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ROOTSTOCKS OF ALMOND

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Abstract : It is well known that rootstocks are used for tree size control but we may need to remind ourselves of their other benefits. They have other specific influences such as winter hardiness, early yield, good fruit size, phytophthora and collar rot resistance, replant disease tolerance and mildew and woolly aphid resistance. The one thing they all have in common is that they produce a uniform stand of trees. The attributes required for a rootstock have become more sophisticated over the years, but limiting excessive growth, precocity, enhancing cropping efficiency and wider adoptability to biotic and abiotic factors remains the primary targets while using rootstocks. In recent past, clonal rootstocks of temperate fruits developed in Russia, Poland, USA, UK, France etc are being evaluated in the different areas of the world (M, MM, P, Bud, MAC, Ottawa series in Apple, OH x F, Oregon series in Pear, Gisela series in Cherry, Peach x Almond hybrids rootstocks etc). "Lapins" sweet cherry cultivar had lowest trunk cross sectional area under Gisela 5 but yield efficiency was highest. Mariana plum rootstock GF 8-1 resisted to water logging for 145 and 50-60 days in winter and summer respectively, highest than other stocks studied. Various clonal and seedling rootstocks of apple, pear, peach, plum, cherry etc have been rated for their resistance, tolerance or susceptibility to biotic and abiotic factors by different researchers. Cherry rootstock Avima Argot and CAB 11 E resulted in 100% survival as compared to Colt (84.6%) under non irrigated conditions from 1996 to 2004. Modern genetic engineering technology is starting to realize much of its promise in the identification of markers that will reduce reliance on tedious, expensive, long-term field trials and thus accelerate progress. Much good scientific work and challenges remain.

Keywords : Almond, Rootstocks, Tree

SEABUCKTHORN – A VALUABLE RESOURCE OF THE COLD DESERT (LADAKH)

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Abstract: Seabuckthorn grows extensively throughout Ladakh region of J&K state (India). Its distribution extends from Nubra (District Leh) on one side upto Drass (District Kargil) on the other and encompasses Zaskar valley. It is a dioecious thorny shrub and if left undisturbed, attains the size of a small tree. The plant has gained tremendous importance by virtue of its pharmaceutical, cosmaceutical and nutraceutical value. Despite having such a potential, the plant is still under utilized in this region.

Keywords: Cosmaceutical, Dioecious, Ladakh, Nutraceutical, Pharmaceutical, Seabuckthorn, Underutilized

**CORRELATION BETWEEN PHYSICO-CHEMICAL FACTORS AND
PHYTOPLANKTON GROWTH WITH REFERENCE TO *MICROCYSTIS* SP. IN
THE HERITAGE TANK BINDUSAGAR, ODISHA**

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Abstract: The relationship between the nutrient level and growth of different phytoplanktonic forms was studied in Bindusagar (Bhubaneswar, Odisha). Growth of *Microcystis* sp. in a water body is regarded as an indicator of water pollution. It is a notorious, potentially toxic Cyanobacteria that causes problems in freshwaters all over the world. It contains gas vesicles that make it lighter than water, so that it can accumulate at the surface of the water column, forming toxic scums. All the organic substances, after religious performances, are thrown into the tank, round the year and this organic nutrition, in water encourages bloom formation. *Microcystis* produces hepatotoxic as well as neurotoxic protein known as microcystin that is harmful for aquatic flora, fauna, domestic animals, birds as well as for human beings.

Keywords: Algal forms, *Microcystis* sp. Pollution, Temple tank

**GENETIC DIVERSITY, DOMESTICATION AND CONSERVATION
IMPLICATIONS OF FRUIT MORPHOMETRIC DATA ANALYSES FOR
DACRYODES EDULIS IN SOUTHERN NIGERIA**

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Abstract : *Dacryodes edulis* – African Pear is of socio-economic importance in the Southern region of Nigeria where it is a major auxiliary revenue source for farmers. Cluster and Principal Component analyses of the fruit data showed three distinct groupings; small-sized fruit, large-sized fruit and an intermediary group of mixed fruit types. These reflect the cadre of genetic diversity inherent in the taxon, and constitute a possible veritable tool for its improvement. Notwithstanding the diversity, the prevailing spread pattern of the taxon across the region threatens to erode a section of the species genetic richness; the small-sized fruit types - var. *parvicarpa*, as well as undermine the genetic integrity of large-sized fruit var. *edulis* population. The trend is driven by a vendor/farmer preference for the large-sized fruit type across the region, and except there is deliberate *In situ* and *Ex-situ* conservation efforts, these intraspecific diversities of the species may be lost altogether.

Keywords : African pear, Farmer/vendor, Genetic erosion, Intra-specific diversity, Spread pattern.

**CONCEPT OF ORGANIC FARMING
AND GREEN FOOD PRODUCTION IN HORTICULTURE**

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Abstract : Now a days, the term “Organic” is getting popularity in all aspects along with agricultural products. But as far as a farmer is concerned, the organic matter in the soil is important as it provides everything to the soil, good health, and character relation with crop, microclimate for microorganisms etc.

Keywords : Organic farming, Fertilizer, Production, Horticulture

**ELUCIDATION OF ANALGESIC ACTIVITY OF HYDROETHANOLIC EXTRACT
OF *EUPHORBIA NERIIFOLIA* LEAVES IN SWISS ALBINO MICE**

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Abstract : The study was carried out to elucidate the analgesic activity and the possible mechanism(s) of action of hydro-ethanolic extract (HEE) of *Euphorbia neriiifolia* (EN) leaves using Swiss albino male mice (15-20g). The peripheral analgesic activity of HEE of EN (150, 300 and 400mg/kg body weight, oral) was studied using acetic acid induced abdominal constriction method. The central analgesic activity of HEE of EN was studied using tail immersion and hot plate method in mice. The principle findings of EN at the dose of 150, 300 and 400mg/kg p.o, showed significant ($p < 0.01$) decrease in acetic acid-induced writhing, whereas significant ($p < 0.05$ and $p < 0.01$) increase in latency to tail flick in tail immersion method and elevated mean basal reaction time in hot plate method was also observed. Overall, results demonstrated that HEE of EN possesses significant analgesic activity which confirms the traditional claims of EN mentioned in Ayurveda.

Keywords : Analgesic activity, Aspirin, Albino mice, Acetic acid, *Euphorbia neriiifolia*

**KARYOMORPHOLOGICAL STUDIES IN FOUR SEED SPICES OF
UMBELLIFERAE**

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Abstract: Karyomorphological studies were performed in four seed spices of Umbelliferae (the species also possesses immense therapeutic uses) namely, *Apium graveolens* L. (celery), *Cuminum cyminum* L. (cumin), *Foeniculum vulgare* Mill. (fennel) and *Trachyspermum ammi* L. (ajowan) and it revealed six (celery: $2n = 22 = 4D_{sm}^{sc} + 2D_{sm} + 2C_m^{sc} + 10C_m + 2J_m + 2K_{sm}$; cumin: $2n = 14 = 2D_{sm} + 2E_{st}^{sc} + 4E_{st} + 2G_{sm} + 2H_{st} + 2I_t$ and ajowan: $2n = 18 = 2A_{sm}^{sc} + 2B_{st} + 2C_m^{sc} + 4C_m + 2D_{sm} + 6E_{st}$) and four (fennel: $2n = 22 = 8C_m + 4D_{sm}^{sc} + 2D_{sm} + 8F_m$) morphologically distinct chromosome types. Metacentric chromosomes were prevalent in celery and fennel; while, a telocentric pair was located in cumin. Characteristically two long and two short pairs of chromosomes were marked in ajowan and celery respectively. Total haploid chromatin length was noted to be $30.41 \mu m \pm 2.30$ in celery, $19.04 \mu m \pm 1.61$ in cumin, $29.12 \mu m \pm 2.73$ in fennel and $32.45 \mu m \pm 3.52$ in ajowan. Celery and fennel were found to possess symmetric karyotypes. Satellites in all the cases were associated to short arms.

Keywords: Karyomorphology, Seed spices, Umbelliferae

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IMPACT ASSESSMENT OF REJUVENATION TECHNOLOGY AND INTEGRATED PLANT NUTRIENT MANAGEMENT IN OLD GUAVA ORCHARD THROUGH FARMERS PARTICIPATORY APPROACH

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Abstract : An on farm trial was conducted in old guava orchard to assess the rejuvenation and integrated plant nutrient management (IPNM) technologies to restore yield and quality traits from exhausted trees of cv. Allahabad Safeda for the three consecutive years i.e. 2007-10. The eighteen year old trees of selected guava orchard were pruned drastically at a height of 2.00 meter in 2007-2008. It was observed that topping and heading back increased the number of new shoots (below the cut portion) and spread of plant significantly resulting in reduced tree height and improved fruiting potential of trees as compared to farmers practice. As a result of pruning practices increased flowering shoots (39.66%) have given higher yield 63.44 kg tree⁻¹ (average of Ist, IInd, IIIrd years) followed by un pruned well managed trees (44.16 kg tree⁻¹), with having increased yield 107.72 per cent and 44.59 per cent over farmers practice (30.54 kg tree⁻¹) respectively. However, initial yield was recorded lower in rejuvenated plants (29.00 kg tree⁻¹) as compared to T2 (38.66 kg tree⁻¹) and farmers practice (35.50 kg tree⁻¹). The economic analysis revealed that B: C ratios were much higher in rejuvenated plants i.e. T1 (3.76) than T2 (2.38) and farmers practice T3 (1.43).

Keywords : Canopy management, Heading back, *Psidium guajava* L., Yield & quality attributes

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MAJOR WEEDS OF RABI CROPS IN BLOCK CHAMBA, DISTRICT TEHRI GARHWAL (UTTARAKHAND), INDIA

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Abstract : The present communication pertains to major weeds of Rabi crops in block Chamba district Tehri Garhwal (Uttarakhand). The study was based on the extensive and intensive field surveys carried out during different months of Rabi season 2009-11. During the course of field study the authors have selected 05 important agaracarian villages of block Chamba i.e Dharsal, Saundkoti, Sabli, Jagdhar and Nagani, Three sites were selected in each village for collection of weed species. A total of 66 weeds belonging to 01 monocot and 22 dicot families were reported from the study area. The maximum dominance was shown by family Asteraceae and Fabaceae having 14 and 09 weed species respectively. The monocot family (Poaceae) was represented by 05 weed species.

Keywords : Chamba, Tehri, Weed

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ANALYSIS OF SOCIO-ECONOMIC PROFILE OF THE ATMA BENEFICIARIES OF CHHATTISGARH

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Abstracts : The present study was carried out during 2011 in the Surguja district of Chhattisgarh state. This study was conducted in randomly selected 10 villages of three purposively selected blocks i.e. Ambikapur, Lundra, Surajpur located in Surguja district. The aim of this study to assess the socio-personal and socio-economic characteristics of the respondents. A total of 150 respondents including 100 beneficiary and 50 non-beneficiary farmers were selected randomly. The data collection was done by the use of interview schedule through personal interview. Data were analyzed with help of suitable statistical tools. The findings reveal that the majority of the beneficiary and non-beneficiary respondents were of middle age groups (36 to 50 years) having middle school and primary school level educated, residing in nuclear family system with small size of family (up to 5 members). Majority of beneficiaries had high level of social participation as compared to non-beneficiaries. Majority of the respondents were performing agricultural activities, however they were also engaged in 2 to 3 occupation. Majority of the respondents were having marginal land holding (up to 2.50 acre). Majority of the beneficiaries belonged to Rs. 30,001 to Rs. 50,000 (High category) annual income group as compare to non-beneficiaries earned Rs. 20,001 to Rs. 30,000 (Medium category). Majority of the respondents were taking short term credit facility extended by government organization.

Keywords : ATMA, Chhattisgarh, Socio-personal, Socio-economic characteristics

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CLIMATE CHANGE AND CROP PRODUCTION

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Abstract : Changes in climate can be expected to have significant impacts on crop yields through changes in green house gases (CO₂, methane, nitrous oxide, chlorofluorocarbons *etc.*), temperature and water availability. Scientific evidence about the seriousness of the climate threat to agriculture is now unambiguous, but the exact magnitude is uncertain because of complex interactions and feedback processes in the ecosystem and the economy. The increasing CO₂ concentration is posing a serious threat as it leads an increase in the average global temperature but the same has been positively correlated with increased biomass and yield particularly in C₃ plants. The purpose of mitigation is therefore to attempt a gradual reversal of the effects by the climate change and sustainable development. There are several mitigation and adaptation practices that can be effectively put to use to overcome the effects of climate change with desirable results.

Keywords: Bio-diversity, Climate change, Crop production, Greenhouse effect, Mitigation

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ANALYSIS OF SOCIO-ECONOMIC PROFILE OF MARIGOLD GROWER IN ADOPTION OF IMPROVED MARIGOLD PRODUCTION TECHNOLOGY

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Abstract : The present investigation entitled “An analysis of Socio-economic Profile of Marigold Grower in Adoption of improved Marigold Production Technology in Chhattisgarh” was carried out during 2010 in two selected blocks of Bilaspur district. 150 randomly selected farmers who were practicing marigold cultivation were interviewed to collect the primary data on the basis of objective of the study. The data were tabulated and analyzed statistically to draw appropriate conclusions. The findings of this study revealed that majority of the respondents were found in middle age group (29 to 45 year) having high school level of education belonged to other backward caste, medium size of family (6 to 10 members) and had membership in more than one organization. Majority of the respondents were having marigold farming + other business as their main occupation, maximum number of the respondents belonged to medium size of land holdings category (2.1 to 4 ha.) with annual income category of Rs. 20,001 to Rs. 40,000 and maximum number of the respondents found credit for short term period from the co-operative society not easily available and other same agencies.

Keyword : Adoption, Marigold grower, Marigold production technology, Socio-economic profile

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STUDY OF G × E INTERACTION AND STABILITY IN CHICKPEA (*CICER ARIETINUM* L.)

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Abstract : 50 genetically diverse genotypes of chickpea were studied for G x E interaction and stability parameters in 10 quantitative characters Days to 50 % flowering, Days to maturity, Plant height ,No. of branches, Number of pods/plant, No.

of seed/pod, 100 seed weight (g), Biological yield/plant, Seed yield per plant and Harvest index. The linear component of genotype x environment interaction (G x E) was significant for plant height, number of branches, number of pods per plant, biological yield and seed yield. The non-linear component of genotype x environment (G x E) interaction was non significant for all the traits when tested against pooled error. three environment, namely E3 (8.28g), E5 (8.31g), E6 (8.32g) were significantly lower yielding and the 3 environments E1 (8.96 g), E2 (9.29g) and E4 (8.88g) were significantly higher yielding than the grand mean (8.70).

Keyword : *Cicer arietinum*, G × E interaction, Stability

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ANALYSIS OF SOCIO-ECONOMIC PROFILE OF MAIZE GROWERS IN KANKER DISTRICT OF CHHATTISGARH

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Abstract : The present study was carried out in Kanker district of Chhattisgarh to assess the socio-economic profile of maize growers. 120 farmers were considered as respondents for this study. Respondents were interviewed through pre-tested and well structured interview schedule. Collected data were analyzed with the help of suitable statistical methods. The study revealed that the majority (53.33%) of the respondents were found in middle age group and educated up to primary school 35.83 per cent. The maximum (50.00%) number of the respondents had medium size of family and maximum (41.66%) number of respondents had membership in one organization. 42.50 per cent of the farmers were engaged in farming + labours. The maximum (40.83%) number of the respondents was having annual income between Rs. 20,001 to 40, 000.

Keywords : Chhattisgarh, Maize growers, Socio-economic profile, Tribal farmers

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SITE SPECIFIC NUTRIENT MANAGEMENT IN SOYBEAN (*GLYCINE MAX L. MERRILL*)

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Abstract : A field experiment was conducted during *kharif* season, 2008 on medium black clay soils (Vertisols) having pH 7.80 at Research Farm, College of Agriculture Indore (M.P.). To study the “Site specific nutrient management in soybean (*Glycine max* L. Merrill)”. The experiment was conducted in randomized block design having nine treatments - T₁ - Fertilizer dose as per farmers’ practice (50 kg DAP/ha), T₂ - T₁ + 40 kg S/ha through gypsum + 6.25 kg Zn/ha through ZnCl₂, T₃ - Recommended dose of fertilizer (RDF) i.e. 23.5 kg N, 60 kg P₂O₅, 23.5 kg K₂O through DAP and MOP, T₄ - T₃ + 40 kg S/ha through gypsum + 6.25 kg Zn/ha through ZnCl₂, T₅ - 150% of RDF i.e. 35.2 kg N, 90 kg P₂O₅, 35.2 kg K₂O through DAP and MOP, T₆ - T₅ + 40 kg S/ha through gypsum + 6.25 kg Zn/ha through ZnCl₂, T₇ - Soil test based RDF for 25 q/ha yield target (28.95:74.92:9.5 N:P₂O₅:K₂O kg/ha given through DAP and MOP), T₈ - T₇ + 40 kg S/ha through gypsum + 6.25 kg Zn/ha through ZnCl₂, T₉ - Control. The treatments were replicated 4 times. The treatment T₆ (150% RDF + 40 kg S + 6.25 kg Zn/ha) significantly produced maximum plant growth (i.e. plant height, branches/plant, dry matter accumulation, number of nodules/plant, leaf area/plant, LAI, chlorophyll content), seed yield/plant (10.03 g), biological yield (3400kg/ha), grain yield (1673 kg/ha) and straw yield (1727 kg/ha) followed by T₅ (150% RDF). The maximum net return of Rs. 20525/ha along with highest benefit: cost ratio of 3.00 was obtained with treatment T₅ (150% RDF), while gross income was highest (Rs. 31841/ha) with treatment T₆ (150% RDF+ 40 kg S + 6.25 kg Zn/ha).

Keyword: Nutrient management, Soybean

**ETHNO-BOTANY OF SOME USEFUL FOREST TREES OF NARENDRA NAGAR
BLOCK, TEHRI GARHWAL (UTTARAKHAND), INDIA.**

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Abstract : An ethno-botanical study was carried-out in order to document the folk uses of forest trees in the Narendra Nagar Block, District Tehri Garhwal, (Uttarakhand). The population of the region primarily depends upon plant resources for their domestic needs. A wide variety of tree species are present in the study area but this paper includes only those species whose common use is either known locally or they are in daily use for various purposes. Although the authors observed only 20 tree species are utilized for multiple purposes in the study area. Most of these tree species are also used for medicinal purposes. The informative data on ethno-botanical plants were conducted with the local inhabitants and selected informants. The ethno-medicinal data was gathered from the tribal medicine men, villagers and vaidhyas. Questionnaires were adopted during the surveys in order to get qualitative and participatory approach about the plant resources and their utilization by the local people. Questions concerning the utility of different plants, quantity of plants used, rate of consumption, availability, economics/ market value and fuel wood / fodder head loads had been asked.

Keywords : Ethno-botany, Forest, Trees, Tehri

**MOLECULAR MARKERS: APPLICATION IN TREE IMPROVEMENT
PROGRAMMES**

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Abstract : A molecular marker is a nucleotide sequence corresponding to a particular physical location in the genome. Molecular markers are important tools for forest tree improvement. The most important markers are restriction fragment length polymorphisms (RFLPs), polymerase chain reaction- (PCR) based markers such as random amplified polymorphic DNA (RAPD), and fingerprinting markers. DNA markers can supplement isozyme markers for monitoring tree improvement activities such as estimating genetic diversity in breeding populations, germplasm identification, verifying controlled crosses, and estimating seed orchard efficiencies. Isozyme markers have been applied extensively during the past 15 years and have contributed significantly to tree breeding programs. Isozymes generally provide ample genetic information and are relatively inexpensive, rapid, and technically easy to apply, thus they should continue to play an important role in forest tree improvement.

Keywords : Molecular markers, RAPD, Tree improvement programmes

**STUDY OF PHYSICO-CHEMICAL AND BIOLOGICAL PROPERTIES OF GANGA
WATER AT MISHERPUR(HARIDWAR) AND ITS IMPACT ON *CUCURBITA
MAXIMA***

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Abstract : An experiment was conducted at Misherpur (Haridwar) during June 2010 . The water samples were collected from Misherpur (Haridwar) The parameter adopted for knowing the pollution load of samples were Colour , Odor, Temperature , D.O (Dissolve Oxygen) , B.O.D (Biochemical Oxygen Demand) , C.O.D (Chemical Oxygen Demand) , Ph , Nitrate , Nitrite ,T.D.S (Total Dissolve Solids) , T.S.S (Total Suspended Solids) , Amm Nitrogen , Total Nitrogen , Alkalinity , Hardness , Chloride , R-Cl (Residual Chlorene) , Turbidity , Metal , Tc (Total Coleform), Fc (Fecal Coleform) , Abundance of fungi and presence of Phyto-planktons. The *Cucurbita maxima* was selected for observing the effect of polluted water. The seven concentrations (0% ,10% ,20% ,40% , 60% , 80% 100%) were used to see their effect on germination and growth of plant .In the result 80% concentration was found more beneficial for plant growth and germination.

Keywords : *Cucurbita maxima*, Ganga water, Seed germination, Seedling growth

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IMPACT OF ATMA ON CROP PRODUCTIVITY AMONG TRIBALS OF CHHATTISGARH

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Abstract : The present study was carried out during 2011 in the Surguja district of Chhattisgarh state. This study was conducted in randomly selected 10 villages of three purposively selected blocks i.e. Ambikapur, Lundra, Surajpur located in Surguja district. The aim of this study to assess the impact of ATMA on crop productivity among tribals of Chhattisgarh. A total of 150 respondents including 100 beneficiary and 50 non-beneficiary farmers were selected randomly. The data collection was done by the use of interview schedule through personal interview. Data were analyzed with help of suitable statistical tools. The findings reveal that Out of the total cropped area, 91.92 per cent area of beneficiaries and 96.28 per cent area of non-beneficiaries were found under rice crop. The majority of ATMA beneficiaries (86%) were sold their agricultural produces to local shopkeepers. The major crops area of ATMA beneficiaries were subsequently increased in others crops 90 per cent.

Keywords : ATMA, Crop productivity, Tribals

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IMPACT ASSESSMENT OF INTEGRATED PLANT NUTRIENT MANAGEMENT IN BRINJAL (*SOLANUM MELONGENA* L.), THROUGH FARMERS PARTICIPATORY APPROACH

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Abstract : Adoptive experiments on the integrated plant nutrient management (IPNM) with farmer's participatory approach were conducted during Rabi 2008 and Rabi 2009 by Krishi Vigyan Kendra, Chandauli at farmer's field in two villages to assess the technological gap in Brinjal production and potential. Eight numbers of technological gaps including application of fertilizers and pesticides for commercial Brinjal production were identified. The package of IPNM includes application of 10 tons FYM ha⁻¹ + 150:80:60 kg ha⁻¹ NPK respectively +Soil application of Azospirillum biofertilizers @ 10kg ha⁻¹ + foliar spray of Zn and Bo@ 50 ppm at 30, 45 and 75 days after transplanting were applied at farmers field. Findings of experiment revealed that maximum marketable fruit yield 404 q ha⁻¹ in Rabi 2008 and 390 q ha⁻¹ in rabi 2009 were obtained from IPNM plots and subsequently 25.72 and 24.00 per cent increase in total yield were recorded over farmers practice in respective seasons. The per cent loss of yield from total production due to diseased and inferior quality fruits were observed nearly double (13.07 & 12.00) in farmer practice when compared with IPNM plot (7.67 & 7.17%) respectively. Partial budget analysis revealed that the net returns obtained from IPNM plot in Rabi 2008 and Rabi 2009 were higher i.e. Rs. 1, 24,110 and Rs. 1, 16,114 respectively than the farmers practice (Rs. 76,740 and Rs. 71,235) in respective years. Reduction in cost

of cultivation of Rs. 8,170 and Rs. 8,879 were also reported in IPNM plot in comparison with farmers practice . B:C ratio were found maximum 4.25 in Rabi 2008 and 4.23 in Kharif 2009 respectively in IPNM plot, whereas , in farmers practices it were 2.98 and 2.82 in respective seasons. Minimization in hazardous use of pesticide was also appreciated.

Keywords : Brinjal, IPNM, OFT, Participatory approach

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PSEUDOMONAS: UNIQUE PLANT GROWTH PROMOTING RHIZOBACTERIA

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Abstract : Plant growth promoting rhizobacteria promote plant growth and productivity has internationally been accepted. Fluorescent pseudomonas have been extensively studied as a plant growth promoting rhizobacteria (PGPR). Pseudomonads are known to interact with host plant via chemical mediators that develop a symbiotic relationship. During their close association, they influence the growth of host plant by delivering beneficial effects in rhizosphere. Pseudomonads promote the growth of plants either by direct supply of nutrients, synthesis of phytohormones, solubilization of minerals, or indirectly as a biocontrol agent suppressing the pathogens. Cumulative effect of combination of above properties projects it as bacteria of great economic importance. This is usually achieved by either one or blend of several factors released in rhizosphere by symbiont. These include secretive secondary metabolites e.g. Antibiotics, toxins, enzymes, HCN etc. which inhibits the pathogen or chelators like siderophores which generate the microenvironment, a competitive one for pathogen. These bioformulations also enhanced soil fertility and the PGPR activity also increased grain yield.

Keywords : Growth promoting, Pseudomonas, Rhizobacteria

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RIVER BIODIVERSITY: A STUDY OF RIVER BAGAD (A TRIBUTARY OF GANGA)

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Abstract : River boundaries are transitional zones between the terrestrial and aquatic environment. These habitats perform major ecological role in the biosphere. Many of the fossil fuels are known to be produced and preserved by the swampy environment of the carboniferous period. Rivers are of immense use to mankind both economically and ecologically. They are unique habitats and substantial biodiversity. A large number of aquatic plant and animals species restricted only to river. Their survival depends totally on the existence of these habitats. The rivers of India are defined as "one of the richest regions in terms of biodiversity and it is often referred to as a biodiversity hotspot". The ecosystem of river has experienced tumultuous changes due to river valley and other development projects in the last 60 years. Inventorying and monitoring the biodiversity and ecology of river would help in the formulation and implementation of appropriate conservation and management strategies in the Bagad river. This report documents the biodiversity significance of the Bagad river. The trees were cut at that time and the openings created resulted in the extinction of most of swamps. River are one of the most productive ecosystems and thus subjected to human greed which is yet another reason for their extinction. In winters it provides a good habitat for migrating waterfowls, that come here in large numbers.

Keywords : Bagad River, Biodiversity, Phytoplankton, Swamps, Zooplankton

EFFECT OF COPPER AND MERCURY ON GROWTH PARAMETERS IN *LEMNA MINOR*

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Abstract : The ability of aquatic plants to accumulate heavy metals from water is well documented. In this study, duckweeds plants (*Lemna minor*) were exposed to different concentrations of Cu and Hg. Various growth parameters (fresh weight, dry weight and growth index) in different seasons (summer and winter) were studied. The effect of all concentrations on plant parameters was toxic. The plant growth was decreased as the concentrations of heavy metals were increased. The results suggest that the *L. minor* can be effectively used as phytoremediator for waste water polluted with more than one heavy metal at moderate concentrations.

Keywords : Cu and Hg, Heavy metal, *Lemna minor*, Plant-toxicity, Phytoremediation

EXISTING MARKETING PATTERN AND SLAUGHTERING SYSTEM OF GOAT IN CHHATTISGARH

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Abstracts : This study was conducted on 120 goat keepers selected from twelve villages of Mahasamund district of Chhattisgarh state during the year 2010 to ascertain the existing marketing pattern and slaughtering system of goats. The study reveals that majority of respondents had sold live animal only and sold them at home and most of the respondents had no transport facilities for selling their goats. About 13 per cent of the respondents had been slaughtering their goats of less than 12 months old age and they slaughtered their goats anywhere as per suitability. The price of the live goat rate ranged from Rs. 1500 to 6000 and average rate per goat was Rs. 2725 and range of chevon/ kg rate varied from Rs. 80 to 200 with average rate of Rs. 140/kg.

Keywords: Goat rearing, Marketing pattern, Slaughtering system

INFLUENCE OF *PSEUDOMONAS* VP-2 ON GROWTH OF SOYBEAN CROP

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Abstract: *Pseudomonas* VP-2 showed highest shoot, root dry weight, number of nodules per plant and nodules dry weight by 186.36, 283.33, 201.33 and 225% respectively as compared to control. All *Pseudomonas* strains showed improved shoot dry weight, root weight ranges between 147 to 186% and 194.66 to 201% respectively as compared to control. Although control plant also produced nodules but *Pseudomonas* bacterized seeds improved nodulation by 188 to 201% as compared to control. Similarly, nodules dry weight also got enhanced by 212.5 to 225% as compared to control. All the results suggested that *Pseudomonas* improves the plant growth and productivity in Soybean crop.

Keywords: *Pseudomonas*, PGPR, Soybean

GENETIC VARIABILITY IN DIFFERENT ENVIRONMENT IN CHICKPEA (*CICER ARIETINUM* L.).

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Abstract : 50 genetically diverse genotypes of chickpea were studied for Variability Heritability, and Genetic advance in 10 quantitative characters Days to 50 % flowering, Days to maturity, Plant height, No. of branches, Number of pods/plant, No. of seed/pod, 100 seed weight (g), Biological yield/plant, Seed yield per plant and Harvest index. In the vary late sowing condition (E3 and E6) five traits, days to flowering, plant height, total branches, seeds per pod and 100 seed weight showing high estimates of PCV. It was also concluded that days to flowering, plant height, pods/plant, 100 seed weight and harvest index showed high heritability coupled with high EGA. The influence of changing plantings dates was significant on various parameters of variability.

Keyword : Variability, Heritability, Genetic advance

Abbreviation : PCV- Phenotypic coefficient of variation, EGA-Expected genetic advance

ETHNOMEDICINAL USES OF SOME PLANTS AMONG THE TRIBAL PEOPLE OF POONCH DISTRICT OF JAMMU AND KASHMIR NORTH WEST HIMALYA (INDIA)

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Abstract : The present manuscript highlights the occurrence of some common plants used to cure different ailments by the tribal and rural people along with local names in different areas of poonch district of jammu and Kashmir .An ethno botanical survey was made from january 2010 - january2012 and the data was collected through the cross examination of the inhabitants by visiting along with them in the field and in some cases by showing the herbarium sheets, live collection of the plants and photographs .The most common plant parts used to cure different disease are root, rhizome, leaves and even whole plant parts for the treatment of abdominal colic, sexual disorder ,spermmatorea,white discharge, dysentery and even the most dreaded diseases like cancer. The paper will be very useful for the scientific community in general and also for the conservation of traditional knowledge of the region .

Keywords : Ethno traditional, Knowledge, Poonch district (J&K) India, Rural, Tribal

AN ANALYSIS OF SOCIO-ECONOMIC AND PSYCHOLOGICAL TRAITS OF FINGER MILLETS GROWERS IN ADOPTION OF RECOMMENDED FINGER MILLET PRODUCTION TECHNOLOGY AMONG THE TIRBAL FARMERS OF BASTAR DISTRICT OF CHHATTISGARH

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Abstracts : This study was conducted in three selected block of Bastar district of Chhattisgarh. A total of 150 respondents were randomly selected from the each selected blocks for the study. The present study was undertaken to assess the socio-personal and socio-economic and psychological traits of finger millet growers in adoption of recommended finger millet production technology. The data collection was done by the use of pre-tested interview scheduled and through personal interview. Data were analyzed with help of suitable statistical analysis. The study showed that majority (74%) of the respondents belonged to middle age group (34 to 56 years), illiterate (33.34%) and leaved in joint family (63.33%) with membership in one organization. Majority (54%) of the respondents were medium farmers (2.1 to 4 ha) and the surviving with their low annual income (Up to Rs 20,000). Majority (96%) of the selected respondents had acquired credit for finger millet production.

Keywords: Finger millets, Psychological traits, Socio-personal traits, Socio-economic traits, Tribal farmers

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PERFORMANCE OF HYBRID TOMATOES IN CROP CAFETERIA: AN EFFECTIVE TOOL FOR TECHNOLOGY EVALUATION AND DISSEMINATION

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Abstract : A tomato crop cafeteria was conducted at the instructional farm of KVK Chanduli during summer season 2009-10 to assess the performance of tomato hybrids (*Solanum lycopersicon* L.) against the locally popular variety sel-22. Observations recorded on yield and yield contributing characters revealed that the maximum yield was obtained from Hybrid B.S.S. 39 (35.69 t/ha) followed by Phule Hybrid (35.02 t/ha) and Century-12(23.76 t/ha). Among the yield contributing characters, highest total number of fruits were recorded with Phule Hybrid-1 (60.35) followed by B.S.S.-39 (41.60) as compared to check, whereas average fruit weight was found maximum with HOE 303 followed by Ratna (98.66), Century-12(85.83 g), BSS-39 (70.66 g) than the check S-22 (65.70 g). Quality parameters assessed in the experiment exhibited highest ascorbic acid content with BSS-39 (31.15 mg) and Phule Hybrid-1 (29.08 mg) as compared to Check S-22(27.32 mg). Juice content was recorded highest in control variety S-22(83.60%) than the hybrids under study. Demonstration of these hybrids in crop cafeteria for relative performance and scientific production technology at a place were found very effective to upgrade the knowledge and skill of farming communities and tomato growers.

Keywords : Crop cafeteria, Performance, Quality parameters, Tomato hybrids

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Short Communication

ADOPTION OF BIO-PESTICIDES AND BIO-CONTROL AGENTS

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Abstract : Bio-pesticides (also known as Biological Pesticides) are certain types of pesticides derived from such natural materials as animals, plants, bacteria and certain minerals, for example at the end of 1998 there were approximately 175 registered Bio-pesticide active ingredients and 700 products of bio-pesticides.

The Chemical Pesticide consumption is increasing @ 20% per annum. The pest and disease cause over Rs. 29,000 cores crop losses per annum. This situation has been caused by indiscriminate use of chemical pesticides resulting in development of resistance in pests and resurgence of minor pests. Rejection of Indian argil exports are more than Rs. 4000 cores per

annum, because of very high pesticide residue contents. WHO estimates 1 million pesticide-poisoning cases and 20,000 death every year globally. This is due to high pesticide residues in food chain. Chemical pesticides cause significant health hazards like Vomiting, Paralysis, Blindness, Coma, Death, damage to respiratory tract, allergies, anemia etc.

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HETEROSIS FOR TUBER YIELD AND ITS COMPONENTS IN SWEET POTATO (*IPOMOEA BATATAS* (L.) LAM.

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Abstract: In a line (6 x 4) study degree of heterosis varied from cross to cross for all the traits. The highest relative heterosis for tuber yield was observed in the progeny of IGSP-16 x Indira Madhur (39.45%). None of the progenies exhibited significant positive heterobeltiosis for tuber yield per plant whereas, fifteen progenies showed significant positive heterobeltiosis for number of tuber per plant. Heterosis was observed for number of tubers per plant and number of leaves per plant. While, low heterosis value were observed for tuber yield per plant, average weight of tubers, harvest index and number of veins per plant; moderate heterosis was observed for days to maturity, vein height, fresh weight of top per plant and dry matter content. Overall, frequency of heterotic crosses was higher among the crosses involving parents with average gca effects.

Keywords: Heterosis, *Ipomoea batatas*, Tuber

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SYNERGISTIC EFFECT OF *RHIZOBIUM* AND AM FUNGI INTERACTION ON PHOTOSYNTHESIS, ROOT PHOSPHATASE ACTIVITY AND GRAIN QUALITY IN URD BEAN (*VIGNA MUNGO* (L.) HEPPER) UNDER RAINFED FIELD CONDITIONS

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Abstract : Two varieties of urd bean (PU-35, T-9) inoculated with *Rhizobium* and vesicular arbuscular mycorrhiza fungi (applied through layering technique) were raised under field conditions. The synergistic effect was noticed with the combined treatment over any of the bacteria or AM fungi, in terms of chlorophyll content, photosynthetic rate and root phosphatase activity. The interaction enhanced the dry matter production, grain yield and quality also. The carbohydrate, fat and protein content also increased in the *Rhizobium* inoculated seeds; however, it was higher when *Rhizobium* and mycorrhiza fungi were combined together. *Rhizobium* inoculation enhanced the nitrogen content in grain and straw where as *Rhizobium* + AM treated plants had enhanced phosphatase activity and nitrogen content.

Keywords : AM fungi, Photosynthetic rate, *Rhizobium*, Root Phosphatase activity and grain quality, Urd bean

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SOME MORPHOLOGICAL AND BIOCHEMICAL STUDIES OF PLANT PARTS OF *VICIA FABA*.

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Abstract: The Pollen morphology is of great significance particular in cultivar taxonomy. Man has been always interested to find out micro organisms, pollen grains and fungal spore in air for better air quality. From time to time many workers as Vishnu Mittra & Gupta (1966) worked on pollen morphology. Nair & Sharma (1962) also studied on pollen morphology and pollen analysis of certain economically important families of angiosperms such as Liliaceae, Fabaceae. Sateesh and Nair (1993) also carried study of pollen grains at Tirachira pali (T.N.) in atmosphere. It was of interest to carry some work on morphological and bio-chemical studies on selected cultivars crops near college field. The studies with pollen morphology show that size of pollen grain increases under acetolysed as compared to non acetolysed condition. Similar decline in nitrogen content was observed more in infected plant soil as compared with healthy plant soil.

Keywords: Biochemical, Pollen morphology

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QUANTIFICATION OF FUEL LOADS IN FIRE AFFECTED AREAS OF TROPICAL MOIST DECIDUOUS FORESTS OF ACHANAKMAR-AMARKANTAK BIOSPHERE RESERVE

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Abstract : Fuel load assessment in fire affected areas of Tropical Moist Deciduous Forests was carried out in Achanakmar-Amarkantak Biosphere Reserve. Historical ground based fire data of last 10 years was used for delineation and identification of fire affected areas. The fuel load was analyzed in different fire zones (i.e., High, Medium, Low and Non-fire) of the pre-fire and post-fire season in the area. The components of fuel load are assessed by laying a quadrat size of 1m x 1m. The biomass of duffs litter and wood litter were summed to derive total fuel load. The net change in fuel load was assessed by subtracting the fuel load existing in pre-fire and post-fire seasons in each fire zone. The total fuel load in different fire zones during pre-fire seasons followed the order: non-fire > medium fire > high fire > low fire zones, whereas during post-fire season it was in the follow the order: non-fire > low fire > medium fire > high fire zones. The results indicated that the duffs litter and wood litter in both high fire and medium fire zones in the post-fire season was decreased. While in low fire and non-fire zones the fuel load was increased due to protection from fire. There is urgent need for management strategies to these forests.

Keywords : Biomass, Duffs litter, Fuel load, Wood litter

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A STUDY ON ENTREPRENEURSHIP OF VEGETABLE GROWERS IN INDORE DISTRICT IN MADHYA PRADESH

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Abstract : A study was conducted Indore district, as farmers cultivating vegetable crops the research study was conducted in Indore district of Madhya Pradesh. A representative sample of 90 vegetable growers was drawn from the 10 randomly selected villages of two blocks viz., Indore and Depalpur and data were collected with the help of an interview schedule (pre-tested) The mean entrepreneur success of vegetable growers was 27.93, indicating that the most of them had medium level of entrepreneur success. The study also revealed that the entrepreneur success of large farmers was higher than the medium and small farmers. It was further observed that family type, material possession, economic status, risk taking willingness and were positively correlated at 0.05 level of probability and economic motivation at 0.01 level of probability with entrepreneurial success.

Keywords : Growers, Production, Vegetable

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ASSESSMENT OF POPULATION STRUCTURE OF MAJOR TREE SPECIES IN FIRE AFFECTED AREAS OF ACHANAKMAR-AMARKANTAK BIOSPHERE RESERVE

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Abstract : Assessment of population structure of major tree species in fire affected areas of Achanakmar-Amarkantak Biosphere Reserve was carried out for the study by using stratified random sampling technique. The population structure was analyzed in different fire zones (i.e., High, Medium, Low and Non-fire zone) of the region. The trees and saplings were analyzed by randomly laying out five quadrats of size 20 x 20 m. A subquadrat of 5 x 5 m size was randomly laid for measuring seedlings. The study concluded that the species population in the moist deciduous forests, instead of continuous distribution of all size classes in these forests there had a discontinuation in size classes of several important major tree species in the forests vegetation due to repeated fire effect on these forests more importantly the major species population behaved differently in different fire zones.

Keywords : Fire zone, Population structure, Size classes, Species

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PERFORMANCE OF PARENTS OF SWEET POTATO FOR SEED PRODUCTION AT CHHATTISGARH

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Abstract: 24 (twenty four) crosses were made in Line x Tester design utilizing 6 Female and 4 Male parents of wide genetic base to ascertain the performance of parents for TSPS attributes. Among these crosses Indira Navin x Sre rethna for capsule set, Indira Navin x Gauri for seeds per capsule and IGSP-C-15 x Sree rethna for 100 seed weight were found promising. Parental lines Indira Madhur, Sree rethna and Gauri were good females and all four testers were good males for TSPS production.

Keywords : Performance, Potato, Production, Seed, Sweet