

Journal of Plant Development Sciences

(An International Monthly Refereed Research Journal)

Volume 7

Number 12

December 2015

Contents

Natural occurrence of secondary capitula phenotype in <i>Calendula officinalis</i> L. —Rahul Kumar, Vishav Vir Singh Jamwal and Ashutosh Sharma -----	859-862
Influence of weather parameters on pearl millet (<i>Pennisetum glaucum</i> L.) varieties at Allahabad —S.K. Maurya, S. Nath, S.S. Patra and S. Rout -----	863-868
Utility of <i>Tylophora Indica</i> as antiasthmatic plant: A review —Nirlep Kour and Minu Gupta -----	869-873
Carbon sequestration capacity of different natural weed flora under rainfed ecosystem —Adikant Pradhan, S.S. Rao, P.S. Kusaro, S.K. Nag and A. Sao -----	875-880
Floristic survey and phytosociological analysis of roadside communities of NH-24 of Moradabad district —Beena Kumari, Shiv Pratap Singh, Satya Pal Verma and Anupam Pratap Singh -----	881-884
Varietal evaluation of gladiolus (<i>Gladiolus grandiflora</i> L.) under the hilly climatic condition of Mainpat, Chhattisgarh —P.C. Chaurasiya and R.K. Mishra -----	885-888
Standardization of <i>In vitro</i> propagation of <i>Polianthes tuberosa</i> L. (Calcutta double) —Aveek Samanta, Tilak Raj Maity, Debanjan Jana, Babita Saha and Siraj Datta -----	889-891
Cost evaluation of pesticide against major pest complex of paddy crop in Dhamtari district of Chhattisgarh —Randeep Kr Kushwaha, Vijay Kr Koshta, Sanjay Sharma, Jaya Laximi Ganguli and Padmesh Kundan Sharma -----	893-897
Studies on genetic parameter for yield and yield attributing traits across <i>Kharif</i> and <i>Rabi</i> seasons in maize (<i>Zea mays</i> L.) —Manjeet Kumar, S.S. Verma, Meenakshi Uniyal and Anupam Barh -----	899-902
Effect of oil coating and storage periods on the internal quality of Kalinga brown chicken eggs —N. Ramteke and Swati Sharma -----	903-906
REPORTED	
Assessment of Ganga river water at different locations and its suitability for drinking purposes —Veena Chaudhary -----	907-909
Survey on powdery mildew (<i>Erysiphe polygoni</i> dc) disease in coriander (<i>Coriandrum sativum</i> L.) at Gwalior division —Rajendra Kashyap, P.K. Bhagat and G.P. Painkra -----	911-913
SHORT COMMUNICATION	
Effect of modified and split application of ssp on availability of phosphorus at different growth stages of transplanted rice (<i>Oryza sativa</i> L.) —S.K. Yadav, Suresh Kumar, A.K.S. Parihar and K.K. Verma -----	915-916
PERSONAL INFORMATION	
Ecological and environmental hazards —Sanjay Vats -----	917-919

NATURAL OCCURRENCE OF SECONDARY CAPITULA PHENOTYPE IN *CALENDULA OFFICINALIS* L.

Rahul Kumar, Vishav Vir Singh Jamwal and Ashutosh Sharma*

Faculty of Agricultural Sciences, DAV University, Sarmastpur- 144012, Jalandhar-Pathankot
Highway, Jalandhar, Punjab, India
Email: sharma_tosh_ashu@yahoo.co.in

Received-12.12.2015, Revised-24.12.2015

Abstract: During the spring season (February-April) 2015, the natural occurrence of secondary capitula phenotype was found in *Calendula officinalis* L. in DAV University Campus, Jalandhar, Punjab, India. Out of all *C. officinalis* plants grown, 5.3% were found to bear secondary capitula emerging from primary capitula. One plant was found to bear a tertiary capitulum. A comparative analysis of this dataset of naturally occurring secondary capitula was made with the previous reports of secondary capitula phenotype in *C. officinalis* induced by Gibberlic acid (GA) treatment. The observations were found to be in congruence with a previous report. Further, a possible phytopathogen *i.e.* phytoplasma, was also addressed as a potential cause of the phenomenon.

Keywords: *Calendula officinalis*, Plant, Seed

INFLUENCE OF WEATHER PARAMETERS ON PEARL MILLET (*PENNISETUM GLAUCUM* L.) VARIETIES AT ALLAHABAD

S.K. Maurya, S. Nath, S.S. Patra and S. Rout*

School of Forestry & Environment
Sam Higginbottom Institute of Agriculture Technology and Sciences,
Allahabad-211007 (Uttar Pradesh), INDIA.
*Email: srout.forestry@gmail.com

Received-05.12.2015, Revised-11.12.2015

Abstract: A field experiment was conducted during the kharif season 2014 at the research farm of School of Forestry & Environment, Sam Higginbottom Institute of Agriculture Technology and Sciences, Allahabad, to find out influence of weather parameters on pearl millet (*Pennisetum glaucum* L.) varieties under Allahabad condition in Randomized block design (factorial) with nine treatments replicated thrice. The results revealed that on 23rd July maximum growing degree day (1874.4 °C), hygrothermal unit-I (159679.6%), hygrothermal unit-II (100522.0%), photo temperature (2968.4 °C), nycto temperature (2968.4 °C). Whereas, maximum photo thermal unit (18885.2 °C), heliothermal unit (12147.9°C) and inter-diurnal temperature (846.8 °C) was recorded at 06 August sowing date.

Keywords: Pearl millet, Varieties, Agrometeorological indices

UTILITY OF *TYLOPHORA INDICA* AS ANTI-ASTHMATIC PLANT: A REVIEW

Nirlep Kour* and Minu Gupta

Deptt.of Botany, R.G. P.G. College, Meerut

Received-14.12.2015, Revised-21.12.2015

Abstract: There is an increasing demand for plant based medicines to control many of the human diseases. *Tylophora indica* is one of the important medicinal plant of India. It is traditionally used to control asthma and allergic reaction. There is

growing research on isolation and identification of bioactive constituents of plant. The present review highlights the morphology, medicinal uses, biochemistry and other aspects of *Tylophora indica* (Antamul.)

Keywords: *Tylophora indica*, Antamul, Indian Ipecac, Asthma

Journal of Plant Development Sciences Vol. 7(12)

CARBON SEQUESTRATION CAPACITY OF DIFFERENT NATURAL WEED FLORA UNDER RAINFED ECOSYSTEM

Adikant Pradhan*, S.S. Rao¹, P.S. Kusaro², S.K. Nag³ and A. Sao⁴

Email: adi_197753@rediffmail.com

²Dean, S.G. College of Agriculture and Research Station, Jagdalpur

³Scientist, Soil Science, S.G. College of Agriculture and Research Station, Jagdalpur

⁴Scientist, Economics, S.G. College of Agriculture and Research Station, Jagdalpur

⁵Scientist, Genetics, S.G. College of Agriculture and Research Station, Jagdalpur

Received-06.12.2015, Revised-13.12.2015

Abstract: A survey was conducted in the region selecting 6 villages to assess the natural floral composition and its dynamics during *Kharif* and *Rabi* 2013. Sequestration of carbon due to spatial occurrence of flora affected significantly with attaining biomass by plants. The dry matter includes tillers, leaves and flowering parts are directly proportionate to carbon sequestration capacity leading a higher carbon sequestration as 6.37 g in *Spaeranthus indicus* Linn, 4.75 g in *Heliotropium indicum* Linn, 6.03 g in *Alternanthera sessile* (L.) R.Br., 4.85 g in *Malva coramendelum* (L.) Garcke, 5.18 g in *Polygonum hydropiper* L. and 4.89 g in *Gomphrena celosoides* Mart among observed species, which were more than 4 g per plant in nearly 6 months life cycle under natural rainfed ecosystem. Among the narrow leaved flora, *Rottboellia exalata* L., *Iseilema laxum* Hack, *Echinochloa crusgalli* P. Beauv, *Aritida ascensionis* L., *Coix lacrymma-Jobi* L., *Cyperus defformis* L. And *Themeda japonica* L. stored higher biomass as 3.85, 17.29, 6.65, 4.28, 7.36, 7.41 and 6.65 per plant, respectively over remaining species of terrestrial flora.

Keywords: C-sequestration capacity, Weeds, Plant biomass, Weed ecosystem

Journal of Plant Development Sciences Vol. 7(12)

FLORISTIC SURVEY AND PHYTOSOCIOLOGICAL ANALYSIS OF ROADSIDE COMMUNITIES OF NH-24 OF MORADABAD DISTRICT

Beena Kumari*, Shiv Pratap Singh, Satya Pal Verma and Anupam Pratap Singh

Department of Botany, Hindu College, Moradabad. Pin code 244001(U.P.)

Email: beenakumari.botany@gmail.com

Received-30.11.2015, Revised-11.12.2015

Abstract: Floristic survey and phytosociological analysis of Delhi road (NH-24) of the district showed 85 Angiosperms belonging to 27 families, which included exotics as well as medicinal plants. Among eighty five recorded species, *Parthenium hysterophorus* is emerged as a leading species in all study sites with highest IVI followed by *Cynodon dactylon*, *Achyranthes aspera* and *Sida acuta* whereas *Fagoniacretica* recorded lowest IVI in the selected sites of the study area.

Keywords: Floristic survey, Phytosociology, NH-24 Moradabad

VARIETAL EVALUATION OF GLADIOLUS (*GLADIOLUS GRANDIFLORA* L.) UNDER THE HILLY CLIMATIC CONDITION OF MAINPAT, CHHATTISGARH

P.C. Chaurasiya* and R.K. Mishra

Potato Research Station, Mainpat, Surguja, Indira Gandhi Krishi
Vishwavidyalaya, Chhattisgarh
Email: prsigkv@gmail.com

Received-18.12.2015, Revised-25.12.2015

Abstract: The present investigation was carried out at Potato Research Station, Mainpat, Surguja Chhattisgarh, Indira Gandhi Krishi Vishwavidyalaya. The aim of the study was to evaluate the performance of most suitable cultivar under the climatic conditions of Mainpat, Surguja district. Five cultivars of Gladiolus namely White prosperity, Delhi Local, Juster, Punjab Morning, and Surguja Local were evaluated for their adoptability and performance. Results on vegetative characteristics showed that cultivars White Prosperity and Punjab morning took less number of days for sprouting, White prosperity and Punjab morning produced more plants per corm and White Prosperity obtained maximum plant height with maximum florets. Results on floral characteristics showed that cultivar White prosperity and Delhi Local were earlier for spike emergence, White prosperity and Juster took minimum days to flowering, maximum florets were produced by White prosperity and Juster obtained maximum spike length and White Prosperity remained attractive for longer time. Results on corm and cormels characteristics showed that White prosperity produced more corms, Juster produced maximum cormels and gained maximum corm size, maximum corm weight was recorded in Juster. From the results we conclude that keeping in view the vegetative and reproductive characteristics White prosperity, Juster, Punjab Morning is recommended for general cultivation.

Keywords: Gladiolus, Cultivars, Performance

STANDARDIZATION OF *IN VITRO* PROPAGATION OF *POLIANTHES* *TUBEROSA* L. (CALCUTTA DOUBLE)

Aveek Samanta, Tilak Raj Maity, Debanjan Jana, Babita Saha and Siraj Datta*

Department of Biotechnology, Haldia Institute of Technology, Haldia – 721657, West Bengal, India
Email: dattasiraj@gmail.com

Received-20.12.2015, Revised-27.12.2015

Abstract: Tuberose is a bulbous, ornamental plant and popular for its sweet fragrance with attractive beauty. They synthesize many commercially valuable compounds. The various types of tuberose varieties are cultivated in the nursery of tropical and subtropical countries. Application of plant tissue culture has been used in large scale clonal multiplication of *Polianthes tuberosa* L. varieties. In the present study *Polianthes tuberosa* L. (Variety Calcutta double) rhizomes were used as explant to culture in solid MS medium containing different concentrations of IAA and BAP. The best response of multiple shoot production was found in MS medium containing 0.5 mg/l IAA and 3 mg/l BAP as compare to control.

Keywords: 6-Benzylaminopurine, Indole-3-acetic acid, Murashige and Skoog, Tuberose

COST EVALUATION OF PESTICIDE AGAINST MAJOR PEST COMPLEX OF PADDY CROP IN DHAMTARI DISTRICT OF CHHATTISGARH

Randeep Kr Kushwaha*¹, Vijay Kr Koshta², Sanjay Sharma², Jaya Laximi Ganguli²
and Padmesh Kundan Sharma¹

¹ Department of Agriculture, C.G. Govt., Raipur, Chhattisgarh, India- 492 012

² Department of Entomology, CoA, IGKV, Raipur, Chhattisgarh, India- 492 012

Email: rndp2010@gmail.com

Received-18.12.2015, Revised-25.12.2015

Abstract: The study was carried out at the prone area of different villages in Dhamtari district of Chhattisgarh. During 2009, the average cost of pesticides against major pest complex of paddy was ranged from Rs. 606.94 to 12.00. The maximum cost of the pesticides against SB (Rs. 606.94) was recorded followed by HC (Rs. 278.19) and minimum (Rs.12.00) in GB with the cost of share was 47.77, 21.89 and 0.94 percent, respectively. Whereas, during 2010, the average cost of pesticides was ranged from Rs. 574.64 to 12.00. The maximum cost of the pesticides (Rs. 574.64) was recorded followed by LF (Rs. 338.55) and minimum (Rs.12.00) in GB with the cost of share was 42.19, 24.85 and 0.88 percent, respectively. Pooled pesticide cost of major pest complex was ranged from Rs. 590.79 to 12.00. The maximum cost (Rs. 590.79) was recorded against SB followed by HC (Rs.277.31) and minimum (Rs. 12.00) in GB with the cost of share was 44.88, 21.07 and 0.91 percent, respectively. Descending order of the average pesticide cost of major pest complex in paddy crop can be ranked as GM<GB<CW<O<HC<SB. On the basis of information collected from the contact farmer through personal interview, some possible reasons come out which may be the maximum respondents invested cost against SB followed by HC on paddy cultivation which causes major problems in that area and occurring every season which causing a perceptible damage to rice.

Keywords: Paddy cultivation, Pesticides, Cost and return, Plant protection cost, Pest complex of paddy return

Journal of Plant Development Sciences Vol. 7(12)

STUDIES ON GENETIC PARAMETER FOR YIELD AND YIELD ATTRIBUTING TRAITS ACROSS KHARIF AND RABI SEASONS IN MAIZE (*ZEA MAYS* L.)

Manjeet Kumar*, S.S. Verma, Meenakshi Uniyal and Anupam Barh

*Department of Genetics and Plant Breeding, G. B. Pant University of
Agriculture and Technology, Uttarakhand
Email: manjeetbhu615@gmail.com*

Received-15.12.2015, Revised-22.12.2015

Abstract: The present investigation was carried out with fifty six genotypes to estimate the heritability, expected genetic advance and coefficient of variation for yield and yield attributing traits. Treatments differences for all characters were highly significant in both the seasons which indicates the presence of inherent genetic differences in our experimental material. The values of phenotypic coefficient of variation (PCV) were higher than genotypic coefficient of variation (GCV) for all characters in both seasons. Sufficient level of heritability ranging from very high to moderate broad sense heritability were recorded for all characters except anthesis-silking interval across both seasons. Genetic advance at 5% selection intensity was higher for grain yield, plant height, ear height and number of kernels/row in both the seasons. In case of genetic advance as per cent of mean was highest for grain yield across both seasons while next lower values fluctuating with seasons. As grain yield having high both types of expected genetic advance coupled with high heritability in both the seasons, indicates the presence of large proportion of additive gene action for deciding this trait.

Keywords: Maize, Heritability, Genetic advance, Coefficient of variation

Journal of Plant Development Sciences Vol. 7(12)

EFFECT OF OIL COATING AND STORAGE PERIODS ON THE INTERNAL QUALITY OF KALINGA BROWN CHICKEN EGGS

N. Ramteke* and Swati Sharma

*Livestock Production Management Department, College of Veterinary Science and A.H.,
Chhattisgarh Kamdhenu Vishwavidyalaya, Anjora, Durg, Chhattisgarh 491001 India
Email: dr.tanu68@gmail.com*

Received-07.12.2015, Revised-14.12.2015

Abstract: The effect of oil coating and storage periods on the internal quality indicator of Kalinga Brown chicken eggs was examined. The traits were % egg weight loss, albumen height, albumen index, yolk height, yolk index and Haugh unit. In

this experiment a total of 108 fresh eggs from Kalinga brown breed were used. The storage periods were 5, 10 and 15 days while the methods were oil coating and without any treatment at room temperature (40°C). This study indicated that as the storage time increased egg weight, albumen height, yolk height, albumen index, yolk index and Haugh unit significantly ($p < 0.01$) decreased. Albumen index egg quality indicator was significantly ($p < 0.01$) decreased at 5 days (6.54%), 10 days (4.97%) and 15 days (3.71%) of storage period. Oil coated eggs maintained better quality in terms of albumen height (4.5mm), yolk height (16.2mm), albumen index (5.6%), yolk index (36.7%) and Haugh unit (74) than untreated egg at room temperature. It evident from the study that most of egg qualities are effected by methods and periods of storage.

Keywords: Kalinga brown, Storage period, Storage methods, Oil Coating, Albumen index, Haugh unit

Journal of Plant Development Sciences Vol. 7(12)

ASSESSMENT OF GANGA RIVER WATER AT DIFFERENT LOCATIONS AND ITS SUITABILITY FOR DRINKING PURPOSES

Veena Chaudhary*

CSSS (PG) College, Machhra, Meerut, UP, India

Email: veena_chaudhary@yahoo.co.in

Received-20.12.2015, Revised-27.12.2015

Abstract: An attempt has been made in this study to evaluate the surface water quality of Ganga river at different locations. They were analyzed for a total of 14 physio-chemical parameters. In addition to these elements, 05 heavy metals, namely, Cd, Pb, Zn, Cu and Cr. The results showed that all samples were observed colourless, odourless and neutral to pH. Another physico-chemical parameters showed below the permissible limit as prescribed by WHO and BIS standards. The concentration of heavy metals observed in majority of samples within permissible as per described by WHO and BIS guideline. The water is acceptable due to below the concentration of heavy metals. It is suggested that regular monitoring is required to determine the pollution load with improve the water quality, which is being used for drinking purpose.

Keywords: Ganga, River, Water, Metals

Journal of Plant Development Sciences Vol. 7(12)

SURVEY ON POWDERY MILDEW (*ERYSIPHE POLYGONI* DC) DISEASE IN CORIANDER (*CORIANDRUM SATIVUM* L.) AT GWALIOR DIVISION

Rajendra Kashyap¹, P.K. Bhagat² and G.P. Painkra^{2*}

¹*Indira Gandhi Krishi Vishwavidyalaya, Krishi Vigyan Kendra, Balrampur, Chhattisgarh, India*

²*Indira Gandhi Krishi Vishwavidyalaya, Rajmohini Devi College of Agriculture and Research Station, Ambikapur, Distt- Surguja (C.G.) India 497001*

Received-22.09.2015, Revised-29.09.2015

Abstract: A survey on powdery mildew disease in coriander at Gwalior Division of Madhya Pradesh to assess the intensity of powdery mildew on the farmer's fields. It is an important disease of coriander in Guna district. Among the surveyed villages the minimum intensity of powdery mildew 14.73 per cent was recorded in Magroda village of Raghogarh block. However it was maximum 44.14 per cent in Bhadodi village of Raghogarh block. Out of the five Surveyed blocks the minimum disease intensity was recorded in bamori 20.79 per cent followed by Kumbhraj 27.22 per cent, Aron 30.18 per cent and Chachoda 34.79 per cent, while maximum intensity 36.65 per cent was recorded in Raghogarh block.

Keywords: *Coriandrum sativum*, Disease, Powdery mildew

EFFECT OF MODIFIED AND SPLIT APPLICATION OF SSP ON AVAILABILITY OF PHOSPHORUS AT DIFFERENT GROWTH STAGES OF TRANSPLANTED RICE (*ORYZA SATIVA* L.)

S.K. Yadav, Suresh Kumar*, A.K.S. Parihar and K.K.Verma

Department of Soil Science, Narendra Deva University of Agriculture & Technology, Kumarganj, Faizabad (U.P.) 224 229

Received-26.08.2015, Revised-22.12.2015

Abstract: A field study was carried out at instructional farm of Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad during *Kharif* season, 2010-11 to evaluate the effect of modified phosphatic fertilizer on apparent recovery and phosphorus content in soil and transplanted rice. The experiment was comprised with nine treatments i.e. (T₁) control, (T₂) 100% RDPF, (T₃) 50% basal +50% top dressing in one split at tillering stage, (T₄) 50% basal+50% top dressing in two split 25% at tillering and 25% at PI stage, (T₅) mahua oil coated SSP, (T₆) neem oil coated SSP (T₇) gypsum coated SSP, (T₈) cow dung coated SSP and (T₉) poultry manure coated SSP. These were replicated as thrice under randomized block design. Rice variety NDR-359 was taken as test crop. The experimental soil having pH (1:2.5) 8.8, EC 0.41 dSm⁻¹, organic carbon (0.27%), available nitrogen (188.54), P₂O₅ (16.64) and K₂O (254.83) kg ha⁻¹. The availability of phosphorus significantly increased with the application of phosphorus at all crop growth stages in soil over the control. The maximum available phosphorus was obtained with the application of phosphorus coated with gypsum at tillering, panicle initiation, milking and harvest stages (32.60, 29.20, 24.30 and 19.70 kgPha⁻¹), respectively which was significantly superior over mahua oil, cow dung, poultry manure coated and all split application and at par with neem oil coated SSP.

Keywords: Modified SSP, Rice, Salt affected soil, Phosphorus availability

ECOLOGICAL AND ENVIRONMENTAL HAZARDS

Sanjay Vats*

*Asst. Professor, Dept. of Chemistry, Meerut College
Meerut (UP)*

Received-13.09.2015, Revised-23.09.2015

Abstract: Ecology and Environmental biology is the branch of science concerned with plant and animal relationship and their interaction with the environment. Ecology is a multidisciplinary science which includes not only the life science, but also chemistry physics, geology, geography, metrology, climatology, hydrology, anthropology, archeology, sociology and even mathematics and statistics as well. The behaviour of an organism or biotic community in a given environment can be explained by making use of data obtained from a number of sources such as morphology, taxonomy, genetics, soil Science, Physiology, Geology etc. Many practical applications of ecology are found in agriculture, horticulture, forestry, limnology, fishery, pest control, public health, toxicology, pollution control etc. A knowledge of ecological principles helps in discovering new sources of food, unpolluting sources of energy (e.g. solar energy) and new methods of pest control. By making use of ecological principles the deserts can be converted into agricultural lands.

Keywords: Ecology, Environment, Temperature, Wind, Light