WEATHER DATA FOR THE PREVAILING WEEK

Date of foundation pruning: 15/04/2020
Wednesday (23/9/2020)–Wednesday(30/9/2020)

Location	Temperature (°C)		Possibility of Rain	Cloud Cover	Wind Speed (Km/hr) Min-Max	R H%	
	Min	Max				Min	Max
Nashik	20-22	26-29	**Nashik, Pimpalgaon Baswant, Ozar, Palkhed, Dindori, Vani** Wed to Fri- Good Rain. Sat- Light Rain. Sun & Mon- Drizzling. **Shirdi, Loni** Wed & Thu- Good Rain. Fri- Moderate Rain. Sat- Light Rain. Sun & Mon- Drizzling. **Niphad, Kalwan, Devla** Wed & Thu- Good Rain. Fri & Sat - Moderate Rain. Sun & Mon- Drizzling.	Mostly Cloudy	1-17	66-87	100
Pune	20-22	27-29	**Pune, Phursungi** Wed & Sun to Next Wed- Drizzling. Thu & Fri- Moderate Rain. Sat- Light Rain. **Narayangaon, Junnar** Wed- Good Rain. Thu to Sat- Moderate Rain. Sun- Light Rain. Mon to Next Wed- Drizzling. **Loni Kalbhor, Uruli Kanchan, Yavat, Patas, Supa, Baramati** Wed, Thu & Sun to Next Wed- Drizzling. Fri & Sat- Light Rain.	Mostly Cloudy	0-18	65-84	99-100
Solapur	22-23	29-32	**Solapur, Nannaj, Kati, Pandharpur** Wed, Thu & Sat to Mon- Drizzling. Fri- Moderate Rain. Tue- Light Rain. **Vairag, Pangri, Barshi** Wed & Sun to Tue- Drizzling. Thu & Sat- Good Rain. Fri- Moderate Rain. **Osmanabad, Tuljapur , Latur, Ausa** Wed, Thu, Sun & Mon- Drizzling. Fri- Moderate Rain. Sat- Good Rain. Tue- Light Rain. **Kasegaon, Atpadi** Wed, Thu, Sun & Mon- Drizzling. Fri- Moderate Rain. Sat- Light Rain. Tue- Light Rain.	Mostly Cloudy	4-21	65-72	91-97
Sangli	20-22	28-30	**Sangli, Miraj,Shirguppi, Kagvad, Arag** Wed, Sat & Next Wed- Drizzling. Thu, Sun & Mon- Light Rain. Fri & Tue- Moderate Rain. **Kawthe Mahakal, Palus, Walva, Tasgaon, Palsi, Vita** Wed, Thu, Sun, Mon & Next Wed- Drizzling. Fri- Moderate Rain. Sat & Tue- Light Rain. **Shetfal** Thu, Sat to Mon- Drizzling. Fri- Moderate Rain. Tue- Light Rain. **Khanapur** Wed- Light Rain. Thu & Tue- Moderate Rain. Fri & Sat- Good Rain. Sun, Mon & Next Wed- Drizzling.	Mostly Cloudy	3-24	68-73	98-100
Bijapur	21-22	28-30	**Bijapur, Tikota, Telsang** Wed, Thu & Sat- Drizzling. Fri, Sun, Mon & Next Wed- Light Rain. Tue- Moderate Rain. **Chadchan** Wed, Thu, Sat to Mon & Next Wed- Drizzling. Fri- Moderate Rain. Tue- Light Rain.	Mostly Cloudy	7-28	67-73	93-96
Hyderabad	22-23	27-30	**Hyderabad, Medchal** Wed, Thu & Mon to Next Wed- Drizzling. Fri to Sun- Good Rain. **Zahirabad** Wed, Thu, Mon & Next Wed- Drizzling. Fri & Sat- Good Rain. Sun & Tue- Moderate Rain.	Mostly Cloudy	3-22	68-83	90-95

Note: Above weather information is summary of weather forecasting given in following websites

http://www.imd.gov.in/, http://wxmaps.org/pix/prec6.html, http://www.fallingrain.com/world/IN/, http://www.wunderground.com/, http://www.bbcweather.com-weather/1269750, etc.

II. a) Days after pruning: - 150+ days

Expected pan evaporation: 2- 4 mm

Amount of irrigation advised:

1. Grape growing areas are likely to receive from drizzling to good rains. Generally, under wapsa (field capacity) condition of the soil, donot irrigate the vineyard.
2. Most of the vineyards have already crossed cane maturity stage. The irrigation water application should be such as to avoid new shoot growth as this may lead to development of disease and pests. Emphasis should be to maintain existing leaf in healthy condition and avoid leaf fall till it is desired.
3. Wherever the vineyards are at Cane maturity stage provide irrigation through drip @ 2500 - 3000 litre/acre/day in case no rains are received and soil moisture is belwo waapsa condition.
4. Remove the mulch and allow the bund/ rootzone to be fully wet with water for leaching of salts.
5. During shoot growth stage (Fruit pruning season), apply irrigation through drip @ 3400-6800 L/ acre/ day for all grape growing regions. In case vigour is more than desired, then reduce irrigation water application by half to 1700 - 3400 L/ acre and still if growth is more, stop the irrigation till such time the growth is brought under control and then start irrigation.
6. In areas where rainfall is low, practice mulching to keep the bunds moistened. This will reduce the salinity build up in the root zone due to evaporation of the moisture from the surface of the bund.

Nutrient management:

1. Due to continuous rains and also improper potassium management, the canes may not be mature. It is advised to spray SOP @ 5g/L twice followed by 15-20 kg SOP/acre through drip in two splits.
2. Remove mulch applied during Foundation pruning and loosen the soil for improving movement of water through the root zone to reduce salts accumulated in the root zone. Organic mulch can be mixed in the soil to improve the porosity of the soil.

Pre-pruning operations – Fruit pruning season:

1. In many of the grape growing areas in Nasik, Sangli and other areas, continuous spells of rains were received, the soils are already saturated. This has affected the rooting activity.

Due to prolonged saturation, the roots may have started decaying. **Donot disturb the soil in the root zone even if pruning is being taken up. Wait for the soil to come to the wapsa condition before any soil related intervention has to be done.**

2. In case pruning is planned during October, raise Sunnhemp or Dhaincha for green manuring purpose.
3. The vineyards where sodicity problems are there, apply gypsum to the soil for removal of sodium from the soil exchange complex. In case of calcareous soils, use sulphur for similar purpose. The application should be alongwith FYM/compost etc. They should be mixed in the soil and not left on the top.
4. In case in calcareous soils, if SSP is applied as basal dose, mix with FYM/compost etc. to avoid phosphorus fixation.
5. Test the soil and irrigation water, to plan for nutrient and water management during fruit pruning season.
6. In areas where rains have not been received and the irrigation water availability is less, it is suggested to flood the rootzone(only) with water to leach out the salts and wet the entire soil depth before pruning and then cover with mulch. Thereafter irrigate as per availability of water.

Fruit pruning season:

1. In case organic fertilizers are applied, check the C:N ratio. Lower the ratio more the nitrogen release, hence possibility of enhanced growth. Control nitrogen application based upon growth of vine.
2. Based upon the soil test value, during shoot growth stage apply urea @ 15kg / acre this week in two splits. If the soil is calcareous, instead of urea apply ammonium sulphate @ 25 kg/ acre in three splits this week. Depending upon the crop vigour, regulate nitrogen application.
3. If sodicity problem is there, apply 10 kg Sulphate of potash per acre in 2 splits this week.
4. Until and unless leaves are fully developed donot go for any foliar application of nutrients. It will be lead to wastage of spray.
5. The quantity of nutrients to be applied through foliar, depends upon canopy size.

IV. Requirement of growth regulators (Dr. S.D. Ramteke)

1. This is the ideal time to apply Ethrel (Not registered in CIB) for defoliation. It should be used once only at proper conc. of 3000ppm.

V. Canopy management (Dr. R.G. Somkuwar)

Established garden:

A) Problem of leaf fall:

Following practices are suggested.

a) Remove young shoots which are above the requirement.

b) Train the shoots/tie on wire so that there will not be overlapping canopy. This will reduce the microclimate.

c) Formation of open canopy will support for uniform coverage of any fungicide sprayed for the control of disease.

d) Spray Bordeaux mixture @ 1% in case of vineyard at cane maturity stage while 0.50 to 0.75% at the stage of initiation of cane maturity (initiation of conversion of pink colour shoot to milky white)

e) Apply potash through spray and soil application. Application of 0:40:37 @ 2.5 g/L and through soil application @ 2.0 to 2.5 kg/acre will support for fruit bud differentiation and also cane maturity.

f) Spray 0:0:50 @ 4 to 5 g/L water will help to initiate the cane maturity or advancing the maturity.

Fig. 1: open canopy will help in controlling the diseases

Fig. 2: Leaf fall due to disease incidence

B) Nutrient deficiency:

Fig. 3: Nutrient deficiency

With the excess rains, majority of the grape suffered with nutrient deficiency. In the vineyard where earthing up was followed, the leaching of nutrients including harmful elements was experienced. Root blackening was mainly due to the non-functioning of roots due to severe water logging also be responsible for hampering the uptake of nutrients resulting into leaf cupping, leaf yellowing, etc.

To avoid these, under the condition of rainfall, spray the nutrients as per the recommended dose. Loosening of soil around the root zone will create aeration thereby formation of white root required for uptake of nutrients.

Fig. 4: Nutrient deficiency in vineyard

Forward pruning:

Under the condition of excess leaf fall due to disease incidence, the cane maturity will be delayed. Forward pruning under such condition will lead to conversion of bunch into fillage. Hence, before pruning, assessment of vine condition before forward pruning is important. To achieve cane maturity, following advice to be followed.

a) Allow the shoot to grow for about 6-7 leaf and pinch at about 5-6 leaf.
b) Apply potash through spray to advance cane maturity.
c) Remove side shoots to obtain open canopy so that all canes receive available sunlight
d) Train the shoots on wire
e) Stop or control the irrigation.

Fig. 5 Leaf fall due to diseases

Fig.6 Allow the shoot tip growth and then pinch

Fig. 7 Immature shoot with white pith

Grafting of new variety:

The period of grafting of new varieties is approaching. Generally, grafting is performed when the temperature in the atmosphere is about 30 to 35^0C while the relative humidity is above 80%. In addition, the rootstock shoots should be in full sap flow condition. This is generally available from third week of August. Hence, following suggestions are given below.

1) Clear all the shoots of rootstock leaving only three shoots.
2) The growers generally cut the rootstock shoots at about 2 feet above the ground. This should be avoided as it allows to drain the sap available in the shoots.
3) At the time of grafting the shoots of rootstock should be semi matured, however, the scion shoot selected for grafting should be completely matured with brown pith.
4) The matured cane with brown colour pith is generally available from third basal bud to 6 buds after the sub cane while in case of straight cane, it upto 10^{th} bud. Hence, collection of scion for grafting should be from these portion.
5) The cuttings are taken for grafting from the vine where the vineyard was sprayed with ethephon 10-12 days before. Under such situation, the leaf fall is complete and the buds are swollen which may start sprouting after 6-7 days. If the grafting is done using these scion, early bud sprouts will be experienced. This condition will lead to failure of grafts as the graft joint is not yet established. Bud sprouting should take place 15- 16 days after the actual grafting.
6) Sometime there will be dry spell in the atmosphere leading to high temperature and reduction in relative humidity. At the time of grafting, if the rootstock shoot does not have sufficient sap, irrigation in the vineyard 2-3 days before grafting is necessary. This will support for sap flow condition of rootstock.
7) The scion selected for grafting should be dipped in Carbendazim solution (4-5g/L water) for about 2-3 hours before grafting. This will help to control the graft from diseases.
8) To avoid failure, basal portion of scion can be dipped in 15 to 20 ppm 6-BA.
9) The plastic tape used for grafting should be of good quality, tied firmly on the graft joint so that air/water will not enter inside.
10) Spraying of insecticide to be taken up from 6-7 days after grafting to avoid damage due to flea beetle while at 13-14 days after grafting precautionary measures to control fungal diseases are important.

Rootstock shoots

Matured Scion

Scion dipped in Carbendazim solution

Successful graft

Selection of varieties:

Varietal selection should be based on objectives (raisin making, export, juice making, wine making, etc.). The selected varieties should fulfil the requirement. Following varieties are given below:

Green seedless:

Round and oblong type (Green): Thompson Seedless, Tas-A_Ganesh, Sudhakar Seedless, Manjari Naveen Sonaka, Clone 2A, etc.

Round and oblong type (coloured): Sharad Seedless, Fantasy Seedless, Flame Seedless, Nanasaheb Purple, etc.

Elongated type (Green): Sonaka, Super Sonaka, SSN, Manik Chaman, Danaka, etc

Elongated type (Coloured): Krishna Seedless, Sarita Seedless, Jyoti Seedless,

1. Manjari Naveen

Salient features:

a) Duration of variety: 110-120 days after fruit pruning.
b) Berry diameter: 16 to 18mm
c) Average bunch weight: 400-600 g
d) Yield/vine: 12-14 kg
e) TSS: 16° Brix

Other characters:

The variety is to be harvested at 16° Brix. The application of GA_3 @ 5 ppm + 0.25 ml CPPU should be given as a spray only once at 8 mm berry diameter. This helps in increase in berry diameter up to 20mm. It can be more suitable for double crops in a year.

2. Manjari Shyama:

Black seedless variety with rudimentary seeds, suited for table/ black raisin developed at ICAR-NRC for Grapes.

Salient features:

a) Duration: 125-130 days after fruit pruning
b) Berry diameter: 16-17mm
c) Average bunch weight: 300.0g
d) Yield/vine: 8-10 kg regular yielder

3. Manjari Kishmish:

A white mutant selection from Kishmish Rozavis has been identified for raisins and table purpose. It is also a good yielder of quality fruits.

Salient features:

a) Duration of variety: 130-140 days after fruit pruning
b) Berry diameter: 14-15 mm
c) Average bunch weight: 190-200 g.
d) Yield/vine: 15-20 kg
e) TSS: 23-24^{o} Brix.
f) Raisin recovery: 3.5 t/acre

Other characters:

The pulp is better than Thompson Seedless in addition to the canopy size. The higher leaf area may help for better photosynthesis. It is also a sturdy variety as compared to the present Thompson Seedless.

4. Manjari Medika

Hybrid developed from the cross between Pusa Navrang X Flame Seedless at NRC for Grapes, Pune.

Salient features: Duration of variety: 115-125 days after fruit pruning

a) Berry diameter: 14-16 mm
b) Yield/vine: 16-17 kg
c) Juice recovery: 60%
d) Average bunch weight: 300 g (without GA_3)
e) Juice colour: Purple to black
f) No of seeds/berry: 2-3
g) TSS: 21-22^{o} Brix.

VI. Disease management (Dr. Sujoy Saha)

Days after pruning	Risk of diseases			
	Downy mildew	Powdery mildew	Anthracnose	Others (specify)
160	Moderate	Moderate	High	

As cloudy conditions are prevailing in most of the regions a preventive spray of sulphur @2g/l may be given for powdery mildew management. Use of triazoles may be restricted. If it is only anthracnose, application of thiophanate methyl 70WP @ 1g/L may be done. If it is only bacterial leaf spot application of mancozeb 75WP @ 2g/L may be done. The tank-mixture of Thiophenate methyl@1g/l + Mancozeb @ 2g/l will also give a good control of mixed infection of anthracnose and bacterial spot. For all fungicide applications use of any silicon based adjuvants @ 1ml/L will enhance the efficacy of spray. Drip application of Trichoderma may be given in areas where there is slight drizzle which will enable the BCA to multiply. Foliar application of Trichoderma, twice, will also bring down the anthracnose infection. Botryodiplodia infection is prevalent in many of the vineyards, especially in those where canopy management is not proper. The disease may be severe in weak canes and immediate application of carbendazim 50WP or thiophanate methyl 70WP @ 1g/L may be given to control the disease.

In Satana region, where berry setting has started and the vines are less than 40 days old after fruit pruning, application of CAA fungicides viz. Dimethomorph@1g/L+mancozeb 75WP@2g/L or Iprovalicarb+propineb @ 2.25g/L or Mandipropamid@ 0.8g/L or Dimethomorph +ametoctradin@0.8g/L may be done.

VI. Insect and Mite management. (Dr. D.S. Yadav)

Growth Stage: Cane maturity and afterwards stage after foundation pruning

- High flea beetle incidence may be noticed in the vineyards now. If not controlled it will cause serious damage after fruit pruning. Remove weeds from inside and around the vineyards. Harrowing may be done in inter row space once the rainy spell is over. Give soil drenching with clothianidin 50 WDG @ 200 gram per acre in the root zone to kill flea beetle grubs in the soil. Thereafter, foliar application of lambda cyhalothrin 4.9 CS @ 200 ml per acre or imidacloprid 17.8 SL @ 160 ml per acre may be given.
- In case of caterpillar infestation, application of spinetoram 11.7 SC @ 0.3 ml per litre or fipronil 80 WG @ 0.0625 g per litre or emamectin benzoate 5 SG @ 0.22 g per litre or cyantraniliprole 10 OD @ 0.7 ml per litre water is effective.
- Use of broad-spectrum insecticides should be avoided for mealybug control. Buprofezin 25 SC @ 1.25 ml per litre or spirotetramat 15.31 OD @ 0.7 ml per litre water may be given to manage mealybugs. Preventive plant wash, on stem and cordons, of biocontrol agents such as *Verticillium, Metarhizium, Beauveria* may be given.
- In case of thrips infestation, remove excess shoot growth.
- Red colour stem borer (*Dervishiya cadambae*) has started egg laying and infestation under bark in grape areas. Install light traps near the vineyards to manage moths of this stem borer. Remove loose bark from stem and cordons and give preventive wash on stem and cordons with biocontrol agent *Metarhizium* @ 3-5 ml per litre water minimum once in the month during July to September months. If infestation is observed, remove the loose bark and give stem and cordon wash with lambda cyhalothrin 5 CS @ 2.5 ml per litre water and 1.5-2 litres water per plant.
- In new vineyards after grafting, flea beetle infestation may be observed. In case of heavy infestation, give soil drenching with imidacloprid 17.8 SL @ 1.5 ml per plant and foliar

application with spinosad 45 SC @ 0.25 ml per litre or spinetoram 11.7 SC @ 0.3 ml per litre or fipronil 80 WG @ 0.0625 g per litre water.

- Mite infestation may start appearing, therefore, monitor the vineyards carefully. If mite infestation is observed, sulphur 80 WDG @ 1.5-2.0 gram per litre or abamectin 1.9 EC @ 0.75 ml/l water is effective.