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Contents

Journal of Plant Development Sciences Vol.2 (1&2)

SCREENING OF A SOIL BACTERIUM FOR BIOLOGICAL CONTROL OF PATHOGENIC FUNGI

Meenakshi Sharma, Nellie Laisram and Ved Pal Singh

Applied Microbiology and Biotechnology Laboratory,
Department of Botany, University of Delhi, Delhi-110 007
Email: vpsingh_biology@rediffmail.com

Abstract: Twenty-two bacterial isolates were obtained by serial-dilution agar plating method and screened for their antagonistic potential against *Fusarium udum* and *Aspergillus flavus* by dual-culture assays. Out of these isolates, only one bacterium, strain S1 was found to show antifungal activity against the test pathogens. Culture-filtrate paper disc assays also revealed antagonistic potential of the isolated bacterium. The bacterium was found to be non-pathogenic when tested on blood-agar medium. Thus, the isolated bacterium could be effectively implemented for controlling the diseases caused by *F. udum* and *A. flavus*, instead of using the hazardous chemicals and pesticides, which pose potential threat to both human and animal health as well as the environment.

Key words: *Aspergillus flavus*, Biological control, *Fusarium udum*, Microbial antagonism.

Journal of Plant Development Sciences Vol.2 (1&2)

LIVERWORTS OF BHADERWAH (JAMMU AND KASHMIR, NORTH WEST HIMALAYA), INDIA

Fayaz Ahmed, Mudassar Iqbal, Anima Langer and Sanjeev Kumar

Department of Botany,
University of Jammu, J.&K., India.
Email: sanjeevkoul111@rediffmail.com
sanjeevkoul222@gmail.com

Abstract: The Present compilation of liverwort flora of Bhaderwah region of J.&K. includes thirteen species, all of which are being reported for the first time from the area.

Key words: Bryophyta, Hepaticae, Bhaderwah, Jammu and Kashmir State, North West Himalaya.

Journal of Plant Development Sciences Vol.2 (1&2)

EFFECT OF NUTRIENT BLENDING WITH FYM ON BIOMASS PRODUCTION AND ECONOMICS UNDER HYBRID COTTON-SOYBEAN INTERCROPPING SYSTEM

P.S. Rathiya*, R. Lakpale*, G.K. Shrivastava* and S.S. Bargali**

**Department of Agronomy,*
***Department of Forestry*
College of Agriculture, Raipur (C.G) 492006

Abstract: The field experiment was conducted during *kharif* season of 2004 and 2005 at the Instructional Farm, Indira Gandhi Agricultural University, Raipur (C.G.) to study the effect of nutrient blending with FYM and intercropping on biomass production and economics of hybrid cotton - soybean intercrops under irrigated condition. The growth characters of cotton like- plant height, number of branches, number of leaves, dry matter accumulation, LAI, CGR, and RGR were the highest with sole cotton with 100% RDF. In case of soybean, the growth parameters like-plant height, number of branches, number of leaves, dry matter accumulation, LAI, CGR, and RGR were the highest under sole soybean with 100% RDF. The bolls per plant in cotton were the highest under sole cotton with 100% RDF. Similar trend for yield components were observed in case of soybean. Sole cotton with 100% RDF resulted in maximum seed cotton and stalk yield as compared to other intercropping treatments. Similar trend was also noted with sole soybean with 100% RDF, which recorded significantly the highest seed and stover yield as compared to others. The maximum values of LER, cotton equivalent yield, monetary advantage gross realization, net realization ha^{-1} and B: C ratio were recorded under C+S (2:4) + 100%RDF, which was closely followed by treatment C+S (2:4) + 1 t FYM ha^{-1} + 75% RDF (BL).

Key words: Nutrient blending, Intercropping, Biomass production, Economics, Hybrid cotton, Soybean.

Journal of Plant Development Sciences Vol.2 (1&2)

EFFECT OF FERTILIZER AND MOISTURE CONSERVATION PRACTICES ON PERFORMANCE OF MUSTARD (*BRASSICA JUNCEA* L.) UNDER RAIN FED CONDITION

C.K. Verma, S.S. Bharti and R.B. Yadav*

Department of Agronomy,

Chandra Shekhar Azad University of Agriculture & Technology, Kanpur-208002 (U.P.)

**Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut-250110 (U.P.)*

Abstract: A field experiment was carried out to know the effect of fertilizer *i.e*. control, 40 N + 15 S, 80 N + 30 S and 120 N + 45 S kg ha^{-1} and moisture conservation practices *i.e* control, dust mulch created by weeding and hoeing at 25 and 35 DAS and organic mulch @ 5 t ha^{-1} of paddy straw at 25 DAS on mustard [*Brassica juncea* (L.) Czernj & Cosson]' at students instructional farm of C. S. Azad University of Agriculture and Technology, Kanpur (U.P.), during *Rabi* season of 2008-09 and 2009-10. Results reveals that fertilizer 120 N + 45 S kg ha^{-1} gave significantly higher plant height, number of primary branches $plant^{-1}$, number of secondary branches $plant^{-1}$, dry matter accumulation $plant^{-1}$, siliquae length, number of siliqua $plant^{-1}$, number of seeds $siliqua^{-1}$, 1000-seed weight, grain yield, stover yield, harvest index and protein content (%) than other levels of fertilizers *i.e*. control, 40 N + 15 S and 80 N + 30 S, during both years. However, the application of moisture conservation practices *i.e*. dust mulch creating by weeding and hoeing at 25 and 35 DAS and organic mulch @ 5 t ha^{-1} of paddy straw at 25 DAS increased growth, yield attributing characters and seed yield as well as nutrient content and nutrient uptake by mustard over control. On the basis of economics use of 120 N + 45 S kg ha^{-1} and organic mulch @ 5 t ha^{-1} of paddy straw at 25 DAS was found most profitable.

Key words: Mustard, Moisture conservation practices, Fertilizer, Nutrient and Economics.

SOME IMPORTANT ETHNOMEDICINAL PLANTS FROM BHAGIRATHI VALLEY OF DISTRICT UTTARKASHI (GARHWAL HIMALAYA)

Uttranjali Rawat, Preeti Chaudhary and R. Govila

Department of Botany, I.P. College, Bulandshahr, (U.P.)
E-mail of corresponding author: pritiamitrathi@gmail.com

Abstract: Present communication deals with important medicinal plants collected during the field survey from the Bhagirathi valley of Uttaranchal state having ethnomedicinal uses. Specimens were collected and studied during the extensive survey of the area during 2008 to 2010. Information were gathered from local ethnic groups having traditional knowledge of herbal medicines. Information were cross checked for authenticity of investigated results.

Key words: Ethnomedicinal plants, Bhagirathi valley, Herbal, Ailments, Disorder, Indegenous.

Journal of Plant Development Sciences Vol.2 (1&2)

STUDIES ON VARIABILITY IN OKRA (*ABELMOSCHUS ESCULENTUS* (L.) MOENCH)

P.C. Chaurasiya*, Murlee Yadav and D.B.Singh*****

Department of Horticulture, Allahabad Agricultural Institute- Deemed University Allahabad – 211007
E-mail of corresponding author: pcsagri@yahoo.co.in

Abstract: Twenty five genotypes of Okra collected from IIVR, Varanasi were evaluated in summer, 2008 to study the variability for 15 different characters. The treatment mean squares were significant for all 15 characters studied. Recommended agronomic and cultural practices were adopted to obtain good phenotypic expression of the characters. The characters number of branches/ plant, fruit yield/ plant and days first flowering at fruit set should high GCV and PCV estimates. Medium to high and high heritability was recorded for all the characters studied. The characters fruit length no. of ridge per fruit (100%), days of first flowering (89%),plant height(86%) and plant per cent affect by YVMV(84%) showed high heritability estimate, however these characters were coupled with varied genetic advance i.e. high, medium and low respectively suggesting complexity of genetic mechanism in expression of those traits. The additive genetic variance was reported by traits like plant height, no of branches per fruit,fruit length, fruit diameter and no. of fruit per plant.

Key words: Okra, Hybridization, Genotype.

Journal of Plant Development Sciences Vol.2 (1&2)

BIOCHEMICAL IMPACT OF ENDOGENOUS HORMONES INHERENT IN EUCALYPTUS LEAF EXTRACT ON SENESCENCE IN *VIGNA MUNGO* (L.) HEPPER FOR ITS USE AS BIOFERTILIZER

Bhavana Gaur* and Varada Gaur**

**Department of Botany,*
R.G. (P.G.) College, Meerut–250 001,(U.P.) India
Corresponding author's email: gaurbhavana@yahoo.com

Abstract: Senescence in *Vigna mungo* (L.) Hepper is studied here. The biochemical impact of endogenous hormone inherent in *Eucalyptus* leaf extract on it was specially studied. The studies were made by taking aqueous extract of dried leaves of *Eucalyptus citriodora* at various concentrations and compared with control. During study, the various concentrations of *Eucalyptus* leaf extract taken were W/V – 1:200, 1:250, 1:500 and 1:1000 respectively. Senescence was studied in intact and excised leaves of *Vigna mungo* (L.) Hepper. Observations were made both in light and dark in species under investigation. The inference drawn out of experimentation are worth noticing. Whether use of dried leaves of *Eucalyptus* can be done as bio-fertilizer in seedling growth of *Vigna mungo* (L.) Hepper by preventing leaf senescence, was to be seen. It was found out that in *Eucalyptus* leaf extract in light, senescence was controlled in intact leaves. But in dark, senescence was promoted at concentrations, W/V – 1:200, but minimum senescence occurred at dilute concentrations and in control in intact leaves. In excised leaves, senescence was promoted at concentration, W/V – 1:200, both in light & dark. However, at other concentrations, darkness controlled senescence. Lower concentrations of *Eucalyptus* leaf extract are recommended as biofertilizers for *Vigna mungo* (L.) Hepper.

Key words: Senescence, Biochemical impact, Leaf extract, Biofertilizer, Endogenous hormone, Intact leaves, Excised leaves, Light and Dark.

ASSESSMENT OF POST-HARVEST SPOILAGE OF APRICOTS IN DIFFERENT PACKAGING STRUCTURES

J. Bhadwal and Y.P. Sharma

Department of Botany,
University of Jammu, Jammu-180 006.
Email: yashdbm@yahoo.co.in

Abstract: The percentage loss of fruits in a packaging structure is determinant of its efficiency in prolonging the shelf life of fruits. In case of apricots, marketing is done in two types of packaging structures - wooden boxes and cardboard cartons. During the present investigation, an attempt was made to find out the percentage loss and hence, relative efficacy of the two, when it was found that in areas like Jammu (where temperature is very high during apricot marketing season), cardboard cartons are more efficient.

Key words: Apricot, Harvest, Jammu & Kashmir, Uttarakhand.

CONTROL OF *SCLEROTINIA SCLEROTIORUM* (LIB.) de BARY IN INDIAN MUSTARD WITH FUNGICIDES

Preeti Chaudhary, Uttranjali Rawat and R. Govila

Microbiology Lab, Department of Botany,
I.P. College, Bulandshahr, 203001 (U.P.), India
E-mail of corresponding author : pritimitrathi@gmail.com

Abstract: Among various fungicides used, benomyl and carbendazim proved to be most effective fungicide for seed treatment, spray alone as well as in combination to control *sclerotinia- rot* of Indian mustard (*Brassica juncea(L.) (zern and Coss)*. Seed treatment at sowing time with benomyl (0.2 per cent) followed by spraying at first budding or flowering stage with same dose of fungicide provide best clue for recommendation at farmer's field.

Key words: Indian mustard, *Sclerotinia-rot*, Fungicides, Screening, Spray.

Journal of Plant Development Sciences Vol.2 (1&2)

AN ASSESSMENT OF IMPACT OF GROUND WATER IRRIGATION ON SEED VIABILITY OF PADDY CROP (*ORYZA SATIVA* L.)

Shivi Saxena, Shalini Saxena and Somesh Yadav

Laboratory of Cytogenetics, Department of Botany
Bareilly College, Bareilly (U.P.)-243001

Abstract: The present paper deals with the effect of groundwater irrigation along with Ram Ganga river water and sewage water irrigation on seed viability of paddy crop. The water samples have been collected from four different locations of district Bareilly viz. Rampur road, Lucknow road, Pilibhit road and Budaun road. Three varieties of paddy crop viz. Resham Basmati, Pakistani Basmati and Indrasan were taken as test crops. Seeds of these varieties were obtained from National seed corporation Bareilly. Seeds of all three varieties were irrigated by ground water samples taken from different sites. After that all the seeds are subjected to the Tetrazolium (TZ) test to find out the seed viability of each variety of paddy crop. In all the three varieties of paddy crop irrigation with ground water of Rampur road has given the highest seed viability over control, whereas ground water of Budaun road has reduced the seed viability of Paddy crop.

Key words: Seed viability, Ground water, *Oryza sativa*

Journal of Plant Development Sciences Vol.2 (1&2)

EFFECTS OF HEAVY METAL ZINC ON PETAL SENESCENCE OF *ROSA FLORIBUNDA* LINN.

**Seema Khurana, A.K. Bhargava, Sonali Bhargava,
S.K. Agarwal and Amit Dhiman**

*Botany Department,
M.S. College, Saharanpur - 247001*

Abstract: The effect of Zinc concentration on senescene of Cut Rosa sp. Flowers, in light and in the dark in terms of total anthocyanin levels were investigated. It was found that the heavy metals show concentration dependent effects. The lower concentrations delay and higher concentration accelerate the petal senescene both in light and in the dark. Further it is noted that the concentrations of Zinc delay petal senescence in light as compared to the dark.

Keywords: Zinc, Heavy metal, Senescence.

Journal of Plant Development Sciences Vol.2 (1&2)

PHYSIOLOGICAL STUDIES ON ROOTING BEHAVIOUR IN JUVENILE SEEDLINGS OF *PHASEOLUS VULGARIS* IN LIGHT AND DARK

Bhavana Gaur

*Department of Botany,
R.G. (P.G.) College, Meerut–250001, India
E mail:gaurbhavana@yahoo.com*

Abstract: *Phaseolus vulgaris* is an important pulse, belonging to family Fabaceae, is an important source of vegetarian diet. Due to its food value, its plants are cultivated from very ancient times. For cultivation of plants, the first and foremost come roots, which help in fixation of plants and in supplying water and minerals to developing plants. Root studies from physiological point of view are very important. Here physiological aspect of root development has been studied in juvenile seedlings of *Phaseolus vulgaris* and rooting behaviour is studied in light and in dark. The root starts with emergence of radicle, an indication of germination of seeds. During further studies on root growth, the roots take over a particular length. The root length has been recorded here. Differentiation of lateral roots is again an important part of root architecture. Whether lateral roots initiate early or late has been observed here. Lastly average number of lateral roots differentiated at a particular point of time has been observed here. Here rooting behaviour of roots of *Phaseolus vulgaris* has been studied covering all above mentioned aspects in light and dark. Studies started with emergence of radicle at the time of seed germination and rooting behaviour of juvenile seedlings of *Phaseolus vulgaris* was observed for 7 days in light and dark. Light promoted emergence of radicle, while dark promoted rest of the root activities i.e. root length, differentiation of lateral and average number of lateral roots.

Key words: Physiological aspects, Rooting behaviour, Root architecture, Juvenile seedlings, Radicle, Lateral root differentiation.

Journal of Plant Development Sciences Vol.2 (1&2)

EFFECT OF CO-INOCULATION OF *PSEUDOMONAS*-MP3 AND *RHIZOBIUM*-GR23 ON PLANT GROWTH OF PEANUT (*ARACHIS HYPOGAEA* L.)

Vishal Kumar Deshwal and Kavita Vig

Department of Microbiology,
Doon (P.G.) Paramedical College, Dehradun-248001.

Abstract: In the present study, Twenty five *Pseudomonas* strains were isolate from rhizosphere of maize plant and twenty five *Rhizobium* strains were isolate from the nodules of Gram plant in 05 different sites at Dehradun (Uttarakhand). Both *Pseudomonas* and *Rhizobium* strains were characterised on the basis of Holt. *et al*., (1994). Plant growth activity of bacteria and interaction studies were done as per Deshwal *et al*. (2003). Seventeen *Pseudomonas* strains and fourteen *Rhizobium* strains produced Indole Acetic Acid (IAA), Siderophore, HCN, phosphatase enzyme of them, only three combinations of *Pseudomonas* and *Rhizobium* strains enhance plant growth activity in Peanut (*Arachis hypogaea* L.) as compared to individual strains

Key words: *Arachis hypogaea, Pseudomonas, Rhizobium*

THE GENUS *TERMITOMYCES* FROM MADHYA PRADESH

H.S. Chaubey,* Sanjeev Kumar and Y.P.Sharma****

**School of Studies in Botany, Jiwaji University, Gwalior (M.P.)*
***Department of Botany, University of Jammu, Jammu 180006*
*E.mail:*ohm_mushroom2005@yahoomail.com,
sanjeevkoul222@gmail.com

Abstract: Genus *Termitomyces* includes three species namely *T. hemii, T. indicus* and *T. microcarpus* have been described and illustrated from various locations of Gwalior Division of Madhaya Pradesh. Their habitat description, macro and microscopic details and edibility status have also been incorporated in the present study.

Key words: Gwalior Division,*Termitomyces*

EFFECT OF AUXIN (INDOL-3-ACETIC ACID) LEAF CONTENT IN INTACT AND EXCISED LEAF OF *ROSA INDICA*

Manoj Kumar Sharma

Deptt. of Botany, J.V. (P.G.) College, Baraut, Baghpat.
Email:mbhardwaj1501@yahoo.in

Abstract: Senescense is a puzzling process it always differs from ageing. It may or not be lead to death .it not only support the degradation process but also promote the growth of new plant parts. Physiological senescense is

definitely followed by death while non-physiological not be followed. It is due to definenecy of any essential mineral. It is controlled by several factor, harmones are one of them. Auxin delays the senescense. Generally, higher concentrations of IAA used for visible symptoms of senescense were observed below 100ppm at very high concentration i.e. 400ppm, it becomes non-physiological in both intact and excised conditions. 300ppm of IAA shows maximum delay.

Key words: Senescence, Auxin, Rose, Protein, Chlorophyll

Journal of Plant Development Sciences Vol.2 (1&2)

A FIELD TRIAL TO STUDY THE EFFECT OF *AZOSPIRILLUM BRASILENSE* AND *PSEUDOMONAS STRIATA* AS INOCULANTS AND INSECTICIDE CARBOFURAN ON GROWTH PARAMETERS OF SORGHUM CROP

Vandna Saxena* and Jaya Mohan**
**Division of Microbiology*
***Division of Agriculture Chemicals,*
Indian Agricultural Research Institute New Delhi-110012

Abstract: The field trial with inoculants *Azospirillum brasliense* and *Pseudomonas striata* and insecticide carbofuran showed significant increase in grain yield, there was significant decrease in dead heart formation with carbofuran. With application of ammonium sulphate at the rate of 100kg N/ha a yield of 34.75g/ha was obtained and with *Azospirillum* a yield of 32.0g/ha was obtained. The results clearly indicated that inoculation with *A. brasliense* could save about 60kgN/ha since a basal dose of 40kgN/ha as ammonium sulphate was provided.

Keywords: *Azospirillum brasliense, Pseudomonas,* Nitrogen uptake

Journal of Plant Development Sciences Vol.2 (1&2)

EFFECT OF SUBSTRATUM AND SULPHURIC ACID TREATMENT ON THE GERMINATION OF KALMEGH (*ANDROGRAPHIS PANICULATA* NEES.)

Aniat-ul-haq, Rashmi Vamil* and Poonam Mahrotra

Departement of Botany,
Bundelkhand University Jhansi (U.P)
** Dr. B.R. Ambedkar University Agra (U.P).*

Abstract: A study was carried out to Investigate the effect of substratum (soil-sand amendments cotton and filter paper) and treatment of sulpheric acid on the germination of Kalmegh (*Andrographis paniculata* Nees.) seeds were placed on moistened substratums in different containers under laboratory conditions for germination. 3000 seeds of

Andrographis paniculata (100 seeds per container) with three replicates of each were used. The highest germination was recorded in sand (0:1 soil: sand) substratum. Germination was observed to be enhenced by the 25% sulpheric acid pre- treatment. Results of this study may serve as useful information in the production and improvement of this species.

Keywords: Germination, Kalmegh (*Andrographis paniculata* Nees), Substratum, Sulpheric acid.