

COW PEA / FRENCH BEAN / CLUSTER BEAN

SEASON

S.no	Crop	Season
1	Cluster bean	Sowing can be done during June- July and October – November
2	French Bean	Hills: February–March Plains: October- November
3	Cowpea	June – July (Rainfed), February – March(irrigated)

SEED

S.no	Crop	Seed Rate (Per acre)	Spacing
	Cluster bean	4 kg	<ul style="list-style-type: none"> Form ridges and furrows at 45cm apart. Dibble the seeds on the sides of the ridges at 15cm apart.
2	French Bean	32 kg	<ul style="list-style-type: none"> In hills, sow the seeds (2seeds/hill) in line sow in beds at a spacing of 30x15cm. In plains, sow the seeds (2seeds/hill) in the sides of the ridges at a spacing of 45 x 30 cm.
3	Cowpea	8 kg	<ul style="list-style-type: none"> Form ridges and furrows at 45cm a part or beds of convenient sizes. Dibble the seeds on both sides of the ridges or in lines in the beds 45 x 15 cm spacing.

SEED TREATMENT

- Treat the seed with Beejamrutham and dry the seeds under shade for 30minutes and
- Treat the seeds with *Trichoderma* 4g/kg

LAND PREPARATION

Plough the field to fine tilth is obtained and make ridges and furrows based on above recommendations given in spacing column

SOIL FERTILITY MANAGEMENT

Apply ghanajeevamrutham (treated with trichoderma viridi @4kg) @ 400 kgs 2500Kg NADEP Compost, (if available) during final plough.

- Apply 200 kgs of Ghanajeevamrutham 15 days after sowing
- Spray Dhrajeevamrutham (@ 20 ltrs per 100 litres of water) @ 15 days of interval At every 10 days interval apply 200 litres of Dhrajeevamrutham

PEST AND DISEASE MANAGEMENT

APHIDS: *APHIS CRACCIVORA* KOCH

Damage/Symptoms

- Leaves, inflorescence stalk and young pod Covered with dark coloured aphids
- Honeydew secretion with black ant movements

Control Measures:

- Spray Neemastram/ vitex leaf extract/ datura leaf extract
- Grow 4 rows of maize crop as border so that beneficial Insects like lady bird beetles will develop and suppress the aphid population

SPOTTED POD BORER: *MARUCA VITRATA* GEYER

Damage/Symptoms

- Bore holes on the buds, flower or pods
- Infested pods and flowers are webbed together.



Control Measures:

- Multiple cropping like maize + cowpea 2:1 ratio are found to be effective.
- Collect and destroy the larvae. Keep the field weed free in the initial 25- 40 days through intercultural operations and hand weeding
- Erection 5- 6 pheromone traps per acre
- Spray Neemastram followed by Bramhastram/ agnastram

FIELD BEAN POD BORER: *ADISURA ATKINSONI*

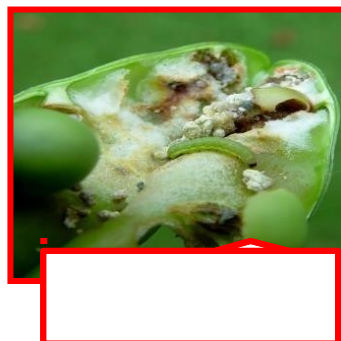
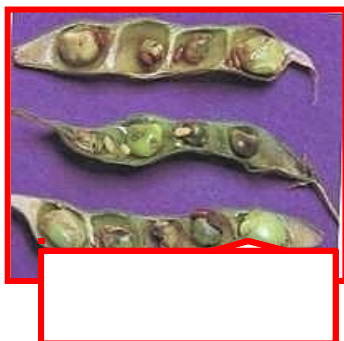
- Release of *Trichogramma brasiliensis* @20,000/acre 4 to 6 times within weekly interval.
- Spray Brahmanstram/ agnastram



GRAM POD BORER: *HELICOVERPA ARMIGERA*

Damage/Symptoms

Caterpillars bore holes and feed on leaves, flower buds and maturing pod seating the seeds. They also attack young pods eating the pod wall and the developing seeds.



Control Measures:

- Field sanitation and roguing
- Setting up lighttraps @1/acre for adults



- Erecting of bird perches @10/acre for encouraging predatory birds such as King crow, mynah etc.
- trap crops such as marigold @100 plants/acre and collection of larvae from flowers
- Installing pheromone traps @4-5/acre (ETL 10moths/trap/day)
- Spraying of HNPV 250 LE per acre 2 times at 30 & 60 DAS
- Spray garlic green chilli extract/ Bramhastram/ agnastram

BEAN STEM FLY: *OPHIOMYIA PHASEOLI* TRYON

Damage/Symptoms

Infected stems are often red inside (sometimes pale) and a distinct zig-zag tunnel filled with frassy excreta may be observed— with maggots or pupae inside. Apart from the exit holes, the plants may apparently appear healthy from outside. Severe infestations (3 or more maggots/plant) may cause wilting, yellowing, drying and finally premature plant death, especially in younger plants particularly if Damage occurs in the plant's hypocotyl (basal stem) region.



Control Measures:

- Spray Neemastram for infertility of eggs laid by adult flies

PEA LEAF MINER: *CHROMATOMYIA HORTICOLA*

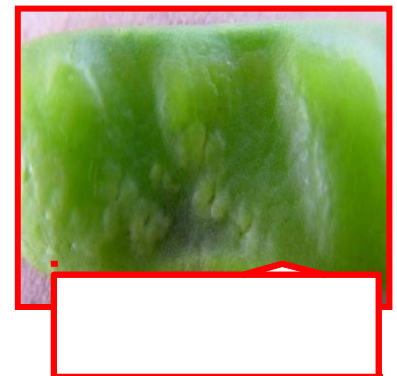
Damage/Symptoms

Leaf miners are major pests of peas. The maggots mine on leaves and pods. Mining of leaves affect the photosynthetic capacity of the plant. Mining of pods causes cosmetic damage leading to rejection of pods in varieties grown for their tender green pods



Control measures

- Spray Neemastram for infertility of eggs laid by adult flies
- Spray bramhastram/ agnastram



THRIPS: *THRIPS TABACI*

Damage/Symptoms

Thrips suck plant tissues causing withering of the plant. Infested parts show silvery white discoloration. Thrips feeding on pods cause tinny scars and blemishes. The damaged pods may not be noticed at harvest, but scars become more visible during post harvest transport to

market. Thrips damage lowers the market value of snow peas and sugar snaps (which are eaten as pods) and May lead to rejection. Their feeding punctures may also be a point of entry for disease-

Causing fungi such as *Ascochyta*. Thrips are difficult to control since they often migrate in to peas from surrounding vegetable crops and weeds

Control Measures:

- Ecological engineering of leguminous vegetables with *Sesbania grandiflora* intercropping provides barrier for thrips entry
- neem+nirgundi leaf extract
- Erection of 5-6 blue sticky traps



WHITEFLY: *BEMISIA TABACI*

Damage/Symptoms

- Leave mottled and yellowish in colour
- Vector of yellow mosaic virus

Control measures

Erection 5-6 yellow sticky plates / acre

- Spray neem + nirgundi leaf extract



SPIDER MITE: *TETRANYCHUS URTICAE* KOCH

Damage/Symptoms

Spider mites cause small white yellow specks on leaves. If spider mites are present in large numbers the leaf may be dry and fall off. Plants grow poorly when they are heavily infested .When infestations are heavy, the spider mites will goup on the supports for the plants and accumulate on the tips so that the wind can carry them to new crops.



Control Measures:

- Field sanitation, roguing of affected plants
- Frequent irrigation at summer season
- Plant 3-4 rows of tall crops such as maize, sorghum etc as border crops
- Spray dung + urine + hing extract

FUSARIUM WILT: *FUSARIUM OXYSPORUM*

Damage/Symptoms

The fungus can attack plants at any stage of development. Distinct symptoms consist of yellowing of foliage and wilting leading to death of affected plants. The disease appears in scattered areas of the field and eventually may cover bigger areas. If stem of diseased plant is split, the pith is brick-red in colour. The disease can be seed- borne

Control Measures

- Drenching of *Trichoderma viridi*
- Spray dung +urine+hing extract



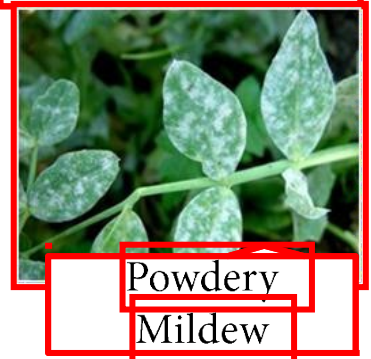
- **POWDERY MILDEW: *ERYSIPHE POLYGONI***

Damage/Symptoms

It is characterised by a white powdery growth on the leaves, stems and pods. The initial symptoms consist of tiny lightly discoloured spots on the upper surface of leaves. These spots enlarge and become covered with powdery fungal growth. The tissue beneath affected areas may turn purple and later brown. If infection is severe, affected plants turn brown and die. Affected seeds become brown. Water stress accelerates mildew development. Warm days and cool nights favour disease development. The fungus is seed- borne.

Control Measures

- Spray dung +urine+hing solution
- Spray of 6 % sour butter milk in 100 of water



Powdery
Mildew

Extracted from:

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