



**Iprodione Use and Benefits in Arizona Agriculture**  
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The EPA is seeking public comments in response to published risk assessments for iprodione. Our goal at this time is to inform the EPA about specific use patterns of iprodione on Arizona crops. Iprodione is a systemic fungicide used to manage *Sclerotinia* and *Alternaria* in lettuce and cole crops, as well as *Botrytis* and purple blotch in onions.

**Iprodione Use in Arizona Agriculture**

Iprodione has significant reported annual use on lettuces and onions (including onions grown for seed), and is reported to a lesser extent on cole crops (broccoli and cauliflower). Few other crop uses are noted (Fournier 2017).

**Lettuce**

In 2019, Arizona growers produced 71,000 combined acres of head lettuce, leaf lettuce and romaine value at over \$1.6 billion, as well as 12,570 combined acres of cauliflower and broccoli valued at over \$185 million (USDA-NASS 2020).

*Sclerotinia* drop of lettuce is caused by the fungi *Sclerotinia minor* and *S. sclerotiorum*, which can persist over long periods in the soil and require active management to suppress disease incidence below economic levels (Matheron 2019). *Sclerotinia minor* only infects the stems and leaves in contact with the soil, while *Sclerotinia sclerotiorum* can also infect lower leaves and stems. Symptoms are mostly similar between the two pathogens. Once infected, a soft decay develops that eventually destroys the plant crown tissue, causing plant collapse (Koike & Turini 2017). *Alternaria* leafspot in cole crops is caused by the fungi *Alternaria brassicae* and *A. brassicicola*. The disease causes spotting of the leaves. Old leafspots become papery and weaken plant tissue, which may tear. While not usually an economic concern on cole crops, the disease is promoted by moist conditions (Koike & Subbarao 2008). Both diseases can cause significant crop damage and economic losses.

Iprodione (Rovral) is one of several efficacious materials for management of *Sclerotinia* (Matheron 2019). The recommend treatment is two applications of effective products to the soil bed to help reduce populations of the infective pathogen. Growers rotate different modes of

action for resistance management. According to licensed Arizona Pest Control Advisors (PCAs) who work with the lettuce industry, iprodione is among the most widely used materials for Sclerotinia. Treatments are made to fields that have had problems in the past. Typically, a single full rate application of iprodione is used annually, applied by ground or chemigation, in rotation with other effective chemistries. Alternatives include boscalid and penthiopyrad. PCA use estimates on lettuce range from less than 25% to as high as 50%. Pesticide use data indicates a slight decline in use on lettuce over the past few years. PCAs attribute this reduction to more available effective alternative products, Maximum Residue Limits (MRLs) for some export markets, and increased effectiveness of cultural practices. However, this remains an important and effective material. Disease issues have worsened in recent years, particularly in winter months, and it remains important for growers to have a range of effective materials with different modes of action available.

### Onions

Iprodione is used in onions for control of purple blotch and Botrytis leaf blight. Botrytis causes leaf-tip dieback and plant blighting. In severe cases, bulb size is reduced, impacting yield. Purple blotch causes oval-shaped, tan-to-brown lesions and yellow streaks on leaf blades. Lesions become deep purple and may expand, girdling and killing the leaf. The disease can also attack and girdle onion seed stems (Swett et al. 2019).

Iprodione provides effective and affordable control for these diseases. It is one of the older materials available. There are effective alternatives, but they are much more expensive, a difference of \$30/acre versus \$70/acre, according to one PCA, which would negatively impact our growers. Its use is particularly important in seed onion production. Disease pressure has increased in Arizona over the past several years, in onions and other crops. One PCA says he applies up to seven fungicide treatments to seed onions where they used to spray four times, rotating modes of action for resistance management. It is important for our growers to maintain access to multiple modes of action.

### 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 serves as an Integrated Pest Management Network Coordinator through the Western IPM Center Signature Program, representing stakeholders in the desert Southwest states in EPA registration reviews. 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

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### **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 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 and other compounds in our agricultural systems. We actively solicit input from stakeholders in Arizona and other Southwest states (Nevada, Colorado, New Mexico and Southeastern California), 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**

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