PRODUCTION GUIDELINES FOR TRAINING OF PASSION FRUIT (PURPLE-GRAFTED)

1. ECOLOGICAL CONSIDERATIONS

a. Temperature

- Performs well in cool to warm conditions
- Temperature range of 18 degrees Celsius to 25 degrees Celsius is optimum

b. Rainfall

- Best grown with irrigation
- However, ideal rainfall requirement is 1,500mm-2,000mm during production period but even 900mm will still do
- During the first month after transplanting, crop should not face any drought. So time rainy seasons well when irrigation is not possible

c. Altitude

- Can grow from 1,200m to 2,000m above sea level

2. SITE SELECTION

a. Soil type and analysis

- Well draining, fertile soils are suitable
- pH levels between 5.5 and 7 will do

b. Water proximity

- As much as possible site near water source will be very ideal

c. Topography.

- Ideal topography is where land is relatively level
- But sloping land can be used bearing in mind contours

3. CROP PLANNING

a. Farm layout

- Plan land use to allow for crop mix that will enable rotation

b. Crop rotation.

- Very necessary to avoid disease build up
- Rotation will be necessary once the maximum production period of up to 5 years is achieved or disease buildup in soil is higher

c. Record keeping

- A very important exercise or tool that needs to be used by all farmers. Any activity undertaken should be recorded
- Needs to be designed early to ensure proper and timely collection of relevant information

d. Marketing

- Necessary to know where the product will be sold and the likely price.

4. NURSERY OPERATIONS

a. Area selection

- Site for nursery should be away from any production areas
- Site should be near a water source
- Should be protected from interference

b. Preparation

- Add soil to the area if possible
- The area should be thoroughly ploughed two weeks in advance to a depth of at least 15 centimeters
- The soil should then be prepared to a fine tilth
- Remove all trash and clods
- Incorporate well cured manure and DAP
- Some types of soils will require addition of sand (thus soil:sand:organic matter mix)

Rootstock (Yellow)

c. Sowing

- The seed can be soaked for a while before sowing
- Before sowing in the nursery, thoroughly water the soil using a rose sieve
- Depth of seed sowing depends on size of seed
- In beds, drill seeds in lines thinly, the lines 15 centimeters apart
- In the plugs, put one seed per hole

d. Management

- After sowing, the beds should be covered with either a Hessian cloth or grass mulch
- Then shade should be provided on top using either shade net or any other material that can do this
- Watering can be done daily during the early morning or evening using a rose sieve. However, it is always advisable to check the moisture content before irrigating

- Germination is likely from the 6th day onward. Once germination starts, remove the cloth or mulch to be left with a shade of 50 percent to 70 percent
- Watering pattern remains the same
- Shade can be reduced as needed based on response of plants
- In the last week before transplanting, remove all shade, reduce watering frequency and apply root guard
- Seedlings should then be transplanted into bags (8 inches x 5 inches) when ready
- The rootstock is ready for grafting when it is 15 inches high

Scion (Purple)

- Treatment for scion should follow the same procedure as the **rootstock** above
- The scion should be transferred into a screen house and provided with supports when ready to transplant

GRAFTING

- The yellow rootstocks is ready for grafting when 15 inches tall
- Cut off around 3 inches of the top of the yellow
- Make a cut 2 centimeters to 3 centimeters deep
- All the cuts should be done in hygienic conditions using sodium hypochlorite (jik) as a sterilant
- Select a healthy scion from the screen house (a small piece of young shoot with one bud)
- The scion is then put in the cut and bound with a tape or a strip of nylon paper
- After grafting, the plant should be maintained in a humidity chamber until the scion has taken
- After which it should be moved into a shaded area and maintained there until ready for planting

N.B NURSERY OPERATIONS ARE SPECIALIZED TO AVOID WOODINEES VIRUS AND SHOULD BE CARRIED OUT BY LICENSED NURSERIES.

5. MAIN SITE PREPARATION

a. Ploughing

- Disc plough up to 8 inches deep or more where the land is virgin

b. Harrowing

- Should be done to achieve a fine surface

c. Holes

- Make holes 2 feet wide x 2 ft deep
- Separate topsoil from subsoil
- Make available one debe of well cured manure for each hole

d. Spacing

- Plant to plant is 3 meters and row to row is 2 meters (3m x 2m)
- Lines should run in direction of wind flow

e. Starter solutions

- There are various starter solutions available that can be used at planting time to enhance startup. Among them is root guard

f. Support holes

- This should be done early at land prep time
- Make 2-foot holes spaced 6 meters apart in each row/line
- Put poles at least 6 inches wide and 9-10 ft long into the hole. The pole should be 2 feet into the ground
- Run a wire on the top along each line of poles that should be held in place by a nail on each pole. The wire should at least be a 12mm gauge
- Tie sisal twines on selected stems and onto the wire

6. TRANSPLANTING

a. Timing

- Before transplanting time, mix the topsoil with the manure thoroughly
- Depending on the acidity of the soil, add either DAP or TSP
- Add chopped up, green matter like Maize Stovers. A good portion in the hole will act as a water holding tank for the crop during the dry periods
- Fill the hole with the above mix
- Wet the hole before transplanting if using irrigation or transplant after a good rainfall
- Transplant in the evening to reduce shock when plants are 6 weeks old
- Ensure the graft union has no contact at all with the soil

b. Depth

- The seedling should be put at the same level as it was in the bag

7. CROP MANAGEMENT

a. Feeding/Fertilization

- At planting, phosphorus should be added as described at transplanting above
- Top dressing should follow with a nitrogen fertilizer as is necessary and depending on the nature of the soils

b. Manuring

- Advisable to incorporate manure during hole preparation as already described

c. Weeding
- Ensure field is weed free, thus regular weeding necessary

d. Supports
- As the plant grows, train the vines along the sisal twines

e. Pest and Disease
- Common passion fruit pests are aphids, thrips, spider mites and white flies, in that order
- Control of the pest is through regular scouting and correct selection of pesticides
- The main passion fruit diseases are blights (early and late), bacterial wilt and blossom end rot which is more of a physiological disorder
- The control of disease is achieved with proper selection and utilization of pesticide

f. Mulching
- Helps to reduce weed pressure, keep moisture loss low and also helps maintain soil fertility around the plant

g. Pruning
- Once the plant has taken, remove the tape/nylon strip
- As the plant develops, select two main stems (leaders) and prune the rest while supporting the two leaders on the wire
- Once the leaders reach the wire, train them in opposite direction
- On the wire, let the leaders start producing bearing shoots
- The bearing shoots should not carry any shoots except flowers and fruits
- Cut the tip of the bearing shoot a foot off the ground
- Cut the tip of the leaders when they reach the leaders of the next plant
- During pruning, remove the tendrils to reduce entangling
- All the bearing vines or shoots should hang vertically downward and free

8. HARVESTING

a. Stage
- Eight months after transplanting, the passion fruit will be ready for picking
- After 12 months, it will be in full production

b. Specifications
- Would be determined by the type of market

c. Postharvest handling
- Passion fruit should be handled with care to avoid bruising
- Depending on destination, passion fruit should be packed in either boxes or bags

9. GROSS MARGIN ANALYSIS

a. Capital costs
- Note all the capital expenses incurred

b. Yield
- Record all yield data collected from field

c. Cost of production
- Any cost incurred during the production process should be recorded

d. Profits and losses
- Profit/loss = income (yield x sale price) – expenses (production cost)