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## SIMULATION ANALYSIS OF ELEVATED CO<sub>2</sub> AND TEMPERATURE WITH RICE GROWTH MODEL ORYZA 2000 UNDER DRIP-FERTIGATED AEROBIC RICE

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**Abstract:** Simulation analysis with well calibrated and validated dynamic model of ORYZA2000 using present data inputs of drip fertigation system indicated that temperature-induced yield alterations in future climates could be favourably mitigated with the CO<sub>2</sub> fertilization along with fertigation practices. With the decline of the already limited water available for rice production, there is a need to adopt Water-saving measures such as aerobic rice to meet the challenge of feeding billions of people living and relying on rice. The crop growth model ORYZA2000 was used to calculate seasonal water balances of drip fertigation and flood irrigated aerobic rice study was conducted in Tamil Nadu agricultural university, India from 2007 during dry season.

**Keywords:** Simulation; Model; aerobic Rice; Elevated CO<sub>2</sub>; Temperature increment; Grain yield

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## STRUCTURE AND DIVERSITY OF TREE SPECIES IN NATURAL FORESTS OF KUMAUN HIMALAYA IN UTTARAKHAND

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**Abstract:** Present study deals with density, basal area, population structure, species diversity and concentration of dominance of natural forests in Lohaghat of Champawat district in Kumaun Himalaya, Uttarakhand. The data were collected from each forest for different six classes such as seedling, sapling, young tree, pole size tree, mature tree and old tree. Soil bulk density was 1.02-1.18gcm<sup>-3</sup>. Soil porosity, water holding capacity and soil moisture ranged from 41.8-48.5, 56.4-65.5 and 27.1-32.2 percent respectively. The soil texture was in order: sand (42.6-47.3%)>silt (31.6-34.3%)>clay (21.1-23.1%). Soil pH and soil carbon ranged from 6.2 to 6.8 and 6.2to 6.8 percent. Density of seedling sapling and tree ranged from 270 to 1790, 365 to 1040 and 920 to 1345, respectively. Species diversity in each category was 0.757-1.500 for tree, 0.950 to 2.050 for seedling and 1.000 to 1.810 for sapling. The good regeneration structure depicted by *Rhododendron arboreum* in site 1, *Myrica esculenta*, *Cedrus deodara* and *Pinus roxburghii* in site-2, *Myrica esculenta*, *Prunus cerasoides* and *Pinus roxburghii* by site-3, while poor regeneration was depicted by *Quercus leucotrichophora*, *Myrica esculenta* and *Pinus roxburghii* in site-1, *Quercus leucotrichophora* in site-2 and *Cedrus deodara* and *Pinus roxburghii* in site-4. However, fair regeneration was shown by *Cedrus deodara* in site-1 and *Quercus leucotrichophora* in site-3. The *Quercus leucotrichophora* seedlings were less in number than other tree species. Decreasing regeneration pattern of *Quercus leucotrichophora* in each site indicated that increased anthropogenic pressure on oak tree species for fuel and fodder may be one of the reasons of poor regeneration in each studied forest.

**Keywords:** Species diversity, population structure, seedlings, saplings, tree size class, Kumaun Himalaya

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## **EXISTING ANIMAL HUSBANDRY PRACTICES ADOPTED BY THE DAIRY FARMERS OF CHHATTISGARH**

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**Abstract:** The present study was conducted in Raipur district of Chhattisgarh with the objectives to find out the existing animal husbandry practices adopted by dairy farmers. Majority of respondents had more than 20 years of experience of dairy farming and they were possessing up to 20 animals for production of milk and milk products. Majority of the respondents possessed 21 cows of improved breeds. Similarly, more than 71 per cent of the respondents were possessing on an average 22 animals of improved breeds of buffaloes. The average milk production per day per dairy farmer was found 127.29 litres per day. Majority of the respondents were allowing their cattle for grazing on pasture, dry fodder and concentrate. Only 20.77 per cent respondents were also making silage for feeding of their animal. Majority of the respondents were keeping breeding bull of cow and buffaloes in their dairy for natural breeding; however artificial insemination was also adopted by them. Vaccination is commonly adopted practices for calves and heifers among the respondent, while, majority of the respondents were not adopting castration and dehorning practices.

**Keywords:** Animal husbandry, Adoption, Improved breeds, Dairy Farmers

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## **THE MARKETING STRATEGY OF EGG IN RAJNANDGAON DISTRICT OF CHHATTISGARH STATE**

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**Abstract:** Poultry is one of the important components of animal husbandry in the Indian economy. The population of India and Chhattisgarh about 121 crore and 2.55 crore, respectively. Nearly 80 per cent population lives in rural area and 60 per cent of rural population is unemployed or underemployed. It implies that majority of rural people are poor and poverty stricken.

**Keywords:** Animal husbandry, Economy, Marketing

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## **ROLE OF PLANT GROWTH PROMOTING RHIZOBACTERIA (PGPR), SULPHUR AND MICRONUTRIENTS ON THE COST PRODUCTION OF LENTIL (*LENS CULINARIS*).**

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**Abstract:** Bacteria that colonize roots effectively are termed “Rhizobacteria”. PGPR are free-living bacteria and some of them invade the tissues of living plants and cause unapparent and symptomatic infections when applied to seeds or crops, enhance the growth of the plant or reduce the damage from soil-borne plant pathogens. An experiment was conducted at the farm of J. V. College, Baraut, during Rabi seasons of 2008-09 on nodulation of Lentil (*Lens culinaris*). Inoculated with PGPR, S and micronutrients viz. Mn, Zn and Mo. Application of PGPR along with S @ 60 kg/ha, Zn @ 4 kg/ha, Mn @0.5 kg/ha and Mo @ 0.1 kg/ha significantly increases protein content, The use of PGPR along with S and Mn (7,498 Rs. in 2008 & 7,768 Rs. in 2009) was the most economical treatment with higher net return followed by PGPR + S +Mo + Mn (7,323 Rs. in 2008 & 7,533 Rs. in 2009)> PGPR + S(7,113 Rs. in 2008 & 7,233 Rs. in 2009). It is concluded that use of PGPR, S and micronutrients would be an effective approach in term of cost production of lentil under natural conditions.

**Keywords:** PGPR (Plant growth-promoting rhizobacteria), S (Sulphur), Micronutrient (Mn, Zn & Mo), *Lens culinaris*, L-4076 and PL-406

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## **PHYSICO-CHEMICAL STATUS OF GROUND WATER SAMPLES IN NAGERCOIL TOWN, KANYAKUMARI DISTRICT, TAMIL NADU**

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**Abstract:** The Physico-chemical status of water samples from five different stations in Nagercoil town was assessed. The study was carried out by collecting five groundwater samples (both bore-well and open well) during January 2011 – April 2011. The results were compared with standards prescribed by WHO and ISI 10500-91. Total 10 parameters were analysed. It was found that the ground water was contaminated at few sampling sites, namely, Vadassery market area, Meat area and agricultural area while the sampling sites residential area and rocky area showed physico-chemical parameters within the water quality standards and the quality of water is good and it is fit for drinking purpose.

**Keywords:** Ground water, physico-chemical parameter, open well, bore-well, Nagercoil Town.

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## **SALT TOLERANCE IN GERmplasm LINES OF BERSEEM (*TRIFOLIUM ALEXANDRIUM* L.)**

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**Abstract:** A field investigation was conducted in *Rabi* crop season 2001-02 at Main Experiment Station of Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad. The soil of the experiment was sodic having pH 8.9 and 10.6, exchangeable sodium percentage 42.5 and 86.5 and silt loam in texture. Forty nine germplasm lines were sown at two sodicity levels viz pH 8.9 and 10.6 in the month of October. Each line was in 3m row length and seed was broadcasted in rows replicated thrice. None of the germplasm lines could survive at pH 10.6. At the pH 8.9, all the lines survived ranging between 3 to 60 percent survival. The maximum survival (60%) was found in JHB-98-2-1 and I-90-B<sub>4</sub> germplasm lines followed by 350/28/6-10, JHB-97-2 and 3-90K having 50% survival. The germplasm lines viz Saidi Berseem, 350/28/44-50; 3-90-K, 350/28/53-55 and IL-98-94 were found to be tolerant under salt-affected condition.

**Keywords:** Salt tolerance, germplasm, Berseem, Sodidity

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## **ASSESSMENT OF CARBON STOCK AND FLORISTIC DIVERSITY IN COFFEE BASED AGROFORESTRY SYSTEMS IN CENTRAL WESTERN GHATS OF KODAGU IN INDIA**

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**Abstract:** The accumulation of shade tree biomass was 141.81 t/ha in native trees under evergreen as well as under moist deciduous vegetation 134 t/ha. Lowest biomass of 78.47 t/ha was noticed in exotic plantations under evergreen vegetation type. It was highest in native plantations of evergreen type 70.90 t/ha followed by native plantations under moist deciduous vegetation type 61 t/ha. It was least in case of exotic plantations 39.23 t/ha under evergreen conditions. And the total number of tree species found under evergreen vegetation was 94, which was much higher as compared to 61 species found under moist deciduous vegetation.

**Keywords:** Agroforestry system, Biodiversity, Carbon sequestration, Biosphere

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## **PHYSICO-CHEMICAL VARIATION ON *TIKHUR* POWDER OBTAINED FROM MOTHER AND FINGER RHIZOMES Soumitra Tiwari<sup>1</sup> and S. Patel<sup>2</sup>**

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**Abstract:** *Tikhur* is economically and medicinally important product of India as well as Chhattisgarh. The edible rhizome rich in powder content is processed to obtain *Tikhur* flour (powder). Powder recovery from mother and finger rhizomes 13.0% was obtained in traditional method of powder extraction. Mother rhizomes contain 3.0 % more powder as compare to finger rhizomes. Physico-chemical variation on *Tikhur* powder obtained from mother and finger rhizomes slightly differ in protein and fat but no more significant variation find therefore use of both part as powder are more economical. Powder content is 3% more compare to the finger rhizomes. *Tikhur* production in Chhattisgarh is fairly high but this area of study is still untouched and not much information is available on the production,

processing and value addition of this valuable crop. Therefore, it was attempted to study the processing of *Tikhur*. **Key words:** *Tikhur*, *Curmuma angustifolia*, herbs, rhizome, physico-chemical

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## **PHYSIOLOGICAL BASIS OF SUSCEPTIBILITY AND TOLERANCE IN RICE UNDER COMPLETE SUBMERGENCE**

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**Abstract:** A pot experiment was conducted during the Kharif season 2010-2011 with submergence tolerant varieties (NDR 9930111, Swarna Sub 1 and IR 64 Sub 1) and intolerant varieties (Mahsuri, Swarna and IR 64) rice genotypes in order to find out physiological traits associated with submergence tolerant and intolerant. Plants were raised in pots. At the age of 21 days seedling, pots were submerged in tank for 10 days. One group of plants were kept outside as non submerged control set. After 10 days submergence period, the plant were taken out from submergence tank and placed in open again for survival and recovery growth. Plant recovery was recorded 20 days after de-submergence. Tolerant genotypes had moderate elongation ability during submergence as compared to susceptible genotypes with greater elongation. Submergence tolerant genotypes NDR 9930111, Swarna Sub 1 and IR 64 Sub 1 had higher dry weight of shoot after submergence as compared to susceptible genotypes. Tolerant genotypes had higher total carbohydrate as compared to intolerant during submergence and stored carbohydrate is utilized for regeneration after de-submergence.

**Keywords:** Susceptibility, Rice, seedling, Kharif

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## **ENHANCEMENT OF GROWTH PARAMETERS OF CHICKPEA GENOTYPES THROUGH FOLIAR APPLICATION OF UREA UNDER RAINFED AND IRRIGATED CONDITIONS**

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**Abstract:** The influence of foliar application of 2% urea at different stages on growth of four chickpea (*cicer arietinum* L.) genotypes under rainfed and irrigated conditions. The irrigations had significant effect on the growth attributes i.e. plant height, number of branches per plant, dry matter accumulation, leaf area and total chlorophyll content of chickpea at all the stages of crop. This could be explored by the fact that lack of moisture affected various physiological processes adversely which reflected in growth attributing characters and ultimately in the grain yield. Irrigated crop recorded highest number of nodule and nodule weight per plant as compared to rainfed condition. Irrigation might have increased nodulation, as soil moisture has been shown to affect nodulation. At pod setting stage, nodule number starts declining and caused a reduction of about 38%. Pusa 362 produced more number of branches, higher dry matter accumulation, leaf area, root weight, nodule number and nodule weight over rest of genotypes, which indicated their expression of genetic character under iso-nutritional and good conditions. Pusa 1053 produced significantly taller plant as compared to other genotypes. Double foliar spray of urea (2%) at 50% flowering and pod setting stages recorded higher value of growth attributes i.e. plant height, number of branches, dry matter accumulation, leaf area, total chlorophyll content, root weight, nodule number and nodule weight of chickpea genotypes. The increased availability of nitrogen and water to plants through foliar spray may be responsible for improvement in growth of chickpea. Foliar spray of urea solution at vegetative growth periods may help to reduce the adverse effect of moisture stress on crop plants.

**Keywords:** Rainfed, Nodule number, root weight, Foliar spray of urea

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## **SYNOPTIC ANALYSIS OF FABACEAE S.L. (LEGUMINOSAE) OF SOME REGIONS OF DISTRICT KATHUA (J & K), INDIA**

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**Abstract:** The present communication deals with documentation of members of family Fabaceae *s.l.* from some regions of district Kathua (Jammu and Kashmir, India). A total of 28 genera represented by 41 species have been reported classified and they are classified into 11 different tribes. This study is first of its kind as far as district Kathua is concerned.

**Keywords:** Leguminosae, Fabaceae, Kathua

## **GROWTH AND YIELD OF SHORT SLENDER AROMATIC RICE (*ORYZA SATIVA* L.) VARIETIES AS INFLUENCED BY INTEGRATED NUTRIENT MANAGEMENT**

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**Abstract:** An experiment was conducted during the *kharif* season of 2009 at Instructional Cum Research Farm of Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh. The result of the experiment revealed that between two varieties, Badshah Bhog was found to produce higher growth, yield attributing characters, yield and B:C ratio as compared to Gopal Bhog. For quality production of scented rice varieties, application of only organic nutrients *i.e.* 20 t FYM ha<sup>-1</sup>(T<sub>1</sub>) was found superior than other integrated nutrient management treatments. As regards to the effect of different integrated nutrient management, the results revealed that various growth parameters and yield attributing characters were recorded highest with the application of 50:50:60 kg NPK ha<sup>-1</sup> with blending of N and P through FYM (T<sub>6</sub>) which also gave the highest yield and economic return.

**Keywords:** FYM, Inorganic fertilizer, Poultry manures, Scented rice, Vermicompost

## **EFFECT OF PRIMERS ON GROWTH AND BIOCHEMICAL PARAMETERS OF RAINFED RICE**

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**Abstract:** An experiment to study the effect of primers on growth and biochemical parameters of rice (Var. NDR-118) was conducted at Department of Crop Physiology, N.D. University of Agriculture & Technology, Kumarganj, Faizabad (U.P.). Seed priming was done by soaking the seeds for 16 hours in distilled water, GA<sub>3</sub> 50 ppm, GA<sub>3</sub> 100 ppm, GA<sub>3</sub> 150 ppm, K<sub>2</sub>HPO<sub>4</sub> 300 ppm, K<sub>2</sub>HPO<sub>4</sub> 400 ppm and K<sub>2</sub>HPO<sub>4</sub> 500 ppm. Application of primers brought a considerable increase in growth parameters like root length, root and shoot dry weight. The biochemical parameters viz., total chlorophyll content, total soluble carbohydrate and nitrate reductase activity showed a significant increase due to seed priming. Among different treatments, GA<sub>3</sub> 100 ppm was the best treatment in increasing these parameters being at par with GA<sub>3</sub> 50 ppm and significantly higher than rest of the treatments.

**Keywords:** GA<sub>3</sub>, primers, rice, soluble carbohydrate, nitrate reductase

## **IMPACT OF DIFFERENT GENOTYPES ON GROWTH AND YIELD PARAMETERS OF ELEPHANT FOOT YAM (*AMORPHOPHALLUS COMPANULATUS* DECNE.) UNDER CHHATTISGARH PLAINS**

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**Abstract:** The experiment was conducted at Research and Instructional Farm, Department of Horticulture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (Chhattisgarh) during the year 2010-11 in factorial randomized block design with 6 treatments which were replicated three times with an objective to study the effect of different genotypes on growth and yield on elephant foot yam. The treatment consisted of six genotypes of elephant foot yam *viz.* IGAM-1, IGAM-2, IGAM-8, NDA-2, TRC-Badama and Sree Padma. Data revealed that genotype G<sub>4</sub> (NDA-2) proved its superiority followed by G<sub>1</sub> (IGAM-1), G<sub>2</sub> (IGAM-2), G<sub>3</sub> (IGAM-8), G<sub>5</sub> (TRC-Badama) and G<sub>6</sub> (Sree Padma) for sprouting per cent, number of stems/plant, canopy spread (E-W and N-S), size of corm (diameter), number of cormels/plant, weight of cormels/plant, corm yield (kg/plant), total corm yield (q/ha) and dry matter per cent of corm. Genotype G<sub>2</sub> (IGAM-2) superior for plant height and average weight of corm, genotype G<sub>3</sub> (IGAM-8) superior for girth of stem, genotype G<sub>5</sub> (TRC-Badama) superior for days to first emergence and genotype G<sub>6</sub> (Sree Padma) superior for days to senescence.

**Keywords:** Genotype, elephant foot yam, yield

## **CONSTRAINTS FACED AND SUGGESTIONS MEET BY THE KVK BENEFICIARIES FARMERS**

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**Abstract:** The study was carried out in Anand district of Gujarat state during 2008-09 to seek the constraints and suggestions offered by the beneficiaries to overcome the constraints. The investigation was done in two taluka of selected district, five villages are selected from each taluka and from each village 4-15 beneficiaries farmers were selected for the study. Study concluded that the unavailability of improved seeds is main constraints followed by high cost insecticides and pesticides whereas majority (95.00%) of the respondents expressed number of training programme should be increase, ensure the timely availability of the improved seeds and fertilizers (87.50%) are the main constraint.

**Keywords:** Constraints, Suggestions and Krishi Vigyan Kendra etc.

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## **PROBLEMS IN ADOPTION OF RECOMMENDED MARIGOLD PRODUCTION TECHNOLOGY AMONG MARIGOLD FARMERS OF CHHATTISGARH**

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**Abstract:** This study was carried out in Bilaspur district of Chhattisgarh during 2010 in two selected blocks. The study aims to assess major problems faced by marigold growers in adoption of recommended marigold production technology. 150 randomly selected farmers who were practicing marigold cultivation were interviewed to collect the primary data. The collected data were analyzed with the help of suitable statistical techniques to draw appropriate conclusions. The findings of this study reveal that the major problems faced by the respondents regarding recommended marigold production technology were lack of availability of labour, perceived new technology as costly, lack of training facilities on flower cultivation and excess post harvest losses, etc. The major suggestions given by the respondents for solving the problems as faced by them were market as well as cold storage facility should be increased, knowledge should be increased in various aspects of marigold production technology i.e. seed treatment, wise use of irrigation, wise use of fertilizer, use of proper dose of fungicide, insecticide, weedicide, through systematic training/regular programme, the trainings should be provided on different aspects of recommended marigold production technology, etc.

**Keyword:** Marigold production, Problems, Suggestions, Marigold growers

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## **ECONOMICALLY SUITABLE ROW PATTERN FOR COTTON INTERCROPPING UNDER VERTISOLS OF CHHATTISGARH**

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**Abstract:** An experiment was conducted under *Vertisols* of Chhattisgarh during rainy season of 2008-2009 to study of economically profitable crops in different combination of cotton intercropping. The experiment was laid out in randomized block design with three replications. The results revealed that, the growth characters of cotton like- plant height, number of branches, dry matter accumulation were the highest with sole cotton. The green bolls per plant in cotton were the highest under sole cotton. Sole cotton resulted in maximum seed cotton and stalk yield as compared to other treatments. However, cotton + soybean (1:1) and (2:2) and cotton + coriander (1:1) recorded the highest plant height, Dry matter accumulation, leaf area index and crop yield at different stages of crop growth period at 30 DAS, 60 DAS, 90 DAS, 120 DAS and at harvest stage excelled over sole cotton and other treatment combinations. The highest net income 52605.50 Rs. / ha and benefit ratio 2.70 was found in cotton + soybean (1:1) and followed by cotton + soybean (2:2).

**Keyword:** Cotton intercropping, Row ratio, yield and Economics

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## **EFFECT OF CROP RESIDUES AND THE GREEN MANURE INCORPORATION IN WHEAT ON GROWTH, NUTRIENT UPTAKE AND YIELD UNDER RICE BASED CROPPING SYSTEM**

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**Abstract:** A field experiment was conducted at the Research Farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during *Rabi*, season 2008-2009 to study the effect of crop residues and the green manure incorporation in wheat on growth, nutrient uptake and yield under rice based cropping system. The seven treatments namely no straw and 0kg RDF (T<sub>1</sub>), no straw + RDF (T<sub>2</sub>), straw burn+RDF(T<sub>3</sub>), straw incorporated +RDF (T<sub>4</sub>), straw incorporated with 25% N+ RDF\*(T<sub>5</sub>), straw incorporated with 5t GM/ha+RDF\* (T<sub>6</sub>), straw incorporated with microbial culture + RDF (T<sub>7</sub>) were replicated four times in RBD. The NPK uptake in seed and stover significantly increase by crop residue management compared does control. The higher nitrogen (52.79 kg ha<sup>-1</sup>) and phosphorus uptake (15.23 kg ha<sup>-1</sup>) in seed was found with straw burn+RDF (T<sub>3</sub>), but, potassium uptake in seed highest (2.27 kg/ha) was found with straw incorporated with 5t GM/ha+RDF\*(T<sub>6</sub>) while potassium uptake was found with straw incorporated along with 25% N as starter dose and highest phosphorus uptake was observed with straw incorporated along with microbial culture. The yield parameter affected by different treatment. The highest no. of tiller and highest spike was observed with straw bunt which was significant to control but non-significant to all other treatment. The higher seed and stover yield was found with straw burnt and straw incorporated along with 25% N as starter dose. The higher seed yield (26 q/ha) was recorded with straw burnt+RDF (T<sub>3</sub>) which was also similar to straw incorporated +RDF (T<sub>4</sub>), straw incorporated with 25% N+RDF\* (T<sub>5</sub>), Straw incorporated with 5t GM/ha+RDF\*(T<sub>6</sub>) and straw incorporated with microbial culture +RDF (T<sub>7</sub>) but significantly deference between no straw and 0 kg RDF (T<sub>1</sub>) and no straw +RDF (T<sub>2</sub>). The lowest seed yield (14q/ha) was recorded in no straw and 0 kg RDF (T<sub>1</sub>). The highest stover yield (54.5 q/ha) was found in straw incorporated with 25%N+RDF\*(T<sub>5</sub>) and lowest (35.75 q/ha) was with no straw and 0 kg RDF (T<sub>1</sub>). Significantly the highest harvest index (34.90%) was obtained with straw burnt+RDF (T<sub>3</sub>). Whereas, the lowest harvest index (28.14%) was obtained with no straw and 0 kg RDF (T<sub>1</sub>).

**Keyword:** crop residues, green manure and wheat yield

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## **RESPONSE OF LINSEED (*LINUM USITATISSIMUM* L.) VARIETIES TO VARYING FERTILITY AND IRRIGATION LEVELS IN VERTISOLS OF SOUTH-EAST RAJASTHAN**

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**Abstract:** A field experiment was conducted during *rabi* seasons of 2000-01 and 2001-02 at Agricultural Research Station, Ummadganj, Kota to find out the suitable variety of linseed for fertility and irrigation. The experiment consisted of 24 treatment combinations, comprised of 2 varieties (Meera and Rashmi), 3 irrigation schedules (IW/CPE of 0.3, 0.5 and 0.7) kept in main plots and 4 fertility levels (0 kg N + 0 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup>, 40 kg N + 20 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup>, 80 kg N + 30 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> and 120 kg N + 40 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup>) in sub plots in split plot design with 3 replications. Maximum seed yield, contents of N, protein and oil and oil yield was recorded in Meera as compared to Rashmi. Significantly higher seed yield (15.47 q/ha) was recorded at IW/CPE of 0.5 which was 20.11 % higher than IW/CPE of 0.3. Significantly and maximum higher oil yield (662 kg/ha) and protein content (11.98 %) was recorded at IW/CPE of 0.5 and per cent increased was 11 and 10.7 over IW/CPE of 0.3. The higher seed yield (17.48 q/ha) was recorded by application of 80 kg N + 30 kg P<sub>2</sub>O<sub>5</sub>/ha, which was 22.2 and 92.1 % higher over 80 kg N +20 kg P<sub>2</sub>O<sub>5</sub>/ha and no fertilization. The oil content (42.80) and oil yield (753.60 kg ha<sup>-1</sup>) also significantly increased by 3.62 and 12.2, 26.82 and 115.70 per cent at 80 kg N +30 kg P<sub>2</sub>O<sub>5</sub>/ha over 40 kg N +20 kg P<sub>2</sub>O<sub>5</sub>/ha and 0 kg N +0 kg P<sub>2</sub>O<sub>5</sub>/ha, respectively.

**Keywords:** N content, Oil yield, Protein content, Seed yield

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## **PHYSICO-CHEMICAL PROPERTIES OF VERTISOL AT DIFFERENT STAGES OF TRANSPLANTED RICE AS INFLUENCED BY LONG TERM APPLICATION OF FERTILIZERS AND MANURE UNDER CHHATTISGARH CONDITION**

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**Abstract:** A field study was carried out during *Kharif* season of 2010-11 at the Research and Instructional Farm of Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur. Experiment was conducted to examine the “Physico-chemical properties of *vertisol* at different stages of transplanted rice as influenced by long term application of fertilizers and manure under *chhattisgarh* condition”. The experiment was carried out in randomized block design with 4 replications having treatments: T<sub>1</sub> (Control without fertilizer), T<sub>2</sub> (100% NPK), T<sub>3</sub> (100% N alone), T<sub>4</sub> (100%NPK+FYM), and T<sub>5</sub> (50%NPK+Green manure). A medium duration high yielding paddy variety “Mahamaya” was taken as crop. The soil pH and EC decreased in

T<sub>3</sub> (100% N alone) treatment. However, it remained constant in T<sub>2</sub> (100%NPK), T<sub>4</sub> (100%NPK+FYM), and T<sub>5</sub> (50%NPK+GM). The organic carbon content under treatment T<sub>4</sub> (100%NPK+FYM) was found to be significantly higher in all the growth stages when compared with control. The soil moisture was also found higher in under treatment T<sub>5</sub> (50%NPK+GM). The texture of the soil under study was estimated to be sand (20.40%), silt (35.30%) and clay (45.0%), respectively.

**Keyword:** Long Term, Rice, Different Stage, Physic Chemical Properties

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## **TO ANALYZE SOCIO-ECONOMIC PROFILE OF BRINJAL GROWERS IN CHHATTISGARH**

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**Abstracts:** The present investigation was carried out during the year of 2010-11 in 12 selected villages in Durg district of Chhattisgarh. This study aims to assess socioeconomic profile of the brinjal growers. From each selected village ten farmers were selected randomly, thus total 120 farmers were selected for the present study. The data were collected through personal interview with the help of pretested interview schedule and analyzed by using appropriate statistical tools like mean, standard deviation frequency and percentages etc. The findings of this study revealed that the majority of the respondents were found in middle age group, educated upto higher secondary level, belonged to other backward class, medium family size and had membership in two and more than two organization. Majority of the respondents were small farmers with Agriculture + Brinjal cultivation + labor as their main occupation and belonged to the income category Rs 45,001 to 1.55 lacs per year having medium size (2.1 to 4.0 ha) of land holding. Majority of the respondents took credit from friends.

**Keywords:** Socio-personal, socioeconomic characteristics, durg, Chhattisgarh

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## **VARIABILITY STUDIES IN BRINJAL (*SOLANUM MELONGENA* L.)**

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**Abstract:** The genetic parameters were estimated in twelve genotypes including its local germplasm and national checks of Brinjal. The study revealed highly significant differences for most of the traits. High Genotypic and Phenotypic Coefficient of Variance were observed for number of long style flowers per inflorescence, number of fruits per cluster, number of medium style flower per inflorescence, rind thickness, average fruit weight, fruit length, fruit girth, number of flowers per inflorescence, total fruit yield per plant, number of branches per plant and total fruit yield per plant indicating effectiveness of simple selection for improvement of these characters. The low estimates of GCV & PCV were observed for days to first flowering and days to first fruiting while, the moderate estimates of Genotypic Coefficient Variance were exhibited for the characters stalk length, total fruit yield per plant, plant height. The highest estimates of GCV, heritability coupled with high genetic advance was observed for average fruit weight, indicating effectiveness of simple selection for improvement of these characters.

**Keywords:** Brinjal, GCV, PCV, Heritability, Genetic Advance, Yield

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## **HOST PREFERENCE OF PULSE BEETLES (*CALLOSOBRUCHUS* SPP.) AGAINST SELECTED PULSES**

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**Abstracts:** The host preferences of pulse beetles with eight pulses were made under laboratory conditions at the interval of different hours revealed that the green gram (*Vignaradiata*) was the most preferred while lentil (*Lenceesculentum*) least preferred. Lentil was comparatively less preferred for oviposition (83.33 eggs/100 g seeds). The developmental period (32.33 days), adult survival (79.33 %) and weight loss of grains (1.93%) was also less followed by pigeon pea.

**Keywords:** Host preference, pulse beetle, oviposition

## **EFFECT OF DIFFERENT BASE MATERIAL FOR SPAWN PRODUCTION OF NEW STRAIN IGKVM-11 OF OYSTER MUSHROOM (*PLEUROTUS* SP.)**

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**Abstract:** The effect of different base materials viz. sorghum, bajra, ragi, kutki, kodo, wheat, maize and paddy grains on the production of spawn of new strain IGKVM-11 of oyster mushroom (*Pleurotus* sp.) was studied. The minimum period for spawn development was recorded in sorghum grains (10.00 days) followed by Bajra (11.00 days) grains and maximum period for spawn development was recorded in paddy grains (20.00 days) followed by Maize (19.00 days). The results clearly demonstrated that between different base materials used for spawn production, maximum growth rate were recorded on sorghum grains. The second best grain for spawn production of new strain IGKVM-11 of oyster mushroom (*Pleurotus* sp.) on bajra grains.

**Keywords:** *Pleurotus* sp.; sorghum; spawn; grains; oyster mushroom.

### **Short communication**

## **STUDIES ON PHYSICO-CHEMICAL PARAMETERS OF GUAVA (*PSIDIUM GUAJAVA* L.) CV. L-49 THROUGH DRIP IRRIGATION AND MULCHING UNDER AGRO-CLIMATIC CONDITION OF CHHATTISGARH PLAINS**

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**Abstract:** The experiment was carried out during the year 2009-2010 in Randomized Block Design (RBD) with five replications and eight treatments allocating mulching with different irrigation levels viz., 100%, 80% and 60% of water through drip and flood irrigation. The guava variety L-49 was taken with the objectives to study scheduling of irrigation under drip irrigation systems, to workout the water requirement of guava and to assess the effect of black plastic mulch on physico-chemical composition of guava fruits. The use of 80 per cent water through drip irrigation with plastic mulch was found effective for guava plants. The plants in respect of fruit weight, fruit volume, pulp: seed ratio, TSS (maximum), pH (maximum) and non-reducing sugar (maximum) were found superior under 80 per cent water through drip with plastic mulching. Whereas, the treatment having 60 per cent water through drip with plastic mulch was found effective for fruit diameter, weight of pulp, reducing sugar (maximum), acidity (minimum) and total sugar (maximum). The treatment under 100 per cent water through drip with plastic mulch recorded maximum ascorbic acid (%) in the fruits.

**Keywords :** Drip irrigation, mulching, guava, physico-chemical parameters

### **Short communication**

## **EFFECT OF INTERCROPPING COWPEA, FRENCH BEAN, TURMERIC AND GINGER WITH COLOCASIA UNDER AGRO-CLIMATIC CONDITIONS OF CHHATTISGARH PLAINS**

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**Abstract:** The experiment was carried out in the field of AICRP on tuber crops, Research and Instructional Farm, Department of Horticulture, College of Agriculture (IGKV), Raipur (C.G.) during *Kharif*, 2010-11. The experiment was laid out in a randomized block design with nine treatments three replications with an objective to study the effect of intercropping cowpea, french bean, turmeric and ginger with colocasia under agro-climatic conditions of Chhattisgarh plains. The treatment consisted of sole and intercropping viz: T<sub>1</sub>- Colocasia (sole) with 60 x45 cm, T<sub>2</sub> - Colocasia + Cowpea (1:1) with 60 : 30 cm, T<sub>3</sub> - Colocasia + Cowpea (1:2) with 60 : (15 : 15) cm, T<sub>4</sub> - Colocasia + French bean (1:1) with 60 : 30 cm, T<sub>5</sub> - Colocasia + French bean (1:2) with 60 : (15 : 15) cm, T<sub>6</sub>- Colocasia + Turmeric (1:1) with 60 : 30 cm, T<sub>7</sub>- Colocasia + Turmeric (1:2) with 60 : (15 : 15) cm, T<sub>8</sub>- Colocasia + Ginger (1:1) with 60 : 30 cm, T<sub>9</sub>- Colocasia + Ginger (1:2) with 60 : (15 : 15) cm. The name of variety for different crops are Colocasia : Indira Arvi-1, Cowpea : Pusa komal, French bean :

Contender, Turmeric : Rashmi, and Ginger: Suprabha The result revealed that growth parameters of colocasia viz., plant height, number of leaves and yield attributes like number of cormels plant<sup>-1</sup>, weight of cormels plant<sup>-1</sup> weight of mother corm plant<sup>-1</sup>, total yield plant<sup>-1</sup>, total tuber yield and marketable tuber yield t ha<sup>-1</sup> were recorded significantly highest under sole cropping of colocasia. Among all intercropping system, plant height and number of cormels plant<sup>-1</sup> were observed higher under colocasia + cowpea at the 1:1 row ratio followed by colocasia + french bean at the 1:1 row ratio. Beside that; weight of cormels plant<sup>-1</sup>, weight of mother corm plant<sup>-1</sup>, total tuber yield and marketable tuber yield t ha<sup>-1</sup> were found higher under colocasia + ginger at the 1:1 row ratio among the other intercropping system.

**Keywords:** Intercropping, colocasia, cowpea, frenchbean, turmeric, ginger

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**Short communication**

**SCREENING AND EVALUATION OF ANTI-MICROBIAL ACTIVITY IN TYLOPHORA INDICA**

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**Abstract:** In present study, aqueous and alcoholic extract of both parental and *in vitro* medicinal plant *Tylophora indica* was selected for evaluate antimicrobial activity against *Staphylococcus aureus* ATCC 25923, *Streptococcus agalactiae*, *Enterococcus faecalis*, *Staphylococcus epidermidis*, *Streptococcus pyogenes*, *Bacillus species*. Agar well diffusion was used to evaluate antimicrobial activity. Results indicated antibacterial activity of the aqueous and alcoholic extracts of *in vitro* raised calli of *Tylophora indica* against the tested gram-positive bacteria are shown in the table 1. Significant activity (P<0.05) was observed against *Staphylococcus aureus* and *Staphylococcus epidermidis* in the alcoholic leaf callus extract. Against these gram positive bacteria no significant activity was exhibited by the aqueous leaf callus extract. No activity was observed against the tested gram-positive bacteria in alcoholic as well as aqueous extracts of root and nodal calli.

**Keyword:** Antimicrobial activity, *Tylophora indica*

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**Short communication**

**INTEGRATED WEED MANAGEMENT IN SYSTEM OF RICE INTENSIFICATION (SRI) FOR SECURED LIVELIHOOD**

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**Abstracts:** Weeds not only cause quantitative, but also hamper the quality of produce owing to competition for nutrients, moisture, light and to some extent for space. The extent of yield reduction of rice due to weeds is estimated from 15-95 per cent (Gogai *et al.*, 1996).

**Keywords:** Livelihood, Rice, Weed

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**Short communication**

**PRODUCTIVITY ENHANCEMENT OF SOYBEAN (GLYSINE MAX.) THROUGH INTEGRATED NUTRIENT MANAGEMENT IN HADOTI REGION OF RAJASTHAN**

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**Abstract:** Among the factors responsible for low productivity of soybean, inadequate fertilizer use and emergence of nutrient deficiencies due to poor recycling of organic sources are important. To enhance the productivity of soybean integrated nutrient management package incorporating vermicompost was evaluated at farmers' field. Results of study revealed that application of 50% N by vermicompost +rest N, P and K of RDF by inorganic fertilizer gave significantly higher seed yield (15.85 q/ha) and net return (Rs 20,196 / ha) which was 17.41% and 26.08% higher, respectively over farmer practice and were at par with RDF owing to the integration of vermicompost.

**Keywords:** Soybean, Productivity, integrated nutrient management, vermicompos

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## **CONSTRAINTS IN PRODUCTION AND MARKETING OF SOYBEAN IN RAJNANDGAON DISTRICT OF CHHATTISGARH**

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**Abstract:** The present study was conducted in the Rajnandgaon districts of Chhattisgarh. The primary data were collected from randomly selected soybean growers of three soybean growing villages of Rajnandgaon block for the year 2006-07. Major constraints pertaining to cultivation of soybean were lack of irrigation facilities (76.67 per cent) followed by lack of recommended package practices of crop (65.00 per cent) and lack of technical knowledge (61.67 per cent). Other constraints are lack of resources (58.33), lack of financing (51.67) and lack of HYV seed (45.00 per cent). Constraints in the marketing of soybean were lack of storage facilities (88.66) followed by lack of regulated and cooperative market (71.66 per cent) and small marketable surplus (66.66 per cent). Study suggested that the irrigation facilities are to be developed in the proper way so that farmers can adopt improved technologies with assured irrigation facilities. It is essential to adopt the production system approach of linking the production technology, credit and marketing of soybean as was done under Technology Mission of Oilseeds, to raise the production of soybean particularly.

**Keywords:** Constraints, Production, Marketing, Economics

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## **A CASE STUDY OF BROILERS MARKETING IN RAJNANDGAON DISTRICT OF CHHATTISGARH STATE**

**D.K. Verma<sup>1</sup>, K.N.S. Banafar<sup>2</sup>, M.R. Chandrakar<sup>3</sup> and Dilip Kumar<sup>4</sup>**

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**Abstract:** About 80 per cent population lives in rural area and 60 per cent of rural population is unemployed or underemployed. It implies that majority of rural people are poor and poverty stricken. Pressure on agricultural land is increasing year after year due to fragmentation of land, industrialization, urbanization and also population explosion. Thus there is a need activity like poultry farming, poultry has been attached in a number of central and state government sponsored scheme such as Integrated Rural Development Programme (IRDP), Special Livestock Production Programme (SLPP), Tribal Development Programme (TDP), and Special Livestock Breeding Programme (SLBP) to encourage poultry farming among rural poor's.

**Keywords:** Marketing, Rural, Poultry, Tribal