product under FIFRA § 3(c)(5) when the Agency requires registrants of similar products to submit such data.

4) Submit or cite all data required to support MON 89034 x TC1507 x MON 88017 x DAS-59122-7 plant-incorporated protectant products within the timeframes required by the terms and conditions of EPA Registration Numbers 68467-2, 68467-5, 68467- 6 and 68467-7, respectively.

5) Submit an interim report provio. ᵤ the following data and information w. lin one year and a final report within two years.

To address the potential for resistance development in European Corn Borer (ECB) and Southwestern Corn Borer (SWCB)

• Submit revised modeling incorporating the structural elements recommended by the SAP (explicit larval movement, switch from a frequency-based model to one including density dependent larval mortality, epistatic mechanisms for resistance in target pests), with separate analyses for SWCB and ECB. Mycogen Seeds c/o Dow AgroSciences LLC must include non-uniform oviposition in the modeling for both ECB and SWCB, especially (but not only) for the second generation of adults, which will more likely lay eggs on *Bt* rather than on damaged (or crowded out) non-*Bt* refuge plants in seed blends.

• Submit biological research on adult movement (related to mating and movement from refuges), larval movement, larval feeding (i.e., selective feeding within corn ears or on pollen), survival of heterozygote genotypes on Refuge Advanced Powered by SmartStax® (markers may need to be determined for heterozygotes), and the potential for epistatic mechanisms of resistance (particularly with older instars).

To address the potential for resistance development in Corn Earworm (CEW)

• CEW can have up to six generations per year in the southern U.S. and may be at greater risk for resistance in a seed blend environment. CEW modeling for product durability that addresses the following concerns has been submitted but is not yet reviewed:

    a. CEW will encounter a mosaic of *Bt* expression in kernels of refuge corn ear as well as in *Bt* corn ear. Seed blends containing *Bt* and non-*Bt* seeds may actually accelerate resistance in ear-feeding Lepidoptera including corn earworm and fall armyworm. *Bt* ingestion has shown to promote wandering in larvae, and individuals that receive a sublethal dose may move to another kernel. Horner et al. 2003 evaluated feeding patterns of CEW in MON 810 and non-*Bt* maize and determined that larvae had greater movement on *Bt* ears and essentially sampled kernels at greater frequency than their counterparts who fed exclusively and in a more compact fashion on non-*Bt* corn ears. This ability to move to another source of kernel in this mosaic of toxins (lethal vs. sublethal) and also to a non-toxin environment will give heterozygous individuals a great fitness advantage: the functional dominance of the resistance allele will increase (Porter 2011, personal communication).

    b. Horner and Dively (2003) found that CEW exposed to Cry1Ab had reduced cannibalistic behavior which, they hypothesize, could serve as a mechanism to increase the selective differential between susceptible and resistant CEW and essentially lead to greater resistance evolution. (Cannibalistic behavior results "in partially resistant larvae feeding on nontoxic food [their fellow intoxicated larvae], thus temporarily providing escape from exposure to the *Bt* endotoxin.")

    c. CEW development on *Bt* corn is delayed (Sims et al. 1996, Storer et al. 2001). This could enable a fraction of adult CEW to mate with CEW emerging from *Bt* cotton. Discretely breeding populations could become continuously breeding for part of the year in this scenario. This may be an important aspect to incorporate into IRM models of the south where corn and cotton are host plants of the same pest. Theoretical explorations are needed to assess effects of this delayed development on corn on the resistance evolution in CEW.

6) Implement the following Insect Resistance Management (IRM) Program for Refuge Advanced Powered by SmartStax®:

a) **Refuge Requirements for Refuge Advanced Powered by SmartStax® corn**

The following information must be included on the product bag or bag tag:

This product is a seed mixture containing MON 89034 x TC1507 x MON 88017 x DAS-59122-7 seed and a minimum of 5% non-*Bt* seed that when planted creates an interspersed refuge within the field. There are no requirements for a separate structured refuge for Refuge Advanced Powered by SmartStax® corn when planted in the U.S. corn growing area, including Alaska and Hawaii, because the refuge seed is contained within the bag/container. SEE THE IRM/GROWER GUIDE FOR DETAILED IRM REQUIREMENTS, including the areas making up the corn-growing region.

The interspersed refuge can only be used by planting seed corn specifically generated by qualified seed producers/conditioners licensed by the registrant. The seed producer must ensure a minimum of 5% non-PIP refuge seed included with the MON 89034 x TC1507 x MON 88017 x DAS-59122-7 seed in each lot of seed corn. The refuge seed in the seed mixture may not be treated with seed-applied insecticides for corn rootworm (CRW) control unless the MON 89034 x TC1507 x MON 88017 x DAS-59122-7 seed in the seed mixture receives an equivalent seed treatment for CRW control.

The seed mix refuge option for Refuge Advanced Powered by SmartStax® satisfies the refuge requirements in all regions other than in the cotton-growing area where corn earworm is a significant pest as defined below.

Additional refuge requirements in the cotton growing area where corn earworm is a significant pest

Refuge Advanced Powered by SmartStax® may not be sold by Mycogen Seeds c/o Dow AgroSciences LLC for planting in the cotton growing area referenced below after December 1, 2015.

In the cotton-growing area where corn earworm is a significant pest, Refuge Advanced Powered by SmartStax® requires the planting of an additional 20% structured refuge, i.e. 20 acres of *non-Bt* corn for every 80 acres of Refuge Advanced Powered by SmartStax® corn planted.

The 20% refuge must be planted with corn hybrids that do not contain *Bt* technologies for the control of corn rootworms or corn borers. The refuge and the Refuge Advanced Powered by SmartStax® should be sown on the same day, or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties. The structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge or planted as a separate block that is within 1/2 mile of the Refuge Advanced Powered by SmartStax® field. In-field refuge options include blocks, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. SEE THE IRM/GROWER GUIDE FOR DETAILED IRM REQUIREMENTS, including the areas making up the corn-growing region.

The cotton-growing area requiring the additional 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid,

Pemiscot, Scott, and Stoddard). Al_ _ther states and counties are considered _ be in the corn-growing area where no structured refuge is required.

The following information must be included in the IRM Grower guide:

The refuge can be protected from lepidopteran damage by use of *non-Bt* insecticides if the population of one or more target pests of Refuge Advanced Powered by SmartStax® in the refuge exceeds economic thresholds. In addition, the refuge can be protected from corn rootworm (CRW) damage by an appropriate seed treatment or soil insecticide. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

b) **Grower Agreement for Refuge Advanced Powered by SmartStax® corn**

1) Mycogen Seeds c/o Dow AgroSciences LLC must require that persons purchasing Refuge Advanced Powered by SmartStax® corn sign a grower agreement. The term "grower agreement" refers to any grower purchase contract, license agreement, or similar legal document.

2) Mycogen Seeds c/o Dow AgroSciences LLC's grower agreement and any specific stewardship documents referenced in the grower agreement must clearly set forth the terms of the current IRM program. Mycogen Seeds c/o Dow AgroSciences LLC must write the grower agreement such that, by signing the grower agreement, a grower will be contractually bound to comply with the requirements of the IRM program.

3) Mycogen Seeds c/o Dow AgroSciences LLC must implement a system (equivalent to that already approved for previously registered Mycogen Seeds c/o Dow AgroSciences LLC *Bt* corn products) that is reasonably likely to assure that persons purchasing Refuge Advanced Powered by SmartStax® corn will affirm annually that they are contractually bound to comply with the requirements of the IRM program.

4) Mycogen Seeds c/o Dow AgroSciences LLC must continue to use a grower agreement for Refuge Advanced Powered by SmartStax® corn. If Mycogen Seeds c/o Dow AgroSciences LLC wishes to change any part of the grower agreement or any specific stewardship documents referenced in the grower agreement that would affect either the content of the IRM program or the legal enforceability by Mycogen Seeds c/o Dow AgroSciences LLC of the provisions of the agreement relating to the IRM program, Mycogen Seeds c/o Dow AgroSciences LLC must submit to EPA 30 days prior to implementing a proposed change the text of such changes to ensure that it is consistent with the terms and conditions of this registration.

5) Mycogen Seeds c/o Dow AgroSciences LLC shall maintain records of all Refuge Advanced Powered by SmartStax® corn grower agreements for a period of three years from December 31st of the year in which the agreement was signed.

6) Mycogen Seeds c/o Dow AgroSciences LLC shall maintain, and provide to the Agency upon request, the number of units of Refuge Advanced Powered by SmartStax® corn seed sold or shipped and not returned, and the number of such units that were sold to persons who signed grower agreements for the previous growing season, within three months of the request.

7) Mycogen Seeds c/o Dow AgroSciences LLC 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 confidential business information, including names, personal information, and grower license number, will be protected.

c) **IRM Education and IRM Compliance Monitoring Program for Refuge Advanced Powered by SmartStax® corn**

1) Mycogen Seeds c/o Dow AgroSciences LLC must design and implement a comprehensive, ongoing IRM education program designed to convey to Refuge Advanced Powered by SmartStax® corn users the importance of complying with the IRM program. The education program shall involve the use of multiple media, e.g. face-to-face meetings, mailing written materials, EPA-reviewed language on IRM requirements on the bag or bag tag, and electronic communications such as by internet, radio, or television commercials. Copies of the materials will be provided to EPA for its records. The program shall involve at least one written communication annually to each Refuge Advanced Powered by SmartStax® corn user separate from the grower technical guide. The communication shall inform the user of the current IRM requirements. Mycogen Seeds c/o Dow AgroSciences LLC shall coordinate its education program with the educational efforts of other registrants and other organizations, such as the National Corn Growers Association and state extension programs.

2) Annually, Mycogen Seeds c/o Dow AgroSciences LLC shall revise, and expand as necessary, its education program to take into account the information collected through the compliance survey and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high.

3) Upon EPA request, Mycogen Seeds c/o Dow AgroSciences LLC shall provide copies of grower education materials and information on grower education activities including any substantive changes to these materials and activities conducted either individually or as part of a report from the industry working group, Agricultural Biotechnology Stewardship Technical Committee (ABSTC). Mycogen Seeds c/o Dow AgroSciences LLC is required to submit reports within three months of EPA request.

4) Mycogen Seeds c/o Dow AgroSciences LLC must use the existing compliance assurance program (CAP) for Mycogen Seeds c/o Dow AgroSciences LLC's other Cry3Bb1 seed blend products.

5) Mycogen Seeds c/o Dow AgroSciences LLC will continue to conduct and support grower education (e.g. corn clinics, certified crop advisor training, etc.) that demonstrates the economic and technology-preserving value of crop rotation as a best agronomic practice. Mycogen Seeds c/o Dow AgroSciences LLC will submit to EPA a report with evidence of the 2014 grower education program (specifically including the number of education sessions/trainings held, locations, number of attendees, examples of presentation materials and grower survey results if available) by July 31, 2014. For the following seasons, Mycogen Seeds c/o Dow AgroSciences LLC will submit a similar report upon the request of the agency within three months of the request.

d) **Insect Resistance Monitoring and Remedial Action Plans for Refuge Advanced Powered by SmartStax® corn**

Existing programs for resistance monitoring and remedial action for MON 89034 x TC1507 x MON 88017 x DAS-59122-7 are applicable and required for Refuge Advanced Powered by SmartStax® corn. Mycogen Seeds c/o Dow AgroSciences LLC must submit a revised definition of unexpected damage in Refuge Advanced Powered by SmartStax® corn for resistance monitoring and must also submit a remedial action plan within 90 days of the date of registration that must be found acceptable to BPPD by April1, 2014. A report on results of resistance monitoring and investigations of damage reports must be submitted to the Agency annually by August 31st each year for the duration of the conditional registration.

e) Annual Reporting Requirements for Refuge Advanced Powered by SmartStax® corn

Mycogen Seeds c/o Dow AgroSciences LLC must submit to the Agency by the dates specified below, beginning in 2014 (except where otherwise specified), the following information:

1) Compliance Assurance Plan: Compliance Assurance Program activities, including IRM Grower Survey results and on-farm assessment results, for the prior year and plans for the compliance assurance program for the current year on or before January 31st of each year beginning in 2014;

2) Insect Resistance Monitoring Results: results of monitoring and investigations of damage reports, on or before August 31st of each year.

f) Refuge Assurance Program for Refuge Advanced Powered by SmartStax® corn

Mycogen Seeds c/o Dow AgroSciences LLC must continue to implement a blended seed refuge assurance program designed to ensure Refuge Advanced Powered by SmartStax® corn products are formulated with the appropriate rate of refuge seeds.

The program must include the following four elements:

1. Trait purity check on seed lots prior to blending (Mycogen Seeds c/o Dow AgroSciences LLC);

2. Standard Operating Procedures for the blending process;

3. Calibration of blending equipment; and

4. Records and data retention records for seed blend products, as follows:

• Calibration records - Mycogen Seeds c/o Dow AgroSciences LLC will retain documentation for three (3) years on the equipment calibration including the procedure, when it was conducted and the results.

• Blend proportion records (weight and kernel based) -- Mycogen Seeds c/o Dow AgroSciences LLC will retain documentation for three (3) years on the kernel per pound data of the components, the calculations to determine the proportions based on weight and the actual weights that are blended together to make up an Refuge Advanced Powered by SmartStax® corn product by seed lot. All records must be maintained at the Mycogen Seeds c/o Dow AgroSciences LLC blending facilities and must be available for EPA review upon request.

Should Mycogen Seeds c/o Dow AgroSciences LLC be notified by the USDA/AMS or State Seed Control Officials that Mycogen Seeds c/o Dow AgroSciences LLC's seed blend products have been found to have a lower percentage of the refuge component than is represented on the label, they must notify EPA within 30 days. This would constitute information reportable under FIFRA section 6(a)(2).

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e).

The basic confidential statement of formula (CSF) dated November 26, 2013, is acceptable and supersedes all previous basic CSFs. A copy has been placed in the file jacket for this registration.

A stamped copy of the label is enclosed for your records.

Sincerely,
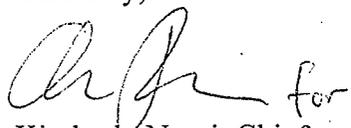
Kimberly Nesci, Chief
Microbial Pesticides Branch
Biopesticides and Pollution
Prevention Division (7511P)

Enclosure

8/12

<u>**Plant-Incorporated Protectant Label**</u>
Refuge Advanced Powered By SmartStax®
(Alternate Brand Name MON 89034 x TC1507 x MON 88017 x DAS-59122-7
Insect Protected Herbicide-Tolerant Corn With An Interspersed Refuge)
(OECD Unique Identifier: MON-89Ø34-3 × DAS- Ø15Ø7-1 ×
MON-88Ø17-3 × DAS-59122-7)

Active Ingredients:
Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) .... ≤ 0.0026%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) .... ≤ 0.0053%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1) .... ≤ 0.0012%*

Bacillus thuringiensis Cry3Bb1 protein and the genetic material (vector PV-ZMIR39) necessary for its production in corn event MON 88017 (OECD Unique Identifier: MON-88Ø17-3) .... ≤ 0.0079%*

Bacillus thuringiensis Cry34Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) .... ≤ 0.0194%*

Bacillus thuringiensis Cry35Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) .... ≤ 0.0042%*

Other Ingredients:
CP4 EPSPS protein (5-enolpyruvylshikimate-3-phosphate synthase) and the genetic material (vector PV-ZMIR39) necessary for its production in corn event MON 88017 .... ≤ 0.0052%*

PAT protein (phosphinothricin acetyl transferase) and the genetic material (vectors PHP17662 and PHP8999) necessary for its production in corn events TC1507 and DAS-59122-7 .... ≤ 0.00045%*
*Maximum percent (wt/wt) of dry forage

‡ SmartStax® seed with this refuge configuration contains 95% MON 89034 × TC1507 × MON 88017 × DAS-59122-7 mixed with at least 5% non-*Bt* corn within a single lot of seed.
™Trademark of Dow AgroSciences LLC

KEEP OUT OF REACH OF CHILDREN

CAUTION

NET CONTENTS_____

EPA Registration No. 68467-16
EPA Establishment No. 62719-IN-001

ACCEPTED

NOV 2 7 2013

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 68467-16
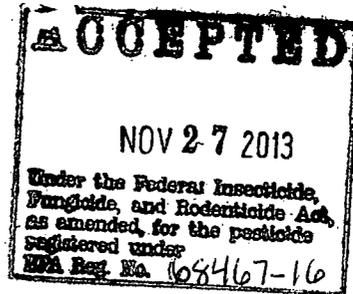
Mycogen Seeds c/o Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. The plant-incorporated protectant (PIP) product must be used as specified in the terms and conditions of the registration.

This plant-incorporated protectant may be combined or produced through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

Refuge Advanced™ Powered By SmartStax® protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label and root damage caused by corn rootworm larvae listed on this label. In order to minimize the risk of these pests developing resistance to Refuge Advanced™ Powered By SmartStax®, an insect resistance management plan must be implemented as defined in the registration terms and conditions.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described in the Product Use Guide for Refuge Advanced™ Powered By SmartStax® or other applicable product use documents.

Sales of corn hybrids that contain Mycogen's *Bt* corn plant-incorporated pesticide(s) must be accompanied by a Product Use Guide which includes information on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the *Bt* proteins is planted.

Corn seed bags or bag tags for products containing Refuge Advanced™ Powered By SmartStax® must include the refuge size requirement in text and graphical format.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management.

These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The following information regarding refuge placement for commercial production must be included in the Product Use Guide.

This product includes refuge that is interspersed within the field by planting a licensed seed-mixture containing MON 89034 × TC1507 × MON 88017 × DAS-59122-7 and a minimum of 5% non-PIP seed. **The seed mix refuge option for Refuge Advanced™.**

Powered By SmartStax® satisfies the refuge requirements in all regions other than in cotton growing regions where corn earworm is a significant pest as defined below.
The seed producer must ensure a minimum of 5% non-PIP refuge seed is included with the MON 89034 × TC1507 × MON 88017 × DAS-59122-7 in each lot of seed corn.

The interspersed refuge can only be used by planting seed corn specifically generated by qualified seed producers/conditioners licensed by the registrant. The refuge seed in the seed mixture may not be treated with seed-applied insecticides for corn rootworm (CRW) control unless the MON 89034 × TC1507 × MON 88017 × DAS-59122-7 seed in the seed mixture receives the same treatment. Insecticidal treatments labeled for adult CRW control are discouraged during the time of adult CRW emergence.

Additional refuge requirements in cotton-growing regions where corn earworm is a significant pest

In cotton-growing regions where corn earworm is a significant pest, as defined below, the seed-mixture containing MON 89034 × TC1507 × MON 88017 × DAS-59122-7 and a minimum of 5% non-PIP seed requires the planting of an additional 20% structured refuge (i.e. 20 acres of non-Bt corn for every 80 acres of Refuge Advanced™ Powered By SmartStax® planted).

The 20% refuge must be planted with corn hybrids that do not contain Bt technologies for the control of corn rootworms or corn borers. The refuge and the Refuge Advanced™ Powered By SmartStax® should be sown on the same day, or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties. The structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge, or as a separate block that is within ½ mile of the Refuge Advanced™ Powered By SmartStax®. In-field refuge options include blocks, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-Bt insecticides if the population of one or more target lepidopteran pests of SmartStax® (MON 89034 × TC1507 × MON 88017 × DAS-59122-7) in the refuge exceeds economic thresholds. In addition, the refuge can be protected from CRW damage by an appropriate seed treatment or soil insecticide; however, insecticides labeled for adult CRW control must be avoided in the refuge during the period of CRW adult emergence. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

The cotton-growing region requiring this additional 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City,

11/12

Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

The following language will be included on the seed bag tags for Refuge Advanced ™ Powered By SmartStax®:

Management Guidelines

This product consists of a licensed seed-mixture/seed-blend containing 95% SmartStax® seed and a minimum of 5% seed that does not contain B.t. technologies for the control of corn borers or corn rootworms. When planted, the refuge will be interspersed within the field.

The interspersed refuge configuration in Refuge Advanced™ powered by SmartStax® fulfills the grower's refuge requirements for this product in non-cotton growing regions and in cotton growing regions where corn earworm is not a significant pest (i.e. the same regions where the minimum refuge size is 5% under SmartStax registration 68467-7).

The interspersed refuge in Refuge Advanced™ powered by SmartStax corn is not sufficient to meet IRM requirements in regions that currently require a 20% structured refuge for SmartStax (cotton growing regions and non-cotton growing regions where corn earworm is a significant pest). In these regions growers are required to plant a structured 20% corn refuge for corn earworm.

In the SmartStax 20% structured refuge areas, the structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge or as a separate block that is within ½ mile of the Refuge Advanced field. In-field refuge options include blocks, perimeter strips (i.e., strips around the field) or in-field strips. If perimeter strips or in-field strips are implemented, the strips must be at least four consecutive rows of corn wide..

Cotton Growing Region

The cotton-growing region requiring this additional 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard)

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*

Black cutworm	*Agrotis ipsilon*
Western corn rootworm (WCRW)	*Diabrotica virgifera virgifera*
Northern corn rootworm (NCRW)	*Diabrotica barberi*
Mexican corn rootworm (MCRW)	*Diabrotica virgifera zeae*

Refuge Advanced™ Powered By SmartStax® is a product of Monsanto's and Dow AgroSciences' research programs, offering unique genetic characteristics for specific grower needs and may be protected by one or more of the following U.S. patents:

Dow AgroSciences Patent Rights: 6,083,499; 6,127,180; 6,218,188; 6,340,593; 6,548,291; 6,624,145; 6,893,872; 6,900,371; 6,943,282; 7,790,961 and 7,956,246; Monsanto Patent Rights: 5,717,084; 5,728,925; 6,025,545; 6,051,753; 6,063,597; 6,083,878; 6,489,542; 6,645,497; 6,713,063; 6,962,705; 7,064,249; 7,070,982; 7,250,501; 7,304,206; 7,544,862; 7,618,942; 7,700,830; 7,927,598; 8,034,997; and 8,212,113.

EPA Accepted: /   /   .