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Response of Lowland Rice to Different Sources and Levels of Sulphur Fertilization

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ABSTRACT

Sulphur sources had no significant and consistent response on growth and yield parameters of rice. Plant height, tiller number and drymatter accumulation increased significantly with increase in sulphur levels from 0 to 40 kg S ha⁻¹ in both the years. Higher level of 40 kg S ha⁻¹ recorded significantly higher number of grains per panicle and 1000 grain weight as compared to 0 and 20 kg S ha⁻¹ in both the years. Sulphur application at 40 kg S ha⁻¹ recorded the higher grain yield of 5273 kg ha⁻¹ which was significantly superior to the remaining two levels in the first year, while in the second year, it was at par with that of 30 kg S ha⁻¹.

Key words : Growth, Rice, Sulphur Sources, Yield

Effect of Nutrient Management System on Productivity of Finger Millet [*Eleusine coracana* (L.) Gaertn.] Cultivars Under Sandy Soils

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ABSTRACT

Among the cultivars of finger millet tested, Ratnagiri produced significantly higher plant height and more number of tillers m⁻² significantly over Godavari and VMZ 1. The grain and straw yields were significantly higher with cultivars Ratnagiri and Godavari than VZM 1. The nutrient management system with the application of 100 per cent RDF plus 3 t FYM ha⁻¹ significantly increased the plant height and tiller number over the other nutrient management systems. Similarly, the Integrated System II was significantly superior to the other nutrient management systems in terms of grain yield and straw yield. The nutrient management systems *i.e.*, Integrated System –I and Inorganic System produced comparable grain yield and straw yield which were significantly superior to those of the organic system.

Key words : Finger Millet, Nutrient Management System, Productivity

Rainfall Analysis for Summer Crop Planning in Musilipedu Pilot Village of Yerpedu Mandal of Chittoor District of Andhra Pradesh

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ABSTRACT

Among the weather elements, rainfall is the most important factor that affects crop production. The annual/ monthly rainfall data for 10 years (1993 - 2002) as recorded in 24 Eastern mandals and 15 years (1988-2002) in Yerpedu mandal (nearest rain gauge for Musilipedu village) were analyzed statistically and coefficient of variation (C.V) was calculated to assess the dependability on rainfall for crop production in early *kharif* / *kharif* under rainfed situation. The mean annual rainfall for 10 years in Eastern mandals of Chittoor district was 1136 mm of which 458.0 mm and 552.5 mm were received during South-West and North-East monsoon. The C.V value for annual rainfall was 29.1 per cent indicating low variability among the years. The ten years mean rainfall of 24 mandals of Eastern mandals of Chittoor district for May, June, July, August and September was 67.4, 90.7, 99, 133.2 and 135.1 mm, respectively and the C.V values for the

same were 87.0, 90.4, 37.6, 40.2 and 43.7 per cent, respectively. The rainfall for the months of May and June was uncertain as C.V values were high. The mean annual rainfall of Yerpedu mandal (nearest rain gauge for Musilipedu village) for 15 years was 1235.6 mm and the C.V of 28.1 per cent for annual rainfall indicating low variability among the years. The C. V values for May and June were 109.8 and 85.5 per cent, respectively, which were higher indicating higher variability. Analysis of rainfall regression equation revealed that there was decreasing trend in annual rainfall in Eastern mandals (1993-2002) and Yerpedu mandals (1998-2002) of Chittoor district. Summer crops like sesamum, greengram or pearl millet can be suggested for May sowing, as requirement of water for these crops is less.

Key words : Annual Rainfall, Bajra, Greengram, Sesame, Summer Crops

Response of Drill Sown Chilli (*Capsicum annum L.*) to Different Spacings and Fertilizer Levels Under Rainfed Condition

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ABSTRACT

A field experiment was carried out during *khariif* 2005-06 and 2006-07 at Agricultural Research Station, Annigeri, University of Agricultural Sciences, Dharwad to study the response of drill-sown chilli (cv. Annigeri Deluxe) to spacings (60 cm x 30 cm, 75 cm x 15 cm, 75 cm x 30 cm, 90 cm x 15 cm and 90 cm x 30 cm) and fertilizer levels (75-32.5-32.5, 100-50-50 and 125-62.5-62.5 kg ha⁻¹) in vertisols under rainfed conditions. The pooled results revealed that the crop sown at 75 cm X 15 cm spacing recorded significantly higher dry chilli yield (1444 kg ha⁻¹) which was 7.6, 4.5, 16.1 and 8.4% higher over 60 cm x 30 cm, 75 cm x 30 cm, 90 cm x 15 cm and 90 cm x 30 cm spacings, respectively. Application of 125-62.5-62.5 kg NPK ha⁻¹ recorded significantly higher dry chilli yield (1473 kg ha⁻¹) which was 17.6 and 9.9 % higher over 75-32.5-32.5 and 100-50-50 kg NPK ha⁻¹, respectively.

Key words : Benefit Cost Ratio, Drill Sown Chilli, Fertilizer Levels, Net Returns, Spacings

Effect of Crop Residue Incorporation and Nitrogen Management Practices on Growth and Yield of Rice (*Oryza sativa L.*)

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ABSTRACT

Field experiments were conducted at wetland farm of S.V. Agricultural College, Tirupati, Acharya N.G. Ranga Agricultural University, for two consecutive years 2002 – 2003 and 2003 – 2004. The results revealed that by raising a reasonably short duration leguminous crop (either a pulse crop or vegetable crop depending upon the farming situation) preceding to rice and incorporation of their crop residues after picking the economic yield and supply of 100 per cent recommended dose of nitrogen through fertilizer to rice was found to be the best nitrogen management package for rice in terms of higher productivity and economic returns. Incorporation of fieldbean crop residues was found to be superior to any other crop residue (C₃) incorporation with regard to growth and yield. The highest gross returns and net returns as well as benefit-cost ratio recorded with the incorporation of crop residues of fieldbean (C₃). Supply of 100 per cent N through fertilizer to rice was found to be superior to any other nitrogen management practices, with regard to growth and yield. The highest gross returns, net returns and benefit-cost ratio were recorded with application of 100 per cent nitrogen through fertilizer (N₂).

Key words : Crop Residue Incorporation, Nitrogen Management Practices, Rice

Genetic Divergence Estimation by Different Methods in *Desi* Chickpea (*Cicer arietinum L.*)

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ABSTRACT

Thirty genotypes of *desi* chickpea were evaluated for genetic diversity using Mahalanobis' D² statistic, cluster analysis and principal component analysis (PCA). By using Mahalanobis' D² statistic and cluster analyses 5 and 6 clusters were obtained, respectively. Divergence studies indicated that geographical diversity not necessarily associated with genetic diversity. 100-seed weight and days to maturity contributed maximum towards divergence in D² analysis and PCA. Principal component analysis identified four principal components with eigen values more than one which contributed 90.661 per cent of cumulative variance. The genotypes selected from above analyses were ICC 16036, CSJ 313, ICC 12960, ICC 14334, ICC 188, ICC 14194, ICC 8927, BG 2070, Phule G 01103, JSC 39, JG 2003-01101 and IPC 00-59. Utilizations of these genotypes as parents in hybridization programme may result in good recombinants.

Key words : Chickpea, Cluster Analysis, D² Statistic, Principal Component Analysis

Multivariate Analyses in Soybean [*Glycine max* (L.) Merrill]

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ABSTRACT

Genetic divergence in 45 genotypes of soybean [*Glycine max* (L.) Merrill] belonging to different eco-geographical regions was studied using Mahalanobis' D² statistic, cluster analysis and principal component analysis. On the basis of these clustering methods 6 and 7 clusters were obtained in Mahalanobis' D² statistic and cluster analyses, respectively. Days to maturity contributed maximum towards genetic divergence followed by number of pods plant⁻¹ and days to 50% flowering. The best cluster with regard to seed yield and oil content were cluster IV and VI. Principal component analysis identified five principal components which explained 84.51% variability in soybean. The principal component analysis enabled loading of similar type of variables on a common principal component. Genotypes AMS 4-63, KDS 167-9 and JS 93-05 (based on PC 1 axis) were found better performers.

Key words : : Divergence, D² statistic, Soybean, Genetic Distance

Genetics of Yield and Components in Tomato (*Lycopersicon esculentum* Mill.)

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ABSTRACT

A Study of 30 F₁ hybrids of tomato in a diallel set involving six diverse genotypes showed that non-additive genetic component contributed to the genetic expression of days to 50 per cent flowering, number of laterals plant⁻¹, number of clusters plant⁻¹, number of fruits plant⁻¹, fruit weight, yield plant⁻¹ and total soluble solids. Both additive and non-additive gene action were present with predominance of additive gene action for plant height and number of locules fruit⁻¹. The results also indicated over dominance for days to 50 per cent flowering, number of laterals plant⁻¹, number of clusters plant⁻¹, number of fruits plant⁻¹, fruit weight, yield plant⁻¹ and total soluble solids. Majority of the characters were controlled by atleast one group of dominant genes.

Key words : Diallel, Dominance, Gene Action, Heterosis, *Lycopersicon esculentum*

Genetic Divergence in Italian Millet [*Setaria italica* (L.) Beauv]

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ABSTRACT

Fifty two genotypes of Italian millet were evaluated for 13 quantitative characters to study genetic divergence using Mahalanobis' D^2 statistic, cluster analysis and principal component analysis. Based on these clustering methods 9 clusters in *Kharif* and 10 clusters in *Rabi* were formed for D^2 statistics and 8 clusters in both seasons for hierarchical cluster analysis. Straw weight followed by days to maturity, carotene content, calcium content, crude protein, 1000 grain weight, ear weight and ear length during *Kharif* and flag leaf area followed by calcium content, straw weight, carotene content, grain yield plant⁻¹, productive tillers plant⁻¹, ear weight and 1000 grain weight during *Rabi* contributed maximum towards diversity in D^2 analysis. PCA identified 5 components in *Kharif* and 6 in *Rabi* with eigen values more than one, contributed 84.94 per cent and 84.89 per cent cumulative variance during both *Kharif* and *Rabi*, respectively. GS 442, GS 443, GS 455, GS441 and GS439 in *Kharif* and GS 459, GS 475, GS479 and GS458 in *Rabi* are the divergent genotypes which can be used in hybridization programme. Highest inter-cluster distance was observed between V and IX during *Kharif* and between IX and X in *Rabi* as per D^2 statistic. Where as cluster III and VIII during *Kharif* and between III and IV were wide apart in *Rabi* in hierarchical cluster analysis. No relationship between geographic origin and genetic diversity was observed. For varietal improvement, strains from these clusters are important on the basis of their genetic distance and highest cluster means.

Key words : Cluster Analysis, Genetic Diversity, Italian Millet, Principal Component Analysis

Restriction Selection Indices in Sugarcane (*Saccharum officinarum* L.)

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ABSTRACT

Twelve diverse pre-released genotypes of sugarcane obtained from Sugarcane Research Station, Vuyyur were evaluated for 14 characters viz., shoot population at 120 DAP, shoot population at 240 DAP, shoot population at 270 DAP, length of millable cane, diameter of cane, single cane weight, number of internodes cane⁻¹, number of millable canes, brix per cent at 300 days, sucrose per cent at 300 days, purity per cent at 300 days, cane yield (kg plot⁻¹) and CCS yield (kg plot⁻¹) during 2007-08 crop season. The restricted selection indices using single and double case restriction of each or two character/s were studied. In both single and double case restriction selection indices highest genetic advance values were recorded by cane yield when each character / two characters were restricted separately. Therefore, simultaneous selection for all those traits dependent on cane yield would be better over selection for cane and CCS yields, directly.

Key words : Restriction Selection Indices, Sugarcane

Comparison of Direct and Indirect Effects of Yield Contributing and Physiological Characters Between Hybrids and Varieties of Rice

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ABSTRACT

A comparison of yield contributing characters between 10 hybrids and 10 varieties of rice indicates that the characters viz., number of filled grains panicle⁻¹, biological yield plant⁻¹, harvest index, panicle length and number of productive tillers plant⁻¹ are directly contributing to the yield in hybrids because of their positive direct effect coupled with positive significant correlation with grain yield plant⁻¹. Whereas in varieties biological yield plant⁻¹, plant height, 1000 grain weight and leaf area plant⁻¹ are yield contributing characters due to their positive direct effect coupled with positive significant correlation with grain yield plant⁻¹.

Key words : Hybrids, Path Coefficient Analysis, Rice, Varieties

Multivariate Analysis Under Drought in Rice (*Oryza sativa* L.)

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ABSTRACT

Genetic diversity of 37 genotypes of rice were evaluated for drought tolerance using Mahalanobis' D² statistic, principal component and cluster analyses. The pattern of distribution of 37 genotypes obtained from different agro-ecological regions was 6 clusters in case of D² analysis and 7 clusters in case of cluster analysis. The best clusters with regards to grain yield and drought tolerance were cluster IV and VI in case of D² analysis where as cluster V and IV in cluster analysis. The principal component analysis explained 92.069 variability among the genotypes studied. Days to 50% flowering, chlorophyll content index and stomatal conductivity are major contribution towards genetic diversity under drought tolerance.

Key words : Cluster Analysis, D² Analysis, Principal Component Analysis, Rice

Character Association and Path Coefficient Analyses for Yield and Yield Component Traits in Upland Cotton (*Gossypium hirsutum* L.)

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ABSTRACT

Correlation and path coefficient analyses were carried out with 60 cotton genotypes, obtained from different cotton research centres across the country for yield and yield component traits. The character association studies revealed that seed cotton yield plant⁻¹ had positive significant correlation with plant height, number of monopodia plant⁻¹, number of sympodia plant⁻¹, number of bolls plant⁻¹, boll weight, seed index, micronaire, uniformity ratio and lint yield plant⁻¹ suggesting that these are the major yield contributing traits. Path coefficient analysis revealed that lint yield plant⁻¹ exerted strong direct positive effect on seed cotton yield plant⁻¹ signifying the importance of this trait while selecting for improvement of seed cotton yield of cotton.

Key words : Character Association, Cotton and Path Analysis

Combining Ability Studies Involving New Hirsutum Lines in Cotton (*Gossypium hirsutum* L.)

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ABSTRACT

Combining ability analysis using line × tester design was conducted during *kharif* 2008-09 on 48 hybrids produced by crossing 8 lines and 6 testers. Among lines, RAH 22 and RAH 44 while, tester RAH 143 showed positively significant *gca* effects for seed cotton yield plant⁻¹ and six yield contributing characters. All the characters studied were controlled predominantly by non-additive gene action. Among the cross combinations RAH 63 × RAH 141, RAH 44 × RAH 141, RAH 15 × RAH 183, RAH 24 × RAH 162, RAH 24 × RAH 183 and RAH 52 × RAH 143 exhibited higher *per se* performance and significant positive *sca* effects for seed cotton yield plant⁻¹.

Key words : Cotton, Line × Tester Analysis, General and Specific Combining Ability

Estimation of Variability and Genetic Diversity in Indian Mustard Germplasm (*Brassica juncea* L.)

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ABSTRACT

The genetic variability and divergence among 41 Indian mustard (*Brassica juncea* L.) genotypes were assessed for 12 characters. High to moderate estimates of GCV and PCV were exhibited by siliqua plant⁻¹, harvest index and biological yield plant⁻¹. High estimates of heritability and genetic advance were observed for plant height and harvest index. High estimate of genetic gain was observed for siliqua plant⁻¹, harvest index and biological yield plant⁻¹. Forty one genotypes were grouped into seven clusters. The cluster II had the maximum number of genotypes. The maximum inter-cluster distance was observed between cluster III and VI and cluster VI and VII and cluster III and VII. Thus, genotypes present in cluster III and VI and VII like Raya, CS54, Sivalik, Krishna, NDRE 4, Urvasi, Ganga Kaveri Vijay may be used in hybridization programme to obtain superior segregants for yield improvement in Indian mustard.

Key words : Heritability, GCV, Genetic Diversity, Genetic Gain, PCV, Mustard, Variability

Qualitative Assessment of Sweet Sorghum [*Sorghum bicolor* (L.) Moench] Cultivars for Ethanol Production

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ABSTRACT

Qualitative characters like total soluble sugars (TSS), reducing sugars, non-reducing sugars, fermentable sugar yield and ethanol production were significantly higher in cultivars SSV 84, SSV74, NTJ₂ and S35 than those exhibited by the other cultivars both at flowering and harvesting.

Key words : Brix (%), Ethanol, Fermentable Sugars, Non Reducing Sugars, Reducing Sugars, Sorghum, TSS (Total Soluble Sugars(%))

Effect of Growth Substances and Sex Type on Rooting of Kakrol Stem Cuttings

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ABSTRACT

The studies on effect of different growth substances on root formation in kakrol vine cuttings revealed that among different growth substances, IBA at 1500 ppm recorded early (13.28 days) and higher percentage of rooting (90.97), number of roots per cutting (32.19), length of the longest root (21.05 cm),

length of the shoot (31.95 cm), number of leaves per cutting (21.21) and percentage of establishment (99.23). Between male and female cuttings, male recorded significantly higher percentage of rooting (70.87) and early rooting (15.58 days), number of roots per cutting (21.08), length of the longest root (16.44 cm), length of the shoot (22.42 cm), number of leaves per cutting (11.68) and percentage of establishment (92.42) in the main field compared with female. The interaction between growth substances x chemicals revealed that IBA 1500 ppm + male cuttings recorded significantly early rooting (12.16 days), greater number of roots per cutting (34.46) and the longest root (22.43 cm) over rest of the combinations.

Key words : Cuttings, Growth Substances, Kakrol, Rooting

Leaf Nutrient (NPK) Status of Cashew Gardens in Coastal Districts of Andhra Pradesh

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ABSTRACT

The investigation was carried out during 2006 - 07 in 12 mandals cashew farmers' orchards of coastal districts of Andhra Pradesh. The leaf nutrient contents N, P, and K ranged from 1.25 to 2.38% (low range), 0.056 to 0.168% (deficient to low range) and 0.117 to 0.715% (deficient to low range), respectively in these orchards. Non-fruiting terminals showed highest nutrient contents than fruiting terminals in all the months of study.

Key words : Cashew, Leaf Nutrients

Resource Productivity and Allocative Efficiency of Paddy in N.S.P. Left Command Area in Nalgonda District of Andhra Pradesh

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ABSTRACT

The study conducted in N.S.P Left Command area of Nalgonda district comprised six mandals, eighteen villages and 360 farmers, selected for the study. The Cobb- Douglas production function model was chosen to estimate the returns to scale. Increasing returns to scale prevails in the study area. MVP to OC ratio was less than unity for all the variables viz nitrogen, phosphorous, potassium, pesticides and human labour indicating excess use. So the costs on these inputs needs to be decreased as they result in decreasing additional returns.

Key words : Allocative Efficiency, Resource Productivity

Feedback on Vyavasaya Soochanalu- a Farm Broadcast of ANGRAU

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ABSTRACT

A study was taken up to get the feedback on Vyavasaya Soochanalu- a farm broadcast of ANGRAU. Majority of the respondents had expressed positive opinion with regard to the convenience of the time, duration and usefulness of the programme and they were also regularly listening to the programme. The major suggestions given for improvement of the programme were- more topics on plant protection,

water management, broadcasting zonal wise technical information, allotting toll free number for asking the doubts by the farmers etc.

Key words : ANGRAU, Farm Broadcast

Research Note

Sulphur and Zinc Nutrition in Bt Cotton

P Raghu Rami Reddy , B Dileep Kumar and L Jalapathi Rao

Genetic Variability in Babycorn (*Zea mays* L.) Genotypes

J Aravind Kumar, K Murali Krishna, K Radhika and R Sai Kumar

Knowledge, Attitude and Practices (KAP) Levels of Gramasiri Mothers Vs Non-gramasiri Mothers

V Santhi Sri Kotamamba and P Yashoda Devi

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