

ESTIMATION OF YIELD LOSSES DUE TO POWDERY MILDEW IN PEAS

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Abstract

Loss in yield caused by powdery mildew in 8 varieties of garden pea varied from 10.1 - 18.0%. A correlation of yield loss with PDI showed that American and Alderman were relatively more tolerant than PN 25 and Alaska as they suffered less percentage of loss in yield.

Introduction

Pea, (*Pisum sativum* L. var. *arvense* Poir) is attacked by several diseases but powdery mildew caused by *Erysiphe polygoni* DC is the most serious. Srivastava *et al.* (1973) reported a reduction of 21-31 percent in pod number and 24-47 percent in pod weight. Similarly Dixon (1978) found that the number of pickings were reduced drastically from seven pickings in the healthy crop to one in that affected by the disease. The work reported here was undertaken to estimate the comparative loss in yield due to powdery mildew attack.

Materials and Methods

Eight cv. of pea viz. Alaska, American, Alderman, F.C. 3954, Indian, P-8, P-774 and REP 326 were planted on ridges in 3 meter long rows at the National Agricultural Research Centre, Islamabad, during 1981-82. Each plot comprised of two rows spaced 75 cm apart. A set of plot of each variety was protected against powdery mildew by spraying with Afugan, [O, O-diethyl-O-(5-methyl-6-ethoxycarbonyl-pyrazolo-1.5.-a-pyrimid-2-yl-thionophosphate)]@ 0.05% soln. in water while other plots were left to get diseased under natural conditions. Appearance of disease was noticed in the last week of March 1982 when spraying of the crop was carried out. The spray was repeated at 7-day intervals and the crop received 4 sprays. Plant Disease Index (PDI) was calculated 5 days after the last spraying according to the following formula originally used by Srivastava *et al.* (1971)

$$\text{PDI} = \frac{\text{Total rating} \times 100}{\text{maximum rating} \times \text{number of plants examined}}$$

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Table-1. Percent yield reduction due to powdery mildew in pea.

Variety.	Plant Disease index	Yield q/ha		Percent yield reduction.
		Protected	Not protected	
P-8	54	17.9	16.1	10.0
REP 326	57	37.2	32.4	12.9
American	76	16.5	14.4	12.7
FC 3954	71	32.4	27.8	14.2
Indian	66	11.7	9.9	15.4
Alderman	75	19.7	16.5	16.2
PN-25	75	14.8	12.2	17.6
Alaska	75	16.1	13.2	18.0

L.S.D. at 5% = 2.03

Reduction in yield was calculated from the mean difference between the yields of protected and unprotected crops. The data were analysed statistically using "Analysis of variance" (Snedecor & Cochran, 1968).

Result and Discussion

Average loss in yield due to powdery mildew in all the varieties under observation ranged from 10.0-18% (Table 1). Based on the performance of each variety, Alaska and PN-25 suffered the most. The percentage of loss in these varieties alone being 18.0 and 17.6% respectively. In varieties P-8 and REP-326, the damage was significantly lower being 10.0 and 12.9%, respectively (Table 1).

Schafer (1971) has defined tolerance as the relative ability of a variety to withstand attack due to disease. Even though the tolerance of a variety is to be measured against itself yet in comparison with another variety the one suffering less damage under similar conditions of disease attack could be considered more tolerant. The absence of a strong correlation between the intensity of disease attack, as reflected by the plant disease index (PDI) and loss in yield could be due to tolerance of the varieties. Varieties American and Alderman whose PDI is similar to those of Alaska and PN-25 may be classed as tolerant because these varieties suffered less in terms of loss in yield.

References

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