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

WEATHER DATA FOR THE PREVAILING WEEK

Thursday (28/11/2024)– Wednesday (04/12/2024)

Location	Temperature (°C)		Possibility of Rain	Cloud Cover	Wind Speed (Km/hr)	R H%	
	Min	Max			Min-Max	Min	Max
Nashik	12-15	28-30	Nashik, Ozar, Kalwan, Palkhed, Pimpalgaon Baswant –Thu – Wed – No Rain. Dindori, Vani –Sat– Drizzling Rain. Loni –Sat-Mon – Drizzling Rain.	Clear to cloudy	9-18	18-35	42-57
Pune	12-16	27-30	Pune, Phursungi, Loni Kalbhor, Uruli Kanchan, Patas, Yavat, Narayangaon, Baramati –Thu– Wed– No Rain. Indapur – Sat – Drizzling Rain.	Clear to cloudy	9-16	19-41	41-70
Solapur	13-19	29-32	Tuljapur, Ausa, Vairag, Barshi, Nannaj, Solapur, Pandharpur, Latur – Sat – Drizzling Rain.	Clear to cloudy	16-20	20-46	41-79
Sangli	14-20	29-31	Sangli, Walva, Palus, Kawtha, Palsi, Miraj – Thu – Wed –No Rain. Shetphal, Khanapur Vita, Shirguppi – Sat – Drizzling Rain.	Clear to cloudy	16-22	21-43	43-76
Vijayapura	13-18	28-32	Chadchan, Tikota, Vijayapura, Telsang – Sun – Drizzling Rain.	Clear to cloudy	17-21	22-50	43-84
Hyderabad	15-18	26-29	Hyderabad, Medchal – Sat – Wed – Drizzling Rain. Zahirabad – Sun – Drizzling Rain.	Clear to cloudy	10-16	28-60	45-89
Satara	13-18	27-30	Satara, Phaltan, Khatav– Thu– Wed –No Rain.	Clear to cloudy	8-14	25-46	44-80
Ahmednagar	11-14	27-29	Akole, Sangamner, Rahata, Kopargaon, Ahmednagar, Shrigonda–Thu–Wed– No Rain.	Clear to cloudy	12-18	20-42	42-63

			Karjat, Jamkhed – Sat,Sun – Drizzling Rain.				
Jalna	13-17	26-29	Ambad, Ghansavangi, Jalna–Sun– Drizzling Rain. Mantha, Jafrabad – Sat,Sun– Drizzling Rain.	Clear to cloudy	13-15	21-40	40-74
Buldhana	11-15	28-30	D.raja, Sindkhed, Chikhli – Sun,Mon – Drizzling Rain. Buldana– Sun– Drizzling Rain.	Clear to cloudy	9-13	22-39	43-71
Kolhapur	17-22	30-34	Kagal, Karveer, Gagan-bavada– Thu–Wed– No Rain.	Clear to cloudy	7-14	30-43	45-77
Bengaluru Rural	19-21	24-27	Anekal, Doddaballapur, Bengaluru-east, Bengaluru-north, Bengaluru – Fri – Mon – Drizzling to Light Rain.	Clear to cloudy	8-22	49-77	73-94
Belagavi	16-21	27-31	Belagavi, Gokak, Athni –Thu–Wed –No Rain.. Chikodi – Sun, Mon – Drizzling Rain.	Clear to cloudy	12-17	35-57	54-93
Bidar	13-17	27-31	Basavakalyan, Humanabad – Sat – Drizzling Rain. Bidar – Sat, Sun – Drizzling Rain.	Clear to cloudy	13-18	29-60	51-92
Bagalkot	14-18	27-30	Bagalkot, Jamkhandi, Hungund – Sun – Drizzling Rain. Mudhol – Thu – Wed –No Rain.	Clear to cloudy	15-20	24-49	42-85

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: 73

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 :

Shoot Growth stage

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 lead to wastage of spray.
5. The quantity of nutrients to be applied through foliar, depends upon canopy size.
6. 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.
7. Apply 10 kg Magnesium sulphate per acre if the crop is between 5 leaf to prebloom stage.

8. 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.

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 GA_3. In the late pruned grape vineyards, at present pre-bloom stage might be available. At parrot green stage of a bunch, spray of GA_3 @ 10 ppm (at about 18-19 days after fruit pruning) and another spray of GA_3 @ 15 ppm (5-6 days after the first spray) will kelp to achieve elongated bunch during pre-bloom stage.

To obtain good results for bunch elongation, only GA_3 will not be helpful but the efficiency of GA_3 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 GA_3 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 GA_3 spray, one spray of zinc and boron will be more beneficial that will help to increase GA_3 efficiency.

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

The GA_3 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 GA_3

b) Pre-bloom stage: 15 ppm GA_3

c) 25% flowering: 10 ppm GA_3

d) 50% flowering: 10 ppm GA_3

e) 60-80% flowering: 10 ppm GA_3

f) 90-100% flowering: 60 ppm GA_3

g) After berry set: 40-50 ppm GA_3 + 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.

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 160-170^2 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 12^0C. 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 7^0C 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.

IV. Disease management

Days after fruit pruning	Risk of diseases			
	Downy mildew	**Powdery mildew**	**Anthracnose**	**Others (specify)**
73	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 should be done to prevent severe infection of powdery mildew. However, 1-2 foliar sprays of potassium salt of active phosphorus @ 4g/l may be given.

Bacterial spot

Anthracnose

Downy mildew

V. Insect and Mite Pest Management

Growth Stage: flowering, berry setting to berry development after fruit pruning

- Jassid/leafhopper incidence may be noticed in few grape growing regions, spraying of Lambda cyhalothrin 4.9 CS @ 200 ml per acre or imidacloprid 17.8 SL @ 160 ml per acre is effective. Spray at night with a white bright colour light behind tractor for better results. Install light traps outside vineyards.
- In case of caterpillar and thrips 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.
- 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 buprofezin 25 SC @ 1.25 + *Metarhizium anisopliae* 3 ml per litre of water for spot plant wash.
- Aphid infestation may be noticed in Sangali area, regular insecticides used for other insects may also kill the aphids. Spraying of entomogenous fungus, *Lecanicillium (=Verticillium) lecanii* is also effective.
- 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 with *Metarhizium anisopliae* @ 3 ml/l.