

# BREEDING FOR RESISTANCE TO PEA SEED-BORNE MOSAIC VIRUS

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## INTRODUCTION

Pea seed-borne mosaic virus (PSbMV) was first detected in New Zealand in 1978 (Fry & Young, 1978). The properties of one common isolate, PSbMV-Pam, have been described (Ovenden & Ashby, 1981; Ashby *et al.*, 1986). No unusual seed symptoms were observed apart from occasional cracking of the seed coat.

During the 1984-85 growing season unusual seed symptoms were observed on both field and garden peas. They were described as 'tennis ball mark', 'skid mark', 'coat split' or 'abnormal seed condition'. An abnormally high percentage of small peas was also recorded. Some consignments with these symptoms were downgraded for export markets. In garden peas some affected pea seeds were smooth and round instead of wrinkled.

## METHODS

Inoculation experiments onto differential plant hosts, serological tests, and electron microscopy were used to identify the virus. Seed lines were analysed for disease incidence. Control methods were studied in glasshouse and field trials.

## RESULTS AND DISCUSSION

Experiments identified PSbMV-ST strain to be associated with the seed symptoms. Seed symptoms were experimentally reproduced. However, the relationship between symptoms and virus incidence in seed lines was not always consistent.

Emergence and survival of plants grown from affected seed were less than those from non-affected seed in some cultivars. The use of insecticides to control aphid vectors was not effective in controlling seed symptoms. Differential host experiments indicated that plants with the 'sbm sbm' genotype, specifically 'sbm-1'<sup>4</sup> were resistant to PSbMV-ST. A breeding programme to incorporate the 'sbm' gene into DSIR pea cultivars has been initiated because of the repeated presence of the symptoms in 1986, 1987, and 1988 seasons.

## RESISTANCE PROGRAMME

F<sub>2</sub> bulk crosses are inoculated with PSbMV and over a period of 5-6 weeks any plants with disease symptoms or testing serologically positive are removed. This process is repeated in the F<sub>3</sub> generation. The remaining seed of resistant plants is bulked and further assessed in the field. It is anticipated that after field trials the first commercial releases will be available in 5-6 years.

## REFERENCES

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