

Effect of Integrated Weed Management Practices on Forage Yield and Quality of Lucerne (*Medicago sativa* L.)

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ABSTRACT

A field experiment was conducted to study the effect of integrated weed management practices on forage yield and quality of Lucerne (*Medicago sativa* L.) during *rabi* 2008-09. Application of imazethapyr @ 75 g a.i. ha⁻¹ at 12 DAS; sowing pure seed of lucerne fb hand weeding at 30 DAS & after each cut and salt (10%) treatment to seeds + imazethapyr @ 75 g a.i. ha⁻¹ at 12 DAS in Lucerne were found to be the best weed management practices with significantly higher green fodder, dry fodder and crude protein yields. Further, the use of herbicides viz., pendimethalin or imazethapyr was noted to be harmless for animal consumption as their residues in green fodder degraded completely by the time lucerne was harvested (68 DAS).

Key words : Crude Protein Yield, Dry fodder, Green fodder, Lucerne, Residues

Effect of Plant Density and Nitrogen Levels on Productivity and Economics of Rice Fallow Maize (*Zea mays*.L) under Zero Tillage Conditions

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ABSTRACT

A field experiment was conducted on clay loam soils of Agricultural College Farm, Bapatla during *rabi* 2009-10 and 2010-11 on maize under rice fallows. The treatments consisted of three planting densities (67000, 80000 and 100000 plants ha⁻¹) as main plots and four levels of nitrogen (120, 180, 240 and 300 kg N ha⁻¹) and were allotted to sub-plots. The experiment was laid in split-plot design and the treatments were replicated thrice. Plant growth parameters like plant height, dry matter accumulation, chlorophyll (SPAD readings) significantly influenced by both plant densities and levels of N application. Plant height and dry matter accumulation were significantly higher with 100000 plants ha⁻¹ than 67000 plants ha⁻¹ but was on a par with 80000 plants ha⁻¹. However, chlorophyll content, days to 50% tasseling and 50% silking were significantly higher at low planting density (67000 plants ha⁻¹) than higher planting densities of 80000 and 100000 plants ha⁻¹. Yield attributes (cob length, number of kernels cob⁻¹, kernel weight cob⁻¹, and shelling percentage) were significantly higher at lower planting density but kernel (79.3 and 81.7 q ha⁻¹) and stover yields (101.1 and 100.4 q ha⁻¹) were significantly higher at 100000 plants ha⁻¹ than that recorded with 67000 plants ha⁻¹ but was comparable with 80000 plants ha⁻¹. Harvest index was also higher with lower planting density of 67000 plants ha⁻¹ (46.0 and 46.1%) than that recorded with higher level of planting density (100000 plants ha⁻¹) (43.9 and 44.8%). Nutrient uptake was significantly superior with higher level of planting density but soil fertility status reduced with increase in planting density from 67000 to 100000 plants ha⁻¹. Application of N significantly increased plant height, dry matter accumulation, chlorophyll content, yield attributes, yields net returns during both the years. The maximum kernel yield was recorded with application of 300 kg N ha⁻¹ (81.3 and 85.3 q ha⁻¹) but was on par with 240 kg N ha⁻¹ (77.5 and 79.0 q ha⁻¹). HI increased with increase in level of N from 120 (43.5 and 44.0%) to 300 kg N ha⁻¹ (46.4 and 46.7%). Net returns and benefit cost ratio (BCR) higher with higher planting density in combination with 300kg N ha⁻¹.

Key words : Chlorophyll (SPAD readings), Nutrient uptake, Soil fertility status, Zero tillage.

Evaluation of Rotational system of Irrigation Vis-à-Vis Flood Irrigation in Rice (*Oryza sativa L.*) at Mudimaniyam Major of Nagarjuna Sagar Project Left Canal of Nalgonda District, Andhra Pradesh

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ABSTRACT

Onfarm demonstrations on rotational system of irrigation were studied in the farmers field pertaining to rice at upper reach of mudimaniyam major of Nagarjuna Sagar Project left canal of Nalgonda district of Andhra Pradesh during *kharif* & *rabi* seasons, 2008- 09. The upper reach farmers followed the rotational system of irrigation both in *kharif* and *rabi* seasons. The rotational system of irrigation registered 5.1% higher yield (5945 kg ha⁻¹) with 34% saving in water (952 mm) than the traditional system of flood irrigation (5650 kg ha⁻¹ and 1450 mm) during *kharif* 2008 season. Where as in *rabi* rotational system of irrigation registered 4.5% higher yield (6270 kg ha⁻¹) with 28% saving in water (1042 mm) than the traditional system of flood irrigation (6000 kg ha⁻¹ and 1450 mm). Total system economics for both *kharif* and *rabi* seasons, rotational system of irrigation earned Rs 64,600 net returns and 1.12 rupee benefit per rupee investment where as in traditional system of flood irrigation, the net returns and BC ratio were Rs 57500 and 1.02.

Key words : Flood irrigation, Rotational system of irrigation, Upper reach, Water saving.

Effect of Different Planting Pattern, Nitrogen and Weed Management Practices on Nutrient Uptake, Yield and Economics of Export Oriented Groundnut

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ABSTRACT

A Field experiments were conducted during two consecutive *rabi* seasons of 2008 and 2009 on sandy clay loam soils of wetland block of S.V. Agricultural College, Tirupati campus of ANGRAU, to develop certain agro- techniques for enhancing the productivity and quality of export oriented groundnut in Southern Agro climatic Zone of Andhra Pradesh. The experiment was laid out in a split - spit plot design replicated thrice. It consisted of three planting patterns viz., 22.5 cm x 10 cm (P₁), 30.0 cm x 10 cm (P₂) and 37.5 cm x 10 cm (P₃) as main plots, four nitrogen management practices viz., 100% N through fertiliser (N₁), 100% N through poultry manure (N₂), 50% N through fertilizer + 50% N through poultry manure (N₃) and 25% N through fertilizer + 75% N through poultry manure (N₄) as sub plots and four weed management practices viz., Two hand weeding at 20 DAS and 40 DAS (W₁), Pre-emergence application of Pendimethalin @ 1.0 kg a.i ha⁻¹ + one hand weeding at 40 DAS (W₂), Post emergence application of Quaziflofop -p-ethyl @ 54 g a.i ha⁻¹ at 20 DAS + Hand weeding at 40 DAS (W₃) and Pre-emergence application of Pendimethalin @ 1.0 kg a.i ha⁻¹+ post emergence application of Quaziflofop -p-ethyl @ 54 g a.i ha⁻¹ at 40 DAS (W₄) as sub-sub plots. The results revealed that bold kernelled (export oriented) groundnut cv. Bheema (TG-49) could be successfully grown in the southern agro-climatic zone of Andhra Pradesh, with a promising and viable package of agro techniques, comprising of sowing groundnut with planting pattern of 22.5 x10 cm, supply of 30 kg N ha⁻¹ @ 50 per cent each through fertiliser and poultry manure along with hand weeding twice at 20 and 40 DAS, for obtaining higher yield with better quality and remunerative monetary returns, without any objectionable drain on the soil productivity status.

Key words : Export oriented groundnut, Planting pattern, Nitrogen

Effect of Sequential Application of Herbicides on Weed Dynamics, Growth and Yield of Rainfed Cotton

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ABSTRACT

Field experiment was conducted during *Kharif*, 2011 at the Agricultural College Farm, Bapatla of Acharya N.G. Ranga Agricultural University to study the effect of sequential application of herbicides on weed dynamics, growth and yield of rainfed cotton. Results indicated that lower weed count and dry weight of weeds, higher weed control efficiency as well as plant height, monopodial, sympodial branches, number of bolls, seed cotton yield, net returns and benefit cost ratio were found with the farmer's practice. Among the herbicidal combinations, pre-emergence application of pendimethalin @ 1.5 kg *a.i* ha⁻¹ followed by post-emergence application of pyriithiobac @ 63 g *a.i* ha⁻¹ significantly reduced the density and dry weight of weeds and resulted in higher weed control efficiency, plant height, sympodial branches, number of bolls, seed cotton yield, net returns and benefit cost ratio.

Key words : Fenoxaprop ethyl, Pyriithiobac and benefit cost ratio, Quizalofop ethyl, Sequential application of herbicides, Weed control efficiency.

Forage Production Potential and Economics of Maize (*Zea mays*) with Legumes Intercropping under Different Method of Sowing

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ABSTRACT

A field experiment was carried out at Agricultural College Farm, Bapatla, Andhrapradesh during *kharif* 2011 to select a suitable intercrop combination for fodder maize under different methods of sowing and to study the economics of this fodder based intercropping systems. Results of the experiment indicated that the treatment combination involving maize in pairs + cowpea produced the highest tonnage of green fodder (50.1 t ha⁻¹), dry fodder (14.2 t ha⁻¹), and drymatter of 9205 kg ha⁻¹. This combination also recorded the maximum gross return (28,448Rs ha⁻¹), net return (14,783 Rs ha⁻¹), and returns per rupee investment of 2.1. Among the legumes, cowpea was found to be the best intercrop for fodder maize.

Key words : Economics, Fodder maize, Green fodder yield, Intercropping, Legumes.

Effect of Different Crop Establishment Techniques and Nutrient Doses on Growth, Yield and Economics of Rice (*Oryza sativa* L.)

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ABSTRACT

A field experiment was conducted during *kharif*, 2011 on sandy loam soils of Agricultural College Farm, Naira to find out the best crop establishment technique and the optimum nutrient dose for rice. The experiment was laid out in split-plot design with four crop establishment techniques assigned to main plots and five nutrient doses assigned to sub-plots, each replicated thrice. Distinct disparities were noticed with regard to growth parameters, yield attributes and yields of rice due to establishment techniques and nutrient doses. As regards growth stature and yield structure, significantly superior performance of rice was observed with transplanting (C_4) which was however, in parity with semi-dry system (C_1). While the grain yield was significantly higher with transplanting (C_4) which was however, in parity with semi-dry system (C_1) and drum seeding of sprouted seed (C_2). The grain yield was the lowest with broadcasting of sprouted seed (C_3). Although maximum gross returns ha^{-1} was recorded with transplanting method (C_4), the return per rupee invested was the highest with semi-dry system (C_1). Among the nutrient doses tried, maximum grain yield, net returns and B:C ratio were associated with application of the highest dose of N P K (F_5 - 140-105-95 kg N, P_2O_5 , K_2O ha^{-1}) which was however, comparable with F_4 (120-90-80 kg N, P_2O_5 , K_2O ha^{-1}).

Key words : Drum seeding, Nutrient doses, Semi-dry rice, Transplanting.

Productivity and Quality of Popcorn as Influenced by Planting Population, Fertility levels and Split Application of Nitrogen

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ABSTRACT

A field experiment was conducted to study the effect of plant population, fertility levels and application of nitrogen on productivity of popcorn (*zea mays* L.) at S. V. Agricultural College, Tirupati during *rabi* seasons of 2008 and 2009. The grain yield was higher (2596 Kg/ha) at 90x20 cm and increase was 25.5 and 22.7 per cent over 60x 20 cm. Cob length and girth, number of kernel rows cob^{-1} , number of kernel cob^{-1} , hundred grain weight, grain and stover yield, protein content, reducing sugars and total sugars increased with decrease in population and increased with increase in fertility levels upto 120-60-60 kg ha^{-1} N, P_2O_5 and K_2O .

Key words : Nitrogen, Popcorn, Population, Quality, Yield attributes, Yield.

Effect of Soil Application and Foliar Nutrition of Zinc on Yield and Grain Fortification of Rice

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ABSTRACT

A field experiment was conducted at the agricultural college farm, Bapatla on a clay loam soil during *kharif* season of 2011-12 to study the effect of different zinc treatments in improving zinc concentration in rice grain. The findings of the experiment revealed that combined application of soil as well as foliar sprays at MT, PI & flowering stages is more beneficial for realizing higher grain yields and enhancing nutrient content of rice grain.

Key words :Foliar spray, Grain fortification, Soil application, Yield, Zinc.

Performance of Semi-dry Rice as Affected by Graded Levels and Time of Application of Nitrogen

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ABSTRACT

An investigation was conducted on nitrogen management for Semi-dry Rice (*Oryza sativa* L.) at Agricultural College farm, Naira during *kharif* 2011 with four graded levels of nitrogen and five varied timings of nitrogen application. Application of 120 kg N ha⁻¹ (N₄) resulted in the highest stature of growth parameters viz., plant height, total number of tillers m⁻² and dry matter production and yield attributes viz., total number of panicles m⁻², total number of filled grains panicle⁻¹ and yield as well as the highest nitrogen uptake and was significantly superior to other graded levels of nitrogen. All the growth parameters as well as yield attributes, yield and nitrogen uptake of rice were the lowest with N₁ (60 kg N ha⁻¹). Application of nitrogen in four splits ¼ each at basal, conversion to wet, PI and flowering (T₄) recorded the highest stature of all these growth parameters, yield attributes and yield along with highest nitrogen uptake and it was at par with LCC based nitrogen application (T₃) and nitrogen application in four splits ¼ each at basal, AT, PI and flowering (T₂). From the study it can be concluded that under semi-dry situation, rice can be successfully grown with supply of 120 kg N ha⁻¹ applied in four splits ¼ each at basal, conversion to wet, PI and flowering (T₄) resulting in the highest productivity.

Key words : Growth parameters, N levels, Semi-dry rice, Time of N application, Yield nitrogen uptake

Field screening of Castor (*Ricinus communis* L.) germplasm against Botrytis grey rot

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ABSTRACT

Field trial was conducted to evaluate 160 germplasm accessions with Krathi as susceptible check and Haritha as resistant check. Germplasm accessions were sown in single row with 5m length with at 90X45cm spacing. Resistant and susceptible checks were sown after every 10 test entries. Out of 160 accessions screened, only six accessions viz., RG-2289, 2353, 2356, 2363, 3141, 3151 were exhibited resistant reaction (< 10% capsule infection).

Key words :Castor, *Botrytis ricini*, Germplasm Screening.

Identification of Stable Populations Derived By Various Population Improvement Schemes in Different Locations in Sunflower (*Helianthus Annus* L.)

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ABSTRACT

The present investigation was carried out at Regional Agricultural Research Station, Nandyal, Andhra Pradesh. The study was aimed at to find out stability of populations/characters over different locations and dates of sowing. The Morden open pollinated population was chosen for imposing population schemes like Mass selection, Bulk sib, half sib, full sib selection and selfed progeny selection schemes. In the present study environment was treated only in terms of its total effect over different locations in the same year or season and over different dates of sowing in the same location. The progenies derived through different selections i.e. mass selection, bulk selection, half-sib, full-sib, selfed progenies as well as Morden variety and MSFH-17 hybrids were enhanced over the five locations as well as over five different dates of sowing representative of late *Rabi* and early *summer* environments.

Key words : Improvement schemes, Populations derived, Stable, Sunflower.

Genetic Variability for Yield and Yield Attributing Traits in *Rabi Sorghum (Sorghum bicolor L. Moench)*

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ABSTRACT

Studies were carried out to estimate the extent of genetic variability in cultivated genotypes of *rabi* sorghum. Significant mean squares were obtained for all characters in the analysis of variance. High estimates of PCV and GCV were observed for grain yield per plant, stover yield per plant, harvest index, panicle weight, panicle length, 100-seed weight and dead heart percentage. Moderate GCV and PCV were observed for plant height and number of primaries per panicle. High heritability coupled with high genetic advance as percent of mean was observed for almost all the characters under study except for days to 50 per cent flowering.

Key words : Genetic advance, Heritability, Variability.

Combining ability studies for yield and yield components in rice *(Oryza sativa L.)*

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ABSTRACT

Twenty crosses from four lines and five testers along with parents were evaluated in line x tester design for different characters in rice. Predominance of additive gene action was observed for the characters *viz.*, days to 50% flowering, plant height (cm) and test weight (g). Number of ear bearing tillers per plant, panicle length (cm) and grain yield per plant (g) was controlled by non-additive gene action. Among the parents Sudu Hondarawala, IR 64 and PLA 1100 found to be good general combiners for grain yield. The crosses Sinna Sivappu x PLA 1100, PTB 33 x MTU 1075 and Sudu Hondarawala x MTU 7029 were recorded high *sca* effects for grain yield (g).

Key words : Combining ability and L x T analysis.

Variability Studies in Sesame (*Sesamum indicum* L.)

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ABSTRACT

An investigation was carried out to assess the variability, heritability and genetic advance for 10 characters viz., days to initial flowering, days to 50% flowering, days to maturity, Plant height, number branches / plant, number capsules / plant, 1000 seed weight (g), number of seeds/ capsules, oil content (%) and seed yield / plant in 50 sesame genotypes during rabi 2011 at Agricultural College, Naira, Srikakulam District during rabi 2011. High PCV and GCV were observed for number of branches / plant and seed yield / plant. High heritability couple with high genetic advance was observed for characters number of branches / plant, number of capsules / plant, number seeds/ capsule and seed yield/ plant, indicating the additive gene effect. High heritability and low genetic advance was observed for characters days to initial flowering, days to 50% flowering, days to maturity, plant height (cm) and 1000 seed weight indicating the role of non- additive gene action in thier inheritance.

Key words : Sesame, Variability studies

Correlation and Path Analysis Studies in Maize (*Zea mays* L.)

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ABSTRACT

The present investigation was carried out to study the correlation and path analysis for seven quantitative characters in thirty-six crosses along with twelve parents. Single plant yield exhibited highly significant positive correlation with ear girth, ear length, test-weight and plant height which were in turn significantly correlated among themselves revealing that due emphasis may be laid for these characters to increase yield during selection process. Path coefficient analysis revealed that ear length, ear girth, test-weight and plant height had direct effect on yield.

Key words : Correlation, Maize, Path analysis and Yield

Influence of dates of sowing on genetic parameters for yield and its contributing characters in groundnut (*Arachis hypogaea* L.)

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ABSTRACT

Fifty groundnut genotypes were evaluated in three different environments represented by three dates of sowing. Phenotypic co-efficient of variation, genotypic co-efficient of variation, heritability and genetic advance as per cent of mean were computed for yield and yield contributing characters. Comparison of GCV values across environments indicated that for the characters, plant height, kernel yield per plant, pod yield per plant, harvest index, variation was high in the material studied. For these traits, heritability values were moderate to high which was reflected in moderate to high GAM values. For shelling and sound mature kernel percentage, GCV values were moderate with high heritability estimates resulting in moderate to high GAM values. Days to 50 per cent flowering had low GCV but heritability was high in all three environments with moderate genetic gain. For SCMR and SLA, the traits that confer water-use efficiency, GCV values were low with moderate heritability estimates with low genetic gain in the first two environments but in the third environment (August first fortnight sowing), GCV was higher than the first two environments with high heritability and moderate genetic gain from which it can be inferred that the selection for these traits would be more fruitful in this environment. Oil and protein contents seem to be more influenced by non additive genetic effects as both GCV and GAM were low though the heritability was high.

Key words : Heritability, Variability, Genetic advance, Groundnut.

Studies of Genetic Variability in Yield and Yield Contributing Traits of Foxtail Millet

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ABSTRACT

Foxtail millet (*Setaria italica* L.) is an important crop of the semi-arid tropics in India. The present study was conducted to evaluate the foxtail millet genotypes to assess the magnitude of variability and to understand the heritable component of variation present in the biometrical characters. Significant variation was recorded among the genotypes for various yield and yield contributing traits studied. High values for phenotypic co-efficient (PCV) and genotypic co-efficient (GCV) was recorded for grain weight followed by panicle weight and straw yield. High heritability and high genetic advance was recorded for panicle weight, panicle length, number of productive tillers per plants, grain weight and straw yield indicating that these characters were controlled by additive gene effects. Selection based on these characters would be effective for future foxtail millet crop improvement program. Moderate heritability coupled with moderate genetic advance (as percent of mean) was observed for chlorophyll content (SPAD). Threshing percentage showed low heritability as well as low genetic advance.

Key words : Foxtail millet, Genetic advance, Heritability, Variability.

Assessment of Genetic Variability and Genetic Parameters for Grain Yield and Its Component Characters in Rice (*Oryza sativa* L.)

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ABSTRACT

Twenty one rice genotypes were evaluated during *rabi*, 2011 for eleven quantitative and kernel traits to examine the nature and magnitude of variability, heritability (broad sense) and genetic advance. Analysis of variance revealed significant differences among twenty one genotypes for all the characters. Grain yield per plant and total number of productive tillers per plant exhibited high estimates of genotypic coefficient of variation and phenotypic coefficient of variation. Broad sense heritability was highest for kernel L/B ratio followed by number of grains per panicle, grain yield per plant and harvest index, which suggested that these traits would respond to selection owing to their high genetic variability and transmissibility. Maximum genetic advance as per cent of mean was recorded for grain yield per plant with high value of heritability.

Key words : Genetic advance, Rice, Variability, heritability, Yield.

Molecular Characterization of Maize (*Zea mays* L.) Genotypes for Iron Content

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ABSTRACT

The present study was conceptualized and executed for screening maize genotypes for iron content and identification of SSR markers closely associated with micronutrient content in maize genotypes. Fourteen maize genotypes were obtained from the Maize Research Centre, ARI, ANGRAU, Hyderabad. The samples analyzed for grain iron content by Atomic Absorption Spectrophotometry, were grouped under high, medium and low categories. The iron content of the maize genotypes ranged from 9.81 to 80.47 mg / kg of grain and four genotypes had high iron content, six genotypes possessed medium iron content and four genotypes exhibited low iron content. A total of eighty SSR markers distributed over the ten chromosomes of maize were used for identifying the primers closely linked with the genomic regions associated with micronutrient content. Among the eighty markers used, only fifty markers showed amplified bands, out of which, the markers UMC1982, UMC1353, UMC1008 and UMC1349 showed polymorphism between four maize genotypes having high iron and the three genotypes with low iron content. These four markers were used to confirm whether polymorphism between fourteen maize genotypes was due to iron content. Definite trend of polymorphism that could be attributable to high and low iron content in the grains was exhibited by the SSR marker, UMC1008, located on chromosome 4.

Key words : Iron content, Maize, Molecular markers, Polymorphism.

Genetic Studies on Morphophysiological Traits With Elite Inbreds of Maize

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ABSTRACT

A 6 x 6 diallel analysis, generation mean analysis, path analysis and correlation analysis were carried out in maize with elite inbred lines in Delhi and Dharwad during 2010 and 2011. The results revealed that for most of the characters, magnitude of additive variance was more than that of dominance variance in both the locations. This was also reflected in degree of dominance being far below 1.0. However, for grain yield, dominance component was more important. Further, for most of the characters, additive variance was higher in *rabi* season compared to *kharif*. As such these findings are also reflected in higher heritabilities of these traits in *rabi*. The characters that had higher heritabilities (narrow sense) were 50% silking and ASI. The highest negative midparent (MPH) and better parent heterosis (BPH) were observed for ASI. This was more negative in *rabi* (> - 29.0 %). Highest positive heterosis was observed for grain yield in all three seasons.

Key words : Genetics, Heritability, Heterosis, Maize, Morpho-physiological traits.

Correlation and Path Coefficient Analysis for yield and physiological attributes in Rice (*Oryza sativa* L.) under Saline Soil Conditions

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ABSTRACT

This study performed to determine the association between yield and yield components in eight rice genotypes (*Oryza sativa* L.) under saline conditions. The results indicated that the traits panicle length, number of filled grains per panicle and panicle weight correlated significantly with grain yield, while grain yield was negatively correlated with Na⁺/K⁺ ratio and Standard Evaluation Score for visual salt injury. Path coefficient analysis revealed that grain yield was associated with number of tillers per plant, number of filled grains per panicle and harvest index with positive direct effects under stressed situation. Information obtained in this study revealed that the traits, number of filled grains per panicle and number of tillers per plant could be used as selection criteria for improvement of grain yield under saline soil conditions.

Key words : Correlation, Path coefficient analysis, Rice, Saline soils.

Association and Path analysis between Yield and its Contributing traits in F₂ Generation of Aromatic Rice

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ABSTRACT

A field experiment was conducted during kharif, 2010 at Rice section, ARI, Rajendranagar, involving 7 F₂ populations to study the correlations, direct and indirect effects of yield components in aromatic rice. The correlation analysis indicated that grain yield was significantly associated with days to 50% flowering, plant height, panicle length, 1000-grain weight, kernel length and kernel breadth. Critical analysis of the results by path analysis revealed that the characters, kernel breadth followed by 1000-grain weight, panicle length and number of productive tillers are directly influencing the grain yield. A critical study on correlation and path analysis in each cross in F₂ generation revealed that selection on important yield components viz., number of productive tillers per plant, panicle length and 1000-grain weight and the quality trait, kernel length was suggested to bring out further improvement in aromatic rice.

Key words : Aromatic Rice, Correlation, F₂ Generation, Path analysis.

Effect of Integrated Use of Organic and Inorganic Sources of Nutrients and Biofertilizers on Soil Enzyme Activities in Maize – Onion Cropping System

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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 enzyme activities 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 higher activities of soil urease, dehydrogenase and acid and alkaline phosphatases. However in *rabi* onion grown in two different situations like fertilized and unfertilized, the results revealed that the fertilized onion recorded maximum activity of enzymes when compared to unfertilized one. Within fertilized and unfertilized onion INM treatments showed highest activity of enzymes compared to other treatments.

Key words : Dehydrogenase, Maize, Onion, Urease and Phosphotase enzyme activities

Assessment of Ground Water Quality in Paddy-Sugarcane Areas of West Godavari District, Andhra Pradesh

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ABSTRACT

An investigation was carried out during months of May, December and March, 2006–07 to assess the ground water quality in paddy and sugarcane growing areas of West Godavari district. Three hundred water samples i.e., 150 samples each in pre and post monsoon seasons were collected from tube wells, open wells and hand pumps and were analysed for various chemical properties . In pre-monsoon season 54.66 per cent samples were found to be marginally saline, while 16.33 per cent were good for irrigation. 8.66, 4.66, 9.33, 4.0 and 2.66 per cent of samples were categorized under saline, high SAR, marginally alkali, alkali and high alkali waters, respectively. The nitrate-nitrogen content in these waters was safe in 26 per cent, moderately safe in 55 per cent and unsafe in 19 per cent of water samples respectively. In post-monsoon season 57.50 per cent of samples were good and 42.50 were marginally saline for irrigation. The nitrate-nitrogen content in 4.37 per cent samples were safe, 41.87 percent of samples were moderately safe and 53.76 per cent samples were unsafe for irrigation/drinking.

Key words : Classification of Ground Waters, Paddy-Sugarcane growing areas, Water Quality.

Mapping of Nutrient Status of Rice Soils in Guntur District (Andhra Pradesh) Using GIS Techniques

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Spatial distribution of nitrogen (N), phosphorus (P), potassium (K) and organic carbon (OC) was studied by collecting geo-referenced surface (1-15 cm) and sub surface (15-30 cm) samples from 96 sites representing intensively rice growing soils using global positioning system (GPS) and mapped in GIS environment. These samples were analyzed for physical, physico-chemical and chemical properties of the soils. The content of available nitrogen varied from 120 to 450 kg ha⁻¹, available P from 13.8 to 62.6 kg ha⁻¹, available K from 100 to 583 kg ha⁻¹ and organic carbon varied from low to medium. The maps of various nutrient elements clearly indicated the specific locations, where deficiency of nutrients constrained crop production.

Key words : GPS and GIS, Mapping.

Delineation of Leaf Nutrient Status of Maize Crop Grown in Alfisols, Inceptisols and Vertisols in Chittoor District of Andhra Pradesh

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ABSTRACT

A survey was undertaken to delineate the leaf nutrient status of maize crop grown in Alfisols, Inceptisols and Vertisols in Chittoor district of Andhra Pradesh. The analysis of the index leaf samples revealed that the nitrogen, phosphorous, potassium, calcium, magnesium and sulphur contents were in sufficient range. Further, iron, manganese, copper and boron contents in the index leaf samples were also found to be sufficient whereas zinc content was found to be low to sufficient.

Key words : Correlation, Leaf nutrients, Maize grown soils, Soil orders.

Delineation of Leaf Nutrient Status of Rice Crop Grown in Various Mandals in Nellore District of Andhra Pradesh

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ABSTRACT

A survey was undertaken to delineate the leaf nutrient status of rice crop grown in various mandals in Nellore district of Andhra Pradesh. The analysis of the rice index leaf samples revealed that the nitrogen and phosphorus contents were found to be low to sufficient, potassium content was found to be low to high, while calcium, magnesium and sulphur contents were found to be sufficient to high in all the rice index leaf samples. Further, the iron, manganese, zinc and copper contents in the rice index leaf samples were also found to be sufficient.

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

Effect of Different Organic Nutrient Sources on Soil Properties

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ABSTRACT

A field experiment was conducted in *kharif*, 2011 to evaluate the effect of organic and inorganic nutrient sources on soil nutrient status with okra as test crop on medium textured soil. The experiment was laid out in RBD with treatments including organic fertilisers namely Aishwarya and New Suryamin; and organic manures namely EM compost and Urban compost. The treatments consisted of T₁ (control), T₂ (Inorganic NPK 120-60-60), T₃ (New Suryamin @ 50 kg ha⁻¹), T₄ (New Suryamin @ 25 kg ha⁻¹ + 50% RDF), T₅ (Aishwarya @ 120 kg ha⁻¹), T₆ (Aishwarya @ 60 kg ha⁻¹ + 50% RDF), T₇ (EM compost @ 5 t ha⁻¹), T₈ (EM compost @ 2.5 t ha⁻¹ + 50% RDF), T₉ (Urban Compost @ 5 t ha⁻¹) and T₁₀ (Urban Compost @ 2.5 t ha⁻¹ + 50% RDF). Nutrient status at 30 and 90 DAS was high in the treatments with organic and inorganic combinations, with values of highest N recorded in T₁₀ (Urban compost + Inorganic NPK) and highest P and K in T₆ (Aishwarya + Inorganic NPK). Soil organic carbon was recorded highest by Urban compost (T₉) with 1.63 and 1.21% at 30 and 90 DAS, respectively and as a consequence microbial load was also high. The study infers that urban compost could be utilized as organic nutrient source in cultivation of vegetable crops, particularly as a component of integrated nutrient management.

Key words : Bacterial populations, Organic fertilisers, Soil nutrient status, Urban compost.

Effect of Irrigation Methods and Fertigation on Yield and Quality of Tomato

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ABSTRACT

Field experiments was conducted during *rabi* seasons of 2007 and 2008 to study the effect of methods of irrigation and fertilizer application on the dry matter, 100 fruit weight, fruit yield, quality and economics in tomato in *Alfisols* of Hyderabad. The experiments was conducted in R.B.D with treatment combination involving three methods of irrigation and fertigation application replicated seven times. Treatments were ridge and furrow method of irrigation with soil application of recommended dose of fertilizers (T₁), drip irrigation at three days interval with soil application of recommended dose of fertilizers (T₂) and drip irrigation at three days interval with fertigation of recommended dose of N and K at 12 days interval (T₃). The pooled results revealed that drip irrigation with fertigation of recommended dose of N and K at 12 days interval (T₃) gave significantly higher dry matter production (5.9 t ha⁻¹), 100 fruit weight (8.4 kg), fruit yield (33.3 t ha⁻¹), ascorbic acid (19.3 mg 100 g⁻¹), reducing sugars (2.7%), non-reducing sugars (1.35%), total soluble solids (4.9%), lycopene (30 mg 100 g⁻¹), acidity (0.61%) and pulp ratio (0.94) followed by drip irrigation with soil application of RDF and ridge and furrow method of irrigation with soil application of RDF in that order. Maximum net returns (Rs. 81,645 ha⁻¹) and B: C ratio (2.46) was recorded in drip irrigation with fertigation of recommended dose of N and K and least under ridge and furrow method of irrigation with soil application of RDF (Rs. 48, 235 ha⁻¹ and 1.58 respectively).

Key words : Fertigation, Irrigation methods, Tomato, Yield and quality parameters.

Reaction of different in Bidi Tobacco genotypes against Tobacco Mosaic Virus in Northern Karnataka

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ABSTRACT

Tobacco mosaic virus (TMV) which causes mosaic disease in tobacco is one of the most destructive plant viruses in the world. Management through chemicals is often uneconomical and highly variable, hence an attempt was made to assess the reaction of important bidi tobacco genotypes. A total of 117 entries belonging to advanced, initial hybrid and varietal trial material and 190 germplasm lines were evaluated for TMV resistance under natural unprotected conditions. Among these, fourteen lines from advanced trial, four lines from initial trial, eight lines from hybrid trial and eleven from genetic stock recorded moderate infection under field conditions.

Key words : Bidi tobacco, Germplasm, Hybrid, Tobacco mosaic virus, Varietal trials.

Efficacy of Different Insecticides Against Spotted Pod Borer, *Maruca Vitrata* (Geyer) in Rice Fallow Blackgram

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ABSTRACT

A field experiment was conducted during *rabi* 2009-10, to evaluate the field efficacy of newer insecticides against spotted pod borer in rice fallow blackgram. The data revealed that there was significant impact of sprayed new insecticide treatments on larval population, flower damage and pod damage due to spotted pod borer and grain yield at harvest. Spinosad was found to be the most effective insecticide among all the insecticides against larvae of spotted pod borer followed by emamectin benzoate and they were statistically on par with each other.

Key words : Pest management, Spotted pod borer, *Maruca vitrata*, Newer insecticides

Determination of Mechanism of Insecticide Resistance Through Enzyme Estimation in Tobacco Caterpillar, *Spodoptera litura* (Fab) in Cotton

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ABSTRACT

The activity of acetylcholine esterase (AChE) in the third instar larvae of *Spodoptera litura* was 0.994 ± 0.06 μ moles / min / ml of enzyme in Guntur strain while it was 0.742 ± 0.03 μ moles / min / ml of enzyme in Prakasam strain. However the activity of carboxylesterase (CE) was 274.99 ± 4.41 n moles / min / mg protein in Guntur strain while it was 227.48 ± 3.95 n moles / min / mg protein in Prakasam strain. The glutathione S- tranferase (GST) activity was 0.047 ± 0.01 μ moles / min / mg protein in Guntur strain while it was 0.039 ± 0.01 μ moles / min / mg protein in Prakasam strain. Higher levels of these three enzyme assays were found in Guntur strain compared to Prakasam strain of *S. litura*.

Key words : Acetylcholine esterase (AChE), Carboxylesterase (CE), Glutathione S- tranferase (GST), *Spodoptera litura*.

Feeding Capacity of Adults and Grubs of Different Morphotypes of *Cheilomenes sexmaculata* Fab.

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ABSTRACT

Grubs and adults of *Cheilomenes sexmaculata* Fab. were important predators of aphids attacking the cowpea crop. Feeding potential of both adults and grubs were studied on cowpea aphid, *Aphis craccivora* Koch. The first, second, third and fourth instars of the grub of all the morphotypes of *C. sexmaculata* were found to consume 7.0 ± 1.07 , 18.85 ± 1.20 , 70.0 ± 1.74 and 173.0 ± 3.53 ; 6.42 ± 0.57 , 15.28 ± 0.91 , 71.42 ± 1.32 and 178.0 ± 3.66 ; 5.85 ± 0.59 , 12.14 ± 0.67 , 70.28 ± 2.77 and 177.7 ± 2.37 ; 6.14 ± 0.26 , 11.8 ± 0.73 , 77.7 ± 1.86 and 191.71 ± 2.76 and 5.57 ± 0.48 , 13.0 ± 0.61 , 75.57 ± 0.89 and 193.57 ± 3.82 aphids respectively. Adults also consumed the aphids to a greater extent when compared to the immature stages of the *C. sexmaculata*. The average predatory potential of adults of all morphotypes was 579.71 ± 27.3 , 599.3 ± 33.3 , 563.71 ± 30.9 , 598.14 ± 23.06 and 588.4 ± 23.10 aphids respectively.

Key words : *Aphis craccivora*, *Cheilomenes sexmaculata*, Coccinellid, Feeding potential.

Rapid Chemical tests for Identification and Grouping of Rice (*Oryza sativa* L.) Genotypes

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ABSTRACT

Characterization of varieties assumes greater importance with the implementation of Protection of Plant Varieties and Farmer's Right Act (2001) to ensure quality seed. Forty genotypes of rice were subjected to chemical tests using phenol, modified phenol, NaOH, GA₃ and 2, 4-D. Though no individual chemical test was able to distinguish all the genotypes, different chemical tests in conjunction were useful in identification of varieties. For phenol tests the seeds were soaked in distilled water for 18 hrs, then placed in Petri-plates containing filter paper moistened with 5ml of 1% phenol solution and for modified phenol test seeds were soaked in 0.5% copper sulphate (CuSO₄) for 18 hrs instead of distilled water. Based on the colour of the seed coat, genotypes were grouped as dark brown, (18) light brown (16) and no reaction (6). Where as in modified phenol test genotypes were grouped as black (1), dark brown (18) light brown (15) and no reaction (6). For NaOH test seeds were soaked in 2% NaOH solution for 1 hour and then the solution was decanted. Based on the colour of the solution, genotypes were grouped as yellow (7) and light yellow (33). The germination paper towels soaked in 25ppm GA₃ and 5ppm 2, 4-D were used to test the seedling response of these genotypes. Based on the response to GA₃ the genotypes were grouped as high (5) medium (30) and low (5) and based on their sensitivity to 2, 4-D the genotypes were grouped as highly, (4) moderately (4) and least (6) sensitive.

Key words : 2, 4-Dichlorophenoxyacetic acid, Gibberellic acid, Modified Phenol, Phenol, Rice, Seed keys, Sodium hydroxide

Correlation and Path Coefficient Analysis in Cut Flower Anthurium

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ABSTRACT

Genotypic and phenotypic correlation coefficients and path coefficient analysis were carried out in the anthurium using 14 cultivars for 22 characters. The estimate of genotypic correlation coefficient was higher than the corresponding phenotypic correlation coefficient both for vegetative and floral characters. Among the vegetative characters, total number of leaves per plant had high positive direct effect on the number of suckers per plant. Path-coefficient analysis at genotypic level revealed that total number of leaves per plant and leaf fresh weight had a high positive direct effect on sucker production. Among the floral characters, spadix length, spadix diameter, peduncle thickness, peduncle length, spathe length and spathe width had a positive association with number of flowers per plant. In path analysis, peduncle thickness, weeks taken for vegetative growth, days to flower opening and spathe width had positive direct effects on flower yield per plant. Hence, a selection index comprising the characters like total number of leaves per plant, leaf fresh weight, juvenile phase, plant spread on sucker yield and characters like peduncle thickness, weeks taken for vegetative growth, days to flower opening and spathe width on flower yield can be considered highly dependable and reliable characters for selection to improve yield in anthurium. The trait number of flowers per plant was significantly and negatively correlated with number of suckers per plant.

Key words : Anthurium, Genotypic correlation coefficient, Path- coefficient analysis, Phenotypic correlation coefficient.

Field Screening of Brinjal (*Solanum melongena* L.) Germplasm for Desirable Traits by the Use of Augmented Design

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ABSTRACT

Eighty Four Brinjal accessions were grown in augmented randomized complete block design to screen for superior cultivars with desirable traits. The desirable traits were plant height(cm), number of branches per plant, Days to 50% flowering, number of flowers per cluster, relative style length, Days to first fruit set, fruit set percentage, days to harvest, number of fruits per plant, fruit length (cm), weight of fruit (g), seed weight (g), fruit yield per plant (g) and yield (tha^{-1}). Four standard varieties were used, namely Bhagyamati, Gulabi, Shyamala and Arka Kesav. Accessions that were superior to the standard types in more than one trait were EC 386589, IC 112741, IC 112818, IC 427008 and IC 345747. These accessions could be selected and put into crossing blocks to combine the traits into one genotype. The present results show that augmented design is an efficient method in the identification of superior brinjal genotypes with desirable traits.

Key words : Augmented design, Brinjal, Germplasm, Morphological characters, Yield

Laboratory Model of Automation in Agricultural Drainage

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ABSTRACT

Research in water management in the developed countries is progressing towards real time irrigation, decision support systems and expert systems. As the farm holdings are not large enough in India and also high cost of automation cannot be realized, low cost auto drainage, if developed and can be made availability to the farmers serves as a tool comfortable in view of the frequent power cuts and less power available in his farm. Based on simple electronic circuit principles of agricultural drainage, an attempt has been made to develop low cost auto irrigation and drainage based on soil moisture level or timer. Commercially available aqamon make single phase auto cut off and auto cut on circuit board fixed in a box along with sensors. This aqamon reversible circuit is used for agricultural drainage. The sensors in the auto drainage were kept at 0.2 m and 0.7 m height in the drainage well, if water level reaches beyond the cut off depth i.e.0.2 m from the bottom of the drainage well, the motor stops and motor starts at a depth 0.7 m from the bottom of the drainage wall. For the design of low cost automatic drainage circuit and it cost was Rs.350/- The device tested in the lab conditions almost similar to the actual field conditions.

Key words : Auto agricultural drainage, Drainage well, Electrical circuits and Lab model.

Optimization of Process Parameters for Palmyrah Jaggery Production

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ABSTRACT

Palmyra palm (*Borassus flabellifer* L.) is one of the most important and an alternate source for production of jaggery. Palmyra palm jaggery is used in the preparation of ayurvedic/traditional medicines, which will reduce the chances of lung cancer, diabetes and obesity. Processing parameters like lime quantity used to prevent fermentation of neera, and its heating temperature and time were not specific leading to low quality product. In the present study, a central composite rotatable design was used to optimize the process parameters like lime, heating temperature and heating time, developed mathematical models and response surfaces for estimation of total sugars, ash and moisture content of palmyra palm jaggery. The best combination obtained to get the good quality solid palmyrah jaggery was at lime 2.1%, temperature 121°C and time 174 min. Total sugars were increased with increase in temperature and time, but lime has less effect. Ash content was more affected with lime, but less with the time and temperature. Moisture content was more affected by temperature and less with time and lime content. The jaggery solid has proximate composition of 8.5% moisture content, 0.17% fat, 0.98% protein, 4.5% ash and 90.6% carbohydrates. Sensory evaluation of jaggery revealed that the jaggery produced at 2.1% lime, 111°C temperature and 126 min time, has superior quality.

Key words : Central composite rotatable design , Palmyra palm jaggery.

Marketing Efficiency of Different Market Channels For Brinjal in Odisha

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ABSTRACT

The study was undertaken with the main objectives to compare marketing efficiency of different market channels for brinjal in Odisha. Three market channels were identified in the study area *viz.*, channel I: producers-commission agents-wholesalers-retailers-consumers, channel II: producers-wholesalers-retailers-consumers, Channel III: producers-corporate retailer's collection centre-corporate retail market's city processing centre- retail outlets-consumers. Channel III was found to be more efficient compared to other two market channels both by Acharya's method and Shepherd's method. In market channel III producer's share in consumer's rupee was 50.06 percent whereas for channel I and channel II it was 35.95 percent and 37.55 percent respectively.

Key words : Marketing efficiency, Market channels, Odisha.

Rainfed Farming – An Economic Analysis

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ABSTRACT

The study was conducted in Anantapur district of Andhra Pradesh. The cost of cultivation was highest in the case of groundnut (Rs.28,041.06) followed by sunflower (Rs.21,556.62) and redgram (Rs.20,603.31). Among the three rainfed crops, sunflower (Re.0.49) yielded a highest net income per rupee of expenditure followed by redgram (Re.0.40) and groundnut (Re.0.36).

Key words : Cost of cultivaries, Gross income, Returns per rupee

Economics of System of Rice Intensification (SRI) Vis-A-Vis Conventional Rice Farming in Chittoor District of Andhra Pradesh

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ABSTRACT

The present study entitled “Economics of System of Rice Intensification (SRI) vis-a-vis conventional rice farming in Chittoor district of Andhra Pradesh” was undertaken to study farm management practices in conventional and SRI technology and cost and returns for the two respective methods. In *kharif*, the total cost of cultivation per hectare in SRI and conventional paddy was Rs.27,554/- and Rs.27,021/-, while in *rabi* the corresponding figures were Rs.29,927/- and Rs.28,450/-. The gross income was Rs.36,505/- and Rs.30,006/- during *kharif* and Rs.39,698/- and Rs.32,337/- during *rabi* for SRI and conventional paddy respectively. The net income realised was Rs.8,951/- and Rs.2,985/- and Rs.9,771/- and Rs.3,787/- in SRI and conventional paddy during *kharif* and in *rabi* for the two methods of paddy cultivation. The productivity levels in respect of SRI were higher compared to conventional method.

Key words : System of Rice Intensification (SRI), Conventional farming, Economics.

Constraints Being Faced by the Farmers in Utilization of ICTs and Suggestions to Overcome them

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ABSTRACT

The most important constraints reported by the farmers in utilization of the ICT tools were lack of awareness of all the ICT tools within the community, failure to broadcast/ telecast timely information, do not repeat the important programmes followed by irrelevancy of the programmes to the farmers, timings of broadcast/telecast are not suitable to the farmers and the suggestions given by the farmers to overcome the problems were create awareness on the ICT tools within the community by conducting awareness programmes and campaigns, provide timely information followed by change the timings of the farm broadcast/telecast to evening, use simple, clear and understandable words, repeat the highlights of the programme, conduct live phone in programme with progressive farmers and scientists.

Key words : Constraints, ICTs use, Suggestions.

Impact of Front Line Demonstrations on Knowledge and Adoption Level of Farmers With Respect to Integrated Pest Management in Redgram

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ABSTRACT

The study was conducted in Prakasam District of Andhra Pradesh during the year 2011 to study the impact of Front Line Demonstrations on knowledge and adoption of Integrated Pest Management (IPM) practices by red gram farmers with emphasis to pod borers. More than fifty per cent of the red gram farmers in adopted villages had high knowledge and adoption levels, where as majority (60.00%) of the farmers from non adopted village were found in low knowledge group and seventy per cent of them were in low adoption category. Further it was also observed that knowledge exhibited positive and significant relationship with adoption level of red gram farmers on IPM practices.

Key words : Adoption, IPM, Knowledge, Red gram.

Awareness of Women Entrepreneurs about Prime Minister Employment Generation Programme (PMEGP) and its relationship with their Profile Characteristics in Guntur District of Andhra pradesh

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ABSTRACT

The study revealed that majority (63.33%) of the respondents belonged to medium level of awareness, followed by high (20.00%) and low (16.66%) levels. The relationship between profile characteristics and awareness of women entrepreneurs about PMEGP indicated that computed r-value of family size, socio economic status, entrepreneurial experience, risk orientation, achievement motivation, innovativeness and economic motivation were positively correlated with awareness of women entrepreneurs and the association was found significant at 1 per cent level of probability. While age and market orientation showed non-significant relation.

Key words : PMEGP, Profile, Relationship, Women entrepreneurs.

Correlates of Perception about Organisational Climate by teachers of Acharya N.G.Ranga Agricultural University

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ABSTRACT

The study revealed that majority of the teachers had medium (65.09%) perception towards organisational climate followed by low (18.87%) and high (16.04%) perception. The relationship between profile characteristics and organisational climate of teachers revealed that computed 'r' values of age, work experience, general work load, attitude towards work, job involvement and level of aspirations were positively significant at 0.01 level of probability. Teaching work load and professional orientation were found to be positively significant at 0.05 level of probability. Whereas, educational qualification, cadre, salary, training received, web/internet exposure, place of residence, distance from work site and self confidence were found to be non-significant. Multiple Linear Regression Analysis gave the R² value of 0.824, thus inferred that selected independent variables put together contributed 82.40 per cent of the total variation in the organisational climate of teachers.

Key words : Organisational climate, Perception.

Socio-economic impact of Irrigated Agriculture Modernization and Water Bodies Restoration and Management (IAMWARM) project in Pudukkottai District of Tamil Nadu

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ABSTRACT

The findings of study revealed that majority of the beneficiary farmers had medium level of socio-economic impact (46.67%), followed by high (28.33%) and low level of socio-economic impact (25.00%). Among non-beneficiary farmers, 70.00 per cent had low level of socio-economic impact, followed by medium (26.67%) and high level of socio-economic impact (3.33%).

Key words : Beneficiary farmers, Non-beneficiary farmers, Socio-economic impact.

Rearach Notes

Genetic Variability, Heritability and Genetic Advance for yield and its contributing characters in Rice (*Oryza sativa* L.)

P V Padmavathi, P V Satyanarayana, Lal Ahamed M, Y Ashoka Rani and V Srinivasa Rao
Key words : Genetic Advance, Heritability and Variability

Influence of Intercrops on Groundnut Leaf miner, *Aproaerema modicella* Deventer

R Prasannalakshmi, K Manjula, T Murali Krishna and V Sumathi

Key words: Groundnut, Inter Crops, Leaf miner.

**Population dynamics of *Thrips palmi* on mungbean
(*Vigna radiata* L. Wilczek)**

V Manoj Kumar and P Williams

Key words: Mungbean, Population dynamics, *Thrips palmi*.

**A Study on Knowledge level on System of Rice Intensification in
Nagapattinam District of Tamil Nadu**

G Ashok Kumar, V Sailaja, P V Satyagopal and S V Prasad

Key words: Knowledge, SRI technology, Rice