

rachis. This operation should be completed before the 2nd dip of GA₃ for proper utilization of the food material for berry development.

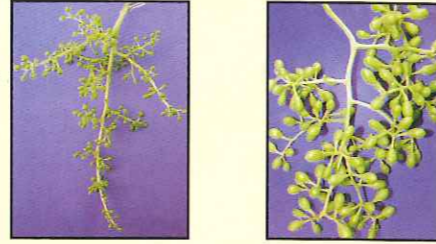


Fig 9: 3-4mm Stage & Fig 10: 6-7mm Stage

- h. The second dip of GA₃ @ 30ppm along with 1ppm Brassinosteroids or 10ppm 6-BA after fruit set should be given at 4-6 mm.
- i. Irrigation should be given @ 1400 litre/ha per mm of evaporation however, phosphorous should be applied @ 107.5 Kg during the same period.

V. Veraison to maturity (91 to 140 days after pruning)

- a. At Veraison, berry softening starts indicating the ripening initiation.
- b. For proper berry development and berry ripening, 4200-litre/ha water per mm evaporation should be applied.
- c. During the period of 71-105 days after pruning, 80 Kg each of nitrogen and Potash/ha should be applied to the vines for berry development and maintaining the vine health. Further, 80 Kg potash/ha should also be applied during 106 to 135 days after pruning.
- d. The vineyards should be sprayed with Hexaconazole @ 0.5 ml/litre water to control powdery mildew at this stage.



Fig 11: Thrips & Fig 12: Mealy Bug damage

VI. Harvesting

- a. For export, grapes should be harvested when the TSS is more than 18° Brix and berry diameter 18 mm and above.
- b. Harvesting should be done early in the morning and not latter than 11.00 am. Temperature of the berries should be brought down to minimum for maintaining the berry quality.
- c. Bunches are to be cut above the knot of the main rachis to increase the shelf life.
- d. At the time of harvesting berries should not be damaged or bruised so as to check the physiological loss in weight and rotting.
- e. Bunches should be stored in shed and cool place and not to be over stacked in the crates.
- f. Proper grading and packing helps in getting higher price in the market.

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Some Tips on Forward Pruning



October pruning is popularly known as forward or fruit pruning. It is carried out in the month of August-September (Early season), October (Normal season) or November- December (Late season) as a part of staggered pruning practices from the point of better marketing. Forward pruning represents the fruit production phase of annual growth cycle of grapevine. It is represented broadly with the following stages:

- Pre-pruning practices
- Pruning and Shoot Growth
- Flowering to Shattering stage
- Berry setting and Berry development
- Veraison to maturity
- Harvesting



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I. Pre-pruning Practices

- Application of Farm yard manure 10 tons + 880kg SSP per acre should be carried out by opening shallow trenches in between vines (e.g. 4'X2'X4" for vines spaced at 6' distance) within the rows
- Water stress should be given at least 7 days before pruning in light soil and 15 days in heavy soil.
- Collection and testing of at least 20-25 randomly selected canes in an acre area for fruitfulness should be done 15 days before pruning
- Leaf removal should be carried out at least 4-5 days before pruning in own rooted vines and 7-8 days in grafted vines.



Fig 1: Forward Pruning & Fig 2: Sprouting

II. Pruning and shoot growth (0 to 40 days)

- Vineyard should be pruned based on the bud testing report received. In the situation where the facility is not available, certain thumb rules should be followed are as given below.
 - In case of sub-cane, prune the cane just ahead of the knot so that the 'Tiger bud' could be exploited.
 - In case of straight cane, prune between 6-10 buds where inter node length is reduced.
- For uniform bud sprout, Hydrogen cyanamide @ 20 to 50 ml/lit should be applied depending on the cane thickness, plant type and the temperature available in that area. The correct doses are as below.

Vine Type	Cane thickness		
	6-8mm	8-10mm	>10mm
Own rooted	20ml/lit	25ml/lit	30ml/lit
Grafted	30ml/lit	40ml/lit	50ml/lit

- The vineyard should be sprayed with 1.0% Bordeaux mixture (i.e. Copper Sulphate 1.0kg and 0.6-1.0kg Lime used for preparation of 100lit

spray solution) within 48 hours of pruning.

- The vineyard should be irrigated at 4200 litre/ha per mm evaporation during first 40 days after pruning.
- Nitrogen should be given @ 80 Kg/ha during the same period of irrigation (30% of the annual dose 266.6:355.2:266.6NPK/ha)
- During bud swelling stage, spraying of Carbaryl @ 2.0g/lit or Neem-oil @ 2.0ml/lit should be carried out to control Flea beetle.
- At leaf emergence stage, spraying of Carbendazim 1.0g/lit be done to prevent anthracnose.
- Spraying of Metalaxyl (8%) formulation @ 2.0g/lit. at 3-leaf stage reduces the chances of Downey mildew.
- Spraying of CCC @ 250ppm along with 6-BA @ 10ppm should be done to avoid filage formation due to vigorous growth.



Fig 3: Three Leaf Stage & Fig 4: Five Leaf Stage

- Shoot and bunch thinning should be carried out as soon as the bunch becomes visible. Only one shoot per sq.ft. area and single bunch per 1.5 sq.ft. area should be maintained. Extra shoots and bunches should be removed keeping in view the health and uniformity in the vineyard.
- GA₃ @10ppm should be sprayed at parrot green colour stage (pre bloom stage) of the bunch. This helps in increasing the size of bunch by increasing the length of primary and secondary rachis.
- Second spray of GA₃ @ 15ppm should be given 3-4 days after 1st spray.
- If proper bunch elongation is not achieved, bunches should be dipped at 20 ppm GA₃ solution after 5-6 days of second spray.



Fig 5: Prebloom Stage & Fig 6: Bunch Elongation
II. Flowering to shattering stage (41 to 60 days after pruning)

- Spraying of Carbaryl @ 1000 ppm at 50% flowering helps in reducing berry set while reduction of irrigation water helps in natural berry thinning up to 30%.
- Spray of Thiomethaxone @ 0.25 g/litre water during berry set helps to control thrips incidence.
- During the period of 41 to 70 days after pruning, 107.5 Kg phosphorous should be applied to the vines.
- For uniform green colour of a bunch, 10-12 leaves above the bunch on bearing shoot are required. This is generally achieved till berry setting. But in some cases, berry drop is experienced due to excess shoot. To avoid this development, shoot should be pinched at required leaf number above bunch.

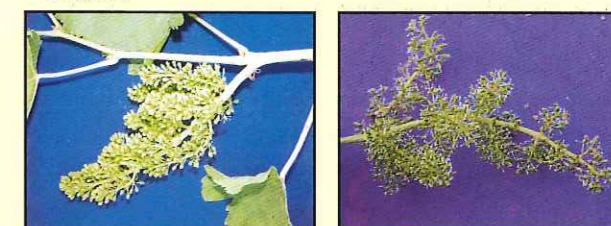


Fig 7: Flowering & Fig 8: Shattering Stage
IV. Berry Growth (61 to 90 days after pruning)

- First dip of GA₃ should be given at 3-4mm berry stage in Thompson seedless and at 4-5mm stage in Tas-A-Ganesh. 40ppm GA₃ along with 2ppm CPPU or 1ppm Brassinosteroids should be given to increase the berry size.
- Berry thinning should be carried out after first dip of GA₃.
- In a bearing bunch 9-10 rachis having 80-100 berries are maintained by thinning out excess