Cucurbits

Gummy Stem Blight and Black Rot (Cucumber, Melon, Pumpkin, Squash, and Zucchini)

Howard F. Schwartz and David H. Gent

Identification and Life Cycle

Gummy stem blight is caused by the fungus *Didymella bryoniae* (anamorph *Phoma cucubitacearum*). The pathogen can also attack fruit, causing a disease known as black rot. The disease cycle begins when spores (ascospores) are released from fungal fruiting bodes after rain or heavy dews. When these ascospores land on leaves and stems, they infect through natural openings, wounds, or by direct penetration. Young leaves of watermelon and melon are highly susceptible to infection, but cucumber and squash are resistant when young and become susceptible as they age. Fruit can be infected through wounds and flower scars at pollination. Infection is favored by free moisture and cool to moderate (68 to 77ºF) temperatures, but continuous leaf wetness is essential for disease to progress significantly. The pathogen can be disseminated within and among fields by wind and splashing water, and survives between cucurbit crops in infested crop debris and diseased vines.

Plant Response and Damage

Gummy stem blight symptoms first appear on leaves as circular, tan to dark brown spots, with or without water-soaking. Lesions often develop first at leaf margins, but eventually entire leaves become covered with lesions. Stem lesions are circular in shape, and tan to dark brown in color. Stem cankers develop on cortical tissues and often produce brown, gummy exudates. Small black specks, fruiting bodies of the fungus, are apparent on stem cankers. Seedlings can be killed from stem girdling. Lesions develop more slowly if infection occurs in older plants, and cankered vines wilt near mid-season. Fruit lesions appear as small, water-soaked spots that enlarge; gummy exudates are apparent on fruit. Gummy stem blight can reduce yield, quality, and marketability of fruit.

Management Approaches

Biological Control

No biological control strategies have been developed for gummy stem blight.

Cultural Control

Practice a two-year or longer crop rotation to nonhosts. Promote air movement within the plant canopy and rapid leaf drying by avoiding dense plantings, narrow row spacings, and excess and overhead irrigation. Orientating rows parallel to the prevailing wind direction can also help reduce periods of leaf wetness in semi-arid environments. Resistance to gummy stem blight is not available in commercially-acceptable watermelon, cucumber, or melon varieties.

Chemical Control

Seed treatments should be routine practice for gummy stem blight control. Regular fungicide sprays may be necessary to control gummy stem blight during cool, rainy weather. Resistance to benzimidazole fungicides (such as Topsin-M) and azoxystrobin (Quadris) has been reported in the eastern U.S. and may appear in the High Plains with repeated use of these fungicides.

Product List for Gummy Stem Blight and Black Rot:

Pesticide	Product per acre	Application Frequency (days)	Remarks
Captan			
Captan 4F	4 pt	5-7 days	4 day REI
Captan 50	4 lb	5-7 days	4 day REI
Chlorothalonil and Chlorothalonil Mixtures			
Bravo 720	1.5-2 pt	7 days	Do not graze or feed debris to livestock; 7 day PHI
Bravo Ultrex	1.4-1.8 lb	7-10 days	Maximum of 16.5 pounds per season; 0 day PHI
Bravo WeatherStik	1.5-2.0 pt	7-10 days	Maximum of 20 pints per season; 0 day PHI
Echo 720	1.5-2.0 pt	7-10 days	Maximum of 2.5 gallons per season; 7 day PHI
Echo 90DF	1.2-1.6 lb	7-10 days	Maximum of 16.67 pounds per season; 7 day PHI
Echo Zn	2.2 to 2.8 pt	7-10 days	Maximum of 3.6 gallons per season; 7 day PHI
Ridomil/Bravo	1-2 lb	7-14 days	7 day PHI
Copper Fungicides			
Champ Dry Prill	1.33 lb	5-7 days	
Champ Formula 2	1.33 pt	5-7 days	
Copper-Count-N	4-6 pt	7 days	Mid-harvest.

Kocide 101	1.5-3 lbs	5-7 days	May cause injury
Kocide DF	1.5-3 lbs	5-7 days	May cause injury
Kocide 4.5LF	1-2 pts	5-7 days	May cause injury
Kocide 3000	0.5-1.25 lb	5-7 days	May cause injury
Nordox	1.5-2.0 lb	7-10 days	
Tri Basic Copper	2-4 pt	7-10 days	1 day PHI
EBDC and Copper/EBDC Mixtures			
Cuprofix MZ Disperss	4-7.25 lb	3-7 days	Maximum of 63.1 pounds per season; 5 day PHI
Dithane	2-3 lb	7-10 days	Maximum of 25.6 pounds per season; 5 day PHI; use a non-ionic surfactant to improve performance
Maneb 75 DF	1.5-2.0 lb	7-10 days	Maximum of 17.1 pounds per season; 5 day PHI
Manex 80W	1.5-2.0 lb	7-10 days	Maximum of 16.0 pounds per season; 5 day PHI
Manex	2.4-3.2 pt	7-10 days	Maximum of 25 pints per season; 5 day PHI
ManKocide	2.0-2.5 lb	7-10 days	Maximum of 128 pounds per season; 5 day PHI
Penncozeb 80W	1.5-3.0 lb	7-10 days	Maximum of 24.0 pounds per season; 5 day PHI
Penncozeb 75DF	1.5-3.0 lb	7-10 days	Maximum of 25.6 pounds per season; 5 day PHI
Strobilurins and Strobilurin Mixtures			
Cabrio	12-16 oz	7-14 days	Maximum of 4 applications or 64 oz per season; Alternate with different modes of action; 0 day PHI
Quadris	11.0-15.4 fl oz	5-14 days	Maximum of 4 applications or 2.88 quarts per season; Alternate Quadris with fungicides with different modes of action; 1 day PHI
Thiophanate Methyl			
Topsin M 70WP	0.5 lb	7-14 days	Maximum of 3 lb per season; Alternate fungicide sprays or tank-mix with fungicides with a different mode of action; 1 day PHI
Topsin 4.5 FL	10 fl oz	7 days	Maximum of 60 fl oz per season; Alternate fungicide sprays or tank-mix with fungicides with a different mode of action; 1 day PHI

Topsin WSB	0.5 lb	7-14 days	Maximum of 3 lb per season; Alternate fungicide sprays or tank-mix with fungicides with a different mode of action; 1 day PHI

Categories: Cucurbits, Disease, Gummy Stem Blight, Black Rot, Cucumber, Melon, Pumpkin, Squash, Zucchini

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