

# Journal of Plant Development Sciences

(An International Monthly Refereed Research Journal)

Volume 10

Number 1

January 2018

## Contents

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### RESEARCH ARTICLE

Assessment of students knowledge and perceptions about biodiversity and conservation method in Harari regional state, Eastern Ethiopia

—**Yeneayehu Fenetahun and Girma Eshetu**-----1-13

Variable salinity tolerance in *Anabaena* sp. bhuar002 through regulation of ion uptake and production of osmoprotectant

—**Aparna Rai**-----15-24

The field screening of the somatic embryogenesis cultures derived cocoa clone trees for the resistance to vascular streak dieback (vsd) disease

—**Entuni, G., Edward, R., Nori, H. and Ahmad Kamil, M.J.**-----25-34

Present status and future prospects of fisheries development in Bihar with special reference to some selected oxbow lakes of Muzaffarpur district

—**Satyendra Kumar**-----35-41

Cytomorphological characterization of *Ocimum basilicum* and *O. Tenuiflorum* germplasm

—**Aditi Saha**-----43-47

Effect of time of air layering and iba concentrations on the rooting behaviour of pant prabhat guava (*Psidium guajava* L.) under sub-tropical condition of Garhwal Himalaya

—**Dinesh Chandra Naithani, Anant Ram Nautiyal, Deepak Kumar Rana and Deepak Mewar**-----49-54

Efficacy of insecticide against insect pest of soybean, *Glycine max* (L.) Merrill

—**Nikki Bhardwaj, S.B. Singh, Pavithra S. and K.K. Singh**-----55-60

Yield irrigation production efficiency and economic return of green pea under variable irrigation and fertigation

—**Arvind Kumar, Avadhesh Kumar Koshal, M. Imtiyaz and S.K. Srivastava**-----61-67

Effect of poultry manure and psb culture in conjunction with different levels of phosphorus on growth and yield of black gram (*Vigna mungo* L.)

—**Raisen Pal and N. Swaroop**-----69-73

### SHORT COMMUNICATION

Impact analysis of cluster frontline demonstration in soybean cultivation

—**R.K. Dwivedi, B.K. Tiwari and K.S. Baghel**-----75-78

## ASSESSMENT OF STUDENTS KNOWLEDGE AND PERCEPTIONS ABOUT BIODIVERSITY AND CONSERVATION METHOD IN HARARI REGIONAL STATE, EASTERN ETHIOPIA

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*Received-16.01.2018, Revised-27.01.2018*

**Abstract:** The term biodiversity refers the number and variability of living organisms on the plant and it is the heart of sustainable development and the life insurance in itself. The main objective of this study was to assess students' level of knowledge and perception about biodiversity conservation techniques, hence strengthening and developing students' level of knowledge and perception towards biodiversity conservation has a great role to protect the variety of all species in the ecosystem. The study has employed both qualitative and quantitative methods such as individual interview, FGD and structured questionnaire. A total 360 students from two target groups (grade 10 and 12) selected from 6 secondary and preparatory schools were involved. The results showed that students' level of knowledge and perception towards biodiversity conservation was varied. Accordingly, above 50% and 70% of the students of grade 12 were found above mastery level in their knowledge and had shown favorable perception respectively regarding biodiversity conservation whereas students from grade 10 above 50% were found below mastery level regarding their knowledge and above 50% of the students also had shown favorable perception about conservation of biodiversity resource. This indicated that the students were not more awareness about biodiversity and conservation methods due to different factors like teaching learning of biodiversity conservation was found ineffective due to lack of facilities, lack of effective implementation of the stated methodology in their text book and large class size. Thus, it can be concluded that the students has not get the expected change in knowledge and perception among students about conservation of biodiversity resources particularly in grade 10 with in the school. Therefore, fulfilling of the necessary facilities, awareness creation on the concerning body and implementing effectively the teaching methods of biodiversity conservation that included in their text book such as field exposure, group discussion active classroom session and continues assessment in the study area is highly recommended.

**Keywords:** Biodiversity, Conservation, Harari, Students, Perception

## VARIABLE SALINITY TOLERANCE IN ANABAENA SP. BHUAR002 THROUGH REGULATION OF ION UPTAKE AND PRODUCTION OF OSMOPROTECTANT

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**Abstract:** Filamentous, heterocyst-forming, diazotrophic cyanobacterium *Anabaena* sp. BHUAR002 was isolated from usar (saline) land near Banaras Hindu University campus, and grown routinely on Allen Arnon medium. The growth of cyanobacterium was measured at various concentrations (upto 1000 mM) of different salt combinations, NaCl, NaCl+Na<sub>2</sub>CO<sub>3</sub> (1:1) and NaCl+Na<sub>2</sub>SO<sub>4</sub> (1:1) and found that the cyanobacterium tolerated the salinity of 500 mM NaCl, 700 mM NaCl+Na<sub>2</sub>CO<sub>3</sub> and 1000 mM NaCl+ Na<sub>2</sub>SO<sub>4</sub>, indicating that elevated carbonate and sulphate support the growth of cyanobacterium under salinity and increase the tolerance range. Natural abundance <sup>13</sup>C-NMR spectra chemical shifts showed sucrose as the osmoticum synthesized in NaCl and NaCl+Na<sub>2</sub>CO<sub>3</sub> (1:1). However, synthesis of sucrose was not found in case of NaCl+Na<sub>2</sub>SO<sub>4</sub> (1:1). Intracellular Na<sup>+</sup> concentration increases under different salt concentrations as compared to control. K<sup>+</sup> concentration also increases with increase of different salt concentration as compared to control is also an indication of acclimatization against salt stress; this type of ionic ratio was found in all three salt stress conditions. Intracellular Cl<sup>-</sup> concentration was found minimum in case of NaCl+Na<sub>2</sub>SO<sub>4</sub> as compared to NaCl and NaCl+Na<sub>2</sub>CO<sub>3</sub> incubated cells.

**Keywords:** Intracellular ion concentration, Osmotic, Salinity, Tolerance range

## **THE FIELD SCREENING OF THE SOMATIC EMBRYOGENESIS CULTURES DERIVED COCOA CLONE TREES FOR THE RESISTANCE TO VASCULAR STREAK DIEBACK (VSD) DISEASE**

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*Received-05.01.2018, Revised-24.01.2018*

**Abstract:** Vascular streak dieback (VSD) caused by the fungus *Oncobasidiumtheobromae* is a devastating pathogen of cocoa (*Theobroma cacao* L.). This disease effects both young seedlings and mature trees. Plant tissue culture technique viz. somatic embryogenesis has a potential to overcome this problem by the development of VSD disease resistant cocoa planting materials. To ensure the effectiveness of this technique, the field screening of resistant of the regenerated cocoa clone trees to VSD was evaluated. The method used was field observation based on visual scoring of VSD infection under normal planting conditions. Thirty cocoa plants derived from immature zygotic embryo and 30 cocoa plants derived from staminode explants of Trinitario varieties were planted in field condition. Pruning to remove the infected branches was carried out to determine the relationship between characteristics of sprouting ability and VSD scoring of the severity for each regenerated cocoa clone trees. At one year of planting, it was found that immature zygotic embryo cultures derived cocoa trees were resistant than staminode cultures derived cocoa trees to VSD disease. The MCBC1 cocoa clone trees either derived from immature zygotic embryo culture or staminode cultures showed the optimum characteristics of sprouting ability than other type of cocoa clone trees.

**Keywords:** *Theobroma cacao*, Tissue culture, Somatic embryogenesis, Field experiment, Vascular streak dieback

## **PRESENT STATUS AND FUTURE PROSPECTS OF FISHERIES DEVELOPMENT IN BIHAR WITH SPECIAL REFERENCE TO SOME SELECTED OX-BOW LAKES OF MUZAFFARPUR DISTRICT**

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*Received-09.01.2018, Revised-23.01.2018*

**Abstract:** Total fish Farmers Development agency (FFDA) working in the state is 33. Water area development through this is around 26,000 ha and average annual productivity of ponds /tanks under this 2175 kg/ha/yr. The main components of work under this centrally sponsored scheme are construction of new ponds, renovation of old derelict ponds through bank finance, training to farmers, supply of essential inputs and extension support. Total no. of ox-bow lakes in the state is 63 which become well. Besides these are many ox-bow lakes which have either become extinct due to certain bio-geological phenomenon or in the process of extinction. There are some lakes with process of formation has been halted due to the raising of earthen embankment, a measures of flood control, and as such these lakes remain in half formed state but still have opened connection with the parent river, resulting into complete inundation during monsoon months. However, they served as good resources for capture fisheries, being a collection sink of riverine stock during the flood

**Keywords:** Future prospects of fisheries, Development in Bihar and Muzaffarpur District

## **CYTOMORPHOLOGICAL CHARACTERIZATION OF *OCIMUM BASILICUM* AND *O. TENUIFLORUM* GERMPLASM**

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Received-06.01.2018, Revised-26.01.2018

**Abstract:** *Ocimum basilicum* (sweet basil) and *O. tenuiflorum* (holy basil) of the genus *Ocimum* (basil; Family: Labiatae) obtained from Medicinal Plant Garden, Narendrapur are grown in the experimental field plots of Kalyani University (West Bengal plains) and cytotaxonomically characterized. Quantitative estimation of essential oil content from leaves and flower tops are also performed. *O. basilicum* and *O. tenuiflorum* show  $2n=72$  and  $2n=36$  respectively in meiocytes. The objective of the work is to catalogue the germplasms of the species under study for proper maintenance of genetic stock(s) for future exploration.

**Keywords:** Basil, Meiosis, Taxonomic characterization, Essential oil, Genetic stock

Journal of Plant Development Sciences Vol. 10(1)

## EFFECT OF TIME OF AIR LAYERING AND IBA CONCENTRATIONS ON THE ROOTING BEHAVIOUR OF PANT PRABHAT GUAVA (*PSIDIUM GUAJAVA* L.) UNDER SUB-TROPICAL CONDITION OF GARHWAL HIMALAYA

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Received-07.01.2018, Revised-25.01.2018

**Abstract:** The present study were undertaken at the Orchard Section, Horticultural Research Centre and Department of Horticulture, Chauras Campus, School of Agriculture and Allied Science, HNB Garhwal University (A Central University), Srinagar Garhwal, Uttarakhand, India during the rainy season of the year 2016 to study the effect of time of air layering and IBA concentrations on the rooting behaviour of Pant Prabhat Guava (*Psidium guajava* L.). The experimental findings showed that the minimum days taken to root appearance (28.40 days), maximum rooting percentage (92.20%), maximum number of roots per layer (24.80), maximum length of longest root per layer (14.20 cm), maximum diameter of thickest root per layer (1.86 mm) and maximum percentage of layers showing secondary roots (70.00%) were significantly superior when layering was done on 15<sup>th</sup> July and treated with 4500 ppm concentration of IBA.

**Keywords:** IBA, Rooting, Layering, Secondary roots

Journal of Plant Development Sciences Vol. 10(1)

## EFFICACY OF INSECTICIDE AGAINST INSECT PEST OF SOYBEAN, *GLYCINE MAX* (L.) MERRILL

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**Abstract:** Efficacy of Quinalphos 25 EC, Imidacloprid 17.8 SL, Trizophos 40 EC, Chlorpyrifos 20 EC, Alphamethrin 10 EC, Profenophos 50 EC and Dimethoate 30 EC was observed. The overall maximum reduction in girdle beetle infestation was noticed in Quinalphos 25 EC (82.15%) followed by Alphamethrin 10 EC (79.41%), and it was minimum in Chlorpyrifos 20 EC (75.88%). The blue beetle population reduction was noticed maximum in Trizophos 40 EC (87.81%) followed by Profenophos 50 EC (85.61%) and minimum in Alphamethrin 10 EC (81.41%). The maximum reduction in green semilooper population was recorded in Profenophos 50 EC (88.05%) followed by Imidacloprid 17.8 SL (87.98%), and minimum in Quinalphos 25 EC (84.57%). Tobacco caterpillar showed maximum population reduction in Imidacloprid 17.8

SL (90.24%) followed by Quinalphos 25 EC (89.42%), and it was minimum in Profenophos 50 EC (86.40%). The Highest grain yield (kg./ha.) was recorded in Imidacloprid 17.8 SL (1500) and it was minimum in Quinalphos 25 EC (850). The best cost benefit ratio was noted in Imidacloprid 17.8 SL (1:3.42) followed by Trizophos 40 EC (1:3.20), and lowest in Quinalphos 25 EC (1:1.94).

**Keywords:** Insecticide, Insect, Soybean, Control

Journal of Plant Development Sciences Vol. 10(1)

## **YIELD IRRIGATION PRODUCTION EFFICIENCY AND ECONOMIC RETURN OF GREEN PEA UNDER VARIABLE IRRIGATION AND FERTIGATION**

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**Abstract:** Field study was carried out at the irrigation Research Farm of Sam Higginbottom Institute of Agriculture and Sciences (Deemed to be University) Allahabad, U. P., India, During winter crop growing season of December 2011 to March 2012, on clay loam soil in order to evaluate the yield of green pea under different irrigation scheduling with fertigation under semi arid climate. The crop was subjected to variable irrigated level (IW/CPE ratio of 50, 75, 100, 125, 150) and fertigation level (100, 200, 300). The crop was irrigated when daily mean of USWB class. A pan evaporation reached to predetermined value of 16.3 mm. irrigated by drip irrigation method with 41/h non compensated on line dripper's Irrigation at 125% of pan evaporation replenishment and fertigation level 300kg/ha resulted in higher green pea yield, whereas irrigation production efficiency was higher with irrigation at 50% of pan evaporation replenishment with fertigation level 300kg/ha. The irrigation at 125% with fertigation level of 300kg/ha, of Pan –evaporation replenishment resulted in higher gross return, net return and benefit cost ratio. Seasonal water applied irrigation schedules and bulb yield, gross return, net return and benefit cost ratio exhibited strong quadratic relationship which can use for optimizing green pea production in this region.

**Keywords:** Drip irrigation, Irrigation scheduling, Fertigation, Economic analysis marketable yield, Pea

Journal of Plant Development Sciences Vol. 10(1)

## **EFFECT OF POULTRY MANURE AND PSB CULTURE IN CONJUNCTION WITH DIFFERENT LEVELS OF PHOSPHORUS ON GROWTH AND YIELD OF BLACK GRAM (*VIGNA MUNGO* L.)**

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**Abstract:** The experiment was conducted during *kharif* (july-oct.) season 2016 on crop research farm of Department of Soil Science and Agricultural Chemistry, Naini Agricultural Institute, Allahabad. By order to evaluate the effect of different treatment of poultry manure and PSB culture with levels of phosphorus. The growth and yield parameters viz. Plant height (cm), Number of leaves ( $\text{plant}^{-1}$ ), Number of braches ( $\text{plant}^{-1}$ ), Number of pods ( $\text{plant}^{-1}$ ). All parameters of growth and yield of Black gram are found significant. The best treatment was found T<sub>9</sub> (P 100% + PSB culture) that showed the highest yield regarding, gave the best results with respect to plant height (56.43 cm), number of leaves  $\text{plant}^{-1}$  (46.20), number of branches  $\text{plant}^{-1}$  (8.00), test weight of 1000 seed (40.23 g), grain yield (8.58 q  $\text{ha}^{-1}$ ) and straw yield (21.74 q  $\text{ha}^{-1}$ ) respectively. The treatment was significantly higher as compared to other treatment combination. The economy of different treatment concerned, the treatment T<sub>9</sub> (P 100% + PSB culture) provides highest net profit of 62057.00 with cost benefit ratio is 1: 3.73 however, the minimum net profit of 41219.00 was recorded in the treatment T<sub>4</sub> (P 50% + un inoculated) with cost benefit ratio is 1:2.91.

**Keywords:** Black gram, Poultry manure, PSB, Phosphorus

## IMPACT ANALYSIS OF CLUSTER FRONTLINE DEMONSTRATION IN SOYBEAN CULTIVATION

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*Received-01.01.2018, Revised-27.01.2018*

**Abstract:** The domestic requirement of oilseed had been manifold of a modern living standard which has been fulfilled through the imports that leads to imbalance the Indian economy. To fulfill the domestic demand and to boost the production and productivity, cluster frontline demonstrations (CFLDs) on Soybean were conducted at farmer's field through Krishi Vigyan Kendra Damoh (M.P.). These demonstrations were conducted in two villages namely Jortala and Bamori during kharif seasons of 2015-16 and 2016-17. The results of CFLDs show a greater impact on farming community due to significant increase in crop yield greater than farmer practice. The economics and benefit cost ratio of both farmers practice (FP) and recommended practice (RP) were workout. An average of Rs. 30990/ha was recorded net profit under RP while it was Rs. 18792/ha under FP. Benefit cost ratio was 2.10 under RP, while it was 1.87 under FP. By introducing the proven technology i.e improved variety (JS 95-60), seed treatment, sowing in broad bed furrow method, integrated weed management, recommended dose of fertilizers on soil test base and integrated pest management by encouraging the farming community of the district through recommended technologies were followed in the CFLDs.

**Keywords:** Soybean, CFLDs, Farming community, Net profit, B:C ratio