CHILLI

SEASON AND CLIMATE

- Chilli requires a warm and humid climate for its best growth and dry weather during the maturation of fruits. A temperature ranging from 20-25°C is ideal for chilli. In chilli fruit development adversely affected at temperatures of 37°C or more. Heavy rainfall leads poor fruit set and in association with high humidity leads
- To rotting of fruits. High temperature & low
- Relative humidity increases the transpiration during flowering resulting in shedding of buds, flowers and small fruits.
- Well drained loamy soils rich in organic matter with pH range 6.5-7.5.
- Season of Sowing
    - January –February
    - June –July
    - September-October

SEED VARIETIES

- Suitable recommended varieties pertaining to that area

SEED QUANTITY AND TREATMENT

Seed Rate

- Varieties - 400 gms per acre
- Hybrid – 100 gms per acre
- Nursery area – 40 Sq.m per acre

Seed Treatment

- First Treat the seed with Beejamrutham and keep them under shade for 20 minutes and
- Treat the seeds with *Trichoderma viride* @4g/kg or *Pseudomonas fluorescens* @10g /kg and sow in lines spaced at 10cm in raised nursery bed sand cover with sand.

NURSERY MANAGEMENT

Protected nursery

- Prepare the nursery area of 1.2 cents with slanting slope of 2% for the seedling production to cover 1 acre

- Cover the nursery area with 50% shade net and cover the sides

- Mix sterilized cocopeat @ 300 kg with 5 kg neem cake along with Azospirillum and phosphobacteria each @ 1kg.

- Approximately 1.2 kg of cocopeat is required for filling one protray. 120 protrays (98cells) are required for the production of 12,000 seedlings, which are required for one acre adopting a spacing of 90x60x45 cm in a paired row system.

- Sow the treated seed in protrays @1seed per cell.

- After 6 days place the protrays with germinated seedlings individually on the raised beds inside the shade net.

- Water with rose can everyday up to seed germination.

LAND PREPARATION

- Land is prepared to a fine tilth by thorough ploughing.
- In case of direct sowing, three to four ploughing are undertaken and sowing is done along with the last ploughing.
- The soil can be treated with Azotobacter or Azospirillum @1-1.25 kg mixed
- Apply Ghanajeevamrutham 400 kg per acre. NADEP compost of 2.5 (upon availability).
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TRANSPLANTATION – PLANT DENSITY AND POPULATION

Seedling treatment

- Dip the roots in slurry of PSB (2 kg per acre) before transplantation
- Dip the roots in Beejamrutham for 20 minutes before transplantation

Spacing

- Rainfed– 60X15 cm
- Irrigated– 60X60 cm or 75x60 cm

TRAP AND BORDER CROP

- Grow Maize or Jowar 4lines around the main crop as border crop
- Plant Marigold (300 plants per/acre) and Onion, Coriander and radish as intercrop . Also dibble 4 to 5 castor plants in the field to check incidence of tobacco caterpillar

SOIL FERTILITY MANAGEMENT

- Topdressing
  - 1st apply 200 liters of Dhravajeevamrutham 10 days after transplantation
  - 2nd apply 200 liters of Dhravajeevamrutham 25 days after transplantation
  - 3rd apply 200 liters of Dhravajeevamrutham 40 days after transplantation
  - 4th apply200 liters of Dhravajeevamrutham 55 days after transplantation
  - 5thapply200 liters of Dhravajeevamrutham70days after transplantation
  - 6th apply 200 liters of Dhravajeevamrutham 85 days after transplantation

    Jeevamrutham can also be sprayed at 25 days interval.

- Spray Panchagavya at the time of flowering and continue at every 15days internal.

PEST AND DISEASE MANAGEMENT

GRAM POD BORER: *HELICOVERPA ARMIGERA*

Common names : Gram pod borer, American bollworm

Habitat / Crop(s) damaged

Cotton, castor, pigeon pea, sunflower, chickpea, black gram, maize, bhendi, potato, tomato, tobacco, rose, etc.

Damaged pods show clearcut,big,circular holes; larvae feed on flowers and pods with rear part of the body remaining outside the pod and granular faeces are present on the plant or affected pods.

Control Measures:

- Field sanitation and rouging
- Growing inter crops such as cowpea, onion, maize, coriander, urdbean in 5 or 4:1 ratio
- Raise Maize 4 lines as border crop
- Rotate the chilli crop with an on-host cereal crop, cucurbit, or cruciferrous vegetable.
- Erecting of bird perches (15 per acre)
- Install pheromone traps @ 5/acre for monitoring adult moths activity. Replace the lures with fresh lures after every 2-3weeks
- Marigold @200 plants/acre 1 row of marigold for every 18 rows of chilli and collection of larvae from flowers (marigold seedling of 45 days should be planted along with chilli transplanting)
- Release of egg parasitoid *Trichogramma pretiosum* @ 50,000 adults (in the form of parasitized card) /acre / week commence right from the start of flower initiation to till end of the crop, tie the egg cards on the stick placed throughout the field at 4-5m apart, in the evening, a day prior to the emergence of adult.
- First spray 5% neem seed kernel extract, after 7 days spray Brahmastram (3.5 liters extract in 100liters of water)
- Spray HNPV (200 ltrs) in100 liters of water per acre

TOBACCO CATERPILLAR: *SPODOPTERA LITURA* FABRICIUS

Symptoms of damage

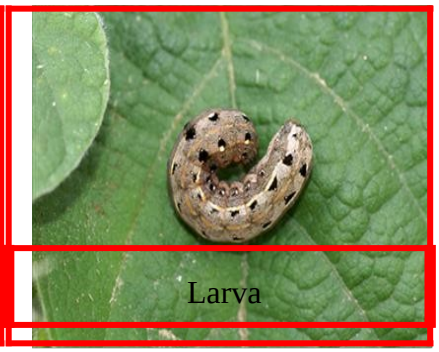
- Newly hatched larvae scrap the green matter in the leaf

- Affected leaf looks like a papery white structure
- Later instar larvae feed by making small holes In severe infestations they feed voraciously on the entire lamina and petiole

Control Measures:

- Castor can be grown as a trap crop along the field border to attract the egg laying female adult moths (collect and destroy the laid egg masses and gregarious neonates)
- Raise maize of jowar as a border crop
- Setting up light traps for collecting adults @1/acre
- Erecting of bird perches (15)
- Install pheromone traps @5/acre for monitoring adult moth activity. Replace the lures with fresh lures after every2-3weeks
- Spray NSKE 5% against eggs and first instar larva.
- Dip gunny bags into jaggery solution and torn into small pieces and keep them in field in the evening all caterpillars will be attracted there and kill them in the morning.
- Spray garlic chilli extract in the evening.
- Spray SNPV(200LE) in 100 liters of water per acre


Tobacco Caterpillar adult


Larva


Damage

THRIPS: *SCIRTOTHRIPS DORSALIS* HOOD

Symptoms of damage:

- The infested leaves develop crinkles and curl upwards
- Elongated petiole
- Buds become brittle and drop down
- Early stage, infestation leads to stunted growth and
- flower production, fruit set are arrested


Deformed pods

Thrips

upwardcurling

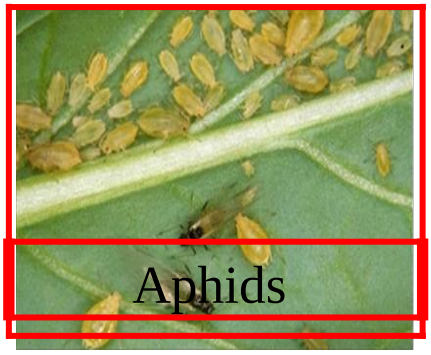
Control Measures:

- Intercrop with *Sesbania grandiflora*, to provide barrier which regulate the thrips population.
- Grow marigold as trap crop (200 per acre)
- Raise 4 rows of Maize or Jowar as border crop
- Sprinkle water over the seedlings to check the multiplication of thrips
- Install yellow, blue and white sticky trap 20 per acre
- Apply neem cake to the beds @100 kg/acre in two split doses at the time of planting and 30days after transplanting
- 200 liters Neemasthram per acre or 5% Neem Seed kernel Extract
- 10days after neemasthram spray Datura leaf extract
- From flowering state, Spray Panchagavya at 15days interval to get quality pods and to control pests

APHIDS

Symptoms of damage:

- The infested plants turn pale with sticky appearance
- The leaves curled and crinkled
- Honeydew excrete-development of sooty mould
- Stunted growth of the plant



Aphids

Damage

Damage

Control Measures

- Grow marigold as trap crop (200 per acre)
- Raise 4 rows of Maize or Jowar as border crop to develop beneficial insects
- Erect 15 to 20 yellow sticky traps per acre
- Spray neemasthram
- Datura leaf extract if pest not controlled

SPIDER MITES: *TETRANHYCHUS* SPP/ YELLOW MITES: *POLYPHAGOTARSONEMUS LATUS* BANKS

Symptoms of damage:

- Downward curling and crinkling of leaves
- Leaves with elongated petiole
- Stunted growth

Mites

Downward curlingof leaves

Control Measures

- Chilli crop bordered by 4 rows of maize
- If the incidence of mites is low, spray NSKE 5% at 10 days interval
- Spray dung + urine + hing extract and
- Spray Neemasthram

DAMPING OFF: *PYTHIUM APHANIDERMATUM*

Stems are black and shrunken at the soil line, and ultimately they die .Damping off is a major problem in vegetable seedling growing areas

ControlMeasures

- Quality seed to be used.
- Excessive watering and poorly drained areas of Field should be avoided
- Use raised beds: more than 15cm height is better for water

- Drenching nursery with trichoderma viridi
- Apply 5KG of neem cake to the nursery bed and Spray5% NSKE extract or Neemasthram

Damping off during nursery stage

DIE BACK AND FRUIT ROT: *COLLETOTRICHUM CAPSICI*


Furit rot

Symptoms

As the fungus causes necrosis of tender twigs from the tip back wards the disease is called die-back. Infection usually begins when the crop is in flowering stage .Flowers drop and dry up. There is profuse shedding of flowers. The flower stalk shrivel and dry up. This drying up spreads from the flowers talks to the stem and subsequently causes die-back of the branches and stem and the branches wither. Partially affected plants bear fruits which are few and of low quality. On the surface of the soil the necrotic areas are found separated from the healthy area by a dark brown to black band.

Control Measures:

- Use healthy pathogen-free chilli seed
- Early removal of affected plants will control the spread of the diseases.
- Transplants should be kept clean by controlling weeds and solanaceous volunteers in the vicinity of the transplant houses
- Stagnation of water should not be allowed in
  - Nursery beds and fields in order to avoid fungal infection. The field should have good drainage and be free from infected plant debris.
- Spray dung + urine + hing extract and
- Spray Milk and Dry ginger decoction

MOSAIC COMPLEX

Plant viruses can be difficult to detect as symptoms look similar to several nutrient deficiencies. Look for:

- Yellow stripes or spots on foliage
- Wrinkled or curled leaves
- Stunted growth and reduced yields
- Infected fruit appears mottled and develops raised “warty” areas
- The virus is sap transmissible. Rubbing together of a diseased and a healthy leaf may result in the development of the disease on healthy plants.

Control Measures:

Select healthy seed for planting.
Crop rotation with non-hosts.
Control perennial weed hosts.
Rogue out and destroy infected plants in early stages of infection.
Grow disease tolerant varieties.
Cover the seed bed with paddy straw.
Spray dung urine, hing extract, and spray Neemastram
Recommendations given for aphids may be adopted for controlling the vector.

POWDERY MILDEW: LEVEILLULA TAURICA

Symptoms

The disease is common in all chilli growing areas a winter season.

- The disease is characterized by a white powdery growth on the under surface of the leaves
- The affected leaves turn yellow and are shed profusely. The affected plants lose their vigour and remain barren
- The yield is very much reduced .
- Cloudy weather is highly favourable for the disease development

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Control Measures

- Sour butter milk(6 liters in100 liters of water) and
- Dung+Urine+Hing extract

FUSARIUM WILT: FUSARIUM SOLANI

Symptoms

Fusarium wilt is one of the important disease occurring in both temperate and warmer areas.


Damage

- Fusarium wilt is characterised by wilting of the plant and upward and inward rolling of the leaves. The leaves turn yellow and die.
- Generally appear localised areas of the field where a high percentage of the plants wilt and die, although scattered wilted plants may also occur.
- Disease symptoms are characterised by an initials light yellowing of the foliage and wilting of the upper leaves that progress in a few days into a permanent wilt with the leaves still attached.
- By the time above –ground symptoms are evident ,the vascular system of the plant is discoloured, particularly in the lower stem and roots.

Control Measures

- Mix 2 kg of *Trichoderma viridi* in 200 liters of water and spray or pour at the base of the plant.

WHITEFLY: BEMISIA TABACI

Symptoms

White flies are polyphagous pests and occur as an occasional pest of chillies

The young ones and adults suck the sap while remaining on the ventral leaf surface. Due to continuous feeding chlorotic spots appear which later coalesce, leaves become brittle and drop prematurely.

- Honey dew excretion results in sooty mould development.
- In severe cases ,leaf fall may occur.

Control Measures

Cultivation of most preferred alternate host crops like brinjal, bhendi, tomato, tobacco and sunflower may be avoided.

Adopting crop rotation with non-preferred hosts of white fly such as Sorghum, Ragi, Maize to check pest build up.

Install 15 yellow sticky traps per acre

Nirgundi leaf extract followed by neem seed kernel extract.


WhiteFly


Damage

Reference:

Manual Prepared by Rythu Sadhikara Samstha (RySS), Andhra Pradesh