Pollinator Stewardship Council
P.O. Box 304, Perkinston, MS 39573
www.pollinatorstewardship.org
832-727-9492

May 14, 2016

Susan Lewis, Registration Division
(7505P), Office of Pesticide Program
OPP Docket, Environmental Protection Agency Docket Center (EPA/ DC), (28221T)
1200 Pennsylvania Ave. NW.
Washington, DC 20460–0001

Re: Sulfoxaflor; Receipt of Application for Emergency Exemption;
Docket #: EPA-HQ-OPP-2016-0225; FRL-9945-75

Dear Ms. Lewis,

The Pollinator Stewardship Council expresses our concerns about applying Sulfoxaflor upon cotton, a pollinator attractive crop, in Tennessee, Arkansas, and Mississippi. The Ninth Circuit Court found in their review of the initial registration of Sulfoxaflor, that important data concerning the effects upon honey bees from Sulfoxaflor was incomplete. The EPA needs to follow the Court's directive, to secure additional data concerning the risks of Sulfoxaflor to honey bees before permitting its use.

The Mississippi State University Extension Service cites the reason for the increase of the tarnished plant bug due to the change in the sink source relationship. Due to the increased acreage of corn and soybean, the "sink" (cotton) balance has been altered. "As a result, the populations that migrate into cotton during the late squaring and early flowering stages are greater . . ." [1] Additionally, as the tarnished plant bug became resistant to pyrethroids (1999), and to organophosphates (2005) foliar applications to cotton have increased overall from $86.50 per acre in 1992 to $140.49 per acre in 2015. "When other insect control costs are factored in, this is clearly not sustainable and a more holistic approach to tarnished plant bug management is needed that does not rely on foliar insecticides." [2]

Reviewing the University of Tennessee Institute of Agriculture "Current Options for Plant Bug Control in Cotton," the IPM Specialist discusses the pros and cons of six pest control products. The products are all limited in their action, affect immature or adult tarnished plant bugs only but not both, or you have to tank mix products and "re-treat," use the "higher rates of the insecticides," and with three of

them noted as "not soft on beneficials."[3] From the research and University Extension advice "this is clearly not sustainable and a more holistic approach to tarnished plant bug management is needed." [4]

Mississippi State University's (MSU) acknowledgment that the balance between corn, soy and cotton has altered the landscape welcoming the tarnished plant bug to cotton, is part of the holistic approach that is needed. MSU Extension suggests the following Best Management Practices for tarnished plant bug stating, "A complete reliance on insecticides is not sustainable for Mississippi growers and alternative control measures should be incorporated into an overall IPM plan." [5]

BMPs for tarnished plant bug in cotton:

1) Plant as early as possible (before May 7)
2) Plant an early maturing variety
3) Arrange plantings to avoid "edge effects"
4) Promote earliness (early season thrips, disease, and weed management)
5) Avoid smooth leaf varieties
6) Reduce nitrogen rates (Excess nitrogen leads to rank growth and delayed maturity)
7) Delay irrigation as long as possible (can cause rank growth and delayed maturity)
8) Use optimum application practices (nozzle type, ground vs air, timeliness, etc.)
9) Make sequential sprays and shorten intervals to 4-5 days during heavy pressure
10) Rotate insecticide classes
11) Use Diamond during late squaring/early flowering (when adults are migrating)
12) Do not chase a few pounds of lint in the top of the plant with multiple sprays (more research is needed on when to stop spraying for plant bugs).[6]

Cotton: A Pollinator attractive crop

Honey bees do collect pollen from cotton. A study by Alabama A & M University found a "positive impact of supplemental honeybees on cotton yield."[7] Cotton "flowers of many varieties are self-fertile and self-pollinating; however, some varieties respond well to cross-pollination. The pollen is not wind-borne, and insects are good pollinators. With some varieties, bee pollination increases seed set per boll ('Pima S-1'), cotton yield ('Ashmouni', 'Pima S-1'), and earliness of seed set ('A-33', 'A-44'). In practice, few, if any, growers manage bees for pollinating cotton. The crop is attractive to bees, and if insecticide pressure is low honey bees may store surplus cotton honey. Limit insecticide applications to evening to reduce bee kill." [8] That last statement, encouraging night applications of insecticides, acknowledges honey bees will be found in blooming cotton positively increasing cotton yields.

Sulfoxaflor label and honey bees

The label for the active ingredient Sulfoxaflor clearly states the concerns of applying Sulfoxaflor when the crop is in bloom and bees are foraging:

> *"This product is highly toxic to bees exposed through contact during spraying and while spray droplets are still wet. This product may be toxic to bees exposed to treated foliage for up to 3 hours following application.*
>
> *Toxicity is reduced when spray droplets are dry.*
>
> *Risk to managed bees and native pollinators from contact with pesticide spray or residues can be minimized when applications are made before 7:00 am or after 7:00 pm local time or when the temperature is below 55° F at the site of application.* [However, this risk mitigation is false, as pollinators forage from sunrise to sunset, and at temperatures less than 55 degrees F.]
>
> *Refer to the Directions for Use for crop specific restrictions and additional advisory statements to protect pollinators.*
>
> *Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters."* [9]

The label directions, meant to protect pollinators, are in direct opposition to research concerning honey bee activity. If a pesticide applicator applies Sulfoxaflor to a wet, dew soaked flower, the flower will remain toxic until the sun evaporates the dew and the pesticide.

If this bee toxic pesticide remains toxic for 3 hours following application, then the application must be made after bees have ceased foraging for the day: after sunset. Honey bees and native pollinators forage from sunrise to sunset, pollinating crops and other plants increasing the crop yield through the act of pollination. Applying bee toxic pesticides after sunset will allow time for the pesticide to dry so it is not toxic for the next day when bees forage.

The label "advises" applicators to "contact known beekeepers" prior to an application; it does not require notification. Native pollinators will be sacrificed since they receive no "notification" of an impending application of a bee toxic pesticide. FIFRA charges EPA with prevention of unreasonable risk. Knowingly applying bee toxic pesticides to a bee attractive plant in bloom is "unreasonable risk."

Sulfoxaflor and pest resistance

The Sustainable Cotton Project's BASIC program (Biological Agriculture Systems in Cotton) offers "strategies designed to save money and reduce the need for pesticides, chemical fertilizers, and water. The use of beneficial insect habitats along crop field borders has shown to increase the presence of beneficial insects. These habitats provide shelter, pollen and nectar sources, and refuge if the fields are treated with a pesticide. In the event you are releasing purchased beneficial insects, these field-edge

habitats will encourage the beneficials to remain and continue their lifecycle in that location, helping reduce the pest population. Some pests may also inhabit the field-edge habitats; therefore, these habitats should be monitored along with the crop field."[10]

The Sulfoxaflor label states an additional concern of continual use of this chemical:

> *"Insect biotypes with acquired resistance to Group 4C insecticides may eventually dominate the insect population if Group 4C insecticides are used repeatedly in the same field or area, or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species."* [11]

Continued use of Sulfoxaflor, and in tank mixes with other pesticides will lead to pest resistance, and unknown synergisms created by tank mixes, since all of the pest control products for the tarnished plant bug only address one life stage of the bug, not all stages.

Sulfoxaflor has been granted twenty-seven Section 18 emergency use requests since 2012 in Tennessee, Alabama, Arkansas, Florida, Georgia, Kansas, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, and Texas.[12] **The Section 18 emergency exemptions are to be utilized when there is NO other pest control product or method available.** University of Tennessee clearly noted a number of registered products utilized individually or as tank mixes that are currently registered and available for use on tarnished plant bug. The Section 18 emergency exemption criteria have not been met.

EPA's bee kill incident reporting and pollinator data is ineffectual in all of the states that permitted Section 18 emergency use of Sulfoxaflor. EPA is therefore unable to make an informed decision on the effect of Sulfoxaflor on these pollinator attractive crops. There is research being conducted by the USDA Agricultural Research Services which is examining the sub-lethal effects of Sulfoxaflor; important to understand, as we work to protect beneficial insects, so they can assist in controlling pests.

The objective of this research pertains to pollinator attractive crops and protection of pollinators.

> *"Alfalfa seed growers must defend their crop plants from pest insects while providing an environment that encourages insect pollination of their plants. Recent trends in plant pest control have led to the widespread deployment of systemic pesticides that may contaminate pollen and nectar at the same time they protect other plant tissues. Although residual toxins in pollen and nectar are typically below lethal concentrations, the effects of sublethal concentrations are poorly known. This study focuses on Sulfoxaflor (trade name Transform WG, Dow Agroscience), which is under consideration for use in alfalfa fields, and this study seeks to determine its effects on the alfalfa leafcutter bee (ALB). This highly integrated study will examine the effects of pesticide treatment on both the pest and pollinator at different treatment levels, and examines sublethal effects on pollinators. The goals are to determine: the concentration of Sulfoxaflor in alfalfa plants that control pea*

> *aphid populations, the longevity of adult alfalfa leafcutter bees foraging on Sulfoxaflor-treated plants, the Sulfoxaflor concentration that reaches bee provisions when adults forage on treated plants, and the survival, brain development, body size and other physiological performance measures of bees that arise from two generations of foraging on treated plants.*[13]

This research would provide relevant scientific-data to advise an informed decision of the use and impact of Sulfoxaflor upon pollinators in the real-world. In the spirit of cooperation promoted by the National Strategy to Promote the Health of Honey Bees and Other Pollinators, EPA should wait for scientific data from fellow federal agencies concerning the impact of Sulfoxaflor upon pollinators before issuing another Section 18 exemption of a bee toxic labelled pesticide.

The Sulfoxaflor label "*Advisory Pollinator Statement: Notifying known beekeepers within 1 mile of the treatment area 48 hours before the product is applied will allow them to take additional steps to protect their bees"*[14] continues to be an ineffective and inefficient mitigation method. It allows applicators of the product to ignore pollinator protection practices as outlined in the label and Extension documents. Protecting beneficial insects will help maintain pest controls, and require less pesticide applications.

The pesticide label should require that applications follow the directions for crops that require pollination. While honey bees are not *necessary* for cotton pollination, they and the plant, mutually benefit: honey bees increase seed set per boll, cotton yield, and earliness of seed set.[15]

We do not believe the criteria for an "emergency exemption" have been met according to the guidelines set by EPA. *"Emergency exemptions can be requested by a state or federal agencies when a serious pest problem jeopardizes production of agricultural goods or public health, but no pesticides are currently registered for that situation. They submit information describing the pest emergency and request permission to use a specific pesticide even though it is not currently registered for that use."*[16]

An Ecological and Environmental Risk Assessment, one of five aspects of a "multi-disciplinary evaluation" to determine Section 18 emergency is to be conducted with a special emphasis on risks to honey bees prior to granting an exemption. Additionally, to issue another emergency exemption for Sulfoxaflor for the twenty-seventh time since 2012, EPA needs to conduct an analysis, and submit documentation of significant economic loss of the crop.

> *"Significant economic loss means that, compared to the situation without the pest emergency despite the best efforts of the affected persons, the emergency conditions at the specific use site identified in the application are reasonably expected to cause losses meeting any of the following criteria:*
>
> *(1) For pest activity that primarily affects the current crop or other output, one or more of the following:*

(i) Yield loss greater than or equal to 20%.

(ii) Economic loss, including revenue losses and cost increases, greater than or equal to 20% of gross revenues.

(iii) Economic loss, including revenue losses and cost increases greater than or equal to 50% of net revenues."[17]

The losses to beekeepers of their livestock integral to pollinating the nation's food supply must also be considered when analyzing "economic loss" due to the use of Sulfoxaflor.

We question the validity of this twenty-seventh emergency use request for Sulfoxaflor. The Ninth Circuit Court of Appeals "vacated and remanded" the registration of Sulfoxaflor due to inadequate research of the pesticides' impact upon pollinators. We, the undersigned encourage EPA to follow the Court's directive, to follow their own emergency exemption guidelines, and to decline this emergency exemption for Sulfoxaflor.

Sincerely,

Michele Colopy
Program Director

References and Resources

[1] **Best Management Practices for Tarnished Plant Bug in Cotton,** Jeff Gore, Angus Catchot, Don Cook, and Fred Musser, Mississippi State University Agricultural and Forestry Experiment Station and Mississippi State University Extension Service, http://www.mississippi-crops.com/wp-content/uploads/2015/03/Best-Management-Practices-for-Tarnished-Plant-Bug-in-Cotton.pdf

[2] Ibid.

[3] **Current Options for Plant Bug Control in Cotton,** Author: Scott Stewart, IPM Extension Specialist, See more at: http://news.utcrops.com/2014/07/current-options-for-plant-bug-control-in-cotton/#sthash.B6bA7XcO.dpuf

[4] Ibid.

[5] **Best Management Practices for Tarnished Plant Bug in Cotton,** Jeff Gore, Angus Catchot, Don Cook, and Fred Musser, Mississippi State University Agricultural and Forestry Experiment Station and Mississippi State University Extension Service, http://www.mississippi-crops.com/wp-content/uploads/2015/03/Best-Management-Practices-for-Tarnished-Plant-Bug-in-Cotton.pdf

[6] Ibid.

[7] **IMPACT OF HONEY BEE POLLINATION ACTIVITIES ON Bt COTTON PRODUCTION IN NORTHERN ALABAMA**, Rufina N. Ward and Kenneth E. Ward, Department of Plant and Soil Science, Alabama A&M University, http://www.alabees.com/impact_of_honey_bee_pollination_.htm

[8] Pollination: Crop Pollination Requirements, The University of Georgia College of Agricultural and Environmental Sciences, http://www.ent.uga.edu/bees/pollination/crop-pollination.html

[9] Specimen Label *Transform WG*, Dow AgroSciences LLC, 9330 Zionsville Road, Indianapolis, IN 46268, Label Code: D02-396-001, Initial printing, LOES Number: 010-02282, EPA accepted 05/06/13

[10] **Organic Cotton Production,** Martin Guerena and Preston Sullivan, NCAT Agriculture Specialists, Published 2003, IP233, https://attra.ncat.org/attra-pub/viewhtml.php?id=89#Insect

[11] Specimen Label *Transform WG*, Dow AgroSciences LLC, 9330 Zionsville Road, Indianapolis, IN 46268, Label Code: D02-396-001, Initial printing, LOES Number: 010-02282, EPA accepted 05/06/13

[12] Section 18 search requests to EPA http://iaspub.epa.gov/apex/pesticides/f?p=SECTION18BKUP:6:::NO:::

[13] **USDA- Agricultural Research Services Research Project:** Lethal and Sublethal Effects of a Systemic Pesticide on Alfalfa Leafcutter Bees, **Location: Pollinating Insects-- Biology, Management and Systematics Research ,** Project Number: 2080-21000-015-24 , Project Type: Specific Cooperative Agreement , Start Date: Sep 01, 2014 , End Date: May 30, 2017, http://www.ars.usda.gov/research/projects/projects.htm?accn_no=427395

[14] **EPA, Pesticide Emergency Exemptions**, http://www.epa.gov/pesticide-registration/pesticide-emergency-exemptions#intro

[15] **Importance of bee pollination for cotton production in conventional and organic farms in Brazil**, Viviane C. Pires, Fernando A. Silveira, Edison R. Sujii, Karoline R. S. Torezani, Wallyson A. Rodrigues, Fábio A. Albuquerque, Sandra M. M. Rodrigues, Antonieta N. Salomão, Carmen Sílvia Soares Pires, Journal of Pollinator Ecology, 3(16), 2014, pp 15 1-160, http://www.pollinationecology.org/index.php?journal=jpe&page=article&op=view&path[]=259

[16] Specimen Label *Transform WG*, Dow AgroSciences LLC, 9330 Zionsville Road, Indianapolis, IN 46268, Label Code: D02-396-001, Initial printing, LOES Number: 010-02282, EPA accepted 05/06/13

[17] Code of Federal Regulations, Title 40, Chapter 1, Subchapter E, PART 166—EXEMPTION OF FEDERAL AND STATE AGENCIES FOR USE OF PESTICIDES UNDER EMERGENCY CONDITIONS, Subpart A, General Provisions, §166.2 Types of exemptions. http://www.ecfr.gov/cgi-bin/text-idx?SID=dcb4e604ce325c91bbf1e019108eefb9&node=pt40.24.166&rgn=div5#se40.24.166_13

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