ORGANIC MANGO CROP NUTRITION AND CULTURAL PRACTICES

ICCOA
MANGO PLANTING AND IRRIGATION

- **Planting**: Pit size: 0.5mx0.5mx0.5m. In loamy and deep soils and 1mx1mx1m in shallow, rocky, stony and other problem soils. Sprinkle water and keep 200 gauge white poly sheets in pit to solarize the soil.

- **Spacing**: Banganapalli, Langra, Suvarnareka, Neelam: 10x5m, 9x6m, or7.5x5m. There will be 80 to 110 trees per acre. The pits should be filled with top soil+30 kg FYM + Pseudomonas and Trichoderma 100 gm each per pit. Plant the seedlings in monsoon.

- **Irrigation**: Basin method: In the first year every 2-3 days. 3-5 year old trees should be irrigated at 4-5 days interval.5-8 year old trees should be irrigated at 10-15 days intervals. When plants are in full bearing stage, 2-3 irrigation are given after fruit set. Frequent irrigations, 2-3 months before flowering are not advisable as it will affect flowering.

- **Drip irrigation**: 2 yr plants-2-5lit/pl, 2-4 yr plants-10-25 lit/pl and 5-10 yr plants 30-90 lit/ plant.
CULTURAL PRACTICES TO IMPROVE SOIL HEALTH.

- High density plants and sole mango orchards not suitable for organic.
- July-March: Grow green manure and pulse crops- sunhemp, sesbania, green gram, black gram, cowpea as intercrop and plough them back to add Nitrogen. Drench soil with jivamruth to improve soil biological activity.
- In dry areas where intercrop is not possible, cover the soil with biomass mulch. It conserves soil moisture and control weeds.
- Along with mango, one line of custard apple and amla can be grown for every two lines of mango for better diversity.
ON-FARM PREPARATIONS FOR NUTRIENT MANAGEMENT

- **Cattle urine enriched FYM/Compost:** Spread one ton compost, dry for 6 hours and sprinkle 50 lit cow urine and mix.

- **Concentrated manure mix:** Mix 70 kg vermicompost + 5 kg castor or karanj cake +10 kg neem oil cake+ 5 kg poultry manure+ 15 kg wood ash (or 2.5kg sulphate of potash). If ‘P’ deficient soil, add 2 kg rock phosphate or bone meal.

- Add 200 gm of Azotobacter, PSB and potash mobilizing bacteria and 500 gm each of Trichoderma viride and Pseudomonas fluorescens in 5 lit of water and mix with the above manure mixture. Keep it covered in a heap for 48 hrs and apply in soil within 5-8 days.

- **Foliar feed solution:** Vermiwash 5%, Pachagavya 3% and farm made protein hydrolysate (Amino Acid)* 4-5 ml/lit of water. Take required water for covering the orchard and mix the ingredients as required and spray.

- *see next slide to make on-farm amino acid
VERMICOMPOST, COW DUNG AND URINE.
PREPARATION OF EGG AMINO ACID FOR GROWTH PROMOTION

• Squeeze 20-25 limes in a bucket. Add 250 gm jaggery and mix well to form a solution. Immerse 10-15 chicken or duck whole eggs in the lime-jaggery solution. Tightly close the bucket with a lid and leave it for 10 days. On the 10th day, the eggs will be like a rubber ball.

• Squeeze and mix the eggs along with the shells in lime and jaggery solution and add again jaggery solution- equal quantity to the original solution (If the egg solution is 2 lit, add 2 lit. of jaggery solution). Keep it tightly closed for 10 days. (Make small holes on the lid for excess gases to escape).

• After 10 days, the solution is ready to spray. Use 10-15 ml/lit of water and spray either alone or with panchagavya or vermiwash. The solution can be kept for 6 months and can be sprayed on all crops.
NUTRIENT MANAGEMENT SCHEDULE
FOR RAINFED MANGO.

• **July-August**: Compost/FYM treated with cattle urine @ 35-50 kg per plant per year. (35kg is for 5 year plant and 50 kg is for 10 year plant)

• Apply concentrated manure mixtures (Compost with oil cake, bone meal) @ 8-15 kg per tree.

• **October-November**: Foliar feed solution 2-4 lit/plant 2 times @ 30 day interval.

• **Feb-Mar**: At the flower and fruit set time, foliar feed solution 2-4 lit/ plant 3 times @ 20 days interval.
De-oiled cake

Cow Urine

Compost

jeevamrutha

Biopesticides
NUTRIENT MANAGEMENT SCHEDULE FOR IRRIGATED MANGO.

- **July-August**: Compost/FYM treated with cattle urine @ 40-80 kg per plant per year. (40 kg is for 5 year plant and 80 kg is for 10 year plant)

- Apply concentrated manure mixtures (Compost with oil cake, bone meal etc) @ 8-15 kg per tree.

- **October-November**: Foliar feed solution 2-4 lit/tree 2 times @ 30 day interval.

- Nov-Dec: Apply concentrated manure mixture 8-15 kg/tree

- **Jan-Mar**: At the flower and fruit set time, foliar feed solution 2-4 lit/ tree 4 times @ 20 days interval.

- **Application method of manure**: Mix manure with bio fertilizers-keep in heap for 48 hrs-apply them at a distance of 1 to 1.5 metre distance in trenches. Cover trenches with dry biomass-sprinkle 1-2 lit jivamruth mixed with water to each tree.
INTERCROPPING

• In young mango orchards, space between rows can be used for intercrops like, pulses, vegetables or green manure crops in the first 4 or 5 years. The biomass can be ploughed back after harvesting the produce.
GROW PULSES, COVER CROPS TO ENRICH SOIL
REJUVENATION OF OLD AND UNPRODUCTIVE ORCHARDS

- Remove completely from base the undesirable, criss-crossed, overcrowded, dried and diseased branches in Nov-Dec.
- Pruning back of 3-4 main branches- to be retained at a height of 4 m from the ground. They should be allowed to produce healthy and well distributed canopy.
- In the cut surface, apply Bourdeaux mixture or cow dung mixed with Pseudomonas @ 20 gm/kg of dung.
- Judicious management of nutrition, irrigation, thinning of shoots and plant protection will lead to healthy growth.
- Pruned trees develop umbrella like open canopy of healthy shoots with good bearing potential.
- Rejuvenation technique gives old trees new life of 25-30 years and make sick trees productive and economical.
PRE-HARVEST FRUIT DROP AND HARVEST.

- **Fruit drop** is mostly due to physiological reasons. To minimize the fruit drop, spray vermiwash 5% or Panchagavya 3% or cow urine 5% @ 15 days interval beginning 2 months before harvest.

- **Harvest stage**: Fruits have outgrown shoulders and formation of depression at the stem attachment point. Skin colour changes from dark green to light green. Change in flesh colour from greenish white to light yellow. Specific gravity is more than one. (will sink in water)

- **Harvest time**: Either morning or evening. Do not harvest in noon or during rainy season. Allow a gap of 5 days for harvest after rain.
POST HARVEST HANDLING AND MANAGEMENT

• Fruits must be harvested with long pedicel – collected in a flat ventilated plastic crates. Cut the stem to 1 cm by clipper. Desapping is done by keeping the stem-end of the fruit down for 2-3 hrs to avoid blemish on fruits by the oozing sap.

• Washing/wiping: if fruits have sooty mould or stains, wash with mild detergent solution (use liquid soap 1 ml/lit water) and wipe with cloth. Grade according to size and pack in 4 kg cardboard boxes.

• Where facilities are there, hot water treatment is done by keeping the fruits in hot water at constant temperature of 52 degree C for 10 min.

• Pre-cooling is essential for long transport or export. Done through forced air cooling temperature of 10-13 deg C with 90-95% relative humidity for 4-6 hrs.

• Storage: Optimum temp 13 deg C in RH 85-90%. Can be stored for 3-4 weeks depending upon the variety.