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**EVALUATION OF THE EFFECT OF CCC  
(2 CHLOROETHYLTRIMETHYLAMMONIUM CHLORIDE) ON THE GROWTH OF  
*MUCUNA PRURIENS* (L.) DC.**

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**Abstract:** The effect of CCC (2 chloroethyltrimethylammonium chloride) on the growth of *Mucuna pruriens* (velvet bean, Family: Fabaceae) was evaluated in the present study. Different concentrations (500, 1000 and 2000ppm) of CCC were administered to viable seeds in pots of garden soil, with growth parameters including plant height, leaf surface area, number of leaves, fresh weight and dry weight considered. CCC caused reduction in plant height and number of leaves as the plant grew as well as leaf area in a concentration-dependent manner. Very minimal effect was observed on fresh and dry weight of root while the stem and leaves experienced concentration-dependent reduction in both weight parameters. Reduction in mitotic activity is probably responsible for the retarding effects observed.

**Keywords:** CCC, *Mucuna pruriens*, Fabaceae, Growth regulators, Seeds

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**AN UPDATED OVERVIEW ON CYTOLOGICAL AND CYTOGENETICAL ASPECTS  
OF *CORCHORUS* SP. (TILIACEAE)**

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**Abstract:** *Corchorus* (Family: Tiliaceae) possessing more than 170 species are fibrous annual plants distributed in warm regions throughout the world. *Corchorus capsularis* L. (white jute) and *C. olerarius* L. (tossa jute) yields fibre of commerce (phloem fibre) from bark of the stem (commonly known as pat); while, few wild species found and grown in India are important genetic resources (*C. trilocularis* – abiotic stress tolerance, tolerant genotype to water inundation; *C. pseudoolitorius* and *C. pseudocapsularis* – fungal disease resistance; *C. tridens*, *C. trilocularis* and *C. aestuans* – fine fibre quality). India is an important producer of commercial jute and socio-economic significance is associated with the crop plant. With a view to fibre yielding importance of the cultivated species of *Corchorus* as well as considering the potentiality of wild members an updated overview is conducted only on cytological and cytogenetical (including plant type mutation) aspects to provide adequate necessary information to researchers interested in the field of conventional cytogenetics so that the methodology may be explored for effective utilization in crop improvement and human benefit.

**Keywords:** *Corchorus*, Overview, Cytology, Cytogenetics, Plant type mutation

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## **THERMOPHILIC BACTERIA AND THEIR POTENTIAL FOR INDUSTRIAL APPLICATIONS**

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**Abstract:** Enzymes produced by thermophilic bacteria have great potential in industrial biotechnology due to their ability to withstand wide range of temperature extremes. They have also gained industrial importance because of the improvement and invention of various tools and technologies. Thermozyms serve as industrial enzymes superior to traditional catalysts, as they perform better in high temperature conditions required for various industrialized enzymatic processes. As a result, the characterizations of microorganisms that are able to thrive in high temperature conditions have received a great deal of attention of researchers and industrialist all over the world. This review discuss about the different uses of thermophilic bacteria in various industrial applications such as in enzyme industry, in medicines, in single cell protein production, in bioconversion of wastes, in petroleum industry, in fuel production, in mining, and as biosensors. Also, this review focuses on phylogeny and stabilizing factors responsible for the existence of these bacteria under thermal environmental conditions. Although, a lot of work has been done to understand biochemical basis of thermophily, still further research work is required with respect to the genomic and proteomic features of thermophilic bacteria and their enzymes of industrial interest.

**Keywords:** High-temperature catalysis, Industrial applications, Thermophilic bacteria, Thermophily

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## **SYNERGISTIC EFFECTS OF ATMOSPHERIC DEPOSITION AND ORGANIC AMENDMENT ON METAL ACCUMULATION IN *SPINACIA OLERACIA* L.**

**Richa Pandey, K. Shubhashish\*, J. Pandey**

**Abstract:** Pot-culture experiments were conducted to study the accumulation of heavy metals as influenced by atmospheric deposition in organic farming system, in which spinach (*Spinacia oleracea L.*) was grown in earthen pots containing soil and farm yard manure (4:1) at three sites in Varanasi. Heavy metal accumulation in spinach showed synchrony with atmospheric deposition, the values being maximum at Bypass and minimum at BHU site. Concentration of metals in spinach ranged from 0.095 to 5.860  $\mu\text{g g}^{-1}$  for Cd; 0.189 to 13.96  $\mu\text{g g}^{-1}$  for Cr; 0.160 to 23.49  $\mu\text{g g}^{-1}$  for Cu; 0.059 to 6.42  $\mu\text{g g}^{-1}$  for Ni and 0.57 to 18.81  $\mu\text{g g}^{-1}$  for Pb. About 75%, 75% and 33% of vegetable samples contained Cd, Ni and Zn above their safe limits respectively. Our study suggests that atmospheric deposition at Varanasi have reached to the level to substantially elevate heavy metal accumulation in vegetables with a sizable increase in the dietary intake of toxic metals to local residence.

**Keywords:** Agricultural sustainability, Atmospheric deposition, Metal accumulation, Organic farming, Pot-culture

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## RESPONSE OF WHEAT TO THERMAL POWER PLANT DISCHARGED WASTEWATER (TPPW) SUPPLEMENTED WITH NPK FERTILIZER

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**Abstract :** A pot experiment was conducted in the winter season of 2008-2009 to evaluate the suitability of Thermal Power Plant discharged Wastewater of National Thermal Power Corporation (NTPC), Dadri as a source of irrigation and its impact on growth and yield components of two wheat cultivars *viz.* PBW 343 and UP 2338. The test crop was raised with different concentration of TPPW ( $T_1$  : 10 %,  $T_2$  : 25 %,  $T_3$  : 50 %,  $T_4$  : 75 %,  $T_5$  : 100 %) compared to control plants ( $T_0$ ) receiving normal ground water supplemented with fertilizer  $N_{100}P_{80}K_{40}$  and  $N_{50}P_{40}K_{20}$ . TPPW with  $N_{100}P_{80}K_{40}$  promoted growth, number of tillers, number of ears, total chlorophyll, seed yield per plant, 1000 seed weight, biological yield and harvest index as compared to control. 75 % effluent was found most suitable for the measured growth and yield parameters while 100 % concentration proved inhibitory. TPPW may be considered as an alternative of fresh water for irrigation purpose improving yield and quality of wheat crop.

**Keywords:** TPPW, Germination, Chlorophyll content, Growth yield

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## REPRODUCTION STRATEGIES IN *BRASSICA NIGER* VAR. PT-303

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**Abstract:** The first flower was opened on an average 29<sup>th</sup> day and the single continuous flowering period was 26-30 days . The average number of pollen grains per anther 369.8 and per chamber 92.44 have recorded . The variation in the number of pollen grains among flowers in this variety may be caused by the variation in male phase duration.

The results suggest that variation in male and female function among flowers within inflorescences may affect the fitness of a plant through differential male and female reproductive success in this species. The ovules number per ovary and per plant were 18.2 and 930.8 respectively. The total number of pollen grains on stigma were 37.3 while the germinated pollen number on stigma was 9.7. The average number of fertilized ovules were 10.8 and the maximum number of seeds per fruit were 10.3. The stigmas were receptive upto 4 days after anthesis. Intravarietal crosses were 75% successful and seed setting was 65%. The high positive correlation has been found between germinated pollen grains and fertilized ovules per ovary(+0.8189).

**Keywords:** *Brassica niger*, Pollen grains, Sex allocation, Correlation

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## SYSTEMATICS STUDIES ON *GEASTRUM* SPECIES FROM JAMMU PROVINCE

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**Abstract:** During exploration of wild mushrooms from some locations of Jammu province of Jammu and Kashmir state. The present paper deals with six species of *Geastrum* namely *G. campestre*, *G. drummondii*, *G. fimbriatum*, *G. pectinatum*, *G. triplex* and *G. velutinum*. Their habitat description, macro and microscopic features has been described and illustrated in the present communication. Survey of literature reveals that out of these *Geastrum drummondii* have not been earlier reported from the state of Jammu and Kashmir and thus constitutes new record for the state and remaining constitute first authentic report from Jammu province.

**Keywords:** Mushrooms, *Geastrum*, Jammu and Kashmir

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## ETHNODERMATOLOGICAL STUDY AMONG THE ITSEKIRI PEOPLE OF WARRI SOUTH LOCAL GOVERNMENT AREA OF DELTA STATE, NIGERIA.

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**Abstract:** Ethnodermatological data were collected from the Itsekiri people of Warri South Local Government Area of Delta State between February and September, 2009. The study was carried out in 3 communities (Okorode-Itsekiri, Okorode-Urhobo and Ogbewaj) within the Local Government council Area. The data were gathered from 15 randomly selected Traditional healers/herbalist with the aid of a structured questionnaire. A total of 30 medicinal plant species belonging to 21 families and 30 genera were of ethnodermatological importance for the treatment of 17 skin diseases. Herbs and trees form the most used growth form and the fruit being the most cited plant part in a greater number of the remedy preparations. Most of the remedies were prepared from a single plant source with other ingredients and a few common plants. The contributions of this study towards the understanding, documentation and safeguarding of indigenous knowledge and the possible utilization of the plants for greater economic uses were also highlighted.

**Keywords:** Ethnodermatology, Medicinal plant, Traditional healers, Herbalist, Itsekiri people, Delta State, Nigeria

## ISOLATION, EVALUATION AND MASS PRODUCTION OF ARBUSCULAR MYCORRHIZA (AM) FROM TWO LEGUME SPECIES

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**Abstract:** The Arbuscular Mycorrhizal (AM) status of selective plants like *Acacia leucophloea* Roxb. and *Cicer arietinum*, L, were studied. The AM spores belong to the Genus *Glomus*, *Acaulospora*, *Gigaspora*, *Scutellospora* and *Sclerocystis* were isolated from the rhizosphere soil. Among these *Glomus* and *Acaulospora* are predominant in rhizosphere of *A. leucophloea* and the rhizosphere soil was applied as an inoculum for the mass production of AM fungi using *Zea mays* (L.), *Sorghum halepense* (L.) Pers and *Oryza sativa* (L.) as host plants. The AM inoculated *Zea mays* and *Sorghum halepense* (L.)Pers. showed beneficial growth with increase in fresh and dry matter, root and shoot length and also with 98% and 93% of AM-colonization in roots.

**Keywords:** Arbuscular Mycorrhiza, AM spore isolation, Mass production, *Zea mays*, *Sorghum halepense*, *Oryza sativa*

## HETEROSIS AND INBREEDING DEPRESSION FOR SEED AND OPIUM YIELD IN OPIUM POPPY (*PAPAVER SOMNIFERUM* L.)

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**Abstract:** The degree of heterosis in F<sub>1</sub> progenies and inbreeding depression in F<sub>2</sub> generations was studied for seed and opium yield in opium poppy (*Papaver somniferum* L.) in set of crosses derived from partial diallel breeding design. Mid and better parent heterosis for seed yield was recorded in between -48.35 to 87.69% and -54.38 to 71.15% respectively. Likewise, for opium yield it varied from -39.06 to 71.13% and -42.74 to 52.04% for mid and better parent respectively. Significant and desirable heterosis over mid and better parent for seed yield was observed in forty five and twenty six crosses respectively. The crosses ND1002 x NBRI-11 and ND1002 x BR241 showed higher better parent heterosis both for seed and opium yield. Considerable amount of inbreeding depression in F<sub>2</sub> generation were also recorded. Significant inbreeding depression in F<sub>2</sub> generation were observed in seven crosses for seed yield/plant, and twenty two for opium yield/plant indicating deterioration in their performance in F<sub>2</sub> generation. The magnitude of inbreeding depression varied from -125.60 to 24.16% and -60.14 to 33.07% for seed and opium yield/plant respectively.

**Keywords:** Heterosis, Inbreeding depression, Opium poppy

## BIO CHEMICAL IMPACT OF COFFEE EXTRACT ON PLANT DEVELOPMENT: SPECIAL REFERENCE TO SEEDLING GROWTH IN *PHASEOLUS LUNATUS*

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**Abstract:** Coffee is an important beverage taken and inhaled practically by all persons of the world. How does it affect individual's specially biological materials? It has been a point of query in a number of medicinal studies taken over on human health. Similar study on plants i.e. biochemical impact of coffee extract on plant development specially growth has been taken over here. The investigation is specially taken over with special reference to seedling growth in *Phaseolus lunatus*.

Coffee beans with a number of biochemical ingredients including chiefly caffeic acid and chlorogenic acid typically influence plant growth. Seedling growth in *Phaseolus lunatus* is taken here as an example. Coffee extract is taken at concentrations W/V – 1:200; 1:250; 1:500 and 1:1000. The effect of seedling growth is studied both in light and dark.

In light favourable concentration of coffee extract for seedling growth specially for root length, shoot length and total seedling length was found to be W/V – 1:200. For shoot ratio it was W/V – 1:1000.

In dark root length, shoot length and total seedling length showed decline in coffee extract at all concentration except at W/V – 1:200. In dark at root ratio 1, shoot ratio showed decline in coffee extract. However, minimum decline was observed at concentration W/V – 1:1000. In dark leaf expansion was also studied. Increase in leaf length and leaf breadth was found at concentration, W/V – 1:200, as compared to control. Rest of the concentrations showed irregular changes.

**Keywords:** Biochemical impact, Coffee extracts, Plant development, Seedling growth, Root length, Shoot length, Total seedling length, Root/Shoot ratio, Leaf expansion

## SCREENING AND EVALUATION OF ANTI-MICROBIAL ACTIVITY IN *COLEUS* *FORSKOHLLII* AND *STEVIA REBAUDIANA*

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**Abstract:** The results showed that aqueous and alcoholic extracts of leaf of parent plant of *Coleus forskohlii* showed antibacterial activity against *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Bacillus* species. Alcoholic extract of stem of parent plant of *Coleus forskohlii* showed significant activity against *Staphylococcus aureus* and *Staphylococcus epidermidis*. Antibacterial activity shown by the alcoholic as well as aqueous extracts of *in vitro* raised plant of *Coleus forskohlii* against the gram-positive bacteria was tested. The significant amount of activity

against *Bacillus* species only was shown by the alcoholic leaf extract but the alcoholic stem extract exhibited mild but statistically insignificant ( $P < 0.05$ ) activity against *Enterococcus faecalis* and *Bacillus* species. The aqueous leaf extract of parent plant of *Stevia rebaudiana* exhibited significant activity against only *Staphylococcus epidermidis* and the alcoholic leaf extract showed significant activity against *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Enterococcus faecalis* and *Bacillus* species. MIC values of the alcoholic leaf extract of parent plant of *Coleus forskohlii* against the tested gram-positive bacterial species ranged from  $9.43 \times 10^{-3}$  to  $18.65 \times 10^{-3}$   $\mu\text{g/ml}$  and MIC values of the aqueous leaf extract of parent plant of *Coleus forskohlii* against the tested bacterial species ranged from  $3.15 \times 10^{-3}$  to  $4.65 \times 10^{-3}$   $\mu\text{g/ml}$ . MIC values of the alcoholic leaf extract of parent plant of *Stevia rebaudiana* against the tested gram-positive bacterial species ranged from  $9.43 \times 10^{-3}$  to  $25.15 \times 10^{-3}$   $\mu\text{g/ml}$  and aqueous leaf extract of parent plant of *Stevia rebaudiana* against *Staphylococcus epidermidis* was found to be  $12.5 \times 10^{-3}$   $\mu\text{g/ml}$ .

**Keyword:** Antimicrobial activity, MIC, *Coleus forskohlii*, *Stevia rebaudiana*

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## POSITIVE ALLELOPATHIC INTERACTION OF *AMARANTHUS VIRIDIS* WITH *TRITICUM AESTIVUM*

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**Abstract:** Crop and crop-weed residue (previously growing in the field) allelopathic interactions were investigated in common field plants in simulated isolated pot plantation experiments. *Triticum aestivum* UP-2338 (crop plant) grown in soil treated with *Amaranthus viridis* (crop-weed) dry root powder (ADP), resulted in increased % germination with increase in concentration of ADP. Root length, shoot length and vigour-index were observed maximum in wheat plants grown in soil treated with 0.2% ADP and minimum in soil without ADP (control). Plant biomass, total sugar, chlorophyll a, Chl.b, total chlorophyll and total carotenoid contents increased in all treatments except in plants grown in 0.5% ADP treated soil as compared to control. NRS and organic carbon increased with increasing concentration of ADP whereas nitrogen, phosphorus, RS and phenolics declined as compared to untreated. Total protein, protease,  $\alpha$ -amylase activities declined in roots ADP concentration above at 0.2%. Peroxidase activity increased at 0.2% ADP and maintained almost the same level at further increase in ADP concentration. In shoots, protease,  $\alpha$ -amylase and peroxidase activities declined though total protein increased with increasing concentration of ADP. The allelochemicals of *Amaranthus viridis* directly influences the root metabolic activities, indirectly influencing (promoting) shoot metabolic activities.

**Keywords:** Allelopathy, Allelochemicals,  $\alpha$ -Amylase, Vigour-index, ADP

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## EFFECT OF FLY ASH EXTRACT ON SEED GERMINATION AND SEEDLING GROWTH OF GARDEN PEA

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**Abstract:** Fly ash disposal and utilization shall continue to be an important area of national concern due to India's dependence on thermal power generation for its energy supply. Fly ash accumulation creates environmental pollution and health hazards. Due to increasing environmental concern and growing magnitude of the problem it has become imperative to manage fly ash. Fly ash is rich in many macro and micro plant nutrients. In laboratory bioassays, the influence of different concentrations (0, 25, 50, 75 and 100%) of fly ash extract was studied on seed germination and seedling growth of Azad P<sub>1</sub>, E<sub>6</sub>, Arkel and PSM cultivars of *Pisum sativum* L. Pea varieties responded positively to fly ash aqueous extract. Fly ash aqueous extract with increasing concentration (25-75%) stimulated the seed germination and seedling growth as compared to control. Maximum stimulation was recorded for root and shoot length and their dry matter accumulation at 50% extract concentration. Extract concentration above 75% significantly inhibited the early growth. Stimulation of early growth of garden pea by fly ash extracts points towards its utilization for soil amendments.

**Keywords:** Disposal, Fly ash, Germination, Growth, Nutrients

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## **CYANOBACTERIAL STRESS ACCLIMATION UNDER ENERGY DEPLETED CONDITION**

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**Abstract:** Cyanobacteria show different adaptations under various salt stress conditions, which facilitate their survival. Pyrophosphate works as an energy donor while energy depletion in the cyanobacteria during salt stress condition. Alternative glycolytic reaction can bypass Pi dependent (ATP dependent) pathway of glycolytic cycle in cyanobacteria, through which these organisms are acclimated to salt stress.

**Keywords-** Acclimatization, Adaptation, Cyanobacteria, Glycolytic cycle, Salt stress

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## **EFFECT OF FOLIAR APPLICATION OF FUNGICIDES ON PHYLLOPLANE FUNGI OF MAKOI LEAF**

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**Abstract:** The composition of phylloplane mycoflora of plant is determined by the interaction of many factors, including the agrochemicals. The chemical nutrients, growth regulators, insecticides, weedicides and fungicides, etc. frequently applied to plants may alter the mycoflora either directly by affecting particular components, or indirectly by altering the physiology of the host. These chemicals are frequently introduced into the environment of the plant and its microflora to alleviate diseases. The present paper deals with the foliar application of fungicides (Dithane M-45, Bavistin and Blitox) on phylloplane mycoflora of Makoi (*Solanum nigrum* L.) leaf. The fungal flora was decreased on leaves treated with fungicides.

**Keywords:** *Solanum nigrum*, Fungicides (Dithane M-45, Bavistin, Blitox), Phylloplane mycoflora

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## **OBSERVATION ON NATURAL DYE YIELDING PLANTS OF CENTRAL NARMADA VALLEY INDIA**

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**Abstract:** The present study mainly focuses on the Some Dyes yielding plants from central Narmada valley of Central India. As many as 150 species were screened for dye, out of these 34 species belonging to 29 genera and 22 families are presented in this research article. The botanical name, family, vernacular name and parts from which dye is obtained are described in this paper.

**Keywords:** Dyes, Plants, Central Narmada Region, Hoshangabad, India

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## **PHYTOCHEMICAL ANALYSIS OF MARKET SAMPLE OF *CURCUMA LONGA* LINN. (*TURMERIC*) AND THEIR MARKETABILITY**

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**Abstract:** Turmeric (*Curcuma longa* Linn.) is an important medicinal and spice plant. It has been reportedly effective as anti-cancer, anti thrombotic, wound healing properties and anti-venom etc. It's most important phytochemicals are Curcumin, ar-turmerone, 1-8cineole, curcumene etc but Curcumin is the most potent phytochemical. Ten market sample of turmeric usually available in the market are studied for curcumin content and their suitability for marketability is recommended. Maharashtra nanded hingoli semifinished finger yield maximum curcuminoids in Saharanpur city samples. And, therefore, it is recommended variety for marketability.

**Keywords:** Anti-cancer, Anti-thrombotic, Anti-Venom, HPTLC, Phytochemicals

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## **CHARACTER ASSOCIATION AND PATH COEFFICIENT STUDIES IN SWEET POTATO [*IPOMOEA BATATAS* (L.) LAM.] GENOTYPES**

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**Abstract:** Correlation coefficient analysis revealed that tuber yield<sup>2</sup> showed significant positive correlation with vine weight<sup>2</sup> and marketable tuber yield<sup>2</sup> at both genotypic and phenotypic level, suggesting that selection of these characters may be useful for the development of ideal plant type of sweet potato for the Chhattisgarh plains. Path coefficient analysis revealed that marketable tuber yield<sup>2</sup>, biological yield<sup>2</sup>, tuber diameter and dry matter per cent of tuber, neck length of tuber, tuber length and vine had positive direct effect on tuber, and therefore these traits could be utilized as selection criteria in sweet potato.

**Keyword:** Sweet potato, *Ipomoea batatas*, Correlation, Path coefficient

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## **TISSUE CULTURE AND DEVELOPMENT OF *AGROBACTERIUM TUMEFACIENS*- MEDIATED TRANSGENETIC PIGEON PEA (*CAJANUS CAJAN* L. MILLSP.) PLANTS**

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**Abstract:** Transformation of pigeon pea (*Cajanus cajan* L. Millsp.) was achieved using *Agrobacterium tumefaciens* strain LB4404, containing the construct of isolated protease inhibitor gene. The gene was driven by CaMV 35S promoter containing kanamycin resistance as plant selection marker. Embryonic axes excised from seeds germinated on MS basal supplemented with BAP (2 mg/l) were used as explants. Transformed calli were selected on medium containing kanamycin (50 mg/ml) after 3 weeks of incubation. Thereafter, the green calli were kept for differentiation. MS basal medium containing IAA (0.2 mg/l) and different concentrations of BAP was tested for the regeneration frequency of explants (embryo axes and leaves). Rooting ability of differentiated shoots was tested on half MS basal medium containing different concentrations of IBA. Molecular analysis of the transformed plants was done by Northern techniques.

**Keywords:** Pigeon pea, Transformation, Tissue culture

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## **CORRELATION AND PATH STUDY FOR SOME POLLEN CHARACTERS IN *LINUM USITATISSIMUM* L.**

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**Abstract:** The highly significant positive correlation coefficient has been observed among the germinated pollen number after 6 hours with pollen grains number per anther and pollen tube length. The pollen grain number per flower with anther length, pollen grain number per anther, seed length, ovary length female reproductive organ length and economic yield. Character like the female reproductive organ length has maximum positive direct effect

on pollen tube length followed by percentage germinated pollen, pollen grain number per flower, total pollen grain on style and stigma and anther length.

**Keywords:** *Linum*, Pollen, Correlation, Path coefficient

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## **EFFECTS OF ACID RAIN UPON GROWTH PARAMETERS OF *CALENDULA OFFICINALIS***

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**Abstract:** In the present investigations the effects of acid rain upon growth parameters of *Calendula officinalis* have been studied. Results showed a decrease in root length, root fresh weight, shoot fresh weight, root dry weight, shoot dry weight, leaves fresh weight and leaves dry w.t. when plants were treated with acid rain solutions.

**Keywords:** Acid rain, Root length, Shoot length, Root fresh wt., Shoot fresh wt., Leaves fresh wt., Root dry wt., Shoot dry wt., Leaves dry wt.

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## **EFFECT OF LEAF EXTRACT AND EXUDATES OF *SOLANUM NIGRUM* L. ON SOME PHYLLOPLANE FUNGI**

**Jyoti Chauhan, D.K. Jain, P.C.Pande and P.N. Singh**

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**Abstract:** Leaf serves as an important natural habitat for the microbes by providing the nutrient in the form of organic (sugars, amino acids, etc.) and inorganic substances. The present paper deals with the effect of leaf extracts and exudates of *Solanum nigrum* L. on some phylloplane fungi. More number of amino acids and sugars were detected in extract than exudates of leaves of *S.nigrum*. The exudate and extract of leaves stimulated the linear growth of dominant phylloplane fungi.

**Keywords:** Leaf extract, *Solanum nigrum*, Amino acids

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## **EFFECT OF ACID RAIN ON THE CONTENTS OF LEAVES OF *SOLANUM MELONGENA***

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**Abstract:** The acid rain causes damage to vegetation is true beyond any doubt. Therefore, as a part of study the effect of acid rain on plants, the effect of acid rain on chlorophyll, sulphur and ascorbic acid contents of *Solanum melongena* was investigated.

**Keywords:** *Solanum melongena*, Acid rain, Chlorophyll

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## **ESTIMATION OF PROTEIN AND DETERMINATION OF PROTEIN SUBUNITS OF *CHLOROCOCCUM INFUSIONUM* (SCHRANCK) MENGHINI**

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**Abstract:** The common unicellular green algae *Chlorococcum infusionum* can be used as a source of protein like *Chlorella*. Hence it contains 42% of dry weight protein. The present findings showed that when the culture media is formulated with urea (a nitrogenous fertilizer), the protein content observed was maximum than the other medium formulations. SDS-PAGE electrophoresis showed 5 protein bands of molecular weights 42, 29, 26, 16, 14.3 k D. So it may be used as a supplement for protein in future.

**Keywords:** *Chlorococcum infusionum*, Media formulation, Protein subunits, SDS-Page

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## **EFFECT OF SOME MEDICINAL PLANT EXTRACTS ON THE INFECTIVITY OF SPOTTED WILT VIRUS**

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**Abstract:** The effect of four medicinal plants viz. *Allium sativum* L., *Allium cepa* L., *Datura stramonium* L. and *Ocimum tenuiflorum* L. extracts on the infectivity of the spotted wilt virus was observed in the farmer's field at village Barara, Distt. Agra. The antiviral activity was tested on indicator plant, *Chenopodium amaranticolor*

(Chinopodiaceae). Plant extracts showed differential activity on indicator plant. The percentage inhibition of spotted wilt virus increased from 10.20% to 96.63% at different concentrations. 1000ppm concentration of garlic, onion, datura and ocimum aqueous extracts inhibited 91.60, 79.09, 92.96 and 96.63 percent inhibition of spotted wilt virus respectively. Hence, these medicinal plants may be used for controlling the infection of spotted wilt virus.

**Keywords:** Aqueous extract, Indicator Plant, Medicinal plants, Spotted wilt virus, Tomato

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## **EFFECT OF NITROGEN FIXING BACTERIA ON TILLERING, PHOTOSYNTHETIC RATE AND CHLOROPHYLL CONTENT IN PLANT GROWTH REGULATOR INDUCED NODULATED WHEAT**

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**Abstract:** Under laboratory conditions the seedlings were raised to induce the nodule-like out growths using different growth regulators 2, 4-D (0.5 ppm), IBA (8 ppm) and NAA (8 ppm) in nitrogen free Hoagland solution. The seedlings were inoculated with bacterial culture such as *Azorhizobium caulinodans* (ORS 571) and *Nostoc* (mixed strains) in wheat variety C-306. Another set was raised with *Azorhizobium caulinodans* and *Nostoc* without plant growth regulators as uninoculated control. The treated paranodulated wheat seedlings were transferred to pots. The data collected on 60 days after transplanting revealed that the plants treated with *Nostoc* either alone or with different growth regulators had higher tiller number, chlorophyll content and leaf area per plant. The maximum effect was observed with IBA + *Nostoc* followed by 2, 4-D and NAA as compare to *Nostoc* treated plants. The *Azorhizobium caulinodans* treated plants were also better than control; it was also observed that the photosynthetic rate was maximum with 2, 4-D treated plants followed by *Azorhizobium caulinodans* and *Azorhizobium caulinodans* with NAA and IBA. The biomass production was maximum in *Azorhizobium caulinodans* treated plants followed by *Nostoc* along with growth regulators; however IBA and *Azorhizobium caulinodans* gives the maximum biomass production.

**Keywords:** Plant growth regulators, *Azorhizobium caulinodans*, *Nostoc*, Nodulation, Photosynthesis, Chlorophyll content, Tiller number

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## **EFFECT OF INTEGRATED NITROGEN MANAGEMENT IN GROWTH, YIELD AND FLOWER QUALITY OF GLADIOLUS (*GLADIOLUS GRANDIFLOROUS*) CV. CANDYMAN**

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**Abstract:** The field experiment was conducted during *Rabi* 2009-10 at the Research cum Instructional Farm, Department of Horticulture, Indira Gandhi Krishi Vishwavidyalaya, and Raipur (C.G.) to study the effect of integrated nitrogen management in growth, yield and flower quality of gladiolus cv. Candyman. The result indicated that the T<sub>3</sub> (50%N (Urea) +50%N (FYM) +P and K @ 20gm/m<sup>2</sup> each) performed better in different parameters namely, days to sprouting, numbers of sprouts per mother corm, number of leaves per plant, height of the plant up to tip of leaf, days to spike emergence, length of spike, number of florets per spike, vase life of cut spikes, and yield of corms and cormels.

**Keywords:** Gladiolus, FYM, Vermicompost

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## PLANTS REGENERATION THROUGH CALLUS TISSUE OF OKRA (*ABELMOSCHUS ESCULENTUS* L. MOENCH.)

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**Abstract:** The explants (hypocotyl, cotyledonary node & cotyledonary leaf or leaf segments) were excised from aseptically grown Okra (*Abelmoschus esculentus*) seedling. The explants were cultured on Murashige & Skoog basal nutrient medium, which supplemented with auxin or cytokinin or in combination of auxin-cytokinin and auxin with AgNO<sub>3</sub> and Casian hydrolysate in various concentrations. The callus formation from explants was occurred in a medium containing auxin (NAA, IAA, 2, 4-D) or cytokinin (BAP, KN, Z) or auxin - cytokinin combinations. But the shoots development was observed on medium containing BAP & BAP-combinations (BAP+NAA, or BAP+IAA, or BAP+AgNO<sub>3</sub>+casian hydrolysate). No shoots developed in MS medium contained KN or Z. The regenerated shoots were successfully rooted on MS medium containing NAA or IAA. The regenerated rooted shoots were successfully established in soil.

**Keyword:** Regeneration, Callus, Okra

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## MYCORRHIZAL STUDIES ON SOME ORCHIDS OF DEHRADUN

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**Abstract:** Present paper deals with the mycorrhizal studies on four orchids of Dehradun region namely *Aerides multiflorum*, *Oberonia falconeri*, *Rhynchostylis retusa* and *Vanda testacea*, all of which are epiphytic and widely known for their medicinal importance. Mycorrhizal study reveals the presence of pelotons which are widely distributed.

**Keywords:** Mycorrhizal, Medicinal, Pelotons, Dehradun

**EFFECT OF GIBBERELIC ACID (GA<sub>3</sub>) LEAF CONTENT IN INTACT AND EXCISED  
LEAF OF *ROSA INDICA***

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**Abstract:** Senescence is considered as a genetically programmed process with culminates the development and differentiations of plant structure and which serve to specific function in the plant. Physiological senescence is definitely followed by death while non-physiological not be followed. It is due to deficiency of any essential mineral. The senescence process allows for the termination of cells, tissues, organs or even organisms in a controlled process. Senescence is age dependent and under the control by hormonal, molecular, and genetical processes. It is controlled by several factor, hormones are one of them. The hormonal regulation is an important aspect of the mechanism of the senescence but not an isolated aspect. Hormones act by controlling the development of the senescence programme. Gibberellins delay the senescence. Gibberellin is a powerful retardant.

**Keywords:** Senescence, Gibberellins, Rose, Protein, Chlorophyll

**EFFECT OF BORON ON GROWTH AND YIELD OF CAULIFLOWER (*BRASSICA  
OLERACEA VAR. BOTRYTIS*)**

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**Abstract:** Cauliflower (*Brassica oleracea* L. var. botrytis) is one of the most important winter season vegetable crops in India which belongs to the family Brassicaceae. It is herbaceous annual vegetable grown for its white tender 'curd' and biennial for seed production. The crops have spread all over Europe from Mediterranean region. In India, area under cauliflower is 248.3 thousand hectares with production potential of 4717.8 thousand metric tonnes and productivity level of 20-40 tonnes ha (NHB, 2008).

**Keywords:** Cauliflower, Brassicaceae, Crop

**EFFECT OF IRON ON SENESCENCE IN *DELONIX REGIA*, LINN.**

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**Abstract:** The effect of different concentration of Iron on senescence of cut flowers of *Delonix regia* (Gulmohr) in light, both in terms of total anthocyanin and dry weight levels were investigated, It was found that the heavy metal Iron show concentration dependent effects. The lower concentration delay senescence and higher concentration accelerate the petal senescence in light. Control along with the higher concentrations of Iron accelerates petal senescence.

**Keywords:** Iron, Senescence, Anthocyanin