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December 26, 2023
U.S. Environmental Protection Agency
OPP Docket, EPA Docket Center (EPA/DC), 28221T
1200 Pennsylvania Avenue, NW
Washington, DC 20460-0001

Re: Dinotefuran: DRAFT Biological Evaluation and Associated Effects Determination for Endangered and Threatened Species and Their Designated Critical Habitats
EPA Docket ID: EPA-HQ-OPP-2023-0506

To Whom It May Concern:

The Arizona Pest Management Center is host to the University of Arizona's expert Integrated Pest Management (IPM) scientists, including Ph.D. entomologists, weed scientists and plant pathologists with expertise in the strategic tactical use of pesticides within IPM programs that protect economic, environmental and human health interests of stakeholders and the society at large. In coordination with the Western Integrated Pest Management Center, we contribute to federal comments on issues of pest management importance to stakeholders throughout the desert southwest including Arizona, New Mexico, Nevada, Colorado and the southeast desert regions of California.

We are writing at this time in response to the draft Biological Evaluation of Dinotefuran, EPA Docket number EPA-HQ-OPP-2023-0506, on behalf of agricultural stakeholders. We recognize that this draft Biological Evaluation is based on current use practices, as specified on registered labels. Furthermore, we are aware of, and previously commented on proposed mitigations in EPA's Proposed Interim Decision (PID) for Dinotefuran in 2020 (Comment ID: EPA-HQ-OPP-2011-0920-0819). In 2017, we submitted comments in response to EPA's preliminary pollinator risk assessments for dinotefuran (Comment ID: EPA-HQ-OPP-2011-0920-0100). **By this letter, we request incorporation of these previous comments on the PID into the current comment docket for this period.**

Fournier, A.J., J.C. Palumbo, P.C. Ellsworth, W.A. Dixon II. 2020. Dinotefuran: Response to EPA Proposed Interim Decision for Arizona and the Desert Southwest. University of Arizona, Arizona Pest Management Center. May 4, 2020. Comment ID: EPA-HQ-OPP-2011-0920-0819.
https://www.regulations.gov/comment/EPA-HQ-OPP-2011-0920-0819

Fournier A.J., P.C. Ellsworth, W.A. Dixon II. Neonicotinoid Insecticide Use and Pollinator Protection in Several Crops and Recreational Turf in Arizona and New Mexico. University of Arizona, Arizona Pest Management Center. Jul 24 2017. Docket ID: EPA-HQ-OPP-2011-0920-0100. https://www.regulations.gov/comment/EPA-HQ-OPP-2011-0920-0100

Dinotefuran Use and Importance in Southwest Agriculture

Dinotefuran is primarily used on melons in Arizona, with several thousand acres treated annually, and to a lesser extent on other cucurbits (squash, pumpkins) lettuces and cole crops (cabbage, broccoli, cauliflower). From 2011 to 2019, dinotefuran represented less than 10% of reported neonicotinoid uses across all Arizona crops, according to the Arizona Pest Management Center (APMC) pesticide use database (Ellsworth et al. 2007). Like other neonicotinoids, dinotefuran products provide very effective alternatives to broad-spectrum insecticides and help to preserve natural enemies for biological control of insect pests in crops, making this active ingredient a valuable component of integrated pest management (IPM) programs in Arizona and throughout the desert Southwest.

Melons

Dinotefuran, along with thiamethoxam and flupyradifurone, plays a critical role in the management of cucurbit yellow stunting disorder virus (CYSDV) in cantaloupe, watermelons and squash. Fruits from infected plants often taste bad due to a reduction in sugars, making them unmarketable, leading to economic loss. The virus is transmitted from plant-to-plant exclusively by the whitefly vector, *Bemisia tabaci*, which is "entirely responsible for virus spread over short distances (e.g., within and between fields). The virus is not transmitted mechanically (by touch) nor is it seed-transmitted. Consequently, the disorder is almost always associated with whiteflies; it does not take many insects to spread the virus" (Davis et al. 2017). Since the virus first appeared in Arizona melons in 2006, aggressive control of *B. tabaci*, especially whitefly adults, has been the best defense.

The 2017 Guidelines for Whitefly / CYSDV Management on Fall Melons recommend soil applications of dinotefuran (e.g., Venom, Scorpion) or Sivanto (Flupyradifurone) at planting and prior to first bloom as a side-dress application. Foliar sprays are recommended on 1 to 2 leaf stage plants (Palumbo 2017a). Soil applied neonicotinoids have been shown to effectively control whiteflies when injected at moderate to high rates 1.5 - 3 inches below the seed line (sub-seed furrow) just prior to planting. They are also effective at controlling whiteflies when applied immediately through low pressure drip irrigation systems (Palumbo 2017b). Many melons in Arizona are planted from transplants and are grown on beds with drip irrigation. Common practice is to apply thiamethoxam via drip irrigation immediately after planting, and continue to treat every two weeks, via drip, rotating to other chemistries, including flupyradifurone (Sivanto) and dinotefuran (Venom) (Fournier et al. 2017).

Other Crops

Although neonicotinoids remain the third most commonly used class of chemistry in desert lettuce production, this is driven primarily by soil-applied imidacloprid for control of whiteflies and aphids. While neonicotinoids were used on 93% of fall head lettuce acres in 2018, and 89% of acres in spring 2019, dinotefuran foliar sprays on leafy vegetables are not common in the desert southwest (Palumbo 2020). Dinotefuran (e.g., Venom, Scorpion) represented 0% of treated acres for both soil and foliar applications in both Fall 2022 and Spring 2023 (Palumbo 2023). However, dinotefuran has excellent activity against whiteflies (adults and nymphs) on leafy vegetables and is occasionally sprayed more than once on lettuce (Palumbo 2020).

Leafminers are a key pest of New Mexico chile peppers. The larvae feed within chile leaves and cotyledons, causing loss of photosynthetic area of the leaves, desiccation, and leaf loss (English 1999). Application of systemic neonicotinoids are used to control the larvae inside the plant. If leafminers are present, applications are made every third day. Growers use clothianidin (Belay), thiamethoxam (Durivo) and dinotefuran (Scorpion) in rotation with other modes of action such as chlorantraniliprole (Coragen) and bifenthrin (Capture). All products are applied at full label rate, but only in infested fields (Fournier et al. 2017).

Dinotefuran is also used in rotation with a premix of thiamethoxam and the pyrethroid lambda-cyhalothrin (Endigo) for control of Bagrada bug in cole crops (Palumbo 2017a).

Proposed Interim Decision for Dinotefuran

In the Proposed Interim Decision for Dinotefuran, EPA proposed a number of mitigations, including:

- Proposed Reductions to Maximum Annual Application Rates, targeting certain uses with potentially higher pollinator risks and lower benefits.
- Proposed Crop Stage-based Application Restrictions (see Table 5), targeting certain uses with potentially higher pollinator risks and lower benefits.
- Preserve the current restrictions for application at-bloom.
- Mandatory spray drift mitigation and buffer zones to limit off-site movement of dinotefuran
- Promotion of voluntary stewardship to encourage use of best management practices, education, and outreach to applicators and beekeepers

In a 2020 Extension communication via the Vegetable IPM Updates newsletter, Dr. John Palumbo, Research Scientist in Entomology and an Extension Specialist working with the Arizona vegetable industry, summarized the potential impact of EPA's proposed label mitigations for neonicotinoids (Palumbo 2020). His comments on foliar uses of dinotefuran are included below.

Dinotefuran-foliar uses only:

- The proposed label changes would reduce the maximum annual amount of dinotefuran (Venom/Scorpion) allowed from 0.268 lbs. ai./A per year to 0.23 lbs. ai./A per year.
- In leafy vegetables, the proposed label would reduce the maximum number of 3 oz/ac foliar applications of Venom from 2 to 1 application per crop season. In Brassica/Cole crops, a single 4 oz application would still be allowed. Application of Venom at rates below 3 oz/ac are not recommended for control of whiteflies.
- Dinotefuran foliar sprays on leafy vegetables are not common in the desert southwest. Venom/Scorpion were applied to less than 1% of lettuce acres last year (*i.e. 2019 Lettuce Insect Losses survey*).

- Dinotefuran has shown inconsistent activity against aphid species that attack leafy vegetable/brassica crops in the desert and is not recommended by UA Cooperative Extension.
- Dinotefuran has excellent activity against whiteflies (adults and nymphs) on leafy vegetables and are occasionally sprayed more than once on lettuce.
- Effective foliar alternatives are available to offset the loss of the 2nd application - this also fits our Insecticide Resistance Management (IRM) guidelines.
- There are several foliar alternatives (non-neonicotinoids with different MOA) that are as, or more, effective than dinotefuran for foliar insect management in leafy vegetables.

Pollinator Protection Practices
In our response to the 2017 preliminary pollinator risk assessments for dinotefuran and three other neonicotinoid insecticides, we identified the following pollinator protection practices among growers who use neonicotinoids in the Desert Southwest (Fournier et al. 2017).

In melons, pest control advisors maintain long-term, ongoing relationships with beekeepers, and this contributes to their excellent communication. In melon insect management with neonicotinoids, there have been no documented issues with bee kills. Delivery of insecticides via drip helps to minimize the number of sprays and potential exposure of bees to insecticides, and all foliar applications are applied at night (between nightfall and 4 am) so that the chemical is dry in the morning by the time bees are actively foraging. Likewise, in celery, neonicotinoids are applied via drip irrigation to minimize the potential for pollinator exposure.

Pollinator protection is important to chile growers in New Mexico. Peppers are self-pollinating plants. However, when they are in flower, bees are attracted to the field. Most insecticide applications, including neonicotinoids, are applied through drip irrigation. Growers generally do not apply foliar insecticides when peppers are in flower. Flowering is spread out because growers use continuous plantings of chiles for continuous harvest. If foliar applications are needed, sprays are done at night to avoid impact on pollinators.

Growers develop Pollinator Protection Plans in coordination with the Arizona Department of Agriculture, and there is a high level of awareness and commitment in the industry to the importance of protecting pollinators.

As EPA moves ahead to consider and implement mitigations that will be needed to address risks to listed threatened and endangered species from acetamiprid use, we hope you consider these factors.

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Palumbo, J.C. 2020. Impact of Proposed EPA Label Changes on Neonicotinoid Uses on Produce and Melon Crops in the Desert Southwest. Vegetable IPM Update, April 15, 2020. University of Arizona Cooperative Extension. https://acis.cals.arizona.edu/docs/default-source/agricultural-ipm-documents/vegetable-ipm-updates/2020/200415-impact-of-proposed-epa-label-changes-on-neonicotinoids.pdf?sfvrsn=f6fd9eab_0

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Who We Are
Dr. Peter Ellsworth is Director of the Arizona Pest Management Center (APMC), State IPM Coordinator for Arizona and Professor of Entomology / Extension IPM Specialist with expertise in developing Integrated Pest Management systems in cotton and other crops and measuring implementation and impact of IPM and pest management practices. Dr. Al Fournier is Associate Director of the APMC / Associate Specialist in Entomology, holds a Ph.D. in Entomology, and has expertise in evaluating adoption and impact of integrated pest management and associated technologies. He works with the Western IPM Center, representing stakeholders in the desert Southwest states in EPA registration reviews.

These comments are the independent assessment of the authors and the Arizona Pest Management Center as part of our role to contribute federal comments on issues of pest management importance and do not imply endorsement by the University of Arizona or USDA of any products, services, or organizations mentioned, shown, or indirectly implied in this document.

Our Data and Expert Information
Through cooperative agreements with Arizona Department of Agriculture, the Arizona Pest Management Center obtains use of, improves upon, and conducts studies with ADA's Form1080 data. Growers, pest control advisors and applicators complete and submit these forms to the state when required by statute as a record of pesticide use. These data contain information on 100% of custom-applied (i.e., for hire) pesticides in the state of Arizona. Grower self-applied pesticide applications may be under-represented in these data. In addition, the Arizona Pest Management Center is host to scientists in the discipline of IPM, including experts in the usage of this and other compounds in our agricultural systems. We actively solicit input from stakeholders in Arizona, including those in the regulated user community, particularly to better understand use patterns, use benefits, and availability and efficacy of alternatives. The comments within are based on the extensive data contained in the Arizona Pest Management Center Pesticide Use Database, collected summary input from stakeholders and the expertise of APMC member faculty.

Through the Crop Pest Losses and Impact Assessment Signature Program, partially funded through the Western IPM Center, the Arizona Pest Management Center conducts annual surveys with state-licensed pest control advisors (PCAs), who are the primary pest management decision makers, in consultation with growers. The surveys, conducted at face-to-face meetings, provide detailed information on crop yield losses to specific insect pests, weeds and diseases, control costs, and pesticide use for the key crops, cotton and lettuce. Cotton data have been collected since 1991 and lettuce data since 2005. Data are collected for all of Arizona and neighboring production regions of California, with typical responses representing up to 65% of acres planted in Arizona. These data provide detailed information on shifting pest trends, chemical use and costs, and often compliment and augment information from the APMC Pesticide Use Database, particularly for pesticide uses for which the state does not mandate reporting.

Thank you for your consideration. Please feel free to contact us with any questions.

Sincerely,

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