

*Package of practices
for
Strawberry Cultivation*

INTRODUCTION

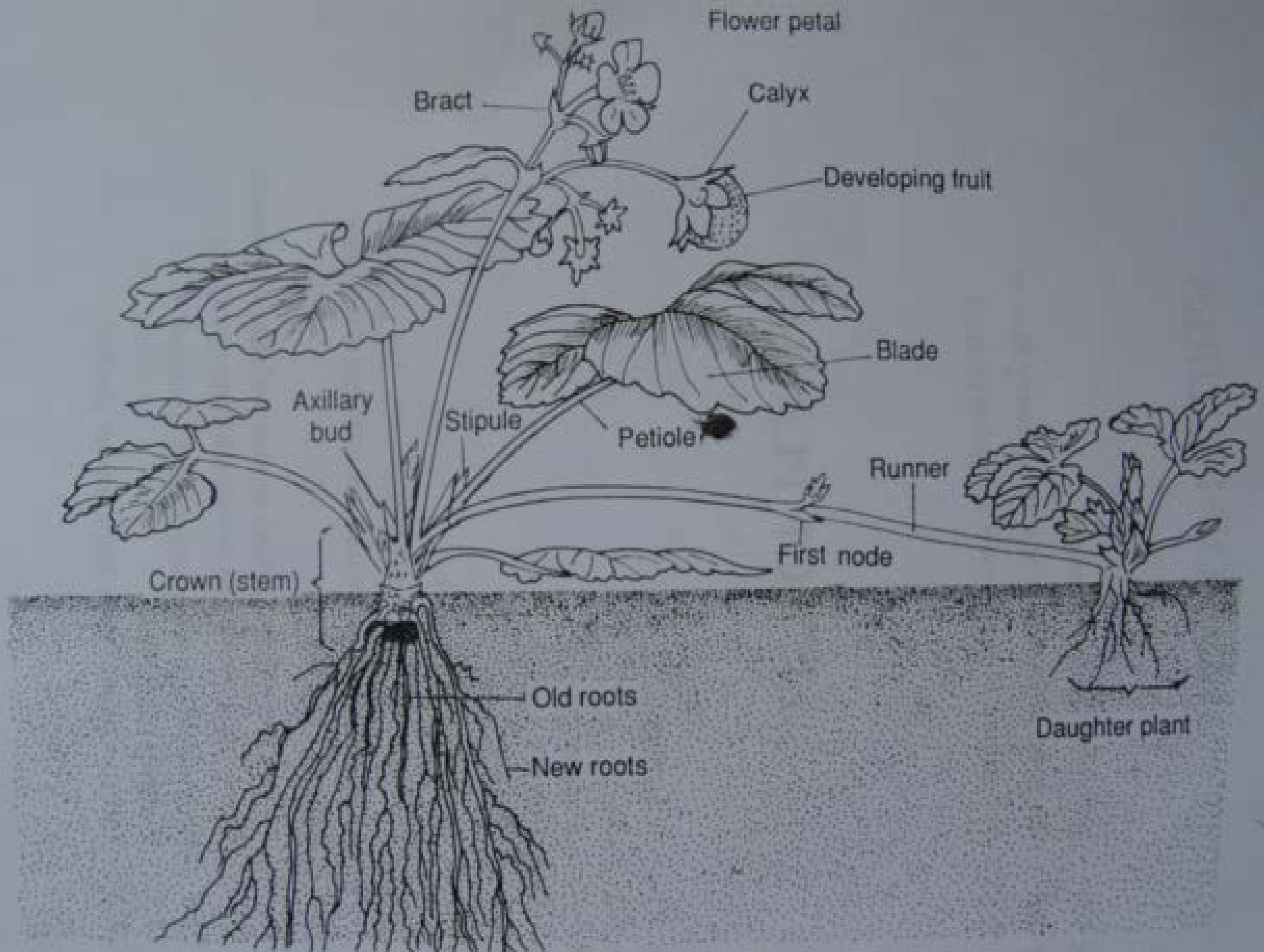
- ❖ One of the most important soft fruits
- ❖ A low volume high value fruit crop
- ❖ Grown under protected & open condition
- ❖ Gives quickest return in shortest time than any other fruit.
- ❖ Day neutral crop. increased the area under cultivation
- ❖ Mechanical harvester reduced the cost of production

IMPORTANCE

- ❖ Fair source of vit-A,B1,B2,niacin and vit-C
- ❖ Rich in minerals – Ca,P and K
- ❖ one of the best natural sources of antioxidant
- ❖ Pleasant flavour – volatile esters
- ❖ Consumed as fresh fruit &
- ❖ Processed products – ice cream, soft drinks, confectionary and chewing gum

Distribution

- ☞ Total area- 2,17,766 thousand hectares & production 29,86,813 MT.
- ☞ Europe and North America(50 and 30%) are the major producer.
- ☞ In India, confined only to hilly tracts of H.P, Uttaranchal, parts of U.P. and Kashmir valley.
- ☞ With the introduction of day neutral cultivars, its cultivation has spread to tropical and subtropical zones also and now Maharashtra is leading state.
- ☞ Meghalaya, Sikkim & Mizoram started its cultivation



Soil & CLIMATE

- ❖ Shallow, Well drained, Loamy soil rich in humus
- ❖ Acidic pH (5.0 –6.5)
- ❖ Friable up to 30-40cm depth
- ❖ Fumigation against Verticillium wilt
- Grown in temperate & subtropical countries
- Max. growth rate- 22-25 °C day and 7° -13°C night temperature
- Frost damage & winter injury – constraints
- Photoperiod is effective for vegetative growth, plant morphology and yield.

CULTIVARS

- ✓ Ofra
- ✓ Camarosa
- ✓ Chandler
- ✓ Fair Fox
- ✓ Black More
- ✓ Sweet Charlie
- ✓ Elista
- ✓ Seascape



Ofra



Chandler



CAMAROSA



SWEET CHARLIE



Sea Scape



Blackmore



Fair Fox



Elista

Propagation

- ★ Propagated through runners.
- ★ Planted at 1.2 x 1.2m or 1.8 x 1.8 m distance for propagation only(not field plantation).
- ★ All the cultural practices followed.
- ★ At the second node of stolon a runner plants is formed.
- ★ After sufficient growth and roots, separated from the mother plant and planted elsewhere.
- ★ Production can be enhanced by GA3 (50-100 ppm) spray in the month of June.
- ★ Lifted during Sept- October.



FIELD PLANTING (FOR PRODUCTION)

Matted rows: plant runners at 90x45cm, width of mat is 40-45cm

▪ **Spaced beds:** plant runners at 90x30 to 90x50cm

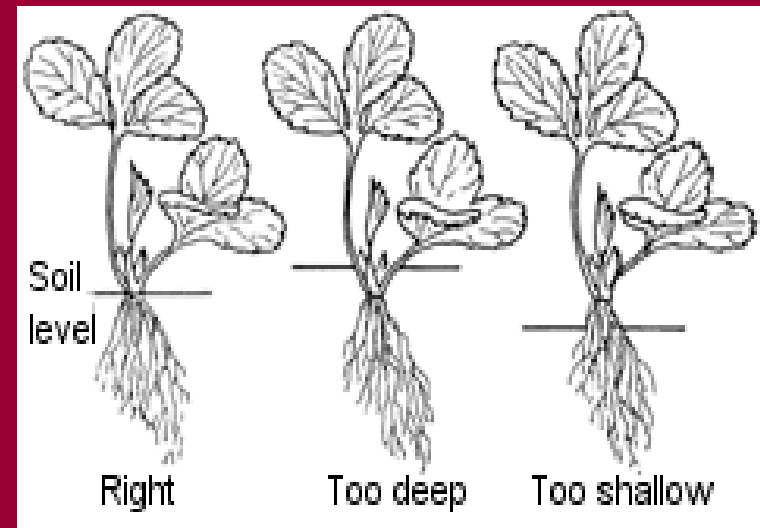
▪ **Hill rows:** plant runners on raised beds of 15-20cm height at 30-45cm: single /double rows

▪ 35,000 to 50,000 plants / ha- planting density

▪ July to December : time of planting

▪ Set the plant at the correct depth and pack the soil firmly around the roots.

▪ If the crown is set too shallow it will dry out, and if set too deep it may be smothered.





System of planting





Protected
cultivation





MANURING

- ➡ For annual cropping ,70-80 t FYM/ha fulfill the nutritional requirement
- ➡ Pre-planting application of 20 tonnes of FYM/ha
- ➡ 20-40-40 NPK kg/ha:basal dressing
- ➡ 40kg P & 80kg K /ha :annual application
- ➡ Foliar application of urea (2%), zinc sulphate (0.5%), calcium sulphate (0.5%) and boric acid (0.2%) is beneficial for higher and better yields.

IRRIGATION

- Go for frequent rather than few heavy ones
- Do not wet leaves as it aggravates foliage scald
- Trickle & sprinkler : reduces water requirement
- Irrigate through furrows between rows
- **Weed management**
 - Manual weeding/ Chemical- paraquat, simazine @ 3kg/ha & Pendimethalin @ 330g/ha

MULCHING

❄️ To minimize freezing injury, suppress weed growth, reduce soil erosion, early cropping, increased yield

❄️ Mulch before exposure to low temp of 6-7°C

❄️ Organic mulch- Clean straw, saw dust, pine needle/Bamboo matting.

❄️ Inorganic mulch- black plastic, transparent coloured polythene

❄️ Loose & light material so that it does not mat down and smother plants.

❄️ Disadvantage –it does not decompose in soil, so to be removed from the field at end of fruiting season.



Pine needle



Paddy straw



Black polythene

Special cultural practices

Bud and Shoot thinning / Deshooting / Debudding

➤ Removal of 1 - 2 buds/plant improves fruit yield and quality.

Deblossoming

➤ Removal of the flower truss to prevent fruiting & increased the yields of early saleable runners.

Control of runners

➤ Runners should be allowed to root along the rows until sufficient crowns are formed.

➤ Excess runners are not required and should be removed from the rows.

HARVESTING

- ❖ Maturity index-when half to three quarter of the skin develops colour
- ❖ For distant market-when berries are green/white and still hard
- ❖ Picking on alternate days
- ❖ Pick the berries by nipping off stalk & not holding the fruit
- ❖ Pick berries with the caps (or calyx) or stem one to two inches from the calyx.
- ❖ Average yield- 8-12t/ha

Packaging

- ✧ Packed in plastic punnets.
- ✧ Placed in the corrugated fiber trays or ventilated cardboard boxes.
- ✧ Refrigerate at all times at 5°C or below.
- ✧ For more than one days, reduce the temperature to 0°C .
- ✧ Ideally it is preferred to pre cool and followed by lower cooling for longer shelf life.



| Pests | Symptoms | Control |
|---------------------------|--|---|
| White grubs and cut worms | Cut the root and stem of young plants | Drench the soil with chlorpyrifos @ 2ml/L water |
| Hairy caterpillar | Defoliate leaves during June-July | Spraying of endosulphon 0.05% or malathion 0.05 %, Harvest berries 7-10 days after malathion spray. |
| Root weevil | Feed on the rootlets, make deep tunnels in crown, finally the plants collapse. | Apply Carbofuran (6-10 kg/ha) and Parathion (0.017 %) around the plants |
| Red spider mite | Sucking sap causing rusty brown of leaves. Plants stunted, reduced yields | Aldicarb (10G) @ 5 kg/ha or Chlorpyrifos and Carbamates are effective |



Root weevil



Larvae of root weevil



Spider mite



Tarnished bug



Slugs



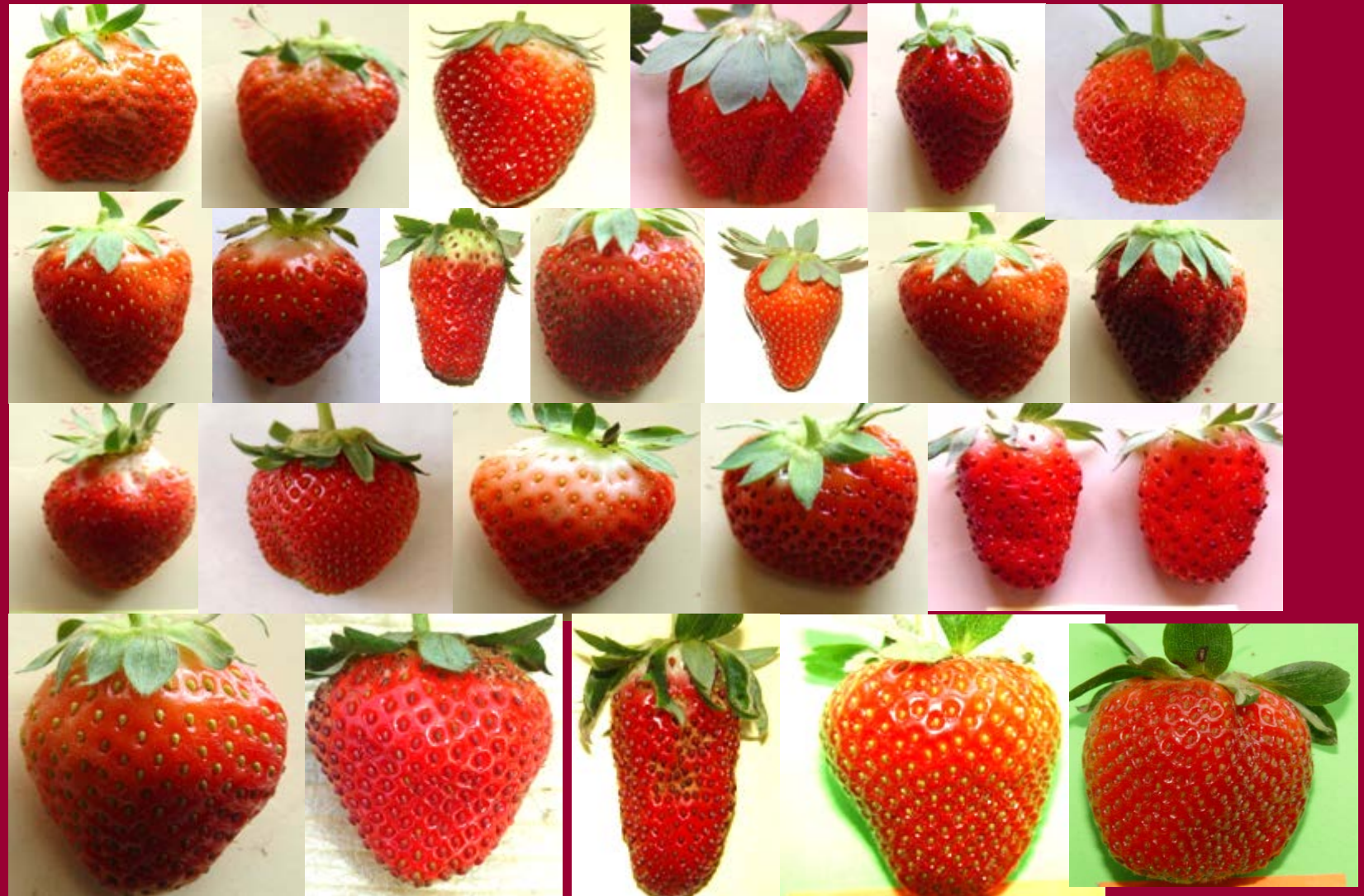
Bud weevil

| | | |
|--|---|--|
| <p>Diseases Verticillium wilt</p> | <p>Older leaves turn brown, shrivelled and plants die</p> | <p>proper crop rotation and soil fumigation with formalin (5000 L/ha) or chloropicrin (210 L/ha).</p> |
| <p>Red stele</p> | <p>Fungus enters in to the root and plant shows dull, bluish green which soon wilt and die.</p> | <p>Proper drainage,crop rotation are important to reduce the incidence. Soil drenching with Ridomil and treating runners with copperoxychloride(0.1%) for15 minutes.</p> |
| <p>Leaf spot complex</p> | <p>Spot of various shape appears on the leaves during rainy season, that dry and defoliate</p> | <p>Give 2-3 sprays of Belyton (2 ml/L) or 5 sprays of carbendazim (0.5g/L) at 21 days intervals.</p> |
| <p>Grey mould</p> | <p>Blossom blight and fruit rot</p> | <p>Do not allow fruit to touch the soil. Apply black polythene/straw mulch before flowering</p> |
| <p>Viral diseases</p> | <p>Stunting of plants, marginal yellowing and upwards curling of leaves</p> | <p>Use of virus free runners, isolation of infected plants and control of aphid vectors with systematic insecticides</p> |









Variability in Strawberry fruits