

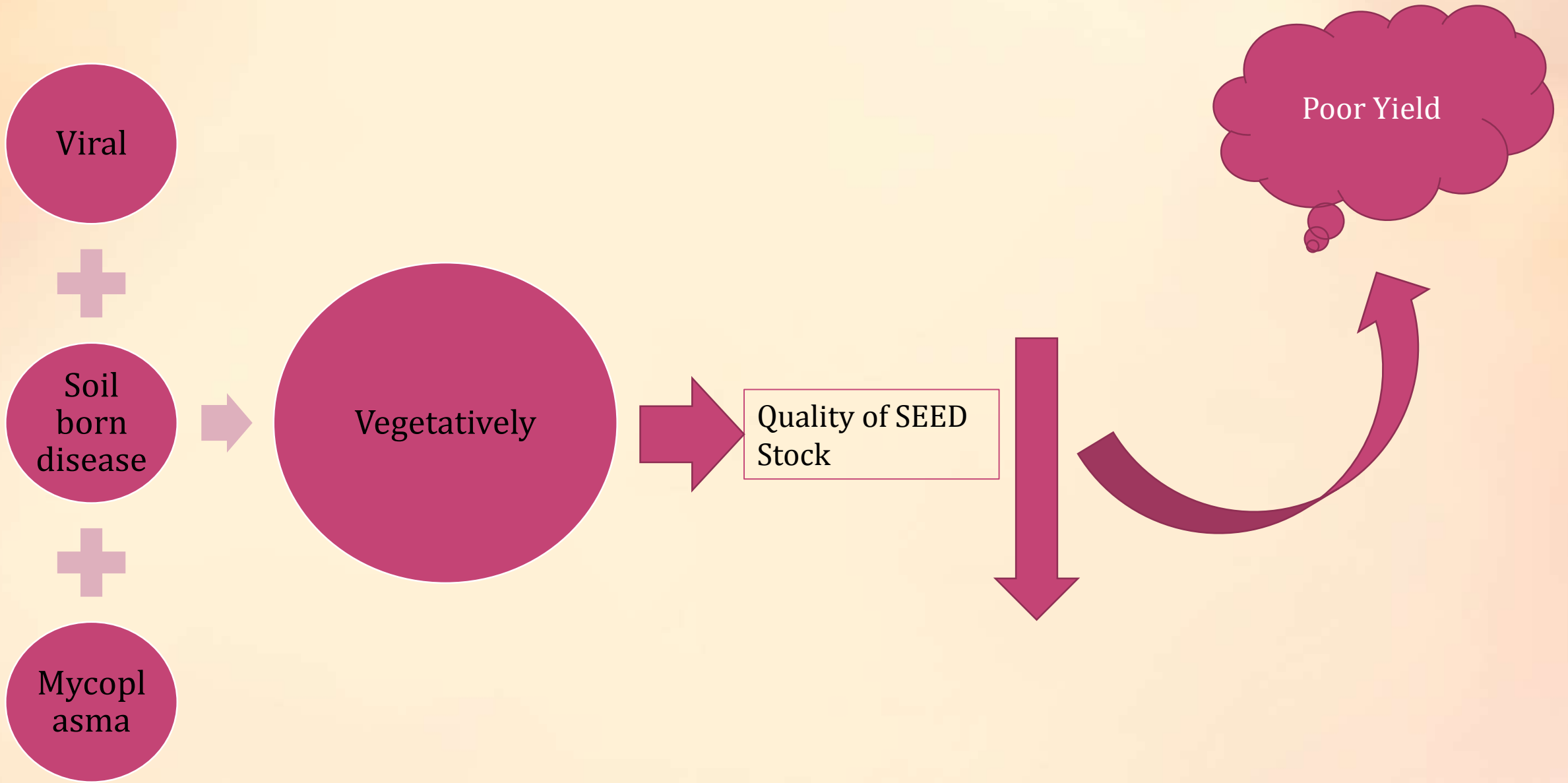


Seed Plot Technique

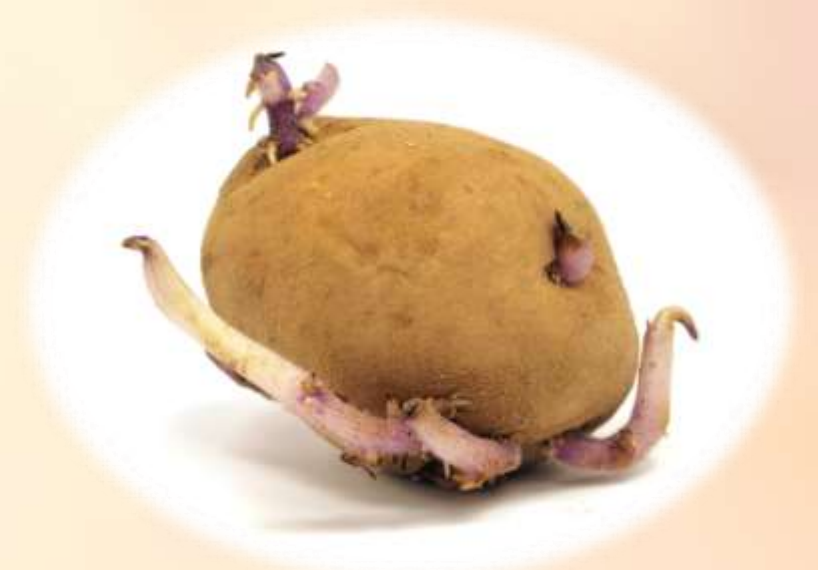
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Introduction

- Seed Plot Technique is a raising healthy seed crop during low aphid period available in Northern Plains during Oct- Jan and cutting haulms and harvesting of crop.
- This technique and effective viral diagnostics has sustained the National Potato Seed Production Programme by producing about 2600 tons of breeder's seed annually. This breeder's seed is further multiplied to about 4,32,000 tons of certified seed by the State Departments of Agriculture/ Horticulture.
- Thus, the country saves about 484 million US dollars because most Asian countries like Pakistan, Bangladesh and even China continue to import seed potatoes from Europe.
- The decentralization of potato breeding from hills to plains in India through the seed plot technique enabled the development of varieties suited to different agroclimatic regions of the country. The area under seed potato production also increased by 12 times and enabled the availability of seed potato throughout the country in proper physiological state.

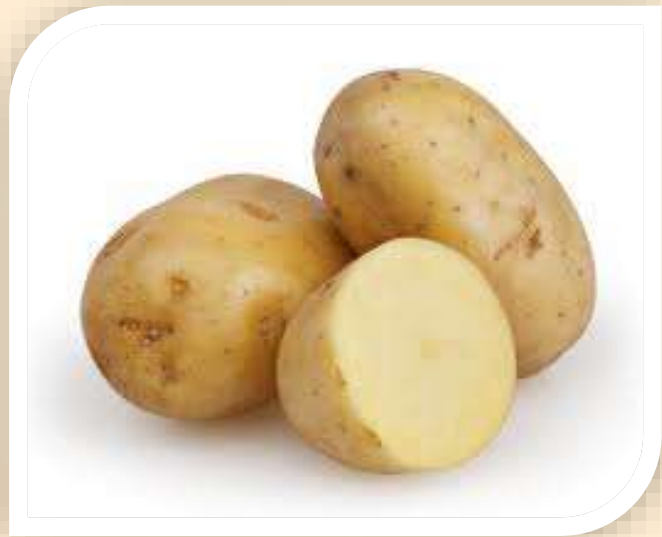


Principle and Need



- **Principle** : selection of time having less incidence of Aphid (major vector).
- **Need** :
- Hills account only 6% of the area under potato cultivation and not enough to meet the seed requirement of plains.
- The tubers harvested in Sept- Oct in the hills can not be used for planting the commercial crop in Sept- Oct in the plains because of dormancy.

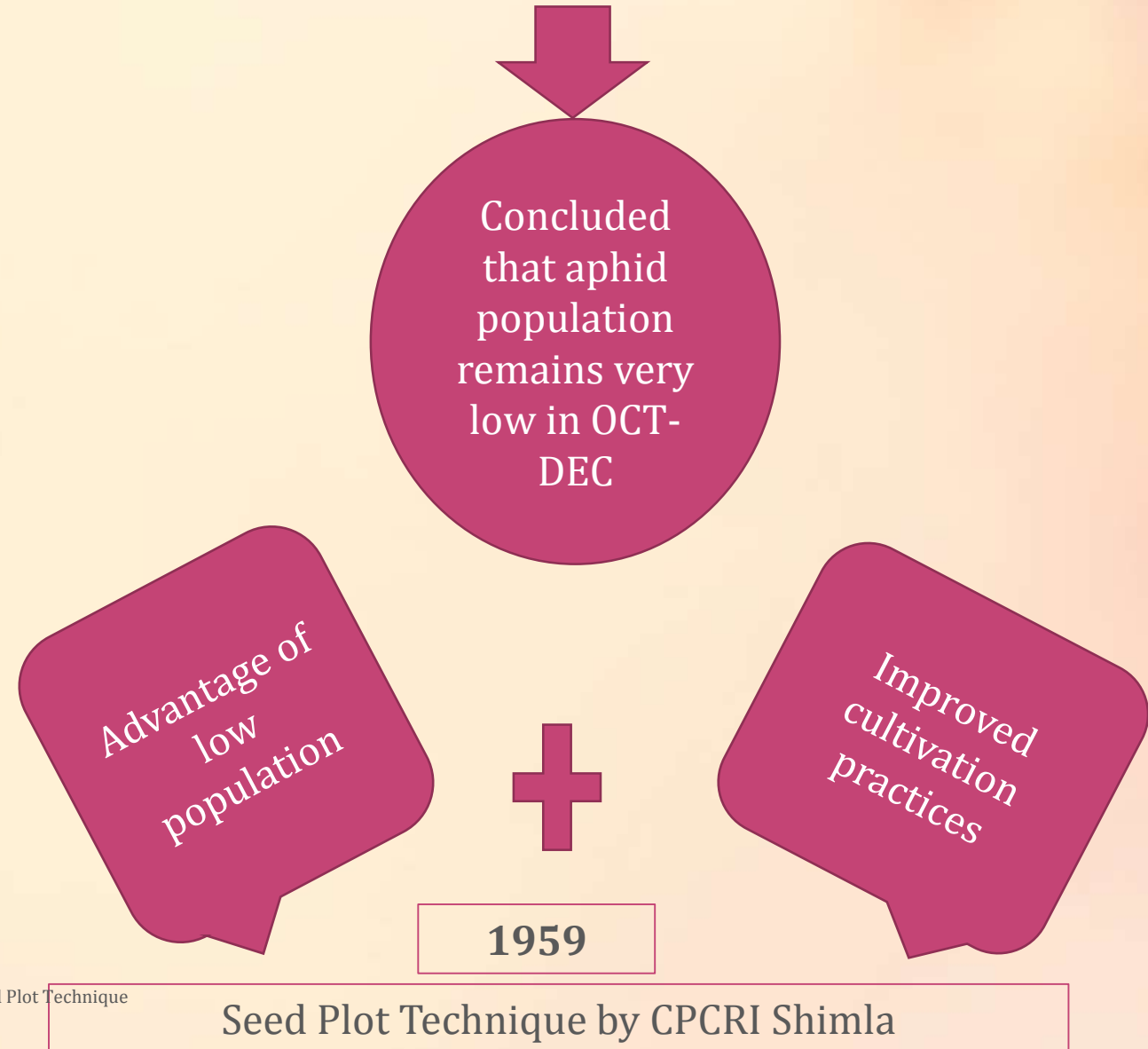
History



Puskarnath

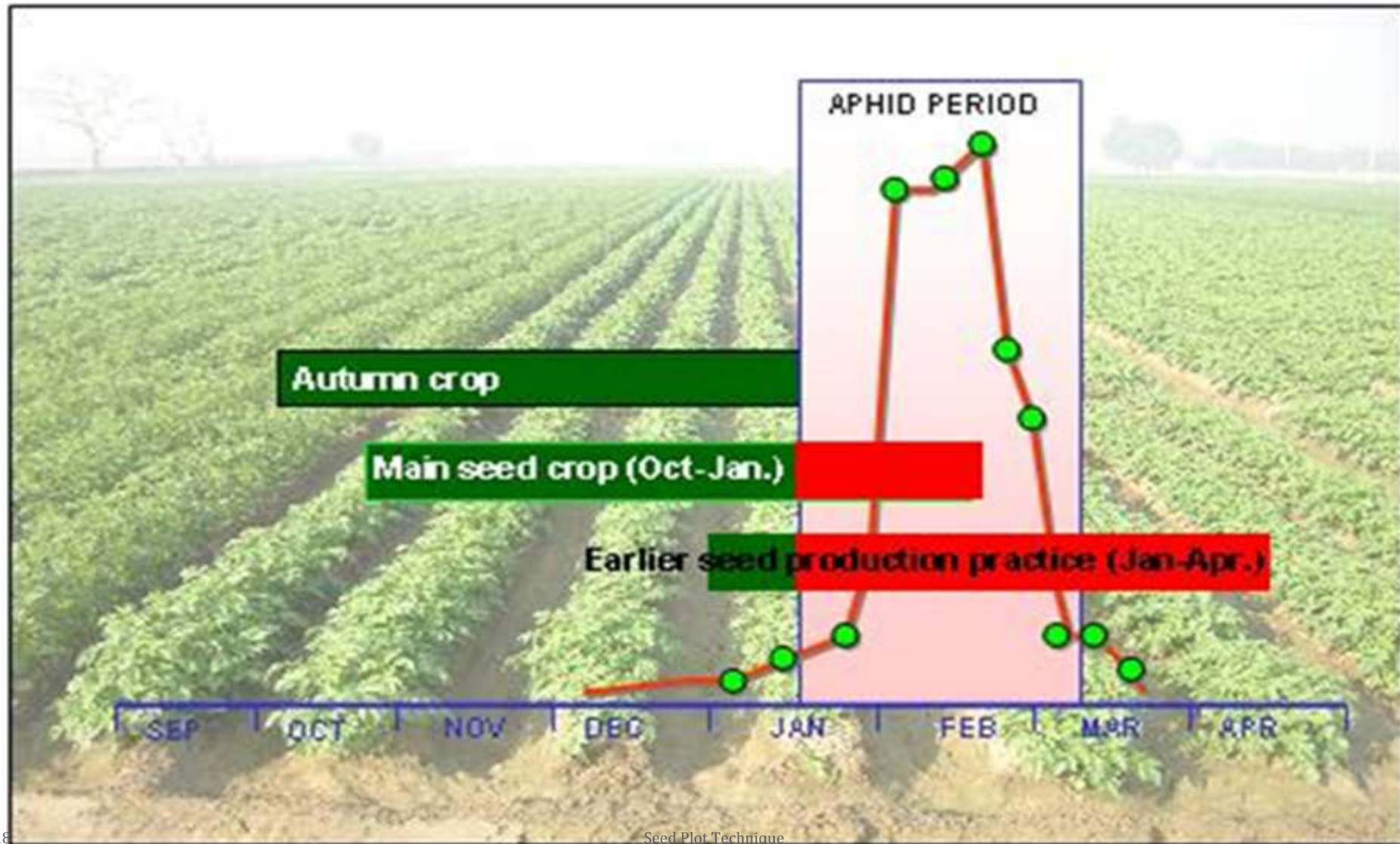
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- Surveys were made by CPRI in 1952



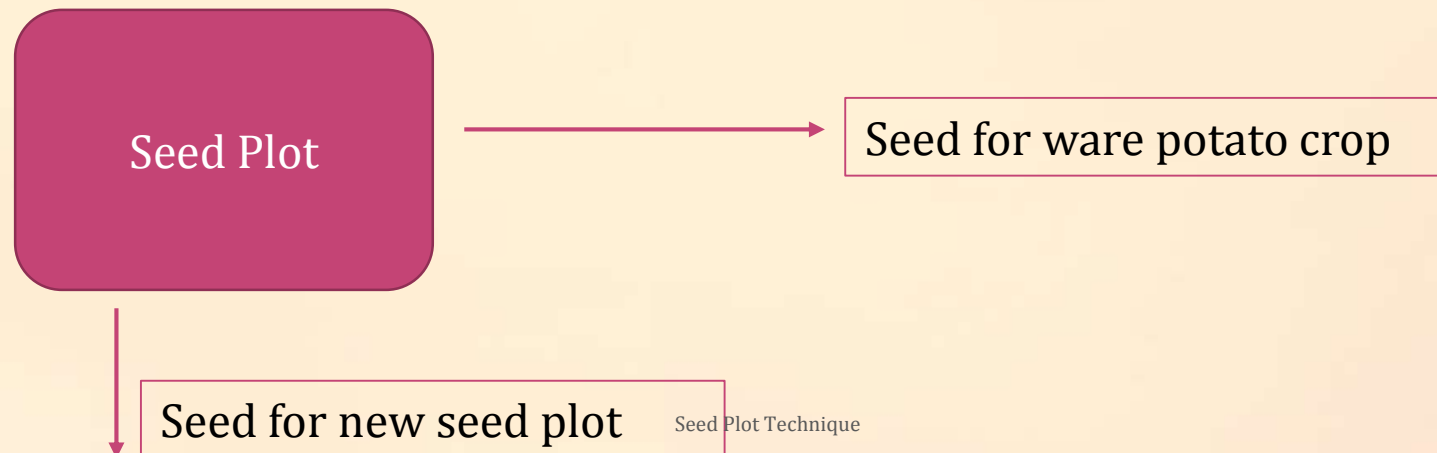
SEED PLOT TECHNIQUE

APHID POPULATION BUILDUP IN SUB-TROPICS



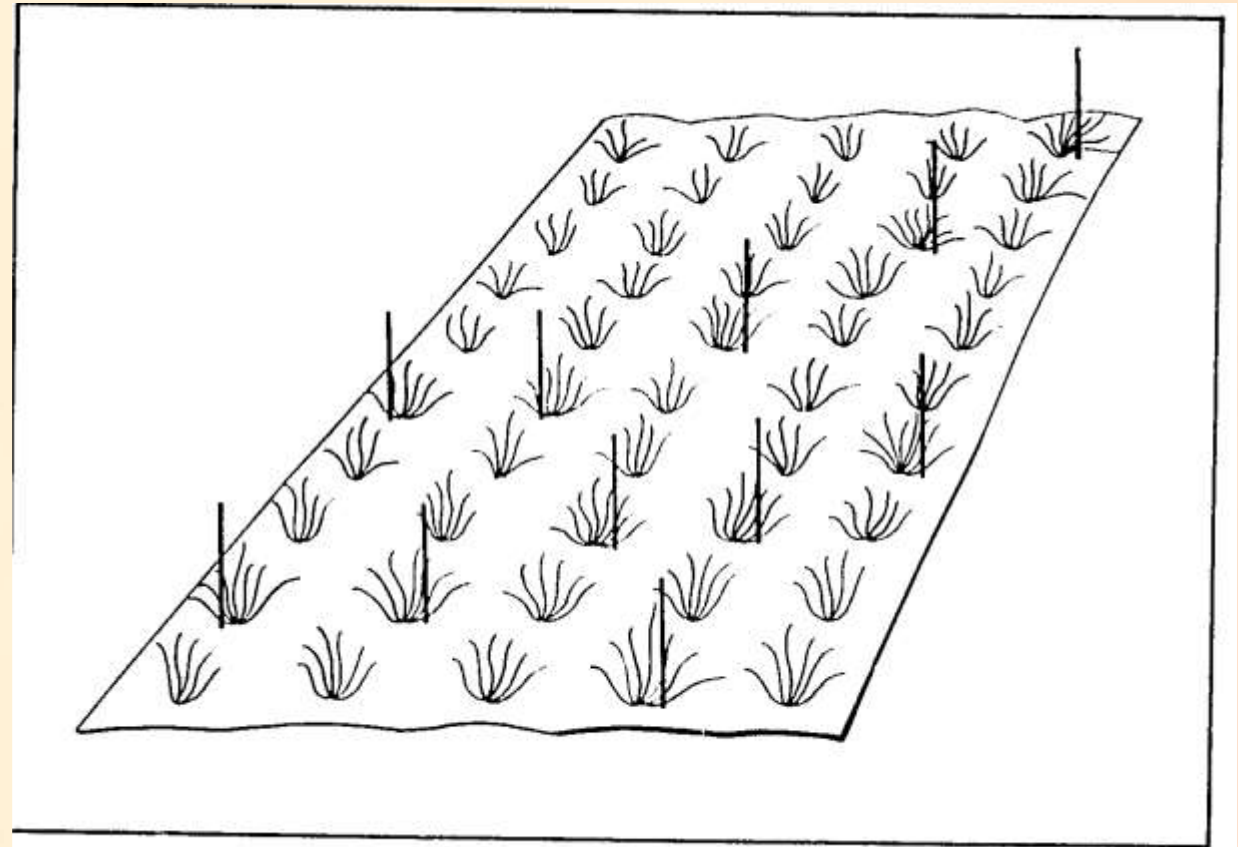
Fundamental of Seed plot

- Selecting the best plants from the current potato crop, storing the tubers from these selection separately, and using them the following season to plant the seed plot.
- The process is repeated each cropping season by selecting the best plants from current seed plot for the new seed plot.
- Remaining tubers of the current season seed plot are used as seed for the farmer's ware potato crop.



Steps for Seed plot technique

- A. Growers best potato crop is used to began crop improvement programme
- B. In the first year, selection at flowering time is best and easiest to recognize the desired variety so as to avoid mixtures.



Mark the healthiest and most vigorous plants in the field with stakes.

- C. Before harvesting the field, hand-harvest the staked plants to keep selected tubers separate. Some staked plants may be eliminated because of poor yields, tuber-borne diseases or deformities.
- D. Store tubers harvested from staked plants separate from the other potatoes to avoid mixtures and contamination
- E. The following season plant the selected tubers in a newly-established potato seed plot. Plant the seed plot on land not used for potatoes the previous season or longer, and at some distance from other potato fields. Plant all tubers, not just the ideal-size seed tubers. Oversize tubers may be planted at wider spacing; smaller tubers at closer spacing.

**Area =1 ha
Tuber = 2.5 t**

**Area =1 ha
Tuber = 2.5 t**

Plants 5000
Tuber = 50000

Plants 5000
Tuber = 50000



5600 plant

5600 plant

5600 plant

560 plants 5600 tuber

560 plants 5600 tuber

560 plants 5600 tuber

Essential feature of Seep plot tech.

- Disease free Seed
- Selection of aphid free location for tuber production.
- Minimal isolation of 20m for foundation class and 5m for certification seed class should be provided.



Agro-techniques of seed plot technique

- **Seed Treatment**
- **Presprouting**
- **Early planting**
- **Mechanization for faster cultural operations**
- **Control of aphid vectors and diseases through regular sprays**
- **Rouging**
- **Haulms cutting before the aphid count reached critical levels.**

Important practices

- Blind Earthing up of crop before crop emergence.
- Planting, dehauling and harvesting of crop based on aphid appearance.
- Application of granular systemic insecticide at planting/ Earthing.
- Removal of off type and disease plant.

Region and Practices

Region	Planting	Dehauling	Harvesting
Punjab & Haryana	7 Oct	31 Dec	15 Jan
North west & central plain	15 Oct	7 Jan	25 Jan
Eastern UP and MP	31 Oct	15 Jan	31 Jan
Bihar & West Bengal	7 Nov	20 Jan	31 Jan

Good Crop Management

- Timely Planting – 25 Sept – 15 Oct
- Pre Sprout seeds with multiple sprout may be use which ensures quick early and uniform germination.
- Seed size and Spacing : inter row spacing 50cm, Intra- row spacing 20 cm.

Fertilizer

Fertilizer	Doze (kg/ha)
N	100-125
P ₂ O ₅	80-100
K ₂ O	80-100

Protection measures

Thimate – 10G	16kg/ha
Dithane – M 45	2kg/ha
Metasystox	2kg/ha

Dehauling

Before the aphid population reach the critical level of 20 aphid/100 compound leaves

Harvesting

The crop is lifted 15-20 days after dehauling when the soil is in the good condition and the tuber skin is harden.

Further refine in techniques

- Hot weather and green manuring.
- Crop rotation of 2-3 year.
- One or two spray of systemic insecticide +spray of Metalaxyl in Dec- Jan.
- Tuber dip treatment with 3% boric acid for 30 min after harvest and before storage of the produce.

Disease free seed potato production through seed plot technique at farmers' level in Bangladesh

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Infestation of different diseases in seed plot techniques and farmers' plots at Munshiganj (average of 3 years trials)

Disease	Seed plot technique	Farmers' practice
Average yield (t/ha)	31.7	31.9
Wilt (% plant)	nil	1.9
Late blight(% plant)	nil	nil
Virus (% plant)	0.3	5.9
Scab (% wt)	1.4	5.9
<i>Rhizoctonia</i> /Black scurf (%)	nil	0.5

Incidence of Disease

Incidence of diseases in subsequent generations in seed potatoes produced from seed plot techniques

Disease	2nd generation	3rd generation
Virus (% plant)	0.8	3.1
Scab (% wt.)	2.3	4.9
Wilt (% plant)	nil	1.2
Black scurf (% plant)	nil	0.8

A Description of Seed plot Potato Systems in Kenya, Uganda and Ethiopia

(Peter et al, 2009.)

Place	Seed plot technique yield (t/ha)	Normal cultivation (t/ha)
Kenya (10)	28.40	22.2
Uganda (12)	29.02	26.6
Ethiopia (08)	31.60	29.9



Thank You