

## Possibility of Planting Early Seed Potato Crop in Punjab

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### ABSTRACT

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 carried out with five major potato varieties during 2013-14 and 2014-15. 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 normally planted 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 on normal dates. 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.

In India, the area under potato is 1.4 million ha which requires 4.2 million t of quality seed @3.0 t/ha for the production of ware potatoes. Being grown through tubers, potato is prone to systemic infection by viruses, mycoplasmas, surface borne fungi & bacteria and nematodes. These biotic stresses affect the plant stand, vigour, foliage, production and potential and ultimately the crop yield. The degenerative affect of viral diseases is important in vegetatively propagated crops like potato and there is no direct control measure of these diseases at field level.

The production of quality seed in the hills and plains is based on the certain principles which are briefly summarized in the “**Seed Plot Technique**”(SPT). 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 weeks 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 vectors like White fly *Myzus persicae*, *hoppers* 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

**Table 2: Percentage incidence of pests and diseases and yield in early and normally planted potato crop**

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



**Figure1: Early crop exhibiting damage from insect pests**



**Figure2: Main crop exhibiting healthy growth**

### **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 2013-14 and 2014-15. 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. Appearance and severity of different diseases were recorded in both early and main crop.

### **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 IVth 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 normally planted 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 on normal dates. Among

different potato varieties evaluated for the early planting Kufri Surya and Kufri Pukhraj 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.

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