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FLORISTIC DIVERSITY AND STRUCTURAL DYNAMICS OF MANGROVES IN THE NORTH WEST COAST OF KERALA, INDIA

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Abstract: Mangrove vegetation is recognized worldwide as an epitome of most productive ecosystem and tuned with evergreen forest. The present investigation on floristic diversity of Mangroves of Malappuram district revealed that the presence of 11 species of true mangroves under 7 genera belonging to 5 families. Rhizophoraceae was the leading group with 5 species. *Avicennia officinalis* registered highest density (3045 stems/ha) and lowest for *Rhizophora apiculata* (53 stems/ha). Relative basal area was recorded highest for *Sonneratia caseolaris* (32.37%) followed by *Avicennia officinalis* (27.26%). Structural analysis of the mangroves of Malappuram unveiled that *Avicennia officinalis* having highest Importance value index (IVI) and Relative importance value index (RIVI) among the 11 species distributed all over. Diversity indices for six mangrove sites and for whole Malappuram district indicated that mangroves at Thalakkad-Pariyapuram constituted highest Shannon – Weiner index and Simpson's index (2.764 and 0.831) whereas Mangattiri – Etrikkadavu having lowest value (1.836 and 0.658) respectively. Species richness and species evenness reported for Malappuram was 1.07 and 0.845 respectively. Similarity indices for different mangrove locations in Malappuram were ranged from 0.20 to 0.70.

Keywords: Mangroves, Floristic diversity, Structural analysis, Diversity index

IN VITRO CLONING OF AN ENDANGERED MEDICINAL PLANT, RAUWOLFIA SERPENTINA (L.)

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Abstract: An efficient protocol for *in vitro* cloning of *Rauwolfia serpentina* L. was developed using leaf segment (LS), nodal segment (NS) and internodal segments (INS) as explants. The technique involves *in vitro* shoot regeneration, rooting of microshoots and transplantation of regenerated plantlets under *in vivo* condition. Sterilized explants were cultured on MS media supplemented with different auxin (IAA, IBA, NAA, & 2,4-D) and cytokinins (Kn & BAP) within a concentration range of 0.5-3.0mg/L used singly or in combination. The best shoot multiplication was obtained from nodal explants on MS medium supplemented with BAP+NAA (1.5+0.5) mg/L along with CW (5% v/v). Excellent rooting of microshoots (4-6cm) was noticed on the medium (1/2 MS salt) fortified with combination of auxins [NAA+IBA, (1+0.5)mg/L]. Compact callus which was hydrated, green and crystalline in appearance was obtained from LS and INS on medium having 1.5mg/L 2,4-D. Nodal explants were superior to internodal as well as leaf explants in response to shoot proliferation. Regenerated plantlets were transferred to pots having mixture of sand:soil:vermiculite(1:1:1) and little fungicides (Eco fungicide). The survival rate of plantlets was much promising (around 85%) and regenerated plantlets were healthy, green and morphologically identical to mother plants.

Keywords: *Rauwolfia serpentina*, Callus, Phytohormones, Multiple shoot, Conservation

CHARACTERISTICS OF POTATO CHIPS OF DIFFERENT VARIETIES

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Abstract: Moisture content of varieties differed significantly ($p \leq 0.01$) ranging from 78.87 per cent to 84.53 per cent with lowest in Atlanta and thus ranked first. Variety Kufri Khayti (20.93 mg/100g) showed highest dry matter content. Starch of potato tubers and it ranged between 58.32 per cent to 85.67 per cent with highest content in Kufri Khayti and lowest in Kufri Surya. Among the varieties Kufri Pukhraj had lowest reducing sugars (55.13 mg/100g), whereas lowest non reducing and total sugar in J/99-242 with 104.43 mg/100g and 216.10 mg/100g respectively. Compared to control variety, chips prepared from Kufri Khayti found to be more crunchy, possessed firm texture as well as appealing flavour, appearance and overall acceptability. The acceptability scores was highest for potato chips from Kufri Khayti (88.89 %) followed by Kufri Surya (80.44 %). There was a negative relationship between reducing sugar and colour score as well as moisture content and texture score, whereas positive relation between dry matter and sensory parameter.

Keywords: Chemical, Chips, Potato

DEVELOPMENT OF PACKAGE OF PRACTICES FOR OPEN FIELD CULTIVATION OF CAPSICUM (*CAPSICUM ANNUM L.*)

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Abstract: The genus *Capsicum* (*Capsicum annuum L.*) belongs to the family Solanaceae it is grown in several parts of the world and is believed to be the native of Tropical South America. The domesticated peppers could be broadly classified into sweet and hot types based on their level of pungency. The bell pepper (*Capsicum annuum L.*), $2n = 24$) is commonly known as sweet pepper, capsicum or green pepper. The present investigation was carried out at the Horticultural Research Farm, Precision Farming Development Centre, Department of Horticulture, Indira Gandhi Krishi Vishwavidyalaya, Raipur Chhattisgarh with effect of different types of plastic mulches with four levels of fertigation and three levels of mulching. The results under this study the 80% RDF through fertigation gave maximum fruit yield followed by 100% RDF through fertigation with maximum plant height and number of leaves. The *Capsicum* cv. Indra hybrid is most important vegetable and can be grown profitably under plastic mulch. Silver polyethylene mulch was significantly superior over Black Polyethylene mulch paddy straw mulch and without mulch. The study also revealed that the net income and benefit cost ratio was observed higher in 80% water through drip irrigation as compared to traditional method of irrigation.

Keywords: Capsicum, Fertigation, Plastic mulches, RDF

SOME NEW RECORDS OF POACEAE IN MORADABAD DISTRICT OF ROHILKHAND REGION OF UTTAR PRADESH, INDIA

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Abstract: The extensive survey of grasses growing throughout the Moradabad district was carried out during 2011-2013. A total number of 62 species under 47 genera of grasses were collected and identified. In the present investigation nine genera namely *Arachne racemosa* (Heyne) Ohwi, *Arundo donax L.*, *Bambusa arundinacea Willd.*, *Cymbopogon citratus* (DC)

Stapf., *Hygroryza aristata* (Retz.)Nees., *Iseilema laxum* Hack, *Leersia hexandra* Sw., *Thysanolaena maxima* (Roxb) O.Kuntz and *Urochloa panicoides* P. Beauv., three species of *Eragrostis* namely *E. diarrhea* (Schult.)Steud., *E. japonica* (Thumb)Trin., *E. tenella* L., one species of *Digitaria*, (*D.setigera* Roth ex Roem. et Schult.), one species of *Saccharum* (*S. bengalense* Retz.) and one species of *Sporobolus* (*S. marginatus* Hochst. ex A. Rich.) have been recorded for the first time from the study area which have not been listed by Paliwal and Singh (1982).

Keywords: Grassess, Moradabad, Poaceae family

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CONTACT TOXICITY OF COMMONLY USED INSECTICIDES AND NEW MOLECULES AS PER RECOMMENDED DOSE FOR CROP PESTS AGAINST INDIAN HONEY BEE, *APIS CERANA INDICA* FABR. IN LABORATORY CONDITION

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Abstract: The effect of insecticides on honey bee population was observed least mortality in neem oil, flubendiamide, thiamethoxam, and imidacloprid at 6 hour after treatment. However, the lowest mortality was recorded in neem oil (2.5%) during 12 hour after treatment whereas neem oil and fipronil was found safer at 24 hour after treatment whose mortality was 2.5 and 7.5 per cent, respectively. Thus neem oil was found safest for Indian honey bee. The bio-pesticides (neem oil) and phenyl pyrazole (fipronil) had least negative effect on Indian honey bee whereas the phosphamidon, monocrotophos, chlorpyrifos, profenophos and cypermethrin were highly toxic.

Keywords: *Apis cerana indica*, Toxicity, Insecticides, Laboratory

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STRUCTURE ACTIVITY ANALYSIS OF ANTIBACTERIAL AND ANTIFUNGAL ACTIVITIES OF SOME SUBSTITUTED CHROMONES

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Abstract : Bacteria and fungi are causes of numerous diseases in plants as well as animals . How anti-bacterial and anti-fungal activities change in chromonyl chalcones as well as heterocyclically substituted chromones with structural variation in compounds is described in present study. Both chromonyl chalcones as well as heterocyclically substituted chromones derived from 3-formylchromones have been found to be good antimicrobials. It is found that electron rich aryl groups on chalcone backbone increase antibacterial activities; whereas, heteroaromatic substituent like 2-furyl group favour antifungal characteristics in chromonyl chalcones. Electron releasing alkyl group like methyl group at C₆-position of chromone moiety causes decrease in antimicrobial action; but, electron withdrawing – Cl substituent at the same position results in enhanced activity.

Keywords: Antibacterial activity, Antifungal activity, Chromonyl chalcones, Heterocyclically substituted chromones , Filter paper disc method

EFFECT OF DIFFERENT DOSES OF IBA AND ROOTING MEDIA ON ROOTING OF STEM CUTTING OF LEMON (*CITRUS LIMON* BURM) CV. PANT LEMON-1

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Abstract: The present investigation was conducted during 2011-12 at Horticultural Research Centre of Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut (UP) - 250110. The experiment was laid of Randomized Block Design (RBD) with three replications. The experiment consisted of ten treatment viz., T₁ - 400ppm IBA + garden soil + sand (1:1), T₂ - 400ppm IBA + garden soil + sand + FYM (1:1:1), T₃ - 400ppm IBA + garden soil + sand + vermi-compost (1:1:1), T₄ - 800ppm IBA + garden soil + sand (1:1), T₅ - 800ppm IBA + garden soil + sand + FYM (1:1:1), T₆ - 800ppm IBA + garden soil + sand + vermi-compost (1:1:1), T₇ - 1200ppm IBA + garden soil + sand (1:1), T₈ - 1200ppm IBA + garden soil + sand + FYM (1:1:1), T₉ - 1200ppm IBA + garden soil + sand + vermi-compost (1:1:1), T₁₀ - Control (Garden soil). Out of these, the treatment 800ppm IBA + garden soil + sand + vermi-compost (1:1:1) was gave significant results on rooting of stem cuttings and survival percentage of lemon (*Citrus limon* Burm) cv. Pant Lemon-1 as compared to control ones under western UP conditions.

Keywords: Lemon stem cutting, IBA, Vermi-compost, Survivability

CULTIVATION TREND AND PREDICTION OF KODO (*PASPALUM SCROBICULATUM*) MILLETS FOR CHHATTISGARH PLAIN ZONE OF CHHATTISGARH, INDIA

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Abstract: Kodo millet has large potential to provide nourishing food to subsistence farmers in Africa and elsewhere. Kodo (*Paspalum Scrobiculatum* var. *Scrobiculatum*). Under the present investigation the Kodo millets has been taken for the study. District Kabirdham of Chhattisgarh State has been used under the investigation for the Kodo millets along with total cereal for the last 15 year (1998-99 to 2012-13). The correlation coefficient has been calculated between area and production on district level and state level as well. The percent contribution has been calculated for the same. Simple linear regression model has been used for the calculation of prediction of production on different particulars. The correlation Coefficient between crop production on district level (Kabirdham) and State level (Chhattisgarh) is high and positive i.e. 0.938 and district level and total cereal is 0.697. The contribution in percent in respect of area is ranging from 9.15 to 11.35; maximum contribution in area has been found 14.32 in 2002-03 followed by 14.08 in the year 2003-04 production is ranging from 9.52 to 9.32; maximum contribution in production has been found 14.46 in 2002-03. The best model for the prediction is model 5 the parameters for the evaluation is R² and significance level.

Keywords: Kodo Millets, Correlation, Regression, R², Percent Contribution

**AN ECONOMIC ANALYSIS OF PRODUCTION AND MARKETING OF PALAS TREE
(LAC) IN KORBA DISTRICT OF CHHATTISGARH**

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Abstract: Lac culture is a cash crop of importance and provides valuable income to resource constrained growers inhabiting tribal-dominated forest and sub-forest regions of Chhattisgarh. The State of Chhattisgarh contributes almost 25 per cent of the total Stick Lac produced in India. Almost one hundred thousand household in the state is involved with the cultivation and procurement of this forest produce. However, the production per tree is almost on the lower end in Chhattisgarh. Jharkhand state ranks 1st followed by Chhattisgarh, Madhya Pradesh, West Bengal and Maharashtra. Lac growers give more important to regular income from cultivation of lac over the years to one-time income from timber or fuel. The study aims to examine the cost, return, Marketing pattern and constraints in Lac production and marketing in the study area. The study is relied on the response collected personally from 75 Lac growers, selected purposely from two villages of Korba district of Chhattisgarh state. It was found that, most of the respondent belonged to schedule tribes; literacy of family members was observed 89.29 per cent in all categories of farmers. Agriculture is observed as the main occupation. The economics of Lac cultivation in average cost for Palas was worked out as Rs.2419.08 per tree. Major expenditure was incurred in Brood Lac (91.46 per cent) followed by Inoculation of Brood Lac (1.90 per cent). The average production per tree of Lac for Palas was observed as 22.13 Kilogram, Average input-output ratio of Lac was observed as 1:2.29 for Palas Lac tree. There were three marketing channels for the marketing of Lac i.e. channel I producer, wholesaler, retailer and primary processor, channel II producer, wholesaler, and primary processor and channel III producer, and primary processor. It was observed that 54.50 per cent of produced has been marketing in I, II, and III respectively.

Keywords: Economic analysis, Production, Tree, Chhattisgarh

**SEASONAL INCIDENCE OF RICE STINK BUG, *EUSCHISTUS TRISTIGMUS* AND
OEBALUS SPP. UNDER UPLAND TRANSPLANTED RICE ECOSYSTEM AND
THEIR CORRELATION WITH WEATHER PARAMETERS**

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Abstract: The present study was conducted at research farm of Indira Gandhi Krishi Vishwavidyalaya, Raipur during *kharif* season 2013-14 under upland transplanted rice ecosystems (UDS). The results of field experiments revealed that the maximum population of rice stink bug observed on 42 SMW in month of October with 18.75 nymph/adult/25 sweeps. The seasonal mean population of bug was 3.09 nymph/adult/25 sweeps. The rice stink bug showed non-significant positive correlation with sun shine hours and non-significant negative correlation with maximum, minimum and average temperature, morning, evening and Average relative humidity at 5 and 1 per cent level of significance.

Key words: Ecosystem, Rice stink bug, Upland, Wealth

STUDY ON STRUCTURE ACTIVITY RELATIONSHIP OF SOME 3- OR 6-(2-AMINO OR N- SUBSTITUTED AMINOTHIAZOL-4-YL)-2-METHYLCHROMONES

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Abstract: Medicinal plants are important source of diuretics. But, significance of synthetic drugs in emergency cannot be denied as they have quick and remedial action in hypertension, heart failure, renal failure, nephrosis etc. Thus synthetic diuretics are important. Therefore, present study is carried out on structure activity relationship of 3- or 6-(2-Amino or N-substituted aminothiazol-4-yl)-2-methylchromones to find new and useful diuretic drugs. Compounds VPS-1 to VPS-6 were tested and found to possess diuretic activity.

Keywords: Diuretic activity; 3- or 6 -(2-Amino or N- substituted aminothiazol-4-yl)-2-methylchromones; 3-[2-(3,5-disubstituted -1H-pyrazol-1-yl)-4-thiazolyl]-2-methylchromones

CONSTRAINTS OF PRODUCTION AND MARKETING OF LAC IN KORBA DISTRICT OF CHHATTISGARH

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Received-11.06.2015, Revised-18.06.2015

Abstract: Lac culture is a cash crop of importance and provides valuable income to resource constrained growers inhabiting tribal-dominated forest and sub-forest regions of Chhattisgarh. The State of Chhattisgarh contributes almost 25 per cent of the total Stick Lac produced in India. Almost one hundred thousand household in the state is involved with the cultivation and procurement of this forest produce. However, the production per tree is almost on the lower end in Chhattisgarh. Jharkhand state ranks 1st followed by Chhattisgarh, Madhya Pradesh, West Bengal and Maharashtra. Lac growers give more important to regular income from cultivation of lac over the years to one-time income from timber or fuel. The study aims to examine the cost, return, Marketing pattern and constraints in Lac production and marketing in the study area. The study is relied on the response collected personally from 75 Lac growers, selected purposely from two villages of Korba district of Chhattisgarh state. It was found that, most of the respondent belonged to schedule tribes; literacy of family members was observed 89.29 per cent in all categories of farmers. Agriculture is observed as the main occupation. The major constraints pertaining to cultivation of Lac were problem of Shortage of Broodlac 92 per cent is generally faced by Lac grower farmers. Similarly, high temperature during summer season, intensity with continuous rainfall, and insect pest etc., Lack of demonstration, Lack of labour and regulated marketing system was reported as most important constraint faced by the farmers during marketing of Lac. Study suggested that looking to the importance of Lac in the study area Government should provides Brood lac to the growers at subsidized rate and also ensured the marketing of Lac has to be done through co-operative societies/ other Government agencies at remunerative price to minimize the role of middleman in study area.

Keywords: Production, Marketing, Crop, Korba district

BIOGAS PRODUCTION THROUGH ANAEROBIC DIGESTION OF PRESSMUD AND COWDUNG

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Abstract: Biogas is a readily available energy resource that significantly reduces greenhouse-gas emission compared to the emission of landfill gas to the atmosphere (Nabuuna and Okure, 2005). Being a source of renewable natural gas, it has been adopted as one of the best alternatives for fossil fuels after 1970's world energy crisis (Imam *et al.* 2013).

Keywords: Biogas, Production, Atmosphere, Energy