

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089**

Period: 16th to 31st January, 2015

Latitude : 13^o58¹ N

Longitude : 78^o 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			
January 16 th to 31 st , 2015	27.8	15.5	69.9	41.5	3.3	4.2	--
	(28.3)	(14.8)	(72.4)	(43.0)	(4.8)	(4.51)	(--)

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

Fortnight from 16th to 31st January, 2015

During the second fortnight of the month i.e., from January 16th to 31st, 2015, the average maximum and the average minimum temperatures were lower by 0.4°C and 3.7°C respectively, as compared to the previous fortnight. The average maximum temperature value was lower by 0.5°C and the average minimum temperature value was higher by 0.7°C as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 1.4% and 6.3% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- ❖ Flowering has been noticed in some of the mango varieties/species viz., M. camptosperma, Alphonso and Nazulipasand
- ❖ The weather during the fortnight remained dry. Crops which are in prime growth stages like vegetables may be provided with irrigation through drip system wherever there is provision. Mango farmers are advised to spray mango special for taking care of micronutrients needs. Wherever possible cover the ground with available mulch to minimise evaporation losses.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Hoppers on mango

- ❖ Incidence of hoppers is observed 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 @ 0.5ml/L or cypermethrin @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 @ 2ml/L or chlorpyrifos @c 2.5ml/L is advised.

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 @ 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 @ 0.3 g/l for their management.

Aphids on cucurbits

- ❖ Aphid infestation may increase on different cucurbits. Spray imidacloprid @ 0.5 ml/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 acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on tomato

- ❖ Incidence of mites is observed and may increase on tomato. For their management spray dicofol @ 2.5 ml/L or wettable sulphur @ 3 g/L.

Mites on Rose

- ❖ During the period, incidence of mites is observed heavily on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

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HESSARAGHATTA, BANGALORE – 560 089**

Period: 16th to 28th February, 2015

Latitude : 13^o58¹ N

Longitude : 78^o 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			
February 16 th to 28 th , 2015	30.7	15.0	51.1	37.0	5.0	4.1	--
	(29.7)	(16.4)	(68.8)	(45.5)	(5.2)	(4.8)	(--)

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

Fortnight from 16th to 28th February, 2015

During the second fortnight of the month i.e., from February 16th to 28th, 2015, the average maximum and the average minimum temperatures were higher by 1.9°C and 1.2°C respectively, as compared to the previous fortnight. The average maximum temperature value was higher by 1.0°C and the average minimum temperature value was lower by 1.4°C as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 15.5% and 3.1% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- ❖ The relative humidity during this period was lower compared to previous five year record and average temperature was marginally higher (max) while minimum temperature was lower. Since soil moisture levels are lower protective irrigation is advised and application of recommended dose of FYM is needed. Measure to conserve soil moisture is required and application of chemical fertilizers may be avoided.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Hoppers on mango

- ❖ Incidence of hoppers is continuing on mango. Spray imidacloprid 200 SL @ 0.3 ml/l. 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 @ 0.5ml/L or cypermethrin @1ml/L are useful to control the pest.

For Fruit fly

- ❖ Erect methyl eugenol traps @ 6/acre wherever fruits attained bigger than lemon size

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 quinalphos @ 2ml/L or chlorpyrifos @c 2.5ml/L is advised.

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 @ 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 @ 0.3 g/l for their management.

Aphids on cucurbits

- ❖ Aphid infestation may increase on different cucurbits. Spray imidacloprid @ 0.5 ml/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 acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on tomato

- ❖ Incidence of mites is observed and may increase on tomato. For their management spray dicofol @ 2.5 ml/L or wettable sulphur @ 3 g/L.

Mites on Rose

- ❖ During the period, incidence of mites is observed heavily on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

Diseases

- ❖ In grapes, anthracnose infection may be noticed. Application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker @ 0.5 ml/ l is recommended for the management of the 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.
- ❖ Sigatoka leaf spot (*Mycospheralla* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) Macrophoma fruit spot disease needs proper attention in banana. 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.
- ❖ In mango, 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.
- ❖ Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further in pomegranate. 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.
- ❖ Infection of Black spot (*Asperisporium caricae*) may further increase in papaya. 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.
- ❖ 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.
- ❖ Change in weather especially dry spell followed by unexpected showers causing high 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
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HESSARAGHATTA, BANGALORE – 560 089**

Period: 1st to 15th March, 2015

Latitude : 13^o58¹ N

Longitude : 78^o 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			
March 1 st to 15 th , 2015	30.6 (31.5)	19.4 (17.9)	68.1 (66.3)	50.4 (43.9)	5.8 (5.9)	5.28 (5.07)	8.7 (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, 2015

During the first fortnight of the month i.e., from March 1st to 15th, 2015, the average maximum temperature was lower by 0.1°C and the average minimum temperature was higher by 4.4°C, as compared to the previous fortnight. The average maximum temperature value was lower by 0.9°C and the average minimum temperature value was higher by 1.5°C, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 17.0% and 13.4% respectively, as compared to the previous fortnight. The rainfall of 8.7 mm was recorded during the fortnight.

Crop weather situation

- ❖ The mean average maximum temperature during the last fifteen days was a marginally lower compared to the average of last five years. While relative humidity was marginally higher. The total rainfall received was 8.7mm and may not be adequate to meet the water requirement in many horticultural crops. Therefore protective irrigation may be provided and basal dose of nutrient application may be taken up after adequate moisture is build up in soil.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Mango Hoppers: On mango, incidence of hoppers may continue wherever flowering is delayed. Spray azadirachtin @ 3ml/L. If the incidence is severe, spray imidacloprid @ 0.3 ml/L.

Mango stone weevil management: Wherever fruits reached lemon size (2-4 cm diameter), a spray of acephate @ 1.5g/L followed after two weeks by deltamethrin @ 1ml/L. This will also take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures.

Fruit fly Management: In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6-8/acre. Collect and destroy fallen fruits.

Leaf miner on tomato : Incidence of leaf miner is observed on tomato. For its management spray triazophos @ 1.5 ml/l

Mites on tomato : For the management of mites on tomato, spray dicofol @ 2.5 ml/l

Whiteflies on tomato : Incidence of whiteflies is noticed on tomato. For their management spray imidacloprid @ 0.5 ml/l.

Brinjal shoot and fruit borer

❖ For the management of brinjal shoot and fruit borer, spray rynaxypyr @ 0.3 ml/l.

Mealy bugs on grapes

❖ Incidence of mealybugs may increase during this period. Spray dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Thrips on rose : For the management of thrips on rose, spray acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on Rose : During the period, severe incidence of mites is observed on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

Diseases

- ❖ 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.
- ❖ In mango, anthracnose spots might further increase on foliage. Application of Chlorothalonil (0.2%) or Antracol (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / l) is recommended for the disease management.
- ❖ Quiescent infection (*Colletotrichum musae*) crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and Macrophoma fruit spot disease needs proper attention in banana. Anthracnose, Crown rot, 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.
- ❖ Moderate intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may be noticed in pomegranate. Application of Chlorothalonil (0.2%) /Antracol (0.2%) or Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control. Bacterial blight may also taken seriously wherever unseasonal rains occurred. Application of COC (0.2%) + Streptocycline (300 ppm) along with 0.5ml /l sticker should be sprayed.
- ❖ In 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%) or Carbendazim (0.1%) or 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.
- ❖ In tomato, early blight (*Alternaria solani*) and powdery mildew (*L. Taurica*) needs attention. Early blight could be managed with the foliar application of COC (0.3%) or Chlorothalonil (0.2%) or Mancozeb (0.2%) or Propineb(0.2%) at fortnightly interval. For powdery mildew application of Hexaconazole (0.05%) or Dinocap (0.1%) are effective.

- ❖ In Chilies and Capsicum, powdery mildew (*L. Taurica*) should be taken care by the application of Hexaconazole (0.05%) or Dinocap (01%).
- ❖ Purple blotch (*Alternaria porri*) should be needs attention in onion. Application of fungicides such as Chlorothalonil (0.2%) or Propineb(0.2%) or Mancozeb(0.2%) at fortnightly interval from the onset of the disease.

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Period: 16th to 31st March, 2015

Latitude : 13°58' N

Longitude : 78° 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			
March 16 th to 31 st , 2015	34.7	20.4	69.3	52.0	6.07	4.49	--
	(33.0)	(17.7)	(68.8)	(37.7)	(7.0)	(4.89)	(--)

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

Fortnight from 16th to 31st March, 2015

During the second fortnight of the month i.e., from March 16th to 31st, 2015, the average maximum and the average minimum temperatures were higher by 4.1°C and 1.0°C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 1.7°C and 2.7°C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 1.2% and 1.6% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- ❖ Average day temperature higher than average values of previous 5 years. Protective irrigation may be given to all the summer vegetable crops. Mulching may be applied to reduce the evaporation losses.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Mango stone weevil management

- ❖ Wherever fruits reached lemon size (2-4 cm diameter), a spray of acephate @ 1.5g/L followed after two weeks by deltamethrin @ 1ml/L. This will also take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures.

Fruit fly Management in Mango

- ❖ In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6-8/acre. Collect and destroy fallen fruits.

Leaf miner on tomato

- ❖ Incidence of serpentine leaf miner is observed on tomato. For its management spray triazophos @ 1.5 ml/l
- ❖ A new pest namely, *Tuta absoluta* which causes leaf mining and also boring the fruits has been found to be widespread in tomato fields. It is advised that farmers may remove crop residues immediately after crop is over. *Nesidiocoris tenuis*, a bug was found predated on eggs and early instars of *T. absoluta* under field conditions. Since it is a new pest, management strategies are being worked out. In case of severe incidence farmers may apply Bt formulation @ 1ml/L.

Mites on tomato

- ❖ For the management of mites on tomato, spray dicofol @ 2.5 ml/l

Whiteflies on tomato

- ❖ Incidence of whiteflies is noticed on tomato. For their management spray imidacloprid @ 0.5 ml/l.

Brinjal shoot and fruit borer

- ❖ For the management of brinjal shoot and fruit borer, spray rynaxypyr @ 0.3 ml/l.

Mealy bugs on grapes

- ❖ Incidence of mealybugs may increase during this period. Spray dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Thrips on rose

- ❖ For the management of thrips on rose, spray acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on Rose

- ❖ During the period, severe incidence of mites is observed on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

Diseases

- ❖ In grapes, anthracnose infection may be noticed. Application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker @ 0.5 ml/ l is recommended for the management of the 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.
- ❖ Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) Macrophoma fruit spot disease needs proper attention in banana. 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.

- ❖ In mango, 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.
- ❖ Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further in pomegranate. 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.
- ❖ 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.

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Period: 16th to 30th April, 2015

Latitude : 13^o58¹ N

Longitude : 78^o 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			
April 16 th to 30 th , 2015	32.0	20.0	74.5	53.5	4.9	3.7	44.8
	(32.4)	(20.1)	(73.3)	(41.9)	(5.8)	(5.3)	(32.2)

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

Fortnight from 16th to 30th April, 2015

During the second fortnight of the month i.e., from April 16th to 30th, 2015, the average maximum and the average minimum temperatures were lower by 0.5°C and 0.8°C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were lower by 0.4°C and 0.1°C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning hours was higher by 2.9% and percent relative humidity during afternoon hours was lower by 3.3%, as compared to the previous fortnight. The rainfall of 44.8 mm was recorded during the fortnight.

Crop weather situation

- ❖ The average maximum temperature was same as last five year average while average relative humidity was marginally lower. The total rainfall received was much higher than the average of last five years. Sufficient moisture is required for applications of fertilizer and therefore application of fertilizer may be taken along with organic manure often sufficient rainfall is received.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Mango fruit fly, *Bactrocera dorsalis*

- ❖ As the fruits had attained maturity stage, incidence of fruit fly is expected. For its management following measures are suggested.
 - Install methyl eugenol traps @ 6 /acre. Traps can be procured from IIHR or KVKs or firms licensed to manufacture IIHR traps.
 - Collection and destruction of fallen fruits
 - Bait splash on tree trunks with 10% jiggery 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. For its management
 - 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 @ 0.3ml/L or Lambda-cyhalothrin @ 0.5ml/L

Diseases

- ❖ Grapevines should be protected against the infection of 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.
- ❖ Low incidence of Sigatoka (*Mycosphaerella* sp) and other leaf spots needs attention in banana. The disease can be managed by the application of with 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.
- ❖ Anthracnose (*C.gloeosporioides*) and stem end rot (*L. theobromae*) are expected to infect mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Azoxystrobin (0.1%) followed by post-harvest treatments with Hot water (52°C) for ten minutes is recommended.
- ❖ In 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.
- ❖ Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase in papaya. 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.

- ❖ 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.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089**

Period: 16th to 30th June, 2015

Latitude : 13°58¹ N

Longitude : 78° 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			
June 16 th to 30 th , 2015	30.5	21.4	78.2	53.4	3.04	8.54	15.0
	(29.6)	(20.0)	(71.8)	(51.0)	(4.8)	(7.8)	(9.6)

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

Fortnight from 16th to 30th June, 2015

During the second fortnight of the month i.e., from June 16th to 30th, 2015, the average maximum temperature was lower by 0.7°C and the average minimum temperature was higher by 0.3°C, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 0.9°C and 1.4°C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning hours was higher by 0.2 % and percent relative humidity during afternoon hours was lower by 0.6%, as compared to the previous fortnight. The rainfall of 15 mm was recorded during the fortnight which is very significantly higher as compared to the average rainfall of 9.6 mm of the corresponding period for the previous five years

Crop weather situation

- ❖ Rainfall is copiously received to complete many farm operations. Full dose of FYM and Basal dose of N,P, K fertilizers may be applied and incorporated well into the soil in all the fruit and vegetable crops. As the wind speed is more protection against harsh winds may be provided to crops like banana.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

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 hewed wood material and excreta) with cotton dipped in dichlorvos @ 5ml/L and close with mud. In case of severe infestation IHR developed Sealer cum healer can be used. Affected tree trunks can be wrapped with nylon mesh to trap the emerging beetles.

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

- i. Spray acephate 75 SP @ 1.5 g/l or fipronil (1 ml/l) or lambda cyhalothrin 5 EC (0.75 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.
- ii. Mix acephate 1g/l mixed with 2 ml of pongamia oil and 1 ml sticker and make an emulsion (add a little water and shake thoroughly in a bottle) and make the volume to 1 lt and spray.

Root-knot nematode in tomato

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

Whitefly on gerbera (polyhouses)

- i. Spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l.
- ii. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose thrips

- i. Spray acephate 75 SP @ 1.5 g/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- ii. Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- iii. Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- ❖ Incidence of midge is increasing on crossandra. For its management spray acephate @ 1.5 g/l or imidacloprid @ 0.5 ml/l.

Diseases

- ❖ 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%)/ 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. (iii) Rust (on var Bangalore blue): treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%).

- ❖ Latent infection due to Anthracnose (*C. gloeosporioides*) and stem end rot (*B. theobromae*) were recorded 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 for their management.
- ❖ Moderate increase in the intensity of Sigatoka leaf spot (*Mycosphaerella* sp) was noticed in banana 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 Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post harvest dip in Chlorine water (300 ppm) for 10 minutes.
- ❖ Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) needs attention in pomegranate. 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 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.
- ❖ Foliar, fruit as well as internal infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may advance in papaya. 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.
- ❖ There was no appreciable change in the intensity of leaf spot (*P. indicia*) disease compared with last fortnight in sapota. Application of Zineb (0.3%) or Ziride (0.4%) along with sticker (0.5 ml /l) are recommended for their management.
- ❖ 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.
- ❖ To avoid the purple blotch and *Stemphyllum* leaf blight in 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 will be useful.
- ❖ To avoid the spread of downy mildew in cucurbits 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.
- ❖ To avoid the spread of viral diseases in tomato and chilli 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
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089**

Period: 1st to 15th July, 2015

Latitude : 13°58' N

Longitude : 78° 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			
July 1 st to 15 th , 2015	30.1 (27.8)	21.2 (20.0)	77.8 (77.3)	53.5 (55.6)	3.9 (3.9)	5.9 (7.3)	26.2 (75.8)

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

Fortnight from 1st to 15th July, 2015

During the first fortnight of the month i.e., from July 1st to 15th, 2015, the average maximum and the average minimum temperatures were lower by 0.4°C and 0.2°C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 2.3°C and 1.2°C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning hours was lower by 0.4% and the percent relative humidity during afternoon hours was higher by 0.1% as compared to the previous fortnight. The rainfall of 26.2 mm was recorded during the fortnight.

Crop weather situation

- ❖ During last fortnight deficit rainfall was received compared to the average value of the previous five years. The nutrient availability would be lower due to lower soil moisture. Foliar Spray of micro nutrients to already planted kharif vegetables and other fruit crops may be given. Spray of Boron and Potassium may be given to make the crops adjusted to drought situation. Wherever sufficient soil moisture is there planting of fruit crops may be taken up.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

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 hewed wood material and excreta) with cotton dipped in dichlorovos @ 5ml/L and close with mud. In case of severe infestation IIHR developed Sealer cum healer can be used.

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

- iii. Spray acephate 75 SP @ 1.5 g/l or fipronil (1 ml/l) or lambda cyhalothrin 5 EC (0.75 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.
- iv. Mix acephate 1g/l mixed with 2 ml of pongamia oil and 1 ml sticker and make an emulsion (add a little water and shake thoroughly in a bottle) and make the volume to 1 lt and spray.

Root-knot nematode in tomato

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

Whitefly on Gerbera (polyhouses)

- iii. Spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l.
- iv. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- iv. Spray acephate 75 SP @ 1.5 g/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- v. Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- vi. Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- ❖ Incidence of midge is increasing on crossandra. For its management spray acephate @ 1.5 g/l or imidacloprid @ 0.5 ml/l.

Diseases

- ❖ Latent infection due to Anthracnose (*C. gloeosporioides*) and stem end rot (*B. theobromae*) were recorded 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 for their management. 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.
- ❖ Grapevines needs 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. (iii) Rust (on var Bangalore Blue): treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%).

- ❖ Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) needs attention in pomegranate. 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 was recorded on the fruits. 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.
- ❖ Foliar, fruit as well as internal infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may advance in papaya. 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.
- ❖ In 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.
- ❖ 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.
- ❖ In 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.
- ❖ 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 in onion.
- ❖ In cucurbits, spraying of Chlorothalonil (0.2%) or Mancozeb (0.2%) or Metalaxyl –Mancozeb (0.2%) or Fosetyl-Al (0.2%) or Cymoxanil- mancozeb (0.2%) 10-day intervals from onset of downy mildew will reduce the damage.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089**

Period: 16th to 30th September, 2015

Latitude : 13°58¹ N

Longitude : 78° 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			
September 16 th to 30 th , 2015	30.1	19.8	80.0	50.8	2.9	3.4	145.2
	(29.5)	(20.2)	(79.3)	(53.7)	(4.2)	(4.4)	(80.4)

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

Fortnight from 16th to 30th September, 2015

During the second fortnight of the month i.e., from September 16th to 30th, 2015, the average maximum and the average minimum temperatures were lower by 0.1°C and 0.4°C respectively, as compared to the previous fortnight. The average maximum temperature value was higher by 0.6°C and the average minimum temperature value was lower by 0.4°C, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 0.1 % and 1.6% respectively, as compared to the previous fortnight. The rainfall of 145.2 mm was recorded during the fortnight which is very significantly higher as compared to the average rainfall of 80.4 mm of the corresponding period for the previous five years.

Crop weather situation

- ❖ The mean temperature during the last fortnight was higher than the average for last 5 years while the total rainfall was nearly two fold higher. Sufficient moisture availability in soil enables application of fertilizers in perennial horticultural crops and also soil amendment application can be taken up. Control measure for disease needs to be taken up as preventive measure as relative humidity was high during this period.
- ❖ Stray flowering was noticed in certain germplasm accessions of mango.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

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 become serious on new leaves. Remove webbed leaves wherever possible and burn them. Spray quinalphos @ 2 ml/l or lambda cyhalothrin @ 1ml /l for their management.

Fruit sucking moth on Pomegranate

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

Thrips on Pomegranate

- ❖ On new flush, thrips incidence is expected. Spray acephate @ 1.5g/L

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 thiodicarb @ 1 g/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 @ 0.5 %, thoroughly covering lower surface of leaves.

Thrips on rose

- ❖ Incidence of thrips is observed on rose grown under polyhouses. Spray acephate @ 1.5 g/l for their management.

Whitefly on Gerbera

- ❖ Incidence of whitefly is more on Gerbera under protected cultivation. Spray dichlorvos @ 1 ml/l followed by imidacloprid @ 0.5ml/l for its management, after a fortnight. The second spray is need-based.

Diseases

- ❖ 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 Mencozeb /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.

- ❖ Intensity of Leaf spot (*P. mangiferae* / *C. gloeosporioides*) may increase in mango. 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.
- ❖ **In 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.
- ❖ Intensity of Sigatoka leaf spot (*Mycosphaerella* sp) may be moderate in banana. For controlling Sigatoka application of Tridemorph (0.1%)/ or 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%).
- ❖ On fresh foliage and emerging flower buds infection of anthracnose might be noticed and Leaf and fruit spot disease caused by *Pseudocercospora punicae* may become serious in pomegranate. These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.
- ❖ **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
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089**

Period: 1st to 15th November, 2015

Latitude : 13°58' N

Longitude : 78° 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			
November 1 st to 15 th , 2015	28.5	18.5	84.2	54.0	1.9	2.8	130.0
	(27.8)	(19.0)	(79.9)	(53.8)	(3.9)	(4.0)	(62.0)

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

Fortnight from 1st to 15th November, 2015

During the first fortnight of the month i.e., from November 1st to 15th, 2015, the average maximum and the average minimum temperatures were lower by 2.2°C and 2.1°C respectively, as compared to the previous fortnight. The average maximum temperature value was higher by 0.7°C and the average minimum temperature value was lower by 0.5°C, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 8.1% and 1.7% respectively, as compared to the previous fortnight. The rainfall of 130 mm was recorded during the fortnight, which was very significantly high as compared to the previous fortnight and values of the corresponding period for the previous five years.

Crop weather situation

- ❖ As the rainfall recorded was almost more than double of the average of previous years, there will be excess soil moisture everywhere and water stagnation may also be there. It is very important to drain out excess water from the basins of all fruit crops especially in case of papaya as it is very sensitive to water stagnation. Proper staking for all the fruits and vegetables crops is required as heavy rains might have affected them. Nutrient sprays like banana special to banana and vegetable special to vegetables may be done as heavy rains might have leached all the nutrients.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Thrips on Grapes

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

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 @ 1ml/l.

Aphids on brinjal & bhendi

- ❖ Incidence of aphids is increasing on brinjal and bhendi. If the crop is at pre-flowering stage, spray acephate 1 g/l or 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.

Mites on tomato

- ❖ During the period, incidence of mites is observed in different tomato fields. Spray dicofol @ 2.5 ml/l for their management

Aphids on rose and beans

- ❖ Aphid infestation may increase on rose and other bean vegetables. Spray Dimethoate @ 2 ml/l for their management

***Helicoverpa* on china asters**

- ❖ Incidence of *Helicoverpa* may increase on china asters. Spray indoxacarb 14.5 EC @ 1 ml/l for its management.

Diseases

Expected Disease Incidence in Vegetable Crops

Leaf blight of tomato and potato by *Phytophthora infestans*

- ❖ Due to the recent rains the incidence of late blight due to *P. infestans* is expected to increase. 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.

Expected Disease Incidence in Fruit crops

Downy mildew and anthracnose in Grapes

- ❖ Intensity of Downy mildew and anthracnose may increase in grapes. For the management of downy mildew application of Metalaxyl + 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.

Sooty mould and Anthracnose in Mango

- ❖ Sooty mould should be taken care in mango. 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.

Sigatoka leaf spot, crown rot, *Macrophoma* spot in 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 in banana. 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.

Leaf and fruit spot disease in Pomegranate

- ❖ Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may remain moderate in pomegranate. 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.

Vector borne virus diseases

- ❖ After the recent rains, there will be surge of sucking pests like aphids and thrips in vegetable crops if a dry spell follows. Hence wherever required prophylactic spray of acephate at 0.2% if applied it may help in reducing vector population.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089**

Period: 16th to 30th November, 2015

Latitude : 13^o58¹ N

Longitude : 78^o 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			
November 16 th to 30 th , 2015	27.8	17.4	84.2	52.2	0.9	2.7	43.0
	(27.1)	(17.0)	(78.6)	(53.7)	(3.9)	(4.0)	(33.0)

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

Fortnight from 16th to 30th November, 2015

During the second fortnight of the month i.e., from November 16th to 30th, 2015, the average maximum and the average minimum temperatures were lower by 0.7°C and 1.1°C respectively, as compared to the previous fortnight. The average maximum and the average minimum temperature values were higher by 0.7°C and 0.4°C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning hours was remained same and during afternoon hours the percent relative humidity was lower by 1.8%, as compared to the previous fortnight. The rainfall of 43.0 mm was recorded during the fortnight.

Crop weather situation

- ❖ The average temperatures were lower and rainfall was higher during last fortnight resulting in low evaporation rate. Due to heavy rains there may be depletion of soil nutrients due to leaching. Spraying of vegetable special may be taken up for rabi vegetables. Excess water may be drained out from the fields.
- ❖ Due to continuous rain some plants of papaya show pale whitening symptoms on leaves and incidence of PRSV in papaya was noticed due to continuous cloudy weather.
- ❖ Due to continuous rain and over cast sky incidence of rust in fig is very high and premature ripening of fruits was noticed.
- ❖ Phytophthora root rot was noticed in Annona due to the recent heavy rains.
- ❖ Due to continuous rains in late pruned grape varieties like Sharad and Saritha Seedless late downey mildew was noticed on clusters.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Hoppers on mango:

- ❖ 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 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 (5g/L) followed by spinosad (0.3ml/L) 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 @ 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 @ 0.3 g/l for their management.

Aphids on cucurbits

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

Diseases

Fruit crops

- ❖ Downy mildew and anthracnose needs to be monitored in grapes. For the management of downy mildew application of Metalyxl + Mancozeb (0.2%)/ AI 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.
- ❖ In 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.

- ❖ Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodiatheobromae*) and anthracnose (*Colletotrichum musae*) of banana 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.
- ❖ Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may remain moderate in pomegranate. 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.
- ❖ Infection of Black spot (*Asperisporium caricae*) is increasing in papaya. 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

- ❖ Powdery mildew requires attention in Solanaceous and cucurbits vegetables. 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

- ❖ This is the time for rust in chrysanthemum and spraying mycobutanol (2g/l) or propiconazole at the rate of 1.5 ml litre will help in preventing the spread of the disease.

**CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089**

Period: 1st to 15th December, 2015

Latitude : 13^o58¹ N

Longitude : 78^o 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			
December 1 st to 15 th , 2015	27.0	18.0	81.2	54.2	1.3	2.5	--
	(26.6)	(17.0)	(80.5)	(54.7)	(4.4)	(3.0)	(1.8)

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

Fortnight from 1st to 15th December, 2015

During the first fortnight of the month i.e., from December 1st to 15th, 2015, the average maximum and the average minimum temperatures were lower by 0.8°C and 0.6°C respectively, as compared to the previous fortnight. The average maximum and the average minimum temperature values were higher by 0.4°C and 1.0°C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning hours was lower by 3.0 % and during afternoon hours was higher by 2.0 %, as compared to the previous fortnight. There was no rainfall recorded during the fortnight.

Crop weather situation

- ❖ As there was no rainfall received during the last fortnight, protective irrigation may be given to rabi vegetables. Top dressing of nitrogen and micro nutrients spray may also be given for better growth. Those rabi vegetables which are still in nursery may also be given NPK fertilizers for healthy growth of seedlings.
- ❖ Several mango hybrids and varieties viz., Lazzat Baksh and Guruvam have started flowering.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Hoppers on mango:

- ❖ 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 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.

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 @ 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 @ 0.3 g/l for their management.

Aphids on cucurbits

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

Diseases

Fruit crops

Downy mildew and anthracnose in grapes

- ❖ Downy mildew and anthracnose needs to be monitored. For the management of downy mildew application of Metalxyl + 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.

Powdery mildew in mango

- ❖ Powdery mildew requires attention in mango. 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.

Sigatoka leaf spot, crown rot, *Macrophoma* spot in 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 in banana. 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.

Leaf and fruit spot disease in Pomegranate

- ❖ Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may remain moderate in pomegranate. 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.

Vegetable crops

- ❖ Powdery mildew requires attention in Solanaceous vegetables. 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.
- ❖ Powdery mildew may become problem in cucurbits vegetables. 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

- ❖ This is the time for rust in chrysanthemum and mycoblutanol or tilt at the rate of 1.5 ml litre will help in preventing the spread of the disease.

Period: 16th to 31st December, 2015

Latitude : 13°58' N

Longitude : 78° 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			
December 16 th to 31 st , 2015	28.8	17.5	78.3	51.5	2.0	2.5	0
	(27.5)	(16.5)	(77.3)	(50.1)	(4.0)	(4.2)	(0.6)

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

Fortnight from 16th to 31st December, 2015

During the second fortnight of the month i.e., from December 16th to 31st, 2015, the average maximum temperature was higher by 1.8°C and the average minimum temperature was lower by 0.5°C as compared to the previous fortnight. The average maximum and the average minimum temperature values were higher by 1.3°C and 1.0°C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 2.9% and 2.7% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- ❖ There was no rainfall during last fortnight also. So protective irrigations have to be continued for all the rabi vegetables and standing fruit crops. The low temperatures of December might have caused reduction in growth of crops like banana. To boost the growth banana special may be sprayed. Similarly for mango and grape also a booster dose of mango special and grape special may be given.
- ❖ Due to morning dew followed by sunshine, there were scarce incidence of powdery mildew in Flame Seedless and Crimson Seedless grapes.
- ❖ Sporadic late downey mildew incidence was observed in late pruned Sharad Seedless grapes.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

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.

Hoppers on mango

- ❖ 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 @ 0.25 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 @ 0.5ml/L or cypermethrin @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 @ 2ml/L or chlorpyrifos @c 2.5ml/L is advised.

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 @ 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 @ 0.3 g/l for their management.

Aphids on cucurbits

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

Diseases

Fruit crops

- ❖ Anthracnose and Powdery mildew infection are supposed to increase in grapes. 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. 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.
- ❖ Sigatoka leaf spot (*Mycosphaerella* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) Macrophoma fruit spot disease needs proper attention in banana. 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.
- ❖ Powdery mildew requires attention in mango. 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.

- ❖ In 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.
- ❖ In 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

- ❖ In crucifers, powdery mildew may be noticed. 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.
- ❖ In tomato, Powdery mildew may be observed. Spray hexaconazole or tebuconazole 0.2% at the beginning of the infection with sticker as mentioned earlier