



**2,4-DB Use on Alfalfa in Arizona and Imperial County, California**  
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**Comments submitted by the Arizona Pest Management Center,**  
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**Summary**

- EPA is seeking public comments in response to new draft human health and ecological risk assessments for 2,4-DB
- EPA's ecological risk assessment indicated potential concerns about spray drift and runoff from fields treated aerially with 2,4-DB.
- EPA identified risks of concern are for dicotyledonous plant species in adjacent habitats exposed via runoff or via spray drift for fields treated aerially with 2,4-DB. There are specific risks of concern for plants in semi-aquatic habitats, exposed to 2,4-DB via runoff from application rates  $\geq 0.53$  lbs a.e./A.
- EPA also identified risks of concern for mammals foraging on tall grass, broadleaf plants, and arthropods in or near alfalfa stands.
- At this time, our goal is to inform EPA about specific uses of 2,4-DB in alfalfa, including information on typical rates, number of applications, and the fit of 2,4-DB into alfalfa weed management programs.
- 2,4-DB is a foundational component of weed management programs in alfalfa, applied to nearly all new stands in mixtures with other herbicides.
- 2,4-DB is essential for weed management in alfalfa. The level of 2,4-DB efficacy on otherwise resistant weeds makes 2,4-DB a critical tool in weed management programs for alfalfa production.
- In many situations, maintaining access to aerial applications is important for our growers.
- There is alfalfa production and use of 2,4-DB in habitats along the Colorado River, with field edges 30 to 40 yards from the river's edge, or closer. In these areas, product use rates as high as 32 fl. oz. (0.50 lbs. / acre). Pest control advisors working in these areas indicated a potential need to maintain product rates above 32 fl. oz., due to efficacy concerns.

## **Arizona Alfalfa Production**

Alfalfa is an integral crop of Arizona's economy. In 2018, 260,000 acres of Alfalfa were harvested worth more than \$451mil. Arizona alfalfa growers lead the nation in yields, averaging 8.4 tons per acre (USDA NASS 2018).

## **2,4-DB use in Arizona & Imperial County, California**

2,4-DB plays a cornerstone role in alfalfa weed management programs throughout Arizona and adjacent regions of Imperial County, California, based on data from the Arizona Pest Management Center (APMC) Pesticide Use Database (Fournier et al. 2017), and input from several licensed pest control advisors in the region. 2,4-DB is typically applied for weed control on all newly-planted alfalfa stands, in a tank mixture with either imazamox (e.g., Raptor) and/or imazethapyr (e.g., Pursuit). In central and Westerns Arizona, when needed, 2,4-DB is also used for winter weed control on established stands. Pest control advisors estimate annual use at between 35 and 50% of planted alfalfa acres annually. (Typically, stands are replanted every 3 to 4 years.) These same general practices are followed in Imperial Valley, California, along the Arizona border, according to pest control advisors who work on both sides of the river.

2,4-DB is particularly effective for managing species of weeds with resistances to other herbicides. Based on input from licensed pest control advisors, 2,4-DB provides effective control of sow thistle, Russian thistle, milkweed, lambsquarter, pigweed (Palmer Amaranth), goosefoot nettle and various mustards (e.g., shepherd's purse, yellow rocket), all of which are exhibiting increasing resistances to other available herbicides. The level of 2,4-DB efficacy on otherwise resistant weeds makes 2,4-DB a critical tool in weed management programs for alfalfa production statewide.

Application rates vary, depending on the geographic location and the situation. Common product use rates on Arizona alfalfa include 16, 24 and 32 fl. oz. 87% of reported applications statewide are at or below the 32 fl. oz. rate. In Cochise County, where temperatures are cooler, the 64 fl.oz. rate is used, but this represents a small portion of alfalfa statewide. Along the Colorado River, the only significant aquatic region of alfalfa production, ground applications are mainly used, at the 24 or 32 fl. oz. rate. Pest control advisors working in these areas indicated a potential need to maintain product rates above 32 fl. oz., due to efficacy concerns. Alfalfa fields in Mohave County can be as close as 30 to 40 yards from the Colorado River, and in La Paz County, on the Colorado River Indian Reservation, even closer.

Pest control advisors are well aware of sensitivities of neighboring crop plants to 2,4-DB. In our system, cotton is very sensitive to damage, as are onions, melons and lettuces. Practitioners are careful to avoid applications when temperatures or wind speeds are high, and there have been very few occurrences of spray drift causing damage to adjacent crops. In areas where this is a potential concern, ground applications are generally used. Drift control agents are also used to reduce the potential for drift. (Crop damage has sometimes occurred when people have not been careful enough in cleaning spray equipment.) Aerial applications make up 65% of reported applications statewide over the past few years, but this is misleading. All aerial applications require reporting, whereas grower-applied ground applications typically do not. It is likely the actual percentage of aerial applications is lower. Maintaining access to aerial applications is

important. There are situations where it is not feasible to use ground equipment, such as wet fields, where it is important to get the application done while weeds are still small enough to be sensitive to the herbicide.

### **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. 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. Dr. William McCloskey is an Associate Professor and Extension Specialist in Weed Science, with experience in field crops, including alfalfa, cotton, and tree fruit and nut crops. 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. 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 field crops and measuring implementation and impact of IPM and pest management practices. Ms. Madyson Hampson is a student intern working in our program.

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.

## **References Cited**

Fournier, A., W. Dixon, P.C. Ellsworth. 2017. Arizona Pest Management Center Pesticide Use Database. University of Arizona Cooperative Extension.

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