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Publication Date

2007-03-01

DOI

10.3733/ucanr.8259

Peer reviewed



UNIVERSITY OF CALIFORNIA

Division of Agriculture and Natural Resources

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Ascochyta Blight of Garbanzos

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INTRODUCTION

Ascochyta blight, caused by the fungus *Ascochyta rabiei*, is a serious disease of garbanzo beans (chickpeas, *Cicer arietinum* L.). There are no other known crop or weed hosts. Ascochyta blight is one of three major disease problems affecting garbanzos in the Central Valley of California. The others are Sclerotinia stem rot (white mold) and a complex of viruses.

SYMPTOMS

Early symptoms appear on leaves and stems during or after cool, rainy weather. At that point they are tan-colored spots with no border. As the tan spots and lesions continue to develop, small black raised dots, which are fruiting bodies called pycnidia, form in concentric rings within the lesion (fig. 1). Stem lesions tend to become dark brown, the stem is weakened, and it often breaks at that site (fig. 2). If pods are present, they can become infected and lesions with concentric circles appear as the disease progresses (fig. 3). During this phase, developing beans can become infected and, if used for seed, can lead to early infections in the next crop.

DISEASE CYCLE

Sources of infection in a new crop include infected seed or spores spread from either diseased volunteer garbanzo plants or residue from the previous crop. Infection requires moisture and cool to moderate temperatures (50–75°F). It is known that the necessary mating types to produce sexual spores are present in California, but sexual fruiting bodies have not been found to date. The asexual spores are spread primarily by splashing water and they move relatively short distances. Spores germinate, enter the plant, and continue spreading through plant tissues, resulting in leaf spots



Figure 1. Leaf lesions caused by *Ascochyta rabiei* showing concentric rings of pycnidia.



Figure 2. Ascochyta blight stem lesion.



Figure 3. Lesions on pods of garbanzo with concentric rings of pycnidia.



Figure 4A. View of garbanzo field affected by *Ascochyta* blight.



Figure 4B. Close-up view of stand loss associated with *Ascochyta* blight in garbanzos.

and stem or pod lesions. As the fungus further develops, pycnidia, formed in lesions, produce spores that can spread the disease within the field when environmental conditions are favorable (fig. 4).

DISEASE MANAGEMENT

Following harvest, incorporate plant residue and destroy volunteer seedlings to reduce the spread of disease. For the new crop, choose a field that has not been planted to garbanzos for at least the previous two years and, if possible, avoid planting in fields adjacent to previous garbanzo fields. Rotation, residue incorporation, and elimination of volunteers are all particularly important when disease levels were high in the previous garbanzo crop.

There are differences among varieties in tolerance to this disease. If disease is expected, it is advisable to plant varieties that are less susceptible to *Ascochyta* blight. UC Cooperative Extension researchers and local warehouse personnel should be able to help with variety selection. Always plant seed that has been treated with an appropriate fungicide, such as Mertect, to reduce introduction of the fungus by seed.

Monitor fields closely for early symptoms of disease. Avoid sprinkler irrigation, which promotes the spread of disease by splashing spores from infection sites to nearby plants. Once present, the decision of when to apply fungicides depends on variety susceptibility, weather forecasts, and stage of crop development. To avoid development of resistance, it is important to rotate between fungicide chemistries (table 1).

Table 1. Fungicides registered for control of *Ascochyta* blight of garbanzos in California as of September 2006

Trade name	Chemical name	Fungicide group	Manufacturer
Mertect (seed treatment)	thiabendazole	benzimidazole (1)	Syngenta
Bravo Weather Stik	chlorothalonil	chlorinated benzonitrile (M)	Syngenta
Headline	pyraclostrobin	strobilurin (11)	BASF
Quadris	azoxystrobin	strobilurin (11)	Syngenta
Endura	boscalid	anilid (7)	BASF

Bravo Weather Stik is a protectant and should be applied at the first sign of disease prior to rain or sprinkler irrigation. Thorough coverage of the plant canopy is important. Headline, Quadris, and Endura, which in addition to being protective have some curative action, can be applied prior to rain, or within 36 hours after rain. If repeat applications are necessary, choose a fungicide from a different chemistry class to delay the development of resistance by the pathogen.

PREVENTING THE SPREAD OF ASCOCHYTA BLIGHT OF GARBANZOS

You can help limit the spread of Ascochyta blight by taking the following steps:

- Incorporate plant residue and remove volunteer garbanzo seedlings.
- Do not plant garbanzos back-to-back in the same field; rotation is important.
- Select fields without a recent history of garbanzos (at least 2 years).
- Select varieties less susceptible to Ascochyta blight.
- Plant certified, disease-free seed treated with fungicide(s) approved for Ascochyta control.
- Avoid sprinkler irrigation.
- Monitor fields for disease symptoms early and often during the cropping season.
- When necessary, treat foliage with registered fungicide(s); rotate fungicide chemistries.

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An electronic version of this publication is available on the ANR Communication Services Web site at <http://anrcatalog.ucdavis.edu>.

Publication 8259

ISBN-13: 978-1-60107-479-9

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pr-3/07-LR/CM