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## **ROLE OF SULPHUR IN OILSEED CROPS: A REVIEW**

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**Abstract:** India is largest producer and consumer of vegetable oil in the world. Oilseeds have been the backbone of agricultural economy of India since long. Oilseed crops are primarily grown for edible oil. Sulphur is an important nutrient for the higher yield and quality of oilseed crops. Sulphur plays a remarkable role in protein metabolism. It is required for the synthesis of proteins, vitamins and chlorophyll and also sulphur containing amino acids such as cystine, cysteine and methionine which are essential components of protein. Among the sulphur supplying sources, gypsum and elemental sulphur are being abundantly used in sulphur deficient soils. Use of high analysis sulphur free fertilizers, heavy sulphur removal by the crops under intensive cultivation and neglect of sulphur replenishment contributed to widespread sulphur deficiencies in arable soils. Due to Sulphur Deficiency, plants leaves become pale green, yellowish green or complete yellow colouration. The leaves are smaller and narrower and stem growth is affected.

**Keywords:** Sulphur, Growth, Oilseed, Quality

## **SOME MEDICINAL PLANTS USED FOR NERVOUS DISORDERS: A REVIEW**

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**Abstract:** Use of plants for curing human ailments is an ancient practice. Recently there is revival of interest. Ethno botanical field surveys have been done from different parts of developing countries of the world. It reflects concern about the possible loss of valuable information on traditional medicine. Neurological disorders are often not considered common diseases. They are mental illness like epilepsy which is the most serious chronic disorder affecting millions of people. Other's like Parkinson's, Alzheimers, Meningitis and Stroke. Nervous disorders also affect speaking, movement, breathing, mood and memory. Herbal medicines are a holistic medium. Growing of these important herbs will add to the terrestrial diversity of the ecosystem and help in conservation of Biodiversity. *Centella asiatica, Avena sativa, Lagenaria sicerana, Cassia tora, Cassia fistula* are some of the important plants used in nervous disorders. The different medicinal plant varieties can be studied with biochemical properties and a taxonomic classification can be made based on medicinal uses and on the biochemical relationship drawn. Tissue Culture studies along with molecular characterization can also be done. Important germplasm of the medicinal plants will add to the terrestrial biodiversity and the most effective medicinal plant used for nervous disorder can be obtained.

**Keywords:** Nervous disorders, Medicinal plants, Biodiversity, Ethnobotany, Mental illness

## **CHARACTERIZATION OF POTENTIAL PGPR'S ISOLATED FROM RHIZOSPHERE OF WHEAT FROM TRANS-HIMALAYAS AND THEIR EFFICACY ON SEED GERMINATION AND GROWTH PROMOTION OF WHEAT UNDER NET HOUSE CONDITIONS**

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**Abstract:** In the present study, the diversity of rhizobacterial isolates from rhizospheric soils under wheat cultivation in districts of Solan and Sirmour of Himachal Pradesh a Himalayan belt of India. Phenotypic and genotypic characteristics of the PGPR isolates were recorded to categorize and identify the bacteria. In total seventy three rhizobacterial isolates were isolated from different locations of both the districts of which some sites were rainfed and some sites were irrigated. The characteristics of the bacterial isolates were determined using the colony morphology, gram staining as well as biochemical properties. After screening for PGP attributes *in-vitro* conditions. Three isolates (Kn-7, De-21 and Dh-7) were found hyperpotential for PGP attributes such as production of siderophore, P-solubilization, ammonia, HCN and growth regulators. These three isolates had shown maximum PGP potential *in-vitro* conditions and thus were selected to construct bioformulations for the wheat crop under net house conditions.

**Keywords:** Wheat, PGPR, Rhizosphere, PGP Attributes, Growth Promotion of wheat

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## POPULATION STRUCTURE OF VEGETATION IN URBAN ENVIRONMENT OF SARGUJA, CHHATTISGARH, INDIA

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**Abstract:** The present study was conducted in different directions (east, west, north and south) of Ambikapur to explore the urban vegetation in terms of species status, population structure and regeneration potential of species. A total of 10 tree species distributed into 6 families were recorded in east direction, 9 tree species with 4 families in west direction, 12 tree species comprised of 9 families in north direction, and 11 tree species belonging to 8 families were recorded in south direction. The tree density ranged between 170-240 trees/ha across the site being highest under north direction and least at east direction. The rarity and commonness of the species in urban setup reflected that majority of the species are rare in occurrence in different stratum while the intermediate, moderately high and common (high frequency) species class was almost negligible in the entire site in most of the vegetation stratum. Population structure of the species also revealed the younger vegetation stand in all the direction due to absence of the different size classes of the species. The regeneration of the species was not found up to the mark in all the direction. Therefore, there are needs for the conservation priority to manage the urban landscape for better management and planning.

**Keywords:** Structure, Population dynamics, Regeneration, Urban vegetation

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## EFFECT OF PEG INDUCED WATER DEFICIT STRESS ON PHYSIOBIOCHEMICAL CHARACTERISTICS OF DIFFERENT PEARL MILLET VARIETIES

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**Abstract:** The present study aimed to scrutinize six pearl millet varieties, differing in their drought sensitivity to evaluate drought tolerance through physio-biochemical parameters. The main purpose of this work was to screen the highly tolerant and susceptible genotypes under PEG-6000 induced water deficit stress (WDS). WDS was induced in seedling on 10<sup>th</sup> and 20 day of germination by exposing them to different stress levels *i.e.* T1 (Control); T2 (5% PEG) and T3 (10% PEG). Significant reductions in parameters viz. shoot length, root length, seedling vigour index I, seedling vigour index II and Membrane stability index was observed. The antioxidant enzyme activity (Catalase and Superoxide Dismutase) was assayed for these varieties under water stress. There was a profound decrease in the Catalase activity whereas the SOD activity was increased in the varieties selected for the study. The water stress induced by supplementing 5% PEG in soil was tolerable by the plants as compared to 10% PEG. The results obtained were useful in screening drought tolerant Pearl Millet genotype.

**Keywords:** WDS, PEG, Drought, Pearl millet, Enzyme activity

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## VEGETATION INTER-RELATIONSHIP AND REGENERATION STATUS IN TROPICAL FOREST STANDS OF CENTRAL INDIA

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**Abstract:** The regeneration status of the vegetation reflects the health of forest ecosystem. In this context, the present study was done in order to assess the rarity or commonness of the species along with regeneration status and species inter-relationship in tropical forest ecosystem. The study site of present investigation includes Achanakmar-Amarkantak Biosphere Reserve. Four forests stand *viz.*, dense, regenerating, medium and degraded forest having diverse vegetation attributes and representative of the region's vegetation were marked for the study. The permanent plot techniques were opted for enumeration through stratified random sampling method. The tropical forest studied reflects high rarity of the species in different sites under various stratified vegetation. Total 24 species distributed into 17 families were recorded in the study sites. The species commonness or high occurrence of the species is found to be negligible due dominance of species over the area. Regeneration status of different species showed drastic scenario in different forest stands. The good regeneration in different sites varied from 9.09-30.77% being lowest in degraded forest site and maximum in regenerated forest stand. The results revealed significant differences in species abundance, occurrence, regeneration status and inter-relationship in various forests stands. The screening of the species on the basis of abundance, regeneration status and positive or close inter-relationship between different species at site level can be utilized as effective tools for the scientific management, conservation and sustainable development of forest stands.

**Keywords:** Abundance, Inter-relationship, Rarity, Regeneration status, Vegetation stands

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## DYE YIELDING PLANTS OF BARWANI DISTRICT, MADHYA PRADESH

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**Abstract:** Natural dyes are colours obtained from plants, invertebrates or minerals. Vegetable dyes from angiosperm plant sources comprise major part of natural dyes. Further, other biological sources such as fungi and lichens also contribute in the production of natural dyes. Due to the discovery of synthetic dyes in nineteenth century a marked decline in the use of natural dyes was experienced. Now-a-days extraction and use of natural dyes is confined as traditional knowledge (TK) among the rural people of few villages only. Barwani district in Madhya Pradesh has few areas where this TK is still in practice among the villagers. District is situated on the south-west part of Madhya Pradesh and lies between 21°37'N74°27'E

and 22°22'N-75°30'E. In the present communication TK available with the villagers in Barwani district is documented using semi-structured questionnaire. During field survey in the study area, 11 plant species are recorded which are used as a source of natural dyes was experienced. Now-a-days extraction and use of natural dyes in confined as traditional knowledge (TK) among the rural people of few villages only.

**Keywords:** Natural dyes plant, Indigenous knowledge, Medicinal uses, Angiosperm

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## **PHYSICAL PROPERTIES ANALYSIS IN KIDNEY BEANS (*PHASEOLUS VULGARIS* L.)**

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**Abstract:** Physical properties of Rajma (*Phaseolus vulgaris* L.) seeds were investigated and their application was also discussed. Four varieties of the kidney beans were locally collected from Garhwal region of Uttarakhand for determination of physical properties. Sample of one thousand seeds of each varieties of Rajma was taken for conducting the study. The physical parameters viz moisture content, dimensions (length, width, thickness), diameter, sphericity, surface area, volume, shape factor, bulk density, true density, porosity(%) and angle of response for different germplasm of Rajma *i.e.* PRG-4, PRG-20, PRG-2, PRG-5 and PRG-1 was taken for conducting the study. Our results showed that the germplasm PRG-5 had maximum moisture, dimensions, surface area and volume, maximum sphericity and bulk density for PRG-2, maximum shape factor for PRG-4, maximum porosity (%) for PRG-1 and angle of response PRG-1.

**Keywords:** Rajma, Physical properties, Garhwal region, Uttarakhand

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## **INFLUENCE OF ORGANIC, INORGANIC AND INTEGRATED NUTRIENT MANAGEMENT ON BIOMASS YIELD AND QUALITY OF BRAHMI**

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**Abstract:** *Bacopa monnieri* (L.) Pennel, commonly known as Brahmi is an important medicinal crop which is in high popularity because of its high market value. Brahmi belongs to the family Plantaginaceae and is extensively being used in Indian system of medicine as a memory booster. Brahmi is used to treat insomnia, insanity, depression, psychosis, stress, cardiac, respiratory problems etc. The therapeutic effect is mainly based on bacosides (saponins). Bacoside A (a saponin glycoside) is the major active ingredient. Nowadays organic farming or integrated nutrient farming in crop production is gaining much boom because of our increasing health consciousness. In this context an experiment was conducted to study the effect of organic and inorganic sources of nutrients on the quality of brahmi at All India Coordinated Research Project on Medicinal, Aromatic Plants & Betelvine, College of Horticulture, Kerala Agricultural University, Thrissur during 2018 - 2019. The experimental design was RBD with six different treatments. The results of the study revealed that plants which received integrated nutrient management (NPK @ 100:60:60 kg/ha along with Farm yard manure @ 10 t/ha) recorded higher biomass yield (6672 kg/ha) and Bacoside A content (0.94%). Integrated Nutrient Management was thus found more effective to boost up the production of the active constituent Bacoside A compared to purely organic or purely inorganic management practices in Brahmi cultivation. Calcium, Magnesium and iron content were also found higher in INM.

**Keywords:** *Bacopa monnieri* , Bacoside A, Integrated nutrient management (INM)

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## **COLORED PAN TRAPS FOR INSECT POLLINATORS/VISITORS DIVERSITY IN MUSTARD ECOSYSTEM IN AMBIKAPUR OF CHHATTISGARH**

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**Abstract:** A field experiment was undertaken at Rajmohini Devi College of Agriculture and Research Station, Ambikapur Surguja (Chhattisgarh) during 2017-18 to study the insect pollinators diversity in mustard ecosystem using different fluorescent colored pan trap *i.e.* White, blue and yellow at onset of bloom, full bloom and end of bloom of mustard crop in two different habitats. In habitat-I various insect visitors *i.e.* *Apis dorsata*, *A. indica*, *A. florea*, syrphid fly, house fly, black pants and small ants were recorded. In the colored pan traps maximum population was noticed in yellow pan trap (14.31 insect/trap) followed by blue trap (13.99 insect/trap) and minimum in white (6.3 insect/trap) at onset of bloom. However, at the full bloom highest population was recorded in yellow pan trap (24.65 insect/trap) followed by blue pan trap ( 20.98 insects/trap) and lowest in white trap (20.65 insects/trap). Similarly at the end of bloom higher population was recorded in yellow pan trap (14.32 insects/trap) followed by blue pan trap (13.99 insects/trap) and the lowest in white pan trap (5.99 insects/trap) .Habitat-II During the onset of bloom higher population was recorded in yellow pan trap (21.66 insect/trap) followed by in blue trap (21.65 insect/trap) and lower population was recorded in white pan trap (8.32 insect/trap). At the full bloom period maximum population was noticed in blue pan trap (18.65 insect/trap) followed by in yellow pan trap ( 16.65 insect/trap) however the lowest population was recorded in white colored pan trap (9.98 insect /trap).Similarly, at the end of bloom higher population was recorded in yellow pan trap (24.99 insect/trap) followed by blue pan trap ( 24.98 insect/trap) and the lower population was noticed in white colored pan trap (8.65 insect/trap).

**Keywords:** Diversity, Colored pan trap, Habitat, Pollinators, Mustard ecosystem