

### Botrytis Decay of Lupins

Severe *Botrytis* stem decay of field crops of lupins has followed injury caused by snow or heavy rain. Under glasshouse conditions in sterile soil the lupin varieties Sweet Blue, Sweet Yellow, Sweet White, and Bitter Blue were wound inoculated with *Botrytis cinerea*. Disease ratings showed that each of these varieties except Sweet Yellow were very susceptible to *Botrytis* infection, whereas repeated inoculations failed in the latter variety, which remained free of *Botrytis* stem wilt.

### Disease Survey

(a) *Potatoes*.—*Phytophthora infestans* caused severe losses throughout the South Island in the autumn of 1945, the epidemic following the abnormal summer rainfall of 1944–45. A survey of a limited area, including sixty separate potato crops, revealed—

- (1) Among the main crop varieties, Dakota was distinctly less affected by tuber decay than other varieties. The Arran Banner variety showed heavy disease infection throughout, up to 80 per cent. tuber loss.
- (2) When the varieties were examined in relation to seed stock, mother-seed lines were less severely affected, but the differences in infection between crops grown from mother seed, commercial, or uncertified lines were small.
- (3) There were distinct differences in the amount of tuber loss occurring on different soil types. The heavier and damp loams were associated with more disease within the varieties than sandy loams. The evidence of the field inspections suggests that the extent to which a particular soil type retains moisture (following initial soil saturation) is a primary factor.
- (4) Among the varieties Aucklander S.T., Arran Banner, and Dakota, no evidence was obtained from the field observations that planting date (between mid-October and mid-November) influenced the ultimate degree of infection. No conclusion was possible regarding the effect of amount of fertilizer.
- (5) Among Aucklander S.T., Arran Banner, and Dakota varieties, infections were less severe when the crop had been planted after lupins for green manure, and most severe where potatoes were being grown for the second time in succession. It is thought that the favourable effect following a lupin green-manure crop is attributable to the open-soil texture and quick drainage associated with soils on which lupins had been ploughed in.

(b) *Perennial Rye-grass: Blind-seed Disease*.—During the past two seasons several hundreds of rye-grass samples submitted by farmers in Canterbury have been examined for pre-harvest infection with the fungus *Phialea temulenta*. The following figures represent the distribution of infection within the samples examined:—

| Percentage of Disease. | Percentage of Samples tested. |        |        |        |        |          |
|------------------------|-------------------------------|--------|--------|--------|--------|----------|
|                        | Under 10.                     | 10–20. | 20–30. | 30–50. | 50–70. | Over 70. |
| 1944–45 .. .. .        | 3                             | 13     | 15     | 32     | 15     | 22       |
| 1945–46 .. .. .        | 35                            | 20     | 15     | 10     | 10     | 10       |

Pre-harvest estimates of germination capacity closely followed final official germination percentages. The data from a questionnaire among growers who submitted samples for testing were analysed, but no positive correlations could be detected between amount of infection and management since sowing, degree of lodging, amount of clover undergrowth. Certified lines of seed continued to show severe infections, in comparison with which a number of uncertified lines from very old pastures have in these two seasons of severe infection been free of the disease. Abnormal rainfall at the time rye-grass seed is being set appears to be the most significant environmental factor contributing to blind seed.