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Sulfoxaflor Continues to Be a Bee Killer

EPA's announcement[1] to expand the use of Sulfoxaflor means expanded loss of managed and native pollinators. Beekeepers, whose honey bees provide the essential agriculture pollination service for our food supply, have suffered colony losses of 40-90% annually the past ten years. A horizon scan of future threats and opportunities for pollinators and pollination placed the chemical Sulfoxomine (sulfoxaflor) in the top six priority issues that globally threaten the agricultural and ecological essential service of pollination.

Six high priority issues
1: corporate control of agriculture at the global scale
2: sulfoximine, a novel systemic class of insecticides (which is sulfoxaflor)
3: new emerging RNA viruses
4: increased diversity of managed pollinator species
5: effects of extreme weather events under climate change
6: positive effects of reduced chemical use on pollinators in non-agricultural settings[2]

The Pollinator Stewardship Council has expressed our concerns about the registration of Sulfoxaflor for reduced use, and for emergency exemptions. In our legal action about the registration of Sulfoxaflor, the Ninth Circuit Court found in their review that important data concerning the effect upon honey bees from Sulfoxaflor was incomplete. EPA adjusted the pesticide label, reducing the bee attractive crops on which the chemical could be applied. However, let's be concise: the active ingredient, Sulfoxaflor, is toxic to chewing and sucking insects. Honey bees and other pollinators are chewing and sucking insects.

With over one billion pounds of pesticides used in the U.S. annually,[3] the EPA claims there are "few viable alternatives for sulfoxaflor." Research is showing the "viable alternatives" are to restore the health of agricultural soils so the beneficial insects and fungi can return and protect the crops. "Regenerative Agriculture is a system of farming principles and practices that increases

biodiversity, enriches soils, improves watersheds, and enhances ecosystem services."[4] By restoring the health of soils, we restore the health of plants, and we restore the health of beneficial insects like pollinators.

In a study conducted from 2004-2009 by the University of Idaho on various methods of control for lygus bugs in alfalfa it was observed the Peristenus howardi (and similar species) parasitized lygus bugs ranging from 5% to 80%. The primary goal of that research was "*to conduct studies investigating the feasibility of enhancing lygus bug management in alfalfa seed through several complementary approaches. The individually low levels of lygus bug management provided by newer, more selective alternative compounds and that provided by natural enemies of lygus bugs will be combined in an attempt to provide acceptable levels of lygus management in large plots of alfalfa grown for seed. We will attempt to further enhance natural enemy numbers in these studies through modification of crop habitat (border treatments).*"[5]

These very "border treatments" will now be under threat of contamination from Sulfoxaflor applications, degrading their prospective evidence-based solution of providing habitat for natural predators of crop pests. Similar border treatments in other crops would be as beneficial. But the 12-49 feet of blooming crop border could be contaminated with the bee toxic pesticide, Sulfoxaflor. Blooming field borders support true IPM (Integrated Pest Management), providing costs savings to the farmer in reduced chemical inputs, and conserving crop losses through the pest management of beneficial insects.

While Pollinator Stewardship Council appreciated the initial revised Sulfoxaflor label as an improvement over the previous label, limiting the use of the pesticide after bloom on *mostly* non-bee attractive crops, Sulfoxaflor is still a bee toxic pesticide with unknown synergisms when tank-mixed. With little to no data on the degradates of Sulfoxaflor, and no research of tank mixes with Sulfoxaflor, it remains a bee toxic pesticide contaminating bee forage through drift and residue. With the expansion of the use of Sulfoxaflor EPA is ignoring the threats to essential agricultural and ecological pollination services, and to the very livelihood of beekeepers tasked with providing the managed honey bees to pollinate our crops.

[1] EPA Registers Long-Term Uses of Sulfoxaflor While Ensuring Strong Pollinator Protection, https://www.epa.gov/newsreleases/epa-registers-long-term-uses-sulfoxaflor-while-ensuring-strong-pollinator-protection

[2] Brown MJF, Dicks LV, Paxton RJ, Baldock KCR, Barron AB, Chauzat M, Freitas BM, Goulson D, Jepsen S, Kremen C, Li J, Neumann P, Pattemore DE, Potts SG, Schweiger O, Seymour CL, Stout JC. 2016. A horizon scan of future threats and opportunities for pollinators and pollination. PeerJ 4:e2249 https://doi.org/10.7717/peerj.2249, https://peerj.com/articles/2249/?utm_source=TrendMD&utm_campaign=PeerJ_TrendMD_1&utm_medium=TrendMD

[3] Pesticides Use and Exposure Extensive Worldwide, Michael C.R. Alavanja, Dr.P.H., Rev Environ Health. 2009 Oct–Dec; 24(4): 303–309. , https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2946087/

[4] http://www.regenerativeagriculturedefinition.com/

[5] **MANAGEMENT OF LYGUS SPP. (HEMIPTERA: MIRIDAE) IN ALFALFA SEED,** University of Idaho, National Institute of Food and Agriculture, 2004-2009, http://reeis.usda.gov/web/crisprojectpages/0202036-management-of-lygus-spp-hemiptera-miridae-in-alfalfa-seed.html