Chickpea and Ascochyta: Early Disease Scouting and Management is Important

By Donna Fleury

For chickpea growers, ascochyta blight is a severe and potentially devastating disease that requires integrated management and vigilance from the start of the season. This disease, caused by the fungal pathogen *Ascochyta rabiei*, is a different and much more aggressive species than the pathogens causing ascochyta blight in lentils or peas.

Plant breeder Bunyamin Tar'an at the Crop Development Centre (CDC) outlines several important steps for managing chickpea and ascochyta blight disease that must be considered as an interrelated package of management strategies. First is to select the best varieties. Most of the varieties currently available are considered moderately resistant to ascochyta, with Desi type having a bit better resistance than Kabuli type.

Growers need to plant the best quality seed with the lowest disease levels possible for ascochyta, and use a seed treatment at planting. A four-year rotation is recommended, and chickpeas should not be seeded adjacent to fields that have had chickpeas in the past two years, as the disease can overwinter in the debris for more than one year.

In-crop scouting should begin at the seedling stage for ascochyta blight and continue until pods have well-formed seeds. Symptoms include tan or brown lesions on stems, leaves, and pods. Spores are often present in these lesions. Rain and/or high humidity means scouting frequency should be increased. If conditions are drier and the chickpea plant gets past the seedling stage, scouting frequency can be decreased to every seven to 10 days. Ascochyta blight can spread throughout the season, therefore additional disease cycles may be prevented with early and additional fungicide application at later stages.

The timing of the first foliar fungicide application is very critical. The first application should be made early at the eight to 10 node stage to minimize spore development on the plants. Although plants are small and disease symptoms may not be visible, spores are most likely already present and able to infect the plants. Once established, ascochyta blight develops quickly, so early detection of pathogen presence and timely sprays before the onset of infection are essential to protect chickpea flowers and conserve yield. Subsequent fungicide application can be made as required, with wet weather and rain events increasing the disease risk. Fungicide activity does not extend much past two weeks after application.

Seed grower Barry Reisner has been growing chickpeas for over 25 years on his farm near Limerick. Ascochyta blight was not a problem when he first started, but as the crop became more popular over the years, ascochyta blight severity increased, in some cases causing complete crop losses. Unlike diseases in other crops that may cause injury or some yield loss, ascochyta can completely kill a chickpea crop.

Reisner implements an aggressive management strategy for high quality seed production, and budgets for four or five fungicide applications per season, using different fungicide modes of action throughout the season. The

first application is made about a month after seeding at the eight node stage, which is key to keeping the crop clean from the beginning, rather than trying to clean up the crop after it is infected. Subsequent fungicide applications are made every two weeks until the crops starts to dry down. Weather conditions make a difference, and if conditions into July are hot and dry, the timing may be extended to three weeks between applications.

Non-seed growers may rely on a less aggressive fungicide strategy, however Reisner emphasizes the timing of the first application is critical, with subsequent application timing based on regular scouting and monitoring weather conditions. Protecting the value of a good yielding crop is important. If the weather is dry, the application may be delayed until there is rain in the forecast.

As with all fungicide applications, growers using multiple applications in a season should rotate fungicide group and mode of action to reduce the risk of resistance buildup. This is extremely important for ascochyta in chickpeas due to the genetic diversity of the fungus, and the fact that isolates with resistance to strobilurin fungicides have been confirmed in Saskatchewan.

Rotate the use of a strobilurin product in the mix (or tank mixed) with a non-strobilurin product during the growing season. Use no more than two applications per year of any fungicide containing a strobilurin to the same field. Do not apply more than two applications of the same group in a single growing season (except for chlorothalonil, which can be applied three times). Do not use a strobilurin product as the last application of the season (to help reduce the risk of resistant strains from over-wintering).

Tar'an and his colleagues are continuing to work on improving resistance to ascochyta in the chickpea breeding program, as well as for earliness, and seed size. They are also working on including imidazolinone (IMI) herbicide tolerance in new breeding lines and expect to have varieties available once the registration process is complete.