Integrated Plant Protection Center
Katie Murray, Faculty Research Assistant
2040 Cordley Hall, Corvallis, Oregon 97331-2915
Tel: 541-231-1983 | **Fax:** 541-737-3080
katie.murray@oregonstate.edu
http://ipmnet.org/

June 17, 2016

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington DC 20460-0001

Re: EPA-HQ-OPP-2010-0889, Sulfoxaflor registration

The following comments are submitted regarding the proposed re-registration of the active ingredient sulfoxaflor. These comments are being submitted on behalf of the Western IPM Center, and provide input on the use of sulfoxaflor and potential impacts of the proposed restrictions in Pacific Northwest commodities.

Although a relatively new product, sulfoxaflor is considered by several industries to be an effective and reduced-risk management tool for controlling a number of major insect pests. These industries include potatoes, apples, berries, and alfalfa seed. This chemistry is considered to be compatible with IPM programs in these industries, in terms of its efficacy on key insect pests such as aphids, plant bugs, and psyllids, as well as its utility in resistance management, and relatively low risks to pollinators. The re-registration of this product for the labeled crops is overall supported in the Pacific Northwest.

On potatoes in the PNW (Washington, Oregon, and Idaho), it was estimated that 60,000 acres were treated with sulfoxaflor in 2015. Many insecticides are labeled for use on potatoes, but very few offer the spectrum of control for key insect pests that sulfoxaflor does. It is anticipated that this product would be used widely for leafhopper, psyllid, and aphid control during the middle of the potato production season. Currently, pyrethroids fill that niche, but pyrethroids are not recommended during that time period, as they tend to flare spider mites, psyllids, and sometimes aphids, leading to more late season insecticide and miticide applications. However, including potatoes in a "post-bloom application only" restriction category could be problematic, as there is a lot of variation in bloom between various potato varieties. Some potato varieties are prolific bloomers, and in some varieties, blooming continues well past mid-season. In general, there is not a synchronous flowering time for this crop. It is suggested that a definition of blooming might be more useful for potatoes, restricting applications to a timeframe of "less than xx% bloom," for example.

Sulfoxaflor in the "Closure" formulation is hoped to evolve into an important insecticide for control of wooly apple aphid in apple production. Wooly apple aphid is a very difficult pest to control, and is a pest that has increased in importance after

Integrated Plant Protection Center
Katie Murray, Faculty Research Assistant
2040 Cordley Hall, Corvallis, Oregon 97331-2915
Tel: 541-231-1983 | **Fax:** 541-737-3080
katie.murray@oregonstate.edu
http://ipmnet.org/

the final phase-out of azinphos-methyl. So this proposed re-registration for apple is welcomed by the industry.

The Oregon berry industry is interested in sulfoxaflor as a promising product considered compatible with their IPM programs. Residue field trials and analyses on sulfoxaflor have been completed through IR-4A registration for both blueberry and caneberry, and a submission to EPA for establishment of a tolerance for these crops is scheduled for spring 2017; thus, curiosity exists regarding how this proposed re-registration will impact the IR-4 investments for the blueberry and caneberry industries, among others.

Sulfoxaflor was registered for use in strawberries before all registrations were revoked in 2015, and is an important tool for managing aphids in strawberry fields. Besides leaving behind aphid "honeydew" and reducing fruit quality, aphids can vector virus diseases, such as strawberry mottle virus, which reduces crop vigor and productivity. With its previous registration in strawberry, sulfoxaflor was a replacement for neonicitinoid, synthetic pyrethroid, and organophosphate chemistries that had been used previously to control aphids. Aphid infestations in strawberry fields generally occur at two distinct periods of time: in late-April and May, which is post-bloom, and again in September, when strawberry plants contain foliage only. The type of strawberries grown in the Pacific Northwest (and in some other parts of the US) are "June-bearing" strawberries. They have only one fruit crop per year, and a distinct bloom period that lasts about three weeks. It is the "day-neutral" strawberry that has indeterminate flowering, and produces berries continuously during the crop season. Thus, treating for aphids in June-bearing strawberries occurs with no blooms present on the plants. Oregon strawberry growers would like to see the sulfoxaflor/strawberry registration reinstated for June-bearing strawberries as soon as possible to aid with aphid management in their fields.

Although seed crops are currently restricted from the proposed label, the alfalfa seed industry of the Pacific Northwest had important comments on the need for this product, as sulfoxaflor offers very effective Lygus bug control during late bloom, while causing minimal harm to pollinating leafcutting, alkali, and honey bees, as shown during the 2015 season (Doug Walsh at Washington State University has more information on this statement). The main insecticide that sulfoxaflor would displace for alfalfa seed growers is naled, an organophosphate that poses more risk to managed and unmanaged pollinators than sulfoxaflor, while also not as effective as sulfoxaflor at managing pests such as Lygus bug. Thus, this product was proving to be a more effective and reduced-risk product for growers.

Integrated Plant Protection Center
Katie Murray, Faculty Research Assistant
2040 Cordley Hall, Corvallis, Oregon 97331-2915
Tel: 541-231-1983 | **Fax:** 541-737-3080
katie.murray@oregonstate.edu
http://ipmnet.org/

Substantial effort went into acquiring a 24C registration for Sulfoxaflor following its initial registration, approved first in Washington and Idaho, and subsequently in Oregon, Utah, and Colorado. It was estimated that over half the alfalfa seed acreage in the 5 states that sulfoxaflor was permitted use on through this 24C (Washington, Idaho, Oregon, Utah, Colorado) was treated with this product in 2015. With the recent Section 18 request from both Idaho and Washington being rejected by EPA, alfalfa seed growers have lost the potential for use of this product for the 2016 field season. If the proposed re-registration of sulfoxaflor proceeds as labeled, alfalfa seed growers would be requesting another 24c registration in subsequent years on alfalfa produced for seed. As growers continue to learn to minimize any adverse impacts to pollinators, and gain familiarity with the product, its continued use would be a great benefit.

Additional Proposed Restrictions

12-foot buffer:

Common concerns regarding the proposed 12-ft buffer relate to potential impacts to on-farm biodiversity. The inclusion of blooming plants on the perimeter of agricultural fields is a practice that provides habitat for beneficial insects, resulting in effective natural pest control and a reduction in the use of pesticides. Researchers, extension agents, and crop consultants have made significant investments in encouraging growers to increase this type of biodiversity on their farms. While in general, buffers can be compatible with on-farm biodiversity, imposing a buffer for sulfoxaflor could result in growers being forced into either choosing a potentially more toxic product that does not have the same buffer requirement, increasing potential negative impacts to pollinators, or removal of flowering plants adjacent to fields, in order to accommodate the restriction. This type of decision-making could negatively impact the continued and desirable use of on farm flowering plants and insectary plantings, and could indirectly encourage the removal of on-farm biodiversity and diverse floral resources, which would degrade not only the success of pollinators, but also the ability of natural enemy populations to offer effective pest control services.

Further, if growers are able to accommodate the buffer, a portion of the crop (in this case a 12 foot perimeter) is left unprotected and vulnerable to pest infestation, which can easily become a reservoir for breeding and proliferation of pest populations, exacerbating the need for additional pesticide use. Mitigations exist and are commonly used to reduce the possibility of off-target drift, such as the use of

Integrated Plant Protection Center
Katie Murray, Faculty Research Assistant
2040 Cordley Hall, Corvallis, Oregon 97331-2915
Tel: 541-231-1983 | **Fax:** 541-737-3080
katie.murray@oregonstate.edu
http://ipmnet.org/

drift-reduction spray nozzles, the addition of drift reduction adjuvants and spray deposition aids, and avoidance of applications on windy days.

Tank-mixing restriction:

Additional concern has been expressed over the proposed restriction on tank-mixing. Generally speaking, growers tank-mix products for the sake of efficiency, as a way to keep their applications costs lower, a practice that often leads to very significant cost savings. The overwhelming response is that a restriction on tank-mixing sulfoxaflor would impose an unreasonable burden on growers, and could eliminate the potential for its use altogether in many industries. Berry growers in the Pacific Northwest are already experiencing this, based on the tank-mix restriction currently in effect for the fungicide "Pristine" (boscalid + pyraclastrobin). This fungicide is highly effective for controlling Botrytis fruit rot (mold), but is often not used due to the tank mix restriction on the label. Using a less effective product may then result in the need for more applications to control the same pest.

Most growers routinely combine materials (insecticides, fungicides, oil, adjuvants, nutrients, plant growth regulators, environmental protectants, drift reduction surfactants, etc.) in any given spray application, and depending on the crop and time of season, there are commonly 2-3 products in the tank. There are fewer instances where a material might be applied unmixed than mixed. Combining materials is an economic necessity, and restrictions on applying sulfoxaflor or many other products separately would greatly increase the growers' time and cost of application. Requiring multiple pesticide applications also inherently increases risks to human, environmental, and pollinator health, as the risks of pesticide exposure to humans, pollinators, and beneficial insects increase with increased applications.

Tank-mixing allows for more efficient pest management, which leads to a more productive crop, as well as a reduced carbon footprint in decreased numbers of ground or aerial applications. Further, the use of targeted, reduced-risk products, as opposed to the more broad-spectrum chemistries, is encouraged and needed from an IPM perspective, and with the use of these more targeted and specific products, broad-spectrum control is best achieved by applying them in combination with other target-specific products during one application. Another benefit of tank mixing is for resistance management, and in EPA's recently released draft guidance on managing pesticide resistance, one of the recommended labeling statements suggests that product-specific use directions might include instructions to tank-mix a pesticide with a pesticide from a different mode of action group as a resistance

Integrated Plant Protection Center
Katie Murray, Faculty Research Assistant
2040 Cordley Hall, Corvallis, Oregon 97331-2915
Tel: 541-231-1983 | **Fax:** 541-737-3080
katie.murray@oregonstate.edu
http://ipmnet.org/

management strategy. A tank mixing restriction on the sulfoxaflor registration would have a huge negative impact on a grower's ability to control pests effectively and economically while reducing overall risks to the agricultural system.

Any considered restrictions with this product should thoughtfully balance the need for environmental protection, and of course any data demonstrating synergistic or other effects of this product resulting in negative impacts to pollinators, with not only the economic impacts this would have on growers, but also the impacts to their ability to continue to use critical IPM practices, which also support important principles of environmental protection.

Respectfully,

Katie Murray

Research Assistant, Extension IPM
Integrated Plant Protection Center
Oregon State University
541-231-1983
katie.murray@oregonstate.edu