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TWELVE BRYOPHYTE GENERA, NEW DISTRIBUTIONAL RECORDS TO ANDHRA PRADESH, INDIA

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Abstract: Twelve Bryophyte genera representing 13 species and a variety, viz., *Reboulia hemisphaerica* (L.) Raddi, *Cheilolejeuneagirdiana* (Massari) Mizut., *Mastigolejeuneahumalis* (Gottsche) Schiffner, *Leucobryum humillimum* Cardot, *Hymenostomum edentulum* (Mitt.) Besch., *Hymnostylium recurvirostre* (Hedw.) Dixon, *H. recurvirostrum* var. *auranticum*, *Trichostomum tenuirostre* (Hook. & Taylor) Lindb., *Anomobryum filiforme* (Griff.) A. Jaeger, *A. schimidii* (Mull. Hal.) A. Jaeger, *Pohlia flexuosa* Harv., *Bartramidularoylei* (Hook. f.) Bruch & Schimp., *Floribundaria floribunda* (Dozy & Molke.) M. Fleisch and *Entodons cariosus* Renault & Cardot, are collected from different forest tracts of Eastern Ghats in Andhra Pradesh and are being reported as new distributional records to the state.

Keywords: Bryophyta, Genera, New records, Andhra Pradesh

DISTRIBUTION OF SEX PHENOLOGICAL CHARACTERS AMONG BITTER GOURD (*MOMORDICA CHARANTIA* L.) GENOTYPES AND ITS CORRELATION WITH YIELD POTENTIAL

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Abstract: Bitter gourd (*Momordica charantia* L.) is one of the most popular vegetables in India. The natural flowering behavior of bitter gourd to produce a greater number of pistillate flowers than staminate flowers is the major limitation for the yield improvement. Fifty-three genotypes of bitter gourd were evaluated for the sex phenology, yield and yield contributing characters. The wild genotype AC-16/25 can be marked as an early variety based on sex phenology. The number of pistillate flowers and number of fruits per plant was found to be the highest in JJNS-15/65. Even though, a greater number of pistillate flowers and fruits per plant were produced by the wild genotypes, the fruit yield per plant was found to be the highest in cultivated *charantia* types. A significant positive correlation was observed between yield per plant and other yield contributing characters viz., fruit weight, fruit length, fruit width and flesh thickness.

Keywords: Bitter gourd, Correlation, Pistillate, Sex phenology

SOURCE OF INFORMATION AND DEVELOPMENT OF TRAINING PACKAGE REGARDING RAIN WATER HARVESTING

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Abstract: Rain water is the ultimate source of fresh water. The availability of collecting rain water is directly or recharging into the ground to improve ground water storage in the aquifer is called Rain Water Harvesting. In north western Rajasthan particularly In Bikaner district the quantity of available water from various sources such as surface water and ground water are not sufficient even for drinking purpose. People have been depending on Rain Water harvesting Structures in the form of small ponds (*Nadis*) reservoirs underground tank (TANKA), Kund etc. All the traditional rain water harvesting system was adopted by the people according to the specific needs and environment. Training is the best way of communicating information as all the senses are used which makes learning more effective. The present study was conducted in randomly selected two villages (Naal and Navrangdesar) of purposively selected Bikaner panchayat samities 60 rural people constitute the sample size. The study was conducted in two phases. In first phase, training package consisting of variety of audio-visual aids like video programme (CD), *phad*, flipbook, flash cards, charts, posters, folders, booklet were developed along with literature the guidance of subject matter specialist. In second phase developed training package on Rain Water Harvesting was implemented. Developed training package along with literature was evaluated by experts and pre-tested with fifteen non-sample rural people. Data were collected through interview method. The schedule used for investigation was divided into three sections. Data collection to find out the sources of information utilized regarding rain water harvesting, to assess the knowledge of respondents related to rain water harvesting was followed in three steps; pre-test, exposure and post-test and to assess the constraints perceived by respondents in using rain water harvesting structure. Major findings of the study among sources of information, in formal sources majority of respondents used assistant agriculture officer, informal sources were used neighbours and in mass media sources newspaper and T.V. As their sources utilized regarding rain water harvesting. Training package is a set of nationally endorsed standards and qualification used to recognized and assess to skill and knowledge people need to perform effectively in the work place.

Keyword: Source of information, Training package, Rainwater harvesting

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PATHOGENICITY TEST BY USING ARTIFICIAL INOCULATION METHODS AND ECO-FRIENDLY MANAGEMENT OF *ALBUGO CANDIDA* ON *BRASSICA JUNCEA* UNDER PUNJAB REGION

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Abstract: The oilseed crops especially rapeseed-mustard play a vital role in agricultural economy of the world. Diseases of plant pathogens are considered an important biotic constraint, which leads to significant yield losses of crop world-wide. Of all the agricultural pests and diseases that threaten mustard crop, white rust is one of the most devastating. White rust of mustard is caused by an obligate biotrophic fungus *Albugo candida*. Under technique of detached leaf inoculation, three method were used viz., spore suspension solution spray method, directly spores picking method and inoculation with infected leaf method under laboratory conditions. Directly spores picking method has found to be finest and swift method. The conventional technique like spraying method has the disadvantage of causing considerable variation in spores distribution. *Trichoderma viride* was found most effective in Pre Treatment than Treatment After Disease Infection while neem oil was less effective in Pre Treatment.

Keywords: *Albugo candida*, *Brassica juncea*, Eco-friendly management, Pathogenicity, *Trichoderma viride*

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AN EVALUATION OF CYTOTOXIC POTENTIAL OF *TRIGONELLA FOENUM GRAECUM* USING *ALLIUM CEPA* ROOT MERISTEMS

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Abstract: The cytotoxic potential of *Trigonella foenum graecum* (fenugreek) a common spice, was investigated using *Allium cepa* root meristem. Stock solution was prepared by using serial dilution method and 100ppm, 250ppm, 500ppm, 750ppm and 1000ppm conc. were prepared. Root meristems of *Allium cepa* were treated with above mentioned conc. of Fenugreek for 2, 4 and 6 hours. Result revealed mitodepressive behaviour of the spice and it also caused various chromosomal aberrations. Disturbed metaphase, chromatid separation, breakage at metaphase, scattered metaphase stickiness of chromosomes and rings were predominant aberrations induced by Fenugreek. Polarity abolition, Chromatin Bridge and laggards were reported at anaphase. Mitodepressiveness of *Trigonella* is due to the presence of a steroidal substance Diosgenin which is used as a starting material in the synthesis of sex hormones and oral contraceptives. Excessive and indiscriminate use of fenugreek may cause abortion in females hence its overdosing should be checked and scientific dose must be prescribed. At the same time Diosgenin extracted from *Trigonella* seeds inhibits spindle formation in dividing cells and for this reason it can be successfully used in the treatment of cancer.

Keywords: Cytotoxicity, Chromosomal aberrations, Root meristems

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SYMPTOMS AND MANAGEMENT OF ALTERNARIA BLIGHT OF INDIAN MUSTARD (*BRASSICA JUNCEA*)

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Abstract: Mustard is the major oilseed crop in the world. Many biotic and abiotic stresses are liable for reducing quantity and quality of mustard crop. Among biotic stress, Alternaria blight is one of the most destructive fungus disease of mustard which caused by *Alternaria brassicae* and *Alternaria brassicicola*. The symptoms of *A. brassicae* appear on whole parts of plant viz., leaves, stems and pods. The PBR-97 variety showed early symptoms at 21 days after sowing (DAS) whereas, Giriraj showed the late symptoms at 34 DAS. Mancozeb show the maximum diameter of zone of inhibition at different concentration (125, 250, 500, 1000 ppm) followed by ridomil and carbendazim. *Allium sativum* give best and swift result than *Azadirachta indica*. Botanical control is the alternative approach for management of disease that is eco-friendly and reduces the harmful impact on human and animal health.

Keywords: Alternaria blight, *Alternaria brassicae*, Fungicides, Management, Mustard

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ECONOMIC ANALYSIS OF WEED CONTROL IN RICE CROP [*ORYZA SATIVA* L.]

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Abstract: Rice (*Oryza sativa* L.) is a plant belongs to the family of Gramineae (Poaceae) is one of the predominated food crop of the world. Data on weeds (viz., flora, density and dry weight), data on growth parameters, yield attributes (effective tiller/hill, length of panicle/hill, grains/panicle, filled grains/panicle, chaffy grains/panicle, test weight. were taken. Finally, LAI, CGR, RGR, NAR, grain yield, Straw yield, WI, WCE, HI and economic viability of the treatments was also determined in terms of cost of cultivation, GMRs, NMRs and B: C ratio on/hectare basis. Data pertaining to various parameters were tabulated and subjected to statistical analysis for interpretation of results. The results thus obtained are summarized as under. The B:C ratio were the highest under BIL007 (pyribenzoxim) at 35 g/ha closely followed by BIL007 (pyribenzoxim) at 30 g/ha as post emergence to rice.

Keyword: B.C. Ratio, Economic, Gross monetary returns, Net monetary returns, Rice

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FORAGING BEHAVIOR OF EUROPEAN HONEY BEE, *APIS MELLIFERA* (HYMENOPTERA-APIDAE) IN MARIGOLD FLOWERS IN CHHATTISGARH, INDIA

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Abstract: A study was undertaken at Raj Mohini Devi College of Agriculture and Research station, Ambikapur (Chhattisgarh) substation of Indira Gandhi Krishi Vishwavidyalaya, Raipur (Chhattisgarh) India. The foraging behavior of European honey bee, *Apis mellifera* was observed in unmanaged French marigold red cherry (Genda) during January to February 2020. The maximum foraging activity of honey bee was observed third week of January 2020 (2.05 bees/5min/plant) followed by fourth week of January 2020 (1.87 bees/5min/plant) and first week of January 2020 (1.53 bees/5min/plant) however the lowest population was recorded during third week of February 2020(0.73 bees/5min/plant). Similarly during the different hours of the day the maximum population of honey bees were recorded at 10.00-12.00 Noon (2.41 bees/5min/plant) followed by at 12.00-2.00PM(1.63 bees/5min/plant)and at 2.00-4.00PM (0.74 bees/5min/plant). However the lowest population was recorded at 8.00-10.00AM (0.64 bees/5min/plant).

Keywords: Foraging behavior, French marigold red cherry, *Tegetes patula*, European honey bee, *Apis mellifera*, Marigold

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EFFECT OF *IN VITRO* SUBCULTURES ON VIGOUR OF GERBERA (*GERBERA JAMESONII* BOLUS EX.)

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Abstract: Gerbera is commercially multiplied through tissue culture using shoot tip explant and sub culturing frequently. This method allows for obtaining large amounts of healthy homogenous plants. However, frequent *in vitro* subculture leads to vitrification and reduced vigour in some populations. A study was therefore undertaken to investigate the effect of *in vitro* subcultures on vigour and confirmed that fifteen subcultures can be continuously performed from shoot tip without losing vigour with a span of 45 weeks. If this procedure is followed from 100 shoot tips, an approximately 47000 ready to plantlets can be obtained in a span of 45 weeks without losing vigour and quality. Quality planting material can be obtained at cheaper rate in the range of Rs.10-15 save the grower by 70% on planting material cost.

Keywords: Gerbera, Tissue culture, Shoot tip, Sub culture, Vigor

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STUDIES ON GENETIC DIVERGENCE ANALYSIS FOR QUALITY TRAITS IN RICE (*ORYZA SATIVA* L.) GERMPLASM

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Abstract: Genetic diversity among fifty rice germplasm was evaluated analysis of variance revealed the presence of considerable amount of variability among the germplasm. Based on cluster analysis, the germplasm were grouped into five clusters. For quality characters, the cluster III constituted of 18 accessions, forming the largest cluster followed by cluster IV constituted of 14 accessions, Cluster V constituted of 8 accessions, Cluster I constituted of 6 accessions and Cluster II constituted of 4 accessions. This type of pattern of cluster group confirms the continuation of significant number of variability. The inter cluster distance was maximum between cluster II and V and minimum inter cluster distance was observed between cluster III and IV. Cluster II exhibited highest mean value for head rice recovery %, Cluster III exhibited highest mean value for endosperm content of amylose, Cluster IV exhibited highest mean value for hulling %, milling %, grain width, decorticated grain width, kernel width, alkali spreading value, Cluster V exhibited highest mean value for grain length, decorticated grain length, decorticated grain length width ratio, kernel length, kernel length width ratio. The germplasm falling in different clusters with high mean for hulling % and other component characters can be utilized for hybridization programme to obtain elite segregants. These traits hence could be focused for selection while improving grain yield.

Keywords: Genetic divergence, Cluster analysis, Yield attributes, Rice