

# Inoculation of rotation crops with *Fusarium oxysporum* f.sp. *vasinfectum*

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## Introduction and Objective

- *Fusarium* wilt of cotton, caused by *Fusarium oxysporum* f.sp. *vasinfectum* (*Fov*), remains a constraint to sustainable cotton production in Australia.
- The pathogen can survive as spores in the ground, saprophytically on residues or on alternative hosts. While there are a number of known symptomless weed hosts, the extent to which *Fov* can infect and multiply on common rotation crops in Australia has not been investigated.

**The objective of this preliminary study was to determine infection and colonisation of rotation crops following artificial inoculation with *Fov* under glasshouse conditions.**

## Results and Conclusion

- All crops tested, except Canary yielded *Fov* (Table 1).
- Infection was largely restricted to the root and crown region in some crops (eg. Fababean, Sorghum, Japanese millet). In others (eg. Lablab, Mungbean, Pigeonpea) colonisation was more extensive up the stem.

**Crop rotation sequences will need to take into account the ability of *Fov* to infect and persist on other crops, aiding in the survival of this pathogen.**

## Materials and Methods

- Seeds of 24 different crops were planted into small pots of sterilised potting mix.
- 3 week old seedlings were inoculated by dipping roots in a spore suspension (1,500,000 spores per ml) of a known Australian VCG 0 1111 isolate of *Fov* for 6 minutes.
- After 6 ½ weeks plants were removed and root/crown and stem material (up to 6 cm) was plated onto ½ strength PDA amended with streptomycin sulfate.
- Pathogenicity tests on cotton seedlings were conducted with the recovered isolates to confirm presence of *Fov*.



Some inoculated rotation crops



Pathogenicity tests on cotton seedlings

Crop	Root or Crown	1 cm	2 cm	3 cm	4 cm	5 cm	6 cm	Not infected	Total Plants
Cotton	-	-	-	-	-	-	11	3	14
Canary	-	-	-	-	-	-	-	14	14
Sorghum	7	-	-	-	-	-	-	7	14
Fababean	3	-	-	-	-	-	-	7	10
Triticale	-	-	-	1	-	-	-	11	12
Barley	5	2	1	-	-	-	-	4	12
Japanese millet	7	-	-	2	-	-	-	3	12
Maize	2	2	-	-	-	-	-	5	9
Safflower	-	1	2	1	-	-	-	11	15
Chickpea	2	1	1	2	1	-	-	8	15
Sunflower	2	4	2	-	1	-	-	5	14
Oats	-	3	4	3	1	-	-	2	13
Peanut	1	2	3	3	1	-	-	4	14
Lupin	2	2	5	1	1	-	-	3	14
Wheat	-	3	4	5	1	-	-	1	14
Panicum	2	3	3	5	1	-	-	0	14
Canola	-	-	-	1	12	-	-	0	13
Linseed	-	3	2	3	2	-	1	3	14
Fieldpea	-	-	-	1	10	2	-	0	13
Pigeonpea	-	-	1	1	11	6	-	0	19
Vetch	-	-	-	4	7	4	-	0	15
Soybean	-	-	4	2	5	2	-	1	14
Mungbean	-	-	4	2	3	4	2	0	15
Lablab	2	-	3	1	-	4	3	1	14

**Table 1: Number of plants and height to which *Fov* was isolated from the stem of inoculated rotation crop species (6.5 weeks after inoculation)**

## More information

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