

Don'ts

- Avoid retaining the canes of less than 6 mm diameter.
- Avoid delay in pruning under the situation of complete leaf fall due to heavy rainfall or disease incidence.



Fig. 4: Pruned vineyard & b) leaf fall due to rains and disease

Thinning of shoots and bunches

- Shoot thinning should be carried out as soon as the bunch is seen on the sprouted shoots. This will avoid the loss of nutrients.
- Cane having diameter of 6-8 mm, only one bearing shoot (one bunch) along with one non-bearing shoot should be retained.
- Canes with 8-10 mm diameter, two bunch bearing shoots with one non-bearing shoot should be maintained. This can supply required food material to the developing bunch.
- The canes with less than 6 mm diameter should either be removed while pruning or only on bunch bearing shoot should be maintained.
- Excess clusters should be removed during pre bloom stage.

Don'ts

- Avoid shoot thinning after berry set. This leads to drainage of food reserve from the shoot.
- Do not allow shoots more than requirement that will invite the disease incidence in the canopy.

Production of loose bunch

Do's

- Spray GA₃ at proper bunch growth stage so as to achieve the increased distance between the rachis. This will help in reducing the cost of labour for berry thinning.
- For better effect of GA₃, use citric acid or phosphoric acid in the spray solution, which helps in lowering down the pH of the spray solution.
- Dipping the cluster with GA₃ once during pre bloom stage helps in proper elongation of a bunch.

- Use first dip of GA₃ after berry set at 4-6 mm berry size in case of Tas-A-Ganesh while at 2-3 mm size in case of Thompson Seedless.
- Cut the tips of clusters immediately after set by retaining 8-10 apical branches depending on the number of leaves available for a bunch.
- Thin the berries manually before 3-4 mm berry size stage.
- Impose moisture stress by withholding irrigation for 8-10 days from full bloom to shattering stage of bunch development.



Fig. 6. Well-elongated and loose bunch

Don'ts

- Do not spray GA₃ at pre-bloom stage if the weather is cloudy and humid, particularly if it is likely to rain to avoid excessive flower drop.
- Do not girdle the vines before 3-4 mm berry size stage.
- Avoid injury to the berries while thinning mechanically by scissors.
- Do not dip bunches at 2-3 mm berry size in Tas-A-Ganesh to avoid elongated berry.
- Do not allow more than 10-12 leaves above bunch. The shoot growth to be stopped by pinching the shoot tip.

Increasing berry diameter

Do's

- Thin the berries and tip the cluster by 1/4 or 1/3 to retain 8 berries per leaf, when the leaf opposite to cluster is 16 cm wide, reduce the number of berries to 6 per leaf if its width is about 12 cm. This will provide appropriate quantity of food material to the developing bunch.

Don'ts

- Do not treat the clusters with CPPU when the bearing shoot has inadequate leaf area, and the shoots are less vigorous. This may weaken the vine leading to barrenness of the vine during the

next year.

- Avoid berry thinning beyond pea size stage of berries. This may lead to competition of nutrients and reduced berry size.

Uniform size of berries and sugar in a bunch

Do's

- Clip off the tip of the cluster by retaining 2/3rd to even up to 1/2 of its length (under well elongated bunch),
- Ensure leaf/fruit ratio for a developing bunch (6-8 berries/leaf)
- Avoid excessive watering after berry softening.
- Take appropriate and adequate protection measures against powdery mildew after fruit set.
- Orient the bearing shoots horizontally or diagonally on a slanting curtain
- Cover bunches with 75% cut shade net in the situation of reduced canopy.

Don'ts

- Avoid spraying of micronutrients and EC formulations of chemicals after veraison, which may give scars and oily deposits on the developed berries.

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Role of Canopy in production of Exportable quality grapes - Do's and don'ts



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The criteria for selection of grapes for export is mainly depend on the following.

- The bunch size should be 350-500 g.
- The bunch should be of uniform green colour.
- The bunch should be loose and free from blemishes.
- The berries in a bunch should weigh approx. 3.5 to 4.0 g with 18 mm diameter and total soluble solids of 18° Brix.
- The bunches should be neither straggly nor compact but loose.
- Pedicle should be fresh and green

Out of the total production, approximately 80% of the table grape in the country is sent to the local market. However, the grapes sent to various international markets are very low (1.3-1.5%). The major requirement of the international market is that grape bunches should have uniform green colour, minimum TSS of 18° Brix, the berry size of 18 mm and above having the bunch weight of 350 to 500 g. To achieve these, the health of vine is important in terms of all the canopy management parameters. The quality production of table grapes mainly depends on the care taken at each step right from the selection of the planting material. Hence, based on the factors influencing various parameters of canopy management for the production of export quality table grapes, the Do's and Don'ts at each stage as summarized below may help the growers to achieve the quality production.

Selection of site

Do's

- Ensure the suitability of soil for grape by testing soil texture, pH, EC, chloride and sodium ions.
- Ensure the adequacy of water. Approximately 16,000 to 17,000 liters water / acre / day is needed during the hot months.
- Ensure the quality of available water by testing it for salts, EC and pH, etc.
- The land should be away from road, highway to reduce menace of mites, dust and heavy metal accumulation on the produce.

Canopy management plays an important role in production of exportable quality grapes. Steps taken during each growth stage under can help the vine to utilize the food material supplied in the form of fertilizer, irrigation, growth regulator, etc. in proper dose. Such type of vines will always be healthy and can be more tolerant to pest and diseases.

- The slope should be maintained up to the extent of 3%, which can help in drainage of excess water during rainfall period.

Don'ts

- Avoid locations difficult to reach and far away from cold storage facilities.
- Avoid soils with high sodium, free calcium and other salts that result in injury to the vine and ultimately the reduction in yield.
- Avoid grape cultivation near river or water body like lake/tank that builds high relative humidity making the vines susceptible for disease incidence of Downey mildew.

Selection of variety and rootstocks

Do's

- Select varieties based on purpose of cultivation.
- Use rootstocks for saline soil / water and drought prone areas (Dog Ridge and 110 R is found better in our condition of soil salinity).

Don'ts

- Do not select the variety having reduced shelf life that may lead to more physiological loss.
- Do not select the rootstock, which does not have good compatibility.

Selection of planting material

Do's

- Select cuttings from high yielding and healthy

vines.

- The selected cuttings should be from middle portion of the matured shoot (cane).
- Dip the selected cuttings in 0.1% Carbendazim for 3-4 hours to control diseases.



Fig. 1: Selection of cuttings and nursery plants.

Don'ts

- Do not take cuttings from low yielding and diseased and insect infected vines.
- Do not take cuttings from basal and top portion since this portion of shoot does not have proper bud and food reserve to supply the cutting till it sprouts.

Planting

Do's

- While planting, maintain the spacing of 10'X6' distance in heavy black cotton soil and 9'X 5' in light soil. This will adjust the vigor of the vine by covering the space allotted to each vine.
- Planting should be done in North South direction to harvest sunlight uniformly.
- In good soils having enough water, train the vines to flat roof gable to adjust the vigor.
- The angle between two sides of the flat roof gable should be 130° - 140° but not less than 120°

Don'ts

- Avoid planting of own rooted vines at a longer spacing under which bunches comes under direct exposure due to reduced vigor.
- The main stem height should not be less than 4 ft 6 inches in flat roof gable and 5 ft. in bower below which it may affect the storage of food material.

Grafting and maintenance of vines

Do's

- Grafting should be done based on the objective and preference in that area.
- The period of grafting is during Aug -Sept when there is high temperature and high humidity prevails in the area.
- Soak the scion cuttings in 0.1% Carbendazim

solution before using for grafting.

- While grafting care should be taken that the scion and stock has uniform thickness. This helps in good combination of graft joint.
- At 40th day after grafting, the plastic tape tied while grafting should be loosened and retied since the graft joint will not be strong.
- Since sprouting will not be uniform after grafting due to uneven size of stock and scion material used and also the infection of vines by diseases, take the fresh re-cut during February (when the minimum temperature starts rising above 15 °C).

Don'ts

- Avoid grafting at a height below 1ft, 3 inches. This will lead to burying the graft joint in the soil while earthing up operation during the subsequent year of cultivation.
- Do not select the cuttings having less than 6 mm diameter. Such cuttings after sprouting start drying due to less reserve of food material.



Fig 2. Grafting at proper height and at ground

Training the vines

- Train the sprouted shoots on bamboo initially and tie with wire. This will help in achieving the straight trunk and avoid formation of dead wood.
- When the shoot grows 3 inches above the first wire, cut 3 inches below the wire. Follow the same while cutting at second wire. This gives proper direction to the sprouting of side shoots for the formation of primary and secondary arm.
- Develop the cordon at installments by using "Stop and Go" method.
- Develop limited canes during the first year to maintain the health of the vine.
- Make sub canes only when enough irrigation is available that results in to more vigor of the vine.
- The shoot orientation for harvest of maximum sunlight should be 90 ° after April pruning and 45 ° after October pruning for protection of bunches.

- Retention of 0.67 shoot for every square feet during April pruning can help in production of exportable quality bunches after October pruning.

Don'ts

- Avoid hard pinching for developing the cordons.
- Avoid developing canes on the trunk during the first year. By doing this, the trunk may get exhausted leading to weakening the vines.



Fig.3: Well developed cordons and
b) Canes developed on trunk

- Avoid over-crowding of shoots and natural shading of leaves.
- Do not reduce the angle of the shoot less than 45° when the shoot orientation is in vertical direction after October pruning.



Fig. 4: Well-trained vine

- Restrict the shoot growth by maintaining 16-17 leaves per shoot.

Pruning

Do's

- The vines should be pruned based on the objective of selling the produce in local or international market.
- The leaf removal should be done 7-8 days before October pruning in case of grafted vines and 3-4 days in own rooted vines.
- The canes should be swabbed with bud-sprouting chemicals twice in case of thick canes having diameter more than 10 mm.
- The pruned material (disease free) can be buried in the trench for composting.
- The vineyard should be irrigated 2-3 days before the pruning is done.