

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th January, 2020

Latitude: 13⁰7¹ N

Longitude: 77⁰ 29¹E

Altitude: 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average at 7.30AM	Average at 1.30PM			
January 1 st to 15 th , 2020	29.4	15.4	87.6	52.4	3.87	3.92	0
	(28.5)	(14.7)	(75.4)	(38.6)	(3.8)	(2.5)	(0)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th January, 2020

During the first fortnight of the month i.e., from January 1st to 15th, 2020, the average maximum temperature was higher by 1.2⁰C and minimum temperature was lower by 1.1⁰C, as compared to previous fortnight. The average maximum temperature was higher by 0.3⁰C and minimum temperature was lower by 1.4⁰C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity was lower by 1.9% and 13% during morning and afternoon, respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

The maximum temperature during the first fortnight of January, 2020 was marginally higher compared to the mean value of the last five years. However, the relative humidity was lower as compared to the previous fortnight. Since the rain fall received was nil, protective irrigation is required and foliar application of nutrient limiting the yield maybe taken up in fruit crops along with liberal application of FYM.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Fruit crops

Hoppers on mango:

- Incidence of hoppers is expected on mango. Spray Azadirachtin 10000 ppm @ 3 ml/L, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.3 ml/l or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. This will also take care of thrips. Addition of sticker is essential. Avoid spraying on full bloom to protect pollinators.
- For organic orchards, application of entomopathogen *Metarhizium anisopliae* formulation @ 5ml/L is recommended.

Flower webbers/inflorescence caterpillars on mango

- Besides hoppers, inflorescence caterpillars which web the flowers and feed inside are potential pests on mango during January. Application of lambda cyhalothrin 5EC @ 0.5ml/L or cypermethrin 25 EC @ 1ml/L are useful to control the pest.

Banana skipper

- Skipper butterfly is becoming a serious pest on banana. Larva rolls the leaves and feeds by remaining inside. Affected leaves to be mechanically removed and destroyed. In case of severe infestation, spraying of quinolphos 25 EC @ 2ml/L or chlorpyrifos 20 EC @ 2.5ml/L is advised.

Vegetable crops

Onion thrips

- Both on bulb and seed crops, thrips are expected to increase with ensuing rise in temperatures. Spraying with imidacloprid 17.8SL (0.3ml/L) or fipronil 5SC (1.5 ml/L) would be effective.

Tomato fruit borer

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray *HaNPV* @ 250 LE/ha during evening hours or spray indoxacarb 14.5 SC @ 1ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam 25 WG @ 0.3 g/l for their management.

Thrips on Chilli

- Spraying with thiamethoxam 25 WG @ 0.3 g/l or fipronil 5SC (1.5 ml/L) would be effective.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid 17.8 SL @ 0.5 ml/l or dimethoate 30 EC @ 2 ml/l for their management.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of January, 2020.

Fruit crops

Grape

- Anthracnose and Powdery mildew (*Uncinula necator*) infection may be noticed. For anthracnose application of Difenconazole (0.05%)/ Thiophanate methyl (0.1%),/ Carbendazim + Mancozeb (0.2%) /Bitertanol (0.2%) whereas for powdery mildew Application of Azoxystrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Banana

- Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) Macrophoma fruit spot disease needs proper attention. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes. Application of Hexaconazole + Zineb (0.2%) may be effective in case of complex infection of diseases as mentioned above.

Mango

- Powdery mildew requires attention. At this point of time application of wettable sulphur shall be taken only when the temperature is very high. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (Dikar) (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l. Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Papaya

- Infection of Black spot (*Asperisporium caricae*) may further increase. Whereas powdery mildew (*Oidium caricae*) infection may also be noticed. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetables

- **Powdery mildew** incidence will be high in all vegetables (solaceous and cucurbitaceous). If temperature is not high wettable sulphur can be given. If temperature increases spraying of wettable sulphur should be avoided. Hexaconazole at 0.1% along with sticker 0.5ml/ l will be effective in controlling the powdery mildews in vegetables.
- **Anthracnose** in vegetables will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%),/ Carbendazim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Ornamentals

- **Powdery mildew** in rose and gerbera. Spraying azoxystrobin at 0.1% along with sticker 0.5ml/l will help in reducing powdery mildew spread under protected cultivation. In not spread extensively tebuconazole or hexaconazole at 0.1% with sticker also will help.
- **Virus diseases** Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 31st January, 2020

Latitude: 13^o7¹ N

Longitude: 77^o 29¹E

Altitude: 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average at 7.30AM	Average at 1.30PM			
January 16 th to 31 st , 2019	30.9	13.1	81.4	41.1	4.9	3.98	0
	(28.5)	(14.8)	(77.2)	(41.7)	(4.1)	(3.2)	(0.2)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st January, 2020

During the Second fortnight of the month i.e., from January 16th to 31st, 2020, the average maximum temperature was increased by 1.5°C and minimum temperature was lower by 2.3°C, respectively, as compared to the previous fortnight. The average minimum temperature increased by 0.1°C as compared to average values of the corresponding period for the previous five years whereas, maximum temperature remains same. The percent relative humidity during morning and afternoon were lower by 6.2% and 11.3% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

When compared to the last fortnight, the average maximum temperature, evaporation rate and wind speed had increased and the minimum temperature and the relative humidity had decreased. Moreover, there was no rainfall during this period. More diurnal variations in temperature, high evaporation and no rainfall might have caused the soil moisture insufficiency for crop growth. Therefore, watering may be given to fruit and vegetable crops as per the crop requirement.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Fruit crops

Hoppers on mango:

- Incidence of hoppers is expected on mango. Spray Azadirachtin 10000 ppm @ 3 ml/L, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.3 ml/l or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. This will also take care of thrips. Addition of sticker is essential. Avoid spraying on full bloom to protect pollinators.
- For organic orchards, application of entomopathogen *Metarhizium anisopliae* formulation @ 5ml/L is recommended.

Flower webbers/inflorescence caterpillars on mango

- Besides hoppers, inflorescence caterpillars which web the flowers and feed inside are potential pests on mango during January. Application of lambda cyhalothrin 5EC @ 0.5ml/L or cypermethrin 25 EC @ 1ml/L are useful to control the pest.

Banana skipper

- Skipper butterfly is becoming a serious pest on banana. Larva rolls the leaves and feeds by remaining inside. Affected leaves to be mechanically removed and destroyed. In case of severe infestation, spraying of quinolphos 25EC @ 2ml/L or chlorpyrifos 20 EC @ c 2.5ml/L is advised.

Vegetable crops

Tomato fruit borer:

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray *HaNPV* @ 250 LE/ha during evening hours or spray indoxacarb 14.5 SC @ 0.75ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre
- Spray indoxacarb 14.5 SC @ 0.75 ml/litre or spinosad 45 SC @ 0.3ml/l

Midge on chillies:

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam 25 WG @ 0.3 g/l for their management.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid 200 SL @ 0.5 ml/l or thiamethoxam 25 WG @ 0.3 g/l for their management.

Aphids on Beans and rose

- Aphids incidence is observed on beans and rose. Thoroughly spray neem soap or Pongamia soap (1 %) or pulverised neem seed powder extract (NSPE) 4 % for their management.

Thrips on rose

- For the management of thrips on rose, spray fipronil 5 SC @ 1.5 ml/litre or imidacloprid 200 SL @ 0.5 ml/l.

Mites on tomato

- Incidence of mites is observed and may increase on tomato. For their management spray spiromesfin 22.9 SC @ 1 ml/l or fenazaquin 10 EC @ 3 g/L.

Mites on Rose

- During the period, incidence of mites is observed heavily on roses grown under polyhouse conditions. Spray spiromesfin 22.9 SC @ 1 ml/l for their management.

Disease Scenario

Disease forecast based on the weather data for second fortnight of January, 2020

Fruit crops

Grape

- Anthracnose and Powdery mildew (*Uncinula necator*) infection may be noticed. For anthracnose application of Thiophanate methyl (0.1%),/ Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) whereas for powdery mildew Application of Azoxystrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease. Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) along with sticker @ 0.5 ml/ l.

Banana:

- Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) Sigatoka could be managed by spraying propiconazole 0.1% whereas crown rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

Mango:

- Powdery mildew requires attention. At this point of time application of wettable sulphur is not advisable if high temperature prevails. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (0.3%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/l.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%) / Carbendazim (0.1%) / Thiophanate methyl (0.1%) / Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Papaya

- Infection of Black spot (*Asperisporium caricae*) may further increase. Whereas powdery mildew (*Oidium caricae*) infection may also be noticed. Application of Chlorothalonil (0.2%) Carbendazim (0.1%) / Thiophanate methyl (0.1%) / Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetables crops

Powdery mildew

- Incidence will be high in all vegetables (solaceous and cucurbitaceous). If temperature is not high wettable sulphur can be given. If temperature increases spraying of wettable sulphur should be avoided. Hexaconazole at 0.1% along with sticker 0.5ml/ l will be effective in controlling the powdery mildews in vegetables.

Anthracnose

- In vegetables will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%) / Thiophanate methyl (0.1%) / Carbendazim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Ornamentals

Powdery mildews

- In rose and gerbera. Spraying azoxystrobin at 0.1% along with sticker 0.5ml/l will help in reducing powdery mildew spread under protected cultivation. In not spread extensively tebuconazole or hexaconazole at 0.1% with sticker also will help.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

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METEOROLOGICAL DATA OF
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HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th February, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
February 1 st to 15 th , 2020	30.9	15.7	80.0	42.9	5.5	4.8	0.0
	(29.1)	(15.2)	(70.7)	(40.5)	(4.7)	(3.4)	(0.1)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th February, 2020

During the first fortnight of the month i.e., from February 1st to 15th, 2020, the average maximum temperature remained same and minimum temperature was increased by 2.6⁰C, as compared to previous fortnight. The average maximum temperature and minimum temperature was higher by 0.6⁰C and 0.4⁰C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity was lower by 1.4% in morning and increased by 1.8% during and afternoon, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

When compared to the last fortnight, the average minimum temperature and the evaporation rate had increased to the extent of 2.6⁰C and 0.6 mm, respectively. Moreover, the average maximum and minimum temperature had increased by 0.6⁰C and 0.4⁰C as compared to the previous five years' weather data. Relative humidity, wind speed and evaporation rate had also increased. Moreover, there was no rainfall during this period. High temperature and evaporation with no rainfall might lead to loss of soil moisture. Therefore, irrigation may be scheduled to fruit and vegetable crops to meet the water requirement of the crops.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Fruit crops

Hoppers on mango:

- Incidence of hoppers is expected on mango. Spray Azadirachtin 10000 ppm @ 3 ml/L, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.3 ml/l or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. This will also take care of thrips. Addition of sticker is essential. Avoid spraying on full bloom to protect pollinators.
- For organic orchards, application of entomopathogen *Metarhizium anisopliae* formulation @ 5ml/L is recommended.

Flower webbers/inflorescence caterpillars on mango

- Besides hoppers, inflorescence caterpillars which web the flowers and feed inside are potential pests on mango during February. Application of lambda cyhalothrin 5EC @ 0.5ml/L or cypermethrin 25 EC @ 1ml/L are useful to control the pest.

Banana skipper

- Skipper butterfly is becoming a serious pest on banana. Larva rolls the leaves and feeds by remaining inside. Affected leaves to be mechanically removed and destroyed. In case of severe infestation, spraying of quinolphos 25 EC @ 2ml/L or chlorpyrifos 20 EC @ 2.5ml/L is advised.

Vegetable crops

Onion thrips

- Both on bulb and seed crops, thrips are expected to increase with ensuing rise in temperatures. Spraying with imidacloprid 17.8SL (0.3ml/L) or fipronil 5SC (1.5 ml/L) would be effective.

Tomato fruit borer

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray *HaNPV* @ 250 LE/ha during evening hours or spray indoxacarb 14.5 SC @ 1ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam 25 WG @ 0.3 g/l for their management.

Thrips on Chilli

- Spraying with thiamethoxam 25 WG @ 0.3 g/l or fipronil 5SC (1.5 ml/L) would be effective.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid 17.8 SL @ 0.5 ml/l or dimethoate 30 EC @ 2 ml/l for their management.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of February, 2020.

Fruit crops

Grape

- Anthracnose and Powdery mildew infection are supposed to increase may be noticed. For anthracnose application of Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) +Mancozeb (2%) or thiophanate methyl (0.1%) whereas for powdery mildew Application of Myclobutanil (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease.

Banana

- Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) Macrophoma fruit spot disease needs proper attention. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

Mango

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Anthracnose spots might further increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.
- Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Pomegranate

- Intensity of leaf and fruit spot disease and anthracnose of fruit and leaf may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Papaya

- Infection of Black spot (*Asperisporium caricae*) may further increase. Whereas powdery mildew (*Oidium caricae*) infection may also be noticed Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops

Crucifers:

- **Powdery mildew:** Spray wettable sulphur or tebuconazole at 0.2% at the beginning of the infection with sticker at 0.5ml per l of spray liquid with good coverage of the lower surface of the leaves.

Tomato:

- **Powdery mildew:** Spray hexaconazole or tebuconazole 0.2% at the beginning of the infection with sticker as mentioned earlier.

Floriculture

Rose

- **Powdery mildew:** Spray with azoxystrobin at 0.05% with sticker as mentioned above.
- **Black spot:** Spray mancozeb 0.2% at the initial stages and trifloxystrobin or propiconazole (0.1%) if infection is severe at later stages.

Medicinal crops

Betel vine

- **Powdery mildew:** Spray wettable sulphur at 0.2%. Spray of systemic fungicides not recommended.
- Maintenance of good aeration and proper drainage are important.

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Period: 16th to 29th February, 2020

Latitude: 13^o7¹ N

Longitude: 77^o 29¹E

Altitude: 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average at 7.30AM	Average at 1.30PM			
February 16 th to 29 th , 2020	32.1	15.4	74.1	34.5	5.94	5.12	0.0
	(30.9)	(15.5)	(62.7)	(32.5)	(5.7)	(3.8)	(0.0)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 29th February, 2020

During the Second fortnight of the month i.e., from February 16th to 29th, 2020, the average maximum has increased by 1.2°C and minimum temperature has decreased by 0.3°C, as compared to the previous fortnight. The average maximum and minimum temperatures have increased by 1.8°C and 0.3°C respectively, as compared to average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon were lower by 5.9% and 8.4% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

The mean maximum temperature was marginally higher when compared to the average of the last five years while minimum temperature showed no significant difference. The relative humidity was higher during the last fortnight compared to last five years mean value. There was no rainfall recorded during this period. Need based foliar application of micronutrients, liberal application of FYM Protective irrigation is desirable to improve the growth and yield potential of vegetable and fruit crops. Mite incidence was noticed in papaya and new flushes were observed in grapes. Profuse vegetative flushing suppressing flowering was observed in almost all mango varieties

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Fruit crops

Under the prevailing weather situation during I fortnight of March 2020, the following pests are expected under Bangalore conditions. Various pest management options are also mentioned below.

Mango Hoppers

➤ On mango, incidence of hoppers may continue wherever flowering is delayed. Spray azadirachtin @ 3ml/L. or thiamethoxam @ 0.3 g/L or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. This will also be helpful in checking the thrips.

Mango stone weevil management

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of deltamethrin 2.5 SC @ 1ml/L will be effective.

Fruit fly Management

- In orchards where fruit set occurred early and they attained full size, erect methyl eugenol-based fruit fly traps @ 6/acre. Collect and destroy fallen fruits.

Mealy bugs on grapes

- Incidence of mealybugs may increase during this period.
- Encourage natural enemies such as lady bird beetle. If incidence is high than spray difenthiuron 50 WP 1g/litre and repeat the spray after 2 weeks.

Vegetable crops

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray neem seed kernel extract 4% from nursery till flowering @ 7-10 days intervals.

Mites on tomato

- For the management of mites on tomato, spray spiromesifen 22.9 SC@ 1ml/litre

Whiteflies on tomato

- Incidence of whiteflies is noticed on tomato. For their management spray difenthiuron 50 WP 1g/litre.

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb 14.5 SC @ 0.75 ml/litre or spinosad 45 SC @ 0.3ml/l

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray rynaxypyr 18.5 SC @ 0.3 ml/l rotate with emamectin benzoate 5 SG 0.3g/liter followed by indoxacarb 14.5 SC @ 0.5 ml/litre.

Ornamentals

Thrips on rose

- For the management of thrips on rose, spray imidacloprid 17.8 SL @ 0.5 ml/l or fipronil 5 SC @ 1.5ml/litre.

Disease Scenario

Disease forecast based on the weather data during second fortnight of February, 2020

Fruit crops

Grape

- Anthracnose may be noticed. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%), / Carbendzim + Mancozeb (0.2%) whereas for powdery mildew Application of Azoxystrobin (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease. Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Mango

- Powdery mildew requires attention. At this point of time application of wettable sulphur is **not advisable** because of high temperature. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l.

- Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Vegetables

Anthracnose

- In vegetables it will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%), / Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th March, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
March 1 st to 15 th , 2020	32.8	19.1	77.80	44.00	6.1	3.99	3.75
	(32.7)	(19.2)	(68.4)	(38.8)	(6.2)	(3.7)	(10.9)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th March, 2020

During the first fortnight of the month i.e., from March 1st to 15th, 2020, the average maximum and minimum temperatures increased by 0.7⁰C and 3.7⁰C, respectively as compared to previous fortnight. The average maximum and minimum temperatures increased by 1.8⁰C and 3.7⁰C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity increased by 3.7% in morning and 9.5% during afternoon, as compared to the previous fortnight. There was 3.75 mm rainfall during the fortnight.

Crop weather situation

During this period, the average maximum and minimum temperature increased to the tune of 0.7⁰C and 3.7⁰C than the last fortnight. However, there is no much difference in the average maximum and minimum temperature values during this period when compared to the average values during the corresponding period for the previous 5 years. But relative humidity has increased and rainfall has decreased. Therefore, supplemental irrigations need to be given to fruit and vegetable crops to meet their water requirement.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Fruit crops

Mango Hoppers

- On mango, incidence of hoppers may continue wherever flowering is delayed. Spray azadirachtin @ 3ml/L. or thiamethoxam 25WG @ 0.3 g/L. This will also be helpful in checking the thrips.

Mango stone weevil management:

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of deltamethrin 2.5EC @ 1ml/L will be effective.

Fruit fly Management

- In orchards where fruit set occurred early and they attained full size, erect methyl eugenol-based fruit fly traps @ 6/acre. Collect and destroy fallen fruits.

Mealy bugs on grapes

- Incidence of mealybugs may increase during this period.
- Encourage natural enemies such as lady bird beetle. If incidence is high than spray difenthiuron 50 WP 1g/litre and repeat the spray after 2 weeks.

Vegetable crops

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray indoxacarb 14.5SC @ 0.75 ml/litre or spinosad45SC @ 0.3ml/l.

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb 14.5 SC @ 0.75 ml/litre or spinosad 45 SC @ 0.3ml/l.

Mites on tomato

- For the management of mites on tomato, spiromesifen 22.9 SC @ 0.5ml/litre.

Whiteflies on tomato

- Incidence of whiteflies is noticed on tomato. For their management spray difenthiuron 50 WP 1g/litre.

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray rynaxypyr 20SC @ 0.3 ml/l rotate with emamectin benzoate 5SG 0.3g/liter followed by indoxacarb @ 0.75 ml/litre.

Ornamental crops

Thrips on rose

- For the management of thrips on rose, spray imidacloprid 17.8SL @ 0.5 ml/l or fipronil 5 SC @ 1.5ml/litre.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of March, 2020.

Fruit crops

Grape

- Anthracnose infection may be noticed. For anthracnose application of Difenconazole (0.05%)/ Thiophanate methyl (0.1%)/ Carbendzim + Mancozeb (0.2%) along with sticker @ 0.5 ml/ l is recommended for the management of disease.

Mango

- Anthracnose spots might further increase on foliage. Application of Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l. Sooty mould should be still taken care. Application of Copper

oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Vegetable crops

Anthracnose

- In vegetables will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%)/ Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 31st March, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (⁰ C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
March 16 th to 31 st , 2020	34.5	17.3	68.7	32.3	7.45	4.89	2.70
	(34.2)	(19.1)	(66.1)	(35.8)	(6.5)	(3.7)	(0.68)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st March, 2020

During the second fortnight of the month i.e., from March 16th to 31st, 2020, the average maximum temperature has increased by 1.7⁰C and minimum temperature decreased by 1.8⁰C as compared to previous fortnight. The maximum temperature increased by 1.5⁰C and minimum temperature decreased by 0.1⁰C as compared to the average values of the corresponding period for the previous five years. The percent relative humidity decreased by 9.1% in morning and 11.7% during afternoon, as compared to the previous fortnight. There was 2.70 mm rainfall during the fortnight.

Crop weather situation

The mean temperature showed difference when compared to the average of the last five years and was marginally higher. Also the total rainfall received was lower compared to the mean of last five years. However there is a need to give protective irrigation and need based foliar application of micronutrients may be given to avoid deficiency of nutrients. During the period under report, there were no incidences of any weather related issues in different fruit crops.

Incidence of pests and diseases

Under the prevailing weather situation the following pests are expected under Bangalore conditions. Various pest management options are also mentioned below.

Fruit Crops

Mango Hoppers:

- On mango, incidence of hoppers may continue wherever flowering is delayed. Spray azadirachtin @ 3ml/L. or thiamethoxam 25WG @ 0.3 g/L. This will also be helpful in checking the thrips.

Mango stone weevil management:

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of deltamethrin 2.5EC @ 1ml/L will be effective.

Fruit fly Management:

- In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6/acre. Collect and destroy fallen fruits.

Mealy bugs on grapes:

- Incidence of mealybugs may increase during this period.
- Encourage natural enemies such as lady bird beetle. If incidence is high than spray difenthiuron 50 WP 1g/litre and repeat the spray after 2 weeks.

Vegetable Crops

Leaf miner on tomato:

- Incidence of leaf miner is observed on tomato. For its management spray indoxacarb 14.5SC@ 0.75 ml/litre or spinosad45SC @ 0.3ml/l.

Tomato moth:

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb 14.5 SC @ 0.75 ml/litre or spinosad 45 SC @ 0.3ml/l.

Mites on tomato:

- For the management of mites on tomato, spiromesifen 22.9 SC@ 0.5ml/litre.

Whiteflies on tomato:

- Incidence of whiteflies is noticed on tomato. For their management spray difenthiuron 50 WP 1g/litre.

Brinjal shoot and fruit borer:

- For the management of brinjal shoot and fruit borer, spray rynaxypyr 20SC @ 0.3 ml/l rotate with emamectin benzoate 5SG 0.3g/liter followed by indoxacarb @ 0.75 ml/litre.

Thrips on chilli:

- For the management of thrips on rose, spray thiamethoxam 25WG @ 0.3 g/l alternate with fipronil 5 SC @ 1.5ml/litre or spinosad 45 SC@ 0.3ml/l or chlorfenapyr 10SC @ 0.5ml/l.

Thrips on onion

- Spray thiamethoxam 25WG @ 0.3 g/l or fipronil 5 SC @ 1.5ml/litre.

Ornamental Crops

Thrips on rose

- For the management of thrips on rose, spray imidacloprid 17.8SL @ 0.5 ml/l or fipronil 5 SC @ 1.5ml/litre.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of March, 2020.

Fruit Crops

Grape:

- Anthracnose infection may be noticed. For anthracnose application of Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) along with sticker @ 0.5 ml/ l is recommended for the management of disease.

Mango:

- Anthracnose spots might further increase on foliage. Application of Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase.

Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l.

- Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.3%).

Vegetable Crops

Anthracnose:

- In vegetables will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%),/ Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Virus diseases:

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th April, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
April 1 st to 15 th 2020	34.6	18.4	71.3	36.1	7.2	4.91	19.0
	(34.5)	(20.7)	(70.2)	(38.3)	(6.2)	(3.02)	(0.78)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th April, 2020

During the first fortnight of the month i.e., from April 1st to 15th, 2020, the average maximum and minimum temperatures has increased by 0.1⁰C and 1.1⁰C, respectively as compared to previous fortnight. The maximum and minimum temperatures increased by 0.3⁰C and 1.6⁰C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity decreased by 2.6% in morning and 3.8% during afternoon, as compared to the previous fortnight. There was 19.0 mm rainfall during the fortnight.

Crop weather situation

The mean temperature during first fortnight of April, 2020 showed no significant difference when compared to the average of the last five years while marginal difference was noticed in relative humidity. Total rainfall received was higher during the period. Need based foliar application of micronutrients in some the perennial crops like mango may be taken up if deficiency is noticed. Liberal application of FYM and protective irrigation is highly desirable.

Incidence of pests and diseases

Under the prevailing weather situation the following pests are expected under Bangalore conditions. Various pest management options are also mentioned below.

Fruit Crops

Mango stone weevil management:

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of deltamethrin 2.5EC @ 1ml/L will be effective.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 30th April, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
April 16 th to 30 th , 2020	34.1	20.4	79.9	51.2	6.3	4.1	85.0
	(35.0)	(21.3)	(70.9)	(40.5)	(6.0)	(3.3)	(17.2)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th April, 2020

During the second fortnight of the month i.e., from April 16th to 30th, 2020, the average maximum temperature has decreased by 0.5⁰C and minimum temperature has increased by 2.0⁰C as compared to previous fortnight. The maximum and minimum temperatures have increased by 0.5⁰C and 0.6⁰C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon have increased by 8.6% and 15.1% respectively, as compared to the previous fortnight. There was 85.0 mm rainfall during the fortnight.

Crop weather situation

The average maximum has decreased to the extent of 0.5 °C and the average minimum temperature has increased to the extent of 2.0 °C when compared to the last fortnight data. The relative humidity and total rainfall have also increased but evaporation, wind speed and rainfall has decreased. Fertilizer nutrients may be applied to meet the crop requirement. The weather may be congenial for outbreak of many fungal diseases; therefore, proper plant protection measures need to be followed to sustain the production. If possible soil and water conservation practices can be carried out to restore soil and water. The weather during the second fortnight of April, 2020 was suitable for cultivation of *Calocybe indica* & *Macrocybe, gigantean*. However, *Oyster* mushroom could also be grown in well ventilated cropping room with good humidity control.

Incidence of pests and diseases

Under the prevailing weather situation, the following pests are expected under Bangalore conditions. Various pest management options are also mentioned below.

Fruit Crops

Mango fruit fly, *Bactrocera dorsalis*

As the fruits had attained maturity stage, incidence of fruit fly is expected. For its management following management measures are suggested.

- Install methyl eugenol traps @ 6 /acre. Traps can be procured from IIHR or KVKs or firms licenced to manufacture IIHR traps.

- Collection and destruction of fallen fruits
- Bait splash on tree trunks with 10% jaggery solution mixed with deltamethrin.
- Community approach at village level is recommended for the effective management of this pest.

Grapes Flea Beetle: Incidence of flea beetle is expected on newly pruned vines.

- Remove all loose bark
- Rake the soil in basin to expose grubs and pupae to sunlight and mechanical injury
- At early bud sprout –spray of imidacloprid 17.8 SL @ 0.3ml/L or Lambda-cyhalothrin 5 EC @ 0.5ml/L.

Grape thrips:

- On newly pruned grapes, thrips infestation on leaves is expected. Spray *Metarhizium anisopliae* formulation @ 2ml/L two times at weekly interval or fipronil 5 SC @ 1.5ml/L twice at fortnightly interval.

Vegetable Crops

Brinjal shoot and fruit borer, *Leucinodes orbonalis*:

- Release of *Trichogramma chilonis* @ 75,000 per week (for four weeks), if the incidence is moderate.
- Install pheromones traps in the field
- If the incidence is very severe, for the management of brinjal shoot and fruit borer, spray Rynaxypyr 20 SC @ 0.3 ml/l rotate with Emamectin benzoate 5 SG @ 0.3g/liter followed by indoxacarb 14.5 SC @ 0.75 ml/litre.

Floriculture

Two spotted spider mite, *Tetranychus urticae* on rose

- Spray abamectin 1.8 EC @ 0.5 ml/l under polyhouse conditions.

Thrips, *Scirtothrips dorsalis* on chilli

- Incidence of thrips may increase on chilli and capsicum. For its management, spray fipronil @ 1.5 ml/l alternating with imidacloprid @ 0.5 ml/l at fortnightly interval if the crop is at early stage of infestation. Addition of 2 ml of neem oil or pongamia oil per every litre of insecticide spray solution enhances the efficacy of the chemicals against the pest.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of April, 2020.

Fruit Crops

Mango

- Anthracnose spots might further increase on foliage. Application of thiophanate methyl (0.1%) is recommended for the disease management. Addition of sticker @ 0.5 ml/ l while spraying is recommended.
- Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Pomegranate

- After having the crop in the earlier months when the farmers are giving rest period, that time also one spray of copper based fungicides is recommended to avoid the spread of bacterial blight that can increase after summer showers.

Vegetables Crops

- **Anthracnose** in vegetables will increase especially in chillies. For anthracnose application of Thiophanate methyl (0.1%),/Carbendzim + Mancozeb (0.2%) along with sticker 0.5ml/l will be effective.

Nursery/ seedlings

- In nursery the preventive spray with neem soap or neem oil is recommended to avoid the virus vectors that transmit the virus disease. One spray of systemic insecticide also will help.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th May, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
May 1 st to 15 th , 2020	34.4	21.2	78.3	47.4	5.88	2.94	13.8
	(34.2)	(21.5)	(74.6)	(45.3)	(5.2)	(3.2)	(58.4)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th May, 2020

During the first fortnight of the month i.e., from May 1st to 15th, 2020, the average maximum and minimum temperatures increased by 0.3°C and 0.8°C, respectively as compared to previous fortnight. The average maximum temperature has decreased by 0.8°C and minimum temperature has increased by 0.2°C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity has decreased by 1.6% in morning and 3.8% during afternoon, as compared to the previous fortnight. There was 13.8 mm rainfall during the fortnight.

Crop weather situation

The average maximum and minimum temperature have increased to the extent of 0.3 °C and 0.8 °C, respectively when compared to the last fortnight's corresponding values. Relative humidity, evaporation, and wind speed have also decreased compared to the previous fortnight. Further total rainfall has drastically decreased from 85 mm in the last fortnight to 13.8 mm in the current period. Therefore, supplemental irrigation needs to be given to the crops to meet their water requirement. The Weather during the first fortnight of May, 2020 was suitable for cultivation of *Calocybe indica* & *Macrocybe, gigantean*. However, Oyster mushroom could also be grown in well ventilated cropping room with good humidity control.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Fruit Crops

Mango fruit fly, *Bactrocera dorsalis*

As the mango fruits are in mature stage, fruit fly incidence is expected to increase across the varieties. For its management following management measures are suggested.

Management:

- Installation of methyl eugenol traps @ 6 /acre. Traps can be procured from IIHR, Bangalore or KVKs
- Collection and destruction of fallen fruits
- Community approach at village level is recommended for the effective management of this pest.

Vegetable Crops

Brinjal shoot and fruit borer, *Leucinodes orbonalis*

Management:

- Release of *Trichogramma chilonis* @ 75,000 per week (for four weeks), if the incidence is moderate.
- Install pheromones traps in the field
- Collect and destroy all the affected shoot and fruits
- Spray rynaxypyr 20SC @ 0.3 ml/l rotate with emamectin benzoate 5 SG @ 0.3g/liter followed by indoxacarb 14.5SC @ 0.75 ml/litre.

Thrips, *Scirtothrips dorsalis* on chilli

Management:

- Incidence of thrips may increase on chilli and capsicum.
- Install blue stick traps @ 10-15/ acre
- For its management, spray fipronil 5 SC @ 1.5 ml/l alternating with imidacloprid 17.8SL @ 0.5 ml/l at fortnightly interval if the crop is at early stage of infestation.
- Addition of 2 ml of neem oil or pongamia oil per every liter of insecticide spray solution enhances the efficacy of the chemicals against the pest.

Flowers

Two spotted spider mite, *Tetranychus urticae* on rose

Management:

- Spray abamectin 1.8EC @ 0.5 ml/l under polyhouse conditions

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of May, 2020.

Fruit crops

Mango

- Anthracnose (*C. gloeosporioides*) and stem end rot (*L. theobromae*) occur in mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post-harvest treatments with Hot water (52°C) for ten minutes may be followed. Care should be taken that at the time of spraying there should be minimum of 15-20day time is there before harvest.

Grape

- Anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l.

Pomegranate

- Nodal Blight needs further attention due to the intermittent summer showers. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

Banana

- Low incidence of Sigatoka (*Mycosphaerella* sp) and other leaf spots needs attention. The disease can be managed by the application of with Carbendazim (0.1%) or Thiophanate methyl (0.1%) whereas crown rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post-harvest dip in Chlorine water (300 ppm) for 10 minutes.

Papaya

- Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Guava

- Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides*) should be taken care. For the disease management application of Zineb (0.3%) or Ziride (0.4%) followed with Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ along with sticker (0.5 ml /l) should be followed.

Vegetable Crops

Tomato

- To prevent the early leaf blight disease free seedlings are to be used. Seed treatment with captan or thiram (3g per kg of seeds) or seedling dip with copper oxy chloride (0.3%) also protects plants from various soil borne pathogens. It is the time for the protective sprays of contact fungicides like mancozeb, copper oxychloride or chlorothalonil on tomato to avoid early leaf blight. In case of serious spread due to rain splash follow up spray with propineb (0.2%) or meitiram (0.2%) or pyraclostrobin + metiram (0.2%) at fortnightly interval.

Onion

- To avoid the purple blotch and Stemphyllum leaf blight application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease will be useful.

Cucurbits

- To avoid the spread of downy mildew spraying Chlorothalonil (0.2%) or Mancozeb (0.2%) or Metalaxyl -Mancozeb (0.2%) or Fosetyl-AI (0.2%) or Cymoxanil- mancozeb (0.2%) IO-day intervals from onset of the disease.

Viral diseases in tomato and chilli

- To avoid the spread of viral diseases spraying insecticides like Monocrotophos (0.15%), Acephate (0.15%) or Hostothion (0.1 %) at fortnightly intervals after transplanting till flowering stage.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 31st May, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
May	34.6	21.4	85.1	53.4	6.35	5.33	60.5
16 to 31, 2020	(32.6)	(21.4)	(81.1)	(50.2)	(5.0)	(4.1)	(139.9)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st May, 2020

During the first fortnight of the month i.e., from May 16th to 31st, 2020, the average maximum and minimum temperatures increased by 0.2⁰C as compared to previous fortnight. The average maximum and minimum temperatures have decreased by 1.6⁰C and 0.1⁰C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity has increased by 6.8% in morning and 6% during afternoon, as compared to the previous fortnight. There was 60.5 mm rainfall during the fortnight.

Crop weather situation

Both the average maximum and minimum temperatures have increased to the extent of 0.2 °C when compared to the last fortnight's corresponding values. Relative humidity, evaporation, and wind speed have also increased compared to the previous fortnight. Further total rainfall has increased from 13.8 mm in the last fortnight to 60.5 mm in the current period. Further field preparation and basal application of FYM may be initiated for raising crops. Nutrient application may be carried out in perennial horticultural crops. This kind of weather is conducive for spread of pest and diseases in standing crops and proper measures to be taken care to avoid these problems. Earlier maturity for harvest by about a week observed for Alphonso mango fruits, probably due to the higher day temperature during the period. The Weather during the fortnight was suitable for cultivation of *Calocybe indica* & *Macrocybe, gigantean*. However, Oyster mushroom could also be grown in well ventilated cropping room with good humidity control.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Different management options for their management are mentioned below.

Fruit Crops

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, *Batocera rufomaculata*. Plug active holes (can be diagnosed with the presence of fresh chewed wood material and excreta) with cotton dipped in dichlorovos @ 5ml/L and close with mud. Affected tree trunks can be wrapped with nylon mesh to trap the emerging beetles.

Vegetable Crops

Fruit fly on cucurbits

- For the management of fruit fly (*Zeugodacus cucurbitae*) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray fipronil 5SC (1.5 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.

Root-knot nematode in tomato

- Raise healthy transplants on soil applied with FYM or vermicompost @5 tons/ha enriched with *Trichoderma harzianum* @ 2kg + *Paecilomyces lilacinus* @ 2kg + *Pseudomonas fluorescens* @2kg /ton of FYM.
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m². This can also be mixed with water and applied as soil drench @ 2l/m². The same can be thoroughly filtered and sent along with drip or sprayed.

Flower Crops

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran 50WP @ 1 g/l followed by dinetofuran 20SG @1g/litre
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray imidacloprid 17.8SL @ 0.5 ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with imidacloprid 17.8SL @ 0.5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray imidacloprid 17.8SL @ 0.5 ml/l.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of May, 2020.

Fruit crops

Mango

- Anthracnose (*C. gloeosporioides*) and stem end rot (*L. theobromae*) occur in mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post-harvest treatments with Hot water (52°C) for ten minutes is recommended.

Grape

- Grapevines should be continued to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly (ii) anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.
- Nodal Blight needs further attention. With the pre-monsoon showers, blight incidence will increase. Application of COC (0.2%) + bononopal 0.5g/l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days. Preventive sprays of plant health promoters like Arka Microbial consortium or Arka Actinoplus would help in better plant growth and there by induced resistance.

Banana

- Low incidence of Sigatoka (*Mycosphaerella* sp) and other leaf spots needs attention. The disease can be managed by the application of with Carbendazim (0.1%) or Thiophanate methyl (0.1%) whereas crown rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in salt water (300 ppm) for 10 minutes.

Papaya

- Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Guava

- Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides*) should be taken care. For the disease management application of Zineb (0.3%) or Ziride (0.4%) followed with Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ along with sticker (0.5 ml /l) should be followed.

Vegetable Crops

Tomato

- To prevent the early leaf blight disease free seedlings are to be used. Seed treatment with captan or thiram (3g per kg of seeds) or seedling dip with copper oxy chloride (0.3%) also protects plants from various soil borne pathogens. It is the time for the protective sprays of contact fungicides like mancozeb, copper oxychloride or chlorothalonil on tomato to avoid early leaf blight. In case of serious spread due to rain splash follow up spray with propineb (0.2%) or meitiram (0.2%) or pyraclostrobin + metiram (0.2%) at fortnightly interval.

Onion

- To avoid the purple blotch and Stemphyllum leaf blight application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease will be useful

Cucurbits

- To avoid the spread of downy mildew spraying Chlorothalonil (0.2%) or Mancozeb (0.2%) or Metalaxyl -Mancozeb (0.2%) or Fosetyl-AI (0.2%) or Cymoxanil- mancozeb (0.2%) IO-day intervals from onset of the disease.

Viral diseases in tomato and chilli

- To avoid the spread of viral diseases spraying insecticides like Acephate (0.15%) or Hostothion (0.1 %) at fortnightly intervals after transplanting till flowering stage.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th June, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
June 01 to 15, 2020	31.1	20.8	94.5	71.3	4.9	7.9	24.3
	(30.6)	(21.0)	(80.2)	(57.2)	(5.0)	(4.7)	(55.8)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th June, 2020

During the first fortnight of the month i.e., from June 1st to 15th, 2020, the average maximum and minimum temperatures decreased by 3.5⁰C and 0.6⁰C respectively as compared to previous fortnight. The average maximum and minimum temperatures have decreased by 2.0⁰C and 0.4⁰C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity has increased by 9.4% in morning and 17.9% during afternoon, as compared to the previous fortnight. There was 24.3 mm rainfall during the fortnight.

Crop weather situation

The average maximum and minimum temperatures have decreased to the extent of 3.5⁰C and 0.6⁰C respectively when compared to the corresponding values of last fortnight. Relative humidity and wind speed have increased as compared to the previous fortnight. Further total rainfall has drastically decreased from 60.5 mm during last fortnight to 24.3 mm during current fortnight. Evaporation has also come down from 6.35 to 4.9 mm. High RH may be favourable for spread of diseases and pests, hence proper measures has to be taken. Further if prolonged dry spell continues supplementary irrigation may be given to meet the crop water requirement.

The Weather was suitable for cultivation of *Calocybe indica* & *Macrocybe, gigantean*. However, Oyster mushroom could also be grown in well ventilated cropping room with good humidity control.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Different management options for their management are mentioned below.

Fruit Crops

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, *Batocera rufomaculata*. Plug active holes (can be diagnosed with the presence of fresh chewed wood material and excreta) with cotton dipped in dichlorovos @ 5ml/L and close with mud. Affected tree trunks can be wrapped with nylon mesh to trap the emerging beetles.

Vegetable Crops

Fruit fly on cucurbits

- For the management of fruit fly (*Zeugodacus cucurbitae*) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray fipronil 5SC (1.5 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.

Root-knot nematode in tomato

- Raise healthy transplants on soil applied with FYM or vermicompost @5 tons/ha enriched with *Trichoderma harzianum* @ 2kg + *Paecilomyces lilacinus* @ 2kg + *Pseudomonas fluorescens* @2kg /ton of FYM.
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m². This can also be mixed with water and applied as soil drench @ 2l/m². The same can be thoroughly filtered and sent along with drip or sprayed.

Flower Crops

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran 50WP @ 1 g/l followed by dinetofuran 20SG @1g/litre
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray imidacloprid 17.8SL @ 0.5 ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with imidacloprid 17.8SL @ 0.5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray imidacloprid 17.8SL @ 0.5 ml/l.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of June, 2020.

Fruit crops

Mango

- Anthracnose (*C. gloeosporioides*) and stem end rot (*Lasiodiplodia theobromae* and *Pestalotia mangiferae*) are common in mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post-harvest treatments with Hot water (52°C) for ten minutes is recommended.

Grape

- Grapevines should be continued to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly (ii) anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l.

Papaya

- Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase. Application of Chlorothalonil (0.2%) Carbendazim (0.1%) Thiophanate methyl (0.1%) Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%) Carbendazim (0.1%) Thiophanate methyl (0.1%) Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.
- Nodal Blight needs further attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

Guava

- Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides*) should be taken care. For the disease management application of Zineb (0.3%) or Ziride (0.4%) followed with Carbendazim (0.1%) Thiophanate methyl (0.1%) along with sticker (0.5 ml /l) should be followed.

Vegetable Crops

- In cucurbits it is time to monitor the downy mildews. Continuous rain and warm weather favour the disease. Spray of metalaxyl at 0.2% will reduce the spread. In tomato with the onset of monsoon the spread of buck eye spot damage on fruits may occur. This can be prevented by spray of copper oxy chloride at 3g/l and in severe cases spray with fenamidon + mancozeb at 0.2% will reduce the disease incidence. In chillies the leaf curl will spread further. Suitable insecticides to be applied to control the insect vectors.

Flower Crops

- The black spot of rose can be managed by spray with trifloxystrobin + tebuconazole at 0.1% at 15 days interval. For the downy mildews spray with metalaxyl + mancozeb at 0.2% will help.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 30th June, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
June 16 to 30, 2020	31.3	20.8	95.5	77.7	4.1	5.9	60.7
	(29.3)	(20.5)	(80.0)	(56.7)	(3.7)	(6.7)	(29.4)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th June, 2020

During the second fortnight of the month i.e., from June 16th to 30th, 2020, the average maximum temperature increased by 0.2°C as compared to previous fortnight and minimum temperature was remain same. The average maximum and minimum temperatures decreased by 1.3°C and 0.5°C respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity has increased by 1.0% in morning and 6.4% during afternoon, as compared to the previous fortnight. There was 60.7 mm rainfall during the fortnight.

Crop weather situation

The average maximum temperature increased to the extent of 0.2 °C when compared to the last fortnight's corresponding value. Relative humidity also increased. However, evaporation, and wind speed decreased compared to the previous fortnight. Further total rainfall increased from 24.3 mm to 60.7 mm. Nutrient management practices like FYM and fertilizer application may be carried out to various horticultural crops. Further, high relative humidity with moisture is conducive for spread of pest and diseases, hence proper protective measures have to be taken to control them. The weather was suitable for cultivation of *Calocybe indica* & *Macrocybe, gigantean*. However, Oyster mushroom could also be grown in well ventilated cropping room with good humidity control.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit crops

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, *Batocera rufomaculata*. Plug active holes (can be diagnosed with the presence of fresh chewed wood material and excreta) with cotton dipped in chlorpyrifos @ 5ml/L and close with mud. In case of severe infestation IIHR developed Sealer cum healer can be used.

Vegetable crops

Fruit fly on cucurbits

- For the management of fruit fly (*Bactrocera cucurbitae*) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.

Cut worms

- Incidence of cutworms may be seen up to 15-20 days after transplantation of vegetable crops.
- Young seedlings will be cut at ground level by cut worm larvae during night time.
- Drench the soil around the root zone of the crop with imidacloprid 200 SL @ 5ml/l for killing larvae in the soil.

Legumes pod borer

- Spray indoxacarb 14.5 SC @ 0.75ml/litre at 10 days interval from flowering stage.

Root-knot nematode in tomato

- Raise healthy transplants on soil mixed with Neem cake @ 50kg + *Trichoderma harzianum* @ 1kg + *Paecilomyces lilacinus* @ 1kg /ton of soil.
- Apply 2 kg of Farm yard manure enriched with bio-pesticides –*T. harzianum* and *P. lilacinus* at the time of planting.

Flower Crops

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran 50 WP @ 1 g/l followed by dinetofuran 20 SG @ 1g/litre.
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with imidacloprid 200 SL @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray imidacloprid @ 0.5 ml/l.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of June, 2020.

Fruit Crops

Grape

- Grapevines should be continued to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalaxyl + Mancozeb (0.2%)/ AI Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly (ii) anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%) effective along with sticker @ 0.5 ml/ l. (iii) Rust (on var Bangalore blue): treatment with Chlorothalonil (0.2%).

Banana

- Moderate increase in the intensity of Sigatoka leaf spot (*Mycosphaerella* sp) was noticed compared with the last fortnight whereas anthracnose of fruits (*C. musae*) and crown rot caused by *Fusarium moniliformae* were recorded. For controlling Sigatoka application of Dinocap (0.1%) or Chlorothalonil (0.2%) is recommended whereas crown rot and anthracnose could be effectively managed by the pre-harvest sprays with propiconazole at 0.1%

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) needs attention. Application of Chlorothalonil (0.2%) /Antracol (0.2)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control. Nodal Blight needs continuous attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

Papaya

- Foliar, fruit as well as internal infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may advance Application of Chlorothalonil (0.2%), Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable Crops

Tomato

- It is the time for the protective sprays of contact fungicides like mancozeb, copper oxychloride or chlorothalonil on tomato to avoid early leaf blight. In case of serious spread due to rain splash follow up spray with propineb (0.2%) or meitiram (0.2%) or pyraclostrobin + metiram (0.2%) at fortnightly interval.

Onion

- To avoid the purple blotch and *Stemphyllum* leaf blight application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease will be useful.

Cucurbits

- To avoid the spread of downy mildew spraying Chlorothalonil (0.2%) or Mancozeb(0.2%) or Metalaxyl -Mancozeb(0.2%) or Fosetyl-AI (0.2%) or Cymoxanil- mancozeb(0.2%) 10-day intervals from onset of the disease.

Viral diseases in tomato and chilli

- To avoid the spread of viral diseases spraying of neem oil or neem soap at early stages of crop growth after transplanting till flowering stage will help.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th July, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
July 1 to 15, 2020	28.9	20.8	89.7	70.4	4.0	6.8	110
	(30.4)	(20.8)	(79.4)	(55.2)	(4.7)	(5.9)	(39.16)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th July, 2020

During the first fortnight of the month i.e., from 1st to 15th July, 2020, the average maximum temperature decreased by 2.4°C as compared to previous fortnight and average minimum temperature was remain same. The average maximum and minimum temperatures increased by 1.1°C and 0.3°C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity has decreased by 5.8% in morning and 7.3% during afternoon, as compared to the previous fortnight. There was 110 mm rainfall during the fortnight.

Crop weather situation

The average maximum temperature during first fortnight of July, 2020, was much lower when compared to the value of last fortnight, while the average minimum temperature showed no difference. The relative humidity was also much lower whereas the total rainfall was higher as compared to previous fortnight. The soil moisture regime was suitable for soil application of recommended dose of fertilizer and liberal application of FYM was also recommended. Further, there were no incidences of any weather related issues in different fruit crops during the period under report as well as the weather was extremely suitable for oyster mushroom cultivation.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit crops

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, *Batocera rufomaculata*. Plug active holes (can be diagnosed with the presence of fresh chewed wood material and excreta) with cotton dipped in chlorpyrifos @ 5ml/L and close with mud. In case of severe infestation IIHR developed Sealer cum healer can be used.

Vegetable crops

Fruit fly on cucurbits

- For the management of fruit fly (*Bactrocera cucurbitae*) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.

Aphids in chilli

- Spray neem soap at 10g/l at weekly interval if severity is more then spray thiamethoxam 25WG at 0.3 g/l of water.

Cut worm

- Incidence of cutworms may be seen up to 15-20 days after transplantation of vegetable crops.
- Young seedlings will be cut at ground level by cut worm larvae during night time.
- Drench the soil around the root zone of the crop with imidacloprid 200 SL @ 5ml/l for killing larvae in the soil.

Legume pod borer

- Spray indoxacarb 14.5 SC @ 0.75ml/litre at 10 days interval from flowering stage.

Root-knot nematode in tomato

- Raise healthy transplants on soil mixed with Neem cake @ 50kg + *Trichoderma harzianum* @ 1kg + *Paecilomyces lilacinus* @ 1kg /ton of soil.
- Apply 2 kg of Farm yard manure enriched with bio-pesticides –*T. harzianum* and *P. lilacinus* at the time of planting.

Flower Crops

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran 50 WP @ 1 g/l followed by dinetofuran 20 SG @ 1g/litre.
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with imidacloprid 200 SL @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray imidacloprid @ 0.5 ml/l.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of July, 2020.

Fruit Crops

Grape

- Grapevines needs to be protected against the infection of (i) downy mildew: by the application of 0.5g Dimethomorph + 2.00 g Mancozeb /l or Metalaxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly.

- anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%) are effective along with sticker @ 0.5 ml/ l.
- Rust (on var Bangalore Blue): treatment with Chlorothalonil (0.2%) or azoxystrobin at 0.05%.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) needs attention. Application of Chlorothalonil (0.2%) as protective spray and Hexaconazole (0.1%) as curative spray along with the sticker @ 0.5ml/l is effective for the disease control.
- Fresh Bacterial blight infection can be seen due to rains. That requires continuous attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

Papaya

- Foliar, fruit as well as internal infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may advance. Application of Chlorothalonil (0.2%) / Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable Crops

Tomato

- Foliar application of copper oxychloride (0.3%) or Chlorothalonil (0.2%) or Mancozeb (0.2%) or Propineb (0.2%) or Metiram(0.2%) or Pyraclostrobin + metiram (0.2%) at fortnightly interval will reduce the spread of early leaf blight of tomato caused by *Alternaria* species.
- To prevent the late blight caused by *Phytophthora infestans* spraying of Mancozeb (0.2%) or Copper oxychloride (0.3%), Copper hydroxide(0.2%) or Fosetyl-Al (0.2%) or Pre-packed mixture of Metalaxyl+Mancozeb (0.2%) may be carried out that may reduce the risk of serious infection expected in the later part of the season.
- Spraying of acephate at .01% or imidacloprid at 0.03% will reduce the tospovirus infection spread by thrips.

Chillies and capsicum

- To prevent the leaf blight may reduce the risk of serious infection expected in the later part of the season. Spray of systemic insecticides at fortnightly by *Phytophthora capsici* spraying of Mancozeb (0.2%) or Copper oxychloride (0.3%), Copper hydroxide(0.2%) or Fosetyl-Al (0.2%) or Pre-packed mixture of MetalaxylMancozeb (0.2%) may be carried out that intervals after transplanting, until the flowering stage will reduce vector transmitted viral diseases incidence.

Onion

- Application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease may reduce the purple blotch or *Stemphylium* leaf blight.

Cucurbits

- Spraying of Chlorothalonil (0.2%) or Mancozeb(0.2%) or Metalaxyl -Mancozeb(0.2%) or Fosetyl-AI (0.2%) or Cymoxanil- mancozeb(0.2%) 10-day intervals from onset of downy mildew will reduce the damage.

Flower Crops

Rose

- To avoid the black spot in rose prophylactic spray with contact fungicides will help (chlorothalonil or mancozeb at 0.2%) along with sticker. If severe cases trifloxystrobin+tebuconazole at 0.1% at 15 days interval will reduce the disease incidence.

Marigold

- To avoid the spread of *Alternaria* blight prophylactic spray with copper oxy chloride, chlorothalonil or mancozeb at 0.2% at 15 days interval will help.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 31st July, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
July 16 to 31, 2020	29.2	20.4	93.4	75.1	3.94	4.41	125.3
	(29.1)	(20.6)	(81.4)	(59.2)	(3.8)	(6.0)	(61.4)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st July, 2020

During the second fortnight of the month i.e., from July 16th to 31st, 2020, the average maximum temperature increased by 0.3⁰C and minimum temperature decreased by 0.4⁰C as compared to previous fortnight. The average maximum and minimum temperatures decreased by 1.3⁰C and 0.2⁰C, respectively as compared to the average values of the corresponding period for the previous five years. The percent relative humidity has increased by 3.7% in morning and 4.7% during afternoon, as compared to the previous fortnight. There was 125.3 mm rainfall during the fortnight.

Crop weather situation

When compared to the last fortnight the average maximum temperature increased by 0.3⁰C and minimum temperature decreased by 0.4⁰C during the current fortnight. Relative humidity, wind speed and rainfall parameters were increased. Evaporation had come down. Proper drainage should be given to avoid water stagnation. Further fertilizer applications can be practiced to meet the nutrient requirement of the crops. The weather of the fortnight was congenial for the cultivation of Oyster Mushroom.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit crops

Leaf Webber on mango

- Remove and destroy the webbed portions wherever they are accessible.
- For the management of this pest prune the affected shoots and spray lambda cyhalothrin 5EC @ 1ml/l.

Mango shoot borer

- Clip and destroy affected shoots.

- Spray lambda cyhalothrin 5EC @ 1ml/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae*.

Vegetable crops

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (lambda cyhalothrin 5EC 1 ml + jaggery @ 10g/L) at 10 days interval from the date of flowering.
- Bait Splash of 40/ acre (150g jaggery + 500mlwater + 5ml lambda cyhalothrin 5EC).

Tomato moth

- Install Tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb 14.5 SC @ 0.75 ml/litre or Spinosad 45SC @ 0.3ml/l.

Mites on tomato

- For the management of mites spray wettable sulphur @ 3 g/l or propargite 57 EC @ 1.25 ml/l or fenazaquine 10EC @ 1.5ml/litre.

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or imidacloprid 17.8 SL (0.3 ml/l) alternately at fortnightly interval.

Root-knot nematode in tomato

- Raise healthy transplants on soil applied with FYM or vermicompost @ 5 tons/ha enriched with *Trichoderma harzianum* @ 2kg + *Paecilomyces lilacinus* @ 2kg + *Pseudomonas fluorescens* @ 2kg /ton of FYM.
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m². This can also be mixed with water and applied as soil drench @ 2l/m². The same can be thoroughly filtered and sent through the drip or sprayed.

Flower crops

Rose Thrips

- Spray imidacloprid 17.8 SL @ 0.3ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Mites on rose

- For the management of mites spray Milbemectin 1EC @ 1 ml/l.

Midge on crossandra

- Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray imidacloprid 17.8SL @ 0.3 ml/l.

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran 50WP @ 1 g/l followed by dinetofuran 20SG 1g/litre
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of July, 2020.

Fruit Crops

Grape

- Grapevines need to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalaxyl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly.
- Anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%) are effective along with sticker @ 0.5 ml/ l. (iii) Rust (on var Bangalore Blue): treatment with Chlorothalonil (0.2%).

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) needs attention. Application of Chlorothalonil (0.2%) /Propineb (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.
- Fresh bacterial blight infection can be seen due to rains. That requires continuous attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

Papaya

- Foliar, fruit as well as internal infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may advance. Application of Chlorothalonil (0.2%) /Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Sapota

- There was no appreciable change in the intensity of leaf spot (*P. indicia*) disease compared with last fortnight. Application of Zineb (0.3%) or Ziride (0.4%) along with sticker (0.5 ml /l) are recommended for their management.

Vegetable crops

Tomato

- Foliar application of copper oxychloride (0.3%) or Chlorothalonil (0.2%) or Mancozeb (0.2%) or Propineb (0.2%) or Metiram (0.2%) or Pyraclostrobin + metiram (0.2%) at fortnightly interval will reduce the spread of early leaf blight of tomato caused by *Alternaria species*.
- To prevent the late blight caused by *Phytophthora infestans* spraying of Mancozeb (0.2%) or Copper oxychloride (0.3%), Copper hydroxide (0.2%) or Fosetyl-Al (0.2%) or Pre-packed mixture of Metalaxyl+Mancozeb (0.2%) may be carried out that may reduce the risk of serious infection expected in the later part of the season.
- Spraying of acephate at 0.01% or imidacloprid at 0.03% will reduce the tospovirus infection spread by thrips.

Chillies and capsicum

- To prevent the leaf blight by *Phytophthora capsici* spraying of Mancozeb (0.2%) or Copper oxychloride (0.3%), Copper hydroxide (0.2%) or Fosetyl-Al (0.2%) or Pre-packed

mixture of Metalaxyl Mancozeb (0.2%) may be carried out that may reduce the risk of serious infection expected in the later part of the season. Spray of insecticides like Monocrotophos (0.15%), Acephate (0.15%) or Hostothion (0.1 %) at fortnightly intervals after transplanting, until the flowering stage will reduce vector transmitted viral diseases incidence.

Onion

- Application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease may reduce the purple blotch or *Stemphylium* leaf blight.

Cucurbits

- Spraying of Chlorothalonil (0.2%) or Mancozeb (0.2%) or Metalaxyl -Mancozeb (0.2%) or Fosetyl-AI (0.2%) or Cymoxanil- mancozeb (0.2%) 10-day intervals from onset of downy mildew will reduce the damage.

Flower crops

Rose

- To avoid the black spot in rose prophylactic spray with contact fungicides will help (chlorothalonil or mancozeb at 0.2%) along with sticker. If severe cases trifloxystrobin+tebuconazole at 0.1% at 15 days interval will reduce the disease incidence.

Marigold

- To avoid the spread of *Alternaria* blight prophylactic spray with chlorothalonil or mancozeb at 0.2% at 15 days interval will help.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th August, 2020

Latitude : 13⁰⁷1' N

Longitude : 72⁰²⁹1'E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
August 1 to 15, 2020	27.6	20.7	90.4	74.4	3.4	9.0	25.1
	(28.4)	(20.8)	(81.6)	(63.2)	(3.7)	(5.5)	(57.2)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th August, 2020

During the first fortnight of the month i.e., from August 1st to 15th 2020, the average maximum temperature decreased by 1.6⁰C and minimum temperature increased by 0.3⁰C as compared to previous fortnight. The average maximum temperature decreased by 0.7⁰C and minimum temperature increased by 0.2⁰C as compared to the average values of the corresponding period for the previous five years. The percent relative humidity has decreased by 3% in morning and 0.7% in the afternoon as compared to the previous fortnight. Rainfall of 25.1 mm was received during the fortnight.

Crop weather situation

During this fortnight there was not much variation in day temperatures and humidity was slightly higher when compared with the average value of the previous 5 years. Rainfall lower than the average value of previous 5 years. For banana planted during June- July, first instalment of top dressing of N, P₂O₅ and K₂O @ 50:30:60 g per plant may be applied. Liberal application of FYM and split application of the recommended dose of nutrients may be taken up since soil moisture is adequate.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Leaf Webber on mango

- Remove and destroy the webbed portions wherever they are accessible.
- For the management of this pest prune the affected shoots and spray lambda cyhalothrin 5EC @ 1ml/l.

Mango shoot borer

- Clip and destroy affected shoots.
- Spray lambda cyhalothrin 5EC @ 1ml/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of the leaf eating weevil, *Rhynchaenus mangiferae*.

Vegetable Crops

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, the following integrated approach may be followed. Deployment of cue lure traps @ 15 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (cypermethrin 1 ml + jaggery @ 10g/L) at 10 days interval from the date of flowering.
- Bait Splash of 40/ acre (150g jaggery + 500mlwater + 5ml cypermethrin).

Tomato moth

- Install Tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb 14.5 SC @ 0.75 ml/litre or spinosad 45 SC @ 0.3ml/l.

Mites on tomato

- For the management of mites spray wettable sulphur @ 3 g/l or propargite 57 EC @ 1.25 ml/l or fenazaquin 10EC @ 1.5ml/litre.

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or Difenthran 50WP @ 1g/litre or thiacloprid 240 SC @ 0.5 ml/l alternately at fortnightly interval.

Root-knot nematode in tomato

- Raise healthy transplants on soil applied with FYM or vermicompost @5 tons/ha enriched with *Trichoderma harzianum* @ 2kg + *Paecilomyces lilacinus* @ 2kg + *Pseudomonas fluorescens* @2kg /ton of FYM.
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m². This can also be mixed with water and applied as soil drench @ 2l/m². The same can be thoroughly filtered and sent along with drip or sprayed.

Flower Crops

Rose Thrips

- Spray imidacloprid 17.8 SL @ 0.5ml/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Mites on rose

- For the management of mites spray milbemectin1 EC @ 1 ml/l.

Midge on crossandra

- Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray imidacloprid 17.8SL@ 0.5 ml/l.

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran 50WP @ 1 g/l followed by dinetofuran 20SG @ 1g/litre.

- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of August, 2020.

Fruit Crops

Grape

Downy mildew

- Protection against the infection of downy mildew by the application of 0.8 g Dimethomorph + 2.00 g Macozeb /L or Metalaxyl + Mancozeb (0.2%)/ Al Fosetyl (0.2%).

Rust

- Rust needs to be taken care in grape vine orchards (var Bangalore Blue). It could be managed by the treatment with Chlorothalonil (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly. In white varieties preventive sprays for anthracnose management with difenconazole 0.05% or thiophanate methyl 0.1%.

Banana

- Intensity of Sigatoka leaf spot (*Mycosphaerella* sp) may be moderate. For controlling Sigatoka application of Chlorothalonil (0.2%) is recommended. Moderate infection of Leaf (*Dieghthonella* spp.), and fruit spots (*Macrophoma* spp.) may be noticed that could be effectively managed by the pre-harvest sprays with Zineb + Hexaconazole (0.2%) or Thiophanate methyl (0.1%).

Pomegranate

- On fresh foliage and emerging flower buds infection of anthracnose might be noticed whereas Leaf and fruit spot disease caused by *Puedocercospora punicae* may become serious. These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.
- For bacterial blight spray of Bordeaux mixture 1% along with bronopol or streptocycline at 0.5% at 15 days interval will reduce the spread of the disease.

Vegetable Crops

- Because of intermittent rains spread of *Phytophthora* blight is expected in tomato, chilli and other crops. For initial stages preventive spray with chlorathalonil (0.2%) and Bourdeaux mixture (1%) will help. In severe conditions where spread is faster spraying with cymoxanil + mancozeb (0.1%).
- In solanaceous (tomato, capsicum, chilli) and cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.) **Powdery mildew** may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For *Alternaria* leaf spot chlorothalanil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 31st August, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
August 16 to 31, 2020	28.4	19.7	88.7	71.3	3.4	3.96	70.4
	(28.2)	(20.3)	(84.1)	(63.5)	(3.4)	(4.0)	(80.1)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st August, 2020

During the second fortnight of the month i.e., from August 16th to 31st 2020, the average maximum temperature increased by 0.8⁰C and minimum temperature decreased by 1⁰C as compared to the previous fortnight. The average maximum and minimum temperatures were decreased by 0.2⁰C and 0.5⁰C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity decreased by 1.7% in morning and 3.1% during afternoon, as compared to the previous fortnight. There was 70.4 mm rainfall during the fortnight.

Crop weather situation

The second fortnight of August received sufficient rains. Inter cultivation and application of split dose of fertilizers can be taken up. In case of guava, due to Boron and Zn deficiencies the fruits may be small and hard. Application of ZnSO₄ @ 50 g/tree or 1% spray and 0.1% Boric acid can improve the size of the fruit.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions in various horticultural crops. Various management options for their management are as below.

Fruit Crops

Hoppers and thrips on mango

- New flush of certain varieties like Alphonso and Banganapalli attracts hoppers and thrips. Spraying with acephate 75SP @ 1.5 g /L along with sticker will check the infestation which otherwise may serve as asource for flowering season.

Vegetable Crops

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, an integrated approach may be followed.

- Deployment of cue lure traps @ 15 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + bait spray (cypermethrin 1 ml + jaggery @ 10g/L) at 10 days interval from the date of flowering.
- Bait splash of 40/ acre (150g jaggery + 500mlwater + 5ml cypermethrin)

Mites on tomato

- For the management of mites spray wettable sulphur @ 3 g/l or propargite 57 EC @ 1.25 ml/l or fenazaquin 10 EC @ 1.5ml/litre.

Ash weevil on brinjal

- Collect and destroy adults
- Apply neem cake with (8-10% oil) to ridges @ 250kg/ha at planting and repeat at 30 days after planting
- In endemic areas, apply carbofuran 3 G @15 kg/ha on 15 days after planting
- Spray Cypermethrin 25 EC @ 0.5 ml/litre.

Flower Crops

Rose thrips

- Spray imidacloprid 17.8 SL @ 0.5ml/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing the pupae in the soil.

Mites on rose

- For the management of mites spray milbemectin @ 1 ml/l

Midge on crossandra

- Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray imidacloprid 17.8 SL @ 0.5 ml/l.

Whitefly on Gerbera (polyhouse)

- Spray diafenthiuran 50 WP @ 1 g/l followed by dinetofuran 20 SG@ 1g/litre.
- Install yellow sticky traps coated with adhesive or sticky glue at the crop canopy level for monitoring adult whitefly population.

Budborer on kakada

- Severe incidence of kakada bud borer is noticed during this period. Spray profenofos 50EC @1 ml/l for its management. If the incidence is severe spray indoxacarb 14.5 SC @ 0.75 ml/l.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of August, 2020.

Fruit Crops

Grape

- After forward pruning buds on the grapevines should be protected against the infection of downy mildew by the application of 0.8 g Dimethomorph + 2.00 g Macozeb /L or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%). Rust needs to be taken care in grape vine orchards (var Bangalore Blue). It could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/l.

- Lower surface of the leaves on the vines to be sprayed properly.

Mango

- Intensity of leaf spot (*P. mangiferae* / *C. gloeosporioides*) may increase. Application of Zineb (0.2%) / Chlorothalonil (0.2%) or Mancozeb (0.2%) along with the sticker @ 0.5ml/L advisable. Infection of sooty mould should also be taken care for which application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended

Papaya

- Black leaf and fruit spots (*Asperisporium cariceae*) are attaining serious proportions. Application of Thiophanate methyl (0.1%) or Antracol (0.2%) along with sticker @ 0.5 ml/L are recommended. Lower surface of the leaves to be sprayed properly.

Banana

- Intensity of Sigatoka leaf spot (*Mycosphaerella* sp) may be moderate. For controlling Sigatoka application of Tridemorph (0.1%)/ or Chlorothalonil (0.2%) is recommended.
- Moderate infection of Leaf (*Diehthonella* spp.), and fruit spots (*Macrophomaspp.*) may be noticed that could be effectively managed by the pre-harvest sprays with Zineb + Hexaconazole (0.2%) or Thiophanate methyl (0.1%).

Pomegranate

- On fresh foliage and emerging flower buds infection of anthracnose might be noticed whereas leaf and fruit spot disease caused by *Puedocercospora punicae* may become serious These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.

Vegetables Crops

Solanaceous vegetables (tomato, capsicum, chilli) and cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.)

- Powdery mildew may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For Alternaria leaf spot chlorothalanil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.
- In places where tomato has been planted late, with incessant rains late blight due to Phytophthora will appear. Prevention spray of copper oxy chloride at 0.2% or Bordeaux mixture 1% is recommended.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th September, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (⁰ C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
September 1 to 15, 2020	29.4	20.0	92.2	79.4	3.7	3.8	232.0
	(28.5)	(20.3)	(82.7)	(60.1)	(3.5)	(3.4)	(81.6)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th September, 2020

During the first fortnight of the month i.e., from September 1st to 15th, 2020, the average maximum and minimum temperatures increased by 1⁰C and 0.3⁰C respectively as compared to previous fortnight. The average maximum temperature increased by 0.3⁰C and minimum temperature remained the same, when compared to the average values of the corresponding period for the previous five years. The percent relative humidity increased by 3.5% in morning and 8.1% during afternoon, as compared to the previous fortnight. There was 232.0 mm rainfall during the fortnight.

Crop weather situation

The first fortnight of September received around 3 folds higher rainfall than in the previous five years making water requirement minimal. Clay soils and heavy textured banana and papaya plantations have to be provided with suitable drainage. Application of highly water soluble nitrate fertilizer is not advisable. Incorporation of green manures may be done in mixed cropping orchards.

Incidence of pests and diseases

Under the prevailing weather situation the following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Mango

Mango shoot borer

- Clip and destroy affected shoots spray acephate 50 WP@ 1.5 g/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae*.

Webber and ash weevil

- Incidence of leaf webber and ash weevil will become serious on new leaves. Remove webbed leaves wherever possible and burn them. Spray quinalphos 25 EC @ 2 ml/l or lamda cyhalothrin 5 EC @ 1ml /l for their management.

Pomegranate

Fruit sucking moth

- Wherever matured fruits are there fruit sucking moth damage is expected. Providing protective nets for orchards is recommended.

Thrips

- On new flush, thrips incidence is expected. Spray fipronil 5 SC @ 1.5ml/L.

Vegetable Crops

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + sanitation (complete destruction of infested fruits at each harvest) + bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Tobacco caterpillar on Tomato

- For the management of this pest, spray indoxacarb @ 0.75 ml/L or ranxypyr 18.5 SC @ 0.3ml/L.

Leaf hopper on okra/Bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid 17.8 SL @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 1 %, thoroughly covering lower surface of leaves.

Flower Crops

Thrips on rose

- Incidence of rose thrips was observed more under polyhouse conditions. Spray acephate 75 SP @ 1 g/l or imidacloprid 17.8 SL @ 0.5 ml/l for its management.

Whitefly on Gerbera

- For the management of whitefly on gerbera diafenthiuron 50 WP @ 1g/liter followed by dinetofuran 20SG @ 0.3 g/l. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of September, 2020.

Fruit Crops

Grape

- After forward pruning buds on the grapevines should be protected against the infection of downy mildew by the application of 0.8 g Dimethomorph + 2.00 g Macozeb /L or Metalylx1 + Mancozeb (0.2%)/ Al Fosetyl (0.2%). Rust needs to be taken care in grape vine orchards (var Bangalore Blue).
- It could be managed by spraying Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.
- Lower surface of the leaves on the vines to be sprayed properly.

Mango

- Intensity of Leaf spot (*P. mangiferae* / *C. gloeosporioides*) may increase.
- Application of Zineb (0.2%) / Chlorothalonil (0.2%) or Mancozeb (0.2%) or Carbendazim + Iprodion (0.2%) along with the sticker @ 0.5ml/L advisable.
- Infection of sooty mould should also be taken care for which application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended

Papaya

- Black leaf and fruit spots (*Asperisporium cariceae*) are attaining serious proportions.
- Application of Thiophanate methyl (0.1%) or Antracol (0.2%) or Carbendazim + Iprodion (0.2%) along with sticker @ 0.5 ml/L are recommended.
- Lower surface of the leaves to be sprayed properly.

Banana

- Intensity of Sigatoka leaf spot (*Mycosphaerella* sp) may be moderate.
- For controlling Sigatoka application of Tridemorph (0.1%)/ or Chlorothalonil (0.2%) is recommended.
- Moderate infection of Leaf (*Diehthonella* spp.) and fruit spots (*Macrophoma* spp.) may be noticed that could be effectively managed by the pre-harvest sprays with Zineb + Hexaconazole (0.2%) or Thiophanate methyl (0.1%).

Pomegranate

- On fresh foliage and emerging flower buds infection of anthracnose might be noticed whereas, leaf and fruit spot disease caused by *Puedocercospora punicae* may become serious.
- These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with sticker @ 0.5ml/l.

Vegetables Crops

Solanaceous (tomato, capsicum, chilli) and cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.)

- Powdery mildew may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For Alternaria leaf spot chlorothalonil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.
- In places where tomato has been planted late, with incessant rains late blight due to *Phytophthora* will appear. Preventive spray of copper oxy chloride at 0.2% or Bordeaux mixture 1% is recommended.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 30th September, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
September 16 to 30, 2020	27.2	20.0	89.7	75.6	3.2	5.97	66.0
	(28.1)	(20.4)	(83.2)	(59.2)	(3.0)	(3.6)	(83.2)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th September, 2020

During the second fortnight of the month i.e., from September 16th to 30th, 2020, the average maximum temperature decreased by 2.2⁰C and minimum temperature remained the same as compared to previous fortnight. The average maximum temperature decreased by 0.4⁰C and minimum temperature increased by 0.1⁰C as compared to the average values of the corresponding period for the previous five years. The percent relative humidity decreased by 2.5% in morning and 3.8% during afternoon, as compared to the previous fortnight. There was 66.0 mm rainfall during the fortnight.

Crop weather situation

Slightly higher wind speed and lesser rainfall necessitated frequent irrigations for standing crops. Best time for land preparation for Rabi season crops. For banana plantations, which were planted during June- July a second dose of fertilizer application of N, P₂O₅ and K₂O @ 50:30:60 g per plant may be applied.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Mango

Mango shoot borer

- Clip and destroy affected shoots
- Spray acephate 50 WP@ 1.5 g/l or quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae*

Webber and ash weevil on Mango

- Incidence of webber and ash weevil will become serious on new leaves. Remove webbed leaves wherever possible and burn them. Spray quinalphos @ 2 ml/l or lamda cyhalothrin @ 1ml /l for their management.

Pomegranate

Fruit sucking moth

- Wherever matured fruits are present fruit sucking moth damage is expected. Netting the orchards is recommended

Grapes

- Thrips, *Scirtothrips dorsalis* is expected to occur on the leaves of newly pruned Bangalore Blue. Spray fipronil 5 SC @ 1.5ml/L

Vegetable Crops

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following an integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (imidacloprid 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre
- Spray indoxacarb @ 0.75 ml/litre or spinosad45 SC @ 0.3ml/l

Tobacco caterpillar on Tomato

- Spray indoxacarb @ 0.75 ml/L

Leaf hopper on okra/Bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 1 %, thoroughly covering lower surface of leaves.

Flower Crops

Thrips on rose

- Incidence of rose thrips was observed more under polyhouse conditions. Spray acephate @ 1 g/l or imidacloprid @ 0.5 ml/l for its management.

Whitefly on Gerbera

- For the management of whitefly on gerbera spray dinetofuran20SG @ 1 g/l or diafenthiuron 500SC@ 1ml/litre followed by spirotetramat 240 SC @ 1ml/litre. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring the adult whitefly population.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of September, 2020.

Fruit Crops

Grape

- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/l.

Mango

- Sooty mould should be taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).
- Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Intensity of Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) of fruits may be increased compared to last fortnight. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post-harvest dip in Chlorine water (300 ppm) for 10 minutes.
- *Macrophoma* spots may appear on the fruits of Robusta varieties of banana. Application of Carbendazim (0.1%) or Thiophanate methyl (0.1%) are recommended for the management of the disease.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may remain moderate. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l are effective for the disease control. This will avoid spread of scab disease also. Regular spray of copper oxychloride (0.2%) or Bordeaux mixture (1%) along with streptomycin 0.5g/l is to be continued to avoid spread of nodal blight.

Vegetables Crops

Leaf blight of tomato and potato by *Phytophthora infestans*

- Since the rain fall was heavy in the last fortnight, there is higher spread of late blight. If blight has not started, preventive spray of chlorothalonil or copper oxy chloride at 0.2% is recommended. In case of severe infection, spray of fenamidone + dithane M 45 (Sectin) at 0.1% is recommended.

Powdery mildew in solanaceous vegetable crops

- Spray of wettable sulphur or dithane M 45 after the appearance of the powdery mildew symptoms. In case of severe infection hexaconazole at 0.1% is recommended.

Ornamental crops

- Incidence of rose powdery mildew is expected to increase. In case of severe infection hexaconazole 0.1% or azoxystrobin 0.1% will reduce the disease spread.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th October, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (⁰ C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
October 1 to 15, 2020	28.1	19.9	89.6	71.7	3.1	5.15	30.6
	(29.7)	(20.1)	(83.9)	(59.1)	(3.7)	(2.4)	(132.3)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th October, 2020

During the first fortnight of the month i.e., from October 1st to 15th, 2020, the average maximum temperature increased by 0.9⁰C and minimum temperature decreased by 0.1⁰C as compared to previous fortnight. The average maximum temperature increased by 1.6⁰C and minimum temperature decreased by 0.3⁰C, when compared to the average values of the corresponding period for the previous five years. The percent relative humidity decreased by 0.1% in morning and 3.9% during afternoon as compared to the previous fortnight. There was 30.6 mm rainfall during the fortnight.

Crop weather situation

October pruning and earthing up operations in the standing crops may be taken up. Field preparation, fertilizer application and sowing of rabi vegetables and inter culture operations in standing crops may also be taken up. Green manures raised in the month of July/August have to be incorporated in to the soil in between the rows of tree crops.

Incidence of pests and diseases

Under the prevailing weather situation, the following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Mango

Mango shoot borer

- Clip and destroy affected shoots.
- Spray indoxacarb 14.5 SC@ 0.75ml/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae*.

Webber and ash weevil

- Incidence of webber and ash weevil become serious on new leaves. Remove webbed leaves wherever possible and burn them. Spray quinalphos 25EC@ 2 ml/l or lambda cyhalothrin 5EC @ 1ml /l for their management.

Pomegranate

Fruit sucking moth

- Wherever matured fruits are there fruit sucking moth damage is expected. Netting the orchards is recommended

Grapes

Thrips

- *Scirtothrips dorsalis* is expected to occur on leaves of newly pruned Bangalore Blue. Spray fipronil 5SC @ 1.5ml/L or *Metarhizium* formulations.

Vegetable Crops

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + sanitation (complete destruction of infested fruits at each harvest) + bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Tobacco caterpillar on Tomato

- For the management of this pest, spray indoxacarb @ 0.75 ml/L or ranxypyr 18.5 SC @ 0.3ml/L.

Leaf hopper on okra/Bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid 17.8 SL @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 1 %, thoroughly covering lower surface of leaves.

Flower Crops

Thrips on rose

- Incidence of rose thrips was observed more under polyhouse conditions. Spray acephate 75 SP @ 1 g/l or imidacloprid 17.8 SL @ 0.5 ml/l for its management.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of October, 2020.

Fruit Crops

Grape

- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/l.

Mango

- Sooty mould should be taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).
- Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Intensity of Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodiatheobromae*) and anthracnose (*Colletotrichum musae*) of fruits may be increased compared to last fortnight. Sigatoka could be managed by spraying propiconazole (0.1%) whereas crown rot and anthracnose could be controlled by the post-harvest dip in Chlorine water (300 ppm) for 10 minutes.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may remain moderate. Application of Chlorothalonil (0.2%) /Antracol (0.2%) along with the sticker @ 0.5ml/l is effective for the disease control. This will avoid spread of scab disease also. Regular spray of copper oxychloride (0.2%) or Bordeaux mixture (1%) along with streptocycline 0.5g/l is to be continued to avoid spread of nodal blight.

Vegetables Crops

Solanaceous vegetables

Powdery mildew

- Spray of wettable Sulphur or dithane M 45 after the appearance of the powdery mildew symptoms. In case of severe infection hexaconazole at 0.1% is recommended.

Tomato and potato

Leaf blight by *Phytophthora infestans*

- Spread of late blight is expected to continue. If blight has not started, preventive spray of chlorothalonil or copper oxy chloride at 0.2% is recommended. In case of severe infection, spray of fenamidone + dithane M 45 (Sectin) at 0.1% is recommended.

Ornamental crops

- Incidence of rose powdery mildew is expected to increase. In case of severe infection hexaconazole 0.1% or azoxystrobin 0.1% will reduce the disease spread.

**CROP WEATHER SITUATION METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 31st October, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
October 16 to 31, 2020	27.7	18.6	88.8	64.9	2.8	2.75	120.9
	(28.5)	(18.5)	(74.0)	(53.6)	(3.9)	(2.4)	(23.1)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st October, 2020

During the second fortnight of the month i.e., from October 16th to 31st, 2020, the average maximum temperature and minimum temperatures decreased by 0.4°C and 1.3°C as compared to previous fortnight. The average maximum temperature and minimum temperatures decreased by 1.2°C and 1.6°C as compared to the average values of the corresponding period for the previous five years. The percent relative humidity decreased by 0.8% in morning and 6.8% during afternoon, as compared to the previous fortnight. There was 120.9 mm rainfall during the fortnight.

Crop weather situation

Second fortnight of the October received very high rainfall with high humidity and low evaporation. As there was sufficient rainfall for field preparation, fertilizer application and sowing of rabi vegetables may be taken up. Inter cultural operations in standing crops may also be taken up. Mango needs depletion of profile moisture for flowering. Hence, the irrigation need not be given to mango during this period.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Mango

Leaf eating caterpillars

- Spray quinalphos 25 EC@ 2 ml/l or lambda cyhalothrin 5EC @ 1ml /l for their management.

Weevils

- Spray quinalphos 25 EC@ 2 ml/l or lambda cyhalothrin 5EC @ 1ml /l for their management.

Grape

Thrips

- Thrips, *Scirtothrips dorsalis* is expected to occur on leaves of newly pruned Bangalore Blue. Spraying of imidacloprid 17.8 SL @ 0.3 ml/L or thiamethoxam 25G @ 0.25g/L is recommended.

Vegetable Crops

Caterpillar pests on tomato

- During this period, incidence of both tobacco caterpillar and fruit borer is more. For the management of these caterpillar pests spray indoxacarb 14.5 SC @ 0.75ml/l. Collect and destroy *Spodoptera litura* at early instar stage, when they feed gregariously, is desirable.

Mite on tomato

- Incidence of spider mites is noticed in some tomato fields. For mites management spray spiromesifen 22.9 SC 0.5ml/l.

Thrips on capsicum and chilli

- Incidence of thrips is increasing on capsicum grown under shade net/polyhouses and chilli grown under open conditions. Spray imidacloprid 200 SL @ 0.5 ml/l or fipronil 5SC @ 1.5ml/L.

Jassids on bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid 17.8 SL @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 0.5 %, thoroughly covering lower surface of leaves.

Epilachna beetle on brinjal

- Heavy incidence of Epilachna beetle damage is seen on brinjal. Azadirachtin 0.03 % WSP (300 ppm) 5.0 g/l or Quinalphos 20 % AF 1.7 ml/l.

Ornamental Crops

Aphid on rose

- Aphid infestation may increase on rose in open field. Spray imidacloprid 200 SL @ 0.5 ml/l for its management. If the incidence is severe, spray thiamethoxam 25 WG 0.3g/L.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of October, 2020.

Fruit crops

Grape

- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/l.

Mango:

- Sooty mould should be taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).
- Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Pomegranate:

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may remain moderate.
- Application of Chlorothalonil (0.2%) /Antracol (0.2%) / Carbendazim (0.1%) / Thiophanate methyl (0.1%) / Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.
- This will avoid spread of scab disease also. Regular spray of copper oxychloride (0.2%) or Bordeaux mixture (1%) along with streptomycin 0.5g/l is to be continued to avoid spread of nodal blight.

Vegetable Crops

Expected Disease Incidence in Vegetable Crops

- There has been a dry spell and there are chances for viral diseases transmitted by sucking pests like thrips and aphids. Care should be taken to prevent their population by applying the neem based formulations as per the requirement and crop stage in all crops where vector borne viral disease are expected.

Leaf blight of tomato and potato by *Phytophthora infestans*

- If blight has not started, preventive spray of chlorothalonil or copper oxy chloride at 0.2% is recommended.
- If there is drizzling due to the depression in east coast followed by rain fall the severity of leaf blight may increase.
- In case of severe infection, spray of fenamidone + mancozeb at 0.2% is recommended. The water logging has to be avoided to prevent humidity build up.
- Use of polythene mulch will reduce the secondary spread of the disease through rain splash.

Powdery mildew in solanaceous vegetable crops

- As the minimum temperature has come down and there is cool and dry weather, the powdery mildew will increase.
- Spray of wettable sulphur or mancozeb at 0.2% after the appearance of the powdery mildew symptoms. In case of severe infection hexaconazole at 0.1% is recommended.

Ornamental crops

Powdery mildew in Rose

- Incidence of rose powdery mildew is expected to increase. In case of severe infection hexaconazole 0.1% or azoxystrobin 0.1% will reduce the disease spread.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th November, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
November 1 to 15, 2020	28.7	17.9	86.5	60.5	3.4	3.8	7.3
	(27.8)	(17.3)	(79.2)	(51.0)	(3.4)	(1.9)	(32.3)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th November, 2020

During the first fortnight of the month i.e., from November 1st to 15th, 2020, the average maximum temperature increased by 1⁰C and minimum temperature decreased by 0.7⁰C as compared to previous fortnight. The average maximum and minimum temperatures were decreased by 0.7⁰C and 1.2⁰C, when compared to the average values of the corresponding period for the previous five years. The percent relative humidity decreased by 2.3% in morning and 4.4% during afternoon, as compared to the previous fortnight. There was 7.3 mm rainfall during the fortnight.

Crop weather situation

Rainfall was very less compared to the average rainfall of previous five years. Day temperatures were high and night temperatures were low. This will increase flowering in mango. But this may affect banana plantations which were planted during June –July. Supplemental irrigation may be given to this crop. As evaporation rate is higher it is advisable to put mulching in the basins of the fruit orchards.

Incidence of Insect pests

Under the prevailing weather situation, the following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Grapes

Thrips

- *Scirtothrips dorsalis* is expected to occur on leaves of newly pruned Bangalore Blue. Spray fipronil 5SC @ 1.5ml/L or *Metarhizium* formulations.

Vegetable Crops

Caterpillar pests on tomato

- With the prevailing weather, incidence of various caterpillar pests like tobacco caterpillar and tomato fruit borer may increase on tomato. For the management of both these caterpillar pests, spray indoxacarb 14.5 SC @ 0.75ml/l.

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre
- Spray indoxacarb 14.5SC @ 0.75 ml/litre or spinosad 45SC @ 0.3ml/l

Mites on tomato

- During the period, incidence of mites is observed in different tomato fields. Spray spiromesifen 22.9SC @ 1 ml/l for their management.

Aphids on brinjal & bhendi

- Incidence of aphids is increasing on brinjal and bhendi. If the crop is at pre flowering stage, spray imidacloprid @ 0.3 ml/l. After the fruit set, spray neem or pongamia soaps @ 0.5 % or pulverized neem seed powder extract (NSPE) 4%, by covering the lower surface of the leaves thoroughly.

Aphids on beans

- Aphid infestation may increase on rose and other bean vegetables. Spray imidacloprid 200SL @ 0.5 ml/l for their management

Flower Crops

Aphids on rose

- Aphid infestation may increase on rose and other bean vegetables. Spray imidacloprid 200SL @ 0.5 ml/l for their management

***Helicoverpa* on china asters**

- Incidence of *Helicoverpa* may increase on china asters. Spray indoxacarb 14.5 EC @ 0.75 ml/l for its management.

Disease Scenario

Disease forecast based on weather parameters during the first fortnight of November, 2020.

Fruit Crops

Grape

- Downy mildew and anthracnose need to be monitored. For the management of downy mildew application of Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%)/ Dimethomorph (0.8%) + Mancozeb (0.2%) and for anthracnose spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective.
- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Mango

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Anthracnose spots may increase on foliage.
- Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodiatheobromae*) and anthracnose (*Colletotrichum musae*) of fruits require proper attention.
- Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.
- *Macrophoma* spots may appear on the fruits of Robusta varieties of banana. Application of Carbendazim (0.1%) or Thiophanate methyl (0.1%) is recommended for managing the same.

Papaya

- Infection of Black spot (*Asperisporium caricae*) is increasing. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetables Crops

Solanaceous (tomato, capsicum, chilli) vegetables

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended.
- Leafspots and Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Ornamental crops

Chrysanthemum

- This is the time for rust and spraying Chlorothalonil (2g/l) or mycoblutanol (2g/l) as contact fungicide will reduce the incidence. In severe cases propiconazole (1.5 ml/l) will help in preventing the further spread of the disease.

Rose

- Now the powdery mildew incidence will increase. Spray of azoxystrobin at 0.05% or trifloxystrobin + tebuconazole at 0.1% will reduce the powdery mildew spread.

**CROP WEATHER SITUATION METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 30th November, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30 AM	Average at 1.30 PM			
Nov. 16 th to 30 th 2020	26.2	16.9	88.1	65.9	2.8	4.72	11.9
	(27.4)	(17.5)	(80.8)	(51.7)	(3.3)	(2.4)	(13.0)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th November, 2020

During the second fortnight of the month i.e., from November 16th to 30th, 2020, the average maximum and minimum temperatures decreased by 2.5⁰C and 1⁰C as compared to previous fortnight. The maximum temperature decreased by 0.4⁰C and minimum temperature increased by 0.20C as compared to the average values of the corresponding period for the previous five years. The percent relative humidity increased by 1.6% in morning and 5.4% during afternoon, as compared to the previous fortnight. There was 11.9 mm rainfall during the fortnight.

Crop weather situation

Second half of November received slightly lower rainfall than the average rainfall of previous 5 years. Weather was cool and dry and all required inter cultivation operations can be taken up. Supply of micronutrients foliar sprays like banana special to banana, vegetable special to vegetables may be done. As wind speed is higher during this period farmers are advised to cover the soil surface with available mulch to reduce evaporation losses.

Incidence of pests and diseases

Under the prevailing weather situation, the following pests are expected under Bangalore conditions. Various pest management options are also mentioned below.

Fruit Crops

Hoppers on mango:

- Wherever flowering has started, incidence of hoppers is expected to occur on mango. Spray Azadirachtin 3000 ppm @ 2 ml/l, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.25 ml/l. If blossom webber is noticed, spray lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. Add stickers for enhancing the efficacy. Also direct the sprays to the trunks to check hibernating adults of stone weevils and hoppers.

Cabbage Diamond back moth:

- Occurring in severe form. Spraying of neem soap (10g/L), neem seed powder extract @ 40g/litre at 10 days intervals will be effective.

Tomato fruit borer:

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray *HaNPV* @ 250 LE/ha during evening hours or spray indoxacarb 14.5 SC @ 0.75ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies:

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam 70WG@ 0.3 g/l for their management.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid 17.8 SL @ 0.5 ml/l for their management.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of November, 2020.

Fruit Crops**Grape:**

- Downy mildew and anthracnose need to be monitored. For the management of downy mildew application of Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%)/ Dimethomorph (0.8%) + Mancozeb (0.2%) and for anthracnose spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective.
- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/l.

Mango:

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana:

- Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodiatheobromae*) and anthracnose (*Colletotrichum musae*) of fruits require proper attention. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.
- *Macrophoma* spots may appear on the fruits of Robusta varieties of banana. Application of Carbendazim (0.1%) or Thiophanate methyl (0.1%) is recommended for managing the same.

Papaya:

- Infection of Black spot (*Asperisporium caricae*) is increasing. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops**Solanaceous and cucurbits vegetables:**

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended.

- Leafspots and Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Ornamental crops

Chrysanthemum

- This is the time for rust and spraying Chlorothalonil (2g/l) or mycoblutanol (2g/l) as contact fungicide will reduce the incidence. In severe cases propiconazole (1.5 ml/l) will help in preventing the further spread of the disease.

Rose

- The powdery mildew incidence would increase. Spray of azoxystrobin at 0.05% or trifloxystrobin + tebuconazole at 0.1% will reduce the powdery mildew spread.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 1st to 15th December, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
December	26.2	16.00	89.3	65.4	2.77	4.78	13.9
1 to 15, 2020	(26.7)	(17.3)	(81.3)	(55.4)	(2.6)	(3.3)	(16.8)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th December, 2020

During the first fortnight of the month i.e., from December 1st to 15th, 2020, the average maximum temperature remained same and minimum temperature decreased by 0.9⁰C as compared to previous fortnight. The average maximum and minimum temperatures decreased by 0.7⁰C and 0.2⁰C, when compared to the average values of the corresponding period for the previous five years. The percent relative humidity increased by 1.2% in morning and decreased by 0.5% during afternoon, as compared to the previous fortnight. There was 13.9 mm rainfall during the fortnight.

Crop weather situation

No major change in the average maximum temperature of this fortnight was observed compared to the previous five years average values, though the relative humidity in the morning was higher. Planting of rabi vegetables may be completed in this month. For those rabi vegetables which have already been transplanted top dressing of N @50 kg/ha may be given.

Incidence of Insect pests

Under the prevailing weather situation, the following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Mango

Hoppers

- Wherever flowering started, incidence of hoppers is expected to occur on mango. Spray Azadirachtin 3000 ppm @ 2 ml/l, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray imidacloprid 200 SL @ 0.25 ml/l. If blossom webber is noticed, spray lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. Add stickers for enhancing the efficacy.

Vegetable Crops

Tomato fruit borer

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray HaNPV @ 250 LE/ha during evening hours or spray indoxacarb 14.5 SC @ 0.5ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam 25 WG @ 0.3 g/l for their management.

Thrips on capsicum and chilli

- Incidence of thrips is increasing on capsicum grown under shade net/polyhouses and chilli grown under open conditions. Spray imidacloprid 200 SL @ 0.5 mL/l or fipronil 5 SC @ 1.5 ml/l.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits during cool weather. Spray neem soap @ 10g/liter or imidacloprid 200SL @ 0.5 ml/l for their management.

Disease Scenario

Disease forecast based on weather conditions prevailed during first fortnight of December 2020

Fruit Crops

Grape

- Downy mildew and anthracnose are important diseases in this period. For the management of downy mildew application of Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%)/ Dimethomorph (0.8%) + Mancozeb (0.2%) and for anthracnose spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective.

Mango

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Wettable Sulphur should not be applied if the temperature is higher. Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) of fruits require proper attention. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may remain moderate. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Papaya

- Infection of Black spot (*Asperisporium caricae*) is increasing. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole

(0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable Crops

Solanaceous vegetables

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Leafspots and Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Cucurbits vegetables

- Powdery mildew may become problem. Application of chlorothalonil (0.2%) as preventive spray and tebuconazole (0.1%) at severe stages may help. For the downy mildews spray of ridomil 0.1% will help.

Ornamental crops

Chrysanthemum

- This is the time for rust and spraying chlorothalonil at 2g/l will prevent the disease incidence. While propiconazole at 0.1% will help as curative measure.

Rose

- Powdery mildew of rose in polyhouse as well as field grown crops will increase. Tebuconazole or hexaconazole (at 0.1%) or azoxystrobin at 0.05% would reduce the disease severity.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089**

Period: 16th to 31st December, 2020

Latitude : 13⁰⁷1 N

Longitude : 72⁰²⁹1E

Altitude : 890 M

Fortnight	Temperature (°C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
December 16 to 31, 2020	27.4	15.0	90.7	54.9	3.4	4.8	0.00
	(27.8)	(15.2)	(79.1)	(47.7)	(3.9)	(3.1)	(0.0)

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st December, 2020

During the second fortnight of the month i.e., from December 16th to 31st, 2020, the average maximum temperature increased by 1.2⁰C and minimum temperature decreased by 1.0⁰C as compared to previous fortnight. The average maximum temperature increased by 1.1⁰C and minimum temperature decreased by 2.1⁰C when compared to the average values of the corresponding period for the previous five years. The percent relative humidity increased by 1.4% in morning and decreased by 10.5% during afternoon, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

Second fortnight of December 2020 is much warmer and drier; there was no rainfall during the entire period. Therefore, one needs to take care of irrigation for standing vegetable and fruit crops. Mulching at the base of the standing fruit crops to reduce evaporation losses may be done. Choking of banana can be prevented by application of more potassium and proper mulching during cold winter days.

Incidence of Insect pests

Under the prevailing weather situation, the following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Fruit Crops

Mango

Hoppers

- Incidence of hoppers is observed on mango. Spray Azadirachtin 3000 ppm @ 2 ml/l, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.5 ml/l or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence.

Flower Webbers/ Inflorescence caterpillars on mango

- Besides hoppers, inflorescence caterpillars which web the flowers and feed inside are potential pests on mango during January. Application of lambda cyhalothrin 5EC @ 0.5ml/L or cypermethrin 25 EC @ 1ml/L are useful to control the pest.

Banana

Banana skipper

- Skipper butterfly is becoming a serious pest on banana. Larva rolls the leaves and feed by remaining inside. Affected leaves to be mechanically removed and destroyed. In case of severe infestation, spraying of quinolphos 25EC @ 2ml/L or chlorpyrifos 20EC @ 2.5ml/L is advised.

Vegetable Crops

Tomato fruit borer

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray HaNPV @ 250 LE/ha during evening hours or spray indoxacarb 14.5 SC @ 0.5ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Tomato moth

- Install Tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb 14.5SC @ 0.75 ml/litre or spinosad 45SC @ 0.3ml/l

Midge on chillies

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage.
- Spray thiamethoxam 25 WG @ 0.3 g/l for their management.

Thrips on capsicum and chilli

- Incidence of thrips is increasing on capsicum grown under shade net/polyhouses and chilli grown under open conditions.
- Spray imidacloprid 200 SL @ 0.5 mL/l or fipronil 5 SC @ 1.5 ml/l.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid 17.8SL@ 0.5 ml/l for their management.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of December, 2020.

Fruit Crops

Fruit crops

Grape

- Anthracnose and Powdery mildew infection are expected to increase may be noticed.
- For anthracnose application of Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) or thiophanate methyl (0.1%) whereas for powdery mildew application of Myclobutanil (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease.

Banana

- Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) Macrophoma fruit spot disease needs proper attention.

- Sigatoka could be managed by spraying propiconazole (0.1%)/ whereas crown rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the pre-harvest sprays involving Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

Mango

- Powdery mildew requires attention. At this point of time application of wettable sulphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Anthracnose spots might further increase on foliage. Application of Chlorothalonil (0.2%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.
- Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended.
- Hopper and other insect management are equally important with suitable insecticides (Imidacloprid @ 0.5%).

Pomegranate

- Intensity of leaf and fruit spot disease and anthracnose of fruit and leaf may increase further.
- Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Papaya

- Infection of Black spot (*Asperisporium caricae*) may further increase. Whereas powdery mildew (*Oidium caricae*) infection may also be noticed.
- Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops

Crucifers

Powdery mildew

- Spray wettable sulphur or tebuconazole at 0.2% at the start the infection with sticker at 0.5ml per l of spray liquid with good coverage of the lower surface o the leaves.

Tomato

Powdery mildew

- Spray hexaconazole or tebuconazole 0.2% at the start of the infection with sticker as mentioned earlier.

Ornamental Crops

Rose

Powdery mildew

- Spray with azoxystrobin at 0.05% with sticker as mentioned above.

Black spot

- Spray mancozeb 0.2% at the initial stages and trifloxystrobin or propiconazole (0.1%) if infection is severe at later stages.

Medicinal Crops

Betel vine

Powdery mildew

- Spray wettable sulphur at 0.2%. spray of systemic fungicides not recommended. Maintenance of good aeration and proper drainage are important.