



Response to EPA Proposed Interim Decision for Tebuconazole

Prepared by Alfred Fournier, Alex Hu, Randall Norton & Wayne Dixon
Arizona Pest Management Center, University of Arizona

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Re: Tebuconazole, Comments on EPA Proposed Interim Decision
EPA Docket ID: EPA-HQ-OPP-2015-0378

To Whom It May Concern:

The Arizona Pest Management Center (APMC) 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. Through cooperative agreements with Arizona Department of Agriculture (ADA), the APMC obtains use of, improves upon, and conducts studies with ADA's Form 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) agricultural pesticides used in the state of Arizona. Grower self-applied pesticide applications may be under-represented in these data. 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, Utah and the southeast desert regions of California.

At this time, we wish to respond to the Agency's Proposed Interim Decision for the fungicide tebuconazole, EPA Docket number EPA-HQ-OPP-2015-0378, on behalf of stakeholders in Arizona and adjacent regions of Imperial County, California. Our comments combine information from university disciplinary experts with input from licensed pest management professionals and reported pesticide use data.

Tebuconazole use in Arizona and Imperial & Riverside Counties, California

Tebuconazole is a triazole fungicide used to prevent and/or treat a variety of diseases, including rusts on cotton, garlic, and wheat, Alternaria, charcoal rot and powdery mildew in melons, and a wide range of turf diseases, including fairy ring, bermudagrass decline, brown spot, and snow mold.

Because tebuconazole is on the Arizona Department of Environmental Quality Ground Water Protection List, all soil applications require reporting to the state and are captured in the Arizona Pest Management Center Pesticide Use Database (Fournier et al 2017). Based on these data, tebuconazole has been used on a variety of Arizona crops, including cotton, garlic, wheat, barley, dry beans and melons. There is also significant use on golf course turf, with an average of over 500 acres treated annually from 2017 to 2019. Use in melons, common in 2013 and 2014, has declined to zero. According to several Pest Control Advisors (PCAs), there are more effective control options available, and they no longer use tebuconazole in melons. Our last reported application in dry beans dates back to 2010. PCAs indicate that rust is very rarely an issue in bean production in our desert environment. Our comments specifically address cotton, garlic and onion uses, as well as golf course turf.

Arizona's Agriculture and Environment

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 (Ellsworth et al. 2016). This is true for all our crops, as well as those in adjacent desert regions of Imperial and Riverside, California.

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 (Ellsworth et al. 2016).

The two of the main areas where agricultural fields are found near natural water bodies are (1) along the Colorado River (Yuma and La Paz Counties, AZ and Imperial and Riverside Counties, CA); and (2) Along the Gila River (Graham County, AZ).

Cotton

Arizona often leads the world in cotton yield per acre (>1550 lbs.), nearly twice the U.S. average, contributing 9,000 jobs and \$700 million to Arizona's economy in 2011 (anonymous 2012). In 2021, Arizona produced 129,000 acres of upland cotton with a value exceeding \$142 million for cotton and cotton seed production combined (USDA- NASS 2022).

According to University of Arizona Extension Plant Pathologist, Dr. Alex Hu, tebuconazole is an effective preventative treatment for control of Southwest cotton rust, which primarily affects cotton at higher elevations in the southeastern part of the state. Southwestern cotton rust, caused by *Puccinia cacabata*, occurs sporadically in the Southwestern U.S. but has the potential to cause serious economic losses up to 50% under favorable environmental conditions (Goldberg & French, year unknown). There have been outbreaks of cotton rust in recent years in Graham and Cochise Counties, particularly severe in 2022, due to frequent and abundant summer monsoon rains. Infestations are much milder in typical years. Because the level of disease threat varies based on whether, agricultural use of tebuconazole can fluctuate dramatically from year to year.

There is little to no use of tebuconazole on cotton throughout the rest of Arizona, including Yuma and La Paz Counties, where cotton is sometimes grown near the Colorado River.

One pest control advisor familiar with the southeast production region indicates that many cotton fields are in areas adjacent to the Gila River. In his experience, the heaviest infestations of cotton rust often occur on portions of fields that are closest to the river. In years following winters with heavy precipitation, the river can run in the spring, but generally goes dry by late spring. During years with heavy monsoon rains, the river can begin flowing again in summer. This happened this year (2022). However, according to local PCAs, it is rare for the river to flow in the summer when tebuconazole applications occur. One person noted the last time the river flowed in summer was in 2012.

Tebuconazole is applied as a preventative treatment for cotton rust, only when weather conditions are favorable for disease development, only on susceptible fields. Applications are most common during summer monsoon season. Although most reported tebuconazole applications in cotton are made by air, some growers along the Gila River make ground applications, according to a PCA familiar with practices. Typically, two applications of Monsoon at 8oz/ac (maximum rate) are applied in 7-to-14-day intervals. This treatment is both effective and economically viable for growers. In some cases, only one application is used. Tebuconazole is often used in rotation with azoxystrobin (Quadris), which also helps to manage *Alternaria* leaf spot. Because cotton rust development is dependent on damp weather conditions, many fields go untreated in typical years. Due to significant monsoon rains in 2022, there were many treatments this year in fields along the river.

Based on current practices, some of the mitigations outlined in EPA's proposed interim decision could be problematic for some cotton growers along the Gila River in southeastern Arizona. In response to proposed label language under the header "Alternate Year, Buffer to Aquatic Areas and Vegetative Filter Strip" a knowledgeable Pest Control Advisor expressed the following concerns.

- **Apply only during alternate years in fields adjacent to aquatic areas.** For growers along the Gila River, this would mean selecting an alternative fungicide in place of tebuconazole on alternate years, when they need to control cotton rust on the same field two years in a row. Most alternative options are either more expensive, less effective, or both. This mitigation is likely to lead to increased costs for cotton growers along the river, but only during sequential heavy monsoon years.
- **Do not apply by ground or air within 100 feet of aquatic areas listed above.** Because edges of some fields adjacent to the Gila River are closer than 100 feet, the expected outcome of this mitigation is that a portion of some fields would go untreated for cotton rust. Untreated portions could lead to significant yield losses. Alternately, growers may opt to use a different fungicide in those areas, potentially at increased cost.
- **Maintain a 10-foot-wide non-cultivated vegetative strip to prevent movement into bodies of water.** This mitigation is not expected to be problematic for growers along the Gila River or elsewhere.

A second PCA working in the same region with a different set of cotton growers did not see these mitigations as problematic. He indicated that his growers rotate fields in alternate years between cotton and corn. His growers do not use tebuconazole in corn, so alternate year access to tebuconazole would work for these growers. He also indicated that most of cotton fields where he works are farther than 100 ft. from the river.

Cotton producers in other regions of the state generally do not deal with cotton rust and do not use tebuconazole, so admittedly, EPA's proposed mitigation would impact a small percentage of growers here. But for those growers, the impact could be significant.

Garlic & Onions

There is significant production of garlic and onions in a region along the Colorado River spanning from Blythe, CA, to Poston, AZ. According to a PCA who works with growers in this region, tebuconazole is an important preventative control for garlic rust. When conditions are favorable for disease development, a large number of garlic acres can be treated. In wetter years, tebuconazole is also applied in onions, in combination with a phosphite material. This is very effective for downy mildew control on onions. Most fields (onion and garlic) are set back at least 100 feet from the river and would not be impacted by the proposed mitigations. For the few fields that are within 100 feet of the river, management practices could be adjusted to comply with the proposed mitigation.

Golf Course Turf

The Arizona golf industry is a strong contributor to the state economy with a total economic contribution of \$3.9 billion in sales in 2014, including golf facility operations, golf tourism, and golf-related businesses (Duval et al. 2016). According to a source familiar with the Arizona golf industry, tebuconazole is the most utilized DMI (DeMethylation Inhibitor) fungicide chemistry on golf turf, due to its extremely low phytotoxicity compared to alternative choices.

Tebuconazole is used to control a broad range of diseases, including fairy ring, bermudagrass decline, and brown patch. It is used both preventative and curatively. Golf courses are found in a range of different environmental zones in Arizona, and disease occurrence and fungicide use patterns can vary considerably. But tebuconazole is used in all these areas.

Many golf courses are designed with man-made water features, such as ponds. A few may occur near natural water bodies. Our interpretation of the proposed "Alternate Year, Buffer to Aquatic Areas" mitigations is that they would only apply to agricultural labels. Currently, at least some turf and ornamental labels for tebuconazole products include surface water advisory language that recommend use of a vegetative buffer strip between treated areas and water features, so this element is not new. Were these mitigations to apply to turf uses, use only in alternate years near aquatic areas would be problematic for many golf courses. Many alternative products have higher phytotoxicity in turf, and some are not as effective against many of our key diseases.

Thank you for the opportunity to comment. Please contact me if you have any questions.



Dr. Alfred Fournier, Associate Director,
Arizona Pest Management Center
Maricopa Agricultural Center
University of Arizona
37865 Smith-Enke Rd., Maricopa, AZ 85138
fournier@cals.arizona.edu

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