

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

Period: 16th to 31st January, 2014

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			
January 16 th to 31 st , 2014	29.5	17.9	75.5	51.6	5.4	4.5	---
	(27.8)	(15.0)	(69.3)	(44.5)	(4.5)	(5.0)	(---)

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

Fortnight from 16th to 31st January, 2014

During the second fortnight of the month i.e., from January 16th to 31st, 2014, the average maximum and the average minimum temperatures were higher by 1.9°C and 1.3°C respectively, as compared to the previous fortnight. The average maximum and the average minimum temperature values were higher by 1.7°C and 2.9°C respectively, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning hours was lower by 2.9% and during afternoon hours was higher by 2.4%, as compared to the previous fortnight.

Crop weather situation

- ❖ In mango, fruit set was noticed in many of the varieties viz., Lazzat Baksh, Panakalu, etc.
- ❖ Farmers who have transplanted summer vegetable may conserve soil moisture by adopting mulching practices either with polythene sheet or any available organic residues. They are also advised to spray vegetable special for better yield & quality. In mango orchards also mango special may be sprayed.

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.

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

Tomato and brinjal

- Bacterial wilt caused by *Ralstonia solanacearum* was observed in tomato and brinjal crop. The disease incidence ranged from 55.0 to 40.0 per cent in both the crops. The disease can be managed by initial treatment of seeds and seedlings with *Pseudomonas fluorescens* (108 cfu/ml) and transplanting the seedlings in green manure (Sunnhemp) amended soil followed by 2-3 soil drenching *Pseudomonas fluorescens* at 15 days interval to the main crop.

Pomegranate

- The severe incidence of Bacterial Blight caused by *Xanthomonas axonopodis* pv. *punicae* (3.0 – 50.0%) was observed on pomegranate during the second fortnight of January, 2014. The incidence was noticed mainly on leaves, stems and fruits. This disease can be managed by i) removing the affected plant parts and destroying them by burning, ii) by application of 2 - 3 sprays of streptomycin (0.3g/l) along with copper oxychloride (3.0g/l) alternated with one or two sprays of Bordeaux mixture (1%) at fortnightly interval.

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Period: 1st to 15th February, 2014

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			
February 1 st to 15 th , 2014	28.8	15.0	80.0	48.2	4.6	4.0	---
	(29.8)	(14.4)	(81.4)	(47.2)	(4.6)	(4.5)	(---)

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

Fortnight from 1st to 15th February, 2014

During the first fortnight of the month i.e., from February 1st to 15th, 2014, the average maximum and the average minimum temperatures were lower by 0.7°C and 2.9°C respectively, as compared to the previous fortnight. The average maximum temperature value was lower by 1.0°C and average minimum temperature value was higher by 0.6°C, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning hours was higher by 4.5% and during afternoon hours was lower by 3.4%, as compared to the previous fortnight.

Crop weather situation

- ❖ The late maturing mango variety Neelum has also started flowering.
- ❖ This is a dry period & evaporation loss of water is very high. Farmers are advised to go for foliar spray of nutrients only in evening. They are also advised to mulch soil wherever possible

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

- ❖ On mango, incidence of hoppers may continue. Spray *Metarhizium anisopliae* @ 1×10^9 spores/ml. If the incidence is severe, spray imidacloprid @ 0.3 ml/l.

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

- ❖ The incidence of powdery mildew is a serious problem in grapes, mango, peas, cucurbits and capsicum.

For the management of powdery mildew in grapes spray

- Triadimefon @ 1 gm/l

For the management of powdery mildew in mango spray

- Difenconazole @ 0.6 ml/l

For the management of powdery mildew in peas, cucurbits and capsicum spray

- Flusilazole @ 0.3 ml/l.

**CROP WEATHER SITUATION
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Period: 16th to 28th February, 2014

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			
February 16 th to 28 th , 2014	28.6	17.4	65.0	40.0	4.9	5.0	---
	(29.6)	(16.4)	(59.4)	(38.5)	(4.8)	(4.36)	(---)

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

Fortnight from 16th to 28th February, 2014

During the second fortnight of the month i.e., from February 16th to 28th, 2014, the average maximum temperature was lower by 0.2°C and the average minimum temperature was higher by 2.4°C, as compared to the previous fortnight. The average maximum temperature value was lower by 1.0°C and the average minimum temperature value was higher by 1.0°C, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 15.0% and 8.2% respectively, as compared to the previous fortnight.

Crop weather situation

- ❖ In most of the mango varieties, fruit set has been noticed and in the early flowering varieties like Lazzat Baksh and Guruvam, fruits are about 100-120 g in weight
- ❖ The weather remained dry with some sporadic rains. Evaporation demand remained high. During this period farmers are advised to mulch the soil with available organic or plastic mulch. Farmers are also advised to give a spray of 2% potassium sulphate to maintain turgidity in plants. They can also spray mango special in mango and vegetable special in all vegetable crops.

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

- On mango, incidence of hoppers may continue wherever flowering is delayed. Spray *Metarhizium anisopliae* @ 1×10^9 spores/ml. If the incidence is severe, spray imidacloprid @ 0.3 ml/l.
- Wherever fruits attained lemon size (2-4 cm diameter), spray acephate @ 1.5g/L or deltamethrin @ 1ml/L to control stone weevil. Spray should also be directed on tree trunks as adult beetles hide under the bark.

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.

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.

Leaf miner on tomato

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

- ❖ The incidence of powdery mildew is a serious problem in grapes, mango, peas, cucurbits, bottle gourd, ridge gourd and capsicum.

For the management of powdery mildew in grapes spray

- Triadimefon @ 1 gm/l

For the management of powdery mildew in mango spray

- Difenconazole @ 0.6 ml/l

For the management of powdery mildew in peas, cucurbits, bottle gourd, ridge gourd and capsicum spray

- Flusilazole @ 0.3 ml/l.

- ❖ The incidence of gummy stem blight will be noticed in bottle gourd, for its management spray

- Carbendazim + Mancozeb @ 2 gm/l

**CROP WEATHER SITUATION
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Period: 1st to 15th April, 2014

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 1 st to 15 th , 2014	30.4	18.8	70.08	42.1	5.5	5.0	-
	(32.9)	(19.9)	(67.9)	(44.1)	(5.7)	(4.9)	(27.2)

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

Fortnight from 1st to 15th April, 2014

During the first fortnight of the month i.e., from April 1st to 15th, 2014, 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 temperature and the average minimum temperature values were lower by 2.5°C and 1.1°C, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 4% and 2%, as compared to the previous fortnight.

Crop weather situation

- ❖ Flowering has started in mango variety Siroli during this week.
- ❖ The weather remained dry without rains. Prevailing conditions shows likely chance of getting rains any day in this week. Farmers may get ready for field preparation, procuring of material for kharif planting. Also wherever possible farmers may grow green manures for 45 to 60 days for enriching the soils. On standing vegetable crops farmers may use vegetable specials. Mango farmers may take control measures for fruit flies.

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 orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 8-10/acre.

Fruit borer and weevil in Jamun

- ❖ Fruit borer and fruit weevil will infest pea size fruits. Application of azadirachtin @ ml/L or deltamethrin @1ml/L is recommended.

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

- ❖ Bacterial wilt in solanaceous vegetables like brinjal, tomato and chilli will be noticed. For the management of the wilt, drench with Bordeaux mixture 1%.
- ❖ The incidence of anthracnose was observed in mango, for its management spray Carbendazim + Mancozeb 1 gm/l
- ❖ The incidence of powdery mildew is a serious problem in mango and cucurbits.

For the management of powdery mildew in mango spray

- Difenoconazole @ 0.6 ml/l

For the management of powdery mildew in cucurbits spray

- Flusilazole @ 0.3 ml/l.

**CROP WEATHER SITUATION
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Period: 16th to 31st May, 2014

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			
May 16 th to 31 st , 2014	31.9	20.8	80.0	51.8	5.2	4.08	110.9
	(33.4)	(17.8)	(74.2)	(55.1)	(5.3)	(5.7)	(241.0)

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

Fortnight from 16th to 31st May, 2014

During the second fortnight of the month i.e., from May 16th to 31st, 2014, the average maximum and the average minimum temperatures were higher by 0.7°C and 0.8°C respectively, as compared to the previous fortnight. The average maximum temperature value was lower by 1.5°C and the average minimum temperature value was higher by 3.0°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 9.6% and 6.8% respectively, as compared to the previous fortnight. The rainfall of 110.9 mm was recorded during the fortnight, which is significantly low as compared to the values of the corresponding period for the previous five years.

Crop weather situation

- ❖ Although it rained still the quantity is very less. Wherever soil condition is favorable farmers are advised to go for ploughing. It is advised to sow a green manure crop wherever possible. If soil is acidic it is time to apply lime and incorporate it to the 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 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.

- 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

Brinjal shoot and fruit borer, *Leucinodes orbonalis* : For the management of shoot and fruit borer in brinjal

- 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, spray with rynaxypyr @ 0.3 ml/l

Two spotted spider mite, *Tetranychus urticae* on rose : For its management

- Spray abametin @ 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 liter of insecticide spray solution enhances the efficacy of the chemicals against the pest.

Diseases

In **mango**, latent infection due to Anthracnose (*C. gloeosporioides*) and stem end rot (*P. mangiferae*) were recorded in mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Difenoconazole (0.5%) followed by post-harvest treatments with Hot water (52°C) for ten minutes is recommended for their management.

In **pomegranate**, infection of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) remained moderate. These could be managed by spraying Chlorothalonil (0.2%) or Antracol (0.2%) or Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Hexaconazole (0.1%) along with the sticker@ 0.5ml/l.

For management of **Nodal Blight** (*Xanthomonas axonopodis* pv. *punicae*) clean cultivation is must. As a prophylactic measure, starting from pruning sequential application of the following bactericides and botanicals at fortnightly interval has to be made for better control of the disease and to get better harvest of pomegranate fruits: Bordeaux mixture (1%), Streptocycline 500 ppm + COC 0.3%, Bordeaux mixture (0.5%), Kocide 0.2% + Bronopal 500 ppm, Zantholin 2ml/l, Bronopal 500ppm + COC 0.3%, Zantholin 2ml/l and Streptocycline 500 ppm + COC 0.3%. Under cloudy and rainy condition, the spray interval can be reduced to seven days.

Low incidence of Sigatoka (*Mycosphaerella* sp) and other leaf spots was prevailing in **banana**. These can be managed by the application of with Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%).

Canker (*Pestalotiopsis psidi*) in greenish immature **guava** fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides*) in mature fruits were noticed. 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.

In **grapes**, moderate Infection of Downy mildew and anthracnose was on may occur on cv. Anab-e-shahia and similar ones. For downy mildew application of Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%)/ Dimethomorph + Mancozeb (0.2%)/ and for anthracnose spraying with Difenconazole (0.05%) / Propineb (0.2%) / Chlorothalonil (0.2%) / Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l

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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 1 st to 15 th , 2014	30.2	21.2	71.7	48.0	4.9	5.0	46.4
	(31.7)	(19.8)	(73.9)	(57.0)	(5.3)	(6.6)	(226.5)

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

Fortnight from 1st to 15th June, 2014

During the first fortnight of the month i.e., from June 1st to 15th, 2014, the average maximum temperature was lower by 1.7°C and the average minimum temperature was higher by 0.4°C, as compared to the previous fortnight. The average maximum temperature value was lower by 1.5°C and the average minimum temperature value was higher by 1.4°C, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 8.3% and 3.8%, as compared to the previous fortnight. The rainfall of 46.4 mm was recorded during the first fortnight which was significantly very low as compared to the values of corresponding period for the previous five years.

Crop weather situation

- ❖ The rainfall is very scanty and the conditions has not favored land preparation and sowing. However farmers must be ready with all inputs for undertaking operations without any further delay soon after receiving rains. Those farmers who like to apply lime in acid soil must do it now by mixing the agricultural grade lime well into the soil. If possible farmers may sow green manure crops and incorporate into the soil after 45-50 days to enhance fertility.

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

- ❖ Incidence of fruit flies may continue in late maturing varieties of mango. If the incidence is very severe, spray azadirachtin [3000 ppm] @ 2mL/L as a cover spray at least 21 days prior to harvest. Install methyl eugenol traps @ 6/acre.

Mango Hoppers and other foliage pests

- ❖ Hopper incidence on foliage, especially that of *Amsacta splendens* is expected which will cause severe honey dew excretion on shoots and new flush. Besides leaf feeders like ash weevil (*Mylloceros* sp.), leaf cutting weevil, *Deporaus marginatus* also cause severe damage. Spraying of acephate @ 1.5g/L or Lambda cyhalothrin @ 0.5ml/L would keep these pests under check.

Fruit borer on tomato

- ❖ Incidence of fruit borer is observed in the field. Spray HaNPV @ 250 LE/ha.

Thrips on chilli

- ❖ Incidence of thrips is expected on chilli. Spray, acephate 75 SP @ 1g/L or imidacloprid @ 0.5 mL/L for its management. Safe waiting periods are to be followed before harvest.

Shoot and fruit borer on Brinjal

- ❖ Incidence of shoot and fruit borer may increase in the field. Spray rynaxypyr @ 0.3 ml/l for its management.

Mites on rose

- ❖ Incidence of mites may increase on rose under protected/polyhouse conditions. For mite management spray Abamectin 0.5 mL/L.

Diseases

- ❖ Incidence of *Phytophthora* foliar blight in chillies is likely to appear. *Phytophthora* foliar blight on chillies can be controlled with tank mixed mixture of dimethomorph : mancozeb (1:2g/l), krexim –methyl (1ml/l), or fenamidone- mancozeb (3g/l)
- ❖ In tomato, incidence of early blight will be observed. Early blight in tomato can be managed by spraying copper hydroxide (2g/l) or mancozeb (2g/l) or chlorothalonil (2g/l).

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Period: 1st to 15th July, 2014

Latitude : 13^o58¹ N

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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 , 2014	25.2	19.4	70.3	43.4	3.1	7.4	149.8
	(28.9)	(18.3)	(75.7)	(55.2)	(4.4)	(7.3)	(48.52)

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

Fortnight from 1st to 15th July, 2014

During the first fortnight of the month i.e., from July 1st to 15th, 2014, the average maximum and the average minimum temperatures were lower by 5.6°C and 1.8°C respectively, as compared to the previous fortnight. The average maximum temperature value was lower by 3.7°C and the average minimum temperature value was higher by 1.1°C, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 0.2% and 1.2% respectively, as compared to the previous fortnight. The rainfall of 149.8 mm was recorded during the first fortnight of the month.

Crop weather situation

- ❖ This fortnight received about 100mm more than the normal. It has facilitated sowing and planting in many areas. While planting farmers are advised to use microbial consortia along with organic matter for enhancing growth and disease suppression. Care should be taken that both chemical fertilizers and microbial consortiums should not be applied in the same row or at the same time and application of lime is also recommended in acid soils having pH less than 6.5

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.

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

- ❖ Incidence of yellow rust and downy mildew in grapes will be observed. For the management of downy mildew spray Difenoconazole @ 0.6 ml/l or Triadimefon @ 1 gm/l or Hexaconazole @ 1 ml/l or Flusilazole @ 0.3 ml/l. For the management of yellow rust spray a) Bordeaux mixture @ 1 %, b) Propiconazole @ 1 ml/l and c) Chlorothalonil @ 2 g/l.
- ❖ Incidence of Phytophthora blight in capsicum and chillies is likely to appear. Phytophthora blight can be controlled with tank mixed mixture of dimethomorph : mancozeb (1:2g/l), krexim –methyl (1ml/l), or fenamidone- mancozeb (3g/l).
- ❖ In tomato, incidence of early blight will be observed. Early blight in tomato can be managed by spraying copper hydroxide (2g/l) or mancozeb (2g/l) or chlorothalonil (2g/l).

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

Period: 16th to 31st July, 2014

Latitude : 13⁰58¹ N

Longitude : 78⁰ 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 16 th to 31 st , 2014	28.8 (29.6)	21.5 (20.3)	63.4 (82.6)	44.3 (58.6)	3.7 (3.2)	10.49 (6.0)	17.0 (49.6)

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

Fortnight from 16th to 31st July, 2014

During the second fortnight of the month i.e., from July 16th to 31st, 2014, the average maximum and the average minimum temperatures were higher by 3.6°C and 2.1°C respectively, as compared to the previous fortnight. The average maximum temperature value was lower by 0.8°C and the average minimum temperature value was higher by 1.2°C, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning hours was lower by 6.9% and during afternoon hours was higher by 0.9%, as compared to the previous fortnight. The rainfall of 17.0 mm was recorded during the fortnight, which is very significantly low as compared to the previous fortnight and average values of the corresponding period for the previous five years.

Crop weather situation

The mean temperature during the period did not shown any major deviation when compared to the average of the corresponding five years. Total rainfall received was much lower compared to the average of previous record. The application of basal dose of nutrient required for the crops may however be taken up and liberal application of FYM is recommended. Foliar application of micronutrient may be taken up in the case deficiency symptoms are noticed.

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.

Leaf Webber on mango

For the management of this pest prune the affected shoots and spray acephate @ 1.5 g/L.

Stem Borer on Mango

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.

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.

Mites on tomato

For the management of mites spray sulphur @ 3 g/l or dicofol @ 3 ml/l.

Rose thrips

Incidence of rose thrips is more under polyhouse conditions. Spray fipronil @ 1ml/L or imidacloprid @ 0.5 ml/L for its management.

Mites on rose

For the management of mites spray abamectin @ 0.5 ml/L

Midge on crossandra

Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray imidacloprid @ 0.5 ml/l or acephate @ 1.5 g/L.

Whitefly on Gerbera (polyhouse)

For the management of whitefly on gerbera spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Diseases

Incidence of Leaf spot (*P. mangiferae* /*C. gloeosporioides*) on mango may be noticed on the new flush. 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.

In papaya incidence of 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.

Rust infection needs attention on grapes var. Bangalore blue (PDI> 60%) It could be managed with the application of Chlorothalonil (0.2%) or Bitertanol (0.2%). Lower surface of the leaves on the vines to be sprayed properly. Powdery mildew may infect grapevines for which sprays of Triadimefon (0.1%)/ Hexaconazole (0.1%) are recommended.

Leaf and fruit spot disease caused by *Puedocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) 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.

Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides*) in mature fruits may be occurring. 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) is recommended for disease control.

In sapota, Moderate intensity of leaf spot (*P. indica*) may be recorded. Spraying Zineb (0.3%) or Ziride (0.4%) along with sticker (0.5 ml /l) will effectively control the disease.

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

Period: 1st to 15th August, 2014

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			
August 1 st to 15 th , 2014	28.6	20.6	66.8	53.46	2.9	7.39	73.0
	(28.5)	(19.7)	(77.3)	(55.2)	(2.8)	(6.51)	(44.0)

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

Fortnight from 1st to 15th August, 2014

During the first fortnight of the month i.e., from August 1st to 15th, 2014, the average maximum and the average minimum temperatures were lower by 0.2°C and 0.9°C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 0.1°C and 0.9°C respectively, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 3.4% and 9.16% respectively, as compared to the previous fortnight. The rainfall of 73.0 mm was recorded during the first fortnight of the month.

Crop weather situation

- ❖ This fortnight received higher rainfall than the average rains received during past years. Intercultural operation to remove weeds & providing aeration to roots must be taken-up. The weeds removed may be put for decomposition to convert them into compost. In vegetable crops foliar spray of vegetable special may be given to boost yield & quality.

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.

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 acephate 75 SP @ 1.5 g/L. Add sticker @ 1ml/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.

Mites on tomato

- ❖ For the management of mites spray wettable sulphur @ 3 g/l or dicofol @ 3 ml/l.

Chilli Thrips

- a) Spray ccephate 75 SP @ 1.5 g/l or fipronil (1 ml/l) or lamda cyhalothrin 5 EC (0.75 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.
- b) Mix acephate 1g/l 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 on tomato

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

Rose thrips

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

Mites on rose

- ❖ For the management of mites spray abamectin @ 0.5 ml/l

Midge on crossandra

- ❖ Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray imidacloprid @ 0.5 ml/l or acephate @ 1.5 g/L.

Whitefly on Gerbera (polyhouse)

- ❖ For the management of whitefly on gerbera spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Diseases

- ❖ In tomato, incidence of late blight will be observed. Late blight in tomato can be managed by spraying copper hydroxide (1g/l) as prophylactic spray and followed by Bordeaux mixture (1g/l) after a week.
- ❖ Incidence of Phytophthora blight in vegetable crops is likely to appear. Phytophthora blight can be controlled with tank mixed mixture of dimethomorph : mancozeb (1:2g/l), krexim – methyl (1ml/l), or fenamidone- mancozeb (3g/l).

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

Period: 1st to 15th September, 2014

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			
September 1 st to 15 th , 2014	28.2	21.6	70.2	49.6	3.3	6.6	25.0
	(26.5)	(19.9)	(81.4)	(58.3)	(2.8)	(6.2)	(83.9)

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

Fortnight from 1st to 15th September, 2014

During the first fortnight of the month i.e., from September 1st to 15th, 2014, the average maximum temperature was lower by 2.4°C and the average minimum temperature was remained same i.e., 21.6°C, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 1.7°C, as compared to the values of corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 3.0% and 8.8% respectively, as compared to the previous fortnight. The rainfall of 25.0 mm was recorded during the first fortnight of the month.

Crop weather situation

- ❖ Rainfall received during this period is less than normal though it picked-up at later stage. Disease pressure appeared high in all crops. Farmers are therefore advised to drench Arka Microbial Consortium to improve systemic resistance. Since 4-5 picking stage in most vegetables has crossed, farmers may spray September Vegetable Special to supplement micronutrients.

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.

Mealybug on papaya

- ❖ Exotic mealybug, *Paracoccus marginatus* may appear on papaya fruits. Farmers are advised to stop insecticidal sprays and contact IIHR/NBAII scientists to procure and release of parasitoides, as this is the only effective control method.

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. Remove and destroy the discarded fruits from field.

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 on 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

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

- ❖ Incidence of anthracnose on white variety grapes will be observed. For its management spray Thiophenate methyl (0.1%) / Difenconazole (0.05%).
- ❖ Rust infection needs attention on grapes var. Bangalore blue. It could be managed by spraying Azoxystrobin (0.1%).
- ❖ Incidence of canker on guava will be observed. For its management spray zineb (0.2%).

- ❖ In chilli and capsicum, infestation of phytophthora will be noticed. For its prevention spray copper oxy chloride / cholothalanil / mancozeb (0.2%).

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

Period: 16th to 31st October, 2014

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			
October 16 th to 31 st , 2014	29.9 (28.1)	22.2 (19.2)	76.2 (79.2)	47.3 (50.6)	3.5 (2.5)	3.9 (4.8)	234.0 (22.94)

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

Fortnight from 16th to 31st October, 2014

During the second fortnight of the month i.e., from October 16th to 31st, 2014, the average maximum and the average minimum temperatures were higher by 0.5°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 1.8°C and 3.0°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 higher by 7.6% and 2.1% respectively, as compared to the previous fortnight. The rainfall of 234.0 mm was recorded during the fortnight, which is significantly higher as compared to the previous fortnight.

Crop weather situation

- ❖ This fortnight received good rainfall. Farmers who have transplanted vegetables may undertake on spray of vegetable special micronutrients. It is also advisable to drench the crop with Arka microbial consortium for enhancing yield and quality. Those grapes farmers who have pruned the crop are advised to go for potassium application to enhance the fruit quality. Also they may spray the crop with grapes special after 20 days of pruning. Wherever possible mulching is to be done to reduce evaporation loss.

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.

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 will be effective.

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.

Diseases

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%) 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 (*Diegthonella* 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 the sticker @ 0.5ml/l.

Vegetables

- ❖ **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 chlorothalonil 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, 2014

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			
November 1 st to 15 th , 2014	28.6	21.6	71.9	43.4	3.4	3.1	26.0
	(28.2)	(17.7)	(75.8)	(59.4)	(3.5)	(4.7)	(60.3)

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

Fortnight from 1st to 15th November, 2014

During the first fortnight of the month i.e., from November 1st to 15th, 2014, the average maximum and the average minimum temperatures were lower by 1.3°C and 0.6°C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 0.4°C and 3.9°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 4.3% and 3.9% respectively, as compared to the previous fortnight. The rainfall of 26.0 mm was recorded during the fortnight, which is very significantly low as compared to the previous fortnight and values of the corresponding period for the previous five years.

Crop weather situation

- ❖ The mango variety Siroli in the germplasm block has flowered during the month.
- ❖ The weather remained dry during this fortnight. The temperature is becoming cooler. During this time the nutrient absorption slows down. As a result growth of vegetables will also be slow. To boost the growth farmers are advised to go for a foliar spray of nutrients. Since this is a dry period, farmers may mulch the soils to reduce evaporation. Mango farmers and banana farmers should take up spray of micronutrients special during this period.

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.

Aphids on bhendi

- ❖ Thoroughly spray neem or Pongamia soap (1 %) or pulverised neem seed powder extract (NSPE) 4 %.

Sapota seed borer

- ❖ Incidence of sapota seed borer may be present, if marble sized fruits are available in the fields. For its management, spray deltamethrin @ 1 mL/L alternated with Bt formulations @ 1 mL/L at fortnightly interval.

Aphids on rose

- ❖ Aphid infestation may increase on rose in open field. Spray Dimethoate @ 2 ml/l for its management.

Diseases

Leaf blight of tomato and potato by *Phytophthora infestans*

- ❖ Due to the intermittent rains the incidence of late blight due to *P. infestans* has been increasing. 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.

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.

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* & *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%) is recommended for managing the same.

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.

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

Period: 16th to 30th November, 2014

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 , 2014	27.5	20.7	70.2	45.1	2.9	3.19	--
	(26.4)	(17.0)	(80.2)	(52.1)	(4.6)	(4.6)	(38.8)

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

Fortnight from 16th to 30th November, 2014

During the second fortnight of the month i.e., from November 16th to 30th, 2014, the average maximum and the average minimum temperatures were lower by 1.1°C and 0.9°C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 1.1°C and 3.7°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 1.7% and the percent relative humidity during afternoon hours was higher by 1.7%, 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 viz., Lazzat Baksh, Prabha Shankar, Thorappadi, Thella Kaju and Safed Mulgoa.
- ❖ The rain has ceased and the weather is becoming drier day by day. During this time being winter months the evaporation also has reduced. Farmers who are planting or have already planted vegetables may drench the crop with Arka microbial consortium for better growth. Farmers are also advised to use vegetable special to boost the yield and quality. Mango farmers are advised to go for a spray of mango special as we expect flowering by another 30 days.

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.

Aphids on bhendi

- ❖ Thoroughly spray neem or Pongamia soap (1 %) or pulverised neem seed powder extract (NSPE) 4 % for the management of aphids.

Brinjal shoot and fruit borer

- ❖ Incidence of fruit borer is increasing on brinjal. Spray rynaxpyr @ 0.3 ml/L for its management. Safe waiting periods are to be followed as per label claims.

Sapota seed borer

- ❖ Incidence of sapota seed borer may increase, if marble sized fruits are available in the fields. For its management, spray deltamethrin @ 1 mL/L alternated with Bt formulations @ 1 mL/L at fortnightly interval.

Aphids on rose

- ❖ Aphid infestation may further increase on rose in open field. Spray Dimethoate @ 2 ml/l for its management.

Various caterpillar pests

- ❖ Various caterpillar pests may increase on vegetable and ornamental crops. For *Spodoptera litura* spray SINPV @ 250 LE/ha. For *Helicoverpa armigera* spray HaNPV. If the incidence of hairy caterpillar is noticed spray carbaryl @ 2 g/l.

Diseases

- ❖ The bacterial blight incidence in pomegranate orchards during the second fortnight of November, 2014 in Sira, Hiriyur and Jagalur ranged from 10.0 to 20.0%, low incidence of bacterial disease was due to the growers adopting to Orchard Health management Schedule, which include, orchard sanitation, cultural practices and judicious application of bactericides, i.e. freshly prepared Bordeaux mixture 1.0% alternated with Streptocycline (0.05%) + Copper oxychloride (0.3%) or with Bronopol (0.05%) + Copper oxychloride (0.3%) at every fifteen days interval right from pruning.
- ❖ Bacterial wilt caused by *Ralstonia solanacearum* was observed in tomato crop during the first fortnight of November, 2012. The disease incidence ranged from 10.0 – 30.0 per cent. The disease can be managed by treatment of tomato seeds before sowing or seedlings root dip at the time of transplanting with *Pseudomonas fluorescens* @ 10^8 cfu/ml and planting the seedlings in green manure (Sannhemp) amended soil.

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

Period: 16th to 31st December, 2014

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			
December 16 th to 31 st , 2014	30.0	21.0	70.8	51.8	2.7	3.8	--
	(28.8)	(16.2)	(79.8)	(53.7)	(4.2)	(4.9)	(2.4)

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

Fortnight from 16th to 31st December, 2014

During the second fortnight of the month i.e., from December 16th to 31st, 2014, the average maximum and the average minimum temperatures were higher by 4.4°C and 1.6°C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 1.2°C and 4.8°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 0.4% and 0.6% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

❖ The vegetable crops raised during winter are in peak growth stage. This is the period for application of foliar micronutrients. Farmers may apply vegetable special to crops. Mango farmers may give one spray of mango special. The basins of fruit crops may be mulched to prevent evaporation.

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

❖ In grapes, anthracnose and powdery mildew (*Uncinula necator*) infection 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. 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.

❖ 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 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%).

- ❖ 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.
- ❖ 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.
- ❖ Infestation of powdery mildew on crucifers may be noticed. For its management 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 o the leaves.
- ❖ In tomato, infestation of powdery mildew may be noticed. For its management spray hexaconazole or tebuconazole 0.2% at the begging of the infection with sticker at 0.5ml per l of spray liquid with good coverage.
- ❖ Infestation of powdery mildew on betelvine will be observed. For its management spray wettable sulphur at 0.2%. Spray of systemic fungicides not recommended. Maintenance of good aeration and proper drainage are important.
- ❖ Infestation of powdery mildew and black spot on rose will be observed. For the management of powdery mildew spray with azoxystrobin at 0.05% with sticker with sticker at 0.5ml per l of spray liquid with good coverage and for the management of black spot Spray mancozeb 0.2% at the initial stages and propiconazole (0.1%) if infection is severe at later stages.