

Course- Commercial Horticulture (ELP)

Course code- EL-AGP 807

Practical Manual



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INTRODUCTION OF DRAGON FRUIT

PRACTICAL 1: DRAGON FRUIT PLANT PROPAGATION AND MARKETING

Objective: To familiarize the students with Dragon Fruit

Scientific Name: *Hylocereus costaricensis*

Family: Cactaceae

It is a cactus under *Hylocereus satchya* group with 3 to 5 limbs. It is one of the best fruits in 21st century. It has another name of 'petia' which is also known to the farmers. Now a days it is growing commercially in our country. Very sweet (not hard sweet), palatable and it is helpful for diabetic patient. The flower of this fruit is so beautiful and it is called 'Noble Woman' or Queen of the night; vines are good which is called 'petia'.

Land Preparation: Almost all types of soil, it can grow. But sandy loam soil where water stagnation does not take places, are the best for this crop. P^H range 5.5 to 6.5. Any marshy land from red to salty soil it can also grow.

Two gardens of dragon fruit are there in our university campus.

1. One at Multipurpose building side where area is 30 m X 9 m i.e., 270 sq.m and 30 no. of posts (pillar) are there and 120 no. of plants are planted there. Date of planting was 16.12.2022.
2. Second one is at our shade net side, area is 15 m X 5 m i.e., 75 sq. m, no. of posts 10 and 30 nos. of plants are there. It was planted on 20.4.2021.

Application of basic fertilizer: Land should be thoroughly prepared and 10 tonnes of F.Y.M should be incorporated in the soil. Chemical fertilizer like D.A.P – 220 kg, Urea – 165 kg, S.S.P – 165 kg per ha. and 50% at the time of land preparation and rest half in two splits one after 6 months of planting and rest before flowering should be applied.

Preparation of pillar and panting of cutting: 2m concrete pillars 100 -150 mm dia should be 40 cm depth should be stand with a spacing of 3m x 3m of total 1100 nos. of pillar should be required for 1 ha inside the pillar 4 cuttings of dragon fruit can be planted. Every pillar should require umbrella like round in the head of a pillar.

Varieties: Pink rose, Moroccan red (small), dark star, local yellow, Israel yellow, V.K., L.R., Mexican yellow R.R. P20/7 etc.

Irrigation: Time to time watering along with chemical fertilizer applied as per schedule.

Intercultural operation: Intercultural, Weeding and hoeing done time to time.

Control of insect's pest and diseases: Generally, dragon fruit plants are not infected by insect pest and diseases. Preventive measures may be taken time to time.

Pinching: After 1 year of planting pinching should be done for betterment of growth of dragon fruit.

Harvesting: 1½ years after or after flowering 5-6 months' time is required for harvesting.

Preparation of cutting for sale: 8-12inches cutting should be prepared for sale. About 500 nos of cuttings are ready for sale.



DRAGON FRUIT CULTIVATION



PREPARATION OF CUTTING



PREPARATION OF CUTTING



**DRAGON FRUIT GARDEN NEAR
SHEDNET HOUSE**

PRACTICAL 2: PAPAYA CULTIVATION & RAISING OF SEEDLINGS IN POLYBAG FOR SALE

Scientific name: *Carica papaya*

Family: Caricaceae

Land preparation: Land should be prepared thoroughly 3-4 ploughing along with planking required for land levelling.

Preparation of soil Mixture: 2:1:1 soil F.Y.M and coarse sand mixed thoroughly for poly pack sowing of papaya seed.

Preparation of poly pack: 8-10 inches poly pack should be hole inside & bottom of poly pack where water stagnation does not take place in poly pack.

Fill up of poly pack: Fill up soil mixture in every pack.

Seed sowing: 2-3 Nos. of seed should be sown in every poly pack. Seed can be treated with Bavistin/Dithane M45 before sowing of seed in poly pack.

Irrigation: Time to time irrigation or watering with rose can should be provided.

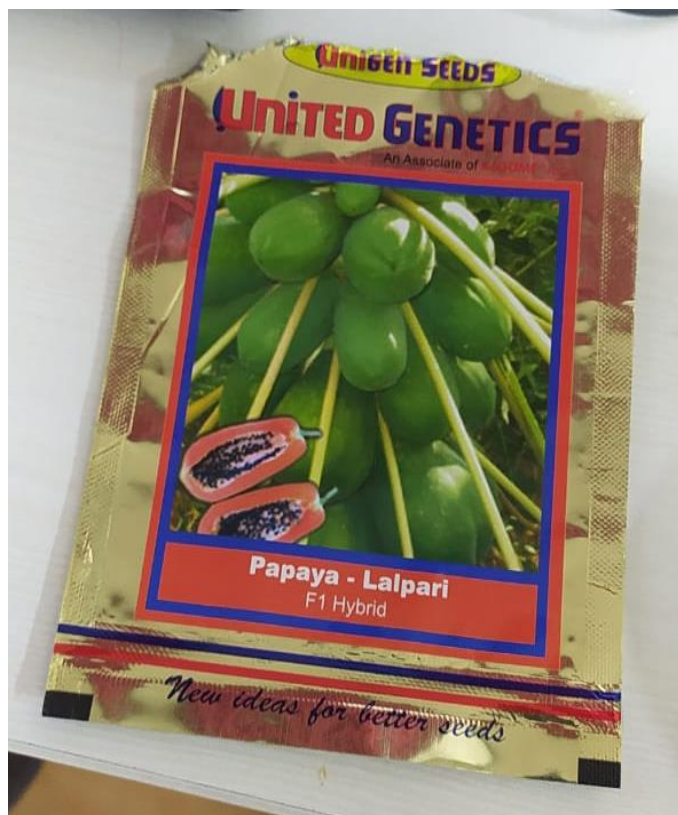
Interculture: Weeding, hoeing & inter-cultural operation can be done timely.

Harvesting and yield: After flowering 1 - 2^{1/2} months required for proper fruiting in case field condition.

Poly pack: About 409 nos. of plants in poly pack will be ready for sale.



SAPNA F1 SEEDS OF PAPAYA



LALPARI F1 SEEDS OF PAPAYA



PREPARATION OF POLY BAGS FOR SOWING PAPAYA SEEDS



PLANTING OF PAPA



WATERING OF PAPAYA SEEDS AND SEEDLINGS



PLANTING OF PAPAYA SEEDS IN POLYBAGS





PRACTICAL 3: CARNATION CULTIVATION IN POLYHOUSE

Scientific Name: *Dianthus caryophyllus*

Family: Caryophyllaceae

It is very highly valued crop because of their excellent keeping quality, and availability of different colours & forms, light weakbility to withstand a long-distance transportation and unique ability to rehydrate etc. It is also known as ‘divine flower’.

Preparation of soil: Sandy loam is best for its cultivation with a pH range 6-7 is ideal. Soil should thoroughly prepared & sterilized by formalin & covered for 15 days in poly bed.

Collection of cutting: It is commercially multiplied vegetatively by shot trip cutting. This can also be propagated through cutting by invitro propagation. Tip cutting treated with fungicide like Bavistin or Dithane M-45 solution.

Planting of cuttings: Planting of cuttings were done in polyhouse on 25-2-2023.

Irrigation: Time to time watering (irrigation) were done.

Fertilization: Liquid fertilizer sprayed & 5-10 kg FYM, 250 g N, 80 g P₂O₅, 80 g K₂O, Ca 125 g & 40 g Mg per /m² can also be used.

Interculture: Weeding, hoeing & interculture operation timely done. Control of insect, pest and diseases by spraying of insecticide & pesticide.

Pinching: Pinching can also be done for good flower quality.

Harvesting of flowers: After pinching, 8-10 shoots should be retained and flowers can be harvested.



WATERING IN POLYHOUSE AT CARNATION BED

PRACTICAL 4: MARKETING OF POTTED ZINNIA PLANTS

Scientific Name: *Zinnia angustifolia*

Family: Asteraceae

Description: Height of zinnia is 75 – 90 cm.

Flower Colour: White, pink, orange, red, yellow, violet, green, daisy like flower single, semi double or double, tall, hardy grown easily for longer duration, suitable for cut flower also.

Soil Preparation: Soil should be prepared thoroughly and there will be no clods, weeds and other foreign materials. It should be cleaned thoroughly in case of land preparation.

Soil mixture preparation: Soil with F.Y.M and coarse sand in the ratio of 2:1:1 as a mixture for pot plants. Mixture of soil should be filled in 6 – 8 inches pots.

Pot culture: Cracks should be placed in the bottom of pots and then soil mixture should be filled for sowing of seeds. Every 3 to 4 nos. of seeds should be sown. About 300 nos. of pots will be ready for sale.

Irrigation: Time to time irrigation, weeding, hoeing and control of insects, pests and diseases attack should be carried out.

Fertilization: After 3 days of sowing, liquid NPK in general dose should be the best for its growth and development.

Flower Pots: After 1^{1/2} months flower pots will be ready for sale.

Varieties: Zinnia elegans, Persian carpet, Evivy (green), Thumbelina (dwarf), State fair (medium).



POT REDDY FOR ZINNIA PLANTS



CRACKS IN POT FOR ZINNIA



PRODUCTION AND SELLING OF ZINNIA PLANT IN POTS



PRODUCTION OF ZINNIA



ZINNIA IN POTS

PRACTICAL 5: PLANT PROPAGATION AND MARKETING OF PEACE LILY

Scientific name: *Spathiphyllum spp.*

Family: Liliaceae

Soil Preparation: Soil should be prepared thoroughly and free from clods, weeds and other foreign materials.

Soil mixture preparation: Soil mixed with F.Y.M and coarse sand in the ratio of 2:1:1 should be prepared.

Pot Preparation: Cracks should be placed in the bottom of pots and then soil mixture to be filled in every pots.

Pot fill-up: About 150 nos. of pots filled up with soil mixture.

Collection of cuttings of peace lily: from any mother plant, cutting from side as used for cutting of peace lily and then planted in every pots.

Planting of peace lily: 6-8 inches pots of peace lily cuttings should be planted in every pots and watering should be done thoroughly by rose can.

Irrigation: Time to time irrigation, weeding, hoeing and intercultural operation to be done. Liquid fertilizer of NPK General dose is the best for its growth.

Ready for sale: 1^{1/2} – 2 months after planting of cuttings along with flowers will be ready for sale.

Uses: It is used as an indoor decoration plants and quality pots (decorative) can be used for sale and better price realisation. Attractive pots fetch a good price.



CUTTING OF PEACE LILY IN POT



SOIL MIXTURE PREPARATION IN POT



