Possibility of planting early seed potato crop in Punjab

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Introduction

Punjab in north-western plains of India has emerged as major seed potato producing areas in the country due to low aphid population between first week of October to end of December. *Myzus persicae*, the main aphid and vector of major viral diseases normally appears in the first week of December and attains the critical population of 20 aphids /100 compound leaves by first week of January. However, during recent years *Myzus persicae* have been observed to appear somewhat early and cross the critical limit by third week of December resulting in shrinking of the aphid free period necessary for production of healthy seed crop. Possibility of advancing planting of seed potato crop from first week of October to third week of September was explored during the current study

Methodology

The study was carried out with five major potato varieties viz. Kufri Chandramukhi, Kufri Jyoti, Kufri Badshah, Kufri Pukhraj and Kufri Surya. The crop was grown as ware and seed crop planted early (planted September 21) and as main crop (planted October 10). The field trials were carried out during 2010-11 and 2011-12. Appearance and build up of insect populations such as whiteflies, mites, *Aphis gossypii* and *Myzus persicae* was recorded at weekly interval after crop emergence till maturity of the crop. The observations on population of Aphids viz. *Aphis gossypii* and *Myzus persicae*, whiteflies, thrips and leafhopper per 100 compound leaves were recorded at bi-weekly intervals from October to January. Appearance and severity of different diseases were recorded in both early and main crop at different intervals.

Results and discussion

Data recorded revealed that thrips, leafhopper and mites were major insect problem in early seed and ware crop. Population of *Aphis gossypii* and whiteflies were higher up to fourth week of November which declined later in December. Population of *M. persicae* in unsprayed crop attained critical limit of 20/100 compound leaves in the last week of December. However, in the crop sprayed with insecticides the population of *M.persicae* remained between 1 to 3 /100 compound leaves even up to second week of January. Severity of damage by thrips and mites ranged between 7.54 to 15.08% in early seed crop as compared to 0.01 to 0.62% in the main crop. Similarly, tuber yield in different varieties ranged between 17.5 to 30.9 t /ha in early crop as compared to 28.94 to 50.92 t/ ha in the crop planted in second week of October. Among different potato varieties evaluated for the early planting Kufri Surya and Kufri Phukhraj performed better than Kufri Chandramukhi, Kufri Jyoti and Kufri Badshah. The study revealed that thrips, mites and low yield are the main constraints which need to be managed for successful production of early seed crop.

Table 1: Incidence of pest damage and yield in early and main crop.

Varieties	Insect damage (%)				Yield (t/ha)			
	Early Ware	Main Ware	Early Seed	Main Seed	Early Ware	Main Ware	Early Seed	Main Seed
K. CM	9.64	1.75	7.75	0.50	10.58	37.61	18.24	26.48
Kufri Jyoti	18.6	3.50	14.20	0.01	10.66	32.28	26.00	29.02
Kufri Badshah	10.32	2.00	7.00	0.75	6.06	48.87	20.05	37.79
Kufri Pukhraj	16.64	2.00	13.27	0.55	11.65	37.86	27.52	42.95
Kufri Surya	23.25	4.25	18.16	1.25	27.69	30.78	31.96	33.07

Table 2: Incidence of pests and diseases and yield in early and main potato crop

Varieties	Thrips damage (%)			Yield t/ha		
	Early ware crop (Planted Sept 21, 2010)	Early seed crop (Planted Sept 21, 2010)	Normal ware crop (Planted 13 th Oct. 2010)	Early ware crop (Planted Sept 21, 2010)	Early seed crop (Planted Sept 21, 2010)	Normal ware crop (Planted 13 th Oct. 2010)
K.Chandramukhi	8.0	7.33	0	14.7	16.7	31.4
K.Ashoka	12.0	18.7	0	26.8	26.2	46.7
K. Chipsona 3	24.0	23.3	0	25.0	20.7	42.2
K.Surya	9.4	12.0	0	30.9	29.8	40.1
K.Badshah	8.0	20.0	0	25.1	25.5	50.1
K. Pushkar	12.0	5.3	0	34.7	33.3	60.3
K.Pukhraj	18.6	6.7	0	26.8	30.2	58.9
K. Chipsona 1	24.0	8.7	0	16.9	19.3	38.6
K. Khyati	28.3	7.7	0	18.9	21.5	52.1
K. Jyoti	20.0	11.3	0	23.9	24.2	42.2
SE ±	6.8	4.1		2.0	1.7	1.35
CD (0.05)	NS	NS	NS	6.0	5.0	4.00

Fig.1 Early Crop

Figure2: Main crop

Conclusion and Suggestions

The study revealed that thrips, mites and low yield are the main constraints which need to be managed for successful production of early seed crop.