



## Research Notes

### Introduction

#### Recognising White Blister

White blister was first reported to cause economic losses in broccoli and cauliflower during the summer of 2001/02 in Victoria. Within 18 months it had spread rapidly throughout southern Australia. It was recently detected on broccoli in Queensland, during August 2005.

#### Recognising white blister

The disease white blister (rust) is caused by the fungus *Albugo candida*. It affects many economically important brassica crops including broccoli, cauliflower, Brussels sprouts, rocket and radish as well as many common brassica weeds.

The fungus produces two types of symptoms: blisters and distorted plant parts.

#### Blisters

White blisters generally develop on the underside of leaves but can cover entire plant parts such as leaves, stems, heads and seedpods. The blister contains spores that develop under the plant epidermis, which eventually breaks from the pressure of the expanding spores. These are vegetative or asexually produced spores. White, powdery or dust-like spores are released at any time of the day or night and spread by wind. As blisters on the underside of leaves age they can be seen on the upper leaf surface as light green to yellow spots which may also produce spores.



White blisters



Aged blisters



White powdery dust like spores

#### Distorted plant parts

Galls on stems, distorted or enlarged stems, leaves, inflorescences and pods contain the oospores (sexually produced spores). These symptoms are often stunning, such as 'stag heads'. At this stage the fungus enters the systemic phase and grows within host tissues, making it harder to control. The oospores are capable of being carried in crop debris and on seed, thus having the potential to infect future crops.



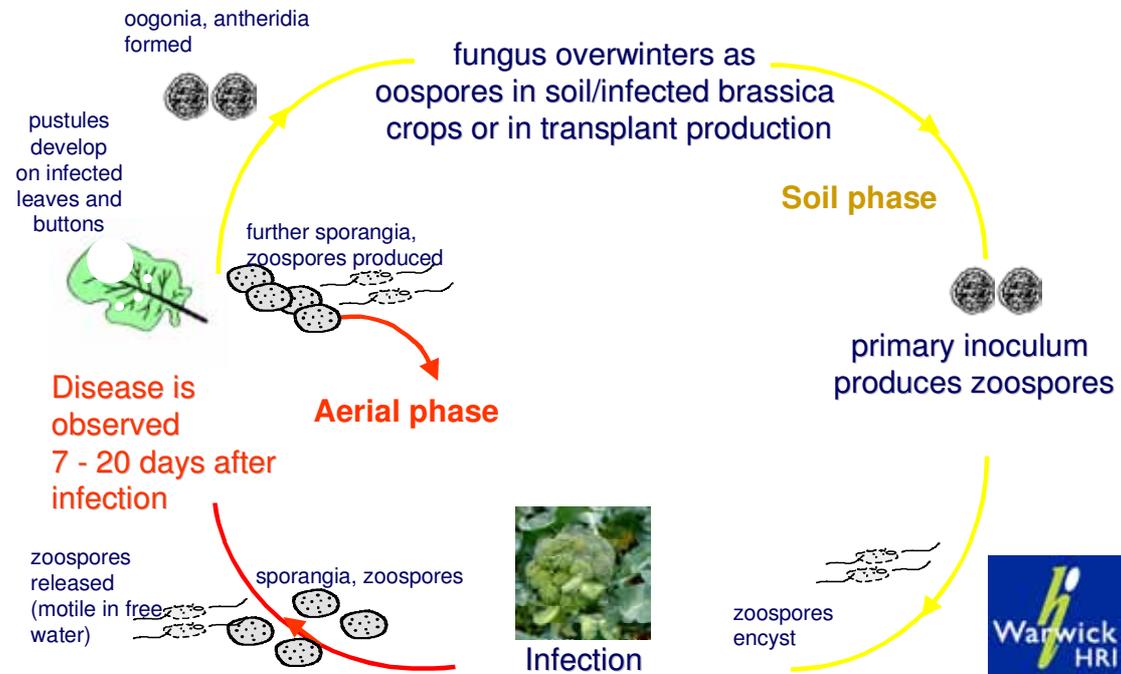
albugo zoosporangia



## The fungus *Albugo candida*

- ◆ is a member of the oomycetes or water moulds,
- ◆ is related to downy mildew, phytophthoras and pythiums,
- ◆ is largely spread by the aerial phase.

## Disease cycle of *Albugo candida*



### Infection depends on:

- \* A source of spores
- \* Temperature range of 13 - 25°C
- \* A minimum of 2-3 hours of leaf wetness

### Disease development:

- \* The disease is more common in autumn and spring
- \* Symptoms develop 7 - 21 days after infection

### Economic loss

White blister produces economic losses by causing:

- ▼ defoliation of seedling leaves, slowing their growth,
- ▼ premature harvest of broccoli heads to avoid symptom expression,
- ▼ reduced production period for rocket crops,
- ▼ damage to radish leaves thus reducing their commercial value,
- ▼ infections on broccoli heads making them unmarketable,
- ▼ development of blister on broccoli heads during transit,
- ▼ increased frequency of fungicide applications.

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