College of Tropical Agriculture and Human Resources
Department of Plant and Environmental Protection Sciences

UNIVERSITY of HAWAI'I® MĀNOA

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Ricardo Jones
Pesticide Re-Evaluation Division (7508P)
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Ave. NW.
Washington, DC 20460–0001

Subject: **Docket ID Number EPA–HQ–OPP–2008–0844**
Comments in Response to *Imidacloprid Registration Review: Aquatic Ecological Assessment* and *EPA's Registration Review Update for Four Neonicotinoid Insecticides*

The following comments are being submitted in response to the May 25, 2017 *Federal Register* notice announcing the availability of and seeking public comment on EPA's aquatic ecological assessment for the registration review of imidacloprid and the update for the registration reviews of four neonicotinoid insecticides. These comments are being submitted on behalf of the Western Integrated Pest Management Center and provide input on the use of imidacloprid in the production of seed crops and in turf and ornamental landscape sites in Hawai'i.

Seed crops

Imidacloprid (SLN HI-110002) is used to control aphids, corn planthopper (*Peregrinus maidis*) thrips, whiteflies, and other piercing/sucking insects in the production of seed corn in Hawai'i. The typical application rate is 0.36 lb ai/acre for soil applications and 0.07 lb ai/acre for foliar applications. Normally, there is 1 (one) application per crop cycle. (A crop cycle is four months. Typically, one crop is planted in a field per year. The field is planted in cover crops or fallow for the period between crops.)

Soil applications are preferred. Soil applications are done at the V3-V4 (3-4 leaves with visible collars) stage when fine feeder roots emerge to maximize effectiveness against pests. Foliar applications are done at the V4-V5 stage (knee high) to maximize efficacy against target pests. Foliar used only if irrigation conditions preclude soil applications.

Imidacloprid (SLN HI-160001) is used in shadehouses to control aphids, thrips, whiteflies, stink bugs, leaf hoppers, plant hoppers and other piercing/sucking insects in containerized plants for seed corn and soybean production in Hawai'i. Typically, one (1) application of 0.014 g ai/container is made per crop cycle. However, the rate of application rate ranges from 0.005 to 0.027 g ai/container. Applications are

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3050 Maile Way, Gilmore Hall 310
Honolulu, Hawai'i 96822
Telephone: (808) 956-7076 Fax: (808) 956-2428
Email: peps@ctahr.hawaii.edu Web: www2.ctahr.hawaii.edu

made directly to the potting media immediately after transplanting (approximately 14 days after planting, at the V3 stage).

The 1% granular formulation of imidacloprid is very effective at controlling thrips and aphids in shadehouse production, thereby reducing the associated risk of the transmission of viral diseases. The systemic activity and the granular formulation make this product ideal for applications within an enclosed structure. There are a limited number of products available for this use in shadehouses. The insecticide chemistries currently available for use in Hawai'i on seed corn are limited to pyrethroids, organophosphates and carbamates. These potential alternatives are not labeled for use in shadehouse structures, or are ineffective in the shadehouse environment. Additionally, imidacloprid has a different mode of action than these alternative chemistries, The use of insecticides with alternative modes of action is aligned with Integrated Pesticide Management principles and facilitates effective insecticide resistance management programs.

Potyvirus group viruses are transmitted by primarily by aphids. Imidacloprid has been very effective at controlling aphids and corn planthoppers, thereby reducing the associated risk of virus transmission. The systemic activity of imidacloprid, compared with contact insecticides, is more effective at controlling pests that are located within the whorl of the plants. The corn planthopper, is the primary vector for Maize mosaic virus (MMV), a very common virus in corn fields in the islands. Of greater concern is the emergence of less common grass viruses such as Maize chlorotic mottle virus (MCMV) and corn stunt spiroplasma. MCMV, in combination with a *Potyvirus* group virus such as Maize dwarf mosaic, has the potential to generate Corn lethal necrosis (CLN). CLN significantly reduces yield and results in premature death of the corn plant. These viruses have the potential to severely impact the economic vitality of the seed industry in Hawai'i.

Commenters addressed ways to mitigate risks to pollinators when using imidacloprid:

- Field applications of imidacloprid are made only during the early stages of crop production; no more than 14-21 days after planting. Pollinators are not present within the crop at this time.
- Applications early in the crop cycle of imidacloprid are the standard practice of the seed industry.
- Because of label limitations to applications to food and feed crops, use of imidacloprid has been limited to research products and few production products with robust tracking procedures.
- Some seed corn growers utilize shadehouses structures as an alternative growing environment for seed corn. The shadehouse construction significantly reduces the presence of pollinators within the structure.

Turf and Ornamentals. Products that contain imidacloprid as the sole active ingredient and products that contain a combination of imidacloprid, bifenthrin and zeta-cypermethrin are used on golf courses, other turf sites and landscape ornamentals in Hawai'i. Turf and landscape managers use these products to control a variety of insect pests, such as sod webworm, armyworms, cutworms, frit fly, various scale species and mealybug. The need to control lobate lac scale on *Ficus* tree is an example of a particular need met by the injectable formulation of imidacloprid. The health of infested trees will decline and trees will eventually die without this imidacloprid treatment. Trunk injection of imdaclopird is very effective in controlling this pest in this situation. Other insecticides are not known to be as effective.

Imidacloprid products are popularly-used, selected because they are relatively low-risk systemic insecticides. Contact control is also provided in the products that also contain bifenthrin and zeta-cypermethrin. Alternatives (such as organophosphates) may present more environmental risks and risks to non-target organisms.

Commenters addressed ways to mitigate risks to pollinators when using imidacloprid. Among these are: not applying neonicotinoids when bees are actively visiting flowers; and not allowing weeds to flower after applying a neonicotinoid product to on turf.

Comments were received from representatives of the seed production industries and Extension personnel of the College of Tropical Agriculture and Human Resources of the University of Hawai'i at Mānoa.

Comments complied and submitted by:

Mike Kawate
Pesticide Registration Specialist
Voice: 808-956-6008
mkawate@hawaii.edu

Cathy Tarutani
Educational Specialist
Voice: 808-956-2004
ctarutan@hawaii.edu