CROP DISEASE BULLETIN

Crop disease information for southern NSW and northern Victoria provided by NSW Department of Primary Industries and Grains Research Development Corporation

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Background

In the early October 2016 the disease lupin anthracnose, caused by the fungus *Colletotrichum lupini*, was confirmed in commercial lupin crops in southern NSW. The disease is a major threat to the NSW lupin industry. Albus lupins are highly susceptible to the disease, while narrowleaf lupins do have some resistance, in particular the varieties Wonga and PBA Barlock and PBA Jurien.

Surveillance by NSW DPI and Local Land Services staff identified six infected properties in 2016 and has put in place measures to eradicate the disease from NSW. This coming season NSW DPI will continue to conduct surveys for the disease in commercial lupin crops and provide support to industry to eradicate the disease from NSW. However, successful eradication relies on co-operation from industry.

It is important for industry to be familiar with the symptoms of anthracnose this coming season and to report any unusual symptoms.

Lupins can be grown outside the restriction zones this season in NSW. Growers within restrictions zones have been contacted and are aware of the measures put in place.

Quarantine restrictions remain in place on the movement of lupin material and machinery into NSW from South Australia and Western Australia.

Anthracnose Awareness in 2017 – The Five Point Plan

For the vast majority of lupin growers in NSW production can continue in 2017 outside restriction zones. However, a five point management plan is being recommended for all lupin producers in NSW for all lupin varieties (albus and narrowleaf) across all districts. Allowing the disease to develop in crop significantly increases the likelihood of disease spread. These strategies are aimed at significantly reducing opportunities for establishment and spread of the disease.

1. **Treat seed for sowing with a fungicide seed treatment containing thiram.**
    - Seed transmission is the main form of disease spread and survival between seasons. Treating lupin seed for sowing with a fungicide seed dressing containing thiram can significantly reduce the chances of anthracnose developing and becoming established. Be aware that seed applied fungicides can be deleterious to rhizobia. The best approach is to treat seed with fungicide, allow to completely dry. Then apply the rhizobia shortly before seeding, using an increased rate to ensure survival.
2. **Separate this year's lupin crop from last year's lupin stubble.**
    - The fungus that causes anthracnose can survive in old infected lupin trash between seasons. New infections can arise if old infected lupin trash comes into contact with new season's lupin crops. Prevent transmission of the disease from old stubble by separating this year's lupin crop away from last year's lupin stubble.
3. **Control volunteer lupins on your property.**
    - Volunteer lupins can be a source of anthracnose for new season's crops. Volunteer lupins can arise from within last year's lupin paddock or from feeding lupin seed to stock over summer and autumn. They can host the anthracnose fungus and build up levels of disease inoculum between lupin crops.
4. **Control machinery and people movement into and out of lupin crops.**
    - Spores of the anthracnose fungus can be carried on machinery, animals and human movement. Spores that develop during the growing season on infected plants can adhere and spread the disease within crops and between crops. ***Be aware of machinery movements into and out of lupin crops, particularly contractors. Be aware of human activities in crops and the possible risks involved.***
5. **Apply a foliar fungicide at 6 – 8 weeks post emergence (with a grass herbicide) using fungicides containing mancozeb ,chlorothalonil or azoxystrobin, and a follow up at pre-canopy closure.**
    - Research conducted in WA found that follow up foliar fungicide applications in combination with seed applied fungicides were highly effective in reducing the transmission of anthracnose between seasons.

Important information about the disease

- The disease is specific to lupin species only. *Colletotrichum lupini* does not affect any other pulse species including field pea, faba bean, chickpea or lentil.
- The fungus survives on infected lupin stubble and can be carried on or within infected seed, which is the main means of disease spread. Infected seed will give rise to infected seedlings the following year and initiate the disease. The fungus does not survive in the soil.
- The fungus can survive for up to two years on infected seed. This time can be longer under some conditions.
- The fungus does not produce air-borne spores. Lesions on infected plants produce spores that are splash dispersed short distances and spread the disease within the crop.
- Spores can also be spread by contaminated machinery, vehicles, people, clothing, boots and animals.

Symptoms of the disease

Symptoms of anthracnose are very distinct and unlike any other foliar disease of lupin. Key features of the disease include:

1. Anthracnose can develop at any stage within the crop, including seedlings.

2. Symptoms become most obvious when crops come into the reproductive phase and start flowering and podding. The disease attacks the soft plant tissue at the growing points (including stem tips, flowering spikes and pods) and works downwards into the crop canopy.

3. Crop lodging is not a symptom, the disease attacks the upper canopy.

4. **The most notable feature of anthracnose is the bending and twisting of stems at the outer ends (see images), also known as 'shepherds crook'. The bending of stems is due to the formation of lesions within the crook of the bend causing collapse down one side. Within the lesion are bright pink/orange spore masses that spread the disease within the crop.**

5. Later as pods start to develop, lesions and spore masses also form on pod tissue that can infect developing seed. Pods can also become deformed and distorted.

6. Anthracnose will develop in patches or 'hotspots' within the crop. As the disease is spread through rainsplash of spores, patches of deformed plants will form within the crop as the disease spreads following rainfall events. Windblown rain can quickly spread the disease within a crop.

Figures 1 and 2. Images above and below of Anthracnose on albus lupin, showing distinct bending and distortion of stems.

Figure 3. A developing stem lesion, showing the distinct pink/orange spore mass within the lesion before collapse of the stem.

What can we do now..

At this point in time procedures to eradicate the disease from NSW and protect the lupin industry have been put in place. This includes maintaining the restrictions on the movement of machinery and lupin plant material from interstate, continued surveillance for the disease across NSW and implementation of the five point management plan.

Across NSW, growers, agronomists, and advisors are encouraged to inspect lupin crops for symptoms of anthracnose and collect any suspect samples or report to NSW DPI of any suspect crops. We also encourage negative inspections (where symptoms of the disease are not found) to be reported, as this supports our on-going surveillance and eradication.

As new season lupin crops emerge in the coming months be aware of unusual symptoms, patches forming within crops or deformed plants.

Sampling

Plants suspected of having lupin anthracnose should be sampled and sent for diagnosis.

- Sample plants that show unusual symptoms
- Wrap the plants in damp (not wet) paper towel and seal in both a plastic container and a ziplock bag, or two ziplock plastic bags.
- Send the sample by express post early in the week. A cold pack is not needed.

Send samples to:

Dr Kurt Lindbeck, NSW DPI, Wagga Wagga Agricultural Institute, Pine Gully Road, Wagga Wagga NSW 2650, Phone: 02 6938 1608

Hygiene

Lupin anthracnose can be spread on clothing and vehicles.

If you come into contact with a crop showing symptoms of lupin anthracnose, change clothing (including hats) and thoroughly clean footwear and vehicles before entering another paddock.

People entering lupin crops should wear disposable coveralls and rubber boots. Used coveralls should be bagged and securely disposed of. A plastic spray bottle with 90% methylated spirits can be used to spray down boots and hands between crops.

Clothing worn in an infected crop should be bagged, sealed and washed before being worn again.

For more information

http://www.dpi.nsw.gov.au/about-us/media-centre/releases/2016/damaging-lupin-disease-confirmed-in-nsw

email: biosecurity@dpi.nsw.gov.au

call: **Rachel Taylor-Hukins, Grains Biosecurity Officer 0409 945 069**

Kurt Lindbeck

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