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Methoxyfenozide Use in Arizona: Maintain Current Label Rates in Corn

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Summary

- The Arizona Pest Management Center is submitting these comments on behalf of our stakeholders in response to EPA's Methoxyfenozide Proposed Interim Registration Review Decision (PID, case #7431).
- In response to the Agency's goal of reducing ecological risks to aquatic invertebrates, we provide information on the significant structural and environmental protections already in place in Arizona low-desert agriculture that make additional protections outlined in the PID unnecessary in Arizona.
- We have concerns about EPA's proposed reduced application rates for sweet corn and field corn, because experienced pest managers indicate that these lower rates will not provide sufficient control of key lepidopteran pests. The proposed rate reduction will likely result in the need for additional applications of broad spectrum chemistries to control lepidopteran pests of corn with detrimental effects on beneficial insects, including pollinators, and on integrated pest management (IPM) programs for corn.

Who We Are

The Arizona Pest Management Center is host to the University of Arizona's expert 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.

Dr. Peter Ellsworth is Director of the APMC, State IPM and Pesticide Coordinator for Arizona and Professor of Entomology / Extension IPM Specialist with expertise in developing IPM 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 / Adjunct 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 serves as a Comment Coordinator for the Western IPM Center, representing stakeholders in the desert Southwest states. Mr. Wayne Dixon holds a B.S. in Computer Information Systems and develops tools and

data used in IPM research, education and evaluation, including management of the APMC Pesticide Use Database.

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 Form L-1080 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 compound 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.

Methoxyfenozide use in Arizona

Methoxyfenozide is labeled for use in a variety of crops and is used as Intrepid 2F Agricultural Insecticide on several Arizona crops, including alfalfa, cotton, corn, sorghum, lettuce and other leafy greens, cole crops, celery, melons and chile peppers. Growers value this insecticide's narrow spectrum of lepidopteran target pests, which preserve the function of natural enemies and other beneficial insects, including pollinators, in our systems, making this an important component of integrated pest management (IPM) programs for many crops.

EPA's risk models indicate potential ecological risk to aquatic invertebrates. To quote EPA's proposed interim decision (PID) document, "the agency's assessments find no human health risks of concern and no risks of concern for mammals, birds, aquatic and terrestrial plants, fish." It is important in assessing risks to aquatic invertebrates that EPA consider the specific aspects of Arizona low desert agriculture in the agency's decision process, before considering limitations on use of this otherwise safe and "environmentally friendly" insecticide so important to Arizona IPM programs.

Structural & Environmental Protections Already Present in Arizona Agriculture

Arizona's low desert agriculture is characterized by a variety of structural and environmental factors that impact movement of pesticides of all kinds. National models that are derived from

the Pacific Northwest and the Eastern Seaboard, such as have been used by US-EPA in the past, are extremely poor predictors of pesticide fate in desert ecoregions, including Arizona agriculture production zones. In the current ecological risk assessment, EPA's screening-level aquatic assessment, "based on conservative inputs such as modeling for the standard farm pond and maximum application rates" is used to assess run-off (from EPA's PID document). As described below, these conditions do not apply to Arizona agriculture. To extrapolate these data to Arizona's situation with methoxyfenozide is dangerously flawed.

Arizona's irrigated agriculture is in a desert environment where rainfall averages less than 25 cm per year. Because of the importance of irrigation water in our system, farmers are important stewards of this natural resource. This includes 100% use of laser-leveling technology (since the 1970s) to control slope in fields for the management of irrigation water. This means that little to no water leaves the site of application, the agricultural field.

These conditions are accompanied by extremely high temperatures and extremely low humidity, as low as 2% in 2015. These are harsh conditions under which to apply pesticides. Off-target movement and duration of the liquid phase of applied pesticides in our system is very low. Also related to our arid, desert climate is the dearth of water bodies that might be present to receive any off-target movement of pesticides. Most of agriculture in our State is devoid of running streams or rivers, and natural lakes or ponds. Furthermore, even the small amounts of pesticides that might reach our soils are subject to intense solar radiation (and heat) and the associated degradation processes.

Proposed Label Rate Changes for Sweet Corn and Field Corn

Intrepid 2F is currently labeled for use in corn (field, sweet and seed) at a rate of 4 – 16 fl. oz., or 0.06 – 0.25 lbs. ai/acre, for specific lepidopteran borer and armyworm pests. The proposed maximum single application rate in the methoxyfenozide PID is 0.06 lbs. ai/acre, the current lowest label rate.

According to the APMC Pesticide Use Database, methoxyfenozide has been used in field corn, sweet corn and corn grown for seed over the past eight years with use reported in both field corn and sweet corn virtually every year. Our data under-represent the amount of methoxyfenozide actually used, because some areas where corn is grown (e.g., on certain Native American lands) are not required to, and often do not, routinely report pesticide use to the state, and also because grower-applied applications may not require reporting. Reported use rates in sweet corn are generally top-of-the-label at or around 0.25 lbs. ai/acre. Rates in field corn tend to be mostly in the 0.12 – 0.16 lbs. ai/acre range.

In sweet corn, it is used to control corn earworm and fall armyworm. In general, a single application before tasseling at the full label rate of 0.25 lbs. ai/acre is used. In some cases, a second follow-up application is needed for fall sweet corn. Use is always well below the maximum annual application rate of 1.0 lbs. ai/acre. The product has good longevity, which means there is a better chance of the target pest feeding on it. The chemical has to be consumed by the larvae and it is relatively slow acting. It is a good product to rotate to for resistance

management, because of its unique mode of action and methoxyfenozide is one of the few lepidopteran materials that is highly selective and safe on bees.

Most field corn grown in Arizona is genetically engineered with the Bt trait for lepidopteran control. As a result we have lower risks for economic levels of lepidopterans. So this insecticide is only rarely used there. However, some growers in Arizona have begun shifting to non-Bt crops on a small number of acres, which would make this active ingredient more important for field corn. Pest control advisors (PCAs) indicated that in the current market climate for field corn in Arizona, whether grown for silage or grain, Intrepid 2F is rather highly priced. However, if other useful products are lost, the insecticide price comes down, or the corn market price increases, this need could quickly change. In field corn, the 8 oz. – 10 oz. rate (0.12 – 0.15 lbs. ai/acre) is typically used to control corn earworm and the armyworm complex.

PCAs in both crops expressed concern about the proposed reduction in the single use application rate in Arizona sweet corn or field corn. “It would be ineffective against these pests at the 4 oz. rate.” The result of this label rate reduction, if implemented for Arizona corn production would be to eliminate methoxyfenozide as a control option for key lepidopteran pests of corn. This would remove an important rotational chemistry for worm control and may result in the need for additional applications of broad spectrum chemistries to control lepidopteran pests in corn, with detrimental effects on beneficial insects, including pollinators, an integrated pest management (IPM) programs.