

**LEC. 33 PEACH AND NECTARINES - SOIL, CLIMATE, PLANTING,
VARIETIES, NUTRIENT AND WATER MANAGEMENT, SPECIAL
CULTURAL OPERATIONS, PHYSIOLOGICAL DISORDERS, PESTS
AND DISEASES, MANAGEMENT PRACTICES**

PEACH

Prunus persica (L.) Batsch

Family : Rosaceae

This is a stone fruit in warm temperate climate also grown in sub-tropics, but of inferior quality. It is most popular because of its attractive colour, excellent quality and taste. Grown in warm temperate zone of Europe, North America, South Africa, Asia and Australia. Nectarines are smooth skin mutants allied to peach. It is non-pubescent peach of smaller size.

Use : Favourite table fruit, highly valued for its taste, nutritive properties and therapeutic uses. Canned, dried, frozen peaches, jam, juice and beverages are popular. Nutrient rich fruit, used as baby food also.

Nutritive value

Good source of sugars, vitamins and minerals.

TSS	-	8-13°B
Total sugars	-	8%
Ascorbic acid	-	6-13 mg
Carotenoids	-	0.19-0.53% - white flesh cultivars 0.75-0.79% - yellow flesh cultivars

Peach kernel contains

Fats, proteins, fibre and minerals

39-55%	Fat
23-30%	Proteins
14.8%	Crude fibre
2.7%	Minerals

Glycosides

‘Prunacin’ – Pulp
‘Amygdalin’ - Seeds

Medicinal properties :

Peach kernel oil - Food, cosmetics, cattle feed, pharmaceuticals, bio-fertilizer
Flower & leaves - Purgative and anthelmintic, urinary stone, kidney function,
indigestion

Origin : China

India : Uttar Pradesh, Jammu & Kashmir, Himachal Pradesh, Punjab, Nilgiris
North eastern states viz., Arunachal Pradesh, Meghalaya, Manipur.

P. behmi a natural hybrid of almond and peach used as rootstock for plum, peach, almonds
Nectarine P. persica var. nucipersica.

Morphological description :

Fruit is low headed, wide spread tree, drupe from superior ovary and velvety skin.

Climate and soil

- ❖ Limiting factors :
 - Low winter temperature
 - Spring frost
 - Hail storms
 - High humidity
- ❖ Chilling hours at 7.2°C more effective
- ❖ Temperature < 2-3°C – does not break dormancy.
- ❖ High temperature in December – January → bloom abnormality and failure of fruit set is noticed.
- ❖ High temperature in winter → prolongs dormancy and multiplies chilling requirement.

Soil

- ❖ Mild to moderate steep hill slopes are ideal
- ❖ Deep valleys not preferred, because sensitive to water logging.

- ❖ Sandy soils with a depth of 7.0 m is ideal.
- ❖ Oxygen supply to the root zone is important, so compact soils with <10-20% pores should be avoided.
- ❖ Ideal pH – 5.8 to 6.8.

Propagation :

- ❖ T-budding is practiced.
- ❖ Autumn season → preferred.
- ❖ Leafy succulent soft wood and hardwood cuttings also preferred.

Peach itself is a successful rootstock :

- ❖ For raising rootstock, seeds from late cultivars are used. If early cv. Is used – germination is poor.
- ❖ Removal of seed coat GA3 treatment – reduce stratification period.
- ❖ Nematode attack is common. But ‘Nenaguard and Okinoura’ exempted.

Others rootstock :

- ❖ Apricot → *P. armeniaca* – Root knot nematode rest.
- ❖ Almond → *P. amygdalis* – dwarfing rootstock
- ❖ Western sand cherry – *P. berseyi*, *P. tomentosa* – dwarfing.
- ❖ Namking cherry – *P salicina* – medicinal to large trees.
- ❖ Micropropagation of both rootstock and scion is possible, axillary shoots and embryo culture are successful.

Planting

- ❖ One year old plants.
- ❖ Spacing 4-6 m in square
- ❖ Spring planting better than autumn planting
- ❖ Trees bare to be white washed to protect it from sun.

Training and pruning

Unpruned trees → Tall and dense
Weak crotches

Surplus scaffold branches

Suckers and water sprouts

Various training systems

- 1) Modified leader
- 2) Open centre
- 3) V-shaped tatura trellis
- 4) Pillar
- 5) High density vase
- 6) 2=scaffold vase – most efficient for low density (277 to 625 plants/ha)
- 7) Belgium bench

For HDP

Hedge row	-	519-889 plants/ha
Tatura trellis	-	666 plants/ha
Medow	-	13,333 plants/ha

Pruning :

- 1st year : Stem cut at 61 cm from ground, 3-4 branches allowed, well spaced and well developed on all sides., All other new growth are removed.
- 2nd year : 2 well spaced secondary branches on each main branch (Dormant season).
- 2nd summer : Water sprouts suppressed, Secondary branches encouraged.
Forked branches cut to make crotches strong / outside buds are pruned to have speedy shape. In the 3rd dormant pruning → diseased, criss-cross branches, water sprouts removed. No severe pruning in early seasons.

II Pruning – bearing trees

Annual pruning

- to maintain open centre
- since it stimulates new wood for production
- It allows penetration of sunlight

- Colour development
- Fungal diseases

Annual heading back

- to maintain low canopy
- 2-3 year old branches to be removed.
- Side branches to be shortened and thinned
- Annual new growth to be maintained @ 41-61 cm length.

Nutrition

- ❖ Balanced nutrition – health and productivity FYM 40 kg/tree.
- ❖ For Indian conditions :
- ❖ Nitrogen : 55-65 kg/ha, phosphorus : 55-65 kg/ha, potassium : 110-135 kg/ha bearing orchard.
- ❖ NPK : 20:15:15 g/year
- ❖ This should be increased annually. Apply fertilizers as band than broadcasting.

Micronutrients

0.5% ZnSO₄, 0.2% Boric acid and 0.2% CuSO₄ corrects respective deficiency.

Irrigation

Soil moisture important particularly at the time of fruit maturity. Deep well drained soils is wetting upto 1.8 m depth. Shallow soils is irrigation at frequent intervals with less water. Stress – less winter hardiness.

Inter cultivation

Desirable but confined to 10 cm soil depth by light hoeing or shallow ploughing.

Advantages : Weed competition decreased, good physical condition, soil erosion, soil moisture conserved.

Intercropping : Short duration crops can be grown till peach comes to bearing. Eg: Cowpea, soyabean, turmeric and pineapple.

Green manuring :

- ❖ Short duration legumes.
- ❖ Incorporate before flowering
- ❖ Soil condition will improve and fertility status increased
- ❖ Eg: Pear, beans, fenugreek, daincha, sunhemp.

Mulching : Peach normally grown under sod – permanent sod cover, depletion of nitrogen.

Crop regulation :

To regulate heavy flowering and fruiting, thinning can be done to get quality fruits of marketable size.

- ❖ Ethrel 50-100 ppm effective in increasing fruit size, fruit weight increased. Pulp – stone ratio increased, fruit quality increased
- ❖ Spraying : 1000-2500 ppm DNOC prior to full bloom effective.
- ❖ Time of thinning : Depends on maturity.
- ❖ Early cultivars – blossom thinning.
- ❖ Mid & early – at petal fall or fruitset.

Physiological disorder :

1) Split pit and gumming – At pit hardening stage splitting at joint of dorsal and ventral side. Exudation of gum and the gum fills the pit cavity and seeds become abortive, fruits become unfit for consumption.

Causes : prolonged drought followed by sudden rain – temperature and humidity increased – splitting.

2) Sunscald – Constant exposure to sun → Sunscald on trunk, twigs and branches.

Control : Painting the exposed area with lime and proper shade.

Harvest : Maturity at harvesting decides the post harvest quality and storage.

Maturity indices :

- 1) Days after full bloom
- 2) Fruit size
- 3) Fruit firmness

- 4) Pit discolouration
- 5) Freeness of pit
- 6) Ground colour
- 7) Sugar , TSS-arid ratio.

Flowering to maturity = 78-127 days

Grand colour change and flesh firmness is the best index.

Yield :

- ❖ 7-10 tonnes/ha
- ❖ High Density Planting – 78 MT/ha
- ❖ Climacteric fruit
- ❖ Application of growth retardants Alar (SADH) and ethrel
- ❖ Enhance ripening
- ❖ Increase flesh colour and colour
- ❖ Increase fruit quality
- ❖ Uniform ripening
- ❖ Alar @ 500 ppm at pit hardening, Ethrel – 100, 700 ppm before harvest – effective

Storage :

- ❖ Soft textured high moisture is highly perishable, spoil within 2-3 days.
- ❖ Pre-cooling – reduces field heat.
- ❖ Hydrocooling with running H₂O @ 10°C
- ❖ Precooling + 0°C storage with 85-90% RH → 28-36 days storage.
- ❖ CAS – Very effective
- ❖ Packing material of weed, fibre, jute, plastics can be used.
- ❖ Recently corrugated paper board boxes.
- ❖ Plastic film with entrapped air bubbles

Storage diseases

Brown rot, Whiskers rot, grey mould, green mold, blue mould, black mould.

To control

Radiation treatment, hot H₂O dipping - reduces spoilage.