



ICAR-NATIONAL RESEARCH CENTRE FOR GRAPES, Manjri, Pune.



WEATHER DATA FOR THE PREVAILING WEEK

Thursday (05/12/2024) – Wednesday (11/12/2024)

Location	Temperature (°C)		Possibility of Rain	Cloud Cover	Wind Speed (Km/hr) Min-Max	R H%	
	Min	Max				Min	Max
Nashik	13-19	29-32	Nashik, Ozar, Kalwan, Pimpalgaon Baswant, Dindori – Thu, Fri– Drizzling Rain. Loni, Vani –Sun– Drizzling Rain. Palkhed–Mon, Tue – Drizzling Rain.	Clear to cloudy	7-12	20-52	38-81
Pune	15-21	31-32	Pune, Phursungi, Loni Kalbhor, Uruli Kanchan, Patas, Yavat, Narayangaon, Baramati –Thu–Wed–No Rain. Indapur – Sun – Drizzling Rain.	Clear to cloudy	6-11	24-51	34-79
Solapur	19-21	31-33	Tuljapur, Ausa, Vairag, Barshi – Thu, Fri – Drizzling Rain. Solapur, Pandharpur – Thu – Sat – Drizzling Rain. Nannaj – Thu–Wed–No Rain. Latur –Thu – Mon – Drizzling Rain.	Clear to cloudy	8-14	40-46	58-75
Sangli	19-21	30-33	Sangli, Walva, Palus, Kawtha, Miraj – Thu – Wed –No Rain. Palsi, Shirguppi – Fri, Sun – Drizzling Rain. Khanapur Vita – Thu – Mon – Drizzling Rain. Shetphal – Thu, Fri – Drizzling Rain.	Clear to cloudy	7-16	33-47	59-80
Vijayapura	19-21	30-32	Chadchan, Tikota, Telsang – Mon – Tue – Drizzling Rain. Vijayapura – Thu – Mon – Drizzling Rain.	Clear to cloudy	9-16	26-48	58-81
Hyderabad	20-21	30-31	Hyderabad, Medchal – Thu – Mon, Wed – Drizzling Rain. Zahirabad – Thu, Mon – Drizzling Rain.	Clear to cloudy	10-16	45-50	77-90
Satara	18-22	31-32	Satara, Khatav– Thu – Sat – Drizzling Rain. Phaltan– Thu–Wed–No Rain.	Clear to cloudy	5-10	37-52	55-81
Ahmednagar	15-20	30-31	Akole, Sangamner, Rahata, Kopargaon – Fri –Drizzling Rain. Karjat, Ahmednagar, Shrigonda –	Clear to cloudy	8-11	26-50	38-82

			Thu – Wed–No Rain. Jamkhed– Fri, Sun – Mon – Drizzling Rain.				
Jalna	16-21	29-31	Ambad, Ghansavangi, Jalna– Thu – Wed –No Rain. Jafrabad – Thu – Sun – Drizzling Rain. Mantha– Thu, Fri– Drizzling Rain.	Clear to cloudy	6-12	25-54	31-80
Buldhana	15-20	30-32	D.raja, Sindkhed –Thu – Tue – Drizzling Rain. Buldana – Thu– Drizzling Rain. Chikhli–Thu – Wed – No Rain.	Clear to cloudy	4-9	24-56	32-77
Kolhapur	19-22	30-34	Kagal, Karveer, Gagan-bavada– Fri– Drizzling Rain.	Clear to cloudy	3-7	44-60	68-91
Bengaluru Rural	18-19	25-28	Anekal, Doddaballapur, Bengaluru-east, Bengaluru-north, Bengaluru – Fri – Mon – Drizzling to Light Rain.	Clear to cloudy	7-12	54-58	93-96
Belagavi	22-23	30-31	Belagavi, Chikodi –Thu–Sat, Tue – Drizzling Rain. Gokak–Thu– Sun– Drizzling Rain. Athni –Thu– Wed –No Rain.	Clear to cloudy	6-13	51-58	80-92
Bidar	21-22	30-33	Basavakalyan, Humanabad – Thu – Mon – Drizzling Rain. Bidar – Thu, Mon– Drizzling Rain.	Clear to cloudy	9-11	48-58	83-92
Bagalkot	20-21	30-31	Bagalkot, Jamkhandi, Hungund, Mon, Tue– Drizzling Rain. Mudhol – Thu – Wed –No Rain.	Clear to cloudy	7-17	40-49	60-84

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

https://www.wunderground.com/?cm_ven=cgi

<https://imdagrimet.gov.in/weatherdata/BlockWindow.php>

<https://www.timeanddate.com/weather/india>

ICAR-National Research Centre for Grapes does not claim accuracy of it.

II. Water management

a. Number of days after Fruit pruning: 80

b. Expected Pan evaporation: 3.5 to 5 mm

Amount of irrigation advised :

1. In case the soil is under wapsa (field capacity) condition, donot irrigate the vineyard.

2. During **shoot growth stage** (Fruit pruning season), apply irrigation through drip @ 5950 - 8500 L/ acre/ day for all grape growing regions. In case vigour is more than desired, then reduce irrigation water application by half to 3000-4000 L/acre and stop nitrogen application. Still if growth is more, stop the irrigation till such time the growth is brought under control and then start irrigation.
3. From flowering to fruit setting, apply irrigation through drip upto 2000-2500 L/ acre/ day. Vigour needs to be controlled.
4. 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.
5. During Berry development stage, apply irrigation through drip @ 5950 - 8500 L/ acre/ day for all grape growing regions.

Soil and Nutrient management :

1. Inflorescence necrosis could be a issue in dense canopy. Remove side shoots and reduce canopy to allow penetration of the sunlight for proper aeration. Manage canopy for adequate sunlight and air movement within the canopy for avoiding/ minimizing problems of kooj (inflorescence necrosis).
2. Unnecessary sprays should be avoided as the leaf health is bound to affect the photosynthate formation. This will impact bunch development.
3. Donot apply any nitrogen based fertilizer just before Flowering to Setting stage to avoid problems of kooj (inflorescence necrosis).

Shoot Growth stage

1. If the crop is between 5 leaf to prebloom stage, apply Zinc sulphate and Ferrous sulphate @ 15 kg/ acre based upon soil test value. Boron application should be carried out only if soil test value indicates low levels and the irrigation water does not contain boron. If during foundation puning, the petiole test stated that boron was deficient then apply boron @ 1.5 kg to 5 kg depending upon the soil test value. Apply one kg boron at a time.
2. Apply 10 kg Magnesium sulphate per acre if the crop is between 5 leaf to prebloom stage.
3. If soils are calcareous, spray Sulphate of potash and Magnesium sulphate @ 2-3g/L depending upon leaf age during prebloom stage.

Flowering to setting stage:

1. Donot apply any nitrogen based fertilizer just before Flowering to Setting stage to avoid problems of kooj (inflorescence necrosis).

2. Apply 3-4 kg Phosphoric acid in two to three splits this week. Remember that the pH of the irrigation water should be near 6.0. OR apply SSP @ 125kg/acre as basal application. SSP should be mixed with FYM/Compost before application to minimize phosphorus fixation.
3. If SOP not applied, then apply 15 kg SOP in case low temperature and cloudy conditions forecasted during flowering stage.
4. **Petiole nutrient testing:** At 70% capfall stage, petiole samples should be taken for nutrient analysis. The leaf opposite the bunch should be removed for sampling.

Berry Development stage:

1. After Berry setting, continue initially with Phosphoric acid application @ 2 kg followed by 5 kg 12-61-0/acre.
2. If the berry size is from 2-4mm, spray calcium @ 2g Calcium Chloride / Calcium Nitrate per litre. Target sprays immediately after GA application (preferably next day) for better absorption.
3. If the berry size is from 5-8mm, spray calcium @ 2g Calcium Chloride / Calcium Nitrate per litre. Target sprays immediately after GA application (preferably next day) for better absorption.
4. After 6-8 mm berry size, start application of nitrogen in the form of ammonium sulphate @ 25kg/acre in 4 splits in calcareous soil and as urea @ 15 kg/acre in other soils in 3 splits. Follow this up with Sulphate of potash or 0-0-50 @ 25 kg/ acre in 3-4 splits for next two weeks.
5. If soils are calcareous, then apply zinc sulphate and ferrous sulphate @ 5 kg/acre at 65-70 days after pruning.

III. Canopy Management

Based on the present growth stages and weather condition in grape vineyard, following suggestions are offered.

1) Vineyard in pre- bloom stage:

To obtain the grape bunch meant for export purpose, it is necessary to achieve the elongated bunch having increased length of rachis as well as distance between two rachises. This can only be achieved during pre-bloom stage with the help of GA₃. In the late pruned grape vineyards, at present pre-bloom stage might be available. At parrot green stage of a bunch, spray of GA₃ @ 10 ppm (at about 18-19 days after fruit pruning) and another spray of GA₃ @ 15 ppm (5-6 days after the first spray) will help to achieve elongated bunch during pre-bloom stage.

To obtain good results for bunch elongation, only GA₃ will not be helpful but the efficiency of GA₃ spray solution will be more important. To increase the efficiency of GA₃, water used for spray solution should have pH of about 6.5 to 7.0. The GA₃ spray solution should have pH of about 5.5 to 6.0. To achieve this, citric acid @0.5 g/L or urea phosphate @ 1.0 g/L. For better GA₃ use efficiency, spraying should be done when the relative humidity in grape vineyard is more than 60%. Considering this, spraying during evening time will be more beneficial. Before GA₃ spray, one spray of zinc and boron will be more beneficial that will help to increase GA₃ efficiency.

2) The vineyard from pre- bloom stage to flowering stage:

The GA₃ spray can be given only during clear weather for better results. Removal of 2 to 3 basal leaf will help for good aeration and coverage of fungicide. In case of white seedless varieties (Thompson Seedless and Tas-A-Ganesh) during full bloom stage, GA₃ spray @ 25 ppm can help for berry thinning as it acts as pollinicide.

The GA₃ schedule for elongated varieties (Sonaka, Manik Chaman, Super Sonaka, Sarita Seedless, Krishna Seedless, SSN, etc) is different than the above. In these varieties, GA₃ can be sprayed as below.

a) Pre-bloom stage: 10 ppm GA₃

b) Pre-bloom stage: 15 ppm GA₃

c) 25% flowering: 10 ppm GA₃

d) 50% flowering: 10 ppm GA₃

e) 60-80% flowering: 10 ppm GA₃

f) 90-100% flowering: 60 ppm GA₃

g) After berry set: 40-50 ppm GA₃ + 10 ppm IAA

3) Berry setting to 8 mm berry size:

The vineyard where berry setting is completed, bunch thinning and berry thinning need to be considered important. The bunches should be retained based on objectives (raisin, local market, and export). The retention of berries per bunch should be based on the bunch type, variety, etc. Berry retention based on the variety is as below.



भारतीय कृषि संशोधन परिषद-राष्ट्रीय द्राक्ष संशोधन केंद्र, पुणे
ICAR National Research Centre for Grapes, Pune



Variety	No of rachis/bunch		No of berries/bunch	
	Local	Export	Local	Export
Thompson Seedless	12-14	10-12	130-140	100-120
Tas-A-Ganesh	12-14	10-12	130-140	100-120
Sonaka	14-16	12-14	140-150	130-140
Manik Chaman	14-16	12-14	140-150	130-140
Sarita Seedless	14-16	12-14	140-150	130-140
Red Globe	10-12	8-10	80-90	70-75
Nanasaheb Purple Seedless	10-12	8-10	80-90	75-80
Crimson Seedless	10-12	10-12	120-130	100-120

4) Leaf requirement for bunch development:

The leaf requirement for bunch development should be given priority. For development of 500 g bunch (100-120 berries), one shoot should have at least total 12 leaf with leaf area of about 160-170² cm.

Approximately 6-8 berries are developed with the support of one leaf. The leaf requirement can be fulfilled upto berry setting. Hence, during the pre-bloom stage to complete the leaf requirement application of nitrogenous fertilizer (urea, 12:61:0, ammonium sulphate, etc) can be applied through drip. Depending upon the curve of shoot tip, the fertilizer requirement can be decided.

5) Effect of low temperature:

In some of the grape growing areas (Bori, Indapur, Satana, Phaltan, etc), early pruning is done. In many of the grape growing regions, minimum temperature is below 12⁰C. In white seedless varieties, the grape bunches at nearing veraison stage suffers with change in green colour to pink colour. This is a physiological disorder. Pink pigmentation is observed when the minimum temperature starts dropping below 7⁰C for one to two days. Though there is no control measure available to stop pink colour formation but some of the management practices can be followed to save the grape bunches. Covering the grape bunch with paper (before veraison starts), increase the irrigation in grape vineyard and burning file in different spots to increase the temperature can help to minimize the problem.

After berry set (4-6 mm berry size) the berry develops at faster rate. However, during the period of low temperature, physiological activities a vie slow down thereby reducing the berry size. The root activity is also seen reduced. This needs to be accelerated by increasing soil temperature. Application of mulch on bund, small trench on the side of bund, increasing phosphorous dose, irrigation, etc. are some of the major practices that can be followed.

6) Effect of dew on berry development:

Since the current experienced sufficient rainfall with longer period in all the grape growing regions, in the coming months, the dew formation during morning hours will be more and the period may also be extended even upto afternoon. This will increase the relative humidity in the vine canopy. The increase in humidity will help to activate the inoculum of major disease like downy mildew. Dry weather in the canopy during evening time may lead to incidence of powdery mildew in case of vineyards after berry setting. More than the use of fungicide, canopy plays a crucial role in controlling the diseases in the grape vineyard. Removal of 2-3 basal leaf, removal of excess shoots, side shoots, arranging the shoots on foliage wire after berry set, etc will help to reduce the relative humidity in the canopy thereby improving the spray coverage for the control of diseases.



भारतीय कृषि संशोधन परिषद-राष्ट्रीय द्राक्ष संशोधन केंद्र, पुणे
ICAR-National Research Centre for Grapes, Pune



IV. Disease management

Days after fruit pruning	Risk of diseases			
	Downy mildew	Powdery mildew	Anthraco	Others (specify)
80	High	Low	High	Bacterial spot-High Rust-Nil

In Sangli areas where bacterial spot and anthracnose were prevalent on berries, Mancozeb 75 WP @2-3g/L, and two sprays of Kasugamycin 5% +Copper Oxychloride 45% WP @750g/ha, may be given. Application of Copper Sulphate 47.15% + Mancozeb 30% WDG@5g/L or Thiophenate methyl/carbendazim @1g/L will provide a good control against anthracnose. Drip application of Trichoderma should continue at fortnightly intervals. There can be an initiation in powdery mildew infection in some areas and an application of sulphur

80WDG @2-3g/l may be given. Application of triazoles or cyflufenamid 5%EW @ 500g/ha or metrafenone 50SC @250ml/ha should be done to prevent severe infection of powdery mildew.



Bacterial spot



Anthracnose



Downy mildew



भारतीय कृषी संशोधन परिषद-राष्ट्रीय द्राक्ष संशोधन केंद्र, पुणे
ICAR National Research Centre for Grapes, Pune



V. Insect and Mite Pest Management

Growth Stage: berry development after fruit pruning

- Aphid infestation may be seen in many grape growing regions especially Sangali and Solapur. These aphids are black in colour and honeydew may be seen on bunches and shoots due to its feeding. Imidacloprid 17.8 SL @ 0.4 ml per litre of water is effective. But, these aphids will keep coming for the next month and repeated application of insecticides is not advisable. Install yellow sticky traps to manage them. Application of *Lecanicillium lecanii*, *Beauveria bassiana* and *Metarhizium anisopliae* is also effective against aphids.



- Caterpillar infestation may be noticed in most of the grape areas. In case of caterpillar infestation, application of emamectin benzoate 5 SG @ 0.22 g per litre or cyantraniliprole 10 OD @ 0.7 ml per litre water is effective.



- For flea beetle management, Imidacloprid 17.8 SL @ 0.4 ml/L or spinosad 45 SC @ 0.25 ml per liter water at night is effective.

भारतीय कृषि संशोधन परिषद-राष्ट्रीय द्राक्ष संशोधन केंद्र, पुणे
ICAR-National Research Centre for Grapes, Pune



- Vineyards may have moderate mealybug infestation as well. Do not spray any broad spectrum insecticides such as chlorpyrifos, dichlorvos, methomyl, profenophos, etc. for mealybug control. Higher humidity will favour development of natural enemies which will slowly kill mealybugs. In case chemical spray is required, prefer spot application of buprofezin 25 SC @ 1.25 + *Metarhizium anisopliae* 3 ml per litre of water for plant wash.
- All the cracked/damaged berries should be removed from the grape bunches and vineyards. Collect these berries in a container and place this container about 100 feet away from the vineyards. The vinegar flies will get attracted towards these rotting berries. Spray spinosad 45 SC @ 0.25 ml per litre water over the container to kill them.
- Incidences of new species of stem borer (red colour larva) may be noticed under bark in Sangali, Solapur, Nashik, Pune, Bijapur grape areas. Remove the loose bark and give good plant wash mainly targeting cordons and main trunk *Metarhizium anisopliae* @ 2.5 ml/l (water volume 1.5 litres per plant).

- Remove the excess shoot growth to manage thrips population during berry development stages.



भारतीय कृषि संशोधन परिषद-राष्ट्रीय द्राक्ष संशोधन केंद्र, पुणे
ICAR-National Research Centre for Grapes, Pune

