# Faba bean disease and virus management update for 2024

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## Key words

faba bean, Botrytis, rust, virus

## GRDC codes

DJP2304-004RTX, DAW2305-003RTX, UA00163

## Take home messages

- The critical period for the development of leaf diseases on faba bean in the northern grain region is July – August when flowering / early pod setting occurs
- BoM long-term prediction for July – August 2024 is that rainfall for parts of the interior will be above average. Growers must be prepared for a fungicide application during this period, particularly if disease symptoms are present in the crop.
- Autumn is the most critical period for virus infection of faba bean
- Aphid vectors are responsible for virus in a crop, however not all aphids carry virus
- Seed treatment of faba bean with neonicotinoids imidacloprid or thiamethoxam will give partial protection against infection of persistently transmitted viruses, but not against non-persistently transmitted viruses. Treatment may also delay the build-up of aphids in the crop and thereby slow the spread of viruses from initial infection foci.
- Sowing in standing cereal stubble and good, even, plant establishment helps lower aphid landing rates in emerging crops.

## Control of foliar diseases

The two main faba bean diseases in the northern grain region are rust (*Uromyces viciae-fabae*) and chocolate spot (*Botrytis fabae* and *B. cinerea*). Diseases that threaten faba bean production in the southern grain region, like Ascochyta blight (*Ascochyta fabae*) and Cercospora leaf spot (*Cercospora zonata*) rarely develop to yield damaging levels in the north.

Optimal conditions for chocolate spot development are prolonged leaf wetness and mild temperatures (>15°C). Faba bean crops become particularly vulnerable during flowering as crops become denser and moisture remains longer in the canopy. Lower leaves need to be protected as, unlike rust, chocolate spot can sporulate on dead leaf tissue. Generally, environmental conditions in the northern region are not favourable for chocolate spot development. However, its potential to have a devastating impact in seasons with above average rainfall makes it a prime focus for disease control. As high-rainfall seasons also have high yield potentials, a pre-emptive fungicide application by growers is justified.

Rust is less dependent on rain than chocolate spot but can develop rapidly during autumn and spring when average temperatures are above 15°C. Infections can occur in winter, but the disease will remain latent in the leaves for a long period. Current faba bean varieties recommended for the northern region have a level of rust resistance that provides adequate protection in most seasons, however if rust pustules are observed in autumn a fungicide application is warranted.

Multiple factors need to be considered when deciding on fungicide use, including the cost (Table 1). Any one of the factors listed below increases the justification for a fungicide application.

- A multi-day rain event is expected.
- Disease is present in the crop or in neighbouring fields (volunteers).
- The crop was sown early and has a high biomass.
- The crop is at a vulnerable stage for disease development (flowering / early podding).
- The crop has a good yield potential.

The timing of previous applications also plays a role; older fungicides only provide protection for a 2-week period, while the newer, more expensive products claim longer coverage. All current fungicides are non-systemic, which means that new plant growth is not protected. This is particularly important during flowering when plants grow rapidly and disease on flowering nodes can have a high impact on yield.

**Table 1.** Main fungicides for faba bean chocolate spot (CS) and rust control.

| **Active ingredients** | **Rate/ ha** | **Application Cost / ha*** ** | **Activity** | **Restrictions** | **WHP to harvest** |
|---|---|---|---|---|---|
| Tebuconazole (430 g/L) | 145 ml | $2.00 | Rust only | 3 applications/year<br>14–21 day interval | 21 days |
| Carbendazim (500 g/L)* | 500 ml | $6.50 | CS only | 2 applications/year<br>14 day interval<br>NO aerial application | 28 days |
| Mancozeb (750 g/kg) | 1 kg | $14.00 | Rust & CS | | 28 days |
| Tebuconazole (370 g/L)<br>Azoxystrobin (222 g/L) | 500 mL | $21.00 | Rust & CS | 2 applications/year<br>14 day interval | 28 d |
| Prothioconazole (150 g/L)<br>Bixafen (75 g/L) | 600 mL | $35.50 | Rust & CS | 2 applications/year<br>28 day interval<br>DO NOT apply after early flowering (BBCH 60/61) | - |
| Procymidone (500 g/L)** | 500 mL | $19.00 | CS only | Under permit PER92791<br>2 applications/year<br>7 day interval | 21 days |
| Fludioxonil (150 g/L)<br>Pydiflumetofen (100 g/L) | 750 mL | $59.00 | CS only | 2 applications/year<br>14 day interval<br>DO NOT apply after end of flowering (BBCH 69) | - |

* Carbendazim remains a legally permitted treatment of pulses, however, growers are advised to talk to their grain buyer prior to the use of carbendazim as export markets might differ in their Maximum Residue Limit (MRL).
** Procymidone was taken off label pending review. However, a permit (PER92791) up to 31 October 2025 is now valid.
*** Fungicide costs taken from the NSW Winter crop variety sowing guide (https://www.dpi.nsw.gov.au/agriculture/broadacre-crops/guides/publications/nsw-winter-crop-variety-sowing-guide)

Current disease control recommendations identify 3 critical periods for fungicide application:

1. crop establishment, when initial infections can occur from crop residue or seed

2. crop canopy closure / flowering / early pod set, to protect the pod setting nodes
3. pod filling, to protect seed size and quality. Fungicides during pod filling are rarely needed in the northern region as Ascochyta blight is not a problem.

**Research**

NSW DPI is part of a GRDC funded interstate project that aims to better understand chocolate spot epidemiology and identify improved control strategies. One of our aims is to investigate whether the newer, substantially more expensive fungicide products can stop the spread from initial infections and thereby reduce the number of fungicide applications needed.

## Control of viral diseases

Pulse crops and pasture legumes can be infected by many viruses, but symptom expression and yield losses differ greatly between virus and host species. For example, *Turnip yellows virus* (TuYV) can kill chickpeas, but has little or no impact on faba bean. Viruses that have caused serious losses in faba beans in the northern region are *Bean leafroll virus* (BLRV), *Bean yellow mosaic virus* (BYMV) and *Alfalfa mosaic virus* (AMV). Combined infection by BYMV and AMV is particularly damaging and was found in some of the worst affected faba bean paddocks during the (mainly) BYMV epidemic on faba beans in north-western NSW during 2020.

The timing of virus infection has a greater impact on plant growth and yield than with foliar diseases. Faba bean is early sown, which makes it particularly vulnerable to virus infections. The main pulse viruses are all vectored by aphids, and aphid movement is highest during autumn. However, aphids are only viruliferous if they have visited a virus infected plant before landing on a healthy plant. Seed-borne viruses can be acquired by aphids within the crop, which can result in earlier and more severe epidemics than those caused by viruses that originate from outside the paddock. Fortunately seed transmission is only of importance for a limited number of pulse viruses. BYMV can be seed transmitted in faba bean, but in 2020 we found only one occurrence of seed transmission in over 7,000 seeds tested from 52 seed lots harvested from severely BYMV affected crops. Pasture legumes, volunteer plants and weeds are all potential sources of virus. AMV seed infection is found in pasture legumes such as medics and vetches, while lucerne is a symptom-less summer host for both BLRV and AMV.

Viral diseases can't be cured, so avoidance of infection is the only option. Well established crops with good ground cover are less attractive to aphids, particularly if sown in standing stubble. Seed treatment with neonicotinoids imidacloprid or thiamethoxam will give protection of emerging plants to persistently transmitted viruses (like BLRV) that require a feeding period on the plant, but not for the non-persistently transmitted viruses (like BYMV and AMV) that can be transmitted during short plant probes. Seed treatment may delay the build-up of aphid populations during early plant growth and lessen the occurrence of secondary virus infections. Similarly foliar aphicide applications will have little effect on initial infections but will delay aphid multiplications in the crop. When applying foliar aphicides use only those that have minimal impact on beneficials. Unlike for aphid feeding damage, there are no aphicide application thresholds for virus vectors: aphid numbers are less important than aphid movements, particularly those entering paddocks from external infection sources.

## Start of the 2024 faba bean growing season

April-May 2024 has been particularly mild and relatively dry and widespread reports of cowpea aphid (*Aphis craccivora*) colonisation in early sown faba bean crops have been noted. Virus testing of these aphid-infested plants has so far found no presence of virus, however, infestation

levels in several paddocks were reportedly reaching 10%, thereby justifying an aphicide application.

No rust or chocolate spot has been reported up to June. However, BoM long-term prediction for July – August 2024 is for above average rainfall for parts of the interior and faba bean growers should be prepared to apply fungicide during this critical period of crop growth.

## Further reading

Managing diseases of faba bean 2024

https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/1562037/Managing-diseases-of-faba-bean-in-2024.pdf

Managing viruses in pulse crops in 2021

https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/1299965/Managing-viruses-in-pulse-crops-in-2021.pdf

Aphid management in pulse crops 2022
https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/1422168/Aphid-management-in-pulse-crops-2022.pdf

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