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Incidence of early and late blight diseases

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The incidence of early blight and late blight was observed to be low in True Potato Seed (TPS) derived seedlings and seedlings tubers when evaluated under field condition. Prevalence of early blight was more than late blight in both seedling and seedling tubers. TPS - seedling tubers appeared to be more tolerant to late blight that that of variety Kufri Jyoti.

Key words : True potato seed, C_1 seedlings, C_2 seedling

INTRODUCTION

True potato seed (TPS) technology has recently been introduced in the potato production programme of West Bengal. TPS technology has certain advantages over the traditional method of potato cultivation (Devaux, 1984). Information regarding the disease development and its severity in potato plants grown out of TPS is lacking, particularly under the tropical conditions. Hence, this work was taken up to study the development of two major diseases viz. early blight (*Alternaria solani* Sorauer) and late blight (*Phytophothora infestans* (Mont.) de Bary) in the crops grown out of TPS and TPS clones. Observations recorded during 1992-'93 and 1993-94 in the plains of West Bengal are presented here.

MATERIALS AND METHODS

Raising of seedlings from TPS in nursery bed

True potato seed (TPS) of two hybrids vis., HPS 1/13 and HPS 7/67 were sown in 3 m × 1 m raised seed beds. The beds were fertilized @ 150 N : 80 P_2O_5 : 100 K_2O kg/ha along with compost @ 20 t/ha. Three to four seeds were sown in each hole with a spacing of 10 cm × 10 cm.

Transplanted TPS - seedling

Twenty five day old seedlings were transplanted with a spacing of 50 cm × 15 cm in the mainfield where fertilizers were applied @ 200 N : 150 P_2O_5 : 100 K_2O kg/ha.

Seedling tuber

Seedling tuber of first generation (C_1) derived from TPS and tubers of second generation

(C_2) produced from previous year's C_1 tubers were planted with a spacing of 50 cm × 15 cm in plots which received fertilizers @ 200 N : 150 P_2O_5 : 150 K_2O kg/ha. Kufri Jyoti was grown as check. N, P and K fertilizers were applied in the form of urea, superphosphate and muriate of potash respectively.

The incidence of diseases (percentage) was studied in seed bed and tranplanted crop at an interval of 50 days and 70 days after planting.

RESULTS AND DISCUSSION

There was a significant variation in the development of early and late blight disease in nursery beds and transplanted fields of TPS. The incidence of early blight was significantly low in the seed bed as well as in the transplanted plots (Tables 1 and 2). Higher incidence of the disease in seed bed when seedlings were more than 80 days old, could be due to higher plant population.

Table 1. Incidence of early and late blight in TPS nursery bed

Year	Days after Tranplanting	Incidence of disease (%)			
		Early blight		Late blight	
		Potato hybrids		Potato hybrids	
		HPS 1/13	HPS 7/67	HPS 1/13	HPS 7/67
	50 - 60	0	0	0	0
1992-'93	70 - 80	22.5		0	0
	80 - 90	40.0		0	0
	60 - 70	0	1.3	0	0
1993-'94	70 - 80	5.6	8.5	0	0
	80 - 90	75.0	80.0	3.0	1.5

Table 2. Incidence of early and late blight in transplanted TPS seedling

Year	Days after Tranplanting	Incidence of disease (%)			
		Early blight		Late blight	
		Potato hybrids		Potato hybrids	
		HPS 1/13	HPS 7/67	HPS 1/13	HPS 7/67
	60	0	0	0	0
1993-'94	80	8.0	12.4	0	0
	90	11.4	15.0	7.6	7.2

Table 3. Percentage of early and late blight disease in hybrid clones compared to Kufri Jyoti

Potato Generation	Days after Tranplanting	Percentage of disease			
		Early blight		Late blight	
		Potato hybrids and cultivar		Potato hybrids and cultivar	
		HPS 1/13	HPS 7/67	HPS 1/13	HPS 7/67
* C_1	50	3.25	4.75	0	0
	70	8.0	10.50	7.5	10.0
** C_2	50	3.0	5.5	0	0
	70	6.5	8.0	10.0	7.0
Kufri	50	35.7	-	-	-
Jyoti (C)	70	96.0	-	6.25	-

* First generation derived from TPS
** Second generation produced from previous year's C_1.

Late blight infection was significantly low in both the years in the experimental plots. The disease severity of hybrids was comparable to that of late blight resistant cultivar Kufri Jyoti.

The low incidence of early blight and late blight in potatoes derived from TPS supports the observations of Shakya (1988) in Nepal.

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