

WHEAT -

NAME: WHEAT (GODHUMAI)

SCIENTIFIC NAME: Triticum aestivum

NATIVE: It generally grows in Theni, Dindigul, Karur, Coimbatore, Erode, Salem, Dharmapuri, Vellore, Thiruvannamalai, Kancheepuram.

ORIGIN: It is originated from Ethiopian Highlands.

DESCRIPTION:

SOIL TYPE: Soils with a clay loam or loam texture, good structure and moderate water holding capacity are ideal for wheat cultivation.

NUTRIENT VALUE:

- Apply NPK fertiliser as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 80:40:40 NPK kg/ha.
- Apply half of N and full dose of P₂O and K₂O basally before sowing and incorporate in the sowing line.

GROWTH TIME AND POTENTIAL:

Wheat is planted in the fall, usually between October and December, and grows over the winter to be harvested in the spring or early summer. Typically, it takes about 7 to 8 months to reach maturity and it creates pretty golden contrast in spring gardens.

DISEASES:

FUNGI : Powdery mildew, Loose Smut, Brown rust, Stripe rust/ Yellow rust, Black rust, Flag smut, Hill bunt or Stinking smut, Kamal bunt, Leaf curl, Foot rot, Head scab/ Fusarium leaf blotch (Snow Mould), Leaf Blotch, Helminthosporium leaf blotch (Spot Blotch), Seedling blight, IPM for Wheat.

PHENOTYPIC OUTPUT: Wheat leaves form at each node and include a leaf sheath that wraps around the stem and a leaf blade. Wheat has small auricles. These wrap around the stem at the point where the leaf sheath meets the leaf blade. The spike (also called the ear or head) forms at the top of the plant.

CULTIVATION STYLE: The wheat crop requires a well-pulverized but compact seed bed for good and uniform germination. Three or four ploughings in the summer, repeated harrowing in the rainy season, followed by three or four cultivations and planking immediately before sowing produce a good, firm seed bed for the dry crop on alluvial soils.

TOMATO

NAME: Tomato

SCIENTIFIC NAME: Solanum lycopersicum

NATIVE: It usually grows in Krishnagiri, Dharmapuri, Salem, Tiruppur, Theni, Dindigul, Namakkal, Nagapattinam, Ranipet, Thenkasi.

ORIGIN: It originated from South America.

DESCRIPTION:

SOIL TYPE: It grows in well drained loamy soils rich in organic matter with a pH range of 6.5-7.5.

NUTRIENT VALUE: The nutrient requirement for hybrids is 200:250:250 kg of NPK per ha. 75 % of P (187.5 kg P which comes to 1172 kg of superphosphate) is applied as basal. The remaining quantity of 200:62.5:250 kg of NPK per ha is applied through fertigation

GROWTH TIME:

- Tomato seeds are commonly planted indoors as early as 8 to 6 weeks before the average date of the last spring frost.
- Tomato seedlings are usually transplanted into the garden 1-3 weeks after the last frost.
- Early-season tomatoes require 50-60 days to reach harvest from transplanting.
- Mid-season tomatoes require 60-80 days.
- Late-season tomatoes require 80 or more days.

POTENTIAL DISEASES:

FUNGI : Damping off, Fusarial wilt

VIRUS: Leaf curl, Tomato spotted wilt disease, Peanut bud necrosis virus

BACTERIAL: Leaf spot

PHENOTYPIC OUTPUT: Fruit of tomato (*Solanum lycopersicum*) are diverse in size and shape, ranging from small and round to large and variably shaped. A prevalent morphological feature distinguishing many cultivated varieties from undomesticated accessions is an elongated fruit shape.

CULTIVATION STYLE: Tomato is a warm season crop, it requires a warm and cool climate. The plant cannot withstand frost and high humidity. Light intensity affects pigmentation, fruit

colour, and fruit set. The plant is highly affected by adverse climatic conditions. It requires different climatic ranges for seed germination, seedling growth, flower and fruit set, and fruit quality. Temperature below 10C and above 38C adversely affects plant tissues.

CHILLI

NAME: Chilli (MILAGAI)

SCIENTIFIC NAME: Capsicum annum

NATIVE: It grows in Kancheepuram, Karur, Theni, Perambalur, Tirunelveli, Thoothukudi, Nagapattinam, Krishnagiri, Namakkal, Pudukottai, Dharmapuri, Ramanathapuram, Sivagangai, Ariyalur, Ranipet and Mayiladuthurai.

ORIGIN: It originated in Bolivia.

DESCRIPTION:

SOIL TYPE: It grows best in well drained loamy soils rich in organic matter with a ph range 6.5-7.5.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:02:01 NPK kg/ha.

GROWTH TIME : Your chillies are ready to harvest in 80 to 90 days. You can harvest green chillies once they have grown completely. It can be grown from January – February, June-July, September-October.

POTENTIAL DISEASES:

FUNGI : Damping off, Fruit rot and Die back, Powdery mildew, Fusarium wilt, Cercospora leaf spot,

VIRUS: Leaf curl

BACTERIAL: Bacterial leaf spot

PHENOTYPIC OUTPUT: Chilli plant is a highly branched herbaceous plant having height ranging from 50-100 cm. Branching mainly depends on cultivar, soil fertility, soil moisture and season. High branching is preferred in chilli for easy picking of fruits and for effective inter cultivation and to prevent rotting of fruits.

CULTIVATION STYLE: Chilli can be grown in all types of soft but the sandy-loam, clay loam and loam soils are best suited for it, the soil must be well drained and well aerated.

BLACK PEPPER

NAME:BLACK PEPPER (MILAGU)

SCI.NAME:PIPER NIGRUM

NATIVE: This crop is majorly cultivated in Kollimalai, Namakkal, Kanyakumari ,Nilgiris.

ORIGIN:It originates from MALABAR COAST OF INDIA.

DESCRIPTION:

SOIL TYPE:Black pepper can be grown in a wide range of soils with a pH of 5.5 to 6.5, though in its natural habitat it thrives well in red laterite soils. Thrives best on virgin soils rich in humus content and the crop can be grown at elevations up to 1500 m.

NUTRIENT VALUE:

Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:03 NPK kg/ha.

GROWTH TIME:Harvesting Black pepper takes about 7 - 8 months after flowering to reach full maturity. In India the crop is harvested during December – January in plains and January - April in the high ranges of Western Ghats.

POTENTIAL DISEASES:

FUNGI : Damping off, Fruit rot and Die back, Powdery mildew, Fusarium wilt, Cercospora leaf spot, Basal wilt, Foot rot /quick wilt disease, Slow decline /slow wilt, Leaf rot and blight.

VIRUS: Phyllody disease.

BACTERIAL: Stunt disease.

INSECTS: Pollu disease /anthracnose.

IPM for Black Pepper.

PHENOTYPIC OUTPUT:Height may reach upto 10m by using its aerial roots. Each slender spike has 40-50 blossoms of the small flowers. Their appearance changes to yellowish-red upon maturity, at that time, it bears a single seed. It has drupe fruit which is called peppercorn having a diameter equal to 5mm.

CULTIVATION STYLE: Pepper is grown as monocrop as well as a mixed crop. Large scale cultivation of pepper as monocrop is done on hill slopes by clearing jungle lands and planting standards for the vines to climb on. As a mixed crop, it is grown with arecanut, coconut, mango, jack etc. where these trees serve as standards for the pepper vines. Pepper is also a suitable intercrop in coffee estates where the shade trees are good standards for them.

BELLARY ONION

NAME: BELLARY ONION (PERIYA VENGAYAM)

SCI.NAME: ALLIUM CEPA

NATIVE: This crop is majorly cultivated in Dindigul, Tiruppur, Perambalur, Trichy, Namakkal, Thoothukudi, Dharmapuri, Ramanathapuram, Ariyalur, Thenkasi.

ORIGIN: It originates from CENTRAL ASIA

DESCRIPTION:

SOIL TYPE: Onion can be grown in all types of soils such as sandy loam, clay loam, silt loam and heavy soils. However, the best soil for successful onion cultivation is deep, friable loam and alluvial soils with good drainage, moisture holding capacity and sufficient organic matter. Red loam to black soils with good drainage facilities is highly preferred for bellary onion cultivation.

NUTRIENT VALUE: Apply NPK fertiliser as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:02:01 NPK kg/ha.

GROWTH TIME: The onion is a hardy cool-season biennial but usually grown as an annual crop. The onion has narrow, hollow leaves and a base which enlarges to form a bulb. The bulb can be white, yellow, or red and require 80 to 150 days to reach harvest.

POTENTIAL DISEASES:

FUNGI : Botrytis Leaf Blight, Purple Blotch, Downy Mildew, Neck Rot, Onion Smut.

BACTERIAL: Bacterial Soft Rot

PHENOTYPIC OUTPUT: The onion plant has a fan of hollow, bluish-green leaves and its bulb at the base of the plant begins to swell when a certain day-length is reached. The bulbs are composed of shortened, compressed, underground stems surrounded by fleshy modified scale (leaves) that envelop a central bud at the tip of the stem.

CULTIVATION STYLE: Farmers and gardeners can grow onions from seeds or from bulbs. If they plant seeds, they must later pull out most of the young plants so the rest can grow

better. This is called 'thinning.' A different way to plant onions is to plant young bulbs. This is faster, but the onions that grow this way are weaker than the onions that started as seeds.

BOTTLE GOURD

NAME:BOTTLE GOURD (SORAKKAI)

SCI.NAME:LAGENARIA SICERARIA

NATIVE:This crop is majorly cultivated in Coimbatore, Trichy, Tiruppur, Krishnagiri, Vellore, Dharmapuri, Thiruvannamalai, Kancheepuram and Ranipet.

ORIGIN:It originates from TROPICAL AFRICA

DESCRIPTION:

SOIL TYPE:Sandy loam soils rich in organic matter with good drainage and the pH ranges from 6.5 to 7.5 is suited for bottle gourd cultivation. This crop requires a moderate warm temperature

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 6:12:12 NPK kg/ha.

GROWTH TIME:Summer and monsoon are the best time to plant seeds. Buy bottle gourd seeds online. Seeds are sown directly in small pits or on raised beds which germinate in 7-8 days. Your plant should start flowering within 25-30 days of planting. Bottle gourd produces white flowers, about 4 inches in diameter. Bottle gourds should appear within 40-50 days of planting.

POTENTIAL DISEASES:

FUNGI : Downy mildew, Damping off and root rots, Gummy stem blight (also known as black rot or alligator skin), Fusarium wilt, Phytophthora blight, Septoria leaf spot,

VIRUS: Cucumber mosaic virus

BACTERIAL: Bacterial wilt, Angular leaf spot

INSECTS: Pollu disease /anthracnose.

PHENOTYPIC OUTPUT: The bottle gourd is a vigorous, annual, running or climbing vine with large leaves and a lush appearance. It grows fast and may begin to flower only 2 months after seeding. The thick stem is furrowed longitudinally. The vine is branched and climbs by means of tendrils along the stem.

CULTIVATION STYLE: The vegetable seed is sown by dibbling method at a spacing of 2 m to 3 X 1.0 m to 1.5 m. Generally, two to three seeds are sown in a pit at 2.5 cm to 3.0 cm depth. Two to three hoeing is given to control the weeds during the early stage of bottle gourd growth. The monsoon or rainy season crop is normally stalked, often trained on a bower made of bamboo and sticks.

GARLIC

NAME: GARLIC (POONDU)

SCI.NAME: ALLIUM SATIVUM

NATIVE: It is mainly cultivated in Dindigul, Erode, Nilgiri.

ORIGIN: It originates from West China, around Tien Shan Mountains to Kazakhstan and Kyrgyzstan.

DESCRIPTION:

SOIL TYPE: Garlic requires well drained loamy soils, rich in humus, with fairly good content of potash. The crop raised on sandy or loose soil does poorly, the bulbs produced are deformed and during harvesting, many bulbs are broken and bruised and so they do not keep well in storage.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 08:03:02 NPK kg/ha.

GROWTH TIME: Garlic is most often planted in the fall (between late September and November) and harvested in the following summer (between June and August). In areas that get a hard frost, plant garlic cloves 6 to 8 weeks before the first fall frost date, before the ground freezes.

POTENTIAL DISEASES:

FUNGI: Macrophomina rot, Pink root, Aspergillus rot.

VIRUS: Mosaic

PHENOTYPIC OUTPUT: Garlic plants grow about 60 cm (2 feet) tall. Depending on the variety, the long leaves typically arise from a short hard stem above the bulb or emerge from a softer pseudostem made up of overlapping leaf sheaths. The bulb is covered with membranous skin and encloses up to 20 edible bulblets called cloves.

CULTIVATION STYLE: Plough the land to a fine tilth and form ridges and furrows at 30 cm spacing or beds of convenient sizes. Cloves are planted at 15 x 10 cm spacing. Irrigate before and after planting; life irrigation is given on third day of planting and at weekly intervals of time. During last ploughing incorporate 50 t/ha of FYM; Apply Azospirillum 2 kg and Phosphobacteria 2 kg/ha, 40:75:75 kg/ha NPK, 50 MgSO₄ and 1 ton neem cake as basal and N 35 kg/ha at 45 days after planting.

MANGO -

NAME: MANGO (MAMPAZHAM)

SCIENTIFIC NAME: Mangifera indica

NATIVE: This crop is cultivated mainly in Krishnagiri, Dharmapuri, Dindigul, Vellore, Nagapattinam, Tiruvallur, Namakkal, Pudukkottai, Ramanathapuram, Sivagangai, Theni, Ariyalur, Tirunelveli, Ranipet, Thenkasi and Mayiladuthurai districts

ORIGIN: INDIA

DESCRIPTION:

SOIL TYPE: Mango grows well on a wide variety of soils, such as lateritic, alluvial, sandy loam and sandy. The loamy, alluvial, well-drained, aerated and deep soils (2-2.5 m) rich in organic matter with a pH range of 5.5-7.5 are ideal for mango cultivation.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:02:03 NPK kg/ha.

GROWTH TIME: Planted from seed, a mango tree requires five to eight years before it will bear fruit; a nursery sapling should produce fruit in about four years. The mango fruit takes three to five months to ripen after the tree has flowered.

POTENTIAL DISEASES:

FUNGI : Damping off, Die back, Powdery mildew, Phoma blight, Red rust, Sooty mold, Mango malformation, Gummosis, Root rot, Scab, Postharvest diseases,

BACTERIAL: Bacterial canker

INSECTS: Pollu disease /anthracnose.

Crop stage-wise IPM for Mango

PHENOTYPIC OUTPUT: The mango tree is an evergreen tree of varying size and shape. It has a deep taproot and profuse surface roots (Litz, 2009), a stout trunk (90 cm in diameter) and an umbrella-shaped crown that may reach 20-40 m high

CULTIVATION STYLE: Land should be prepared by deep ploughing followed by harrowing and levelling with a gentle slope for good drainage. Spacing varies from 10 m x 10 m, in the dry zones where growth is less, to 12 m x 12 m, in heavy rainfall areas and rich soils where abundant vegetative growth occurs. New dwarf hybrids like Amrapali can be planted at closer spacing of 5m X 5m. Pits are filled with original soil mixed with 20-25 kg well rotten FYM, 2.5 kg single super phosphate and 1 kg muriate of potash.

COTTON -

NAME: Cotton (parutthi)

SCIENTIFIC NAME: Gossypium

NATIVE: The major cultivation of this crop is done in Coimbatore, Madurai, Ramanathapuram, Trichy, Salem, Chennai, Cuddalore, Virudhunagar, Dharmapuri, Theni, Thirunalveli, Tirupattur and Ranipet.

ORIGIN: Nile River

DESCRIPTION:

SOIL TYPE: soil types suitable for cotton cultivation are alluvial, clayey and red sandy loam.

NUTRIENT VALUE: If soil test recommendations are not available, follow the blanket recommendation of 120:60:60 NPK kg/ha. Apply 50 percent of N and K full dose of P₂O₅ as basal and remaining ½ N and K at 40 – 45 DAS for varieties. For hybrids apply N in three splits viz., basal, 45 and 65 DAS. Apply the fertilizers in a band, two-thirds of the distance from the top of the ridge and incorporate.

GROWTH TIME : Cotton attains its full length in about 25 days after fertilization with the maximum growth rate occurring during the first 10 to 15 days of this period. Thickening of the cotton begins at about 16 days after fertilization and continues until the boll is mature. Sowings in Tamil Nadu are done during February-March.

- Flower to Open Boll: 45 to 65 days
- Planting to First Flower: 60 to 70 days
- Planting to Emergence: 4 to 9 days

POTENTIAL DISEASE:

FUNGI : Fusarium Wilt, Verticillium wilt, Root rot, Gray or Areolate mildew, Boll rot, Alternaria leaf blight, Myrothecium leaf spot, Cercospora Leaf spot,

VIRUS: Tobacco Streak Virus

BACTERIAL: Bacterial Blight

PHENOTYPIC OUTPUT: It is a sub-shrub, 1 to 1.5 m tall, its stem thick and rigid and leaves horizontally placed. Leaves and twigs are sparsely hairy and rarely glabrous. Fruit or boll is rounded, beaked 3 or 4 lobular with 11 to 10 seeds per loculus. Seeds have short fuzz and lint.

CULTIVATION STYLE: Tamil Nadu traditionally grows cotton in an area of about 0.2m hectares and produces about 0.6 million bales of cotton and because of its climate and soil, the State is ideally suited for producing long and extra-long staple cottons.

MAIZE

NAME : Maize (Solanum)

SCI.NAME : Zea Mays

NATIVE: This crop is majorly cultivated in Salem, Dindigul, Namakkal, Pudukkottai, Tiruppur, Villupuram, Perambalur, Dharmapuri, Ariyalur, Chennai, Cuddalore, Virudhunagar, Krishnagiri, Thoothukudi, Nagapattinam, Ramanathapuram, Theni, Tirunelveli, Kallakurichi, Thenkasi, Tirupattur and Ranipet.

ORIGIN: This crop has its origin from Mexico.

DESCRIPTION:

SOIL TYPE: Deep fertile soils rich in organic matter and well-drained soils are the most preferred ones however maize can be grown on a variety of soils. Loam or silt loam surface soil and brown silt clay loam having fairly permeable sub soil are the ideal soil types.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 153:62.5:50 NPK kg/ha.

GROWTH TIME: Hybrids of maize mature within 90-110 days. Plants may remain green when cobs are dry & ready for harvest. Therefore, do not wait for stalks to dry up for harvesting, this is desirable as such plants can be used as fodder.

POTENTIAL DISEASES:

FUNGI : Maydis leaf blight (MLB)/ Southern Corn Leaf Blight (SCLB), Turcicum leaf blight (TLB)/ Northern Corn Leaf Blight (NCLB), Curvularia leaf spot, Banded leaf and sheath blight, Charcoal rot, Fusarium stalk rot, Bacterial stalk rot, Common rust, Polysora rust.

PHENOTYPIC OUTPUT: Maize is a tall, determinate, annual C4 plant varying in height from 1 to 4 metres producing large, narrow, opposing leaves, borne alternately along the length of a solid stem.

CULTIVATION STYLE: Maize is sown in rows, 60-75 cm apart, whereas the plants in the row are spaced at 20 to 25 cm. A population of 60-75 thousand plants per hectare at harvest are required for obtaining the optimum yield. Sowing in rows is generally done with drill or by dropping the seed behind the plough.

SUGARCANE

NAME:SUGARCANE (KARUMBU)

SCI.NAME:*Saccharum officinarum*

NATIVE:This crop is majorly cultivated in Trichy, Perambalur, Karur, Salem, Namakkal, Coimbatore, Chennai, Vellore, Tiruvallur, Cuddalore, Krishnagiri, Pudukkottai, Nagapattinam, Dharmapuri, Sivagangai, Theni, Ariyalur, Tirunelveli, Kallakurichi, Ranipet, Chengalpattu and Tirupattur.

ORIGIN:Sugar cane originated in New Guinea

DESCRIPTION:

SOIL TYPE: Sugarcane is grown in various kinds of soils, such as red volcanic soils and alluvial soils of rivers. The ideal soil is a mixture of sand, silt, and clay particles, with a measure of organic material. The land is ploughed and left to weather for a time before subsoiling (stirring up the subsoil) is carried out.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 05:05:02 NPK kg/ha.

GROWTH TIME: In India planting Seasons of Sugarcane in subtropical regions are September to October (Autumn) and February to March (spring), whereas in tropical regions it is June to August (Adsali) and January to February and October to November (Eksali). The lowest temperature for good cane-plant growth is about 20 °C (68 °F).

POTENTIAL DISEASES:

FUNGI : Smut, Rust, Red rot,

VIRUS: Yellow leaf disease,

BACTERIAL: Wilt, Ratoon stunting.

PHENOTYPIC OUTPUT: Sugarcane is a tall perennial plant growing erect even up to 5 or 6 metres. The plant is composed of four principal parts, the root system, the stalk, the leaves and the inflorescence.

CULTIVATION STYLE: Sugarcane is propagated primarily by the planting of cuttings. The sections of the stalk of immature cane used for planting are known as seed cane, or cane sets, and have two or more buds (eyes), usually three. Seed cane is planted in well-worked fields. Mechanical planters that open the furrow, fertilize, drop the seed cane, and cover it with soil are widely used.

LEMON

NAME: Lemon (ELUMICHAI)

SCIENTIFIC NAME: Citrus limon

NATIVE: They are mainly cultivated at Dindigul, Tirunelveli, Theni, Thoothukudi, Virudhunagar.

ORIGIN: Lemons originate in Asia, primarily Northeast India (Assam).

DESCRIPTION:

SOIL TYPE: It can be grown up to 1000 m above MSL. Deep well drained loamy soils are best suited for the cultivation.

NUTRIENT VALUE: If soil test recommendations are not available, follow the blanket recommendation of 8:2:10 NPK kg/ha.N is applied in two doses during March and October. FYM, P2O5 and K2O are to be applied in October.

GROWTH TIME: A grafted lemon plant works best as it will start yielding fruit in the same year. A plant grown from seed will take nearly 5 years to start fruiting. Lemon plants come to bear in order to sustain a productive life of a minimum of 15-20 years.

POTENTIAL DISEASE:

FUNGI : Citrus scab, Sooty mould, Powdery mildew.

VIRUS: Citrus tristeza disease.

BACTERIAL: Citrus canker, Gummosis, Greening or Huanglongbing.

INSECTS: Anthracnose.

IPM for Citrus

PHENOTYPIC OUTPUT: The fruit is oval with a nipple-like protuberance at the apex; 2 3/4 to 4 3/4 in (7 -12 cm) long; the peel is usually light-yellow though some lemons are variegated with longitudinal stripes of green and yellow or white; it is aromatic, dotted with oil glands; 1/4 to 3/8 in (6-10 mm) thick; pulp is pale-yellow, in 8 to 10 segments, juicy, acid. Some fruits are seedless, most have a few seeds, elliptic or ovate, pointed, smooth, 3/8 in (9.5 mm) long, white inside.

CULTIVATION STYLE: Today, the lemon is his primary source of income and fetches him annual profits of up to Rs 2 crore a year. While average farmers acquire a yield of 1,000-2,000 fruits per tree, Antonisamy grows 5,000-6,000 fruits per plant.

BRINJAL

NAME: Brinjal (Kathirikkai)

SCI.NAME: Solanum melongena

NATIVE: This crop is majorly cultivated in Krishnagiri, Kanyakumari, Namakkal, Nagapattinam, Ramanathapuram, Ranipet, Vellore, Mayiladuthurai and Selam districts.

ORIGIN: This crop originated from India.

DESCRIPTION:

SOIL TYPE: Brinjal is a hardy crop and is cultivated under a wide range of soils. Since a long duration crop with high yield, well -drained and fertile soil is preferred for the crop. Crops grown in sandy soils yield early and those grown in clayey soils yield more. Ideal pH for cultivation of crops is 5.5 - 6.6.

NUTRIENT VALUE: Brinjal being a long duration crop, requires a good number of manures and fertilizers for high yield. The nutrient requirement for varieties is 100:50:50 kg NPK/ha and for hybrids it is 200:75:75 kg NPK/ha.

GROWTH TIME: Brinjal seeds germinate in 7 to 14 days, depending on the heat, moisture provided, and moisture content and age of the seed. Brinjal is a warm-season crop and requires relatively high temperatures for optimum growth 25-32°C during the day and 21-27°C at night.

POTENTIAL DISEASES:

FUNGI : Cercospora leaf spot, Colletotrichum fruit rot, Damping-off, Early blight, Phomopsis fruit rot, Powdery mildew, Verticillium wilt.

PHENOTYPIC OUTPUT: The brinjal is a much branched perennial usually grown as an annual under cultivation. It is characterised by a bush, indeterminate erect plant, attaining a height of 0.5- 1.5 m. and some plants develop spines.

CULTIVATION STYLE: Brinjal is a hardy crop and is cultivated under a wide range of soils. Since a long duration crop with high yield, well -drained and fertile soil is preferred for the crop. Crops grown in sandy soils yield early and those grown in clayey soils yield more. Ideal pH for cultivation of crops is 5.5 - 6.6.

BANANA

NAME: Banana (VAZHAIPAZHAM)

SCI.NAME: Musa

NATIVE: This crop is majorly grown in Coimbatore, Erode, Thoothukudi, Tirunelveli, Trichy, Vellore, Kanyakumari, Karur, Krishnagiri, Namakkal, Pudukkottai, Nagapattinam, Dharmapuri, RAMA NATHAPURAM, Sivagangai, Theni, Ariyalur, Nilgiris, Mayiladuthurai and Ranipet.

ORIGIN: The origin of this crop is placed in Southeast Asia

DESCRIPTION:

SOIL TYPE: Deep, rich loamy soil with pH between 6-7.5 are most preferred for banana cultivation. Ill drained, poorly aerated and nutritionally deficient soils are not suitable for bananas. Saline solid, calcareous soil is not suitable for Banana cultivation.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:01:02 NPK kg/ha.

GROWTH TIME: Under optimal growing conditions (temperature, water, light, nutrients, soil), a new leaf emerges every 6-8 days. If the plant has optimum conditions, the time from the first leaf to the last leaf will be **245 to 320 days (8 to 11 months)**.

POTENTIAL DISEASES:

FUNGI : Banana speckle, Cigar end rot, Cordana leaf spot, fusarium wilt, Rhizome rot, Yellow sigatoka.

INSECTS: Anthracnose.

PHENOTYPIC OUTPUT: The banana is a tree-like perennial herb. It is an herb because it does not have woody tissues and the fruit-bearing stem dies down after the growing season. It is a perennial because suckers, shoots arising from lateral buds on the rhizome, take over and develop into fruit-bearing stems.

CULTIVATION STYLE: Deep, rich loamy soil with pH between 6.5 – 7.5 is most preferred for banana cultivation. Soil for bananas should have good drainage, adequate fertility and moisture.

CASHEWNUT

NAME: Cashewnut

SCIENTIFIC NAME: *Anacardium occidentale*

NATIVE: It is mostly grown in Ariyalur, Cuddalore, Pudukkottai, Theni, Villupuram, Nagapattinam, Sivagangai, Kanyakumari, Tirunelveli, Thenkasi and Mayiladuthurai.

ORIGIN: It is originated in Brazil

DESCRIPTION

SOIL TYPE: It grows up well in all soils. Red sandy loam is best suited. Plains as well as hill slopes upto 600 - 700 feet elevation are suitable.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME: Assuming an average yield of 5 to 10 kg nuts per tree, the present fertilizer recommendation is to apply 550g N(1200 g urea), 200g P2O5(1250g super phosphate) and 300g K2O (500g muriate of potash) annually in two split doses, first in pre-monsoon i.e., May-June and the second dose in post-monsoon i.e., October-November when there is optimum moisture in the soil. For optimum cultivation it should be grown between June-December.

POTENTIAL DISEASES:

FUNGI : Die back

INSECTS: Anthracnose.

PHENOTYPIC OUTPUT: The leathery leaves are spirally arranged and elliptical in shape. The curved fruit, which is not a true nut, is shaped like a large thick bean and can reach more than 2.5 cm (1 inch) long. It appears as though one of its ends has been forcibly sunk into a pear-shaped swollen stem (hypocarp), called the cashew apple.

CULTIVATION STYLE: The land should be ploughed thoroughly and levelled, and soil trenches should be dug across the contours. Remove any dead trees, weeds, and dried branches. In the regular planting method, it requires around 200 plants/ha whereas in high density planting, 500(Spacing 5m X 4m) plants/ha is recommended. High density plantation definitely yields more in the same area due to greater number of plants.

CARROT

NAME: Carrot

SCIENTIFIC NAME: *Daucus Carota*

NATIVE: It is generally grown in Nilgiris, Dindigul, Krishnagiri.

ORIGIN: It originated from Iran.

DESCRIPTION:

SOIL TYPE: Carrot is a cool season crop and will develop a good colour when grown at 15°C to 20°C. The crop needs deep loose loamy soil. It requires a pH ranging from 6.0 to 7.0 for higher production.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME: In hill stations it can be grown throughout the year. In the plains it can be grown during August.

POTENTIAL DISEASES:

FUNGI: Cercospora Leaf Spot, Sclerotinia Rot.

BACTERIAL: Bacterial Blight, Bacterial Soft Rot

PHENOTYPIC OUTPUT: carrot, (*Daucus carota*), herbaceous, generally biennial plant of the Apiaceae family that produces an edible taproot. Among common varieties root shapes range from globular to long, with lower ends blunt to pointed. Besides the orange-coloured roots, white-, yellow-, and purple-fleshed varieties are known.

CULTIVATION STYLE: In hills, the field should be prepared to a fine tilth and form raised beds of 15cm height, one metre breadth and convenient length. While in plains, two ploughings are given and ridges and furrows are made at 30cm spacing. Once in five days, irrigation should be given. During drought period, to prevent excessive water loss during sunny days and to improve germination of the seeds. It should be kept in mind that after giving irrigation in the evening, beds should be covered with wet gunny bags.

MILLET

NAME: Millet (THINAI)

SCIENTIFIC NAME: *Pennisetum glaucum*

NATIVE: This crop is mainly cultivated in Coimbatore, Erode, Salem, Tirunelveli, Thiruvallur, Virudhunagar, Krishnagiri, Theni, Thenkasi, Tirupattur.

ORIGIN: Native to highlands of East Africa

DESCRIPTION:

SOIL TYPE: Best soils are alluvial, loamy and sandy soil with good drainage.

NUTRIENT VALUE:

- If soil test recommendation is not available follow the blanket recommendation 70:35:35 kg N, P2O5, K2O/ ha for all varieties.
- For hybrids, apply 80 kg N, 40 kg P2O5 and 40 kg K2O per ha.

GROWTH TIME: It is a warm season grass with a growing season of 60–100 days.

Irrigated in February-March and rainfed in September-October.

POTENTIAL DISEASES:

FUNGI : Cercospora Leaf Spot, Millet Downy Mildew, Ergot, Rust, Smut

BACTERIAL: Bacterial Blight, Bacterial Soft Rot.

PHENOTYPIC OUTPUT: Millets are typically annuals and range in height from 30 to 130 cm (1 to 4 feet), with the exception of pearl millet (*Pennisetum glaucum*), which has stalks 1.5 to 3 metres (5 to 10 feet) tall and about 2.5 cm (1 inch) thick.

CULTIVATION STYLE: Millets were probably first cultivated in Asia more than 4,000 years ago, and they were major grains in Europe during the Middle Ages. Millet grains are high in carbohydrates, with protein content varying from 6 to 11 percent and fat varying from 1.5 to 5 percent. They are somewhat strong in taste and are mainly consumed in flatbreads and porridges or prepared and eaten much like rice.

GRAPES

NAME: Grapes (THIRATCHAI)

SCIENTIFIC NAME: Vitis

NATIVE: It is generally grown in Theni, Coimbatore, Dindigul, Dharmapuri, Krishnagiri

ORIGIN: The Middle East is generally described as the homeland of grapes.

DESCRIPTION:

SOIL TYPE: The crop performs best in well-drained rich loamy soil with a pH of 6.5 - 7.0 with low water table with EC less than 1.0. Soil depth should be at least 1 m.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:02 NPK kg/ha.

GROWTH TIME: Grape is harvested almost all the year round. If not all the varieties, one or the other variety is always available at any given time of the year. However, in Thompson Seedless and its clones, major part of the produce is harvested during March-April from the hot tropical region contributing to more than 70% of the total harvest

POTENTIAL DISEASES:

FUNGI : Powdery Mildew, Downy Mildew

INSECTS: Anthracnose.

PHENOTYPIC OUTPUT: Grapevine System of a mature grapevine consists of a woody framework of older roots from which permanent roots arise and grow either horizontally or vertically.

CULTIVATION STYLE: The land is prepared by ploughing it twice and harrowing it thrice. Pits of 90 cm x 90 cm x 90 cm are dug and filled with soil and well decomposed FYM/Compost @ 55 t/ha. The pits are then irrigated to allow the soil to settle. Rectangular system of planting is adopted for growing grapes.

PAPAYA

NAME: Papaya (PAPPAALI)

SCIENTIFIC NAME: *Carica papaya*

NATIVE: It is generally grown in Coimbatore, Madurai, Dindigul, Tirunelveli.

ORIGIN: It originated in Southern Mexico.

DESCRIPTION:

SOIL TYPE: It is a tropical fruit and grows well in regions where summer temperature ranges from 35°C - 38°C.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME: Papaya is planted during spring (February-March), monsoon (June-July) and autumn (October-November).

POTENTIAL DISEASES:

FUNGI : Powdery Mildew

BACTERIA: Foot rot of papaya

VIRUS: Papaya ringspot disease, Papaya mosaic disease, Papaya leaf curl disease

INSECTS: Anthracnose.

IPM for papaya

PHENOTYPIC OUTPUT: Papaya grows to a height of 7.5 m, glabrous, leaves to 0.6 m across, deeply palmately 7 lobed, the lobes pinnately lobed, flowers yellowish, to 2.5 cm long or more, male flowers slender, long-tubed, long-peduncled, axillary racemes to 0.9 m long, female flowers, broader, solitary or few together, on short peduncles, male plants sometimes bearing a few female or bisexual flowers, flower elongate to globose with central cavity, greenish yellow to orange, to 50 cm long with thick yellow or orange flesh, seeds many, black.

CULTIVATION STYLE: The seedling is planted in pits of 60X60X60 cm. In the summer months, the pits are dug about a fortnight before planting. The pits are filled with topsoil along with 20kg of farmyard manure, neem cake and bone meal. Tall and vigorous varieties are planted at greater spacing while medium and dwarf ones at closer spacing.

GROUND NUT

NAME: GROUNDNUT (VERKADALAI)

SCI.NAME: *Arachis hypogaea*

NATIVE: Groundnut is mainly grown in Kallakurichi, Salem, Dindigul, Tiruvannamalai, Thanjavur, Perambalur, Vellore, Cuddalore, Krishnagiri, Pudukottai, Nagapattinam, Dharmapuri, Ramanathapuram, Sivagangai, Ariyalur, Thenkasi, Tirupattur and Chengalpattu.

ORIGIN: It originates in Mesoamerica and South America

DESCRIPTION:

SOIL TYPE: Groundnuts grow best in light textured sandy loam soils with neutral pH. Optimum temperature for their growth and development ranges from 28 to 30 °C; the crop requires about 500-600 mm of well distributed rainfall. The main yield limiting factors in semiarid regions are drought and high temperature stress.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:02:03 NPK kg/ha.

GROWTH TIME: Summer groundnut varieties require 110-120 days for maturity, which matures within 90-100 days in kharif season. The reason for delay in maturity during summer season is due to the fact that in summer it requires 10 to 15 days for its germination as compared to 4-5 days for germination in kharif season.

POTENTIAL DISEASES:

FUNGI : Tikka leaf spots, Early leaf spot, Late leaf spot, Rust, Root rot, Collar rot

VIRUS: Rosette, Groundnut bud necrosis disease

PHENOTYPIC OUTPUT: Peanut is an annual herbaceous plant growing to a height of 30 to 50 cm. The peanut plant can be erected or prostrated with a well developed taproot and many lateral roots and nodules. The leaves are opposite and pinnate with four leaflets; each leaflet is 1 to 7 cm long and 1 to 3 cm across.

CULTIVATION STYLE: Groundnut is raised mostly as a rainfed kharif crop, being sown from May to June, depending on the monsoon rains. It is sown as late as August or early September. As an irrigated crop it is grown to a limited extent between January and March and between May and July.

RAGI

NAME: RAGI

SCIENTIFIC NAME: Eleusine coracana

NATIVE: This Crop is mainly cultivated in Krishnagiri, Dharmapuri, Salem, Erode, Vellore, Cuddalore, Chennai, Tirupattur and Ranipet.

ORIGIN: East Africa

DESCRIPTION:

SOIL TYPE: Ragi is cultivated on a variety of soils ranging from rich loam to poor shallow upland soils. It prefers porous and well drained loam to light red loam and sandy loam soils of good fertility but reasonable water holding capacity. It can tolerate some water logging.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:01:01 NPK kg/ha.

GROWTH TIME: Ragi may be grown as a hot weather crop, from May to September, using long duration varieties and as a cold season crop, from November and December, using early types. Ragi matures 3-5 months after sowing, depending on variety, season and soil properties. Rainfed crops are cut close to ground, stalks are allowed to wither for a day or two in the field, and then bundled and stacked for about 2 months before threshing.

POTENTIAL DISEASE:

FUNGI : Blast

VIRUS: Mosaic

PHENOTYPIC OUTPUT: It is borne on a long peduncle. The panicle consists of a variable number of spikes ranging from 3 to 20 arranged in a bird's foot style. It resembles fingers on hand, hence its common name is finger millet and with an odd one a little lower down the whorl and called the thumb.

CULTIVATION STYLE: Ragi is monocropped in India under irrigation or transplantation. Rainfed it is mostly intercropped with cereals, castor bean, niger, groundnut and pulses. The most common subsidiary crops grown with ragi are fieldbean (*Lablab purpureus*), pigeon pea (*Cajanus cajan*), cowpea (*Vigna sinensis*), and niger (*Guizotia abyssinica*). With groundnuts, ragi is the subsidiary crop. Liberal manure, mainly sheep and cattle, is applied. Green manures such as cowpeas, sunn hemp, artificial manures and oil cakes, have been used on both irrigated and unirrigated crops. Ragi is chopped and weeded at intervals of 14 days or so. The number and frequency of irrigations varies with seasonal conditions.

BHENDI(LADY'S FINGER)

NAME: Bhendi (Lady's Finger, Vendaikai)

SCIENTIFIC NAME: *Abelmoschus esculentus*

NATIVE: It is generally grown in Vellore, Salem, Dharmapuri, Dindigul, Coimbatore, Kanyakumari, Trichy, Namakkal, Nagapattinam, Ramanathapuram, Ranipet and Chengalpattu.

ORIGIN: It is originated in Duchy of Savoy

DESCRIPTION:

SOIL TYPE: It is adaptable to a wide range of soils from sandy loam to clayey loam. It requires soil high in organic matter with a pH between 5.8 to 6.8.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME: Planting can be done during June - August and February. Harvesting can be done 45 days after planting. Fruits are harvested in a tender stage at 1 – 2 days intervals.

POTENTIAL DISEASES:

FUNGI : Charcoal rot, Fusarium Wilt, Powdery mildew, Southern blight, White mould

VIRUS: Enation leaf curl disease, Yellow Vein Mosaic Disease

INSECTS: Aphids, Armyworms, Corn earworm, Cucumber beetles, Loopers, Thrips.

PHENOTYPIC OUTPUT: Okra leaves are heart-shaped and three- to five-lobed. The flowers are yellow with a crimson centre. The fruit, or pod, hairy at the base, is a tapering 10-angled capsule 10–25 cm (4–10 inches) in length (except in the dwarf varieties) that contains numerous oval dark-coloured seeds.

CULTIVATION STYLE: Okra is typically propagated from seed. Soaking seeds in water overnight prior to planting helps the plants to germinate. Seeds are planted in rows spaced 0.65-1.0m (26-40 in) apart. It is generally planted at a rate of 10lb per acre, but this quantity is vastly reduced by the use of precision planting methods. Seedlings are thinned to a final spacing of 15.0-22.5 cm (6-9 in) when they are 4-6 weeks old to produce the final plant stand.

BAMBOO

NAME: Bamboo (MOONGIL)

SCIENTIFIC NAME: Bambusoideae

NATIVE: It is generally grown in Salem, Thanjavur, Trichy, Hosur

ORIGIN: It originated in China.

DESCRIPTION

SOIL TYPE: Bamboo thrives in loamy, well-drained soil. This type of soil combines sand, silt, and clay in roughly equal amounts. It appreciates moderately acidic soil with a pH range of 4.5 – 6.0.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME: The harvesting can be started from the fifth year onwards. In case of commercial farming, harvesting can be done from the sixth year.

POTENTIAL DISEASES:

FUNGI : Fungal spots, Sooty mold, Rot issues

VIRUS: Bamboo Mosaic Virus

PHENOTYPIC OUTPUT: Bamboo is a complex, woody stemmed perennial grass belonging to the family Poaceae. The portion of bamboo below the ground level is called rhizome, which

forms the vital source for its perennial growth. Roots are produced by the rhizome and also extend up to the lower nodes of the stems that are below the soil

CULTIVATION STYLE: The bamboos are propagated through the culm's cuttings or rhizomes. They can also be propagated through seeds which is rare. Bamboo seedlings are basically raised on nursery beds and for a year they are allowed to grow on poly pots. Later the seedling is transferred into the main field. In the rhizome planting method, culm of 1 year along with roots should be dug and cut into 1 metre size and be planted in the rainy season.

POTATO

NAME:POTATO (URULAIKIZHANGU)

SCIENTIFIC NAME:Solanum tuberosum

NATIVE: It is cultivated usually in Dindigul, Nilgiris, Krishnagiri, Erode, Dharmapuri.

ORIGIN: It originated Peruvian-Bolivian Andes

DESCRIPTION:

SOIL TYPE:Potatoes grow best in well-drained, sandy soil. A poorly drained soil is more likely to produce diseased tubers. Have your soil tested. The ideal soil pH level for potatoes is somewhat acidic, between 6 and 6.5, but they will tolerate soil with pH as low as 5.

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME:The time of harvest is very important for potatoes. The development of tubers continues till vines die. The main crop is ready for harvest within 75-120 days of planting depending upon the area, soil type and variety sown.

POTENTIAL DISEASE:

FUNGI : Septoria leaf spot, Early blight, Late blight, Black scurf/ canker,

BACTERIA: Bacterial wilt, Common scab

VIRUS: Viral disease

VIROID: Potato Spindle Tuber

PHENOTYPIC OUTPUT: Potato tubers are highly variable in shape and colour. Tuber shapes are of four types: compressed, round, oval and long. Potato skin colour varies from yellow to pink or purple

CULTIVATION STYLE: Potatoes are best grown in rows. To begin with, dig a trench that is 6-8 inches deep. Plant each piece of potato (cut side down, with the eyes pointing up) every 12-15 inches, with the rows spaced 3 feet apart. If your space is limited or if you would like to grow only baby potatoes, you can decrease the spacing between plants. To begin with, only fill the trench in with 4 inches of soil. Let the plants start to grow and then continue to fill in the trench and even mound the soil around the plants as they continue to grow. Prior to planting, always make sure to cultivate the soil one last time. This will remove any weeds and will loosen the soil and allow the plants to become established more quickly.

BITTER GOURD

NAME: BITTER GOURD (PAGARKAI)

SCIENTIFIC NAME: Momordica charantia

NATIVE: It is mainly cultivated in Coimbatore, Dindigul, Cuddalore, Thoothukudi, Tiruppur, Ramanathapuram and Ranipet.

ORIGIN: It originates from tropical Asia, particularly in the Indo Burma region.

DESCRIPTION:

SOIL TYPE: Bitter gourd can be grown on well drained sandy to sandy loam; medium black soils rich in organic matter. Alluvial soil along the river beds is also good for production of bitter gourds. A pH range of 6.0- 7.0 is considered as optimum.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:02:02 NPK kg/ha.

GROWTH TIME: Bitter gourd can be harvested in 5 to 6 months after sowing seeds. Bitter gourd should be harvested before it starts to turn yellow. Size of the bitter gourd is about 3 to 6 inches to harvest. After blooming, fruits will be ready in the next 3 to 4 weeks.

POTENTIAL DISEASE:

FUNGI : Powdery Mildew, Downy mildew, Damping-off

BACTERIA: Angular leaf spot

VIRUS: Papaya ringspot disease, Papaya mosaic disease, Papaya leaf curl disease

INSECTS: Anthracnose.

PHENOTYPIC OUTPUT: Morphologically, bitter gourd from Indonesia has an external color light green with cylindrical fruit shape. The bitter gourd origin from India has green to dark green with c Spindle fruit shape.

CULTIVATION STYLE: Form the raised beds of 120cm width (120 cm) and spread the lateral tubes in the centre of each bed. Irrigation is done in the beds by operating the drip system continuously for 8-12 hrs. Spray pre-emergence herbicide like Pendimethalin @ 1 Kg a.i/ha just before planting. Planting or sowing is done at the holes made at 2 m distance.

CAULIFLOWER

NAME: Cauliflower

SCIENTIFIC NAME: Brassica Oleracea var. botrytis

NATIVE: It is generally grown in Dindigul, Theni, Coimbatore, Tiruppur.

ORIGIN: It originated in Asia around the Mediterranean Sea.

DESCRIPTION:

SOIL TYPE: It requires a cool moist climate. The early varieties may tolerate higher temperatures and long days. Deep loamy soils with a pH range of 5.5 to 6.6 with higher organic matter content and good drainage are suited for cauliflower cultivation.

NUTRIENT VALUE: Apply NPK fertiliser as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME: This can be grown in plains during September to February. Gap filling is done after 20 days of planting to maintain the population and uniform growth. Hoeing and weeding can be done on the 30th and 45th day of planting. Avoid deep hoeing as it is a shallow rooted crop.

POTENTIAL DISEASES:

FUNGI : Powdery Mildew, Downy mildew, Damping-off, Club root of crucifers,
Alternaria leaf spots, White rust

BACTERIA: Angular leaf spot, Black rot

IPM for Cauliflower

PHENOTYPIC OUTPUT: Cauliflowers are annual plants that reach about 0.5 metre (1.5 feet) tall and bear large rounded leaves that resemble collards (*Brassica oleracea*, variety *acephala*). As desired for food, the terminal cluster forms a firm, succulent "curd," or head, that is an immature inflorescence (cluster of flowers). The broad leaves extend far above the curd and are often tied together before harvest to shade the curd and prevent discoloration.

CULTIVATION STYLE: 250 g of hybrid cauliflower seed is required for the production of seedlings for 1 ha. Treat the seeds in hot water @ 50°C for 30 minutes. 25g of Azospirillum is required for the seed treatment of 250g cauliflower seeds. Sow the seeds in protrays @ 1 seed per cell. Cover the seeds with cocopeat, keep the tray one over the other (8-10Nos) and cover with a polythene sheet for 5 days or till germination starts. After 5 days when the seeds are germinated, arrange the portraits on the raised beds inside the shade net nursery. Water the tray by rose can everyday (twice / day) .The cauliflower seedlings are ready for transplanting in 25 day.

ARECANUT

NAME:ARECANUT (PAAKU)

SCIENTIFIC NAME:Areca catechu

NATIVE:It is mainly cultivated in Salem, Coimbatore, Namakkal ,Erode, Nilgiris.

ORIGIN:It Originated in Malaysia and Philippines

DESCRIPTION:

SOIL TYPE:The largest area under the crop is found in gravelly laterite soils of red clay type. It can also be grown on fertile clay loam soils. Sticky clay, sandy, alluvial, brackish and calcareous soils are not suitable for arecanut cultivation.

NUTRIENT VALUE:Apply NPK fertiliser as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME:It is a cross pollinated crop and fruit set normally varies from 12.0 to 40.0 percent and the time taken from full bloom to maturity of the fruit ranges from 35 to 47

weeks. Climate and Soil: The arecanut palm is capable of growing under a variety of climatic and soil conditions. It is mainly grown during October-January

POTENTIAL DISEASE:

FUNGI : Fruit rot, bud rot, Die back

BACTERIA: Foot rot

VIRUS: Yellow leaf disease,

IPM for Arecanut.

PHENOTYPIC OUTPUT: Areca nuts are about 2.5 cm in length, bluntly rounded, conical in shape and 2–3 cm wide at the base. The testa is brown and marked with a network of small depressed lines. The ruminate endosperm is opal-white. Patches of a silvery coat, the inner layer of the pericarp, occasionally adhere to the testa. The deep-brown testa is marked with a network of depressed fissures; the colour of the testa is due to the presence of tannin. In the centre basal part of the endosperm, the small embryo is situated and an external pale area indicates its position. The seed is very hard, has a faint cheese-like odour when broken and an astringent, acrid taste.

CULTIVATION STYLE:

Spacing: This depends on the rooting pattern of the crop along with the fertility and depth of the soil. The studies conducted at different places with different spacing have revealed that a spacing of 2.7 m X 2.7 m is optimum for arecanut.

Depth of planting: In well-drained soils and in the fields where proper drainage can be provided, deep planting is preferred. Deeper planting provides a firm anchorage and larger volume of space for root development. In areas where the water table is high, shallow planting is preferred. Thus in well-drained soils, planting at a depth of 90 cm is recommended and in heavy soils planting at a depth of 60 cm is recommended.

BEANS -----done/

NAME: Beans

SCIENTIFIC NAME: Phaseolus

NATIVE: It is generally grown in Dindigul, Krishnagiri, Vellore, Theni, Erode, Nilgris, Ranipet.

ORIGIN: It originated as a wild vine in Central and South America.

DESCRIPTION:

SOIL TYPE: A well drained loamy soil with pH range of 5.5-6.0 with cool climate is suited for French bean cultivation.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:01 NPK kg/ha.

GROWTH TIME: Best time to grow in the hills is from February-March. To grow in plains, it should be grown in October-November.

POTENTIAL DISEASES:

FUNGI : Alternaria leaf spot, Anthracnose, Bean rust, Black root rot, Fusarium root rot, white mold.

BACTERIA: Bacterial blight, Bacterial brown spot, Halo blight

VIRUS: Mosaic

INSECTS: Aphids, Armyworms, Corn earworm, Cutworms, Leafminers, Loopers, Mexican bean beetles, Stinkbugs.

PHENOTYPIC OUTPUT: The leaves are broad at the blade and are attached to the stem by means of stalk-like petiole. The leaf may be simple which has only one blade per petiole or a compound one which has three blades per petiole.

CULTIVATION STYLE: While cultivation in hills, soil should be dug thoroughly and form beds of convenient size. Sow the seeds (2 seeds/hill) in lines or in beds at a spacing of 30 x 15 cm. If cultivation in plains, after two ploughing, form ridges and furrows. In plains, sow the seeds (2 seeds/hill) in the sides of the ridges at a spacing of 45 x 30 cm.

COCOA

NAME:COCOA

SCIENTIFIC NAME:*Theobroma cacao*

NATIVE:It is mainly cultivated in Kanyakumari, Dindigul, Tirunelveli, Pudukottai, Coimbatore.

ORIGIN:It originates from upper Amazon basin region (Brazil, Colombia, and Peru)

DESCRIPTION:

SOIL TYPE:Cocoa requires deep and well drained soils. Poorly drained soil affects the growth of plants. Majority of area under Cocoa cultivation is on clay loam and sandy loam soil. It grows well in the pH range of 6.5 to 7.0.

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 28:01:06 NPK kg/ha.

GROWTH TIME:Cocoa bean production seasons are between April and early December with a peak in September.Cocoa can be grown up to 300 m above mean sea level. It requires a minimum of 90-100 mm rainfall per month with an annual rainfall of 1500-2000 mm.

POTENTIAL DISEASES:

FUNGI: Black Pod, Frosty Pod Rot, Witches Broom

VIRUS: Swollen Shoot Virus, Vascular Streak Dieback

PHENOTYPIC OUTPUT:The most frequent morphological states of the traditional Cuban cacao plants examined in this study were as follows: in seeds, flat transversal sections, intensely violet color and slightly acidic flavor; in fruits, yellow color with anthocyanin lacking, ridges distributed in five pairs.

CULTIVATION STYLE:In cultivating cacao, plants are first grown from seeds or cuttings and then transplanted. Other tree crops such as banana, palm, or rubber are often planted with the cacao to provide shade and wind protection for the young trees. Floral buds are removed from the trees until they are five years old.Commercial cocoa bean crop yields may vary from under 100 to over 3,000 kg per hectare (110 to 2,700 pounds per acre), with the world average being between 340 and 450 kg per hectare (300 and 400 pounds per acre).

GUAVA

NAME:GUAVA (KOYYAA)

SCIENTIFIC NAME:*Psidium guajava*

NATIVE:It usually grows in Dindigul, Madurai, Vellore, Virudhunagar, Cuddalore, Namakkal, Pudukkottai, Ramanathapuram, Ariyalur, Tiruhelvelli and Mayiladuthurai.

ORIGIN:It originates from southern Mexico into or through Central America.

DESCRIPTION:

SOIL TYPE:It can be grown on wide varieties of soils including shallow, medium black and alkaline soil. However, it grows successfully on well-drained soils with at least 0.5 to 1m depth. The pH should be between 5.5 to 7.5. Guava is successfully grown under tropical and subtropical climate.

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 10:07:07 NPK kg/ha.

GROWTH TIME:While a guava can be grown from seed, it will not be true to the parent and may take up to 8 years to produce fruit. Trees are more commonly propagated via cutting and layering. In this case, guava tree fruiting should occur when the tree is 3-4 years of age.

POTENTIAL DISEASES:

Fungi: guava wilt,fruit rot,stem canker and dry fruit rot ,styler end rot

Bacterial:

Dieback,Anthracnose Fruit canker

Viral:

Wilt

PHENOTYPIC OUTPUT:Guava (*Psidium guajava* L.) is a small branched tree or shrub up to 7–10 m tall. The root system is superficial. The trunk is woody, hard, with a characteristic smooth, pale mottled bark that peels off in thin flakes, after the trunk has grown to about 20 cm in diameter.

CULTIVATION STYLE: Guava Fruit is successfully grown under both tropical and subtropical climates. It can grow from sea level to an altitude of about 1500 m (5000'). Annual rainfall of below 1000 mm (40') between June and September is the best for the growth of guava plants. Young plants are susceptible to drought and cold conditions.

PINEAPPLE

NAME:PINEAPPLE (ANNASI)

SCIENTIFIC NAME:*Ananas comosus*

NATIVE:It is usually cultivated at Namakkal, Dindigul, Kanyakumari.

ORIGIN:It originates at southern Brazil and Paraguay

DESCRIPTION:

SOIL TYPE:The best soils for pineapple production are non-compacted, well-aerated and free-draining loams, sandy loams and clay loams with no heavy clay or rock within one metre of the surface

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 14:03:10 NPK kg/ha.

GROWTH TIME:Pineapple plants flower 12-15 months after planting and the fruits become ready 15-18 months after planting depending upon the variety, time of planting, type and size of plant material used and prevailing temperature during the fruit development.

POTENTIAL DISEASES:

Phytophthora heart (top) rot,Phytophthora root rot,Base (butt) rot,Fruitlet core rot (green eye),Fusariosis,Green fruit rot,Inter fruitlet corking,Leathery pocket.

PHENOTYPIC OUTPUT:The plant is a short herbaceous perennial with 30-80 trough-shaped and pointed leaves 30–100 cm long, surrounding a thick stem. This shape of the plant has to drive water onto the stem. This water might be absorbed by axil

CULTIVATION STYLE:For commercial viability, high-density cultivation is recommended. Planting density of 63,400 plants/ha. (22.5 x 60 x 75 cm.) is ideal for subtropical and mildly humid conditions, whereas for hot and humid conditions a plant density of 53,300 plants/ha. spaced at 25 cm. from plant to plant within a row, 60 cm. from row to row and 90 cm. from trench to trench (25 cm x 60 cm x 90 cm.) provides a high yield. In rainfed, high

fertile and hilly areas in northeastern states, a somewhat lower density of 31,000 plants/ha. is recommended.

SAPOTA

NAME:SAPOTA (SAPOTA)

SCIENTIFIC NAME:Manilkara zapota

NATIVE:It is cultivated in many parts of Dindigul, Coimbatore, Virudhunagar, Theni, Namakkal, Pudukkottai, Ramanathapuram, Tirunelveli.

ORIGIN:It originates from Mexico and other tropical countries of South America

DESCRIPTION:

SOIL TYPE:Alluvial, sandy loam, red laterite and medium black soils with good drainage are ideal for cultivation of sapota.

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:01:01 NPK kg/ha.

GROWTH TIME:Sapota takes 4-5 months from flowering to maturity of fruits. The fruits are hand picked or harvested with a special harvester which has a round ring with a net bag fixed onto a long bamboo. The crop bearing commences from fifth year..Under tropical climate sapota flowers throughout the year, with two main seasons i.e July-November and February-March. In sub-tropical conditions it also flowers twice in October- November and April-May.

POTENTIAL DISEASES:

Leaf spot,Sooty mould,Fasiation,Postharvest Diseases,IPM for Sapota

PHENOTYPIC OUTPUT:They are borne on slender stalks at the leaf bases. The fruit may be nearly round, oblate, oval, ellipsoidal, or conical; it varies from 2 to 4 in 5-10 cm in width. When immature it is hard, gummy and very astringent. Though smooth-skinned it is coated with a sandy brown scurf until fully ripe.

CULTIVATION STYLE:8 x 8 m (156 plants/ha) for conventional planting.Adopt high density planting at 8 x 4 m (312 plants / ha) for high productivity.Dig pits of 1 m x 1 m x 1 m size and fill up with topsoil mixed with 10 Kg of FYM, 1 Kg of neem cake . Plant the grafts at the centre of the pit with a ball of earth intact. The graft joint must be at least 15 cm above the ground level. After planting, stake the plants properly to avoid bending or damage to graft joints during heavy winds.Irrigate copiously immediately after planting and on the third day and once in 10 days afterwards till the graft establishes.

COFFEE

NAME: Coffee

SCIENTIFIC NAME: Coffea

NATIVE: It is generally grown in Dindigul, The Nilgiris, Salem, Theni, Coimbatore, Namakkal, Tirunelveli.

ORIGIN: It is originated in Ethiopian plateau

DESCRIPTION:

SOIL TYPE: Soil should be deep, friable, open textured rich in plant nutrients with plenty of humus and of slightly acidic nature (pH – 4.5 to 6.5)

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 10:07:10 NPK kg/ha.

GROWTH TIME: Best time to grow is from June-December. Harvest starts during November and harvesting extends up to February. Coffee fruits should be harvested as and when they become ripe. Coffee is just ripe when on gently squeezing the fruits the beans inside come out easily. Unripe fruits should be scrupulously sorted out before using the fruits for pulping. They may be dried separately as cherry.

POTENTIAL DISEASES:

- Rust, Brown leaf spot, Damping off/ collar rot, Die back or Anthranose, Black rot or koleroga, Root rot, Berry blotch.

PHENOTYPIC OUTPUT: It is a bipolar leaf structure, where two leaves grow from the stem opposite each other. The distance between leaf pairs and the stem is about 1 to 3 inches. The leaf pairs generally are at 90-degree rotation for each pair on the stem.

CULTIVATION STYLE: Selective felling may be done while retaining a number of desirable shade trees. Terracing should be done in deep slopy areas. After the summer showers, pits of 45 cm x 45 cm x 45 cm are dug at 1.25 - 2.5 m apart. The pits are left open for weathering and then filled and heaped for planting. At the time of filling, apply 500 g of rock phosphate per pit along with top soil. Planting is done along the contour in slopy areas. Pre-sowing seed treatment with *Azospirillum* and *Phosphobacterium* can be done. Seeds are sown in December - January in the bed 1.5 - 2.5 cm apart with the flat side down wards in regular rows. Then they are covered with a thin layer of fine soil and a layer of paddy straw. Water the

beds daily and protect from direct sunlight by an overhead pandal. Seeds germinate in about 4-5 days after which they are transplanted to a secondary nursery bed for raising ball or Bag nursery.

PEAS

NAME:PEAS (PATTANI)

SCIENTIFIC NAME:*Pisum sativum*

NATIVE:It is cultivated in many regions of Nilgiris, Dindigul.

ORIGIN:It originates from the Mediterranean region, and ancient remains dating to the late Neolithic Period have been found in the Middle East.

DESCRIPTION:

SOIL TYPE:Peas can be cultivated in a variety of soil types. However well drained, loose, friable and heavy soils with a pH range of 6.0-7.5 are considered as ideal. Light soils are preferred for cultivating early cultivars. Soils rich in organic matter promote excessive vegetative growth and poor pod development.

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 05:15:12 NPK kg/ha.

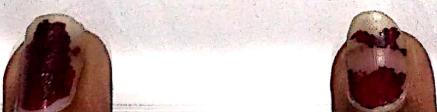
GROWTH TIME: In India ,usually Rabi season crop sowing begins from Oct to November mid in the plains. In the hills, it would be from the middle of March to May end. To get higher yields, sowing of seed during the 1st week of Nov is preferred.

POTENTIAL DISEASES:

- ascochyta blight,powdery mildew,downy mildew,bacterial blight

PHENOTYPIC OUTPUT:They are usually cylindrical, bulging while ripening, bare, with a short and curved rostellum. Pea seeds are spherical, smooth or wrinkled (marrow). Each seed consists of an embryo and the testa. Under the testa, there are two seed-lobes, which remain in the soil when seeds germinate.

CULTIVATION STYLE:Sowing has to be completed between the end of October and mid of November for plains and between mid of March till end of May for hills. Broadcasting methods can be used for sowing seeds. Spacing wise 30 X 5 cm is maintained for early varieties and 50 X 10 cm for late varieties. Seeds are to be sown at a depth of 3 cm under the soil. Irrigation is required before sowing of seeds for better germination. There is no need for pre-sowing irrigation in case soil has enough moisture in it. Once sowing is over, it requires a couple of more times of irrigation.



CARDAMOM

NAME:CARDAMOM (ELAKKAI)

SCIENTIFIC NAME:*Elettaria cardamomum*

NATIVE:It is cultivated in many parts of the Kanyakumari, Nilgiris, Virushunagar, Tirunevali,Dindigul, Theni, Coimbatore.

ORIGIN:Southern Asia mainly Southern India.

DESCRIPTION:

SOIL TYPE:Cardamom grows luxuriantly in forest loam soils, which are generally acidic in nature with a pH range of 5.5-6.5. Growth of cardamom is enhanced, when planted in humus rich soils with low to medium available phosphorus and medium to high available potassium.

NUTRIENT VALUE:Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:01:02 NPK kg/ha.

GROWTH TIME:Cardamom plants start bearing two or three years after planting suckers or seedlings, respectively. The capsules ripen within a period of 120-135 days after its formation. Harvesting period commences from June-July and continues till January-February in Kerala and Tamil Nadu.

POTENTIAL DISEASES:

'Katte disease' (mosaic or marble disease),Primary nursery leaf spot,Capsule rot/azhukal disease,Nursery leaf rot,Damping off /seedling rot,Clump rot or rhizome rot,Cardamom necrosis/nilgiri necrosis,Cardamom vein clearing or Kokke kandu.

PHENOTYPIC OUTPUT:Ovoid or oblong, apex slightly pointed and beak like. Base rounded and shows the remains of a stalk. Surface: Smooth or with thin longitudinal striations. Colour: Pale buff to pale greenish buff.

CULTIVATION STYLE:Cardamom is propagated mainly through seeds and also through suckers each consisting of at least one old and a young aerial shoot. Seedlings are normally raised in primary and secondary nurseries. Raised beds are prepared after digging the land to a depth of 30-45cm.



COCONUT

NAME: COCONUT (Thenkai)

SCIENTIFIC NAME: *Cocos nucifera*

NATIVE: It is cultivated in many parts of Coimbatore, Tiruppur, Thanjavur, Dindigul, Kanyakumari, Krishnagiri, Theni, Thoothukudi, Pudukkottai, Ramanathapuram, Sivagangai, Tirunelveli, Ranipet, Thenkasi.

ORIGIN: It originates at Island Southeast Asia

DESCRIPTION:

SOIL TYPE: soil types that support coconut in India are laterite, alluvial, red sandy loam, coastal sandy and reclaimed soils

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 2:01:04 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Coconuts become mature in about 12 months after the opening of the spathe. June - July, December – January. The planting can also be taken up in other seasons wherever irrigation and drainage facilities are available.

POTENTIAL DISEASES:

- Bud rot, Stem bleeding, Leaf rot, Tanjore wilt, Root (wilt), IPM for Coconut

PHENOTYPIC OUTPUT: Mature coconuts are ovoid or ellipsoid in shape, 30–45 cm (12–18 inches) in length and 15–20 cm (6–8 inches) in diameter. They have a thick fibrous husk surrounding the single-seeded nut. A hard shell encloses the embryo with its abundant endosperm, composed of both meat and liquid.

CULTIVATION STYLE: Coconut is propagated through seedlings raised from selected seed nuts. Generally, 9- to 12-month-old seedlings are used for planting. Select seedlings, which have 6-8 leaves and 10-12 cm collar girth when they are 9–12-month-old. Early splitting of leaves is another criterion in the selection of coconut seedlings.

POMEGRANATE

NAME: Pomegranate (MADHULAI)

SCIENTIFIC NAME: Punica granatum

NATIVE: It generally grows in Coimbatore, Erode, Tiruppur, Thirunalveli, Karur, Dindigul.

ORIGIN: It probably originated in Persia.

DESCRIPTION:

SOIL TYPE: It is grown in a wide range of soils, and it is drought resistant and tolerant to salinity and alkalinity. In deep loamy, it gives an excellent yield. Soil having a pH range between 6.5-7.5

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 20:19:39 NPK kg/ha.

GROWTH TIME: Pomegranate plants flower and provide fruits throughout the year in central and southern India. Depending on patterns of precipitation, flowering can be induced during June-July(mrig bahar), September-October(hasta bahar) and January-February(ambe bahar).

POTENTIAL DISEASES:

- Cercospora fruit spot, Leaf spot or Blight, Alternaria Fruit Spot.

PHENOTYPIC OUTPUT: The pomegranate is considered a shrub, which has abundant foliage, a height around 5m, which generally adapts to Mediterranean climates. The leaves are green, elongated. The flower is flared and consists of 5 to 8 bright orange petals.

CULTIVATION STYLE: Rooted cuttings or layers of 12 to 18 months age can be planted during June to December in pits of 60 cm x 60 cm x 60 cm at 2.5 to 3 m spacing either way. Irrigation is done at 4 days intervals. Fruits are born terminally on shoot growth emerging from mature wood. To promote new shoots on all sides annual pruning is done after harvest is completed during December by shortening past season shoots by removing one third of the shoot. Besides, dried, diseased and cross-cross branches and root suckers are removed. The tree is trained to get a single stem upto 60 cm with 3 or 4 scaffold branches. Thinning of flower clusters ensures better size of the fruit. Spraying liquid paraffin at 1 % concentration at 15 days interval twice during June reduces fruit cracking.

GINGER

NAME: Ginger (INJI)

SCIENTIFIC NAME: Zingiber officinale

NATIVE: It generally grows in Kanyakumari, Nilgiris and lower palani hills.

ORIGIN: It originated in southeastern Asia.

DESCRIPTION:

SOIL TYPE: A friable well drained loamy soil rich in humus with warm and humid conditions with 150 cm of annual rainfall are preferable. This crop is grown as an irrigated crop in humid zones from sea level to an altitude of 1500 metres.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 19:25:19 NPK kg/ha.

GROWTH TIME: It is grown best in May-June. The crop can be harvested after 8-9 months when leaves start yellowing and drying.

POTENTIAL DISEASES:

- Soft rot, Rhizome rot, Leaf rot.

PHENOTYPIC OUTPUT: The leafy stems of ginger grow about 1 metre (about 3 feet) high. The leaves are 15 to 30cm (6-12 inches) long, elongate. The flowers are in dense conelike spikes about 2.5cm (1inch) thick and 5-8 cm(2-3 inches) long that are composed of overlapping green bracts, which maybe edged with yellow.

CULTIVATION STYLE: After the summer rains, plough the land as fine tilth. In a deep, well ploughed field raise 1 meter width, 15cm height and enough length beds at 50 cm intervals. If irrigation facilities are available, raise a bar with 40 cm intervals. In Nematode and root rot disease affected areas, 40 days before planting, should steam soil cover beds with polythene. By doing this, the cultivation can be done without damage. Before sowing the seeds, 25 -30/ha FYM and 4 kg/ha Pseudomonas spread mixture on top of the beds. If spread 2t/ha neem cake powder, it protects from root rot disease. Then seed can be sown at a spacing of 20-25 cm. When planting a maximum depth of 5 cm should be transplanted. After planting, sand mulch should be done. From the date of sowing, depending on soil moisture will begin rising from 25 to 35 day.

TAMARIND

NAME: Tamarind (PULI)

SCIENTIFIC NAME: Tamarindus Indica

NATIVE: It is generally grown in Ariyalur, Chengalpattu, Chennai, Coimbatore, Cuddalore, Dharmapuri, Ramanathapuram, Tirunelveli, Ranipet.

ORIGIN: It originated in Madagascar.

DESCRIPTION

SOIL TYPE: Grown on a variety of soils ranging from poor degraded, eroded, gravelly, saline and alkaline soils. Productivity is higher in red loamy, deep well drained soils. The absolute maximum temperature varies from 36-47.50 C and the absolute minimum temperature varies from 0-17.50 C. Rainfall requirement – 750-1900 mm. Altitude – up to 100 m above MSL.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 04:03:05 NPK kg/ha.

GROWTH TIME: It is best grown in June-December. Plants start bearing from 4th year onwards and the economic yield will be achieved from 9th year onwards. Pods are harvested in March - April every year.

POTENTIAL DISEASES:

- Leaf spot, powdery mildews, sooty mould, stem disease, stem, root and wood rot, stem canker, a bark parasite and a bacterial leaf-spot.

PHENOTYPIC OUTPUT: The fruit is an indehiscent legume, sometimes called a pod, 12 to 15 cm (4+½ to 6 in) in length, with a hard, brown shell. The fruit has a fleshy, juicy, acidic pulp. It is mature when the flesh is coloured brown or reddish brown.

CULTIVATION STYLE: Fresh seeds are sown in nursery beds in March – April. Soaking of seeds in 10 per cent cow urine or in cow dung solution (500 g in 10 l of water) for 24 hours. Two-year-old seedlings are transplanted to the main field. The grafts should be planted in the pits of 1 m x 1 m x 1 m filled with FYM and topsoil. Add 50 g of Methyl parathion 1.3% dust in the pit. Immediately after planting, support the graft with stakes. Regular watering should be given once in seven days.

FENUGREEK -

NAME: Fenugreek(Vendayam)

SCIENTIFIC NAME: Cocos nucifera

NATIVE: Coimbatore, Salem

ORIGIN: native of South-eastern Europe and West Asia

DESCRIPTION:

SOIL TYPE: A rich well drained loamy soil is best suited for fenugreek cultivation

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 30:25:40 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: Fenugreek plant leaves will be ready to harvest within 30 to 40 days sowing. Cool and comparatively dry, frost-free climate. June - July and October - November

POTENTIAL DISEASE:

- Cercospora leaf spot, Charcoal rot, Powdery mildew, Downy mildew, Rust, Damp off, Fusarium wilt, Yellow mosaic disease

PHENOTYPIC OUTPUT: Fenugreek is an erect, smooth, herbaceous plant that can grow up to a height of 40-80 cm. It is tap rooted. Its stems are erect, up to 50 cm high, sometimes branched.

CULTIVATION STYLE: Prepare the main field to a fine tilth. Add FYM 20 - 25 t/ha before last ploughing. Form beds and channels of 3.5 x 1.5 m. Seeds are sown at a spacing of 20 X 15 cm. Spray pre-emergence herbicide Fluchloralin 700 ml in 500 lit of water per ha. First irrigation is given immediately after sowing, second on the third day and subsequently at 7 - 10 days intervals.

CORIANDER -

NAME:CORIANDER (KOTHAMALLI)

SCIENTIFIC NAME:*Coriandrum sativum*

NATIVE:It is grown in many parts of Thoothukudi, Virudhunagar, Ramanathapuram, Coimbatore, Namakkal, Pudukottai, Ariyalur.

ORIGIN:It originated in Italy.

DESCRIPTION:

SOIL TYPE:Loamy soil.cultivation soil should be clay in nature and the pH should be 6 – 8. Coriander performs well at a temperature range of 20 – 25 °C.

NUTRIENT VALUE:Apply NPK fertilizers as per soil test recommendations as far as possible.If soil test recommendation is not available follow the blanket recommendation of 01:04:02 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME:Coriander is sown from late March until early September. To achieve a constant supply of leaves through the Summer sow small amounts every 3 weeks. The best months for leaf production are late spring and Autumn. Coriander will grow best sown directly rather than grown in seed trays and transplanting.

POTENTIAL DISEASES:

- Powdery mildew,Wilt,Stem gall,Blight disease,Stem rot,Disease cycles,IPM for Coriander.

PHENOTYPIC OUTPUT:Coriander is native to regions spanning from Southern Europe and Northern Africa to Southwestern Asia. It is a soft plant growing to 50 cm (20 in) tall. The leaves are variable in shape, broadly lobed at the base of the plant, and slender and feathery higher on the flowering stems.

CULTIVATION STYLE:Prepare the main field to a fine tilth and form beds and channels (for irrigated crop). Sow the split seeds at a spacing of 20 x 15 cm. The seeds will germinate in about 8-15 days.Soak the seeds in water for 12 hours. Treat the seeds with Azospirillum @ 1.5 kg /ha for better crop establishment + Trichoderma viride @ 50 kg/ha to control wilt disease.

Pre-sowing seed hardening treatment with Potassium Dihydrogen Phosphate @ 10 g/lit of water for 16 hours is to be done for a rainfed crop.

- Prepare the main field to a fine tilth. - Add FYM 10 t/ha before last ploughing. - Form beds and channels (for irrigated crop). - Sow the split seeds at a spacing of 20 x 15 cm.

- Spray pre-emergence herbicide Fluchloralin 700 ml in 500 lit of water per ha.
seeds will germinate in about 8-15 days.

TURMERIC -

NAME: Turmeric

SCIENTIFIC NAME:

NATIVE: It is generally grown in Erode, Coimbatore, Salem, Namakkal, Pudukkottai, Dharmapuri, Ariyalur, Ranipet.

ORIGIN: It originated in Southern India and Indonesia.

DESCRIPTION

SOIL TYPE: A friable well drained red loamy soil in wet or garden lands under tropical conditions is ideal. It can be grown in regions receiving an annual rainfall of 1500 m.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 37:15:27 kg/ha.

GROWTH TIME: It is best grown in May-June. The plants will start lodging, yellowing and on crop maturity. The rhizomes are dug with spade or digging forks.

POTENTIAL DISEASES:

Leaf spot, Leaf blotch, Rhizome rot

PHENOTYPIC OUTPUT: Turmeric plants reach about 1metre (3.3 feet) in height and bear simple leaves with long petioles. The leaf emerges from the branching rhizomes that lie just below the soil surface. Older rhizomes are somewhat scaly and brown in colour, while young rhizomes are pale yellow to brown-orange.

CULTIVATION STYLE: Main field is ploughed four times with chisel and disc plough each time and cultivator twice. Ridges and furrows are formed at spacing of 45 cm (or) raised beds of 120 cm width are formed at an interval of 30 cm and the laterals are placed at the centre of each bed. The beds are wetted for 8-12 hours through drip irrigation depending upon soil moisture level.

NUTMEG -

NAME:NUTMEG (JATHIKAI)

SCIENTIFIC NAME:*Myristica*

NATIVE:It is grown in parts of Kanyakumari and Tirunelveli.

ORIGIN:It originates small cluster of islands in Indonesia, the Banda Islands

DESCRIPTION:

SOIL TYPE:Nutmeg thrives well in warm humid conditions in locations with an annual rainfall of 150 cm and more. It grows well up to about 1300 m above mean sea level. Areas with clay loam, sandy loam and red laterite soils are ideal for its growth.

NUTRIENT VALUE:Apply NPK fertilizers as per soil test recommendations as far as possible.If soil test recommendation is not available follow the blanket recommendation of 47:47:30 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME:The female nutmeg tree starts fruiting from the sixth year, though the peak period is reached after 20 years. The fruits are ready for harvest in about 9 months after flowering. The peak harvesting season is during June-August. The fruits are ripe and ready for harvesting when the pericarp splits open

POTENTIAL DISEASES:

- **FUNGAL:**LEAF SPOT (SHOT HOLE) (*COLLETOTRICHUM GLOEOSPORIOIDES*)
- **PESTS:** COCOA WEEVIL (*ARAECERUS FASCICULATUS*)

PHENOTYPIC OUTPUT:Nutmeg is the kernel consisting of outer and inner perisperm, endosperm and embryo; it has an ovoid or broadly elongated shape with a size of 2 to 3 cm length and 1.5 to 2 cm wide. The kernels are greyish brown in colour, with numerous reddish brown spots on them.

CULTIVATION STYLE:Planting in the main field is done at the beginning of the rainy season. Pits of 0.75 m x 0.75 m x 0.75 m size are dug at a spacing of 9 m x 9 m and filled with organic manure and soil about 15 days earlier to planting. For planting plagiotropic grafts, a

spacing of 5 m x 5 m has to be adopted. A male graft has to be planted for every 20 female grafts in the field.

The plants should be shaded to protect them from sun scorch during early stages. Permanent shade trees are to be planted when the site is on hilly slopes and when nutmeg is grown in monocrop. Nutmeg can best be grown as an intercrop in coconut gardens that are more than 5 years old where shade conditions are ideal. Coconut gardens along river beds and adjoining areas are best suited for nutmeg cultivation. Irrigation is essential during summer months.

WATERMELON - except disease is done

NAME:WATERMELON (THARPOOSANI)

SCIENTIFIC NAME:*Citrullus lanatus*

NATIVE:It is grown in several regions of Kancheepuram, Villupuram, Thiruvallur, Ramanathapuram , Thiruvannamalai, Erode AND CHENGALPATTU.

ORIGIN:It originates from northeastern Africa

DESCRIPTION:

SOIL TYPE:Sandy loam rich in organic matter with good drainage and pH range for 7.5 is ideal for cultivation of watermelon.

NUTRIENT VALUE:Apply NPK fertilizers as per soil test recommendations as far as possible.If soil test recommendation is not available follow the blanket recommendation of 01:01:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME:It takes the shortest amount of time to mature, about 70 to 75 days. main-season watermelon is larger and takes longer to ripen, usually 80 to 90 days. Watermelon season runs throughout the summer (May to September). The exact months may vary depending on where you live.

POTENTIAL DISEASES:

- Downy mildew, Powdery mildew, Anthracnose, Alternaria leaf spot, Fusarium wilt, Bud necrosis disease, Cucumber mosaic disease, IPM for Watermelon.

PHENOTYPIC OUTPUT:Watermelon growth habit is a trailing vine. The stems are thin, hairy, angular, grooved, and have branched tendrils at each node. The stems are highly branched and up to 30 feet long, although there are dwarf types (dw-1 and dw-2 genes) with shorter, less-branched stems.

CULTIVATION STYLE: Plough land and bring to fine tilth. In North India, sowing is done February - March month. In North east and west India sowing is done during November to January. Watermelon can be directly seeded or transplanted in a nursery and then transplanted to the main field.

CUCUMBER - except disease js done

NAME: Cucumber (VELLARI)

SCIENTIFIC NAME: *Cucumis sativus*

NATIVE: It is generally grown in Kanyakumari, Dindigul, Tirunelveli, Theni

ORIGIN: It originated in Africa, China, India, or the Near East.

DESCRIPTION:

SOIL TYPE: Sandy loam rich in organic matter with good drainage and pH range from 6.5-7.5 are ideal for cucumber cultivation. This crop requires a moderate warm temperature.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:02:01 NPK kg/ha.

GROWTH TIME: It is best grown during June or January to April. Harvest can be done 45 days after sowing. On an average 8 – 10 harvests can be done.

POTENTIAL DISEASES:

- Anthracnose, Gummy stem blight, black spot, Choanephora wet rot, Fruits rot, Belly rot, Diplodia fruits rot, Bacterial soft rot, Phytophthora fruit rot.

PHENOTYPIC OUTPUT: The cucumber plant is a tender annual crop with a rough, succulent, trailing stem. The hairy leaves have three to five pointed lobes, and the stem bears branched tendrils by which the plant can be trained to support.

CULTIVATION STYLE: Treat the seeds with *Trichoderma viride* 4 g/kg or *Pseudomonas fluorescens* 10 g/kg or Carbendazim 2 g/kg of seeds before sowing. Plough the field four times and form long channels at 1.5 m apart. Sow the seeds on one side of the channel giving a spacing of 0.6 m between hills. Thin the seedlings to two/hill at 15 days after planting. Irrigate the field before dibbling the seeds and thereafter once a week.

JACKFRUIT -done js done

NAME: JACKFRUIT (PALAPAZHAM)

SCIENTIFIC NAME: *Artocarpus heterophyllus*

NATIVE: It is cultivated in Cuddalore, Pudukkottai, Dindigul, Thanjavur, Tirunelveli, Nilgiri, Kanyakumari, Namakkal.

ORIGIN: It originates from Portuguese.

DESCRIPTION:

SOIL TYPE: Jackfruit can grow on a wide variety of soil although it prefers a rich alluvial soil. Soil drainage is of utmost importance.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far possible. If soil test recommendation is not available, adopt a blanket recommendation of 07:04:05 NPK kg/ha.

GROWTH TIME: In about three or four years after planting, you can expect your tree to produce harvestable fruits. Over time, your tree will keep growing and growing, if you're not consistent with your pruning, they can get pretty massive. Generally, jackfruits available from March to June.

POTENTIAL DISEASES:

Soft rot or fruit rot, Dieback, Leaf spot, Rust, Pink disease, Disease cycle, IPM
Jackfruit.

PHENOTYPIC OUTPUT: The fruits consist of a fibrous, whitish core (rachis) about 3 cm (2–4 inches) thick. Radiating from this are many 10-centimeter-long (4 in) individual fruitlets. They are elliptical to egg-shaped, light brownish achenes with a length of about 3 cm (1 1/8 inches) and a diameter of 1.5 to 2 cm (9/16 to 13/16 inch).

CULTIVATION STYLE:

- For jackfruit plantation, 1 x 1 x 1 m pits are dug at least 10 days before planting. At each pit, 30 kg well rotted farmyard manure and 500 g super phosphate are mixed with the soil in the pit and the pit is refilled. Approximately, 2 g/litre chloropyrifos should be applied in situ to avoid insect attack. You can consider to buy grafted Jackfruit plant here. Large number of plants in this way is difficult. After planting, the soil is pressed firmly to avoid waterlogging in pits during the rainy season. This is important for jackfruit.

plantation as the jackfruit can not withstand waterlogging. The best time for planting grafted or seedling is June to August. Prolonged dry weather after planting may lead to the death of plants. The tap root should not be disturbed while planting, to avoid damage to the plants. The square system of planting is commonly practiced for planting but the hexagonal system may be followed in less fertile soils. In fertile soils, a spacing of 12 x 12 m accommodating 70 plants per hectare will suffice for this fruit crop. On average soil, trees may be planted 11 m apart. High density planting can be practiced in lighter and poorer soils.

ASH GOURD -done js done

NAME: ASH GOURD (SAAMBAL POOSINIKAI)

SCIENTIFIC NAME: *Benincasa hispida*

NATIVE: It is mainly grown in Erode, Coimbatore, Villupuram and Ranipet.

ORIGIN: It originates from parts of Southern Asia

DESCRIPTION:

SOIL TYPE: Soil Requirement for Ash Gourd Plantation: This crop tolerates a wide range of soils. However, well-drained deep sandy loam soils with a pH range of 6.0 to 6.5 are best for its cultivation. A higher yield can be expected in warm tropical climatic conditions with good soil organic matter.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:01:01 NPK kg/ha.

GROWTH TIME: January-March and September-December are the ideal seasons for growing ash gourds. For the rainfed crop, sowing can be started after the receipt of the first few showers during May-June. Prepare the soil to a fine tilth by ploughing and harrowing. The fruits will be ready for harvesting after 90 to 100 days after sowing. This may continue up to 5 months (150 days) after sowing. These fruits can be harvested at an immature stage or fully matured stages depending on the requirement of the local market.

POTENTIAL DISEASES:

- Downy mildew: *Pseudoperonospora cubensis*.
- Powdery mildew: *Erysiphe cichoracearum* DC, *Sphaerotheca fuliginea* (Schltdl.) Pollacci.
- Cercospora leaf spot: *Cercospora* leaf spot *C. citrullina*, *C. melonis*, *C. lagenarium*.
- Fusarium wilt: *Fusarium oxysporum* Schlecht.

PHENOTYPIC OUTPUT: Plants monoecious, male flowers solitary, pedicels 5-15 cm long, densely hispid and villous. Bracts ovate or broadly oblong, 6-15 x 5-10 mm, apex acute.

Calyx: Tubular 12-15 mm in diameter, densely villose, lobes lanceolate, 8-12 x 3-5 mm. Corolla yellow, lobes 3-6 x 2.5-3.5 cm, both surfaces pubescent. 1

CULTIVATION STYLE:

- Soak the seeds in double the quantity of water for 30 minutes and incubate for 3 days. The seeds are treated with Trichoderma viride 4 g or Pseudomonas fluorescens 10 g or Carbendazim 2 g/kg of seeds before sowing. Plough the field 3-4 times. Dig pits of 30 cm x 30 cm x 30 cm at a spacing 2 x 1.5 m and form basins. Five to six seeds are sown in each pit. After germination, the seedlings are thinned to two/pit. Irrigate the basin before dibbling the seeds and thereafter once in a week.

AMLA - done is done

NAME: Amla(Nellikaai)

SCIENTIFIC NAME: *Phyllanthus emblica*

NATIVE: It is grown in parts of Dindigul, Tirunelveli, Tiruppur, Sivagangai, Theni, Tenkasi.

ORIGIN: Native to the subtropical South Asian countries of India, Pakistan, and Bangladesh.

DESCRIPTION:

SOIL TYPE: Well drained fertile loamy soil is the best for higher yield.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 2:05:02 kg N, P2O5, K2O/ha for all varieties.

GROWTH TIME: Amla seedlings start bearing fruits in 7-8 years after planting.

POTENTIAL DISEASES:

- Rust, Soft rot

PHENOTYPIC OUTPUT: It is a tree of small or moderate size with a greenish-grey bark and greenish-yellow flowers, formed in axillary clusters. The feathery leaves are linear-oblong, with a rounded base and obtuse or acute apex, subsessile, closely set along branchlets, light green and resembling pinnate leaves.

CULTIVATION STYLE: The plants do not tolerate low temperatures and frost. Amla trees need sandy loam to clay type of soil with a typical pH range of 6.5 to 9.5. The soil for Amla cultivation should be well drained, fertile and deep. The cultivation of Amla is not possible in waterlogged, heavy and sandy types of soils.

MUSKMELON - done js done

NAME: Muskmelon

SCIENTIFIC NAME: Cucumis melo

NATIVE: It is generally grown in Dharmapuri, Ariyalur

ORIGIN: It originated in Persia (Iran) and adjacent areas on the west and the east.

DESCRIPTION:

SOIL TYPE: Sandy loam rich in organic matter with good drainage and pH range of 6.5 - 7.5.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 04:06:03 NPK kg/ha.

GROWTH TIME: It is best grown in November to February. It takes 35 to 45 days to ripen after the flower has been pollinated. Higher temperature levels mean a shorter ripening time. Muskmelon wine takes 90 days to grow from seed to ripe fruit.

POTENTIAL DISEASES:

Powdery Mildew, Leaf Spot, Anthracnose, Fusarium wilt.

PHENOTYPIC OUTPUT: Muskmelons are annual vines that require a long warm growing season. They have hairy trailing stems with clasping tendrils and bear round to lobed leaves. The yellow unisexual flowers produce large fruits, which give off a sweet odour when ripe.

CULTIVATION STYLE: Nursery for muskmelon can be prepared either with polythene bags of 200 gauge, 10 diameter and 15 cm height size or through protlays under protected nursery. Use protlays, each having 98 cells for raising seedlings. Transplant about 12 day's old

seedlings in the main field. Around 250 protrays are required for the production of 23,334 (22,223 + 5%) seedlings, which are required for one hectare at spacing of 1.5 m x 30 cm in a raised bed single row system. Raise beds of 120 cm width at an interval of 30 cm and place the laterals at the centre of each bed. Direct sowing or transplanting is done at a spacing of 1.5 m along the laterals and 30 cm interval in the raised bed single row system, using ropes marked 30 cm spacing.

COW PEA -done - js done

NAME: COW PEA (Kaaramani)

SCIENTIFIC NAME: *Vigna unguiculata*

NATIVE: It is cultivated in VELLORE, THIRUVANNAMALAI, DHARMAPURI, SALEM, NAMAKKAL, PERAMBALUR, ERODE, COIMBATORE, MADURAI, DINDIGUL, THENI, CHENGALPATTU AND VIRUDHUNAGAR.

ORIGIN: It originates Native to West Africa

DESCRIPTION:

SOIL TYPE: drained loam or slightly heavy soil

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 1:02:01 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: ready for harvesting in 3 to 4 months for short duration crop and 4 months to 5 months for long duration crop

POTENTIAL DISEASES:

- Anthracnose
- Asochyta blight
- Brown rust
- Cercospora and Pseudocercospora leaf spot
- Charcoal rot

- Fusarium wilt
- Powdery mildew
- Rhizoctonia seedling blight
- Southern blight
- Bacterial blight
- Brown blotch
- Soft stem rot
- Aphids
- Armyworms
- Corn earworm
- Root knot nematode
- Mexican bean beetle

PHENOTYPIC OUTPUT: Cowpea [*Vigna unguiculata* (L.) Walp] exhibits a considerable variation in leaf shape. Although cowpea is mostly utilized as a dry grain and animal fodder crop, cowpea leaves are also used as a high-protein pot herb in many countries of Africa.

CULTIVATION STYLE: It can grow successfully in acidic soil but not in saline/alkaline soil. In hard soil, one deep ploughing followed by two or three harrowing and planking are sufficient. In normal soil only two harrowing & planking is enough. For summer season crops are irrigated immediately after harvesting of Rabi crops.

RIBBED GOURD -done js done

NAME: Ribbed Gourd (Peerkangai)

SCIENTIFIC NAME: *Luffa acutangula*

NATIVE: It is grown in districts like ERODE, COIMBATORE, TIRUPPUR and RANIPET

ORIGIN: native of South Asia or Africa or Australia.

DESCRIPTION:

SOIL TYPE: grows best in sandy loamy soils.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 5:02:02 kg N,P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: The time from planting to harvest is 60 to 75 days from transplant. The ribbed ridge gourds cater to your taste buds and also your beauty needs. You can eat them while tender or use them as a loofah once mature.

Days to germinate (Sprout): 7 - 14 days

Depth to plant: 1/2 inch deep

Planting season: Summer Spring

POTENTIAL DISEASES:

fungal -

Alternaria leaf blight

Anthracnose

Cercospora leaf spot

Downy mildew

Powdery mildew

Septoria leaf spot

Verticillium wilt

bacterial -

Angular leaf spot

Bacterial leaf spot

Aster yellows

Viral:

Cucumber mosaic

Squash mosaic

PHENOTYPIC OUTPUT: Leaves subcircular, membranous, 15-20 x 15-20 cm, often 5-7 lobed, median lobe broadly triangular, lateral lobes smaller, apex acute or acuminate, margin dentate, sinus subrounded, both surfaces puberulous, petioles 8-12 cm long, scabrous

CULTIVATION STYLE: The Ridge gourd seeds are sown by dibbling method at 1.5 m to 2.0 m X 1.0 m to 1.5 m. Sow 3 seeds in each pit. After germination, thin to 2 healthy seedlings. The seeds also can be sown in poly bags. 2 seeds per bag are ideal and 2 weeks after germination, they can be planted at 2 seedlings per pit in the main field.

CUMIN -done js done

NAME: Cumin(Cirakam)

SCIENTIFIC NAME: Cuminum cyminum

NATIVE: THOOTHUKUDI, VIRUDHUNAGAR, RAMANATHAPURAM AND COIMBATORE, NAMAKKAL, PUDUKOTTAI, DHARMAPURI, RAMANATHAPURAM, ARIYALUR

ORIGIN: originated in Western Asia

DESCRIPTION:

SOIL TYPE: Cumin prefers well-drained sandy loam

NUTRIENT VALUE:

- Apply NPK fertilizers as per soil test recommendations as far as possible.
- If soil test recommendation is not available follow the blanket recommendation of 3:02:02 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Cumin needs approximately 120 days to maturity from the sowing date to produce viable seeds

POTENTIAL DISEASES:

Fungi:

Wilt

powdery mildew

Damping off

Bacterial:

Wilt

Alternaria blight

Viral:

Wilt

PHENOTYPIC OUTPUT: Cumin seeds have eight ridges with oil canals. They resemble caraway seeds, being oblong in shape, longitudinally ridged, and yellow-brown in colour, like other members of the family Apiaceae (Umbelliferae) such as caraway, parsley, and dill.

CULTIVATION STYLE:

Cumin seeds are sown in November during the first week or in the last weeks. The seed rate ranges from 2-4 Kg per acre. The distance between the rows should be 25 cm and the distance between plant to plant should be 10 cm is ideal for Cumin crop cultivation.

BEETROOT -done js done

NAME: Beet root

SCIENTIFIC NAME: Beta vulgaris subsp. vulgaris Conditiva

NATIVE: It is generally cultivated in Thiruppur, Theni, The Nilgiris, Dindigul, Coimbatore, Krishnagiri and Erode.

ORIGIN: Beets are believed to originate along the coasts of the Mediterranean (sea beets) and were first cultivated for their edible leaves.

DESCRIPTION:

SOIL TYPE: Garden beets are produced on a wide variety of soils but deep, well-drained loamy and sandy loams are considered the best. Heavy soils are not satisfactory for beets because the roots are likely to be asymmetrical in shape when grown on such soils.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 1:01:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Plants should be up in 7 to 14 days. In hot weather, cover the seed with sand or light-colored mulch. For continuous supply of beets, make several plantings 3 weeks apart.

POTENTIAL DISEASES:

Bacterial : Bacterial blight, Bacterial soft rot, Bacterial pocket, Bacterial vascular necrosis and rot, crown gall and silvering disease.

Fungal : Alternaria leaf spot, Anthracnose, Aphanomyces root rot (black rot), Black wood vessel, Cercospora leaf spot, Downy yellow, Fusarium yellows, Fusarium root rot, Leaf gall, Phoma leaf spot and root rot, Phymatotrichum root rot, Phytophthora wet rot, Ramularia leaf spot, Rhizopus root rot, Rust, Sclerotinia crown & root rot, Seedling rust, Slime molds, Southern blight, Stemphylium leaf spot, Storage rots, Verticillium wilt and violet root rot.

Viral : Alfalfa mosaic, Beet curly top, Beet distortion mosaic, Beet leaf curl , Beet mild yellows & Beet western yellows, Beet mosaic, Beet yellow net, Beet savoy and Beet yellow vein.

PHENOTYPIC OUTPUT: The garden beet is a biennial plant and is primarily grown for the thick fleshy taproot that forms during the first season. In the second season a tall, branched, leafy stem arises to bear clusters of minute green flowers that develop into brown corky fruits commonly called seedballs.

CULTIVATION STYLE: Sow seeds $\frac{1}{2}$ -inch deep and 1 to 2 inches apart in rows that are about 1 foot apart. After sowing, cover the seeds with a thin layer of soil. Each wrinkled beet "seed" is actually a cluster of 2 to 4 seeds, so you will need to thin the young plants to 3 to 4 inches apart once the greens get to be about 4 inches tall.

Shallots (Small Onions) - done - js done

NAME: Shallots (Chinna Vengayam)

SCIENTIFIC NAME: Allium cepa

NATIVE: It is generally cultivated in Dindigul, Tiruppur, Perambalur, Trichy, Namakkal distri

ORIGIN: Shallots probably originated in Central or Southwest Asia, travelling from there to and the eastern Mediterranean.

DESCRIPTION:

SOIL TYPE: Like onions, shallots prefer sun and a moisture-retentive, fertile soil, id with plenty of well-rotted organic matter such as garden compost added. It's worth looking heat-treated shallot sets, as the resulting plants are less prone to bolting (producing flowers)

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 17:07:06 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Autumn-planted sets are ready after 36 weeks, spring-planted sets after 20 weeks, but as soon as your shallots are big enough to use you can harvest them. The leaves will droop over and turn brown when they've stopped growing.

POTENTIAL DISEASES:

- *Damping off*
- *Purple blotch*
- *Stemphylium leaf blight*
- *Colletotrichum blight/anthracnose/twister disease*
- *Fusarium basal rot/basal rot*
- *White rot (Sclerotial rot)*
- *Pink root rot*
- *Black mould*
- *Bacterial soft rot*
- *Iris yellow spot disease*
- *Onion yellow dwarf disease*
- *Downy mildew*

- Green mould
- Bacterial brown rot
- IPM for Onion

PHENOTYPIC OUTPUT: Inflorescence of Shallots is called cume. Each individual flower is made up of six stamens, three carpels, united with one pistil and six perianth segments. The pistil contains three locules, each containing two ovules.

CULTIVATION STYLE: Shallots are most commonly grown from cloves. Place each clove in the soil with the thick end pointing down and the top just above the soil line. Plant them around 6 inches apart in rows, and space each row around 12 inches apart. These plants do not need a support structure to grow on.

BETELVINE -done except adding pic -js done

NAME: Betelvine (Vetrilai)

SCIENTIFIC NAME: Piper betle

NATIVE: It is generally grown in tiruchirapalli, perambalur, karur, salem, Namakkal, coim
chennai, vellore, thiruvallur, cuddalore, Krishnagiri, pudukkottai, nagapattinam, dharmapuri
sivagangai, theni, ariyalur, tirunelveli, kallakurichi, tirupattur and Chengalpattu.

ORIGIN: The betel plant originated in Southern and Southeast Asia.

DESCRIPTION:

SOIL TYPE: Well drained fertile clay loams are suitable. It does not tolerate saline ;
alkaline conditions. Betelvine requires a cool humid with considerable humidity and regular
supply of moisture in the soil is essential.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as
possible. If soil test recommendation is not available follow the blanket recommendation of
05:12:06 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Training is done by fixing the vine at intervals of 15 to 20 cm along
standards loosely with the help of banana fibre. Training is done at every 15 - 20 days interval
depending upon the growth of vines. Under normal cultivation, the vines grow to height of 3 m
one year period.

POTENTIAL DISEASES:

- Leaf stem and foot rot (fungus)
- Leaf spot or anthracnose (bacterial, fungal, viral)
- Fusarium wilt (fungus)
- Sclerotial wilt or collar rot:(fungus)
- Powdery mildew or Basal rot:(fungus)
- Bacterial leaf spot/Bacterial stem rot:(bacterial)
- IPM for Betelvine (cycle)

PHENOTYPIC OUTPUT: The betel plant is an evergreen, dioecious perennial, with glossy heart-shaped leaves and white catkin. The betel plant originated in Southern and Southeast Asia.

CULTIVATION STYLE: The tree is slender, erect, up to 30 m tall with a smooth trunk and a crown of large pinnate leaves 1-2 m long. The fruit is an ovoid drupe up to 5 cm long, orange coloured when ripe, with hard fibrous endocarp and a single seed, commonly called a nut.

ROSE -done except adding pic - js done

NAME: Rose

SCIENTIFIC NAME: Rosa

NATIVE: It is generally cultivated in Krishnagiri, Madurai, Dindigul, Thanjavur, Ranipet and Chennai.

ORIGIN: Fossil records show rose to be one of the most ancient of flowers. It probably originated in Central Asia but spread and grew wild over nearly the entire northern hemisphere.

DESCRIPTION:

SOIL TYPE: Sandy-loam, red-loam, silt-loam soils are best suited for rose cultivation. The soil pH of 6.0 to 7.5 is ideal for rose cultivation. Rose is very sensitive to saline soils as sodium carbonate which is present in the saline soil is harmful to the plants.

NUTRIENT VALUE: Apply NPK fertilisers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 05:12:06 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Most roses grow fairly rapidly. Tea roses may reach their full height after only three to four years and grow to that height each year despite being cut back each year. Many of the modern roses will only live six to 10 years unless given exceptional care. Some species and climbing roses will live 50 years or more.

POTENTIAL DISEASES:

- Powdery mildew - fungus
- downy mildew - fungus
- Anthracnose - fungus
- canker diseases - fungi and bacteria
- rust, root rots- fungi

- grey mould- fungi
- ghost spot - fungus
- black spot -fungus
- cercospora leaf spot.fungus

PHENOTYPIC OUTPUT: The rose is an ornamental shrub/bush with upright or climbing stems usually prickly. Leaves are alternate, compound, oddly pinnate with stipules adhering to the leaf stalk. Flowers are solitary (single) or in corymbs (cluster).

CULTIVATION STYLE: Rose plants are mainly propagated by the seeds, layers, budding and cuttings. Budding is considered to be one of the best methods for propagating plants. They can be planted in the circular pits about 60 to 90 cm across and 60 to 75 cm deep.

TARO (except pic and disease - js done)

NAME: TARO (SEPPANKIZHANGU)

SCIENTIFIC NAME: Colocasia esculenta

NATIVE: It is grown in Tirupattur, Ranipet.

ORIGIN: It probably originated in the Bay of Bengal region of South-east Asia.

DESCRIPTION:

SOIL TYPE: Taro root can be grown in a wide range of soils with good organic matter. The well-drained loamy soils with the pH range about 5.5 to 7 are ideal for its growth.

NUTRIENT VALUE: Apply NPK fertilisers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:03:06 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Taro root can be grown throughout the year in frost-free weather conditions. Taro crop thrives well in warm, moist conditions. Evenly distributed rainfall is ideal for growth and cultivation. The crop matures in 9-12 months, when the leaves begin to

yellow and die down and there is a slight lifting of the tubers. Lift the tubers as you would sweet potatoes. Taro does not store for longer than a month, so leave tubers in the soil until needed. Taro tubers are peeled and then baked, steamed, boiled or mashed.

POTENTIAL DISEASES: Although taro is susceptible to attack by at least twenty-three pathogens, only a few cause serious reduction in growth and production.

- Phytophthora blight (*Phytophthora colocasiae*) and Pythium root and corm rot (*Pythium spp.*) are the most serious fungal diseases of taro.

PHENOTYPIC OUTPUT: Taro is a perennial, herbaceous rootless plant. Roots are large, underground tuberous rhizomes. Leaves have a long thick and fleshy petiole, longer than the lamina, up to 85 cm long, sheathing at the base. The lamina is large, triangular or arrowhead, completely smooth surface and very hydrophobic.

CULTIVATION STYLE: A couple of deep ploughings are required to make the field soft textured so that the roots easily grow and develop in the soil. Remove any weeds while preparing the soil. The Ridge gourd seed sowing time depends on the type of crop. Usually, Ridge gourd Plantation spreads during January and July. Plough the field to fine tilth. Dig pits of 30 cm x 30 cm x 30 cm size at 2.5 x 2 m spacing and form basins.

LITCHI -done except pic -js done

NAME: Litchi

SCI.NAME: *Litchi chinensis*

NATIVE: It is generally cultivated in some parts of Kanyakumari.

ORIGIN: Lychee is native to Southeast Asia and has been a favourite fruit of the Cantonese since ancient times.

SOIL TYPE: The litchi can grow in a variety of soil types particularly in fairly deep, well drained loam rich in organic matter. A sandy loam or clayey loam with pH ranging between 5.5 and 7 with sufficient soil depth is an ideal soil for litchi cultivation. Water-table should be atleast 1.5 to 2 m deep.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 09:12:08 kg t P2O5, K2O/ ha for all varieties.

GROWTH TIME: Fruiting begins from 5 – 6 years of age in case of plants propagated through air layering. After flowering, it takes 70 to 100 days for the fruits to ripe in most of the commercial varieties of India. On an average, the litchi tree yields 40-100 kg.

POTENTIAL DISEASES:

- Leaf blight-fungi
- Twig blight-fungi
- Panicle/inflorescence and fruit blight-fungi
- Anthracnose-fungi
- Wilt-fungi
- Algal leaf spot-fungi
- Fruit rots-fungi
- Integrated management of major diseases

PHENOTYPIC OUTPUT: The fruit is a heart-shaped drupe when ripe, fleshy and indehiscent. The pericarp is thin, leathery, rough, wrinkled and red colored, with aril covering all the seed. The fruit begins differentiation with the formation of the pericarp which consists of epicarp, mesocarp and endocarp.

CULTIVATION STYLE: It usually prefers low elevation and can be grown up to an altitude of 800 m. (m.s.l.). Deep, well drained loamy soil, rich in organic matter and having pH in the range of 5.0 to 7.0 is ideal for the crop. Dig the pits size of 1 meter x 1 meter x 1 meter with a distance between plants and rows of 10 meters and these pits should be dug few weeks before the plantation. Usually a square system of plantation is followed in Litchi fruit farming. The pits should be filled with 25 kg of farm yard

CABBAGE -done except pic - js done

NAME: Cabbage (Muttaikose)

SCIENTIFIC NAME: Brassica oleracea var. capitata

NATIVE: It is generally grown in Nilgiris, Krishnagiri, Theni, Erode.

ORIGIN: It is originated in Europe

DESCRIPTION

SOIL TYPE: It is commonly cultivated in cool moist climates. It is grown as a winter crop in plains. It is grown in varied types of soils ranging from sandy loam to clay. It requires a pH ranging from 5.5 to 6.5 for higher production.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:01:02 NPK kg/ha.

GROWTH TIME: In hills, the crop can be planted during January – February, July – August and September – October. In plains, it is generally grown in August-November

POTENTIAL DISEASES:

- Club root - fungi,
- Leaf spots-fungi, bacterial, viral
- Leaf Blight, Ring spot, Downy mildew, Black rot - fungi

PHENOTYPIC OUTPUT: Most cabbages have thick, alternating leaves, with margins that range from wavy or lobed to highly dissected; some varieties have a waxy bloom on the leaves. Plants have root systems that are fibrous and shallow

CULTIVATION STYLE: About 100 sq.m nursery area is required for raising plants for one hectare area. Sow the seeds at 10 cm between rows in raised seed beds after drenching it with Copper oxychloride (2.5 g/lit). Transplant 40 - 45 days old seedlings at a spacing of 45 cm. Avoid land infected with 'club root disease'. Raise the seedlings in a shade net house. A nursery area of 5 cents with a slanting slope of 2% is required for the production of seedlings for 1 ha. Cover the nursery area with 50 percent shade net and the sides with 40/50 mesh insect proof nylon net. From the raised beds of 1m width and convenient length inside the nursery and above the beds, the portraits are placed.

ICE APPLE except pic - js done

NAME:ICE APPLE (NUNGU)

SCIENTIFIC NAME:Borassus flabellifer

NATIVE:It is grown in many regions of Krishnagiri, Thanjavur, Pudukkottai, Sivagangai, Ramanathapuram.

ORIGIN:It originates from the Indian subcontinent (especially in South India) and Southeast Asia.

DESCRIPTION:

SOIL TYPE: The best soil for palm plants is a loose, porous mixture, like a combination of peat moss, leaf mold, and shredded bark. You can buy a cactus or palm soil mixture specifically made for growing palm plants—otherwise, they will grow just fine in a general-purpose commercial potting soil.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 03:01:03 NPK kg/ha.

GROWTH TIME: They may take up to four years to mature, but they typically bloom in late winter or early spring. If you live in a climate with a cold winter, it's advisable to plant young date palm in a container so that you can move it inside when the winter comes.

POTENTIAL DISEASES:

- Fusarium Wilt. Fusarium wilt is a fungal disease caused by the species *Fusarium oxysporum*.
- Ganoderma Butt Rot. Another fungal disease, Ganoderma butt rot is caused by *Ganoderma zonatum*, which invades the roots and lower stem of palms. ...
- Bud Rot.-fungi
- Leaf Spot Diseases.-fungi

PHENOTYPIC OUTPUT: Palm stems (trunks) vary considerably in dimensions and appearance among species, but in general they are cylindrical to slightly tapered and occasionally bulging in shape. The surface may be smooth to extremely rough and knobby and may be armed with sharp spines.

CULTIVATION STYLE: The first frond appears in about five months. Production of fronds is slow to begin with. However, the pace picks up as the age advances. The first fan-shaped leaves appear only in the second year. It will be 6-7 years before the top of the trunk appears. The palm is a slow grower and grows to a height of 12-18m and comes to flowering in about 13-15 years (irrigated condition) when it can be tapped for padaneer. On an average, 100-200 litres of padaneer can be obtained for a period of 4 months from February-May. However, the padneer and fruit yield are highly variable in individual palms.

NAME: Drumstick (MURUNGAKKAI)

SCIENTIFIC NAME: *Moringa Oleifera*

DRUMSTICK -except pic - js done

NATIVE: It is generally grown in Dindigul, Karur, Theni, Madurai, Thoothukudi, Ariyalur, Tiruppur, Ramanathapuram.

ORIGIN: It originated in southwest India.

DESCRIPTION:

SOIL TYPE: Annual moringa comes up well in a wide range of soil. A deep sandy loam soil with a pH of 6.5 – 8 is ideal for cultivating this crop.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 03:01:02 NPK kg/ha.

GROWTH TIME: It is best grown in July-October.

POTENTIAL DISEASES:

- Damping off- fungi
- Twig Canker - fungi
- IPM for drumstick- pests

PHENOTYPIC OUTPUT: It is a fast-growing, deciduous tree. It can reach a height of 10–12 m (32–40 ft) and the trunk can reach a diameter of 45 cm (1.5 ft). The bark has a whitish-grey colour and is surrounded by thick cork. Young shoots have purplish or greenish-white, hairy bark. The tree has an open crown of drooping, fragile branches and the leaves build up feathery foliage of tripinnate leaves. The flowers are fragrant and bisexual, surrounded by five unequal, thinly veined, yellowish-white petals. The flowers are about 1.0-1.5 cm (1/2") long and 2.0 cm (3/4") broad. They grow on slender, hairy stalks in spreading or drooping later flower clusters which have a length of 10– 25 cm. The flowers are fragrant and bisexual, surrounded by five unequal, thinly veined, yellowish-white petals. The flowers are about 1.0-1.5 cm (1/2") long and 2.0 cm (3/4") broad.

CULTIVATION STYLE: 500 g/ha of seeds are required. Sow two seeds per pit at a depth of 2.5-3.0 cm. The seeds can also be sown in the poly bags containing pot mixture and transplanted after 35 -40 days of sowing. Dig pits of size 45 cm x 45 cm x 45 cm with a spacing of 2.0 - 2.5 m either way. Apply 15 kg of compost or FYM/pit after mixing with top soil. High density planting at 1.5 X 1.0 m spacing with two plants/hill and plant population 13,333 / ha along with the application of fertilizer dose of 135: 23 :45 g of NPK/pit (150%) through drip increases the yield of moringa. In this phosphorus should be applied basally as soil application. N and K can be applied in the form of urea and muriate of potash through drip.

Pearl Millet js done

NAME: Pearl Millet (Kambu)

SCIENTIFIC NAME: *Pennisetum glaucum*

NATIVE: It is generally cultivated in Ramanathapuram, Tirunelveli, Karur, Perambalur and Salem, Vellore, Cuddalore, Virudhunagar, Ranipet, Thoothukudi and Tirupattur districts.

ORIGIN: Pearl millet has its origins in West Africa.

DESCRIPTION:

SOIL TYPE: Pearl millet can be grown on a wide variety of soils ranging from clay loams to deep sands but yields and grain quality are best on deep, well-drained productive soils.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 09:05:05 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: In north and central part of India, pearl millet sowing is done with the onset of monsoon and not later than 15 July. Rabi crop is sown between 25 September and 1 October. Late sowing beyond October may result in poor germination and plant stand due to soil temperatures.

POTENTIAL DISEASES:

Bacterial: Bacterial spot, Bacterial leaf streak, Bacterial leaf stripe

Fungal: Bipolaris leaf spot, Cercospora leaf spot, Curvularia leaf spot, Dactuliophora leaf spot, Downy mildew, Drechslera leaf spot, Ergot, Exserohilum leaf blight, false mildew, Head mold, Myrothecium leaf spot, Phyllosticta leaf blight, Pyricularia leaf spot, Rhizoctonia blight, Rust, Seedling blight and Zonate leaf spot.

Viral: Black streaked dwarf virus, Guinea grass mosaic virus, Maize streak virus, Panicum mosaic virus, Panicum mosaic virus, Satellite panicum mosaic virus and wheat streak mosaic virus.

PHENOTYPIC OUTPUT: Pearl millet (*Pennisetum glaucum* (L.) R. Br.) is an erect annual grass, reaching up to 3 m high with a profuse root system. Culms are slender, 1-3 cm wide.

CULTIVATION STYLE: Seed should be planted into a firm, mellow, moist seedbed. Seeds of pearl millet are very small, shallow planting is recommended to obtain good seed-to-soil contact. Millets are generally grown on less fertile soils where they yield well when

APPLE is done

NAME: Apple

SCIENTIFIC NAME: Malus

NATIVE: It is generally cultivated in Nilgiri and Dindigul districts.

ORIGIN: They originated in Kazakhstan, in central Asia

DESCRIPTION:

SOIL TYPE: Apples grow best on well-drained, loam soils having a depth of 45 cm and a pH range of pH 5.5-6.5. The soil should be free from hard substrata and water-logged conditions. Soils with heavy clay or compact subsoil are to be avoided.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 01:01:01 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: Standard or full-sized trees can grow up to 30 feet tall and can take six years to bear their first fruit. Semi-dwarf and dwarf apple trees can grow from 6 to 20 feet tall and produce full-sized apples in about three years.

POTENTIAL DISEASES: Phytophthora Crown Rot - fungi, Collar Rot - fungi, and Root Rot - fungi

PHENOTYPIC OUTPUT: Apple morphology can be described at three levels: (1) overall shape; (2) presence of macrostructures (i.e. stem bowl, stem, and calyx); and (3) surface microstructures (i.e. epicuticular waxes, trichomes, microcracks, lenticels, and stomata).

CULTIVATION STYLE: The apple flower of most varieties requires cross-pollination for fertilization. When harvested, apples are usually roundish, 5–10 cm (2–4 inches) in diameter, and some shade of red, green, or yellow in colour; they vary in size, shape, and acidity depending on the variety.

SESAME js done

NAME:SESAME (ELLU)

SCIENTIFIC NAME:*Sesamum indicum*

NATIVE: It is cultivated in many places of Coimbatore, Tiruppur, Erode, Dindigul, Sivagangai, Thoothukudi, Karur, Cuddalore, Tiruvannamalai, Thiruvallur, Kancheepuram, Villupuram.

ORIGIN: The sesame plant likely originated in Asia or East Africa, and ancient Egyptians are known to have used the ground seed as grain flour.

DESCRIPTION:

SOIL TYPE: Sesame thrives well on soils with neutral reaction (or) slightly acidic type. There should not be any water stagnation in the soil, so make sure soil is well drained and light loamy soil for better growth performance. The preferred soil pH range of sesame crops is 5.5 to 8.0.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:01:01 kg N, P₂O₅, K₂O/ha for all varieties.

GROWTH TIME: It is usually grown in the Second fortnight of May to Second fortnight of June November-December Second fortnight of January to March. Depending on the variety, this crop comes to maturity in 3 to 5 months. Harvesting can be started when the leaves, stems and capsules begin to turn yellow and the lower leaves of the plant start shedding.

POTENTIAL DISEASES:

- Phyllody - virus
- Dry root rot.- fungi
- Phytophthora blight.- fungi
- Alternaria blight.- fungi
- IPM for Sesame- pest

PHENOTYPIC OUTPUT: The sesame plant can be branched or unbranched. The leaves vary in shape and size, and may be alternate or opposite. The growing sequence is indeterminate, with leaves, flowers and seeds being produced as long as the weather permits.

CULTIVATION STYLE:

The sesame crop grown as summer crop, Kharif crop and also as semi-rabi crop. Sesame thrives well on soils with neutral reaction (or) slightly acidic type. There should not be any water stagnation in the soil, so make sure soil is well drained and light loamy soil for better growth performance. The preferred soil pH range of sesame crop is 5.5 to 8.0. Saline soils or too much sandy soils are not suitable for sesame cultivation. Adding well rotted Farmyard Manure to the soil is beneficial in getting higher yields.

The land should be ploughed by tractor or desi/country plough and harrowed repeatedly for bridging the soil to fine tilth and weed free for quick germination as the sesame seeds are small. Add appropriate Farm Yard Manure while preparing the soil or beds.

BENGAL GRAM is done

NAME: BENGAL GRAM (SUNDAL KADALAI)

SCIENTIFIC NAME: *Cicer arietinum*

NATIVE: It is cultivated in many places of Coimbatore, Tiruppur, Dindigul and Dharmapuri.

ORIGIN: According to Aykroid and Doughty (1964), the centre of origin of Bengal gram is stated to be eastern Mediterranean, but its probable place of origin lies in Southwestern Asia, i.e. countries lying to North-west of India such as Afghanistan and Persia..

DESCRIPTION:

SOIL TYPE: This crop is grown on **moderately heavy soils, black cotton soils, and sandy loam soils**. However, Fertile sandy loam to clay loam soils with good internal drainage are best suitable for its cultivation. Soils should not be heavy alkaline in nature. Ideal PH range of 5.5 to 7.0

NUTRIENT VALUE: Apply NPK fertilisers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 01:02:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Ready to harvest in 135-140 days. It gives an average yield of 6-8 qt/acre. GNG 1958: Cultivated under irrigated areas also suitable for normal sown irrigated condition.

POTENTIAL DISEASES:

- Wilt - fungi
- Rust.- fungi
- Grey mould.- fungi
- Ascophyta blight.- fungi
- Sclerotinia blight.- fungi

PHENOTYPIC OUTPUT: It is an erect or spreading much-branched annual herb, covered all over with glandular hair. The leaves are pinnately compound, leaflets are opposite or alternate, stipulate and strongly veined. The flowers are papilionaceous, white to various shades of pink or blue.

CULTIVATION STYLE:

The land preparation for sowing Bengal Gram is predicted on the soil type and cropping system. Bengal gram is highly sensitive to soil erosion. In the case of an important soil, a rough seedbed is ready to avoid packing of the cloddy surface thanks to winter rains and to facilitate soil aeration and easy seedling emergence. When Bengal Gram is cultivated as a mixed crop with linseed or mustard, the land is ready to a fine tilth. It is necessary to deep plough the field at the beginning of the rainy season, ensuring efficient moisture conservation. Deep ploughing also reduces the wilting of Bengal Gram that tends to develop due to the presence of hardpans in the root zone.

In North India, the crop comes to harvest in 160-170 days whereas it's shorter towards the south i.e., 90-110 days in it is done by threshing: under the cattle feet or beating with sticks. Plants are pulled out or cut with a sickle and carried to the threshing floor. Yield of Bengal Gram is approximately 20-25 qt/ha.



BLACK GRAM js done

NAME: Black Gram(Ulundu)

SCIENTIFIC NAME: Vigna mungo

NATIVE: It is generally grown in Villupuram, Thiruvarur, Cuddalore, Kanyakumari, Thoothukudi, Namakkal, Pudukkottai, Nagapattinam, Ramanathapuram, Tirunelveli, Kallakurichi, Tirupattur and Ranipet.

ORIGIN: It originated in South Asia.

DESCRIPTION:

SOIL TYPE: It can be grown in a variety of soils ranging from sandy soils to heavy cotton soils. The most ideal soil is a well-drained loam with pH 6.5 to 7.8. It cannot be grown on alkaline and saline soils.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:02:01 NPK kg/ha.

GROWTH TIME:

- Aadi Pattam (June-August) Puratasi Pattam (September-November)
- Margazhi-Thappattam (Winter Irrigated) Rice fallows (January) Chithirai
- Pattam (Summer Irrigated)

POTENTIAL DISEASES:

- Cercospora leaf spot.- fungi
- Bacterial leaf blight.- fungi
- Anthracnose- .- fungi
- Powdery mildew.- fungi
- Root rot and rust.- fungi
- Stem canker and Macrophomnia blight.- fungi
- Yellow mosaic disease - virus
- Leaf crinkle - virus
- IPM for blackgram - pests

PHENOTYPIC OUTPUT: It is an erect, fast-growing annual, herbaceous legume reaching 30-100 cm in height. It has a well-developed taproot and its stems are diffusely branched from the base. Occasionally it has a twining habit and it is generally pubescent. The leaves are trifoliate with ovate leaflets, 4-10 cm long and 2-7 cm wide. The inflorescence is borne at the extremity of a long (up to 18 cm) peduncle and bears yellow, small, papilionaceous flowers. The fruit is a cylindrical, erect pod, 4-7 cm long x 0.5 cm broad. The pod is hairy and has a short, hooked beak. It contains 4-10 ellipsoid black or mottled seeds

CULTIVATION STYLE: Prepare the land to fine tilth and form beds and channels. Amendments for soil surface crusting: To tide over the soil surface crusting apply lime at the rate of 2t /ha along with FYM at 12.5 t/ha or composted coir pith at 12.5 t/ha to get an additional yield of about 15 - 20%.



RED GRAM js done

NAME:RED GRAM (SIVAPPU PAYARU)

SCIENTIFIC NAME:*Cajanus cajan*

NATIVE:It is grown in many districts like Kancheepuram, Tiruvallur, Cuddalore, Vellore, Tiruvannamalai, Salem, Dharmapuri, Krishnagiri, Trichy, Madurai, Theni, Dindigul and Ranipet.

ORIGIN:it originated in India or in Africa.

DESCRIPTION:

SOIL TYPE:Red gram can be grown in almost all soil types that are not very poor in lime and are not subjected to waterlogging. Optimum growth and yield are obtained in deep loam soils.



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NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:02:01 NPK kg/ha.

GROWTH TIME: It is usually grown in June – July. Flowering starts after 5 months from the date of sowing.

POTENTIAL DISEASES:

- Fusarium Wilt - fungi
- Dry root Rot - fungi
- Alternaria Leaf Spot - fungi
- Powdery Mildew - fungi
- Pigeon pea sterility Mosaic - virus
- Mungbean yellow mosaic -virus

PHENOTYPIC OUTPUT: Red gram seeds are round-shaped or lens-shaped, the seeds color coat being dirty white to silver-white, dark mottled brown and pinkish black, and the cotyledons yellow-colored.

CULTIVATION STYLE: Red gram seeds are round-shaped or lens-shaped, the seeds color coat being dirty white to silver-white, dark mottled brown and pinkish black, and the cotyledons yellow-colored. As a mixed crop, sow the seeds in June-July. When sown with groundnut, spacing recommended between rows is 3 to 3.5m. Red gram can also be sown in paddy fields after the harvest of mundakan crop (either broadcast or dibbled). In the dibbled crop, a spacing of 35 cm between rows is recommended. Thinning is to be done, if necessary.

TEA is done

NAME: Tea

SCIENTIFIC NAME: Camellia sinensis

NATIVE: It is generally grown in Nilgiris, Coimbatore, Theni, Tirunelveli, Kanyakumari.

ORIGIN: It originated in East Asia probably in the borderlands of southwestern China and north Burma.

DESCRIPTION:

SOIL TYPE: Tea requires well drained soil with a high amount of organic matter and pH 4.5 to 5.5. The performance of tea is excellent at elevations ranging from 1000 - 2500 m. Optimum temperature: 20 - 270 C.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 02:01:02 NPK kg/ha.

GROWTH TIME: It is best grown in May - June or September - October

POTENTIAL DISEASES:

- Blister blight - fungi
- Red rust - fungi
- Brown blight, grey blight - fungi
- Twig die back, stem canker - fungi
- Brown root rot disease-fungi
- Red root rot disease-fungi
- Disease cycle
- IPM for tea-pest

PHENOTYPIC OUTPUT: It is an evergreen shrub or small tree. It is usually trimmed to below 2m during the cultivation of its leaves. It consists of a strong taproot. The colour of the flowers are yellow-white.

CULTIVATION STYLE: Cuttings are taken in April - May and August - September. Semi hard-wood cuttings are prepared with one leaf and an internode with a slanting cut at the bottom. The sleeves are watered thoroughly and holes are made in the soil. The cuttings are inserted in the hole and the soil around is pressed firmly to avoid airspace followed by watering. Small polythene tents may be provided which maintain high humidity and regulate the temperature inside. Cuttings may take 10 - 12 weeks for rooting. After 90 days i.e. when all the cuttings have rooted, the polythene tent may be removed gradually over a period of 10 - 15 days. After the tent is removed the cuttings are sorted and staked. 30 g of Nursery soluble mixture of the following composition dissolved in 10 litres of water may be applied over an area of 4 sq.m. This should be done fortnightly. Hardening of 4 - 6 months old young cuttings should be done by removing shade gradually in stages over a period of 4 - 6 weeks starting from a few hours exposure to sun every day initially and extending the time of exposure gradually.

Barnyard Millet js done

NAME: Barnyard Millet (Kuthiraivali)

SCIENTIFIC NAME: *Echinochloa esculenta*

NATIVE: It is generally cultivated in Dindigul, Coimbatore, Tiruchirapalli, Salem, Karur and Tirupur districts.

ORIGIN: It originated from wild *E. crus-galli* (L.) (Barnyard grass) was domesticated some 4,000 years ago in the temperate regions of Japan

DESCRIPTION:



SOIL TYPE: Barnyard Millet is generally cultivated in soils of marginal fertility. It thrives best on sandy loam to loam soil having sufficient amounts of organic matter.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:01:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Due to their short growing season, millets are unique. Millets can easily develop from planted seeds to mature, ready to harvest plants in nearly 65 days. This type of short duration crop is highly important in heavily populated areas.

POTENTIAL DISEASES:

- Head Smut- fungi
- Grain Smut- fungi
- Kernel Smut- fungi
- Leaf spot or Blight- fungi
- Leaf Blast- fungi

PHENOTYPIC OUTPUT: The millet is tiny, white, round grain, bigger in size than semolina (rawa) and smaller than sago (sabudana). In India, cereal grains are not consumed during fasts which make barnyard millets a popular ingredient during the fasting days.

CULTIVATION STYLE: Barnyard millet cannot accept waterlogging. It thrives best on red lateritic loams. Barnyard millet is mainly grown in Kharif season in shallow soils with low moisture-holding capacity while rice is planted in deep soils with better moisture availability. Frequently Barnyard millet and rice are found in the same field.

TAPIOCA is done

NAME: Tapioca (Maravalli kizhangu)

SCIENTIFIC NAME: Manihot esculenta

NATIVE: It is generally grown in Selam, Namakkal, cuddalore, Villupuram, Dharmapuri, Kanyakumari, Nagapattinam, Ariyalur.

ORIGIN: Tapioca is a starch extracted from the storage roots of the cassava plant (*Manihot esculenta*, also known as manioc), a species native to the North and Northeast regions of Brazil, but whose use is now spread throughout South America.

SOIL TYPE: Tapioca (*Manihot esculenta* Crantz.) Any well drained soil preferably red lateritic loam with a pH range of 5.5 -7.0 is best suited for tapioca cultivation. It thrives best in tropical, warm humid climates with well distributed rainfall of over 100 cm per annum.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:01:02 kg N P2O5, K2O/ ha for all varieties.

GROWTH TIME: Crop can be harvested at 9 to 11 months after planting. During tuber maturity, the leaves become yellow and 50 % of leaves become dried and shed off.

POTENTIAL DISEASES:

FUNGI: Brown leaf spot, Cassava tuber Rot Disease

VIRUS: Cassava mosaic disease

IPM for Tapioca

PHENOTYPIC OUTPUT: Storage root morphology varies in shape from cylindrical to globular. Time to initiation of storage root formation varies from 45 to 90 days after planting (DAP), depending on the leaf auxillary bud position in the vegetative propagating material at the plant source.

CULTIVATION STYLE: Any well drained soil preferably red lateritic loam with a pH range of 5.5 -7.0 is best suited for tapioca cultivation. It thrives best in tropical, warm humid climates with well distributed rainfall of over 100 cm per annum. This crop can be cultivated upto an elevation of 1000 m.

FOXTAIL MILLET js done

NAME: Foxtail Millet (Thinai)

SCIENTIFIC NAME: *Setaria italica*

NATIVE: It is generally cultivated in Dharmapuri, Krishnagiri, Vellore, Tiruvannamalai, Cuddalore, Villupuram, Salem, Namakkal, Erode, Coimbatore, Tiruchirapalli, Perambalur, Karur, Madurai, Theni, Tirunelveli and Thoothukudi districts.

ORIGIN: Foxtail millet was first domesticated in China .It remains a major crop in arid and semi-arid regions of China and India to this day.

DESCRIPTION:

SOIL TYPE: Foxtail millet needs moderately fertile well drained soil for good yields, although it can grow on soils ranging from sandy to heavy clay soils. Grows better in place with annual rainfall of 500-700 mm.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:01:00 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Normally crop is ready for harvest in 80 - 90 days after sowing Yield: Grain 20-25 q per ha under ideal condition & Straw 30-40 q per ha.

POTENTIAL DISEASES:

- Blast (Pyricularia setaria)
- Brown spot(Helmithosporium setariae)
- Rust (Uromyces setariae)
- Grain smut(Ustilago crameri)
- Green ear(Sclerospora graminicola)

PHENOTYPIC OUTPUT: Foxtail millet is an erect annual grass, fast-growing, leafy and tufted, 90-220 cm high. It has a dense root system of thin adventitious roots. Its stems are erect, slender and tiller from the base. The leaves are alternate with lanceolate and serrated blades, 15-50 cm long and 0.5-4 cm broad.

CULTIVATION STYLE: Spacing: 25-30 cm (row to row), 8 – 10 cm (plant to plant). The seed should be planted 2-3 cm in depth. Manure and fertilizers: Apply Compost or farmyard manure @ 5-10 tonnes/ha about a month before sowing. Generally fertilizers recommended to get a good crop are 40 kg Nitrogen, 20 kg P2O5 and 20 kg K2O per ha.

RUBBER -done js done

NAME:RUBBER

SCIENTIFIC NAME:Hevea brasiliensis

NATIVE:It is grown in many regions of Kanyakumari, Coimbatore, Nilgiri,Tirunelveli.

ORIGIN:The first use of rubber was by the indigenous cultures of Mesoamerica.

DESCRIPTION:

SOIL TYPE: Rubber is grown in literate or loamy soil, mostly in slope and undulated land or slightly high elaborated flat land where there is no possibility of water stagnation, and having well drainage facilities.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 05:05:02 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: In rubber cultivation, June to July is the best season for its plantation. It takes upto 10-15 years for a rubber crop to mature.

POTENTIAL DISEASES:

Fungi:

White Root Fungus

Upas fungus disease

Anthracnose

Bacterial:

Line cancer disease

PHENOTYPIC OUTPUT: The rubber tree (*Hevea brasiliensis*) is a fast growing, medium to tall tree (25 m high in plantations and up to 40 m in the wild), with deep tap-roots. The trunk is smooth and straight with a grayish bark. It is known for its laticiferous system from which latex is extracted by tapping the trunk. Rubbers have the glass transition temperature well below the room temperature, with their soft feel and modulus being lower compared to plastics. This chapter aims to provide the current state of knowledge on the structure and morphology of rubber blends

CULTIVATION STYLE: The main field should be cleared of wild growth and pits with dimensions of 120 cm x 45 cm x 60 cm should be dug along the contour at suitable intervals. Usually it takes 200 to 250 pits per 1 hectare land. The rubber planting depends on the type of land, if it is levelled one, square planting is suitable whereas slope lands are best for rectangular plantation. In hilly areas, row planting is recommended across the slope along the contour lines. Make sure to form a 2m width of terrace. The rubber plant density for 1 hectare land is about 450. Pits of 75 cm x 75 cm x 75 cm should be dug and filled with top soil having 10 kg organic matter and 150 grams of rock phosphate. Make sure to plant in the middle of the pit providing mulch and shade.

LITTLE MILLET js done

NAME: Little Millet (Samai)

SCIENTIFIC NAME: *Panicum sumatrense*

NATIVE: It is generally cultivated in Dharmapuri, Vellore, Tiruvannamalai, Erode, Salem, Namakkal, Coimbatore, Madurai, Dindigul, Theni, Tirunelveli, Thoothukudi and Krishnagiri districts.

ORIGIN: Little millet is native to India and is called Indian millet.

DESCRIPTION:

SOIL TYPE: Little Millet has a heavy water requirement and also grows well in moderate rainfall of 50-60cm. It has wide adaptability to different soil types, from very poor to very fertile and can tolerate a certain degree of alkalinity. The best soils are alluvial, loamy and sandy soil with good drainage.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:01:00 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Harvest is done once the ear-heads are physiologically mature. The crop is ready for harvest in 65 - 75 days after sowing. Yield: Grain 12-15 q/ha and 20-25 quintals of straw per hectare.

POTENTIAL DISEASES: Blast, Rust, Smut, Downy mildew

PHENOTYPIC OUTPUT: Plant height ranged from 88 to 142 cm with a mean of 111 cm. Number of productive tillers per plant varied from 3 to 26 with a mean of 6.9. Flag leaf length showed variation from 18 to 41 with a mean of 28.9 cm. Flag leaf width varied from 0.5 to 1.9 cm with a mean of 0.99 cm.

CULTIVATION STYLE: Broadcasting and line sowing. Spacing: Row to row 22.5 cm, plant to plant 8-10 cm and depth 3-4 cm. Manures and fertilisers: 5-10 t/ha FYM could be applied about a month before sowing. In addition, application of 40 kg nitrogen, 20 kg P2O5 and 20 kg K2O per hectare is beneficial.

GREEN GRAM -js done

NAME: Green Gram (Pachai payaru)

SCI.NAME: Vigna radiata

NATIVE: It is generally cultivated in Thiruvarur, Nagapattinam, Thoothukudi, Namakkal, Dharmapuri, Ramanathapuram, Ranipet and Tirupattur.

ORIGIN: Green gram is an important pulses crop in India and believed to have originated from India.

DESCRIPTION:

SOIL TYPE: Green gram can be grown on a variety of soils ranging from sandy loam to black cotton soils having good drainage capacity. Saline and alkaline soils are not suitable for green gram cultivation. Green gram is very sensitive to water logging conditions.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 1:02:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Ready to harvest in 60-65 days. Suitable for green manuring and grains purpose. Gives average yield of 2.4-3.6 qt/acre.

POTENTIAL DISEASES:

- Anthracnose- fungi
- Bacterial bean blight- fungi
- Bean rot- fungi
- Dry rot- fungi
- Rust- fungi
- Yellow mosaic virus -virus
- Cercospora canescens - fungi
- Powdery mildew- fungi

PHENOTYPIC OUTPUT: The leaves are alternate, trifoliolate with elliptic to ovate leaflets, 5-18 cm long x 3-15 cm broad. The flowers (4-30) are papillonaceous, pale yellow or greenish in colour. The pods are long, cylindrical, hairy and pending. They contain 7 to 20 small, ellipsoid or cube-shaped seeds.

CULTIVATION STYLE: Dibble the seeds adopting a spacing of 30 x 10 cm. For bund crop dibble the seeds at 30 cm spacing. Irrigate immediately after sowing, followed by life

irrigation on the third day. Irrigate at intervals of 7 to 10 days depending upon soil and climatic conditions.

CLOVES -js done

NAME: Cloves (Krambu)

SCIENTIFIC NAME: *Syzygium aromaticum*

NATIVE: It is generally grown in Namakkal, Tirunelveli

ORIGIN: It originated in North Moluccas Islands in Indonesia.

DESCRIPTION:

SOIL TYPE: Humid tropical climate with an annual rainfall of 150 - 250 cm and a mean temperature range of 20°C to 30°C and elevation up to 1000 m are suitable. Deep rich loams with high humus content and laterite soils are the best suited for clove cultivation.

NUTRIENT VALUE: Apply NPK fertilizer as per soil test recommendation as far as possible. If soil test recommendation is not available, adopt a blanket recommendation of 01:03:03 NPK kg/ha.

GROWTH TIME: June – December is found to be optimum for growing cloves. Slopes facing South and West should be avoided. North and North-Eastern slope is preferred.

POTENTIAL DISEASES:

- Seedling Wilt- fungi
- Leaf rot- fungi
- Last spot, Twig blight and Flower Bus shedding- fungi

PHENOTYPIC OUTPUT: The Clove tree is a slow growing, evergreen tree that ranges greatly in maximum height, from a relatively small, shrubby treelet at 8m to a medium sized tree of up to 20m. It has a dense conical crown when young, but becomes cylindrical or pyramidal when mature.

CULTIVATION STYLE: Seeds are extracted from ripe fruits and sown immediately. The seeds germinate in five to six weeks. Two year old seedlings are planted in pits of 30 cm x 30 cm x 30 cm size filled with soil and FYM 10 kg/pit at a spacing of 6 m either way. Apply 50 g/pit *Azospirillum* before planting.

CHICKPEAS -js done

NAME: Chickpeas (Sundal)

SCIENTIFIC NAME: *Cicer arietinum*

NATIVE: It is generally cultivated in Dharmapuri, Salem, Vellore, Krishnagiri, Madurai, Theni, Dindigul, Thoothukudi, Kanyakumari, and Namakkal districts.

ORIGIN: The chickpea most probably originated in an area of present-day south-eastern Turkey and adjoining Syria.

DESCRIPTION:

SOIL TYPE: This crop is grown on moderately heavy soils, black cotton soils, and sandy loam soils. However, Fertile sandy loam to clay loam soils with good internal drainage are best suitable for its cultivation. Soils should not be heavy alkaline in nature.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 9:23:00 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: The seeds should sprout within 10 to 14 days. Water regularly and evenly throughout the growing season to keep the soil moist. In cooler areas, chickpea plants will need about an inch of water per week; in warmer climates, they may need double that amount.

POTENTIAL DISEASES:

- Ascochyta Mycosphaerella blight- fungi
- Seed rot- fungi
- Seedling Blight- fungi
- Root rot- fungi
- Rhizoctonia root rot- fungi
- Fusarium Root rot- fungi
- Aphanomyces Root rot- fungi
- Botrytis Grey Mould- fungi
- Sclerotinia White Mould (Sclerotinia Rot)- fungi

PHENOTYPIC OUTPUT: Chickpea plants can be described as "stems are branched, erect or spreading, sometimes shrubby much branched, 0.2-1 m tall, glandular pubescent, olive, dark green or bluish green in color. Root system is robust, up to 2 m deep, but a major portion up to 60 cm.

CULTIVATION STYLE: Chickpeas are cultivated under both irrigated and rainfed conditions. Basically, this crop is a winter season crop. This crop does not tolerate frost especially @ flowering stage as this will damage the seed development in the pod. Annually 65 to 95 cm rainfall is required for its cultivation.

PUMPKIN -js done

NAME: Pumpkin (Poosani)

SCI.NAME: Cucurbita pepo

NATIVE: It is generally cultivated in Coimbatore, Tiruppur, Theni, Dindigul, Kancheepuram, Erode, Karur, Ramanathapuram, Thanjavur, Thiruvarur, Villupuram districts.

ORIGIN: Pumpkins are believed to have originated in Central America over 7,500 years ago. The first pumpkins held very little resemblance to the sweet, bright orange variety we are familiar with.

DESCRIPTION:

SOIL TYPE: Whatever A soil with sandy loam along with good drainage power and all essential organic matter is supposed to be the best soil for pumpkins.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 6:12:12 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Generally, pumpkins take 90-120 days to mature after seeds are planted, depending on the variety. Pumpkins are ripe when they are fully colored and have a hard rind and woody stem.

POTENTIAL DISEASES:

- Anthracnose- fungi
- Gummy stem blight- fungi
- Black rot- fungi
- Fusarium crown rot- fungi
- Sclerotinia rot- fungi
- Phytophthora blight- fungi
- Bacterial fruit spot- bacteria



PHENOTYPIC OUTPUT: A pumpkin is a cultivar of winter squash that is round with smooth, slightly ribbed skin, and is most often deep yellow to orange in coloration. The thick shell contains the seeds and pulp.

CULTIVATION STYLE: Choose a sunny location with well-drained soil. Add neem cake, rotted manure into the soil. Pumpkins grow best when sown on a raised soil base with a depressed ring below to keep it moist but well-drained.

CHAYOTE is done

NAME: CHAYOTE (CHOW CHOW)

SCIENTIFIC NAME: *Sechium edule*

NATIVE: It is usually grown in the regions of Madurai, Nilgiri, Dindigul, Coimbatore.

ORIGIN: The chayote originated in Central America

DESCRIPTION:

SOIL TYPE: Chayote can be grown on a variety of soils ranging from sandy loam to heavy clay. But for the production of quality fruits well-drained sandy loam soil with moderate moisture holding capacity is found to be the best. It can not withstand water logging.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 3.22 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Planted in spring, chayote will bear flowers in late September when the days are long as the nights generally begin yielding mature fruit in October and producing well into December. Chayote can also be propagated from cuttings made in autumn. Plant the whole fruit 3 to 4 weeks after the last average frost date in spring when the weather has warmed. Chayote grows best where summer temperatures are very warm to hot, in tropical or subtropical regions. Chayote requires 120 to 150 frost-free days to reach harvest.

POTENTIAL DISEASES:

- yellow mosaic disease - virus
- yellow spots.-virus
- Mosaic and upward curling -virus

PHENOTYPIC OUTPUT: Its leaves are on sulcata petioles of 8 to 15 cm in length, they are ovate-cordate to suborbicular, measure 8 to 18 x 9 to 22 cm, are slightly lobate (with three to five angular lobes) and have minutely denticulate margins and three to five divided tendrils.

CULTIVATION STYLE: Before preparing the land the weeds and stones should be removed from the land. Land should be well prepared by mixing manure with soil. Shallow holes should be prepared 1 sq. foot wide and the distance between the holes should be 3 m between hills and rows. Now the land should be supplied with organic fertilizer to make the soil fertile. 3 fruit seeds should be sown in one hill, leaving 1/3 of the seed exposed. In the rainy season the planting should be done so that much irrigation is not required.

LETTUCE is done

NAME: Lettuce

SCIENTIFIC NAME: *Lactuca sativa*

NATIVE: It is generally cultivated in Kancheepuram, Cuddalore, Vellore Salem, Dharmapuri, Ramanathapuram, Coimbatore, Trichy, Pudukkottai, Thanjavur, Sivaganga, Virudhunagar, Madurai, Dindigul, Nagapattinam, Thoothukudi, Tirunelveli, and the Nilgiris districts.

ORIGIN: Lettuce originated in the Mediterranean area and was first grown as a weed.

DESCRIPTION:

SOIL TYPE: Always strive to achieve a pH level of 6.0 to 7.0 for the soil. An ideal potting mix should be a perfect blend of fertile soil and vermicompost. If you are growing lettuce in pots, you can also mix equal parts of any natural compost such as dry leaves or grass, food scraps, etc. with perlite to make the potting mix.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 7:09:05 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Lettuce grows fairly quickly. Leaf varieties reach maturity in 30 days but can be harvested as soon as they reach the desired size. Other types of lettuce require 6 to 8 weeks to reach full harvest size.

POTENTIAL DISEASES:

- Anthracnose (Shot-hole), Leaf drop (Sclerotinia drop), Powdery mildew (*Erysiphe cichoracearum*), Big vein, Bottom rot, Downy mildew - fungi

PHENOTYPIC OUTPUT: Lettuce (*Lactuca sativa*) is the most important crop in the group of leafy vegetables. It is characterized by considerable morphological and genetic variation. The crop comprises seven main groups of cultivars (including oilseed lettuce) differing phenotypically; they are usually described as morphotypes.

CULTIVATION STYLE: Lettuces meant for the cutting of individual leaves are generally planted straight into the garden in thick rows. Heading varieties of lettuces are commonly started in flats, then transplanted to individual spots, usually 20 to 36 cm (7.9 to 14.2 in) apart, in the garden after developing several leaves.

PIGEON PEAS js done

NAME: Pigeon peas (Thuvarai pattani)

SCIENTIFIC NAME: *Cajanus cajan*

NATIVE: It is generally cultivated in Coimbatore, Madurai, Dindigul, Thoothukudi and Tirunelveli and in patches in the districts of Kancheepuram, Vellore, Salem, Dharmapuri, Ramanathapuram, Virudhunagar and the Nilgiris districts.

ORIGIN: The cultivation of the pigeon pea dates back to at least 3,500 years ago. The centre of origin is probably peninsular India, where the closest wild relatives (*Cajanus cajan ifolia*) occur in tropical deciduous woodlands.

DESCRIPTION:

SOIL TYPE: It is successfully grown in black cotton soils, well drained with a pH ranging from 7.0 - 8.5. Pigeonpea responds well to properly tilled and well drained seedbeds.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 10:08:05 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Sowing of pigeon pea should be done from 15 June to 15 July according to varieties. Seeds should be treated with captan or thiram before sowing. Sowing should always be done in rows. Distance from plant to plant should be kept at 30 cm and row to row should be kept at 60-75 cm at the time of sowing.

POTENTIAL DISEASES:

- Alternaria blight, Anthracnose, Cercospora leaf spot, White mold (Sclerotinia rot), Wilt (*Fusarium udum*) - fungi

PHENOTYPIC OUTPUT: Pigeon pea is an erect, short-lived perennial leguminous shrub that usually grows to a height of about 1-2 m, but can reach up to 2-5 m high. It quickly develops

a deep (2 m depth) poisonous taproot. The stems are woody at the base, angular and branching.

CULTIVATION STYLE: The common is flat sowing, the other methods are broadbed - furrow (BBF) for extra - early group and ridge-and-furrow for the late maturity group. Bund cultivation of pigeon pea in rice fallow areas has also been adopted in Chhattisgarh and MP and some rice fallow areas.

PEAR js done

NAME: Pear (Berikkai)

SCI.NAME: Pyrus

NATIVE: It is generally cultivated in Kancheepuram, Tiruvallur, Cuddalore, Vellore, Villupuram and Tirunvannamalai districts.

ORIGIN: The pear (*Pyrus communis* L.) is a typical fruit of temperate regions, having its origin and domestication at two different points, China and Asia Minor until the Middle East. It is the fifth most widely produced fruit in the world, being produced mainly in China, Europe, and the United States.

DESCRIPTION:

SOIL TYPE: Deep, well drained, fertile, medium textured clayey loam soil is the best for pears. A neutral pH range of 6.0-7.5 will be ideal. A minimum soil depth of 180 cm is required. When compared to apples, pear is less tolerant to drought but more tolerant to wet soils.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 1:02:02 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: Pear trees require full sun to produce the most fruit. Prune annually to keep the tree healthy, productive and looking its best. It can take 3 to 10 years for trees to begin flowering and producing fruit. Mature pear trees are large and produce a lot of fruit in a short window of time.

POTENTIAL DISEASES:

- Scab, Seeding blight, Crown gall, White root rot, Collar rot, Powdery mildew, Leaf spot, Canker



PHENOTYPIC OUTPUT: Pear fruits are generally sweeter and of softer texture than apples and are distinguished by the presence of hard cells in the flesh, the so-called grit, or stone cells. In general, pear fruits are elongate, being narrow at the stem end and broader at the opposite end.

CULTIVATION STYLE: Pear cultivation can be done on an assortment of soil extending from sandy loam to clay loam. Best outcomes can be achieved, when cultivation is done in deep soil with good drainage. The soil should not contain a soil pan or a dense layer of soil below the first layer of soil.

EGG PLANT is done

NAME: Egg plant (Kathinkai)

SCIENTIFIC NAME: Solanum melongena

NATIVE: It is generally cultivated in Vellore, Salem, Ranipet, Krishnagiri, Chengalpattu, Dindigul and Coimbatore districts.

ORIGIN: Eggplant is believed to have originated in the Indian center of plant origins, which includes Assam and Burma. There are many entirely different names for it in ancient Sanskrit, Bengali, and Hindustani, indicating its antiquity in India.

DESCRIPTION:

SOIL TYPE: Eggplant prefers well-drained, fertile, sandy loam soils with a pH between 5.5 and 7.2. Remove all weeds and till the soil to loosen it to a depth of 6 to 10 inches. The higher the organic matter content of the soil the better, so incorporate a 3- to 4-inch layer of compost if possible.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 03:02:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: In general, eggplant is harvested in the mid- to late summer, depending on the variety. And it tastes best when harvested fairly young, so check plants often for eggplants that are just becoming ripe. Transplants will take roughly 65 to 80 days to maturity while seeds will take 100 to 120 days.

POTENTIAL DISEASES:

Blossom end rot, Bacterial wilt, Verticillium wilt, Southern blight, Phomopsis blight, Phytophthora blight

PHENOTYPIC OUTPUT: Eggplant is usually grown as an annual and features an erect bushy stem that is sometimes armed with spines. The leaves are large, ovate,

and slightly lobed. The pendant violet flowers are characteristically solitary and approximately 5 cm (2 inches) across.

CULTIVATION STYLE: Plant the eggplant seedlings in a sunny spot — a place that gets between six and eight hours of direct sunlight daily. The soil should be well draining and amended with plenty of compost. Eggplant grows best in soil with a pH between 5.5 and 7.0, which is a range of slightly acidic to precisely neutral.

ORANGE is done

NAME:ORANGE

SCIENTIFIC NAME:Citrus X sinensis

NATIVE: It is cultivated and grown in many districts like Dindigul, Theni, Nilgiri, Pudukkottai, Namakkal.

ORIGIN: Oranges are believed to be native to the tropical regions of Asia, especially the Malay Archipelago.

DESCRIPTION:

SOIL TYPE: Deep well drained loamy soils are the best for the cultivation of sweet orange. Heavy soils, if well drained, yield good crops but cultivation becomes difficult. The pH of soil should be 6.5 to 7.5 and EC of water should be less than 1.0. Plant is highly sensitive to water-logged soils.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:01:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: The ideal season for cultivation of sweet orange is July to September. It can take three to five years for an orange tree to produce fruit, depending on how old the tree is when purchasing. Once the tree finally begins producing fruit, they take 7 to 8 months to ripen.

POTENTIAL DISEASES:

- Anthracnose (*Colletotrichum gloeosporioides*), *Armillaria mellea*, Black root rot - *Thielaviopsis basicola*, Blast- *Pseudomonas syringae*, Brown rot -*Phytophthora spp*, Melanose -*Diaporthe citri*.

PHENOTYPIC OUTPUT: The fruit is a modified berry known as a hesperidium, and the flesh is divided into segments called carpels. The usual shape of the sweet-orange fruit is round and the colour of its pulp orange, but there are variations. The mandarin, for example, is distinctly flattened, and the blood orange has red pulp.

CULTIVATION STYLE: The land needs to be thoroughly ploughed and levelled. In hilly areas, planting is done on terraces against the slopes and on such lands, high-density planting is possible as more aerial space is available than in flatlands. Since citrus trees are highly sensitive to waterlogging and water stagnation during the rainy season, providing drainage channels of 3-4 feet depth along the slopes around the orchard is essential.

FIG js done

NAME: Fig (Aththi)

SCIENTIFIC NAME: Ficus carica

NATIVE: It is generally cultivated in Kancheepuram, Cuddalore, Ramanathapuram, Pudukkottai, Thanjavur, Nagapattinam, Thoothukudi and Tirunelveli districts.

ORIGIN: Ficus carica, plant of the mulberry family (Moraceae) and its edible fruit. The common fig is indigenous to an area extending from Asiatic Turkey to northern India, but natural seedlings grow in most Mediterranean countries.

DESCRIPTION:

SOIL TYPE: The best type of soil required for growing fig trees is deep, non-alkaline clayey loam soil. Soils with well-draining properties and good water holding capacity are ideal for the cultivation of fig, especially alluvial clay loam or medium black soils.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 1:02:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Most fig trees take three to five years to start ripening fruit. Prior to that, figs may form along stems where each leaf attaches, but they won't ripen. Potted figs may bear fruit sooner.

POTENTIAL DISEASES:

- Alternaria rot (surface mold), Aspergillus rot (Aspergillus spp), Botrytis limb blight, Fig mosaic, Fig blister mites, Fig rust

PHENOTYPIC OUTPUT: The fig plant is a bush or small tree, from 1 metre (3 feet) to 10 to 12 metres (33 to 39 feet) high, with broad, rough, deciduous leaves that are deeply lobed or sometimes nearly entire. The leaves and stems exude a white latex when broken.

CULTIVATION STYLE: Fresh figs are highly perishable. Slightly immature fruits are to be harvested for transporting to distant markets. Ripe fruits are picked either from the tree by twisting the neck at the stem end or by cutting it or gathering after they drop.

HORSE GRAM is done

NAME: Horse Gram (Kollu)

SCIENTIFIC NAME: *Macrotyloma uniflorum* (Lam) Verdc

NATIVE: It is generally cultivated in Krishnagiri, Vellore and Dharmapuri districts in Tamilnadu.

ORIGIN: Peninsular India

DESCRIPTION:

SOIL TYPE: Generally grown on lateritic soil (poor in fertility) in south India. The crop can be grown on a wide range of soils from light to heavy soils which are free from alkalinity.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 12:25:12 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: 3 to 5 months.

POTENTIAL DISEASES:

- Aphids, Jassids, Pod borer, Yellow mosaic, Root rot

PHENOTYPIC OUTPUT: Horse Gram grows as an annual plant with an attractive appearance. Here is a general description of this climbing plant: Stems: The stems are slightly hairy. Leaves: It has trifoliate leaves with each leaflet growing between 2.5 cm and 5 cm in breadth. The leaflets are oblong or lanceolate in shape. Small yellow flowers grow in clusters from the leaf axils. The flowers are 1.3 cm to 2 cm long. Their scimitar-shaped, compressed pods grow around 5 cm in length. The large seeds can be round or slightly flattened in shape. They turn nearly black when dried.

CULTIVATION STYLE: They are generally grown from the seeds. The plants can adapt to a wide range of soil types from granitic sands to heavy clays. Tropic and sub-tropic climates are ideal for their growth. They can tolerate saline soils with the preferred pH range being 6.0 to 7.5. Horse Gram plants can grow in dry areas. But, they prefer 500 mm to 2500 mm rainfall. These plants do not survive in frost and extremely cold weather. Harvesting of the seeds can be done both by hands and by using a harvester.

Aloe vera

NAME: Aloe vera

SCI.NAME: *Aloe barbadenis miller*

NATIVE:

kallakurichi,salem,dindigul,thiruvannamai,thanjavur,perembalur,vellore,thiruvallur,cuddalore,krishnagiri,pudukottai,nagapattinam,dharmapuri,ramanathapuram,sivagangai,ariyalur,thenkasi,tirupattur (all districts). I

ORIGIN: Based on strongly supported evolutionary relationships with morphologically similar species, the new research suggests that Aloe vera originated in the Arabian peninsula. Notably, this is right on the northernmost extreme of the natural range of aloes, where conditions are extremely hot and dry.

DESCRIPTION: Aloe is a cactus-like plant that grows in hot, dry climates. It is cultivated in subtropical regions around the world, including the southern border areas of Texas, New Mexico, Arizona, and California.

SOIL TYPE: Well drained laterite to loamy soils is suited for aloe cultivation. The soil pH must be ranged from 7.0 to 8.5. Commercial cultivation can be done in regions having 25 – 40°C.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 01:01:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Aloevera crop take 18-24 months to fully mature. In year time, it bear yellow color flower. It can be harvested 4 times a year. 3-4 leaves cut from each plant.

POTENTIAL DISEASES:

Fungal: Aloe rust, Basal stem rot, Bacterial soft rot

Insects: Aloe vera aphid

PHENOTYPIC OUTPUT: Aloe vera is a stemless or very short-stemmed plant growing to 60–100 centimetres (24–39 inches) tall, spreading by offsets. The leaves are thick and fleshy, green to grey-green, with some varieties showing white flecks on their upper and lower stem surfaces.

CULTIVATION STYLE: The plant of aloe vera is well grown in bright sunlight. With high sunlight, hot humid and high rainfall provide high growth in aloe vera agriculture. For plant cultivation, high drained land and 1000-1200 mm rainfall is the ideal cultivation and biggest reason for the highest growth of aloe vera.

CAPSICUM js done

NAME: Capsicum (Kudai Milagai)

SCIENTIFIC NAME: Capsicum annuum

NATIVE: It is generally cultivated in Krishnagiri, Kancheepuram, Tiruvallur, Cuddalore, Vellore, Villupuram and Tiruvannamalai Districts in Tamilnadu.

ORIGIN: South America

DESCRIPTION:

SOIL TYPE: Well-drained sandy loam soils having good percolation are most suitable to grow capsicum. The soil pH of 6 to 7

NUTRIENT VALUE: Apply NPK fertilisers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 4:6:3 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: 4 to 5 months.

POTENTIAL DISEASES:

Damping off, Fruit Rot, Die Back, Powdery mildew, Bacterial leaf spot, Cercospora leaf spot, Fusarium wilt, Leaf curl virus

PHENOTYPIC OUTPUT: The fruit morphology revealed attenuated fruit shape with rounded surfaces in var. glabriusculum, and cordate fruit shape with flexuous surface in var. annuum, abbreviatum and accuminatum. The fruit is a berry and may be green, yellow, or red when ripe.

CULTIVATION STYLE: Capsicum is a cool season crop, but it can be grown round the year using protected structures where temperature and relative humidity (RH) can be manipulated. This crop requires day temperature of 25-30°C and night temperature of 18-20°C with relative humidity of 50-60%. If temperature exceeds 35°C or falls below 12°C, fruit setting is affected.

SWEET LIME is done

NAME: SWEET LIME (SATHUKUDI)

SCIENTIFIC NAME: Citrus limetta

NATIVE: It is usually cultivated in the following districts Dindigul, Tirunelveli, Trichy, Perambalur.

ORIGIN: It is thought to have originated as a hybrid between a Mexican-type lime and a sweet lemon or sweet citron. Mediterranean botanists refer to it as native to India.



DESCRIPTION:

SOIL TYPE: Mosambi plants thrive well in well-drained red soils or loamy soils. The soil pH should be between 6.5 to 7.5 for optimal growth and higher yields.

NUTRIENT VALUE: Apply NPK fertilisers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 2:1:1 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: Sweet limes come into season mostly during the rainy months from July to August, far before other orange varieties hit the shelves between October through November, and again from November through March. While citrus fruits can be found year-round, sweet limes are quite distinctly a summer monsoon fruit.

POTENTIAL DISEASES:

- Gummosis, Scab/Verucosis, Canker, Tristeza or quick decline, Greening

PHENOTYPIC OUTPUT: Flowers are white, 20–30 mm (0.79–1.18 in) wide. Fruits are oval and green, ripening to yellow, with greenish pulp. The pith is white and about 5 mm (0.20 in) thick. Despite the name sweet lime, the fruit is more similar to a greenish orange in appearance.

CULTIVATION STYLE: The field should be prepared well by giving a couple of ploughings. Land should be levelled and brought to fine tilth stage. Any weeds and rocks should be removed as part of land preparation. Pits should be prepared with a dimension of 3 feet x 3 feet x 3 feet (Width x Length x Depth). The pit-to-pit or plant-to-plant distance should be 20 to 22 feet. A row-to-row distance of 20 to 22 feet should be maintained. It is recommended to expose these pots for a couple of weeks before actual planting starts. This can comfortably accommodate a plant density of 85 to 90 plants. High-density planting of Mosambi is possible in hilly areas. It is better to plant good distances as these trees go very big and occupy a good radius.

SUNFLOWER js done

NAME:SUNFLOWER (Suryagandhi)

SCIENTIFIC NAME:Helianthus

NATIVE:It is cultivated in Coimbatore,Erode,Selam, Namakkal, Tirunelveli, Dindigul, Dharmapuri, Tiruchirapalli, Perambalur, Karur.

ORIGIN:It originates from North America.

DESCRIPTION:

SOIL TYPE:Sunflowers are sun worshipers that grow best in spots that get six to eight hours of direct sun per day. They have long taproots that need to go several feet into the ground, so sunflower plants prefer loose, well-drained, somewhat alkaline soil with a pH of 6.0 to 7.5.

NUTRIENT VALUE:Apply NPK fertilisers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 4:3:3 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME:Seeds can be sown successfully from January to June for flowering during summer and the rainy season. A light application of fertilizer mixed in at planting time will encourage strong root growth to protect them from blowing over in the wind. Sunflowers grow quickly. Many can achieve up to 12 feet of growth in only 3 months. With the proper growing conditions, sunflowers should reach maturity in 70 to 100 days after planting.

POTENTIAL DISEASES:

Alternaria blight,Rust,Charcoal rot,Rhizopus head rot,Sclerotium wilt or rot,Downy Mildew,Sunflower necrosis,Sunflower mosaic virus

PHENOTYPIC OUTPUT:The common sunflower is an annual herb with a rough hairy stem 1–4.5 metres (3–15 feet) high and broad, coarsely toothed, rough leaves 7.5–30 cm (3–12 inches) long arranged in spirals. The attractive heads of flowers are 7.5–15 cm wide in wild specimens and often 30 cm or more in cultivated types.

CULTIVATION STYLE: Sunflower is sown by Dibbling method which requires 5-6 kg seed per hectare, while furrow sowing needs 8-10 kg per hectare. The excess seedlings are thinned 10-15 days after seedling emergence. Seeds should be treated with captan or ceresan @ 3 g/kg seed under dryland conditions. In downy mildew prone areas, seed treatment with apron 35 SD @ 6g/kg seed is necessary.

Climatic conditions with a relative humidity of 50 to 85 percent, could render seeds to lose viability within 40-60 days. The optimum population varies from 40-74,000 plants/ha depending on variety and availability of moisture. Under dryland conditions, 40-50,000 plants/ha, while under irrigated conditions, 50-60,000 plants/ha is the optimum plant density. A plant density of 55,556 plants/ha (60 cm x 30 cm) in tall cultivars and 74,000 plants/ha (45 cm x 30 cm) in dwarf cultivars/hybrids has been found to be optimum.

Tinda (Squash) is done

NAME: Tinda (squash)

SCIENTIFIC NAME: *Praecitrullus fistulosus*

NATIVE: It is generally grown in Tirupattur, Tiruvannamalai, Kancheepuram, Pudukkottai, Ranipet, Thanjavur districts.

ORIGIN: Tinda is a famous nickname among Punjabi families in both India and Pakistan. This unique squash-like gourd is native to India, very popular in Indian and Pakistani cooking with curry and many gourmet dishes.

DESCRIPTION:

SOIL TYPE: Sandy loam soils rich in organic matter with good drainage and pH ranging from 6.5-7.5 is best suited for Tinda cultivation. This crop requires a moderate warm temperature.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 4:03:03 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Harvesting: (80 to 90 days from sowing.) Indian Round gourd climbers will start flowering at the end of 3rd month. You can start harvesting ripe Indian Round gourd fruits after 3 months of seed sowing. Harvesting season can continue for the next 3 months.

POTENTIAL DISEASES:

Fungal: Alternaria leaf blight, Anthracnose, Cercospora leaf spot, Downy mildew, Gummy stem blight, Powdery mildew, Scab, Septoria leaf spot, Verticillium wilt.

Bacterial: Angular leaf spot, Bacterial leaf spot, Aster yellows.

Viral: Cucumber mosaic, Squash mosaic, Watermelon mosaic.

Insects: Squash vine borer, Western striped cucumber beetle.

PHENOTYPIC OUTPUT: Its fruit is almost a gourd family with a diameter of about 5 to 8 cm; its shape is spherical, which is almost green. It is mainly the native of India and it is cultivated widely in India, Punjab and Uttar Pradesh.

CULTIVATION STYLE: The tinda seeds must be planted in one foot (30 cm) ridges, spaced 4-6 feet (1.25-2 m) apart. Or plant seeds in rows about 12 inches (30 cm) apart. Soak it in the water overnight before planting Tinda seed, it will germinate soon.

BENGAL GRAM is done

NAME: BENGAL GRAM (SUNDAL KADALAI)

SCIENTIFIC NAME: Cicer arietinum

NATIVE: It is cultivated in many places of Coimbatore, Tiruppur, Dindigul and Dharmapuri.

ORIGIN: According to Aykroid and Doughty (1964), the centre of origin of Bengal gram is stated to be eastern Mediterranean, but its probable place of origin lies in Southwestern Asia, i.e. countries lying to North-west of India such as Afghanistan and Persia..

DESCRIPTION:

SOIL TYPE: This crop is grown on **moderately heavy soils, black cotton soils, and sandy loam soils**. However, Fertile sandy loam to clay loam soils with good internal drainage are best suitable for its cultivation. Soils should not be heavy alkaline in nature. Ideal PH range of 5.5 to 7.0

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 01:02:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Ready to harvest in 135-140 days. It gives average yield of 6-8 qtl/acre. GNG 1958: Cultivated under irrigated areas also suitable for normal sown irrigated condition.

POTENTIAL DISEASES:

- Wilt, Rust, Grey mould, Ascophyta blight, Sclerotinia blight- fungi

PHENOTYPIC OUTPUT: It is an erect or spreading much-branched annual herb, covered all over with glandular hair. The leaves are pinnately compound, leaflets are opposite or alternate, stipulate and strongly veined. The flowers are papilionaceous, white to various shades of pink or blue.

CULTIVATION STYLE:

The land preparation for sowing Bengal Gram is predicted on the soil type and cropping system. Bengal gram is highly sensitive to soil erosion. In the case of an important soil, a rough seedbed is ready to avoid packing of the cloddy surface thanks to winter rains and to facilitate soil aeration and easy seedling emergence. When Bengal Gram is cultivated as a mixed crop with linseed or mustard, the land is ready to a fine tilth. It is necessary to deep plough the field at the

beginning of the rainy season, ensuring efficient moisture conservation. Deep ploughing also reduces the wilting of Bengal Gram that tends to develop due to the presence of hardpans in the root zone.

In North India, the crop comes to harvest in 160-170 days whereas its shorter towards the south i.e., 90-110 days in it is done by threshing: under the cattle feet or beating with sticks. Plants are pulled out or cut with a sickle and carried to the threshing floor. Yield of Bengal Gram is approximately 20-25 qt/ha.

MOONG DAL js done

NAME: MOONG DAL (PAASI PARUPPU)

SCIENTIFIC NAME: Vigna radiata

NATIVE: It is cultivated in many places of Chengalpattu, Chennai, Coimbatore, Virudhunagar, Salem, Madurai, Tirunelveli, Theni, Dindigul.

ORIGIN: The mung bean is thought to have originated from the Indian subcontinent where it was domesticated as early as 1500 BC. Cultivated mung beans were introduced to southern and eastern Asia, Africa, Austronesia, the Americas and the West Indies.

DESCRIPTION:

SOIL TYPE: Moong Dal can be cultivated on a wide range of soil. It gives the best results when grown on well-drained loamy, sandy-loam soils. Waterlogged and saline soils are not suitable for cultivation. Loam to sandy loam soils is considered the best soil for mung bean cultivation.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 04:02:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Time of Sowing and Sowing Method in Moong Dal Production. The Rabi crop in September or October and the Kharif crop are sown in June to July. Coming to the spring crop, it is to be sown by 15 February and harvested by the middle of May. The summer crop is sown by 15 April

POTENTIAL DISEASES:

- Cercospora leaf spot, Bacterial leaf blight, Anthracnose, Powdery mildew, Root rot, leaf blight, Rust, Stem canker, Macrophomina blight, Yellow mosaic disease

PHENOTYPIC OUTPUT: The mung bean plant is an annual, erect, or semi-erect, reaching a height of 0.15-1.25 m. It is slightly hairy with a well-developed root system. Wild types tend to be prostrate while cultivated types are more erect.

CULTIVATION STYLE:

Use plant to plant spacing of 10 cm and row spacing of 30 cm for Kharif sowing. For Rabi sowing use plant to plant spacing of 7 cm and row spacing of 22.5 cm. As the Moong Dal crop is considered, the 10 cm X 30 cm of spacing is required. The plant population is 3.33 Lakh

plants/hectare. Proper spacing is required for the best growth and aeration. It's also helpful to do other operations like inter-cultivation, picking up insects and pests in the crop. By keeping the proper spacing, the infestation will be minimised. For the summer season, use a seed rate of 12 to 15 kg/acre whereas, for the Kharif season, the seed rate of 8 to 9 kg/acre is required.

Citron CONTENT NOT CRT

NAME: Citron

SCI.NAME: Citrus Medica

NATIVE: It is generally grown in Dindigul, Tirunelveli, Trichy, Perambalur districts.

ORIGIN: Citrus medica's area of origin, like all other citrus forms, lies in South East Asia. However, Weisskopf and Fuller¹ have suggested that, in contrast to other citron fruits, the citron actually originated in the westernmost area of Asia, probably in the central Himalayan foothills where it was first domesticated.

SOIL TYPE: citrus trees can grow in nearly any soil with good drainage, they grow best in loamy or sandy loam soils

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 06:03:02 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Etrog citron is self-fruitful and should bear fruit within four to seven years.

DISEASES:

- Armillaria root rot, Bacterial Blast, Citrus nematode, Dothiorella blight, Phytophthora gummosis, Phytophthora root rot, Sooty mold

PHENOTYPIC OUTPUT: The citron fruit skin looks much like a lemon in color, but the skin is generally bumpier and the fruits are larger and heavier than lemons. The fruits are bigger, but when you cut them open there is not much actual fruit within. The yellow flesh looks small within the huge white rind and contains plenty of seeds.

CULTIVATION STYLE: Citrons grow in mostly all kinds of soils, but require good aeration. Citron trees are grown from cuttings taken from branches 2 to 4 years old. For quicker

production the Etrog citron can be grafted or budded to lemon or grapefruit, but the fruits do not attain the size of those produced from cuttings.

Red Cabbage

NAME: Red Cabbage

SCI.NAME: *Brassica oleracea* var. *capitata* f. *rubra*

NATIVE: It is generally grown in Krishnagiri, Nilgiris, Erode, Namakkal, Theni, Salem, Dharmapuri, Dindigul, Coimbatore districts.

ORIGIN: Red Cabbage can be grown in different kinds of soils ranging from sandy loam to clay soil. But make sure that the soil pH level is maintained at 6.5 to 7 to get a good yield. Soil rich in organic matter with good drainage is all that your Red Cabbage plants need to thrive.
TYPE: Sandy loam soils rich in organic matter with good drainage and pH ranging from 6.5-7.5 is best suited for Tinda cultivation. This crop requires a moderate warm temperature.

SOIL TYPE: Red Cabbage can be grown in different kinds of soils ranging from sandy loam to clay soil. But make sure that the soil pH level is maintained at 6.5 to 7 to get a good yield. Soil rich in organic matter with good drainage is all that your Red Cabbage plants need to thrive.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:02:01 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: Generally, Red Cabbage is ready for harvest once they are big enough and that have purple colour. Simply pull from the ground gently or use a sharp knife to cut at the bottom and take approximately 70 days from planting to harvest.

POTENTIAL DISEASES:

Fungal: Alternaria leaf spot (Black spot, Gray spot), Anthracnose (*Colletotrichum higginsianum*), Black rot, Clubroot (*Plasmodiophora brassicae*), Damping-off (Wirestem, Head rot), White rust (*Albugo candida*)

Bacterial: Bacterial soft rot, Black leg

Viral: Cucumber mosaic, Squash mosaic, Watermelon mosaic, Ring spot

Fungal: Downy mildew

PHENOTYPIC OUTPUT: The red cabbage (purple-leaved varieties of *Brassica oleracea* Capitata Group) is a kind of cabbage, also known as Blaukraut after preparation. Its leaves are colored dark red/purple. However, the plant changes its colour according to the pH value of the soil, due to a pigment belonging to anthocyanins.

CULTIVATION STYLE: Plant your Red Cabbage seedling into rich soil and then scatter some organic material into the soil. Aged manure or compost will work well. Make sure that the soil is well-draining as Red Cabbage cannot tolerate wet soil. Plant about 12 to 24 inches apart in rows.

Jasmine

NAME: Jasmine

SCI.NAME: Jasminum

NATIVE: It is generally grown in Madurai, Dharmapuri, Thiruvallur, Salem, Dindigul, Thiruvannamalai, Mayiladuthurai, Krishnagiri, Ranipet, Virudhunagar districts.

ORIGIN: Jasminum sambac is considered as a native of the East Indies. The name Jasmine is of Arabic origin and is believed to have been derived from Yasmin. It is reported that the height of its popularity reached its peak two to five hundred years ago at canton and metropolis of southern China.

SOIL TYPE: Jasmine can be grown on a wide range of soils. Well-drained, rich loamy soil with a pH ranging from 6.5-7.5 is ideal for their cultivation. Jasmine prefers mild and tropical climate.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 02:01:01 kg N, P₂O₅, K₂O/ ha for all varieties.

GROWTH TIME: Once planted, the jasmine remains in the field for 10-15 years. The ideal time for planting in North India is during July-August and from the end of January-February, while in South India planting is done any time between July-December.

POTENTIAL DISEASES:

- Jasmine Anthracnose - fungi
- Jasmine White Sclerotium Disease - fungi
- Blight (Fusarium wilt) - fungi

PHENOTYPIC OUTPUT: The white, yellow, or rarely pink flowers are tubular with a flaring, lobed, pinwheel-like form; some double-flowered varieties have been developed. The leaves can be evergreen or deciduous and usually are composed of two or more leaflets, although some species have simple leaves.

CULTIVATION STYLE: Jasmine plant can be grown using the method of layering in which a branch is allowed to grow in the soil while attached to the main plant. When it develops the roots, it is detached from the main plant and grows independently.

Fava Beans

NAME: Fava beans

SCI.NAME: Vicia faba

NATIVE: It is generally grown in kallakurichi, salem, dindigul, thiruvannamalai, thanjavur, perembalur, vellore, thiruvallur, cuddalore, Krishnagiri, pudukottai, nagapattinam, dharmapuri, ramanathapuram, sivagangai, ariyalur, thenkasi, tirupattur.

ORIGIN: It probably originates from Asia Minor and Mediterranean region (exact origin and wild ancestor of this plant are unknown). Cultivation of fava bean started 6.800 to 6.500 years BC. Fava bean is cultivated in around 50 countries around the world today. It grows in cold climate on the rich, loamy soil.

DESCRIPTION:

SOIL TYPE: Loamy

Fava beans (Vicia faba), also known as broad beans, are a fast-growing, cool-weather annual vegetable that can be planted in either the early spring or fall.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 01:02:01 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Favas germinate in two to three weeks in cold, wet ground so be patient. Plants grow slowly at first because they are developing a good root system. As the days grow warmer, longer growth accelerates. The gray-green leaves look more like those of peas and peanuts than beans.

POTENTIAL DISEASES:

Chocolate spot, Ascochyta blight, cercospora leaf spot, rust

PHENOTYPIC OUTPUT: Vicia faba is an upright annual forage legume that can grow to a height of 1.5-2 m. It has a taproot and many fibrous lateral roots that explore up to 90 cm of the soil area (Muehlbauer et al., 1997). The stems are coarse, hollow, and unbranched.

CULTIVATION STYLE:

Fava beans are planted much like other types of beans. You can speed up germination by soaking the seeds in water for 12 to 24 hours before sowing. Direct sow the seeds 1 to 2 inches deep and 6 inches apart. Keep the soil moist but not soggy, and germination should occur in a week or two.

Radish

NAME: Radish

SCI.NAME: Raphanus sativus

NATIVE: It is generally grown in Vellore, Dindigul, Thanjavur, Nilgiris, Dharmapuri, Krishnagiri, Namakkal, Salem, Tiruvallur, Thiruvarur.

ORIGIN: originated in China thousands of years ago and gradually spread west. They became an important food of Radishes ancient Egypt, Greece, and Rome. Radishes were extensively cultivated in Egypt during the time of the Pharaohs. Ancient records show that radishes were eaten before the pyramids were built.

DESCRIPTION:

SOIL TYPE: Sandy loam soils with high organic matter content are highly suited for radish cultivation. The highest yield can be obtained at a soil pH of 5.5 to 6.8. Roots of best size, flavour and texture are developed at about 15°C.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 16:20:00 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: After planting radish seeds, it take just 3-5 weeks before you can harvest them. Talk about instant gratification! They grow best when seeded in April (through early May), a time of year when home gardeners are anxious to get out into the garden, but when it is still too cool to plant summer crops.

POTENTIAL DISEASES: Alternaria Blight, white rust, root rot of Radish, Radish Mosaic Virus (RMV), radish phyllody.

PHENOTYPIC OUTPUT: The radish plant has a short hairy stem and a rosette (ground level horizontal and circular leaves) of oblong shaped leaves which measure 5–30 cm (2–12 in) in length. The top leaves of the plant are smaller and lance-like. The taproot of the plant is cylindrical or tapering and commonly red or white in color.

CULTIVATION STYLE: A favorite early spring crop, radishes are a cinch to grow from seed, producing peppery edible roots in as few as 30 days. In climates with cold winters, you can enjoy a second crop in fall by planting seeds when the nights turn cool in early fall.

Marigold

NAME: Marigold

SCI.NAME: Tagetes

NATIVE: It is generally grown in Krishnagiri, Dharmapuri, Tiruchirappalli, Ranipet and Cuddalore.

ORIGIN: Marigolds, both French and African, are indigenous to Mexico and Guatemala. They were discovered in the early 16th century and brought to Europe and Northern Africa in the late 16th century where they were quickly adopted into gardens. The family name, Tagetes, is derived from a mythical Etruscan deity.

DESCRIPTION:

SOIL TYPE: Sandy loam However, a deep, fertile, friable soil having good water holding capacity, well drained and nearer to neutral in reaction (pH 7.0 – 7.5) is most desirable. An ideal soil for marigold cultivation is fertile and sandy loam.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 3:6.5 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: Marigolds germinate quickly, sprouting within a few days and blooming in about 8 weeks, making them easy to grow from seed. Sow seeds directly outside after all danger of frost has passed and the soil has begun to warm up. Sow seeds 1 inch apart and water thoroughly after planting.

POTENTIAL DISEASES: Leaf spots, Septoria, Alternaria, Wilt, Fusarium oxysporum, Verticillium, Botrytis blight, Botrytis cinerea, Root rot, Rhizoctonia solani.

PHENOTYPIC OUTPUT: The African marigold plant is hardy, annual and grows about 90 cm tall, erect and branched. Leaves are pinnately divided and leaflets are lanceolate and serrated. Flowers are single to fully double with large globular heads. The florets are either 2-lipped or quilled.

CULTIVATION STYLE: Marigold is mainly propagated by seeds. Besides; it can also propagated by herbaceous cuttings. Crop raised from seeds is tall, vigorous and heavy bloomer.

Snake gourd

NAME: Snake gourd

SCI.NAME: *Trichosanthes cucumerina*

NATIVE: It is generally grown in Salem, Dindigul, Coimbatore, Villupuram, Thiruvarur, Cuddalore, Tiruppur, Namakkal, Theni, Dharmapuri, Tiruvallur, Ariyalur, Kancheepuram, Pudukkottai, Ranipet

ORIGIN: The snake gourd is native to southeastern Asia and Australia and is also grown in parts of tropical Africa. The whole fruit is eaten as a vegetable when young and can be dried and used as a soap.

DESCRIPTION:

SOIL TYPE: Snake Gourd can be grown in a wide variety of soils. But it grows best in sandy loam soils with rich organic compost. The soil or main field should be prepared thoroughly by 3 – 4 ploughings and soil pH ranging from 6 – 7 is suitable for Snake Gourd cultivation. Snake Gourd crop requires good soil drainage.

NUTRIENT VALUE: Apply NPK fertilizers as per soil test recommendations as far as possible. If soil test recommendation is not available follow the blanket recommendation of 1:2:2 kg N, P2O5, K2O/ ha for all varieties.

GROWTH TIME: The Snake Gourd becomes ready for harvest from 45 to 60 days of sowing depending on the Variety.

POTENTIAL DISEASES: Downy mildew, powdery mildew, Mosaic, Aphids.

PHENOTYPIC OUTPUT: The snake gourd is an annual plant with forked tendrils and kidney- or heart-shaped leaves that are sometimes palmately lobed. The white unisexual flowers have long lacy fringes on the five petals and open at night.

CULTIVATION STYLE: Snake Gourd can be grown in a wide variety of soils. But it grows best in sandy loam soils with rich organic compost. The soil or main field should be prepared thoroughly by 3 – 4 ploughings and soil pH ranging from 6 – 7 is suitable for Snake Gourd cultivation. Snake Gourd crop requires good soil drainage. Fill each pot with soil, and place one seed in each pot. The seeds should be sown at a depth of 0.5 inches (1.3 cm). Water each pot, and keep them in a warm, sunny place. Snake gourd is a tropical plant and will need around 80°F (27°C) to germinate.