

ISSN: 2250-2823



# HortFlora

## Research Spectrum

Volume 5 (3) September 2016

An International Peer Reviewed

JOURNAL



**BIOSCIENCES & AGRICULTURE ADVANCEMENT SOCIETY**

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# HortFlora

## Research Spectrum

Volume 5, Issue 3 : September 2016

An International  
**JOURNAL**  
Peer Reviewed

### International Impact

Index Copernicus Value (ICV) : 27.39; Global Impact Factor (GIF) : 0.471  
InfoBase Index (IBI) Factor : 2.8; New Journal Impact Factor (NJIF) : 2.14

### Indexed / Abstracted in :

- Index Copernicus International, Poland
- Indian Science Abstracts
- CAB Abstracts
- CABI Full text
- CiteFactor
- OAJI.net
- I2OR
- Spice Bibliography
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Date of Publication : 28-09-2016





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## **ABSTRACTS**

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ISSN : 2250-2823



**HortFlora Research Spectrum, 5(3) : (September 2016)**

### **1. Leafing, Flowering and Fruiting of *Sterculia setigera* in Metema, North Western Ethiopia**

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**ABSTRACT :** Episodic in leaf, flower and fruit patterns of *Sterculia setigera* were examined in Metema woreda of north Gondar zone of the Amhara region, Northwest Ethiopia. Monitoring was conducted for the period of 24 months starting from September, 2011 to September, 2013. For the purpose, we selected 16 individual trees (Dbh  $\geq$  10 cm) of *S.setigera* trees at 100 m apart. The trees were measured for dbh, marked and mapped using a GPS and monitoring was conducted in every week. The results of monitoring revealed that pattern of leafing and leaf loss, flowering and fruiting are unimodal in lined with the nature of the rainfall pattern of the study area. Leafing was started at the end of dry season when the rain season begins (Mid May) and the trees were in full leaf (Peak leaf flushing) in June and continued peak in leafing during July. Shedding of leaves starts on October but was higher (peak) in December coinciding with the beginning of dry season. Uniformity was observed in blooming among trees and flowering was concentrated in April and ends at the beginning of mid-May. Early fruiting was observed during October. However, mass fruiting was observed during November and ends in in late December up to early January. Therefore, we concluded that seed harvesting of *S.setigera* is better to conduct in mid-November to beginning of December in the study area.

**Published in : HortFlora Research Spectrum, 5 (3) : 177-182 (September 2016)**

### **2. Character Association and Path Co-efficient Analysis in Garlic (*Allium sativum* L.)**

S. K. Prajapati<sup>1</sup>, Akilesh Tiwari<sup>1</sup>, Sunil Prajapati<sup>\*</sup>, Yogendra Singh<sup>2</sup> and N.R.Verma<sup>1</sup>

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**ABSTRACT :** Correlation co-efficient analysis in garlic (*Allium sativum* L.) revealed that total yield (rp=0.824), leaf length (rp=0.634), equatorial diameter of bulb (rp=0.559), leaf width (rp=0.544), plant height (rp=0.498) pseudostem diameter (rp=0.476), polar diameter of bulb (rp=0.460), average weight of bulb (rp=0.459) and days to maturity (rp=0.435) were positively and significantly associated with bulb yield plant<sup>-1</sup>. Path analysis revealed that number of cloves bulb<sup>-1</sup> (0.820) followed by pseudostem diameter (0.315), number of leaves plant<sup>-1</sup> (0.163), leaf width (0.132), pseudostem length (0.091), equatorial diameter (0.050) and days to maturity (0.034) had the high positive direct effect on bulb yield per plant. It was also observed that the high negative direct effect was exerted by leaf length (-0.124) followed by plant height (-0.118), average weight of 10 cloves (-0.049) and polar diameter (-0.033). Hence, these characters should be given more weight age in selection programme of high yielding variety in garlic.

**Published in : HortFlora Research Spectrum, 5 (3) : 183-188 (September 2016)**

### **3. Evaluation of Chrysanthemum (*Chrysanthemum morifolium* Ramat) Genotypes under West Garo Hills District, Meghalaya**

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**ABSTRACT :** Evaluation of Chrysanthemum genotypes under West Garo Hills District, Meghalaya was carried out at the experimental farm, Department of Horticulture, North Eastern Hill University, Tura, Meghalaya 2015-2016 to identify the suitable variety for successful cultivation and flower production. Fifteen varieties namely, Korean Red, Korean Yellow, Solan Shringar, Ramblored, Yellow Star, Calabria, Ajay, AAU Yellow, White Star, Korean Bicolour, Charming, Lysid, Safin, Shayana and Gambit were selected for their evaluation. The experiment was laid out in randomized block design with three replications. Uniform package of practices were followed throughout the experiment to grow a healthy crop. Significant response in vegetative and flowering characters was observed in cultivar Calabria, Yellow Star, AAU Yellow, Gambit and Solan Shringar. Highest plant height (49.65 cm) in cultivar Yellow Star followed by cultivar Gambit (45.46 cm) was noticed. However, cultivar Solan Shringar showed maximum number of branches (12.51) and number of leaves per plant (125.11). Earliness in full bloom was associated with cultivar Shayana (72.29 days) followed by cultivar Calabria (82.44 days), while, maximum flower longevity after full bloom was observed in cultivar Gambit (24.72 days). Extended flowering duration was recorded with cultivar Calabria (140.84 days). Whereas, maximum vase life under tap water was observed in cultivar Ramblored (9.44 days) followed by cultivar Gambit (8.37 days). Cultivar Gambit showed maximum flower diameter (8.46 cm), flower head height (3.14 cm), number of ray florets per head (186.30), flower fresh weight (1.36 g) and dry weight (0.43 g), while, maximum number of flower head per plant (42.34), number of flowers per spray per plant (21.84) and number of sprays per plant (20.50) was observed in cultivar Calabria.

**Published in : HortFlora Research Spectrum, 5 (3) : 189-194 (September 2016)**

#### **4. Effect of Silicon Bunch Spraying and Bunch Bagging on Yield, Quality and Shelf Life of Banana var. Grand Naine**

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**ABSTRACT :** An experiment was conducted to know the effect of bunch spraying of silicon and bunch bagging on fruit yield, quality and shelf life of banana var. Grand Naine. Potassium silicate was applied as three sprays at 30 days interval after emergence of inflorescence followed of bagging of bunches. Sprays were given at concentration of 2.0, 4.0 and 6.0 ml/lit per bunch 30 days interval then followed by bagging of bunches with polyethylene sleeves after spraying till harvest of fruits. Fruit characters like fruit weight, fruit length, fruit diameter, bunch weight and maximum shelf life (12.33 days) was recorded in treatment applied with bunch spraying of potassium silicate 6 ml/l per bunch bagging. The quality parameters viz., total sugars, acidity, total soluble solids, starch content of the fruit were also significantly influenced by same treatment.

**Published in : HortFlora Research Spectrum, 5 (3) : 195-200 (September 2016)**

#### **5. Nutritional Status of Malta orchards in Bikaner district**

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**ABSTRACT :** The nutritional survey studies conducted in Blood Red Malta orchards during 2009-10 revealed that all leaf samples were found deficient in nitrogen content, high in phosphorous content and low in potassium. The micro-nutrient analysis of Malta leaves showed sufficiency of iron and copper content, low in manganese and zinc content. The physico-chemical analysis of Malta fruits revealed that excellent Malta production can be achieved in arid soils of Bikaner district with proper management of nutrients at both macro and micro level and harvesting of fruits in the December-January can provide remunerative returns to fruit growers in the canal command areas of Bikaner district.

**Published in : HortFlora Research Spectrum, 5 (3) : 201-205 (September 2016)**

#### **6. Effect of Cytokinin and Auxin on Callus Formation and Shoot Multiplication of Strawberry (*Fragaria × ananassa* Duch.) under *in vitro* Condition**

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**ABSTRACT :** The experiment was pursued in Tissue Culture Laboratory of Department of Horticulture in Sardar Vallabhbhai Patel University of Agriculture & Technology Meerut during 2015-16 on Chandler variety of strawberry.  $N_6$  media were prepared. Maximum callus formation in mature leaf explant (81%) was noted under the treatment of BAP  $2\text{mg l}^{-1}$  combined with IBA  $1.0\text{mg l}^{-1}$ . Maximum callus formation in young leaf (74.0%) was noted under the treatment of BAP  $2\text{mg l}^{-1}$  combined with IBA  $1.0\text{mg l}^{-1}$ . Maximum callus induction in internode (47.6%) was noted under the treatment of BAP  $2\text{mg l}^{-1}$  combined with IBA  $1.0\text{mg l}^{-1}$ . Highest number of shoots (14.00) from mature derived callus at four weeks after inoculation were noted under the treatment of BAP  $2\text{mg l}^{-1}$  + Kinetin  $1.5\text{mg l}^{-1}$ . Maximum number of shoots (11.66) from young leaf derived callus of strawberry cv Chandler at four weeks after inoculation were noted under BAP  $2\text{mg l}^{-1}$  combined with Kinetin  $1.5\text{mg l}^{-1}$  and BAP  $3\text{mg l}^{-1}$  alone. The highest number of shoots (10.33) from internode derived callus at four weeks after inoculation were noted with BAP  $3\text{mg l}^{-1}$  alone. Viewing above observations it is concluded that BAP  $2\text{mg l}^{-1}$  + IBA  $1.5\text{mg l}^{-1}$  and Kinetin  $1.5\text{mg l}^{-1}$  + IBA  $1.0\text{mg l}^{-1}$  showed better performance on accordance of callus formation in mature leaf, young leaf as well as internode. BAP  $2\text{mg l}^{-1}$  + Kinetin  $2\text{mg l}^{-1}$  showed better performance on accordance of shoot induction in mature leaf, young leaf as well as internode.

**Published in : HortFlora Research Spectrum, 5 (3) : 206-212 (September 2016)**

## 7. Genetics of Yield and its Component in Ash Gourd [*Benincasa hispida* (Thunb.) Cogn.]

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**ABSTRACT :** An experiment was conducted to study the pattern of inheritance of vine length, fruits per plant, fruit weight and yield per plant from six generations ( $P_1$ ,  $P_2$ ,  $F_1$ ,  $F_2$ ,  $B_1$  and  $B_2$ ) means of ten crosses obtained by crossing nine inbred in ash gourd. Majority of the crosses indicated the contribution of dominance gene effects and duplicate epistasis. Among epistasis interactions, additive  $\times$  additive (i) played a significant role for vine length, fruits per plant and fruit weight, while additive  $\times$  additive (i) and dominance  $\times$  dominance (1) contributed towards fruit yield. These results suggest that heterosis breeding might be more effective for speedy improvement of this crop.

**Published in : HortFlora Research Spectrum, 5 (3) : 213-217 (September 2016)**

## 8. Effect of Silicon Bunch Spraying and Bunch Bagging on Fruit Yield, Quality and Shelf Life of 'Neypoovan' Banana

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**ABSTRACT :** An experiment was conducted to know the effect of bunch spraying of silicon and bunch bagging on fruit yield, quality and shelf life of banana cv. Neypoovan. Potassium silicate was applied as three sprays at 30 days interval after emergence of inflorescence followed of bagging of bunches. Sprays were given at concentration of 2.0, 4.0 and 6.0 ml/lit per bunch 30 days interval then followed by bagging of bunches with polyethylene sleeves after spraying till harvest of fruits. Fruit characters like fruit weight, fruit length, fruit diameter, bunch weight and maximum shelf life (7.33 days) was recorded in treatment applied with bunch spraying of potassium silicate 6 ml/l per bunch bagging. The quality parameters viz., total sugars, acidity, total soluble solids, starch content of the fruit were also significantly influenced by same treatment.

**Published in : HortFlora Research Spectrum, 5 (3) : 218-223 (September 2016)**

## 9. Physico-chemical characterization of guava cultivars under Sawai Madhopur conditions of Rajasthan

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**ABSTRACT :** Based on cumulative assessment of the characters studied during survey of guava orchards in Sawai Madhopur district during 2014-15, it appeared that Gola (Barfkhan) is better over L-49 and Allahabad Safeda with respect to fruit weight, size, thickness of flesh, weight of pure flesh excluding seed cavity, soft texture of seeds, ascorbic acid contents and TSS content which are marketing traits for the guava varieties. In this variety maximum fruit weight (375.87g) and equatorial diameter (82.89 mm) was recorded. This variety had maximum yield of 1.0-1.5 q/tree which was 0.80 and 0.60 q/tree in case of L-49 and Allahabad Safeda, respectively. Gola (Barfkhan) variety's fruit was crunchy in texture with soft seeds. Spreading growth behaviour, compact canopy, green leaf luster and solitary bearing habit were other features of this variety.

**Published in : HortFlora Research Spectrum, 5 (3) : 224-227 (September 2016)**

## **10. Genetic Variability, Heritability and Genetic Advance in Grapefruit (*Citrus paradisi*) Genotypes**

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**ABSTRACT:** Variability assessment of six grapefruit varieties was done based on 22 qualitative and quantitative morphological characters. The maximum variability was observed for leaf lamina width (CV = 12.03), while the minimum variability was noted for petiole wing width (CV = 0.13). The maximum heritability ( $h^2$ ) coupled with maximum genetic advance percentage of mean (GA) was observed for petiole wing width (100 and 45.96, respectively), followed by spine length (100 and 25, respectively) and rootstock diameter (85 and 21.44, respectively), while the minimum heritability coupled with the minimum genetic advance percentage of mean was observed for leaf lamina length (7 and 0.70, respectively).

**Published in : HortFlora Research Spectrum, 5 (3) : 228-232 (September 2016)**

## **11. Effect of Inorganic and Organic Manures on Growth, Yield and Quality of Onion cv. 'Pusa Madhvi' Under Valley Condition of Garhwal Himalaya**

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**ABSTRACT :** An experiment was conducted to find out the combined effect of inorganic fertilizers (NPK) and organic manures [vermicompost, poultry manure and farm yard manure (FYM)] on growth, yield and quality of onion cv. Pusa Madhvi in a Randomized Block Design with three replications. The results showed that maximum plant height (73.18 cm), leaf length (56.10 cm), leaf width (4.51 cm), root length (8.02 cm), fresh weight of leaves (55.27 g) and dry weight of leaves (19.61 g) was recorded under the [Recommended dose of fertilizers (RDF) 75% + poultry manure 25%]. While the neck length (5.08 cm), neck diameter (2.04), total sugar (6.60) and specific gravity (1.47) was recorded maximum in  $T_1$  (RDF 100%). The maximum number of leaves (13.60), number of roots/ plant (159.40), bulb diameter (6.59 cm), fresh weight of bulb (159.79 g), number of scale/ bulb (6.56), yield/ hectare (41.88 q) and Vit- C (17.27) was recorded highest under  $T_3$  (RDF 75% + vermicompost 25%). The fresh weight of root (4.24 g) and dry weight of root (2.02 g) was recorded maximum in  $T_{10}$  (RDF 50% + FYM 50%). Therefore,  $T_3$  (RDF 75% + vermicompost 25%) treatment combination was adjudged best for onion cultivation under valley conditions.

**Published in : HortFlora Research Spectrum, 5 (1) : 233-237 (March 2016)**

## **12. Effect of INM Practices in *Rauwolfia tetraphylla* in Assam Condition**

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**ABSTRACT :** An experiment was carried out in the medicinal and aromatic plant block of Experimental Farm (Horticulture), Department of Horticulture, College of Agriculture, Assam Agricultural University, Jorhat during



2010-2011 and 2011-12. The experiment was laid out in Randomized Block Design with seven treatments viz,  $T_0$  = control,  $T_1$  = 100% RF + FYM 5t/ha (RF: reference dose of fertilizer @ 10 : 60 : 30 kg/ha N,  $P_2O_5$  and  $K_2O$ ,  $T_2$  = 75% RF + *Azotobacter* @20 g per plant + PSB @20 g per plant + FYM 5t/ha,  $T_3$  = 50% RF+ *Azotobacter* @20 g per plant + PSB @20 g per plant + FYM 5t/ha,  $T_4$  = 25% RF+ *Azotobacter* @20 g per plant + PSB @20 g per plant + FYM 5t/ha,  $T_5$  = 50% RF + FYM 5t/ha + Vermicompost 1t/ha,  $T_6$  = 50% RF + FYM 5t/ha + Enrich compost @2t/ha (AAU made) and three replications for two years to determine the biometric and yield performance of *Rauwolfia tetraphylla* under different nutrient sources. The soil of the experimental plot was sandy loam having pH of 4.8, organic carbon (10.05 %), available N (243.32 kg/ha), available  $P_2O_5$  (24.98 kg/ha) and available  $K_2O$  (94.75 kg/ha). The maximum value of plant height (89.15 cm), leaf number (374.70), leaf area index (2.62), branches (19.09), flowers (372.54) and fruits per plant (295.09), seed and root yield (8.94kg/ha and 2809.64kg/ha) were recorded under treatment  $T_2$ . The highest value of total alkaloid (1.28mg/100g dry weight), Phenol(1.69mg/100g dry weight), Tannin (0.45mg/100g dry weight) and Flavonoids (1.70mg/100g dry weight) were recorded by the treatment receiving vermicompost in combination with 50% RF dose of fertilizer and organic manures ( $T_5$ ).

**Published in : HortFlora Research Spectrum, 5 (3) : 238-241 (September 2016)**

### **13. Effect of IBA on Vegetative Growth and Multiplication Rate in Stem Cuttings of Pear Rootstocks**

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**ABSTRACT :** The present investigation was carried out in order to standardize the optimum IBA concentration for vegetative propagation of pear rootstocks Quince-C and BA-29 with reference to vegetative growth and multiplication rate, they were given different concentration of IBA. The treatment with IBA significantly influenced the parameters under study. The IBA treatment @ 1000 ppm was found to be the best in terms of most of the vegetative growth parameters and multiplication rate. The highest multiplication rate was achieved on Quince-C treated with 1000 ppm IBA. Study concluded that IBA treatments significantly influenced vegetative growth and multiplication rate in stem cuttings of pear rootstocks.

**Published in : HortFlora Research Spectrum, 5 (3) : 242-245 (September 2016)**

### **14. Effect of $GA_3$ and *Azotobacter* on Growth and Flowering in African Marigold (*Tagetes erecta* L.) cv. Pusa Narangi Gaiinda**

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**ABSTRACT :** The field experiment was conducted at Horticulture Research Farm of Choudhary Charan Singh University Campus, Meerut U.P. during 2011-12. The nine treatments  $A_1$  (*Azotobacter* by Root Treatment 0.20g/15 plants),  $A_2$  (*Azotobacter* by Soil Treatment 0.40g/plot),  $G_1$  (Gibberellic acid 100 ppm spray at 30 DAT),  $G_2$  (Gibberellic acid 150 ppm spray at 30 DAT),  $A_1G_1$  (*Azotobacter* by Root Treatment 0.20g/15 plants and Gibberellic acid 100 ppm spray at 30 DAT),  $A_1G_2$  (*Azotobacter* by Root Treatment 0.20g/15 plants and Gibberellic acid 150 ppm spray at 30 DAT),  $A_2G_1$  (*Azotobacter* by Soil Treatment 0.40g/plot and Gibberellic acid 100 ppm spray at 30 DAT),  $A_2G_2$  (*Azotobacter* by Soil Treatment 0.40g/plot and Gibberellic acid 150 ppm spray at 30 DAT) and  $A_0G_0$  (No *Azotobacter* and No Gibberellic acid) were evaluated in Randomized Block Design with three replications. The experimental finding revealed that the treatment  $A_2G_2$  (Soil treatment with *Azotobacter* + Spray of  $GA_3$  @ 150 ppm) gave the maximum plant height, maximum number of primary branches per plant, maximum number of secondary branches per plant, maximum plant spread, minimum number of days taken for flower bud appearance, maximum number of flowers per plant, maximum flower diameter, maximum fresh weight of flowers per plant and maximum yield of flower in comparison to individual application of  $GA_3$  and *Azotobacter*.

**Published in : HortFlora Research Spectrum, 5 (3) : 246-250 (September 2016)**

## 15. Effect of Seedling age on Growth and Flowering Attributes of Tomato

(*Lycopersicon esculentum* Mill.)

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**ABSTRACT** : The experiment was conducted at the Department of Horticulture, C.S.A. University of Agriculture and Technology, Kanpur during the year 2014-15 to find out effect of seedling age on growth and flowering attributes of tomato (*Lycopersicon esculentum* Mill.). Randomized block design (RBD) was used with eight treatments of seedling age i.e., T<sub>1</sub> (16 days), T<sub>2</sub> (20 days), T<sub>3</sub> (24 days), T<sub>4</sub> (28 days), T<sub>5</sub> (32 days), T<sub>6</sub> (36 days), T<sub>7</sub> (40 days) and T<sub>8</sub> (44 days) and three replications. Observations were recorded on growth and flowering attributes i.e., height of plant, spread of plant, number of primary branches/plant, number of secondary branches/plant, day to first flower initiation and number of flower per plant. The results showed that T<sub>3</sub> (24 days old seedling) increased significantly to plant height, spread of plant (N-S, E-W), and number of flowers/plant revealing 63.19 cm maximum plant height, maximum plant spread 116.18 cm (N-S) and 171.13 cm (E-S), and maximum number of flower/plant (69.64) respectively. Treatment T<sub>4</sub> (28 days old seedling) enhanced number of primary branches (7.35) which was greater variation among treatments while number of secondary branches were significantly influenced (9.65) with T<sub>4</sub> treatment also. Days to first flower initiation was significantly enhanced with T<sub>1</sub> treatment (62.15 days).

**Published in : HortFlora Research Spectrum, 5 (3) : 251-254 (September 2016)**

## 16. Mango Hopper Management by IPM practices including Insecticides, Botanicals and Cultural Practices

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**ABSTRACT** : Studies on the effect of IPM, chemical, botanicals and cultural practices on hopper showed that hopper population was effectively controlled in insecticide, IPM, insecticide + botanical pesticide and botanical pesticide whereas maximum hopper population was recorded in control. Fruit set per 100 panicles was significantly higher than control in all treatment whereas it was at par among IPM, insecticide alone and insecticide+botanical pesticide. Fruits harvested were maximum in IPM followed by insecticide and insecticide+botanical pesticide whereas no significant differences in fruits harvest were observed between cultural+ mechanical practices and control. Fruit weight was maximum in IPM followed by insecticide+botanical pesticide and insecticide alone. Lowest fruit weight was observed in control.

**Published in : HortFlora Research Spectrum, 5 (3) : 255-257 (September 2016)**

## 17. Effect of Micro Nutrients and Fungicide Application on Internal Fruit Necrosis, Cracking and Fruit Drop in Bael (*Aegle marmelos* Correa.)

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**ABSTRACT** : An experiment was conducted at Horticultural Research Centre, SVP university of Agriculture and Technology, Meerut during 2009-10 and 2010-11 to investigate the effect of micro-nutrients and fungicide on internal fruit necrosis, cracking and fruit drop in bael. Out of six treatments applied, combined application of boron (1%) + copper sulphate (0.25%)+ carbendazim (0.1%) was found to be most effective in reducing internal fruit necrosis (17.00% reduction over control), fruit cracking (15.00% reduction over control) and fruit drop (14.70% reduction over control).

**Published in : HortFlora Research Spectrum, 5 (3) : 258-260 (September 2016)**

## 18. High density planting in fruit crops

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**ABSTRACT** : High density orcharding is one of the recent novel concepts of increasing productivity without affecting quality of fruits. It gives earlier production and return per unit area, shortens juvenility provides efficient resources. Dwarfing root stocks play key role to accommodate more number of plants per unit area. Under HDP has been found most suitable technique for some tropical and subtropical fruits accomodating more number of plants per unit area viz., Dashehari mango (1333 plants/ha), guava (5000 plants/ha), papaya (6400 plants/ha), etc.

**Published in : HortFlora Research Spectrum, 5 (3) : 261-264 (September 2016)**

## 19. Problems faced by kvk training programME on chilli production technology on participating farmers in Khargone District of Madhya Pradesh

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**ABSTRACT** : Finding of this study that major problems faced by trainees farmers in production technology of chili were problems terms of training program were not organized as the need based training, lack of active worker, lack of irrigation facility, storage and marketing problems, not attending training programe regularly, family norms, non availability of audio-video aid, high cost of input health problem, lack of technical knowledge about improved activities, burden of work, high cost of transpiration distant training centre, low socioeconomic status and illiteracy.

**Published in : HortFlora Research Spectrum, 5 (3) : 265-268 (September 2016)**

ICV : 27.39

**HORTFLORA RESEARCH SPECTRUM**

GIF : 0.471

IBIF : 2.8

NIIF : 2.14

[www.hortflorajournal.com](http://www.hortflorajournal.com)

ISSN : 2250-2823

*Published under the Auspices of :*

**Biosciences and Agriculture Advancement Society (BAAS)**

“Shivalay” 98-A Somdutt Vihar, Jagrati Vihar, Garh Road, Meerut-250004

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ISSN: 2250-2823

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2. Johnson, D.A. (1940). *Plant Microtechnique*. McGraw- Hill Publishing Co. Ltd., New York. PP-29

3. Kapil, R.N. and Arora, S. (1990). Some fascinating features of orchid pollen. *J. Orchid Soc.*, 4 (1): 9-28.

4. Rashid, S., Ashraf, M., Bibi, S. and Anjum, R. (2000). Antibacterial and antifungal activities of *Launaea nudicaulis* Roxb. and *Launaea resedifolia* L. *Pakistan J. Biol. Sci.*, 3 (4) :630-632.

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**Printed & Published by :** Dr. Vandana Umrao and **Edited by :** Dr. Vijai Kumar Umrao, Secretary, BAAS 'Shivalay' 98-A, Somdutt Vihar, Garh Road, Meerut-250 004 (U.P.) INDIA. **Mob.:** +91-9412833903  
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Printed at : New Rishabh Offset Printers, Delhi Road, Meerut.

ISSN 2250-2823

