

University of Agricultural and Horticultural Sciences, Shivamogga

M. Sc. (Hort.) theses abstracts produced in the

Department of Fruit Science

1. Studies on Bunch Feeding on Yield and Quality of Banana Cv. Robusta (Aaa-Group) Under Hill Zone of Karnataka

SREEKANTH, H. S.

ABSTRACT

The field investigation was carried out during the year 2011-12 in the farmer's field at Palguni village of Mudigere taluk to study the effect of bunch feeding on yield and quality of banana cv. Robusta. The banana bunch stalk were fed with urea (2.0, 4.0 and 6.0 %), sulphate of potash (1.5, 2.0 and 2.5 %), 2, 4-Dichlorophenoxyacetic acid (10, 20 and 30 ppm), panchagavya (2.0, 4.0 and 6.0 %) and banana special (0.2, OA and 0.6 %) and compared with control (without bunch stalk feeding). The experiment was laid out in a completely randomized block design with sixteen treatments, which were replicated thrice.

The bunch stalk fed with 2.0 per cent sulphate of potash recorded significantly highest internodal length (8.93 cm), bunch length (85.20 cm), finger girth (12.79 cm), finger weight (170.10 g), weight of hand (2.60 kg), weight of bunch (24.21 kg), total yield (60.53 t/ha), pulp weight (109.16 g), peel weight (42.31 g), pulp to peel ratio (2.58), total soluble solids (23.51 o Brix) and benefit cost ratio (2.68). The lowest PLW (10.44 %), more number of days taken to ripe (14.33 days), highest reducing sugar (15.86 %), non-reducing sugar (2.64 %), total sugar (18.49 %), sugar to acid ratio (73.14 %) and lowest titratable acidity (0.25 %) was found in bunches fed with 2.5 per cent sulphate of potash. Both 2.5 per cent sulphate of potash and 6.0 per cent panchagavya recorded the longest shelf life of 8.67 days. While, 2.0 per cent sulphate of potash improved the yield and quality parameters of banana cv. Robusta under Hill zone of Karnataka.

June, 2012

(D. Thippesha)
Major Advisor

2. Response of Soil and Foliar Application of Silicon on Growth, Yield and Quality of Banana cv. Elakkibale under Hill Zone of Karnataka

HAUMANTHAIHAH, M.R.

ABSTRACT

A field experiment was conducted to examine the response of banana plants to soil and foliar application of silicon at RHREC, Mudigere during the year 2011-2012. Potassium silicate and calcium silicate were used as source of silicon. Potassium silicate was given 90 days after planting as a foliar spray at a concentration of 2 and 4 ml VI per plant at 15 and 30 days interval. Similarly, soil application of calcium silicate @ 1000g per plant at once and in combination with foliar spray of potassium silicate was tried during the same period.

The highest plant height (239.67 cm), plant girth (68.43 cm), leaf area (0.6626 m²), number of fingers per bunch (150.11), total bunch weight (11.95 Kg), yield per hectare (29.88 t), benefit cost ratio (1.57: 1) and early days taken from shooting to maturity (91.60 days) were recorded due to combined soil application of calcium silicate @ 1000 g/plant + foliar application of potassium silicate @ 4 ml L-I/plant at 30 days interval followed by foliar application of potassium silicate alone @ 4 ml VI/plant at 15 days interval. The maximum pulp peel ratio (7.44 %), days to full ripe (7.67 days), shelf life of fruits (6.33 days), total soluble solids (26.670 B) and the lowest titratable acidity (0.76 %) were recorded due to foliar application of potassium silicate @ 4 ml L-I/plant at 15 days interval. The combined application of calcium silicate @ 1000 g/plant and foliar application of potassium silicate @ 4 ml L-I/plant at 30 days interval had significantly influenced the growth and yield parameters of banana over control.

September, 2012

(Kulapati Hipparagi)
Major Advisor

3. Response of Soil and Foliar Application of Silicon and Micronutrients on Growth, Yield and Quality of Sapota Under Hill Zone of Karnataka

LALITHYA, K.A.

ABSTRACT

The field experiment was conducted during the year 2011-12 to know the response of soil and foliar application of silicon and micronutrients on growth, yield and quality of sapota at RHREC, Mudigere. Silicon sources like potassium silicate as foliar application at the concentrations of 6 and 8 ml per litre and calcium silicate as soil application were applied only once at the concentrations of 1.0, 1.5, 2.0 and 2.5 kg per tree. Boron was applied at the concentration of 2 and 3 g per litre and micronutrients were applied at 3 and 4 ml per litre at monthly intervals.

The maximum total leaf chlorophyll content (8.47 mg/g), maximum number of shoots (23.96), maximum number of flowers (250.16), fruits per square meter (27.16) and the maximum number of fruits per tree (1216.66) and traits like, the highest yield per tree (124.81 kg), yield per hectare (12.48 t), fruit weight (99.66 g), fruit length (5.55 cm), diameter of fruit (5.85 cm] and volume of fruit (102.38 ml) and the quality traits like maximum total soluble solids (25.16 %), shelf life (10.90 days), minimum physiological loss in weight (8.91 %) and the minimum number of mummified fruits (34.00) were observed In treatment with foliar application of potassium silicate at 8 ml per litre.

September, 2012

(Kulapati Hipparagi)
Major Advisor

4. Effect of Integrated Nutrient Management on Growth, Yield and Quality Parameters in Banana Cv. Ney Poovan Under Hill Zone of Karnataka

D. BHAVANI

ABSTRACT

A field experiment was conducted at the College of Horticulture, Mudigere, Chikmagalur district, Karnataka, during 2011-2012 to study the "Effect of integrated nutrient management on growth, yield and quality parameters in banana cv. Ney Poovan under hill zone of Karnataka". The experiment was laid out in randomized block design with 13 treatment combinations, comprising of inorganic fertilizers, organic manures and biofertilizers and with 3 replications. The treatment received 100% recommended dose of fertilizers (RDF) along with Vermicompost (2kg) + Neemcake (250g) + *Azospirillum* (50g) + PSM (50g) + VAM (250g) recorded the highest plant height, pseudostem girth, number of functional leaves, total leaf production, total leaf area and leaf area index and yield attributes such as length of bunch, weight of hand, number of hands per bunch, number of fingers per hand, total number of fingers per bunch, finger weight, finger length, finger girth, bunch weight per plant, total yield per hectare and also registered better quality parameters such as shelf life, total soluble solids (TSS), acidity, reducing sugar and non-reducing sugar. The available nutrients (N, P₂O₅ and K₂O) and plant nutrients content was significantly higher in the treatment received 100% recommended dose of fertilizers along with organic manures and biofertilizers. The economic analysis clearly indicated that the net returns/ha and C:B ratio was the highest in the plants treated with 100% recommended dose of NPK (P as rock phosphate) in combination with Vermicompost (2kg), Neemcake (250g), *Azospirillum* (50g), PSM (50g) and VAM (250g) and also the plants supplied with 75% recommended dose of fertilizers with Vermicompost (2kg) and *Azospirillum* (50kg). The present findings can be commercially used in making banana production more profitable by the integration of nutrients under hill zone of Karnataka .

July, 2013

(D. Thippesha)
Major Advisor

5. Standardization of Grafting Techniques in Jack Fruit

PRIYANKA, H.L.

ABSTRACT

The study was conducted to find out the most suitable method of grafting, curing period of scion and also age of rootstock for softwood grafting in jack fruit at the college of horticulture, Mudigere. Out of two experiments conducted, in the first experiment, among the three grafting methods and curing periods, the highest success (64.00%) and the least number of days (17.50) to sprout was recorded in epicotyl grafting with ten days old cured scion. Number of leaves, number of branches and length of shoot were also maximum in epicotyl grafting with scion cured for ten days. Vigour of grafts was maximum in softwood grafting with ten days old cured scion. The least mortality (32.20%) was recorded in epicotyl grafting with ten days old cured scion.

In the second experiment, seven months old rootstock recorded the maximum graft success (72.39%). No sprouting was observed in six months old rootstock and the least success (23.60%) was in five months old rootstock. The days to bud sprout was minimum (21.50) in seven months old rootstock and recorded the maximum number of leaves (5.60), number of buds (3.49), length (19.50cm) and girth of shoot (0.86 cm), whereas the number of branches was highest (1.91) in four months old rootstock. The mortality of grafts was minimum (25.65%) in seven months old rootstock, while it was highest in case of six months old rootstock.

Among the different grafting methods, epicotyl grafting was found to be efficient than softwood and approach grafting and among the curing periods, ten days cured scion was found to produce higher graft success when compared to 20 days old cured scion and uncured scion. Among the rootstocks tested, seven months old was effective in getting higher graft success, better growth with low mortality. Hence, with the results obtained higher success can be achieved under Mudigere conditions and could be adopted for large scale multiplication of grafts.

July, 2013

(Kulapati Hipparagi)
Major Advisor

6. Effect of Bunch Spray of Nitrogen and Potash on Yield And Quality of Banana Cv. Grand Naine Under Hill Zone of Karnataka

GEETHA SHETTY, S.

ABSTRACT

The field investigation was carried out during the year 2012-13 in the farmer's field at Halekote village of Mudigere taluk, Chikmagalur district of Karnataka, to study the "Effect of bunch spray of nitrogen and potash on yield and quality of banana cv. Grand Naine under hill zone of Karnataka". The banana bunches were sprayed with urea (1 %, 2 %, 3 %), sulphate of potash (1 %, 2 %, 3%) and combination of urea and sulphate of potash during shooting, after shooting and one month after second spray and compared with control (without bunch spray). The experiment was laid out in a completely randomized block design with sixteen treatments, which were replicated thrice.

The bunch sprayed with two per cent sulphate of potash and one per cent urea recorded less number of days for complete shooting (12.17), shooting to harvest (122.92) and significantly the highest bunch length (90.93 cm), internodal length between hands (11.67 cm), weight of hand (4.41 kg), weight of bunch (40.67 kg), total yield (102.70 t/ ha), length of finger (25.17 cm), girth of finger (13.67 cm), weight of finger (221.00 g), physiological loss in weight (14.73 %), green life (10.67 days), days to ripe (13.67), shelf life (8.67 days), pulp weight (120.67 g), peel weight (44.33 g), TSS (24.73⁰brix), reducing sugar (15.74 %), non-reducing sugar (2.70%), total sugars (18.44 %), lowest titrable acidity (0.24 %), sugar to acid ratio (76.90) and also the highest cost: benefit ratio (3.04) compare to control. Spraying of two per cent sulphate of potash and one per cent urea during shooting, after shooting and one month after second spray improved the yield and quality parameters with highest profit in case of banana cv. Grand Naine under hill zone of Karnataka.

July, 2013

(D. Thippesha)
Major Advisor

7. Studies on Different Age of Rootstocks and Month of Budding on Success Rate of Patch Budding in Gumless Jack (*Artocarpus Heterophyllus* Lam.)

NATARAJ, G. N.

ABSTRACT

“Studies on different age of rootstocks and month of budding on success rate of patch budding in gumless jack (*Artocarpus heterophyllus*Lam.)”. The study was conducted at the College of Horticulture, Mudigere during the year 2012-13, in low cost polyhouse with factorial CRD replicated four times with two factors ie., six age of rootstocks and four month of budding.

The observation on sprouting per cent, number of sprouts per plant, length of budling, girth of budling, number of leaves per budded plants, per cent budding success and establishment percentage of the budlings were recorded periodically.

Patch budding was carried out during the months of September, October, November and December. The maximum per cent budding success (78.75) and final establishment percentage (77.63) was noticed when the budding was done during the month of December.

The age of rootstocks greatly influenced on the success rate of patch budding which was done on one to six month old rootstock. Among them, the per cent patch budding success (75.69 and 72.88) and final establishment percentage of the budlings (75.25 and 71.69) was found maximum on one and two month's old rootstocks respectively.

The interaction effect showed the maximum percentage of budding success on one month old rootstocks on 60th (90.00) and 90th (92.25) days after patch budding during the month of December. While, the establishment percentage recorded maximum (93.30) on one month old rootstocks budded during December at 120 days after budding.

Hence, patch budding can be carried out successfully during the month of December on younger rootstocks to achieve maximum success for Mudigere conditions under low cost polyhouse.

July, 2014

(D. Thippesha)
Major Advisor

8. Effect of Soil Application and Foliar Spray of Micronutrients on Growth, Yield and Quality of Ratoon Banana Cv. Grand Naine under Hill Zone of Karnataka.

NINGAVVA B. VYAPARI

ABSTRACT

The field investigation was carried out during the year 2013-14 in the farmer's field at Maggalamakki village of Mudigere taluk, Chikmagalur district of Karnataka, to study the "Effect of soil application and foliar spray of micronutrients on growth, yield and quality of ratoon banana cv. Grand Naine under hill zone of Karnataka". The experiment was laid out in randomized block design with 14 treatment and 3 replications. The treatment received of 100% recommended dose of fertilizer (RDF) along with foliar spray of zinc sulphate (0.5%) + boron (0.2%) with double suckers per hill recorded the highest plant height (196.33cm), pseudo stem girth (76.29cm), number of functional leaves (19.55), leaf length (138.73cm), leaf breadth (72.31cm), leaf area (15.71m²), leaf area index (4.85), Total crop duration (345.00), chlorophyll content (19.18mg/l OOG) and yield attributes such as length of bunch (94.15cm), internodal length of hands (15.21cm), weight of hand (8.24kg/hill), number of hands per bunch per hill (18.00), number of fingers per hand (22.00), total number of fingers per hill (235.67), finger weight (192.67g), finger length (26.67cm), finger girth (14.33cm), bunch weight per hill (49.00) and total yield per hectare (151.21). The application of 100% recommended dose of fertilizer (RDF) along with foliar spray of zinc sulphate (0.5%) + boron (0.2%) with double suckers per hill registered better quality parameters such as physiological loss in weight (13.32 days to ripe (13.67 days), shelf life (10.67), TSS (28.50°Brix), reducing sugar (15.97%), non-reducing sugar (2.93%), total sugars (18.97), titrable acidity (0.29%) and sugar: acid ratio (65.41). The present findings can be commercially used in making banana production more profitable by the micronutrient application under hill zone of Karnataka.

August, 2014

(Kulapati Hipparagi)
Major Advisor

9. Effect of Growth Regulators on Rooting and Success of Air Layers in Rose Apple (*Syzygium Jambos L.*) Under Hill Zone of Karnataka

KHANDADE SURESH

ABSTRACT

The study was conducted to know the “effect of growth regulators on rooting and success of air-layers in rose apple (*Syzygium jambos L.*) under hill zone of Karnataka” was carried out in Rose apple block at Zonal Agricultural and Horticultural Research Station, Mudigere and in low cost polyhouse at College of Horticulture, Mudigere during the year 2013-14. Among the different growth regulators with or without synergist used, the layers treated with IBA 5000 ppm + 1, 2, 4 acid 1000 ppm resulted in better rooting percentage of 74.67 as against 42.67 in control. The promotive effect was also observed due to the treatment of IBA 8000 ppm + 1, 2, 4 acid 1000 ppm and IBA + NAA 5000 ppm recorded 72 and 68 per cent respectively. However, use of both IBA and NAA in combination with 1, 2, 4 acid synergise the effect of auxins in rose apple air-layers. Among the growing media and growth regulators tried, the rose apple air-layers treated with IBA 8000 ppm + 1, 2, 4 acid 1000 ppm and planted in media containing soil, sand and vermicompost (1:1:2) recorded maximum survival percentage of 94.67, which was on par with soil, sand and vermicompost (1:1:1) with IBA 8000 ppm + 1, 2, 4 acid 1000 ppm (92%) and soil, sand and vermicompost (1:1:1) with IBA + NAA 5000 ppm + 1, 2, 4 acid 1000 ppm (92%). The studies revealed that, rose apple air-layers could be produced easily by treating with IBA 8000 ppm + 1, 2, 4 acid 1000 ppm and grown in the media of soil, sand and vermicompost (1:1:2) with alternatively 1:1:1 can also be used in places where, vermicompost is scarce and costly. By this way, higher turnover can be obtained the commercial nursery entrepreneurs.

July, 2014

(D. Thippesha)
Major Advisor

10. Studies on Growth Regulators on Rooting and Success of Air-Layers in Litchi (*Litchi Chinensis* Sonn) Under Hill Zone of Karnataka

SHASHIDHAR. N. G.

ABSTRACT

The study was conducted to know "Studies on growth regulators on rooting and success of air layers in Litchi (*Litchi chinensis* Sonn) under hill zone of Karnataka" was carried out in Litchi block at Zonal Agricultural and Horticultural Research Station, Mudigere and in low cost polyhouse of College of Horticulture, Mudigere during the year 2013 -14. The study pointed out that, among the different growth regulator formulations used, the formulation with IBA + NAA 200 ppm resulted better rooting percentage of 93.33% as against 76.67% in control. The next promotive effect in this regard was by treatment of IBA 300 ppm and IBA + NAA 100 ppm recorded 91.67% and 91.00% respectively. Among the growing media and growth regulators tried, Litchi air-layers were treated with IBA + NAA 200 ppm and planted in media containing soil, sand and vermicompost (1:I:2) recorded maximum survival percentage i.e. 97.85% which was on par with soil, sand and FYM (1:1:2); IBA 300 ppm (95.35%). The studies revealed that Litchi air-layers could be multiplied easily by treatment with IBA + NAA 200 ppm and growing in the media of soil, sand and vermicompost (1:1:2) in polyhouse condition. As an alternative, media comprising of soil, sand and FYM (1:1:2) can also be used in places where, vermicompost is scarce and costly. By this way, higher turnover can be obtained.

July, 2014

(D. Thippesha)
Major Advisor

11. Effect of NPK Levels and High Density Plants on Growth, Yield and Quality of Ratoon Crop of Tissue Culture Banana Cv. Grand Naine Under Hill Zone

BASAVARAJ, A. KANTI

ABSTRACT

A field experiment was carried out to study the effect of NPK levels and high density plants on growth, yield and quality of ratoon crop of tissue culture banana cv. Grand Naine under hill zone in farmer's field at Maggalamkki, Mudigere taluk, Chikmagalore district during the year 2013-2014.

The different doses of fertilizers along with different levels of suckers per hill were used during this study. The plants provided with 100% recommended dose of NPK with double suckers per hill gave the maximum plant height (173.45 cm at 120 days after harvesting of the main crop in Ta), 150% of recommended dose of NPK with double suckers per hill registered the maximum pseudostem girth (56.1 cm and the maximum leaf area of 8.28 rrT at shooting in T4). The maximum number of leaves (8.27 at shooting) when plants were supplied with 200% of recommended dose of NPK.

The early harvesting of bunches was observed with 175% of recommended dose of NPK with double sucker per hill (86.19 days). The per cent light intensity (88-89%) was found higher in closer spacing system of planting in comparison with conventional (65%) planting system at all the stages of crop growth. The maximum banana yield 177.75 t/ha as obtained with three suckers per hill with the application of 450:270:560 g NPK/hill. The plants supplied with 200% of recommended dose of NPK with triple suckers per hill had the maximum benefit cost ratio of 7.05:1.

August, 2014

(Kulapati Hipparagi)
Major Advisor

12. Effect of Growth Regulators on Yield and Quality Parameters of Guava Under Hill Zone of Karnataka

RAJESH, S.

ABSTRACT

The field investigation was carried out during the year 2014-15 at an existing guava plot (C block of ZAHRS Mudigere) of variety Sardar (L-49) in Mudigere taluk of Chikmagalur district, Karnataka state to study the “Effect of growth regulators on yield and quality parameters of guava under hill zone of Karnataka”. The experiment was laid out in randomized block design with 13 treatments and 3 replications. Among the different treatments the foliar application of GA₃ 150 ppm + NAA 300 ppm recorded the highest fruit volume (147.67 ml), fruit length (6.45 cm), fruit diameter (6.59 cm), weight of fruit (152.33 g), pulp weight (147.70 g), pulp per cent (96.96), number of fruits per tree (378.00), yield per tree (57.63 kg) and yield per hectare (23.05 tonnes) whereas, the quality parameters like TSS (11.79 °Brix), ascorbic acid (143.99 mg/100 g pulp), titratable acidity (0.37 %), TSS : acid ratio (31.96), reducing sugar (4.23 %), non-reducing (2.67 %) and total sugars (6.89 %) while, minimum yield (41.00 kg) and yield parameters were recorded in control. The foliar application of GA₃ 100 ppm + NAA 200 ppm recorded lowest number of seeds per fruit (244.33) and seed weight per fruit (4.38 g), while maximum number of seeds per fruit (321.67) and seed weight per fruit (5.36g) was recorded in control. The application of CCC 750 ppm has registered better quality parameters such as lowest physiological loss in weight (6.59 %) and maximum shelf life (11.67 days), whereas highest physiological loss in weight (10.16 %) and minimum shelf life (7.00 days) was recorded in control.

May, 2015

(K. S. Sheshagiri)
Major Advisor

13. Effect of Age and Curing of Scion on Success Rate of Softwood Grafting in Sapota (*Achras Zapota* L.)

PULI TANUJA

ABSTRACT

The present investigation entitled “Effect of age and curing of scion on success rate of softwood grafting in sapota (*Achras zapota* L.)” was conducted in low cost poly house at College of Horticulture, Mudigere during the year 2014-15. The experiments were carried out with different treatment combinations in Randomized Block Design with appropriate replications. For the study, four age group scions *i.e.*, 3, 6, 9 and 12 months aged with 2, 4, 6, 8 and 10 days cured scions were selected for carrying out grafting in low cost polyhouse.

The results revealed that age and curing of the scions greatly influenced the per cent grafting success and final establishment of the grafts. It is very evident from the study that out of four different age groups the relatively younger scions of 3 months age gave maximum per cent graft success at 30 (50.00%), 60(42.50%) and 90(37.50%) day after grafting with maximum survival percentage (87.00). Similarly in the second experiment, among the six treatments of curing, 10 days cured scions registered maximum per cent graft success at 30 (68.75%), 60(65.00%) and 90(62.50%) days after grafting with maximum survival percentage (84.00). The interaction effect of the age and curing of scion revealed that maximum per cent graft success at 30 (66.66%), 60 (65.33%) and 90(64.00%) days after grafting and maximum survival percentage (80.88) were also registered with 3 months age old scion which was cured for 10 days. Hence, softwood grafting can be carried out successfully with younger scions with 10 days curing to achieve maximum success in low cost polyhouse under Mudigere conditions. In general, these observations were found maximum on younger scions with 10 days cured scions.

May, 2015

(D. Thippesha)
Major Advisor

14. Induction of Flowering to Increase the Fruit Set with More Number of Hermaphrodite Flowers in Bhagwa Variety of Pomegranate (*Punica Granatum L.*)

VIDYA V. ANAWAL

ABSTRACT

The field investigations were carried out during 2014-15 in the farmers field at Hosayalanadu village, Hiriyur taluk, Chitradurga district of Karnataka to study the “Induction of flowering to increase the fruit set with more number of hermaphrodite flowers in Bhagwa variety of pomegranate (*Punica granatum L.*)”. The plants which received ethrel 250 ppm at new flesh stage recorded minimum duration for 50 per cent (12.67 days) and 100 per cent flowering (30.44 days) and also produced maximum number of productive hermaphrodite flowers (68.33) followed by minimum number of intermediate flowers (25.22) which are unproductive. The application of NAA 100 ppm recorded maximum size of the flowers in terms of length and diameter in hermaphrodite flowers (5.58 cm, 1.66 cm respectively), intermediate (4.58 cm, 1.45 cm respectively) and male (4.55 cm, 1.47 cm respectively) flowers. The application of GA₃ 30 ppm resulted in maximum number of male flowers (75.66). Hence, it is not considered as a better treatment. Application of NAA 40 ppm at full bloom stage registered minimum days taken for fruit set (37.55 days) and recorded maximum number of fruits (62.44/plant), yield per plant (16.45 kg/plant) and yield per hectare (15232.70kg). However, fruit length (8.66 cm), fruit diameter (8.71 cm), fruit weight (262.23 g), fruit volume (255.44 ml), aril weight (188.90 g), aril per cent (72.03), minimum number of seeds (269.60) and seed weight (3.09 g) were also recorded. The quality parameters such as total soluble solids (16.76°B), reducing sugars (13.83%), non-reducing sugars (1.75%) and total sugars (15.58%) were found highest, besides, the minimum physiological loss in weight (26.17%), with highest shelf life (29.00 days). The present findings can be commercially used in making pomegranate production more profitable (1:3.90) by the application of Ethrel 250 ppm and NAA 40 ppm in Bhagwa variety of pomegranate.

June, 2015

(P. Narayanaswamy)
Major Advisor

**15. Effect of Plant Growth Regulators on Yield and Quality of Sapota (*Achraszapotal*.)
through Crop Regulation Under Hill Zone of Karnataka**

KAVYASHREE, N.

ABSTRACT

The field investigation was carried out during the year 2013-14 in the fruit orchard, Zonal Agricultural and Horticultural Research Station, Mudigere, Chikmagalur district of Karnataka, to study the “Effect of plant growth regulators on yield and quality of sapota (*Achraszapotal*L.) through crop regulation under hill zone of Karnataka”. The experiment was laid out in randomized block design with 10 treatments and 3 replications. Plant growth regulators like NAA (250, 300 and 350 ppm), 2, 4-D (40, 50 and 60 ppm) and Ethephon (350, 400 and 450 ppm) at varied concentrations were sprayed at pea nut stage.

The maximum fruit weight (110.23 g), fruit length (6.07 cm), fruit diameter (58.30 mm), volume of fruit (106.87 ml), pulp weight (99.35 g), pulp percentage (90.23 %), yield per tree (108.47 kg), yield per hectare (10.85 t) and extended shelf life (10.58 days) with minimum physiological loss in weight (6.10 %, 8.11 % and 10.22 % at 3, 6 and 9 days during storage respectively), less number of seeds per fruit (1.53) and seed weight per fruit (1.72 g) were recorded in the trees sprayed with NAA at 350ppm. Whereas, maximum per cent of thinning (35.30 %) with minimum number of mummified fruits (40.10) was recorded in the treatment with foliar application of ethephon at 450ppm. Similarly, the quality parameters like total soluble solids (19.75 °Brix), reducing sugars (9.12 %), non reducing sugar (6.96 %) and total sugars (15.97 %) were also found to be maximum when sprayed with ethephon at 450ppm.

May, 2015

(B. HemlaNaik)
Major Advisor

16. Effects of Pruning and Growth Regulators on Yield and Quality of Bhagwa Variety of Pomegranate

BALAJI, K.

ABSTRACT

A field experiment was conducted at farmer's field at Kunikere village, Hiriyur taluk, Chitradurga district of Karnataka during 2015-16, to study the "Effects of pruning and growth regulators on yield and quality of Bhagwa variety of Pomegranate". The plants which received 20 cm pruning of shoots along with application of Ethrel 250 ppm and NAA 40 ppm recorded maximum shoot length (54.75 cm), maximum leaf area (9.35 cm²) in plants pruned for 30 cm and in addition to Ethrel 250 ppm. The plants pruned for 30 cm with an application of NAA 40 ppm at new flush stage recorded 50 per cent flowering in 12.33 days. The same treatment produced maximum number of male (73.67) and hermaphrodite (73.00) flowers, and also took minimum days (35.00) for fruitset by recording highest yield per plant (17.27 kg/plant) and yield per hectare (23.31 t). However, the maximum values were recorded for fruit weight (312.07 g), fruit diameter (8.08 cm), fruit volume (270.87 ml), aril weight (130.04 g) and seed weight (4.84 g), while it was minimum in the case of number of seeds (303.67). The quality parameters such as total soluble solids (16.33 °B), reducing sugars (10.63%), non reducing sugars (1.75%) and total sugars (12.38%) were found highest, besides, the minimum titratable acidity (0.36%), minimum physiological loss in weight (27.40%), with highest shelf life (31.67 days). The present findings can be commercially used in making pomegranate production more profitable (1:4.44) by pruning for 30 cm and application of NAA 40 ppm in Bhagwa variety of pomegranate.

October, 2016

(P. Narayanaswamy)
Major Advisor

17. Studies on Integrated Nutrient Management in Pomegranate (cv. Bhagwa) Under Central Dry Zone of Karnataka

KIRANKUMAR, K. H.

ABSTRACT

A field experiment was conducted at farmer's field Somerhalli village, Hiriya taluk Chitradurga district during 2015-16, entitled as "Studies on integrated nutrient management in pomegranate cv. Bhagwa under central dry zone of Karnataka" in Mrig bahar season. The experiment was laid out in randomized block design with 9 treatments comprising of inorganic, organic and biofertilizers, replicated thrice. The treatment containing 100% recommended dose of fertilizers (RDF) along with vermicompost (2 kg) + poultry manure (3.3 kg) + *Azospirillum* (13.61 g) + PSB (13.61 g) + KSB (13.61 g) recorded the highest leaf area (12.89 cm²), shoot length (45.19 cm), fruit weight (292.67 g), number of fruits per tree (61.22), yield per tree (17.93 kg) and yield per hectare (16.46 tonnes). Yield was on par with the treatment 75% recommended dose of fertilizers (RDF) along with vermicompost (2 kg) + poultry manure (3.3 kg) + *Azospirillum* (13.61 g) + PSB (13.61 g) + KSB (13.61 g). Among biochemical parameters high TSS (15.30 °B), lower titratable acidity (0.33 %), higher TSS/TA ratio (46.48), reducing sugars (12.79 %) non-reducing sugars (1.65 %) and total sugars (14.39 %) along with better postharvest parameters like maximum fruit firmness (82.55 newton), lowest physiological loss in weight (12.88 %) maximum shelf life (28 days) and maximum cost benefit ratio (3.45) were recorded. whereas highest physiological loss in weight (18.92 %) and minimum shelf life (18.40 days) was recorded in control. Similar trend was also observed in the case of using inorganic fertilizers at the rate of 75% RDF with biofertilizers and organic manure thus with that of inorganic fertilizers at the rate of 100% RDF with biofertilizers and organic manure. Thus from the study it was observed that there was 25% savings on inorganic fertilizers.

August, 2016

(B. S. Shivakumara)
Major Advisor

18. Evaluation of Different Genotypes for Growth, Yield and Quality of Strawberry (*Fragaria X ananassa* Duch.) Under Naturally Ventilated Polyhouse in Hill Zone of Karnataka

MAHESHGOWDA, B. M.

ABSTRACT

An experiment was conducted to evaluate different genotypes of strawberry (*Fragaria X ananassa* Duch.) for growth, yield and quality in low cost polyhouse of the Department of Fruit Science, College of Horticulture, Mudigere, during 2015-16. The experiment was laid out in Randomized Complete Block Design with seven treatments replicated thrice. The maximum plant height (32.30 cm), number of leaves (30.40), plant spread North-South and East–West (48.47 cm and 53.93 cm respectively), leaf area (206.04 cm²), leaf area index (6.95), total dry weight (29.04g), maximum total chlorophyll content (2.33 mg/g of fresh weight) was observed maximum in genotype Sabrina, while the Cristal accounted maximum runners per plant (10.70). The genotype Elyana took minimum number of days for flowering (53.37) whereas, genotype Sabrina took longest duration for flowering (69.80 days). The maximum number of flowers per plant (29.06), number of fruits per plant (22.36) and yield per plant (380.29 g) was recorded in genotype Sabrina. The maximum fruit weight (20.01 g), diameter (3.28 cm) and volume (24.37 cc) was recorded in genotype Fortuna. The fruit quality parameters like total soluble solids (11.53 °Brix) was maximum in Safari, the ascorbic acid content (73.30 mg/100g) was maximum in Sabrina, total sugars (7.50 %) was maximum in genotype Fortuna, sugars to acid ratio (12.20) was maximum in Elyana and minimum titratable acidity (0.50 %) was recorded in Fortuna. The genotype Fortuna resulted in maximum benefit cost ratio (2.56). Among different genotypes evaluated, the Sabrina genotype performed better for maximum growth and yield.

June, 2016

(Madaiah, D)
Major Advisor

19. Influence of Age and Months of Rangpur Lime Rootstock on Patch Budding in Coorg Mandarin (*Citrus reticulata* B.)

LATHA, M.

ABSTRACT

Coorg mandarin is gaining popularity for its planting material in nurseries. Therefore necessary to produce genuine planting materials within short span of time with good quality budded plants by using different aged rootstock with different months of budding. Hence, the study was conducted on “Influence of age and months of Rangpur lime rootstock on patch budding in Coorg mandarin (*Citrus reticulata* B.)” at Department of Fruit science, College of Horticulture, Mudigere, during 2015-16 in low cost polyhouse. The experiment was laid out in Factorial Complete Randomized Design with 20 treatments and replicated three times with two factors *i.e.*, age of rootstocks and month of budding. The observations were considered for evaluating the suitability of the age of rootstock and months of budding. The observations on number of days taken for initiation, 50 and 100 per cent bud sprouting, number of bud sprouts, sprout length, sprout girth, diameter of budlings, number of leaves per budlings, length of the leaves, leaf area index, bud vigour index, stionic ratio, per cent bud success and survival percentage were recorded. In general, these observations were found maximum on twelve months old rootstock with October month budding. *i.e.*, twelve months old rootstock with October month budding took minimum number of days for sprout initiation (21.14 days). The maximum bud sprout height, sprout girth, number of leaves and bud vigour index at 60 days after budding (19.06 cm, 4.60 cm, 21.20 and 1182.94, respectively), and 90 days after budding (26.04 cm, 6.62 cm, 26.99 and 1434.74, respectively), were recorded in twelve months old rootstock with October month budding. While, the per cent bud success and survival percentage of budlings at 120 days after budding (98.85 and 98.85 %), was also recorded in the above treatment combinations.

July, 2016

(B. S. Shivakumar)
Major advisor

20. Effect of High Density Planting and Nutrition on Growth, Yield and Quality of Tissue Culture Banana (*Musa paradisiaca* L.) cv. Grand Naine under Transitional Zone of Karnataka.

PUTTANNA, C

ABSRTACT

A field experiment was carried out to study the effect of high density planting and nutrition on growth, yield and quality of tissue culture banana(*Musa paradisiaca*L.) cv. Grand Naine under transitional zone of Karnataka in the experimental plot of College of Agriculture, Navule, Shivamogga during the year 2015-16. The different doses of nutrients along with different planting systems were tried during this study. The results revealed that the plants provided with 75% recommended dose of nutrients along with double suckers per hill (T₅) recorded the maximum plant height (178.00 cm), pseudostem girth (64.75 cm) at the time of shooting, whereas, plants provided with 100% recommended dose of nutrients along with single sucker per hill (T₁₀) recorded the maximum leaf area (8.74 m²) and number of functional leaves (13.96) and minimum light interception (68.74%) at the time of shooting. The early shooting (227.75 days) and early maturation of bunches (103.22 days) was observed in the plants supplied with 100% recommended dose of nutrients along with single sucker per hill (T₁₀). The per cent light interception was found to be higher (86.68 %) in high densityplanting systems in comparison with conventional planting system (68.74 %) at all stages of crop growth. The maximum banana yield of 152.94 t/ha and benefit cost ratio of 1:3.01 was obtained in plants of double suckers per hill along with 75 % recommended dose of nutrients (T₅). Among the different treatments, application of 75% recommended dose of nutrients along with double suckers per hill (T₅) was found to be profitable under transitional zone of Karnataka.

October, 2016

(D. Thippesha)
Major advisor

21. Effect of Growth Regulators on Rooting of Stem Cuttings in Italian Lemon (*Citrus limon* L.)

AMBRESH

ABSTRACT

An experiment was conducted to study the effect of growth regulators on rooting of stem cuttings in Italian lemon (*Citrus limon* L.) under low cost polyhouse of the department of Horticulture, College of Agriculture, Shivamogga, during the year 2016-2017. The experiment was laid out by following Complete Randomized Design with sixteen treatments replicated thrice. The stem cuttings of Italian lemon result reveals that, the least number of days (16.33) taken for root initiation, the maximum values were recorded with respect to percentage of rooting (56.17 %), length of the longest root (22.17 cm), average length of roots per cuttings (6.94 cm), average number of roots per cuttings (22.56), fresh weight and dry weight of root (1.96 g and 0.26 g, respectively), volume of root (1.38 cc), least number of days taken for sprout initiation (8.67), more percentage of sprouting (65.00 %), number of leaves per shoot (12.00), length of sprout and shoot (10.56 cm and 15.22 cm, respectively), diameter of shoot (3.02 mm) and number of shoots (2.67) were recorded in cuttings treated with IBA 2500 ppm.

The maximum values of biochemical parameters like total chlorophyll content (1.44 mg/g of fresh weight) of leaves and C:N ratio (6.98) was observed in cuttings treated with IBA 2500 ppm. Maximum survival percentage of rooted cuttings (97.78 %) was observed in cuttings treated with IBA 2500 ppm. The application of IBA 2500 ppm resulted in maximum Cost: benefit ratio (2.46). Among the different growth regulators with different combination, application of IBA 2500 ppm was found to improve rooting and survivability of stem cuttings in Italian lemon under low cost polyhouse condition.

July, 2017

(D. Thippesha)
Major advisor

22. Standardization of Fertigation schedule for Strawberry (*Fragaria x ananassa* Duch.) under Naturally Ventilated Polyhouse

MOUNASHREE, S.

ABSTRACT

An experiment was conducted to standardize the fertigation schedule for strawberry (*Fragaria x ananassa* Duch.) at Department of Fruit Science, College of Horticulture, Mudigere, during 2016-17. The experiment was laid out in Completely Randomized Design with eight treatments in four replications. The study indicated that application of 100 % RDF through fertigation (150:100:120 kg NPK/ha) and 75 % RDF through fertigation (112.5:75:90 kg /ha) performed better among the treatments tested. The maximum plant height (28.56 cm), number of leaves (29.95), flower duration (71.95 days), total leaf chlorophyll content (2.40 mg/g of fresh weight), among the fruit parameters, minimum number of days taken for berry maturity (25.45 days), highest number of berries per plant (21.73), berry weight (17.97 g), fruit volume (18.50 cc), fruit length (4.14 cm) fruit diameter (4.14 cm), with respect to yield it recorded 390.42 g/plant, among fruit quality parameters maximum ascorbic acid content (69.27 mg/100 g), titratable acidity (0.93 %) and sugars to acid ratio (10.55), total sugar content (7.87%) and higher benefit cost ratio (2.67) was recorded in 100 % RDF through fertigation which was on par with 75 % RDF through fertigation (28.10 cm, 28.65, 70.95 days, 2.35 mg/g of fresh weight, 25.90 days, 21.49, 17.96 g, 18.38 cc, 4.10 cm, 4.12 cm, 385.96 g/plant, 68.86 mg/100gm, 0.92 %, 10.14 and 7.62 % and 2.64, respectively.) and it also given highest fertilizer use efficiency (90.10 %). Based on the above results, plants supplied with 75 per cent RDF through fertigation was performed well.

July, 2017

(D. Madaiah)
Major advisor

23. Effect of Growth Regulators on Rooting of Stem Cuttings in Barbados cherry (*MalpighiaglabraL.*)

NIRUPADI

ABSTRACT

An investigation was conducted to study the effect of growth regulators on rooting of stem cuttings in Barbados cherry (*MalpighiaglabraL.*) under low cost polyhouse at Zonal Agricultural and Horticultural Research Station, Shivamogga, during the year 2016-2017. The experiment was laid out in Complete Randomized Design with 12 treatments and three replications. The stem cuttings of Barbados cherry treated with IBA 2000 ppm recorded significantly higher values of root parameters viz., least number of days (16.67) recorded for root initiation, higher rooting (50.67 %), length of the longest root (25.00 cm), average length of roots (13.78 cm), higher number of primary and secondary roots (11.00 and 23.67), average number of roots (29.00), fresh weight and dry weight of roots (1.10 g and 0.68 g), root:shoot(0.62) and root volume (1.34 cm³). Significantly higher shoot parameters viz., least number of days taken for sprout initiation (11.00), higher sprouting (55.00 %), number of leaves per shoot (20.31), shoot length (16.60 cm), diameter of shoot (2.55 mm), number of shoots (7.49), fresh and dry weight of shoots (16.37 g and 5.24 g), leaf area per cutting (486.67cm²) were recorded in cuttings treated with IBA 2000 ppm. Significantly higher total chlorophyll content (1.33 mg/g of fresh weight) of leaves, C: N (5.82), maximum survivability of rooted cuttings (47.89 %) and Benefit: Cost (2.28) was observed in cuttings treated with IBA 2000 ppm. Among the different growth regulators and their combinations, application of IBA 2000 ppm was found superior to improve rooting and survivability of stem cuttings in Barbados cherry under low cost polyhouse condition.

July, 2017

(NagarajappaAdivappar)
Major advisor

24. Studies on the Effect of Integrated Nutrient Management on Growth, Yield and Quality in Sweet Orange (*Citrus sinensis* Osbeck) cv. Mosambi under Central Dry Zone of Karnataka

POOJA, N. U.

ABSTRACT

A field experiment entitled “Studies on the effect of Integrated Nutrient Management on growth, yield and quality in sweet orange (*Citrus sinensis* Osbeck) cv. Mosambi under central dry zone of Karnataka” was conducted in the farmer’s field of Gudihalli village, Chitradurga district during 2016-17. The experiment was laid out in randomized block design with eight treatments comprising of inorganic, organic manures (‘N’ equivalent) and bio-fertilizers replicated thrice. The treatment comprising 75% RDF + poultry manure (12.5 % N equivalent) + vermicompost (12.5 % N equivalent) and Arka Microbial Consortia (T₈) recorded the highest leaf area (34.20 cm²), current season shoot length (69.33cm), shoot girth (2.54 cm), canopy spread (3.38 m N-S, 3.43 m E-W) and yield attributes such as fruit weight (179.51 g), number of fruits per plant (347.32), yield per plant (61.98 kg), yield per hectare (17.23 t/ha) and better quality parameters viz., TSS (10.33⁰ B), lower titratable acidity (0.48 %), higher TSS/Acid ratio (21.28), Ascorbic acid (62.54 mg/100g), total sugar (8.33 %), juice recovery (50.71 %), fruit firmness (58.61 newton), shelf life (22.62 days) and lower physiological loss in weight (8.42 %) at 20 days of fruit storage. The sweet orange plants receiving T₈ recorded higher residual soil nutrients status of 365.18, 52.10, and 338.10 kg/ha N, P₂O₅ and K₂O respectively after the harvest. Besides, recorded higher microbial population of *Azotobacter* (23.14, 20.19 cfug⁻¹ soil) and PSB (25.27, 22.12 cfug⁻¹ soil) at 10⁻⁴ and 10⁻⁵ dilution respectively. The present study revealed that commercial sweet orange production under central dry zone of Karnataka by integrated application of nutrients (T₈) is more economical with increased net returns and BC ratio (Rs. 5, 82,103 ha⁻¹ & 3.09, respectively).

August, 2017

(B.S. Shivakumar)
Major advisor

25. Agro-technique Intervention for Strawberry (*Fragaria x ananassa* Duch.) on Vertical Growing System under Natural Ventilated Polyhouse

RAGHAVENDRA PRASAD

ABSTRACT

An experiment was conducted to study the Agro-technique intervention for strawberry (*Fragaria x ananassa* Duch.) on vertical growing system under low cost polyhouse of the Department of Fruit Science, College of Horticulture, Mudigere, during 2016-17. The work was initiated to standardize plant density and soilless substrates (*viz.*, perlite, vermiculite, coir pith, sphagnum moss and vermicompost) on growth, yield and quality. The experiment was laid out in split plot design with eight main treatments (M-media combinations) and two sub treatment (D-plant density) with sixteen treatment combination (M x D) replicated twice. The results revealed that among different plant density D_1 recorded highest per cent survivability (90.00) and lowest per cent mortality (10.00) whereas, media combination M_1 with perlite+vermicompost was significantly superior with respect to all traits. In interaction, M_1D_1 -perlite+vermicompost with one plant per spot recorded highest plant height (18.25 cm), number of leaves (17.17), plant spread North-South and East-West (25.12 cm and 27.97 cm respectively), number of crowns (2.57/plant), leaf area (108.12cm²), leaf area index (1.37), total dry weight (29.94 g) and total chlorophyll content (2.57mg/g of fresh weight). M_7D_1 treatment with vermiculite+coir pith+vermicompost took minimum number of days for flowering (48.32) whereas, M_1D_2 with perlite+vermicompost and two plants per spot took longest duration for flowering (72.59 days). Highest number of flowers per plant (24.90), number of fruits per plant (24.50), fruit diameter (3.98cm) and yield per plant (365.90g) were recorded in perlite+vermicompost treatment with one plant per spot. The fruit quality parameters like total soluble solids (12.68°Brix), ascorbic acid content (39.62 mg/100 g), reducing sugar (5.94 %), non-reducing sugar (1.92 %), total sugars (7.50%), sugars to acid ratio (25.12) and titratable acidity (0.97 %) were highest in M_1D_1 and resulted in highest benefit cost ratio (2.49). Treatment M_1 under D_1 plant density produced superior vegetative, reproductive and quality traits.

July, 2017

(D. Madaiah)
Major Advisor

26. Effect of Different Plant Growth Regulators on Rooting of Softwood Cuttings of Passion Fruit (*Passifloraedulis* Sims)

RESHMA, B. R.

ABSTRACT

An investigation on “Effect of growth regulators on rooting of softwood cuttings of passion fruit (*Passifloraedulis* Sims)” was carried in poly house during 2016-17 at Central Horticultural Experiment Station, Chettalli. The soft wood cuttings of passion fruit were treated in different concentrations of IBA, NAA and their combinations. The experiment was laid out in Completely Randomized Design with nine treatments replicated thrice. The result revealed that, number of days taken for root initiation (14.67), percentage of rooting(67.77 %), number of roots per rooted cutting (167.67), root volume (2.16 ml), root fresh weight (2.26 g), root dry matter(0.64 g), number of days taken for sprout initiation (7.33), percent sprouting (84.44 %), number of leaves per sprout (10.2), leaf area (107.14 cm²), shoot fresh weight (27.00 g) and shoot dry matter (9.27 g) were recorded in cuttings treated with IBA 750 ppm.

Further total sugar in cuttings was 2.55 per cent with C:N of 7.51when treated with IBA 750 ppm. The N content in the said treatment declined at a faster rate (2.03 to 0.59 %) from initial upto 90 days after planting. Maximum survival percentage of rooted cuttings (96.67 %) was also observed in the same treatment. Hence application of IBA 750 ppm was found effective in improving both rooting and as well survivability of softwood cuttings of passion fruit.

July, 2017

(B.S. Shivakumar)
Major advisor

27. Effect of Growth Regulators and Sucrose on Rooting of Stem Cuttings in Karonda (*Carissa carandas* L.)

SHWETA MARUTI SUTAGATTI

ABSTRACT

Karonda is indigenous fruit of India having tremendous Nutraceutical values and found wild throughout the country. It is usually propagated by seeds however it has got prolonged juvenility. Therefore, it is crucial to produce planting material through vegetative propagation like cuttings with different growth regulator treatment to reduce juvenile period by increasing multiplication rate. An investigation was conducted on “Effect of growth regulators and sucrose on rooting of stem cuttings in Karonda (*Carissa carandas* L.)” variety Konkani Bold at Central Horticultural Experiment Station, Chettalli, Karnataka during 2016-17. The experiment was laid out in a factorial complete randomized design in poly tunnel with two factors of stem cuttings viz. semi hardwood and hardwood cuttings and nine treatments including growth regulators and sucrose treatment. The cuttings were planted in polybags with mixture of FYM, fine sand, soil and coir pith in the ratio of 1:3:6:1 proportion. The observations were recorded on root and shoot parameters at different intervals along with assessing the survivability under nursery condition. The results revealed that hardwood cuttings treated with IBA 6000 ppm + 2000 ppm NAA performed better and took minimum number of days for root initiation (19.00 days), maximum percentage of rooted cuttings (58.8%), number of roots per rooted cuttings (5.26), root volume (2.65 cc), fresh weight of root (1.120 g) and dry weight of root (0.812g), highest percentage of cuttings sprouted (65.6 %), number of leaves per sprouted cuttings (7.06), leaf area (19.04 cm²), fresh weight of shoot (3.76 g) and shoot dry matter (2.96 g) after 90 days of planting. Also maximum per cent survivability (87.26) was recorded in hardwood cuttings treated with IBA 6000 ppm + 2000 ppm NAA 180 DAP.

July, 2017

(B.S. Shivakumar)
Major Advisor

28. Study on Rooting of Stem Cutting in Barbados Cherry (*Malpighia glabra* L.) under Hill Zone of Karnataka

ALAM KHAN SAMIM

ABSTRACT

An experiment was conducted to study on rooting of stem cutting in Barbados cherry (*Malpighia glabra* L.) under hill zone of Karnataka in the department of fruit science, College of Horticulture, Mudigere, University of Agricultural and Horticultural Sciences, Shivamogga, during the year 2017-18. The experiment was laid out in Complete Randomized Design with twelve treatments replicated thrice. The stem cutting of Barbados cherry reveals that, least number of days (21.33) for root initiation, maximum percentage of rooting (80.0), number of root (26.67), average length of root (17.85 cm), length of longest root (23.00 cm), higher number of primary and secondary root (8.83 and 20.83 respectively), maximum fresh and dry weight of root (2.91 g and 1.15 g respectively) and root volume (4.50 cc) was recorded in cutting treated with IBA 5000 ppm followed by IBA 4500 ppm over other treatments. Significantly higher shoot parameters viz., less number of days taken for first sprouting (11.70), number of sprouted cuttings (18.33), sprouting percentage (91.67), number of shoots (5.13), length of shoot (10.40 cm), number of leaves per cutting (21.93), diameter of shoot (2.30 mm) and maximum fresh and dry weight of shoot (3.01 g and 1.30 g respectively) was recorded in cutting treated with IBA 5000 ppm followed by IBA 4500 ppm over other treatments.

Significantly highest chlorophyll-a (1.26), chlorophyll -b (0.55), total chlorophyll content (1.82 mg/g of fresh weight) of leaves and C: N ratio (8.74) was observed in cuttings treated with IBA 5000 ppm. The highest benefit: cost ratio (3.20) was observed in cuttings treated with IBA 5000 ppm. Among all treatments the cuttings treated with of IBA 5000 ppm was found superior to improve rooting and shooting parameters of stem cuttings in Barbados cherry.

June, 2018

(B.S. Shivakumar)
Major Advisor

29. Effect of Growth Regulators on Rooting and Success of Stem Cuttings in Dragon Fruit [*Hylocereusundatus* (Haworth) Britton & Rose]

AYESHA SIDDIQUA

ABSTRACT

An experiment was conducted to study the effect of growth regulators on rooting of stem cuttings in Dragon fruit [*Hylocereusundatus*(Haworth) Britton & Rose] under low cost polyhouse of the Department of Horticulture, College of Agriculture, UAHS, Shivamogga, during the year 2017-18. The experiment was laid out by following Complete Randomized Design (CRD) with twelve treatments, replicated thrice. The stem cuttings of Dragon fruit treated with different plant growth regulators. The result reveals that, least number of days taken for root initiation (14.54), the maximum values recorded with respect to rooting (57.75 %), length of longest root (23.07 cm), average number of roots per cuttings (46.88), average length of roots per cuttings (12.41 cm), root volume (1.97 cc), root diameter (1.47 mm), fresh weight and dry weight of root (2.28 g and 0.67 g respectively), least number of days taken for sprout initiation (7.34), maximum percentage of sprouting (58.67 %), number of sprouts per cutting (2.43), length of the sprout and shoot (2.63 cm and 17.45 cm, respectively), shoot diameter (3.53 mm), fresh weight and dry weight of shoot (56.66 g and 11.12 g respectively). Also, the highest root to shoot ratio (0.67) were recorded in cuttings treated with IBA 7000 ppm (T₃).

The maximum values of biochemical parameters *viz.*, total chlorophyll content (1.30 mg/g of fresh weight) of leaves, total sugar content (3.20 %) and C:N ratio (7.95) was observed in cuttings treated with IBA 7000 ppm. Application of IBA 7000 and 6000 ppm resulted in maximum Benefit:cost ratio (4.0 and 4.1 respectively). From the above experiment, application of IBA 7000 and 6000 ppm was found to improve rooting and survivability (98.55 % and 97.15 % respectively) of stem cuttings in Dragon fruit and could be commercially used for propagation under low cost polyhouse condition.

July, 2018

(Thippesha, D)
Major Advisor

30. Effects of different Mulches on Water use Efficiency, Yield and Quality of Pomegranate (*PunicagranatumL.*)

LOKESHA R

ABSTRACT

A field experiment on 'Effects of different mulches on water use efficiency, yield and quality of pomegranate (*PunicagranatumL.*)' was carried out at T.Nagenally, village of Hiriyur Taluka in Chitradurga district of Karnataka during 2017-18. The experiment was laid out in a Randomized Block Design with nine types of mulches [Black polythene mulch, newspaper, arecanut husk, coconut husk, sawdust, maize stover, leaf litter, peanut hulls, pebbles and control (without mulch)]. Among the different types of mulches, black polythene mulch was found to be superior over others with respect to yield parameters viz., number of fruits (65.22/plant), fruit yield (18.97 kg/plant and 15.81 t/ha), fruit weight (311.31 g), fruit diameter (8.50 cm), fruit volume (345.93 cm³), number of arils (452.44), weight of 100 arils (36.23 g), aril thickness (8.48 mm) and aril percentage (73.66). Among the qualitative characters, the higher total soluble solids (15.28° Brix), juice content (88.86 %), total sugars (14.35 %), reducing sugars (13.72 %), sugar to acid ratio (13.81 %) and lower acidity (0.54 %) were recorded in the black polythene mulch. Treatment black polythene mulch recorded the highest irrigation water use efficiency (10.68 kg/m³), water productivity (119.0 l/kg) and high amount of water saved (28.71 %). Soil properties like mean soil temperature (25.49 °C) and mean soil moisture (19.72 %) were maximum under black polythene mulch. Similarly, black polythene mulch recorded the highest leaf nitrogen (2.87 %). From the present investigation, it was found that black polythene mulch influenced pomegranate to produce for better yield and quality fruits in dry regions where water is a scarce resource.

August, 2018

(P. Narayanaswamy)
Major Advisor

31. Influence of Liquid Plant Growth Promoting Rhizomicrobial Consortia on Growth, yield and Quality of Strawberry (*Fragaria×ananassa* Duch.) under Naturally Ventilated Polyhouse

NISARGA, G.

ABSTRACT

An experiment was conducted to study the influence of liquid plant growth promoting rhizomicrobial consortia on growth, yield and quality of strawberry (*Fragaria×ananassa* Duch.) under naturally ventilated polyhouse at the Department of Fruit Science, College of Horticulture, Mudigereduring 2017-18. The experiment was laid out in Completely Randomized Design with eleven treatments replicated thrice. Significant differences were observed among treatments tested for different parameters. The maximum

plant height (34.00 cm), number of trifoliolate leaves (34.03), plant spread for North-South and East-West directions (44.67 and 43.33 cm respectively), number of crowns (4.93plant⁻¹), leaf area (140.17 cm²) leaf area index (1.46), total dry weight (33.63 g plant⁻¹) and total chlorophyll content (2.36 mg g⁻¹ of fresh weight) was recorded in the treatment 75 % RDF through fertigation(112.5:75:90 kg ha⁻¹) + *Azotobacter*+ PSB + KSB at 250 ml acre⁻¹. Among the yield parameters, minimum number of days taken for berry maturity (25.00 days), highest number of berries per plant (21.00), berry weight (20.90 g), fruit volume (21.67 cc), fruit length (4.78 cm) fruit diameter (3.90 cm) and high yield of 387.67 g plant⁻¹ was found higher in the above treatment. Among fruit quality parameters maximum ascorbic acid content (68.83 mg/100 g), minimum titratable acidity (0.68 %) and sugars to acid ratio (12.00), total sugar content (8.20%) and higher benefit cost ratio (2.90) was also noticed in the same treatment. Based on the results the plants supplied with 75% RDF through fertigation along with *Azotobacter*, PSB and KSB in liquid form showed promising results with respect to growth, yield and quality parameters.

July, 2018

(D. Madaiah)
Major Advisor

32. Evaluation of Tamarind Genotypes for Yield and Yield Attributing Traits

POOJA, G. K.

ABSTRACT

An experiment was conducted on evaluation of tamarind genotypes for yield and yield attributing traits during 2017-18 at Forest Research Station, Govinkovi, Honnali taluk, Davangere district in Karnataka. The experiment was laid out in a randomized block design with three replications involving 16 grafted genotypes which were of 14 years old. In the present study, the genotypes showed variation in terms of tree shape, tree stature, growth habit, leaf colour, foliage arrangement, pod shape and colour of the bud, petal, pod, pulp and seed. The analysis of variance revealed significant difference with respect to tree height (K-9 : 5.08 m), stem girth (K-9: 1.01 m), pod length (K-9: 18.07 cm), pod width (D-2: 3.08 cm), pod thickness (K-10: 2.17 cm), pod circumference (S-8: 8.51 cm), pod weight (K-9: 39.90 g), pulp weight (K-9: 19.50 g), shell weight (K-9 : 8.57 g), seed weight (K-9: 9.38 g) and fibre weight (K-9: 2.45 g). Correlation studies revealed that, the pod yield per tree showed highly significant and positive association with weight of the pod, pulp, shell, fibre and seed. While, pod length, pod thickness, weight of the pod, shell, pulp, seed, fibre and number of pods per tree exhibited positive direct effect on pod yield per tree. With respect to bio-chemical character the higher acidity content was recorded in genotype S-8 (11.25 %). Among 16 genotypes, the genotype K-9 was found superior with respect to pod length, pod width, pod circumference, pod weight, pulp weight, shell weight, seed weight and fibre weight. Therefore, genotype K-9 is most promising and can be used either for further evaluation or selection as a commercial cultivar or as gene source in tamarind improvement programme.

July, 2018

(Nagarajappa Adivappar)
Major Advisor

33. Studies on the Effect of Silicon on Growth, Yield and Quality Attributes of Banana cv. Grand Naine in the Hill Zone of Karnataka

RAKESH, S. H.

ABSTRACT

An experiment was carried out to evaluate the influence of silicon on growth, yield and quality parameters of banana cv. Grand naine. The experiment was conducted in Zonal Agricultural and Horticultural Research Station, Mudigere during 2017-18 and was laid out in Randomized Complete Block Design with nine treatments. The treatment T₉ (soil application of calcium silicate @ 1,000 g per plant + foliar application of potassium silicate @ 5 ml l⁻¹ per plant at 20 days interval) showed highest plant height (174.43 cm), plant girth (15.17 cm), number of leaves (15.07), leaf length (163.40 cm), leaf breadth (75.33 cm), leaf area (1.18 m²), chlorophyll content (1.78 mg/ 100 g) and lowest days taken from shooting to maturity (67.20) and shooting to opening of bunches (18.11). T₉ showed highest yield (23.53 kg per plant and 58.83 t ha⁻¹), weight of bunch (23.53 kg), length of bunch (81.03 cm), internodal length (8.70 cm), number of hands per bunch (10.17), weight of hand (3.77 kg), number of fingers per bunch (184.50), finger weight (182.00 g), finger length (20.10 cm) and finger girth (47.33 mm). The quality parameters were best in T₉ showing highest pulp to peel ratio (3.06), green life (8.87 days), shelf life (9.93 days), days taken for ripening (7.93 days), TSS (20.30 °Brix), reducing sugars (18.57 %), non-reducing sugars (3.23 %), total sugars (21.80 %) and lowest acidity (0.09 %). Lowest soil available nitrogen (150.23 kg ha⁻¹), available phosphorous (15.20 kg ha⁻¹), available potassium (110.52 kg ha⁻¹) and highest exchangeable calcium (230.56 ppm) and available silicon (147.35 kg ha⁻¹) were observed in T₉. T₉ showed highest total nitrogen (3.97 %), phosphorous (0.34 %), potassium (3.11 %), calcium (0.98 %) and silicon (1.23 %) in leaf. Silicon had positive effect on growth, yield, quality parameters and nutrient content of banana plants.

October, 2018

(Yallesh Kumar, H. S)
Major Advisor

34. Performance of Strawberry (*Fragaria×ananassa* Duch.) as Influenced by Humic Acid and Water Soluble Fertilizers on Growth, Yield and Quality under Naturally Ventilated Polyhouse

SAMPADA C. MAREGUDDIKAR

ABSTRACT

An experiment was conducted to study the performance of strawberry (*Fragaria×ananassa* Duch.) as influenced by humic acid and water soluble fertilizers on growth, yield and quality under naturally ventilated polyhouse at Department of Fruit Science, College of Horticulture, Mudigere, during 2017-18. The experiment was laid out in Completely Randomized Design with fourteen treatments in three replications. Significant differences were observed among treatments for different parameters. The maximum plant height (33.03 cm), number of trifoliolate leaves (32.32), plant spread along North-South and East-West direction (46.61 cm and 44.50 cm respectively), number of crowns (5.75 plant⁻¹), leaf area (176.86 cm²), leaf area index (1.89), number of runners (2.02 plant⁻¹), total dry weight (30.29 g) and total chlorophyll content (2.44 mg/g of fresh weight) was recorded in treatment supplied with 100 % RDF (150:100:120 kg ha⁻¹) through soil + Humic acid (2%) + 19:19:19 (1%) + Potassium nitrate (1%) through foliar application at 45, 60 and 75 days after planting. The fruit parameters such as minimum number of days taken for berry maturity (23.30 days), highest number of berries per plant (21.99), berry weight (20.70 g), fruit volume (21.33 cc), fruit length (4.90 cm) fruit diameter (4.03 cm) found higher in the above treatment and with respect to yield it recorded 390.70 g/plant and also fruit quality parameters maximum ascorbic acid content (67.03 mg/100 g), minimum titratable acidity (0.67 %) and highest sugars to acid ratio (12.14), total sugar content (8.13 %) and higher benefit cost ratio (2.87). Based on the above results, plants supplied with 100 % RDF through soil integrated with Humic acid (2%) + 19:19:19 (1%) + potassium nitrate (1%) as a foliar application showed promising results with respect to increase in growth, yield and quality parameters of strawberry.

July, 2018

(D. Madaiah)
Major Advisor

35. Effect of Bunch Feeding and Spraying on Yield and Quality Attributes of Tissue Culture Banana cv. Ney Poovan (AB) under Hill Zone of Karnataka

SATISH B R

ABSTRACT

The field experiment was carried out at Department of Fruit Science, College of Horticulture, Mudigere, during the year 2017-18 to know the effect of bunch feeding and spraying on yield and quality attributes of tissue culture banana cv. Ney poovan. The treatments consist of bunch feeding *viz.*, urea (7.5 g), sulphate of potash (7.5 g), banana special (0.2 %), panchagavya (5 %) and amritpani (5 %) and bunch spraying with 2, 4-Dichlorophenoxyacetic acid (30 ppm) and compared with control. The experiment was laid out in a completely randomized block design with eight treatments, which were replicated thrice. Results of the present study showed that bunch feeding(urea 7.5 g and sulphate of potash 7.5 g) along with bunch spraying with 2, 4-Dichlorophenoxyacetic acid (30 ppm) recorded significantly higher bunch length (73.71 cm), mean finger length (14.92 cm), mean finger girth (38.86 mm), mean finger weight (88.60 g), mean hand weight (1.36 kg), bunch weight (15.63 kg), total yield (39.08 t/ha), green life (5.90 days), shelf life (7.52 days), lowest PLW (12.70 %), pulp weight (73.80 g), peel weight (11.00 g), pulp to peel ratio (6.78), benefit cost ratio (3.56) and nutrient content of fruits *viz.*, N (0.84 %), P (0.15 %) and K (0.92 %). Whereas, highest total soluble solids (23.80 °Brix), total sugar (21.70 %), sugar to acid ratio (89.18), lowest titratable acidity (0.24 %), and nutrient status of fruits *viz.*,Ca (0.22 %), Mg (0.10 %), S (0.47 %), Zn (19.87 ppm), B (20.52 ppm), Fe (124.51 ppm) andMn (102.46 ppm)were found in treatment with bunch feeding (sulphate of potash 7.5 g and banana special 0.2 %) along with bunch spraying with 2, 4-Dichlorophenoxyacetic acid (30 ppm).

August, 2018

(Yallesh Kumar, H. S)
Major Advisor

36. Evaluation of Macadamia (*Macadamia integrifolia* M.) Genotypes for Yield and Yield Attributing Traits

USHA, D. S.

ABSTRACT

An experiment was conducted to evaluate different macadamia genotypes (*Macadamia integrifolia* M.) for yield and yield attributing traits in the existing orchard of farmers field at Gajanur village, Shivamogga district of Karnataka during 2017-18. The experiment was laid out in randomized complete block design with three replications involving 10 genotypes. The morphological traits showed variation in terms of tree shape, tree stature, bearing habit, leaf colour, leaf tip, leaf spines, inflorescence colour and peak flowering period. The analysis of variance revealed significant difference for the traits viz., tree height (G-11: 14.10 m), stem girth (G-6 : 0.62 m), nut weight (G-5 : 10.66 g), nut diameter (G-5 : 2.99 cm), nut volume (G-5 : 11.40 cc), shell weight (G-6 : 6.53 g) shell thickness (G-4 : 3.00 mm), pericarp weight (G-9 : 3.53 g), kernel weight (G-5 : 3.17g), kernel thickness (G-5 : 12.89 mm), kernel recovery per cent (G-5 : 29.73 %), cluster length (G-5 : 10.80 cm), number of nuts per cluster (G-5 : 7.53) and nut yield per tree (G-5 : 16.16 kg). Correlation studies revealed that the nut yield per tree showed highly significant and positive association with kernel weight, kernel thickness, nut weight, cluster length and nuts per cluster. Whereas, nut weight, kernel weight, kernel thickness, cluster length and nuts per cluster exhibited positive direct effect on nut yield per tree. With respect to bio-chemical character higher protein (13.40 %) was recorded in G-5. Among 10 genotypes, G-5 was found superior with respect to nut weight, kernel weight, kernel thickness and kernel per cent. Hence, genotype G-5 found most promising and can be used either for further evaluation or as gene source in macadamia improvement programme.

August, 2018

(Nagarajappa Adivappar)
Major Advisor

37. Effect of Pre-Harvest Foliar Application of Nutrients and Plant Growth Regulators on Yield and Post-Harvest Quality of Sapota under Hill Zone of Karnataka

VANI B. KUMBAR

ABSTRACT

An experiment was conducted to study the effect of pre-harvest foliar application of nutrients and plant growth regulators on yield and post-harvest quality of sapota at Department of Fruit Science, College of Horticulture, Mudigere, during 2017-18. The experiment was laid out in randomized complete block design with fifteen treatments in three replications. The study revealed that among yield parameters the maximum fruit weight (141.63g), fruit length (21.72cm), fruit diameter (60.83mm), fruit circumference (21.72cm), fruit volume (145.59cc) and yield per tree (109.29kg) were recorded in pre-harvest spray of 2,4-D at 10ppm. The minimum per cent physiological loss in weight (14.71 and 10.00), fruit decay percentage (36.33 and 19.40%) with maximum days taken to ripening (9.87 and 25.17 days), fruit firmness (1.04 and 1.00 kg/cm²) and shelf life (11.75 and 26.67 days) was recorded in the pre-harvest spray of CaCl₂ (1%). Among treatments the maximum TSS (23.81 and 23.80 °B), total sugar (22.42 and 25.08%), reducing sugar (12.90 and 13.76%), non-reducing sugar (9.52 and 10.39%), ascorbic acid (9.64 and 9.10 mg/100g pulp) and minimum titratable acidity were recorded in pre-harvest spray of CaNO₃ (1%) during both ambient (12 days) and cold storage (28 days) respectively and the maximum benefit cost ratio (5.67) was recorded in pre-harvest spray of 2,4-D at 10 ppm.

July, 2018

(B.S. Shivakumar)
Major Advisor