

## **Efficacy of Pre and Post Emergence Herbicides on Sequential Basis for Weed Control in Soybean (*Glycine max* L.)**

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### **ABSTRACT**

A field experiment was carried out during *kharif* 2010 to study the effect of pre emergence (Diclosulam 22 g ha<sup>-1</sup>, Oxyfluorfen 0.1 kg ha<sup>-1</sup> and Chlorimuron-p-ethyl 9 g ha<sup>-1</sup>) and post emergence (Imazethapyr 75 g ha<sup>-1</sup>, Quizalofop-p-ethyl 75 g ha<sup>-1</sup>, Fenoxypyr-p-ethyl 75g ha<sup>-1</sup> and Chlorimuron-p-ethyl 9 g ha<sup>-1</sup>) herbicides either alone or in sequence along with standard check (Alachlor 2 kgha<sup>-1</sup> + 2 IC (30 & 45 DAS) + 2 HW (30 & 45 DAS) on weed control in soybean. Result revealed that sequential application of Oxyfluorfen 0.1kg ha<sup>-1</sup> fb Imazethapyr 75g ha<sup>-1</sup> and Diclosulam 22g ha<sup>-1</sup> fb Imazethapyr 75 g ha<sup>-1</sup> were quite effective in controlling weeds at 30 & 60 days as reflected in significantly lower weed count, dry matter, nutrients uptake and higher weed control index. Significantly higher soybean seed yield (27.21 and 25.96 q ha<sup>-1</sup>, respectively) was also obtained in the same treatments. The growth (total dry matter) and yield parameters (pods per plant, seed weight per plant and 100 seed weight) followed the similar trend as that of seed yield. Higher net returns and B: C ratio were recorded with the application of Oxyfluorfen 0.1 kg ha<sup>-1</sup> fb Imazethapyr 75g ha<sup>-1</sup> (Rs 41,030 ha<sup>-1</sup> and 3.18) and Diclosulam 22g ha<sup>-1</sup> fb Imazethapyr 75 g ha<sup>-1</sup> (Rs 38,384 ha<sup>-1</sup> and 3.05) than other treatments.

**Key words** :Economics, Pre and post emergence herbicides, Sequential application of herbicides, Soybean, yield.

## **Yield, Zinc Uptake and Grain Fortification of Rice as Affected by Soil and Foliar Application of Zinc**

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### **ABSTRACT**

Field experiment conducted at the agricultural college farm, Bapatla during *kharif* season of 2011-12 revealed that highest grain yield and straw yield were recorded with soil application @ 50 kg ZnSO<sub>4</sub> ha<sup>-1</sup> +foliar application of 0.5% ZnSO<sub>4</sub> at MT+ PI+ flowering stages which proved significantly superior to rest of the treatments. Similarly, highest Zinc content in grain was recorded with the same treatment and proved significantly superior to rest of the treatments, which remained at a par among themselves. Similar trend was also noticed with respect of Zinc content in brown rice as well as in polished rice as that was observed with Zinc content in grain.

**Key words** : Foliar application, Soil application, Yield, Zinc and Grain fortification, Zinc uptake.

## **Standardization of Nitrogen Dose to the Popular *Kharif* Rice (*Oryza sativa* L.) Varieties in Central Telangana Region of Andhra Pradesh**

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### **ABSTRACT**

A field experiment was conducted at Regional Agricultural Research Station, Warangal during *kharif* season of 2008 and 2009 to validate and optimize the nitrogen dose to the popular *kharif* rice varieties in Central Telangana Zone of Andhra Pradesh. Among the varieties, MTU-1001 performed superior to WGL-32100, WGL-14 and Keshava in yield attributes, yield, nitrogen uptake and net returns. WGL-32100 and WGL-14 were at par with each other. All the rice varieties responded up to 180 kg N ha<sup>-1</sup> (150 % of the recommended N) which was found to be optimum dose for the Central Telangana region of Andhra Pradesh.

**Key words :** High Yielding Variety, Net returns, Nitrogen, Rice, SPAD reading.

## **Response of Aerobic Rice to Nitrogen Doses and Weed Management Practices**

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### **ABSTRACT**

A field experiment was conducted during *kharif*, 2011 in sandy loam soils of Regional Agricultural Research Station, Warangal to find out the optimum dose of nitrogen and best weed management practice for aerobic rice. The experiment was laid out in randomised block design in factorial concept with three doses of nitrogen and four weed management treatments, replicated thrice. Among the nitrogen doses, application of 240 kg N ha<sup>-1</sup> was significantly superior to 120 kg N ha<sup>-1</sup> with respect to the number of tillers m<sup>-2</sup> yield attributes and yield of aerobic rice, but it was at par with 180 kg N ha<sup>-1</sup>. However, nitrogen uptake by the crop, net returns and returns per rupee invested were higher with 240 kg N ha<sup>-1</sup> than the other two doses of nitrogen. Pre-emergence application of pendimethalin @ 1.2 kg a.i. ha<sup>-1</sup> + post-emergence application of pyrazosulfuron ethyl @ 30 g a.i. ha<sup>-1</sup> at 25 DAS significantly reduced the density and dry weight of weeds over weedy check and mechanical weeding twice at 20 and 45 DAS which led to higher weed control efficiency, lower weed index and nitrogen removal by the weeds. The grain yield, net returns and returns per rupee invested were also higher with the application of herbicides than the mechanical weeding.

**Key words :** Aerobic rice, Nitrogen, Pendimethalin, Pyrazosulfuron ethyl and Weed index

# **Effect of Nitrogen and Weed Management Practices on Growth and Yield of Aromatic Rice under Aerobic Culture**

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## **ABSTRACT**

A field experiment was conducted at S.V. Agricultural College farm, Tirupati for two consecutive seasons of *rabi*, 2009, and 2010 on sandy clay loam soils to study the effect of varied nitrogen and weed management practices on growth parameters and yield of aromatic rice under aerobic culture. The results indicated that highest values of growth parameters *viz.*, plant height, leaf area index, number of tillers m<sup>-2</sup> and dry matter production were recorded with application of highest level of nitrogen *i.e.* 160 kg ha<sup>-1</sup>, while the lowest with lower level of nitrogen *i.e.* 100 kg ha<sup>-1</sup>. Among the weed management practices pre emergence application of oxadiargyl @ 75 g ha<sup>-1</sup> fb hand weeding at 25 DAS recorded the highest growth parameters and yield of aromatic rice, which was comparable with pre emergence application of pyrazosulfuron ethyl @ 20g a.i ha<sup>-1</sup> fb hand weeding at 25 DAS. The lowest growth and yield was associated with un-weeded check.

**Key words :** Aromatic rice, Aerobic culture, Growth parameters, Nitrogen and Weed management.

# **Genetic Variability and Character Association in Rice (*Oryza sativa* L.) Under Organic Fertilizer Management**

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## **ABSTRACT**

Estimates of genetic parameters and correlation of fourteen quantitative traits including the grain yield were studied in thirty two rice genotypes under organic fertilizer management. Characters like number of grains per panicle, grain yield per plant, number of effective tillers per plant, plant height and harvest index had high estimates of PCV, GCV and broad sense heritability. High heritability coupled with high genetic advance as per cent of mean were recorded for days to 50 % flowering, days to maturity, number of effective tillers per plant, plant height, number of grains per panicle, harvest index, kernel L/B ratio, 1000-grain weight and grain yield per plant. Grain yield per plant exhibited highly significant and positive correlation with number of grains per panicle, harvest index, panicle length, days to 50 % flowering, number of effective tillers per plant and days to maturity suggesting that the improvement in grain yield could be effective under organic fertilizer management, if selection is based on these component characters.

**Key words :** Correlation coefficient, Heritability, Organic rice, Variability.

## **Combining Ability and Heterosis For Grain Yield and its Components in Maize (*Zea mays* L.)**

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### **ABSTRACT**

Combining ability and heterosis were carried out for grain yield and its components in forty five single cross hybrids derived by crossing in a half diallel fashion along with ten diverse elite early inbreds and two checks. The material was evaluated in randomized block design with three replications at College Farm, College of Agriculture, Rajendranagar, Hyderabad during *kharif*, 1999. The general combining ability effects revealed that parents P4, P6, P7 and P10 were good general combiners for grain yield. Five single cross hybrids P3 x P6, P5 x P9, P5 x P7, P5 x P9, P7 x P9 were identified as potential cross combinations with high SCA effects for grain yield per plot. The cross P8 x P10 for number of kernel rows per ear, P6 x P9 for number of kernels per row and P5 x P9 for 100 kernel weight and grain yield per plot recorded highest standard heterosis. These hybrid combinations may be exploited for commercial cultivation after extensive multiplocation trials.

**Key words :** Combing Ability, Heterosis, Maize, Yield and yield components.

## **Confirming the F<sub>1</sub> Hybridity Using SSR Markers In Sesamum (*Sesamum indicum* L)**

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### **ABSTRACT**

A field experiment was conducted during Late summer, 2010-11 at Institute of Biotechnology , Rajendra nagar, involving two parents. In the present study, Swetha til, a high yielding popular white seeded variety and BB3-8 accession of *Sesamum mulayanum*, a wild variety resistant to powdery mildew from RARS, Jagtial were selected as parents for hybridization. F<sub>1</sub> was developed by crossing the resistant parent ( BB3-8 accession of *Sesamum mulayanum* ) and the susceptible parent (Swetha til) during late summer, 2010. Parentage of F<sub>1</sub> hybrids of sesamum was verified using microsattelite (SSR) markers. Out of 300 primers surveyed, 240 showed clear amplification pattern and 24 markers(10%)were found polymorphic between two sesamum parents (Swetha til and *Sesamum mulayanum*). These highly informative primers not only differentiated the parent genotypes but also confirmed the parentage of their true F<sub>1</sub> hybrids. Our findings revealed that SSR procedures are excellent genomic tools for parentage confirmation and hybridity determination, and would also enhance efficiency of our breeding programmes through marker assisted selection.

**Key words :**F<sub>1</sub> hybrids, Markers, Sesamum.

# **Genetic Divergence for Grain Yield in Early and Mid- Early Duration of Rice Genotypes**

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## **ABSTRACT**

Genetic divergence of sixty three rice genotypes of rice was studied for thirteen quantitative characters of different duration groups *viz.*, early and mid early duration. Genetic divergence was estimated using Mahalanobis's statistics ( $D^2$ ) and principal component analysis. Cluster analysis revealed 63 genotypes were grouped into 8 clusters. The lines chosen from the same ecogeographic region were found scattered in different clusters which indicated that genetic diversity and geographic distribution were not necessarily related. The intercluster distances were higher than the intra-cluster distance reflecting wider genetic diversity among the genotypes of different groups. The highest inter-cluster distance was observed between cluster I & VIII where as the highest intra-cluster distance was found in the cluster VIII indicated that the highly divergent types existed in these clusters. Spikelets per panicle was found to be the maximum contributors towards the total divergence. The genotypes from these clusters may be used as potential donors for future hybridization programme to develop early rice variety with good grain yield.

**Key words :** Genetic divergence, Cluster analysis, Transgressive segregants

# **Physiological and Molecular Characterization of Rice Varieties for Submergence Tolerance**

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## **ABSTRACT**

In rice crop, submergence is one of the limiting factors affecting productivity particularly in coastal irrigated ecosystem during wet season. Most of the widely cultivated rice varieties are vulnerable to flashfloods resulting in lowering the production under adverse climatic conditions. In present study, physiological traits like plant survival percentage, total shoot elongation, relative shoot elongation and SSR markers were used to characterize six widely cultivated rice varieties in comparison with swarna sub, a known submergence tolerant variety. None of the six widely cultivated varieties exhibited submergence tolerance at seedling stage reflecting absence of sub 1A, a submergence tolerant allele. Variety MTU 1064 expressed desirable traits like minimal shoot elongation under submergence and relative shoot elongation showing fast recovery after de-submergence at tillering stage for 10 days. Dendrogram generated using 86 polymorphic SSR marker data grouped two varieties (MTU 1075 and MTU 1010) into cluster I, five varieties (MTU 1061, MTU 1064, MTU 7029, Swarna sub and BPT 3291) into cluster II. Characterization of widely cultivated rice varieties for submergence tolerance with molecular markers would help in introgression of sub 1A using marker assisted selection to enhance the rice productivity under flooded condition.

**Key words :** Diversity, Molecular characterization, SSR markers, Submergence.

## **Genetic Variability, Heritability And Genetic Advance For Seed Yield And Its Components In Sesame (*Sesamum Indicum* L.)**

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### **ABSTRACT**

An Investigation Was Carried Out To Assess The Variability, Heritability And Genetic Advance For Nine Characters Viz., Days To 50% Flowering, Days To Maturity, Plant Height, Number Of Primary Branches Per Plant, Number Of Capsules Per Plant, Number Of Seeds Per Capsule, 1000-Seed Weight, Oil Content And Seed Yield Per Plant In 23 Genotypes (Five Lines, Three Testers And Fifteen Hybrids). The Results Revealed That High PCV And GCV Were Observed For The Character Seed Yield Per Plant. High Heritability Accompanied With High Genetic Advance Had Shown By The Characters Viz., Number Of Primary Branches Per Plant, Number Of Capsules Per Plant, Number Of Seeds Per Capsule, 1000-Seed Weight And Seed Yield Per Plant Indicating The Preponderance Of Additive Gene Action Which May Be Exploited Through Simple Selection Procedures.

**Key words :** Genetic Advance, Heritability, Sesame, Variability.

## **Combining Ability Studies for Quality and Yield Traits in some Restorer lines of Rice (*Oryza sativa* L)**

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### **ABSTRACT**

Twenty crosses derived from four lines and five testers were evaluated for yield and grain quality traits to assess gene action, combining ability of the parents and to identify best combinations. Productive tillers per plant, grain yield per plant, hulling recovery, milling recovery and head rice recovery were found to be under the control of non-additive gene action, while days to 50% flowering, plant height, panicle length, number of grains per panicle, test weight, kernel length, kernel width, kernel L/B ratio, kernel length after cooking (KLAC) and kernel breadth after cooking were under the control of additive gene action. Among the lines BR-827-35R was the best combiner for grain yield per plant, number of productive tillers per plant, test weight and head rice recovery and EPLT-109 for panicle length, number of grains per panicle, L/B ratio, kernel width and kernel breadth after cooking, while in testers 1005 was the best combiner for yield and many of the quality parameters. Cross EPLT-109 x IR 55838-B2-2 recorded significant SCA effects for plant height, earliness, kernel width in desirable direction, number of productive tillers, number of grains per panicle grain yield per plant, kernel length after cooking, L/B ratio and kernel elongation ratio. BR-827-35R x IR 63870-123 for earliness, plant height, productive tillers per plant, test weight, head rice recovery, kernel length after cooking and kernel breadth after cooking.

**Key words :** Combining ability, Gene action, Grain quality.

## Gene Action and Combining Ability Studies for Yield and Yield Attributes in Single Cross Hybrids of Maize (*Zea mays* L.)

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### ABSTRACT

The studies on gene action and combining ability using ten inbreds for grain yield and its components in maize through diallel analysis revealed that the components due to *sca* variance ( $\delta^2sca$ ) were higher than *gca* variance ( $\delta^2gca$ ) in all the characters and also the ratio  $\delta^2gca$  to  $\delta^2sca$  was less than unity, which indicated the preponderance of non-additive gene action in controlling the expression of all most all the traits. Based on both *per se* and *gca* effects, the genotypes BML 7, BML 6 and CM 211 among parental lines were identified as good general combiners for yield and other yield related components *i.e* plant height, ear length, ear girth, number of kernel rows per ear, number of kernels per row, 100-kernel weight. High *per se* performance and significant *sca* effects were exhibited by two hybrids *viz.*, CM 133 × BML 7 and CM 131 × BML 6 which could be exploited in the heterosis breeding programmes.

**Key words :** Gene action, General combining ability, Maize, Specific combining ability.

## Combining Ability Analysis for Grain Yield and Quality Traits in Rice (*Oryza sativa* L.)

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### ABSTRACT

Nine divergent parents were crossed in diallel mating design without reciprocals to generate thirty six hybrids and evaluated to know the combining ability of parents and crosses. The parents JGL 11690 and JGL 1798 were identified as good general combiners for grain yield, IR 64 and MTU 1010 for kernel length and IR 64 and Erramallelu for L/B ratio with high mean and *gca* effects. Similarly, the crosses with parents of high x high *gca*, high *per se* performance and high *sca* were IR 64 x Erramallelu for kernel length and IR 64 x Erramallelu and Erramallelu x JGL 11690 for L/B ratio, which can be exploited for further genetic improvement through direct selection.

**Key words :** Combining ability, Quality, Rice, Yield.

# Stability Analysis of Rice Varieties and Their Hybrids for Yield and Yield Attributes

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## ABSTRACT

In a field experiment, 21 F<sub>1</sub> hybrids along with their seven parents were evaluated for their stability with respect to grain yield, days to 50 percent flowering, productive tillers per plant, filled grains per panicle, and 100 grain weight in three successive seasons (both wet and dry seasons of 1999 and 2000). The genotype x environment interaction was significant indicating genotype interacted considerably with environments existed. Significant pooled deviations for yield and its components indicated that the variation in performance of genotypes is entirely unpredictable. The stable performance in yield observed in certain crosses was due to involvement of parents with higher stability in yield and component characters. The stable parents are Lunisree, Tellahamsa and Erramallelu and the stable cross combinations are Tellahamsa/Lunisree, Lunisree/Erramallelu and Shiva/ Tellahamsa.

**Key words :** Rice hybrids, Rice varieties, Stability.

# Correlation and Path Analysis in Popular Rice (*Oryza sativa* L.) Varieties of India

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## ABSTRACT

Correlation and path analysis studies for eleven yield attributing characters were conducted using eighty seven varieties of rice. The association studies revealed that the genotypic correlations in general were higher than the corresponding phenotypic correlations. Single plant yield exhibited highly significant positive association with plant height, panicle length, number of grains per panicle, number of filled grains per plant, number of chaffy grains per plant, total number of grains per plant, spikelet fertility and 100-grain weight and significant negative association with days to 50% flowering. Path coefficient analysis revealed that plant height, number of productive tillers per plant, number of grains per panicle, number of filled grains per plant and 100 grain weight were five important attributes in formulating selection criterion for effective improvement of grain yield in rice varieties.

**Key words :** Correlation, Path analysis, Rice and Yield



# **Effect of Integrated Use of Organic and Inorganic Sources of Nutrients and Biofertilizers on Drymatter Production, N, P, K, S and Micronutrient Uptake in Maize – Onion Cropping System**

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## **ABSTRACT**

A field experiment was conducted in *kharif* (maize) and *rabi* (onion) during 2009-10 to study the effect of integrated use of organic and inorganic sources of nutrients and biofertilizers on yield and quality in maize-onion cropping system in Alfisols of Hyderabad. The results revealed that application of 75% RDF along with 25% N or P substituted through vermicompost or poultry manure with addition of azotobacter or phosphorus solubilising bacteria recorded the highest drymatter, N, P, K, S and micro nutrient uptake in maize grain during *kharif* season whereas experimental data on *rabi* onion grown in two different situations like fertilized and unfertilized to know the cumulative and residual effect of *kharif* maize treatments revealed that the fertilized onion produced highest drymatter, N, P, K, S and micronutrient uptake when compared to unfertilized one. With in fertilized and unfertilized onion INM treatments showed highest drymatter, N, P, K, S and micronutrient uptake compared to other treatments.

**Key words :** Drymatter, Maize, Nutrient uptake, Onion.

# **Effect of Different Organic Nutrient Sources on Growth, Yield and Quality of Okra (*Abelmoschus Esculentus* L.)**

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## **ABSTRACT**

Organic nutrient sources namely New Suryamin, Aishwarya, EM compost and Urban compost were evaluated in combination with inorganic fertilizers on plant growth, yield and quality of okra (bhendi) during *kharif*, 2011 at College Farm, ANGRAU, Rajendranagar. The treatments consisted of T<sub>1</sub> (control), T<sub>2</sub> (Inorganic NPK- 100%RDF), T<sub>3</sub> (New Suryamin @ 50 kg ha<sup>-1</sup>), T<sub>4</sub> (New Suryamin @ 25 kg ha<sup>-1</sup> + 50% RDF), T<sub>5</sub> (Aishwarya @ 120 kg ha<sup>-1</sup>), T<sub>6</sub> (Aishwarya @ 60 kg ha<sup>-1</sup> + 50% RDF), T<sub>7</sub> (EM compost @ 5 t ha<sup>-1</sup>), T<sub>8</sub> (EM compost @ 2.5 t ha<sup>-1</sup> + 50% RDF), T<sub>9</sub> (Urban Compost @ 5 t ha<sup>-1</sup>) and T<sub>10</sub> (Urban Compost @ 2.5 t ha<sup>-1</sup> + 50% RDF). Plant growth in terms of plant height, leaf area and dry matter production; fruit yield and quality in terms of ascorbic acid were studied. Initially, at vegetative phase Aishwarya @ 60 kg ha<sup>-1</sup> + 50% RDF and later at fruiting stage EM compost @ 2.5 t ha<sup>-1</sup> + 50% RDF combinations recorded highest values of plant height and leaf area. EM compost @ 2.5 t ha<sup>-1</sup> + 50% RDF combination performed best recording highest values of drymatter, yield (5.7 t ha<sup>-1</sup>) and ascorbic acid (13.67 mg per 100 g).

**Key words :** Organic nutrient sources, Okra, Quality, Yield.

## **Influence of Phosphorus Levels, FYM and PSB on Soil Physical, Physico-chemical and Biological Properties in *Bt* Cotton**

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### **ABSTRACT**

A field experiment was conducted in a clay loam soil at Agricultural College Farm, Bapatla, Andhra Pradesh to study the individual and combined effect of inorganic phosphorus, farm yard manure (FYM) and phosphorus solubilising bacteria (PSB) on soil properties using *Bt* cotton as test crop. Results revealed no significant influence of treatments on bulk density, pH, EC and CEC of soils. However, FYM treated plots recorded significant influence on OC content. Bacterial counts showed significant increase in soils treated with RDP + PSB + FYM when compared to RDP alone. The alkaline and acid phosphatase activities, though slightly high in treatments integrated with all components, were not influenced by the treatments significantly.

**Key words :** Bacterial population, Phosphatase activity, Organic carbon.

## **Assessment of Soil Quality Index of Alfisols under Integrated Nutrient Management in Rice-rice Cropping System of Southern Telangana Zone of Andhra Pradesh**

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### **ABSTRACT**

Soil quality assessment under integrated nutrient management in rice-rice cropping system in Alfisols of southern Telangana zone of Andhra Pradesh was attempted for two consecutive years during 2005-06 and 06-07. The quality of unfertilized soil was poor with soil quality index of 253 and relative soil quality index of 63% at the end of 2005. The corresponding values were 267 and 64 at the end of rabi 2006-07. It was categorized as class IV soil. The continuous application of recommended dose of fertilizers improved the soil quality index to 289 and relative soil quality index to 72% after *kharif* 2005. While these values enhanced to 297 and 73 at the end of *rabi* 2006-07. This treatment improved the soil to III category. The integrated nutrient management treatments further improved the soil quality index as well as relative soil quality index (RSQI) substantially. The soil category further improved to class II after *kharif* 2005 in response to the application of 50% recommended dose of NPK and the substitution of 50% N equivalent with FYM or glyricidia or by the application of 75% recommended dose of fertilizers and substitution of 25% N fertilizers with FYM in the *kharif* season.

**Key words :** Integrated Nutrient Management, Soil Quality Index, Alfisols.

## Interaction Effects of Entomopathogenic Fungi on Lesser Grain Borer, *Rhyzopertha dominica* (F.) in Paddy

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### ABSTRACT

The interaction effects of entomopathogenic fungi, *Beauveria bassiana*, *Metarhizium anisopliae* and *Lecanicillium lecanii* were tested against lesser grain borer, *Rhyzopertha dominica* at Post Harvest Technology Centre, Bapatla during the year 2011-12. The interactions of entomopathogenic fungi at 15 DAT, revealed that the grains treated with *Beauveria* + *Metarhizium* have recorded the highest adult mortality of 96.30% followed by *Beauveria* + *Metarhizium* + *Lecanicillium* (92.1%) when compared to *Beauveria* (89.2%), *Metarhizium* (84.6%) and *Lecanicillium* (62.2%) tested alone. At 180 DAT, *Beauveria* + *Metarhizium* + *Lecanicillium* has recorded least progeny adults and per cent weight loss of 119.7 and 17.7% followed by *Beauveria* + *Metarhizium* (122.00 and 18.8%) when compared to control (398.67 and 51.3%). Highest per cent reduction in progeny was observed with *Beauveria* + *Metarhizium* + *Lecanicillium* (69.9%) followed by *Beauveria*+ *Metarhizium* (69.40%), *Beauveria* alone (66.6%) and *Beauveria* + *Lecanicillium* (65.5%) when compared to control at 180 DAT. *Beauveria* + *Metarhizium* + *Lecanicillium* has recorded high per cent reduction in weight loss of 65.5% followed by *Beauveria* +*Metarhizium* (63.4%), *Beauveria* (61.8%) and *Beauveria*+ *Lecanicillium* (60.5%) when compared to control at 180 DAT.

**Key words :** *Beauveria bassiana*, Entomopathogenic fungi, Lesser grain borer, *Lecanicillium lecanii*, *Metarhizium anisopliae*.

## Efficacy of Certain Insecticides on Groundnut Pod bruchid, *Caryedon serratus* (Olivier) as Surface Spray on Jute Bags

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### ABSTRACT

Efficacy of different insecticides as surface spray was studied on jute bags against *C. serratus* for six months. Deltamethrin @ 30 mg a.i./m<sup>2</sup>, malathion @ 150 mg a.i./m<sup>2</sup> and spinosad @ 100, 300 and 500 mg a.i./m<sup>2</sup> caused cent per cent mortality of *C. serratus* at 24 hours after treatment. Deltamethrin and malathion found to be effective up to 180 DAT with 56.67 and 13.33 per cent mortality. Abamectin recorded 3.33 per cent mortality of *C. serratus* at 24 HAT and the mortality increased to 16.67 and 30 per cent at 30 and 60 DAT and then decreased to 16.67 and 6.67 per cent at 90 and 120 DAT. Neem @ 0.75 ppm and 1 ppm caused 53.33 and 93.33 per cent mortality of *C. serratus* respectively at 24 hours after treatment and did not show any mortality from 30 days onwards.

**Key words :** Abamectin, *Caryedon serratus*, Deltamethrin, Malathion, Spinosad.

# Quantitative Damage Caused by Pulse Beetle, *Callosobruchus chinensis* L. on Different Pulse host-grains

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## ABSTRACT

The quantitative losses in different pulse host-grains viz., bengalgram (*Cicer arietinum* L.), redgram (*Cajanus cajan* L.), blackgram (*Vigna mungo* L.), greengram (*Vigna radiata* L.) and pillipesara (*Phaseolus trilobus* L.) caused by *Callosobruchus chinensis* were estimated. The quantitative damage caused by *C. chinensis* in terms of per cent weight loss of the grain, per cent moisture gain, per cent number of grain damage and per cent weight of damaged grain increased with increase in storage period. Among all the host-grains, pillipesara has recorded significantly maximum per cent weight loss (51.55%), per cent number of grain damage (97.82%) and per cent weight of damaged grain (95.47%). The maximum per cent moisture content was also recorded in redgram (14.2%) and pillipesara (13.88%).

**Key words :** Bengalgram, Blackgram, *C. chinensis*, Greengram, Pillipesara, Redgram.

# Efficacy of Some Newer Insecticides against Pod Borer Complex on Pigeonpea

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## ABSTRACT

A field experiment was conducted at Regional Agricultural Research Station, Lam, Guntur during Kharif 2011 to evaluate the efficacy of some newer insecticides against pigeonpea pod borers, *Maruca vitrata*, *Helicoverpa armigera* and *Melanagromyza obtusa* on Pigeonpea. Among the treatments chlorantraniliprole (20 EC) @ 0.3 ml l<sup>-1</sup> and flubendiamide (480 SC) @ 0.2 ml l<sup>-1</sup> were found to be most effective against *H. armigera* and *M. vitrata* by recording highest per cent reduction in larval population, low per cent pod damage and higher yields (569.00 and 531.77 kg ha<sup>-1</sup> respectively) over untreated control (291 kg ha<sup>-1</sup>). *M. obtusa* was effectively controlled by dimethoate 30EC @ 2 ml L<sup>-1</sup> followed by quinalphos (25 EC) @ 2 ml L<sup>-1</sup>, chlorpyrifos+dichlorvos (76 EC) @ 2.5+1 ml L<sup>-1</sup> and profenophos (50 EC) @ 2 ml L<sup>-1</sup>.

**Key words :** Insecticides, *H. armigera*, *M. obtusa*, *M. vitrata*, Pigeonpea.

**Influence of Brassinosteroid (BR) and Kinetin on Drymatter  
Accumulation and Partitioning in relation to yield of chickpea (*Cicer  
arietinum* L.)  
under water stress**

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**ABSTRACT**

Two field experiments were conducted at Agricultural College Farm, Bapatla during two consecutive *rabi* seasons of 2008-09 and 2009-10 to study the influence of brassinosteroid and kinetin on dry matter accumulation and partitioning in relation to yield of chickpea under water stress. The experiment was laid out in split plot design with nine treatments and replicated four times. The results revealed that the influence of BR and Kinetin as foliar spray on dry matter partitioning was more pronounced under water stress condition compared to control. The reduction in dry matter allocation into vegetative parts was more under BR spray followed by Kinetin; indicating under stress conditions dry matter partitioning was more to reproductive parts. In case of seed yield, no water stress recorded significantly higher seed yield (31.9%) over water stress from vegetative stage. Among foliar sprays, homobrassinolide spray @ 1ppm resulted in higher seed yield (20.9%) than no spray and it was on par with kinetin spray @ 5ppm. Seed yield had significant positive correlation with root, stem, leaf and pod weight. It can be concluded that homobrassinolide spray @1ppm at initial stages of pod development would provide better dry matter partitioning resulting potential seed yield under water stress conditions in chickpea at coastal regions of Andhra Pradesh.

**Key words :** Brassinosteroid (BR), Chickpea, Kinetin, Total Drymatter partitioning, Water stress, Yield.

**Identification of Mesta Varieties through Gel electrophoresis  
of Tris-soluble Seed Proteins**

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**ABSTRACT**

A study was conducted with an objective of varietal identification by using gel electrophoresis of tris-soluble seed proteins. Nine genotypes of Mesta (*Hibiscus cannabinus* and *H. sabdariffa*) were characterized by utilizing soluble proteins from extracts of single seeds by SDS-PAGE. The specific banding patterns of total soluble seed proteins by SDS-PAGE was quite different for each of these genotypes and therefore, it was possible to identify each genotype individually indicating the usefulness of electrophoretic variation in soluble seed protein for varietal characterization.

**Key words :** Mesta, Rm, Storage protein, SDS-PAGE.

## **Effect of Delayed Harvest on Yield and Juice Quality of Promising Early Maturing Sugarcane Clones**

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### **ABSTRACT**

Five promising early sugarcane clones from yield trials were selected and evaluated along with two checks to know their tolerance to delayed harvest. Cane weight and juice quality parameters were studied from November (10<sup>th</sup> month) to March (14<sup>th</sup> month) at monthly intervals. Decline in per cent juice sucrose was observed in all the clones with increase of crop maturity *i.e.*, from November to March. The rate of decrease was low in Co C 671, 2006 T36 and Co 94008. Similar trend was observed with cane weight, whereas reducing sugars increased with increase in crop maturity. The clones Co C 671, 2006 T36, 2006 T3 and Co 94008 recorded low reducing sugars even at 14<sup>th</sup> month (March) of crop age among all test clones which indicated their tolerance to delayed harvest. Based on the results of present study it can be concluded that the early clones 2006 T36, 2006 T3 are suitable for delayed harvest along with Co C 671 and Co 94008.

**Key words :** Delayed harvest, Juice sucrose % , Reducing sugars, Sugarcane.

## **Studies on Genetic Variability, Heritability and Genetic advance of Yield and Yield components in Brinjal**

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### **ABSTRACT**

Evaluation of 84 varieties of brinjal revealed that PCV was greater than GCV for all the traits. The high values of PCV and GCV for leaf petiole length, number of flowers per cluster, days to first fruit set, per cent fruit set, days to harvest, number of fruits per cluster, number of fruits per plant, fruit length, fruit diameter, fruit length: breadth ratio, fruit pedicel thickness, weight of fruit, fruit volume and yield per plant indicated high variability among the different accessions of brinjal. High heritability coupled with high genetic advance was recorded for leaf blade length, leaf blade width, leaf petiole length, days to 50 per cent flowering, number of flowers per clusters, relative style length, days to first fruit set, fruit set percentage, days to harvest, number of fruits per cluster, number of fruits per plant, fruit length, fruit diameter, fruit pedicel length, fruit pedicel thickness, weight of fruit, fruit volume, seed weight, seed diameter and yield per plant indicating the role of additive gene action governing the inheritance of these traits and these traits can be improved through simple selection.

**Key words :** Brinjal, Genetic advance, Heritability, Variability.

## **Evaluation of Vegetable Cowpea (*Vigna unguiculata* L. Walp) Varieties For High Yield in Coastal Andhra Pradesh**

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### **ABSTRACT**

Nine vegetable cowpea varieties were evaluated during the year 2011 Kharif to identify suitable vegetable type cowpea varieties for commercial production in coastal Andhra Pradesh based on growth and yield characters. The study revealed that the variety Vellayani Local recorded highest values for all the growth components like plant height, primary branches, number of leaves and dry matter accumulation. Yield components like crop duration, pod length, pod girth, mean pod weight, seeds per pod, pod yield per plant and test weight were also recorded highest by the variety Vellayani Local showing its greater adoptability under these agro-climatic conditions.

**Key words :** Cowpea varieties, Coastal Andhra Pradesh, Pod yield, Yield components.

## **Evaluation of Seedless Grape Varieties for Raisin Making**

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### **ABSTRACT**

Physico-chemical characteristics of seven commercial seedless grape varieties were evaluated for raisin making. The raisins prepared from seven varieties recorded the berry colour greenish yellow with ovoid elongated shape and the average bunch weight ranged from 151.66 gm to 344.66 gm, average berry weight ranges 1.70 gm to 2.26 gm and the berry diameter 14.33mm to 17.66mm, total soluble solids 20.26° Brix to 23.43° Brix, Acidity 0.47% to 0.71%, Ascorbic acid 1.20 mg/100g to 1.23 mg/100g, Total sugars 18.46% to 21.42%, Reducing sugars 17.31% to 19.65% and non reducing sugars 0.49% to 1.77%. Among seven cultivars Manik Chaman followed by Thomson seedless and A18/3 were found to be superior for Raisin making.

**Key words :** Seedles grapes, Varieties

## **Principle Component Approach for Clustering the Rainfall Pattern in Visakhapatnam District**

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### **ABSTRACT**

A multivariate approach based on principle component analysis has been proposed to study the rainfall based classification of different mandals of Visakhapatnam district of Andhra Pradesh. The approach was applied to study the rainfall patterns of 42 mandals based on 25 years of rainfall data of Visakhapatnam district from 1986-2010. The district exhibits variability in monthly and mandal wise rainfall and the first six principle components explains 74.22 per cent of rainfall variability which are statistically significant. The application of this approach identified medium rainfall (862 mm-1162 mm) was the most frequent representative pattern of rainfall in all mandals of Visakhapatnam district. The analysis based on multivariate approach like principle component analysis provides useful information about the rainfall patterns that are likely to occur in different regions in different periods.

**Key words :** Coefficient of variation, Common principle components, Principle component analysis, Rainfall.

# Comparative Performance of Time Series Models on Maize in North Coastal Zone of Andhra Pradesh

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## ABSTRACT

The present study was carried out to the “*Comparative performance of time series models of area, production and productivity of maize in North coastal zone of Andhra Pradesh*”. It has been undertaken to estimate the future trends and to fit the adequate model for the future projections by 2020 AD. The study was carried for North coastal zone of Andhra Pradesh using time series data from 1971 to 2011. Different linear, non linear and time series models were fitted to the area, production and productivity of maize and the best-fitted model was chosen based on least Mean Absolute Percent Error (MAPE) value and highest R<sup>2</sup> value for future projections. The result also shows that maize area, production and productivity would be 34.75 thousand hectares, 140.75 thousand tonnes and 4048 kg ha<sup>-1</sup> respectively by 2020 AD. The conclusion from the study is that, ARIMA model indicated that there would be substantial increasing in the area, production and productivity of the maize crop in the future.

**Key words :** ARIMA, ARCH, GARCH, Exponential smoothing, Linear trend, MAPE, R<sup>2</sup>.

# Laboratory Model of Automation in Irrigation

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## ABSTRACT

Sustainability of the agricultural production is the ability of the production system to enhance productivity towards the potential and maintain it without degrading the resource bases of land and water against various odds. As there more drudgery involved in agricultural pump set as well as losses like excessive water pumping, more consumption of power etc. Present day research focuses on automation of various irrigation systems. Simple electronic circuit principles were applied in irrigation, an attempt was made to develop low cost auto irrigation based on soil moisture. The movable bed paddy field of dimensions 0.9 m X 0.9 m X 0.6 m tray is used under lab scale. The tray is filled with clay soil and at bottom of the tray a drain pipe (horizontal slotted PVC pipe 32 mm wrapped with nylon mesh) is used for removing of the water to well. Commercially available aqamon make single phase auto cut off and auto cut on circuit board fixed in a box along with moisture sensors and design of low cost automation of irrigation circuit. The volume of water removed for 15 minutes interval and also total volume of water drained was calculated.

**Key words :** Automation of irrigation, Electrical circuits, Lab model , Observation well.



# **Development and Evaluation of Modified Rubber Roll Dehusker for Enhanced Husking Efficiency of Paddy**

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## **ABSTRACT**

A laboratory experiment was conducted to study the affect of different roll angles on the husking efficiency of a rubber roll dehusker with a view to increase the husking ratio of the machine. The existing horizontal roller arrangement was modified to an oblique roller arrangement and a modified feed flow plate was incorporated in the dehusker. Provision was made for the main roller to adjust its position with an angular displacement. Paddy variety PR-114 with moisture content of  $14\pm 0.5$  percent on wet basis was selected for the study. The performance evaluation of the dehusker at different roll angles was studied. The optimum feed rate was determined and the optimum roll angle was also estimated. A comparison was made between the present existing roller arrangement and the modified oblique roller arrangement. Data was statistically analyzed to know the significant affect of the two parameters studied viz. feed rate and roll angle on husking ratio. The modified roller arrangement along with a feed flow plate significantly increased the husking ratio of the dehusker. The husking ratio was maximum (88.31%) at a roll angle of  $40^\circ$  when the feed rate was 25 kg/hr in the modified husker whereas the husking ratio was only 85.13% in the horizontal roller arrangement at the same feed rate.

**Key words :** Dehusker, Feed flow plate, Husking ratio, Paddy, Roll angle, Oblique roller arrangement.

# **Resource use efficiency and Allocative efficiency in Sugarcane cultivation in Nellore district of Andhra Pradesh**

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## **ABSTRACT**

The results, revealed that land coupled with human labour on small farms of main and ratoon, human labour on large farms of main crop, land, human labour and tractor service on large farms of ratoon, human labour on combined farms of main crop and land, human labour and tractor service on combined farms of ratoon crop contributed to the increase in yields.

**Key words :** Allocative efficiency, Resource use efficiency.

# **A Comparative Study of Supermarket and Traditional Market Supply Channels of Brinjal in Medak District of Andhra Pradesh**

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## **ABSTRACT**

The present investigation was undertaken with a view to assess the marketing system through comparing marketing costs, marketing margins, price spread, producer's share in consumer rupee and marketing efficiency of supermarket supply and traditional market supply channels of brinjal in Medak district of Andhra Pradesh. A sample of 39 growers who are supplying brinjal to supermarkets and 39 growers who are supplying brinjal to traditional markets were selected randomly. Three marketing channels were identified in the study area i.e., Supermarket supply channel I: Farmer- collection centre- distribution centre- retail outlet- consumer, Traditional markets supply channel II: Farmer-commission agent (wholesaler) - retailer-consumer and channel III: Farmer-commission agent -retailer-consumer. The results revealed that among the three marketing channels the producer's share in consumer's rupee and the value of marketing efficiency was highest in supermarket channel I compared to the other two traditional channels. Promotion of competitive agricultural markets in private and cooperative sectors is required to encourage direct marketing and contract marketing programmes that facilitate industries and large trading companies to undertake procurement of agricultural commodities directly from the farmers field and to establish effective linkages between the farm production and retail chains.

**Key words :** Comparative study, Supermarket, Traditional Market.

# **Relationship Between Profile Characteristics of farmers and their attitude towards ICTs Use**

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## **ABSTRACT**

The study revealed that majority (71.67%) of the respondents had moderately favourable attitude towards ICTs use, followed by less favourable (15.00%) and highly favourable (13.33%). The relationship between profile characteristics of farmers and their attitude towards ICTs use indicated that computed r-values of education , farming experience, information seeking behavior, extension contact , economic status, achievement motivation, scientific orientation and innovativeness were positively correlated with the attitude towards ICTs use and the relationship was found significant at 1 per cent level of probability. While age , land holding and socio-politico participation showed non-significant relationship with the attitude towards ICTs use.

**Key words :** Farmers attitude, ICTs use, Profile, Relationship.

## **Entrepreneurial Behavior of Sugarcane Farmers in North Coastal Districts of Andhra Pradesh**

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502

### **ABSTRACT**

The study conducted during 2010-2011 in north coastal districts of Andhrapradesh to know the level of entrepreneurial behaviour of sugarcane farmers by following ex-post facto research design. A total of 180 respondents comprising of small, medium and big sugarcane farmers, selected by random sampling technique. An index was developed to measure the entrepreneurial behaviour of the sugarcane farmers. The results revealed that majority of the sugarcane farmers possessed medium entrepreneurial behavior followed by high and low entrepreneurial behaviour.

**Key words :** Entrepreneurial behaviour, Sugarcane farmers.

## **Transfer of Paddy Cultivation Technology in College Development Block**

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### **ABSTRACT**

Rice is one of the staple foods, accounts for 20 % of world production. Maharashtra is located in the western part of India along the Arabian Sea. It lies between 15° 44' to 22° 6' N and 72° 36' to 80° 54' E. The total area of Maharashtra State is 307,000 square kilometres, which is 9.36% of the country. Considering the area and population, Maharashtra state is the third largest state in India. The population of the state is 80 million which is 9.47% of the country's total population. In Maharashtra rice is the second important crop of the people, which is grown over an area of 14.99 lakh hectares with an annual rough rice production of 32.37 lakh tones. The average productivity of the state is 2.01 t/ha. (Rice knowledge management portal). Technology transfer efforts at farmer's field helps in improving yield performance of paddy varieties. Present study was undertaken to demonstrate the improved paddy varieties and transfer paddy cultivation technology, to know the change in knowledge level and feedback of 90 paddy growers in College Development Block, Bhore.

**Key words :** Adoption, Knowledge, Transfer of Technology, Yield performance.

# **An Evaluative Study of Training Programmes Organized By Krishi Vigyan Kendra, Wyrā**

**M S Rao and Satyanarayana M**  
Krishi Vigyan Kendra, Wyrā, Khammam (Dist.)

## **ABSTRACT**

The study was conducted in Krishi Vigyan Kendra, Wyrā adopted villages of Khammam District with a sample size of 140 respondents selected randomly. The findings of the study revealed that there was a significant increase in the knowledge of trainees after attending the training programmes on Cotton and Paddy crops organized by KVK during 2007 – 10. The respondents suggested some of the topics should be included in the training programmes for imparting knowledge and skills.

**Key words :** K V K, Knowledge, Profile, Training Programmes

# **Relationship Between Profile Characteristics and Impact Indicators of Sugarcane Farmers**

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## **ABSTRACT**

The research study was conducted to know the relationship between selected profile characteristics of sugarcane farmers and the impact of sugarcane production technologies as perceived by sugarcane farmers in Chittoor district of Andhra Pradesh. The study revealed the selected profile characteristics like education, land holding, extension contact, trainings undergone, social participation, mass media exposure, achievement motivation, management orientation, scientific orientation and innovativeness were found to be positively significant while age and farming experience were found to be negatively significant with impact of sugarcane production technologies of sugarcane farmers. Innovativeness, Management orientation, Mass media exposure, Land holding were the major variables to explain the impact of sugarcane production technologies. The combined effect of these four variables might change the behaviour pattern of the sugarcane farmers towards achieving high economic returns and also towards perceiving the impact of technologies as better in terms of impact indicators .

**Key words :** Correlation, Profile characteristics, Sugarcane farmers.

**Evaluation of Groundnut varieties under different Nutrient management practices during *Kharif* in North Coastal Zone of Andhra Pradesh**

Ravi Jamprangi, K Tejeswara Rao, K V Ramana Murthy and S Ismail

**Key words :** Groundnut, Fertility Levels, Varieties, Yield Attributes.

**Influence of Planting Density and Nitrogen on Seed Yield of Jute (*Cochorus Olitorius* L.)**

Indulekha V P, K Mosha, G Subbaiah and P Prasuna Rani

**Key words :** Influence, Planting density, Seed yield of jute.

**Baby corn (*Zea mays* L.) Performance as Vegetable-cum-fodder in Intercropping with Legume Fodders under Different Planting Patterns.**

T Kiran Kumar and B Venkateswarlu

**Key words :** Baby corn, Intercropping, Planting patterns.

**Studies on Genetic Parameters for Yield and its Contributing Characters in Rice Hybrids and Their Parents**

P V Padmavathi , P V Satyanarayana, Lal Ahamed M, Y Ashoka Rani and V Srinivasa Rao

**Key words :** Gentic Advance, Heritability and Variability.

**Estimation of Variability Parameters For Some Quantitative Characters in Sesame (*Sesamum Indicum* L.)**

K Vijaya Kumar, P V Rama Kumar, J S V Sambamurthy, K V M Krishna Murthy and V Srinivasa Rao

**Key words :** Estimation, Parameters and Variability.

**Correlation Studies Between Available Soil and Leaf Nutrients of Rice Crop Grown in Various Mandals in Nellore district of Andhra Pradesh**

S Soma Sekhar Babu, P Venkataram Muni Reddy R V Sagar Kumar Reddy

**Key words :** Correlation coefficients, Leaf nutrients , Rice grown soils, Soil nutrients.

**The Impact of *Bt* Technology on Cotton Cultivation on Farm Economy in Warangal District of Andhra Pradesh**

V Rajendra Prasad, R Uma Reddy and D Vishnuvardhan Reddy

**Key words :** Bt technology, Cotton, Warangal.