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MANAGING WHITE MOLD IN VEGETABLES

by Sally Miller

White mold, caused by Sclerotinia sclerotiorum, damages a wide range of vegetable crops under cool, wet conditions. Peppers, tomatoes, cabbage, and snap beans are among the most severely affected vegetable crops in Ohio. Typical symptoms include tan-colored lesions on stems and branches and fruit rot. The pathogen, a fungus, produces structures called sclerotia that can survive for many years in soil. These structures are black in color and irregularly shaped (about 1/16 1/4 inch x 1/8 3/4 inch) and can be found inside or outside diseased tissues. White, fluffy mycelium of the pathogen can also be found inside or outside infected tissues under moist conditions. Sclerotia can survive in soil for many years, with or without crop residue.

Since white mold affects many crops, crop rotation is generally not an effective means of managing this disease. Tactics to minimize moisture in the crop canopy, such as reducing plant density and maximizing air movement through the crop can be helpful. However, fungicides have been widely used to manage this disease. The fungicide Topsin M (Cerexagri, Inc., www.cerexagri.com/usa/) can be applied to snap beans beginning at early flowering to protect this crop. For fruiting vegetables (peppers, tomatoes), a Section 18 emergency exemption for use of Topsin M is available for Ohio. Topsin M is not labeled for use on cabbage.

The biofungicide Contans (distributed by Sylvan Bioproducts, contact Bill Stoneman (billstoneman@charter.net; 608-268-7040)) is a fungus (mycoparasite) that kills sclerotia of S. sclerotiorum and is labeled for a wide range of crops. Contans is a formulation of spores of this fungus, which germinate under moist conditions in soil and attack and kill Sclerotinia sclerotia. Recent results by researchers studying white mold of canola in Germany have shown that the best time to apply Contans is just after harvest, when sclerotia are on the soil surface and can be readily attacked by the Contans fungus. Reducing the population of sclerotia of the white mold pathogen using Contans may take several years: deeply buried sclerotia may not be exposed to the Contans mycoparasite at the time of application. As sclerotia are continually mixed and brought to the soil surface through cultivation, they will be exposed to the mycoparasite and eventually sclerotia numbers will decrease. According to the manufacturer, Contans MUST be incorporated at least 2-4 inches into the soil after application in order to maximize contact of the mycoparasite with sclerotia. They also concur that the product should be applied after harvest (with incorporation) in order to allow plenty of time for the mycoparasite to find and kill the sclerotia. Application of Contans at 2-4 lb/A onto the crop residue (trash) just after final harvest is recommended for fields in which white mold has been a problem. A second application the following spring is recommended at least 6 weeks before the disease is expected if the crop is susceptible to white mold. During

the first year of treatment, Topsin M may be needed if conditions are conducive to disease development, until sclerotia populations in soil are significantly reduced.

New Weed Threats Put Crops at Risk

Doug Doohan

Can weeds take a farmer out? Out of business, that is? Several years ago my friend Allan and his Dad left the farming business forever. Alan was a third generation fruit and vegetable grower. The demise of their family farm was directly related to invasion of their strawberry land by yellow toadflax, also know as butter and eggs (Linaria vulgaris).
Yellow toadflax was introduced to Alans farm in wheat straw used for mulch. Every cultural practice used in growing strawberries caused the toadflax to spread. It thrived when other weeds were controlled with Sinbar. Cultivating spread the rhizomes. Fungicides used for gray mold minimized Botrytis infestation of toadflax fruits, leading to more and healthier seed. Toadflax mimicked strawberry. Most successful weeds are crop mimics, meaning they thrive on the same cultural practices and inputs as does the crop. Alans story also illustrates the most important principle of weed control; if one species is not controlled and all other are, the uncontrolled species will take over.

Ohio vegetable farmers may not yet be at risk of being driven out of business by weeds but with todays economics, who can afford increased costs for weed control? As weed communities shift in composition to those species less sensitive to herbicides and cultivation, costs increase. When new weeds tolerate herbicides and cultivation they eventually predominate. Yields and profits are compromised.

New weeds showing up in north central Ohio vegetable fields with increasing regularity are apple of Peru (http://www.oardc.ohio-state.edu/weedworkshop/appleofperu.asp) and bur cucumber (http://www.ppws.vt.edu/scott/weed_id/siyan.htm). Our survey of the Sandusky and Seneca County in 2003 indicated more than 20 farms infested with apple of Peru. Apple of Peru is well controlled by many herbicides in corn and soybeans. However, plants that germinate after herbicide application to field crops grow and produce seed well into fall and build up large seedbanks. Planted to vegetables, apple of Peru cannot be controlled with herbicides. Cultivation only stimulates more emergence.

We know little about the distribution of bur cucumber; however, for those vegetable growers who have it, it is there worst weed problem. Bur cucumber tolerates virtually every herbicide used in vegetables with the exception of atrazine, applied at high rates. Like apple of Peru, it germinates all summer long. Rapid growth during warm weather enables the species to quickly over-top vegetables, even corn,

shading the crop and creating harvesting problems. Be on the lookout for these new weeds and please report them (or other new species) to us by email (doohan.1@osu.edu) or by telephone (330 202 3593.

Return to Vegetable Crops Homepage | Ohio State University Extension

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