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CORRELATION OF BANANA CV GRAND NAINA WITH GROWTH AND YIELD ASPECT

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Abstract: The experiment was laid out in a non replicated trial for metric and non metric variables. A wide range of variation was observed for vegetative growth parameters of banana at various growth periods viz., leaf length (39.42 - 157.52 cm), leaf width (19.17 - 41.09 cm), variation in functional leaf area (0.43 - 6.06 m²), petiole length (10.28 - 34.61 cm), variation in functional leaf (6.99 - 13.27), height of pseudo stem (19.08 - 198.37 cm), girth of pseudo stem (16.77 - 59.01 cm), PCA (23.41 - 277.55 cm²), peduncle length (43.67 cm), peduncle width (14.49 cm), male bud size (31.18 cm length and 30.70 cm girth) showed continuously increased during crop cycle of banana and bunch position was slightly angled. The number of days taken from planting to inflorescence emergence (272.4), days taken from inflorescence emergence to harvesting (101.65) and total crop duration (374.05 days) was recorded during crop cycle of banana plant. The yield attributing characters viz. weight of bunch (21.88 kg), hands per bunch (11.43), fruits on 2nd hand (17.80), hand weight per bunch (1827.45 g), fruits per bunch (202.88), length and girth of fruit (17.61 cm and 10.81 cm, respectively), fruit pedicel length (2.25 cm), fruit pedicel width (1.62 cm), fruit weight (102.58 g) and non metric characters like fruit shape was observed curved (sharp curved) and fruit apex was observed blunt tipped. Coefficient of correlation was estimated for 23 characters of banana cv. Grand Naine. Among these fruit yield exhibited strong positive correlation with leaf area at harvesting time (0.459) and shooting time (0.418), pseudo stem girth at shooting time (0.523) followed by 8th and half MAP (0.476) and harvesting time (0.401), PCA at shooting time (0.521) followed by 8th and half MAP (0.469) and harvesting time (0.398), number of functional leaves at harvesting time (0.402) and shooting time (0.382) and yield attributing characters such as fruits per 2nd hand (0.362), hands per bunch (0.611), fruits per bunch (0.693), fruit weight (0.792), hand weight (0.691), plant crop cycle (0.340) and days taken from flowering to harvesting (0.381).

Keywords: Banana, Phenological characters, Correlation, Yield

POOR MAN'S FRUIT: A COMPREHENSIVE REVIEW ON JACK

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Abstract: Jack is a fruit yielding tree species found in tropical, sub-tropical and humid areas of India. However, as an underutilized crop, jackfruit has escaped attention from intensive production and proper marketing. The efforts were taken to synthesize the detailed information on distribution and diversity, management practices, intercropping, jack production, medicinal and culinary uses, marketing and value addition techniques. This paper also stresses on intensive jack production and promote for wide uses. However, species should be treated as candidate fruit crop.

Keywords: Jack, Intercropping, Production, Phyto-chemistry; Marketing channel

ESTIMATION OF HETEROSIS FOR QUANTITATIVE AND QUALITY TRAITS IN QUALITY HYBRIDS RICE (*ORYZA SATIVA* L.)

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Received-18.10.2013, Revised-25.11.2014*

Abstract: The heterosis study on quantitative and quality traits in quality hybrids rice from line x tester analysis from 24 F₁ hybrids derived from 3 female and 8 male lines. The observations were recorded on 28 quantitative and quality traits. Analysis of variance revealed that all the treatments exhibited highly significant variation for almost all the traits under study. The highest heterotic effects observed for mid parents, better parent and standard heterosis were 233.33%, 97.50% and 60.14% for grain yield per plant noted for the crosses IR 58025A/R1679-1674-1-234-1. Maximum heterosis over mid parents of 313.25%, 33.67%, 26.98% and 100.15% for productive tillers per plant, panicle length, spikelet fertility percentage and harvest index and maximum heterobeltiosis of 163.64%, 29.18%, 24.54% and 43.35% for productive tillers per plant, panicle length, spikelet fertility percentage and harvest index and maximum standard heterosis of 218.68%, 21.10%, 5.89% and 49.09% for productive tillers per plant, panicle length, spikelet fertility percentage and harvest index was found in IR 58025A/R1679-1674-1-234-1.

Keywords: Heterosis, Trait, Hybrids, Rice

COMPETITIVE BEHAVIOR OF WEED FLORA IN WETLAND RICE ECOSYSTEM AS INFLUENCED BY NUTRIENT MANAGEMENT AND SPACING

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Received-26.11.2014, Revised-17.12.2014*

Abstract: A field experiment was conducted at College of Agriculture, Vellayani, Thiruvananthapuram, Kerala to study the extent of crop-weed competition for nutrients and space as influenced by nutrient management and plant population in a wetland rice ecosystem. The treatments included four levels of nutrient management and three levels of crop spacing. The results indicated that by altering nutrient management and adjusting the plant population, the competitive ability of rice crop could be improved and weed management made more efficient and economic. During both the seasons, at 20 and 40 DAT, the weed density and dry weight were the lowest when NPK @ 90:45: 45 kg ha⁻¹ was applied with 25 per cent N as organic while at 60 DAT the enhanced nutrient level of NPK @112.5:56:25:56.25 kg ha⁻¹ applied with 25 per cent N as organic recorded the lowest weed density values. The general trend was that, though weed growth increased with increasing nutrient levels, partial organic substitution had a positive effect in suppressing weed growth. At all growth stages the weed growth parameters were minimum in closer spacing of 15 X 15 cm. An overall analysis of the weed growth and crop performance indicated that the enhanced nitrogen especially when it is applied in an integrated manner with organic substitution benefited the rice crop more than the weeds through altering the micro environment in favour of rice.

Keywords: Crop, Nutrients, Spacing, Rice

EFFECT OF DROUGHT AT FLOWERING STAGE ON YIELD AND YIELD COMPONENTS OF RAINFED LOWLAND RICE

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Abstract: Drought is a major factor limiting rice production in India. Its occurrence at flowering stage is very common in rainfed lowland rice which leads to a considerable yield reduction or even crop failure some times. The study was therefore, contemplated to determine the effect of drought stress at flowering stage on yield and some yield attributing parameters of four rice varieties viz., IR-42, NDR 8002, BPT 5204 and TCA-48. The experiment was carried out in plastic tubs in a completely randomized design with three replications. Varieties were subjected to three water stress treatments (saturated or 100% available soil moisture regime (ASMR), 50% ASMR, 25% ASMR) at flowering stage by withholding water application. The study revealed that drought reduced significantly the grain yield and yield attributing characters, EBT plant⁻¹, test weight, panicle length, total grains panicle⁻¹ and fertile grains panicle⁻¹ of all the varieties; but to a greater extent at 25% ASMR. Sterility of varieties under saturated condition varied from 11 to 16%, which increased to the tune of 17 to 32% and 26 to 40% under 50% and 25% ASMR, respectively. Significant drought and varieties interaction effects were exhibited for EBT plant⁻¹, sterile grains panicle⁻¹ and fertile grains panicle⁻¹, indicating significant differences of drought levels and genetic differences for these traits. Amongst the varieties, NDR-8002 and TCA-48 were noted to be relatively more drought tolerant than others on the basis of assessment of their yield performance.

Keywords: Rice, Flowering stage, Drought, Yield

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EFFECT OF FYM AND WEED MANAGEMENT AND THEIR INTERACTION EFFECT ON WEED DYNAMICS, GROWTH, YIELD ATTRIBUTES AND YIELD OF DIRECT SEEDED RICE (*ORYZA SATIVA* L.) UNDER MINIMUM TILLAGE

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Received-25.11.2014, Revised-27.12.2014

Abstract: Results revealed that, FYM @ 5 t ha⁻¹ (F1) has significant impact on dry matter accumulation of crop, total tillers m⁻² and effective tillers m⁻². Among weed management practices, hand weeding twice at 25 & 45 DAS (W7) produced significantly highest plant height, dry matter accumulation, total No. of tillers meter⁻², leaf area, leaf area index, number of effective tillers meter⁻², test weight (g), Crop growth rate, Absolute growth rate. Highest grain yield (4.21 t ha⁻¹), straw yield (5.52 t ha⁻¹) and harvest index (51.54 %) was recorded under hand weeding twice at 25 & 45 DAS (W7), followed by Chemical weeding with bispyribac Sodium @ 20 g ha⁻¹ 25 DAS (W1), gave grain yield (4.03 t ha⁻¹), straw yield (5.25 t ha⁻¹) and harvest index (51.37 %). The lowest was recorded under unweeded check (W8). In the experimental field, *Commelina benghalensis* L., *Cyanotis axillaris* Schult. F., *Cyperus difformis* L., *Echinochloa colona* (L.) Link, *Monochoria vaginalis* (Burm.f.) Kunth were dominant weeds. The lowest weed density, weed dry matter production and relative weed density were recorded under hand weeding twice at 25 & 45 DAS (W7), followed by Chemical weeding with bispyribac Sodium @ 20 g ha⁻¹ 25 DAS (W1). The highest economic return in terms of gross income (Rs. 42949.00) were obtained from hand weeding twice 25 & 45 DAS (W7), highest net income (26063.00) and B:C ratio (1.69) were obtained under chemical weeding with bispyribac sodium @ 20 g ha⁻¹ 25 DAS (W1).

Keywords: Growth, Yield, Weed dynamics

IMPACT OF DIFFERENT SOURCES OF NUTRIENTS ON GROWTH AND FLOWERING IN CHRYSANTHEMUM (*CHRYSANTHEMUM MORIFOLIUM* RAMAT.) CV YELLOW GOLD

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Abstract: An investigation was carried out to study the combined applications of different sources of nutrients on vegetative growth and flowering characters of chrysanthemum cv. Yellow Gold. The treatments included *Azospirillum*, PSB, vermicompost and FYM with and without 100, 75 and 50% recommended dose of NPK. The experiment was laid out in Randomized Block Design (RBD) with three replications. The experiment consisted of ten treatments viz. T₁: control (with out NPK), T₂: 100% RDF(150:100:100), T₃: 75% RDF + 25% VC, T₄: 75% RDF +25% Leaf Manure T₅: 75% RDF + 25% VC+ 2g/plant *Azospirillum*, T₆: 75% RDF+ 25% VC +2g/plant *Azospirillum* +2g/plant PSB, T₇: 50% RDF +50% VC T₈: 50% RDF + 50% VC+ 2g/plant *Azospirillum*, T₉: 50% RDF + 50% VC+ 2g/plant *Azospirillum* + 2g/plant PSB T₁₀: 50% RDF +50%Leaf Manure + 2g/plant *Azospirillum* +2g/plant PSB,. Analysis of results revealed that treatment T₄: 75% RDF+ 25% VC + 2.0 g/plant *Azospirillum* + 2.0 g/ plant PSB,. significantly induced the days taken to sprouting and increased the height of plant, number of leaves per plant and length of longest leaf per plant. However, treatment T₁₀ significantly gave maximum diameter of leaf. Treatment receiving 50% RDF+ 50% VC + 2.0 g/plant *Azospirillum* + 2.0 g/plant PSB emerged earlier spike while minimum days required for opening of first flower on spike and maximum longevity of spike was observed in treatment T₆. In terms of vase life of cut flowers at room temperature, treatment T₄ shown maximum vase life.

Keywords: Nutrients, INM, Chrysanthemum, Growth and flowering

POPULATION DYNAMICS OF SORGHUM SHOOT FLY, *ATHERIGONA SOCCATA* (RONDANI) INFESTING SORGHUM

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Abstract: The present investigation carried out at Sorghum Research Station, SDAU, Deesa, and Gujarat, to study the population dynamics, varietal screening of sorghum and management of shoot fly *A. soccata* during *khari*2012. The shoot fly incidence (1.52 eggs/plant) started from 7 days after germination (last week of July). The number of eggs per plant gradually increased with crop growth and maximum number of eggs *i.e.* 3.08/plant were observed after 21st days of germination (second week of August). Dead hearts due to shoot fly also started from 7 days after germination (last week of July) *i.e.* 8.15 per cent which increased with crop growth with maximum dead hearts (47.36%) and observed after 21st days of germination *i.e.* second week of August. It can be concluded that peak periods of shoot fly incidence and dead heart were from 21 days to 28 days after germination of the crop.

Keywords: Population, Sorghum, Shoot

POPULATION DYNAMICS OF GREEN LEAF HOPPER, *NEPHOTETTIX* SPP. AND SPIDERS IN UPLAND TRANSPLANTED RICE AGRO-ECOSYSTEM: A BIO-METEOROLOGICAL INTERACTION STUDY

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Abstract: Rice occupies the prominent place in Indian agriculture. Rice fields are very important and environmental buffers. Field experiment was conducted at research farm of Indira Gandhi Krishi Vishwa Vidyalaya, Raipur during *kharif* season 2013-14. The maximum population green leaf hopper (GLH) was recorded in 1st week (40 SMW) of October with 53.25 nymph/adult/25 sweeps showed non-significant negative correlation with minimum temperature, average temperature, morning relative humidity, evening relative humidity and average relative humidity while non-significant positive correlation with minimum temperature and sunshine hours in upland transplanted rice agro-ecosystem. The maximum population of spiders were recorded during 4th week (43 SMW) of October with 11.00 adult/25 sweeps and showed significant negative correlation with Rainfall ($r = - 0.656^*$) while positive correlation with maximum temperature and sunshine hours. GLH and spiders populations showed non-significant positive correlation ($r = + 0.230$) at 1% and 5% level of significance in upland transplanted rice agro-ecosystem.

Keywords: Ecosystem, Green leaf hopper, Rice, Upland, Weather parameters

IN VITRO ANTIMICROBIAL ACTIVITY OF NOVEL FUNCTIONALIZED CHALCONES

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Abstract: Two series of novel chalcones (4a-4g, 5a-5g) have been synthesized by solution phase Claisen-Schmidt condensation. All the new final products have been purified by silica gel column chromatography and characterized on the basis of their infrared (IR) and proton nuclear magnetic resonance (¹H NMR) spectroscopic data, and elemental analysis. All the final compounds (4-5) were exploited for their antimicrobial activity by the cup-plate method. From the antibacterial screening it was observed that the compounds, 4 (a, d, f and g), 5 (b, c, d, e and f), shows good antibacterial activity against *Staphylococcus aureus* (zone of inhibition, 10-16 mm) as compared to standard streptomycin (zone of inhibition, 18 mm) whereas compounds 4 (a and b), 5 (b, c and d), showed good antibacterial activity against *Escherichia coli* (zone of inhibition, 10-18 mm) as compared to streptomycin (zone of inhibition, 22 mm). Fungicidal screening data also revealed that compounds 4 (b and d), 5 (a and e), imparted maximum activity against *Aspergillus niger* (zone of inhibition, 10-15 mm) as compared to standard griesofulvin (zone of inhibition, 17 mm), whereas compounds 4 (b, c, f and g), 5b, showed good activity against *Candida albicans* (zone of inhibition, 10-16 mm) as compared to griesofulvin (zone of inhibition, 20 mm).

Keywords: Chalcones, Condensation, Antimicrobial activity

MORPHOLOGICAL AND BIOCHEMICAL STUDIES IN HEALTHY AND INFECTED PLANT PARTS OF *TRITICUM AESTIVUM*

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Abstract: Pollen morphology is of great significance particularly in plant taxonomy. Results of present investigation revealed the effect of infection on the uptake rates of total N and P and its distribution in selected plant parts clearly define the nutritional aspects and role of macronutrients and pigments in growth and development. Our observation indicates that non-acetolysed pollen grains of *Triticum aestivum* show reduction in size as compared than that of acetolysed pollen grains. Likewise total N, P and chlorophyll content uptake and its distribution in plant parts decline in infected plant parts as compared to healthy plant parts as in stem, leaf, anther & pollen grains.

Keywords: Wheat, Pollen, Grain, Nitrogen, Phosphorus, Chlorophyll

PATH COEFFICIENT ANALYSIS IN MUNGBEAN UNDER IRRIGATED AND MOISTURE STRESS CONDITIONS

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Abstract: An investigation was carried out with fifty eight mungbean genotypes to understand direct and indirect effects of yield attributes and drought related traits on seed yield per plant under both irrigated (E₁) and moisture stress (E₂) conditions for yield components. Path analysis revealed that, harvest index had positive direct effect on seed yield per plant per plant under both irrigated (E₁) and moisture stress conditions (E₂). However, days to maturity, number of pods per plant and number of pods per cluster in E₁ and number of clusters of plant, number of pods per plant, plant height, 100 seed weight and relative water content in E₂ contributed moderate and direct effect on seed yield per plant.

Keywords: Mungbean, Path analysis, Yield, Drought, Parameters

RESPONSE OF RABI ONION (*ALLIUM CEPA* L.) TO VARYING LEVELS OF NITROGEN UNDER SEMI-ARID CONDITIONS

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Abstract: An experiment was conducted to study the effected of different levels of nitrogen on yield attributes and yield of onion under semi arid conditions at Horticulture farm, S.K.N. College of Agriculture, Rajasthan Agricultural University, Jobner during *rabi* season. The experiment was comprised of three levels of nitrogen 50 kg ha⁻¹, 100 kg ha⁻¹ and 150 kg ha⁻¹. The experiment was laid out in randomized block design with three

replications. Onion variety RO-1 was taken up in experiment. Results of study revealed that application of 100 kg N ha⁻¹ being at par with 150 kg N ha⁻¹ significantly increased in yield attributes and yield of onion.

Keywords: Onion, Nitrogen, Yield, Economic

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INFLUENCE OF CHEMICAL FERTILIZERS AND ORGANICS ON GROWTH, FLOWERING, FRUIT YIELD AND QUALITY OF GUAVA (*PSIDIUM GUAJAVA* L.) CV L-49 UNDER CHHATTISGARH PLAINS

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Abstract: A field experiment was carried out during the year 2013-14 for Mrig bahar crop of guava at Horticulture Research Farm of Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) to studies on Influence of chemical fertilizer and organics on growth, flowering, fruit yield and quality of guava (*Psidium guajava* L.) cv. L-49 under Chhattisgarh plains". The experiment was laid out in Randomized Block Design (RBD) with four replications and twelve treatments. Treatment of 75% RDF+ Cowdung Slurry (T₂) resulted significantly maximum tree height (5.27 m), East West tree spread (7.04 m), North South tree spread (7.34 m) at harvesting stage, minimum number of days for flowering (33.51 days), maximum number of flowers per m² (17.62) and number of fruits per m²(14.50), fruit set per m² (90.18%) and fruit retention (93.11%), fruit diameter (9.54 cm), fruit weight (205.41 g) and pulp weight (198.17 g), yield attributing characters, number of fruits per tree (250.57), fruit yield per tree (54.66 kg) and per hectare (14.31 t ha⁻¹).

Keywords: Organics, Chemical Fertilizers, Growth, Yield, Quality, Guava

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EFFECT OF FYM AND WEED MANAGEMENT ON WEED DYNAMICS AND YIELD OF DIRECT SEEDED RICE (*ORYZA SATIVA* L.) UNDER MINIMUM TILLAGE

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Received-25.11.2014, Revised-03.01.2015

Abstract: Results revealed that, FYM @ 5 t ha⁻¹ (F1) has significant impact on total tillers m⁻² and effective tillers m⁻². Hand weeding twice at 25 & 45 DAS (W7) produced significantly highest number of effective tillers meter⁻², test weight (g). Highest grain yield (4.21 t ha⁻¹), straw yield (5.52 t ha⁻¹) and harvest index (51.54 %) was recorded under hand weeding twice at 25 & 45 DAS (W7), followed by Chemical weeding with bispyribac Sodium @ 20 g ha⁻¹ 25 DAS (W1), which gave grain yield (4.03 t ha⁻¹), straw yield (5.25 t ha⁻¹) and harvest index (51.37 %) . The lowest was recorded under unweeded check (W8). In the experimental field, *Commelina benghalensis* L., *Cyanotis axillaris* Schult. F., *Cyperus difformis* L., *Echinochloa colona* (L.) Link, *Monochoria vaginalis* (Burm.f.) Kunth were dominant weeds. The lowest weed density, weed dry matter production and relative weed density were recorded under hand weeding twice at 25 & 45 DAS (W7), followed by Chemical weeding with bispyribac Sodium @ 20 g ha⁻¹ 25 DAS (W1).

Keywords: *Oryza sativa*, Weed management, Yield