

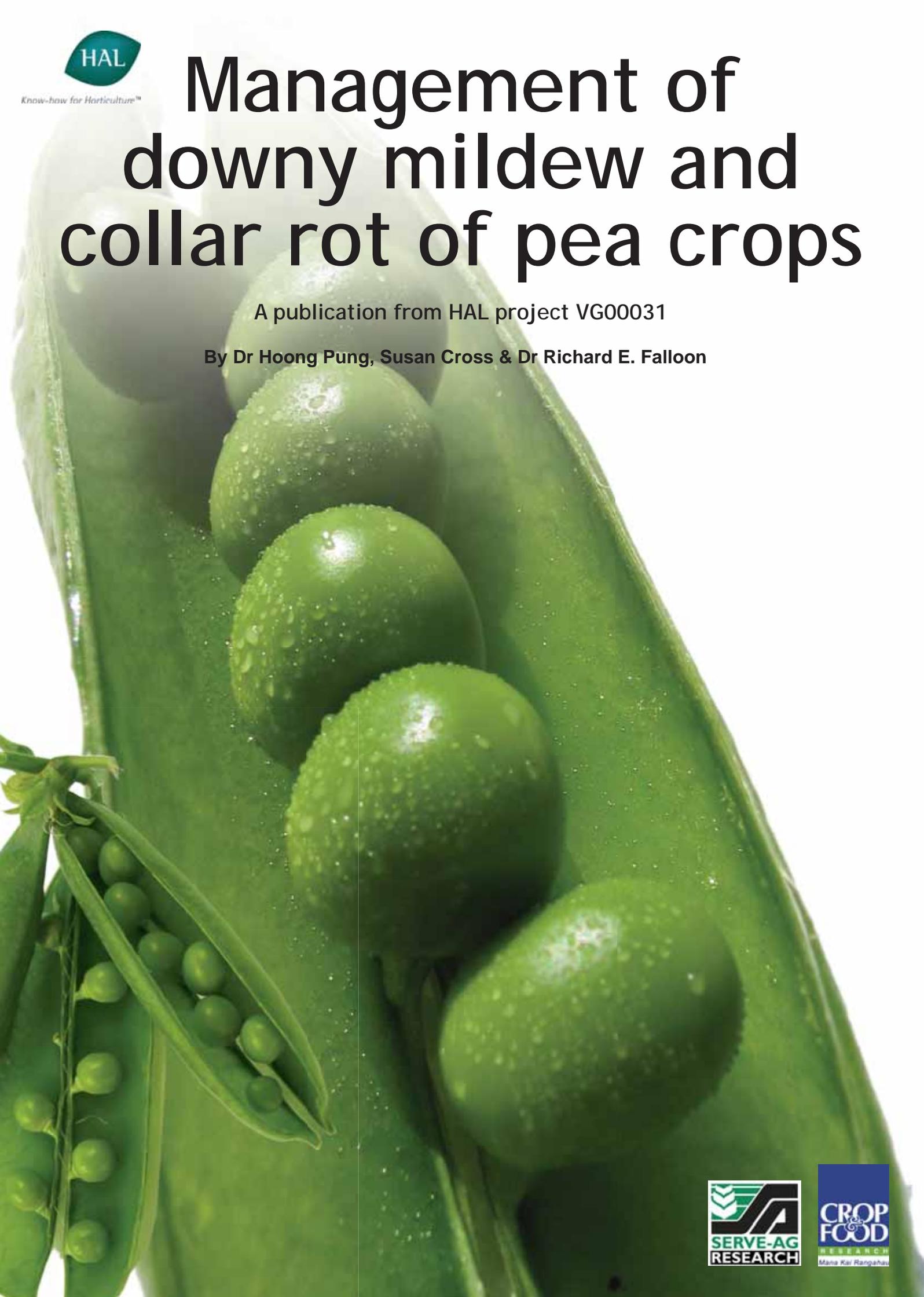


Know-how for Horticulture™

# Management of downy mildew and collar rot of pea crops

A publication from HAL project VG00031

By Dr Hoong Pung, Susan Cross & Dr Richard E. Falloon





Downy mildew (caused by *Peronospora viciae*) and collar rot (caused by *Ascochyta pinodella* and *Ascochyta pinodes*) are the two most common and important diseases of processing pea crops that adversely effect pea yield and quality. Cost-effective management strategies for these two diseases are therefore vital for the sustainability of processing pea production in Australia.



Downy mildew

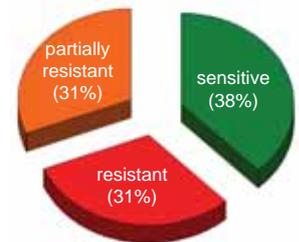


*Ascochyta* collar rot

Infected seeds and soils are common sources of inoculum for both types of pathogen. Appropriate management strategies for preventing seedling and field infections by these pathogens have been developed from research in Horticulture Australia project VG00031. This brochure outlines these strategies.

## Sensitivity of *Peronospora viciae* to metalaxyl-M

In 2001 and 2002, testing of *P. viciae* strains obtained from pea crops at different sites in northern Tasmania showed that 62% were partially or highly resistant to the phenylamide fungicide metalaxyl-M. This is the first report of metalaxyl resistance, following its use as a pea seed dressing, for downy mildew control in Australia, and follows similar findings in New Zealand.



Fungicide resistance management strategies should be applied to achieve effective and sustainable downy mildew control in pea crops. These strategies should include: alternating phenylamides with chemicals with different modes of action, or using phenylamides in mixtures with non-phenylamide chemicals. Appropriate alternative or mixture chemicals include cymoxanil, fosetyl-AI, mancozeb and phosphorous acid. The strategies should be applied for seed treatment fungicide applications to control downy mildew in young crops and for foliar applications of fungicides to control the disease in more mature crops.

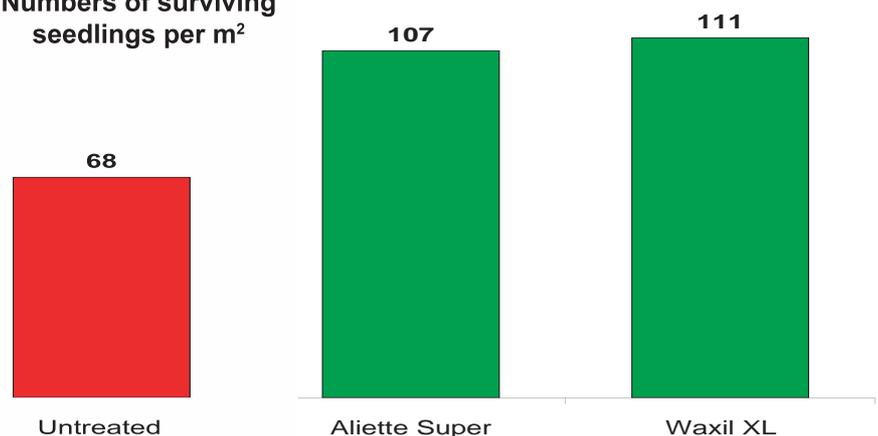
## Control of seed and seedling infection

Ineffective control of *P. viciae* and *Ascochyta* spp. on pea seed and seedlings causes poor crop establishment, stunted plants and early crop senescence, leading to yield loss and uneven crop maturity. Seed treatments with fungicide dressings are the most cost-effective way of controlling *P. viciae* and *Ascochyta* spp. on seeds and seedlings.

The use of metalaxyl alone, in seed treatments for downy mildew control, has become less effective in recent years as a result of increases in the proportion of metalaxyl resistant fungal strains. Hence, previously used seed dressings which relied on metalaxyl for downy mildew control, have become less effective. In Apron® + P-Pickel T®, metalaxyl is the only active ingredient for downy mildew control.

Aliette Super® and Wakil XL® are suitable alternative seed dressings for peas, and these products will also control metalaxyl resistant fungal strains. Aliette Super® and Wakil XL®, each containing a mixture of three active ingredients, are effective against *P. viciae*, *Ascochyta* spp., and soilborne damping-off pathogens on peas. Treating seeds with these products and storing them for almost one year had no adverse effects on germination or seedling growth.

Numbers of surviving seedlings per m<sup>2</sup>



Effects of seed treatments on plant populations in a field trial





## Field control of downy mildew and *Ascochyta* collar rot

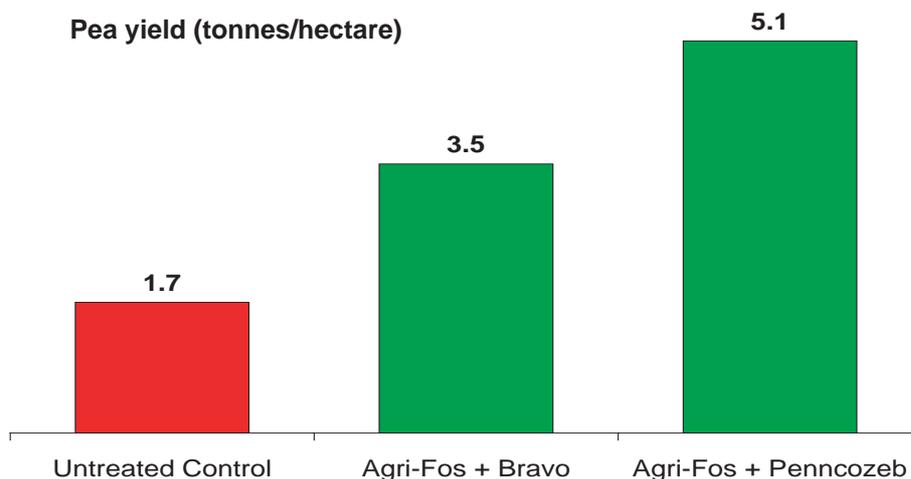
- Prior to this project, there was no cost-effective control method for field downy mildew on processing pea crops at 6 nodes or more.

- The project identified three relatively low cost fungicide products, chlorothalonil (Bravo®), mancozeb (Penncozeb®), and phosphorous acid (Agri-Fos®), for field downy mildew and/or collar rot management on processing pea crops.

- Phosphorous acid + mancozeb mixture was the most consistent and effective foliar treatment for field control of downy mildew, but had no effect on collar rot. Phosphorous acid or mancozeb alone had little or no effect on downy mildew.

- Phosphorous acid + chlorothalonil, the second best treatment against downy mildew, was also effective in reducing collar rot severity.

Pea yield (tonnes/hectare)



Effects of two foliar fungicide applications on pea yield in a crop with severe downy mildew

### Application timing

Collar rot management	One spray application of chlorothalonil at 4 nodes.
Downy mildew management	Phosphorous acid + mancozeb or phosphorous acid + chlorothalonil must be applied at the first sign of infection in crops, usually at 4 to 6 nodes. Generally, two applications at 7 to 10 days interval, gives better downy mildew control than one application.
Collar rot + downy mildew management	Apply phosphorous acid + chlorothalonil at 4 nodes, followed by phosphorous acid + mancozeb at 7 to 10 days interval.

### Product rates used in trial studies:

1.8 L/ha Bravo®

3.5 L/ha Agri-Fos 600®

2.5 L/ha Penncozeb SC®

2.0 kg/ha Penncozeb DF®

© Registered Trademarks





Dr Hoong Pung  
Serve-Ag Research



Susan Cross  
Serve-Ag Research



Dr Richard Falloon  
Crop & Food Research

**Key Research Personnel**



Sarah Badcock  
Serve-Ag Research



Pam Cox  
Serve-Ag Research

**Contributing Technical Staff**

Published by Serve-Ag Research Pty Ltd, 2005

For more information contact

**Dr Hoong Pung**  
**Serve-Ag Research Pty Ltd**  
**16 Hillcrest Rd**  
**Devonport 7310**  
**Tasmania**  
**Phone: (03) 6423 2044**  
**Email: [hpung@serve-ag.com.au](mailto:hpung@serve-ag.com.au)**

The research contained in this brochure was funded by Australian vegetable growers levies, Syngenta Crop Protection Pty Ltd, McCain Foods (Australia) Pty Ltd, and Simplot Australia Pty Ltd, with matching funds from the Australian Government through Horticulture Australia Ltd. A full report (VG00031) has been published and is available from Horticulture Australia Ltd.

Any advice contained in this publication is intended as a source of information only. Always consult product manufacturers, APVMA and farm advisors before using any of the products mentioned.