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ALLELOPATHIC SUPPRESSION OF SOME BROAD LEAVED WEEDS

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Abstract: Allelopathy is environmentally safe tool for removal of hazardous weeds which interferes with crops in terms of nutrition, space, fertilizers. The weed plants affect the growth of crop plants through secreting certain allelochemical substances. To solve this problem, a majority of research has been done to evaluate the properties and effects of allelochemicals extracted from plants or procured. In this review effect of allelochemicals on some selected broad leaved weeds like black nightshade (*Solanum nigrum* L.), goatweed (*Ageratum conyzoides* L.), indian mallow (*Abutilon indicum* (Linn.) Sweet, velvetleaf (*Abutilon theophrasti* Medik.), coffee senna (*Cassia occidentalis* L.), sicklepod (*Cassia obtusifolia* L.) have been discussed for their management.

Key words: Allelopathy, Allelochemicals, Crop, Weeds

INFLUENCE OF SEED STORAGE CONDITION ON SEED MOISTURE CONTENT AND GERMINATION IN *IMPATIENS TALBOTII* HOOK.

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Abstract: Lesser known species *Impatiens talbotii* is a rare, endangered endemic ephemeral restricted to the northern part of central Western Ghats. Life of *I. talbotii* will terminate within six months. In the present study, species is studied to understand its seed viability upon storage which will accounts in species conservation. Seeds were stored at four different relative humidity regimes in two different temperatures. Study revealed that there was a gradual decrease in seed moisture as well germination attributes in all the storage condition upon storage period. Seeds stored under ambient humidity at cold temperature maintained reliable moisture content and germination till the end of storage period. Significantly high germination per cent, rate of germination, seedling length and seedling vigour index was observed in seeds stored in cold temperature than the seeds stored in ambient temperature. Higher germination of 83 per cent was observed in seeds stored at ambient RH under cold temperature and least germination of 3 per cent was observed in seeds stored at 90-95 % RH under ambient temperature after 30 days of storage. After 180 days of storage the high vigour of 1890 was observed in ambient RH under cold storage and low vigour of 83 was noticed in seeds stored at 90-95% RH under ambient temperature. Seed storage at ambient humidity in cold storage is best storage condition to *Impatiens talbotii* for long term storage.

Keyword: *Impatiens talbotii*, Relative humidity, Moisture content, Temperature

EVALUATION OF GENETIC VARIABILITY IN BLACK GRAM (*VIGNA MUNGO* L. HEPPER) GERMPLASM

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Abstract: The present investigation was conducted during kharif-2017-18 in the Field Experimentation Centre, Department of Genetics and Plant Breeding, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad to

examine 39 Black Gram genotypes along with 2 check (T9 and AZAD.1) to evaluate Genetic variability, correlation for yield in black gram. The experiment was laid out in a Randomized Block Design replicate thrice. Analysis of variance showed highly significant differences among 39 genotypes of black gram for 13 characters studied. Moderate genotypic coefficient of variation and phenotypic coefficient of variation was recorded for number of clusters per plant, primary branches per plant and seed yield per plant. All characters showed High broad-sense heritability and high genetic advance as percent of mean was recorded for seed yield per plant and plant height. Biological yield, harvest index, seed yield per plant, exhibited high GCV, PCV and genetic parameters revealed that heritability (broad sense) and genetic advance as % of mean values were high for seed yield per plant indicating that selection would be fruitful for improvement of these traits.

Keywords: Black gram, Correlation, Genetic variability, Genotype

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INFLUENCE OF STORAGE MEDIA AND CONTAINERS ON SEED GERMINATION AND SEEDLING QUALITY IN *GARCINIA GUMMI-GUTTA* L.

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Abstract: A laboratory study was undertaken at Department of Forest Biology and Tree Improvement, College of Forestry, Sirsi, University of Agriculture Sciences, Dharwad during 2016-17 to find out the suitable media and containers for storage of *Garcinia gummi-gutta* seeds. Uniform sized and healthy seeds were stored in different medium and containers under ambient temperatures at laboratory using completely randomized design. Seed without any medium was treated as control. In treatment T₂ dried seeds were mixed with ash at the rate of 1:2 ratios. One kg of dried seed packed in the perforated gunny bag was considered as treatment (T₃). In treatment T₄ and T₅ dried seeds were mixed with sawdust and sand at the rate of 1:2 ratios respectively. One kg of dried seed packed in the pet jar was T₆ treatment. At interval of every 30 days, 100 seeds from each treatment in four replications were taken up from stored seed lot till six months of storage for germination studies. Seeds were sown at monthly interval up to six months. During six months of storage, the fresh seeds recorded maximum germination (18.75 per cent) and decline in germination was noticed with advancement in the storage period. Among the storage media and container, seed stored in pet jar recorded maximum germination per cent (14.50 per cent, 11.50 per cent, 9 per cent and 4.75 per cent) in third, fourth, fifth and sixth months of storage respectively. Germination per cent in control is negligible after 3 months of storage. Maximum mean daily germination and peak value was in seed stored in pet jar and the lowest in control and sand media at end of six months of storage. The mean daily seed germination, peak value and germination value were exhibiting the negative trend as advancement in seed storage period. The seedling length was non-significantly influenced by all storage media in first and third months of storage. Higher seedling length (11.70 cm, 12.98 cm) was recorded in pet jar at fourth and fifth months of storage respectively. Seedling vigour index was non-significant at first month of storage of seed at different medium. At the end of second month of storage, the maximum seedling vigour index (194) was recorded in saw dust.

Keywords: Pet jar, Saw dust, Sand germination, Vigour

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SEASONAL INCIDENCE OF BRINJAL FRUIT AND SHOOT BORER, *LEUCINODES ORBONALIS* GUEN. (LEPIDOPTERA: CRAMBIDAE) UNDER AGRO CLIMATIC CONDITIONS OF ALLAHABAD, INDIA

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Abstract: The seasonal incidence of *Leucinodes orbonalis* Guenee on brinjal was studied at central research farm of the Department of Entomology, SHUATS, Allahabad during Kharif season of 2017. The occurrence of shoot and fruit borer commenced from 39th standard week on shoot with an average 14.94% of damaged shoot. The borer population increased and gradually reached peak level of 44.67% of damaged shoot at 42nd standard week. Infestation on Fruit commenced from 42nd standard week with an average 45.83% of damaged fruit (Number basis) and 43.43% (Weight basis) during the experiment. The borer population increased and gradually reached peak level of 57.50% of damaged fruit (Number basis) and 55.90% of damaged fruit (weight basis) at 44th standard week and thereafter decline in the trend was noticed till 47th standard week. It was found that the pest build up on shoot (Damage % number basis) was positively correlated with maximum temperature ($r = 0.703$) and sun shine hours ($r = 0.589$). However it was negatively correlated with morning relative humidity ($r = -0.730$). Whereas percent fruit infestation had positive correlation with maximum temperature ($r = 0.604$, on number basis and $r = 0.597$, on weight basis) and sun shine hours ($r = 0.586$, on number basis and $r = 0.595$, on weight basis); whereas it had negative correlation with evening relative humidity ($r = -0.551$, on number basis and $r = 0.559$, on weight basis). The statistically significant values indicated that occurrence of brinjal shoot and fruit borer was influenced by the prevailing ecological conditions specially Temperature, Relative Humidity and sun shine hours Hence the management of brinjal pest should therefore be promoted from September onwards using an integrated approach.

Keywords: Brinjal, Climatic condition, *Leucinodes orbonalis*, Seasonal incidence

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EVALUATION THE RESIDUAL EFFECT OF CROPPING SYSTEM AND INTEGRATED NITROGEN MANAGEMENT ON SUMMER GREENGRAM (*VIGNA RADIATA* L.) IN WINTER MAIZE BASED CROPPING SYSTEM UNDER IRRIGATED CONDITION

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Abstract: A field experiment was conducted during rabi and summer seasons of 2013-14 and 2014-15 at Student's Instructional Farm Department of Agronomy, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur (Uttar Pradesh) to find out the residual effect of integrated nitrogen management (INM) and cropping system on summer greengram in winter maize based cropping system under irrigated condition. The experiment consisted of four sole cropping (sole maize, sole potato, sole linseed and sole mustard), three intercropping systems (maize + potato, maize + mustard in 3:1 row ratio and maize + linseed grown in 3:3 row ratio) and three INM practices, viz. 100% recommended dose of nitrogen (100% RDN), 75% RDN through inorganics + 25% RDN through organics (75 + 25% RDN), and 50% RDN through inorganics + 50% RDN through organics (50 + 50% RDN). The residual effect of cropping system on growth attributes of succeeding greengram such as dry matter accumulation/plant and branches/plant, yield attributes of greengram viz., pods/plant, grains/pod, grain weight/pod, grain weight/plant and 1000-grain weight and nodules/plant and their dry weight, were recorded higher values when grown after sole potato and maize + potato in 3:1 row ratio respectively, closely followed by grown after sole linseed and plots cultivated with maize + linseed respectively, during both the years over rest of the cropping system. Grain and stover yield of succeeding greengram crop were maximized when grown after sole cropping of potato, followed by sole linseed in both the years. The corresponding values, on an average, were 0.934 and 1.417 t/ha and 0.923 and 1.398 t/ha for grain and stover yield of greengram grown after potato and linseed, respectively. Among intercropping cultivated plots, greengram grown after maize + potato recorded, on an average, higher grain yield (0.906 t/ha) and stover yield (1.359 t/ha) over greengram grown after other intercropping systems. Greengram grown after maize + linseed and maize + mustard recorded similar values of grain and stover yield. Harvest index of greengram was maximized when grown after maize + mustard intercropping system (40.56% on mean basis). Minimum harvest index of 39.51% on mean basis was recorded when greengram grown after maize + linseed intercropping system. Similar the residual effect of integrated nitrogen management (INM) on growth attributes, yield attributing characters, Number of nodules/plant and their dry weight of greengram were maximized when grown in previously fertilized plots with 50% N through inorganic urea + 50% N through organics, followed by 75% inorganic + 25% RDN through organic in both the seasons. Previously fertilized plots with 50% N through inorganic urea + 50% N through organics recorded significantly higher values of biological (2.413 t/ha) as well as grain yield (0.973 t/ha) of greengram over remaining INM protocols. Similar trends were followed in respect of stover yield of greengram. On an average, maximum harvest index (40.30%) of greengram was recorded when grown after 50% N through inorganic urea + 50% N through organics fertilized plots, followed by 100% RDN through inorganic fertilized plots (40.03%).

Keywords: Cropping system, Integrated nitrogen management, Residual effect, *Vigna radiata* L.

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IMPACT OF SEED RATES AND PLANTING METHODS ON ECONOMIC OF WHEAT (*TRITICUM AESTIVUM* L.) UNDER IRRIGATED CONDITION

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Abstract: A field experiment was conducted to find out the economics of wheat crop with various seed rates and planting methods under irrigated condition. This experiment were laid out in split plot design with total 12 treatment combinations and replicated thrice. The treatment comprises of five planting practices (Broadcasting – M1, 25 cm Spacing – M2, 22.5 cm Spacing – M3 and 20 cm Spacing– M4) and four seed rate (100 kg ha⁻¹ - S1, 125 kg ha⁻¹ - S2 and 150 kg ha⁻¹ -S3). The maximum gross income (Rs 71722 ha⁻¹) was obtained at 22.5 cm apart which was higher other practices, broadcasting (Rs 39728 ha⁻¹) and 25 cm (Rs 66949 ha⁻¹). The maximum net return (Rs 47799 ha⁻¹) was recorded under the seed rate 125 kg ha⁻¹ than other seed rate 100 kg ha⁻¹ and 150 kg ha⁻¹, whereas the highest benefit: cost ratio recorded with 125 kg ha⁻¹ seed rate which is significantly higher in comparison to 150 kg (3.30).

Keywords: Wheat, Seed rate, Planting methods, Economics

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ASSESS THE EFFECT OF DIFFERENT DATES OF TRANSPLANTING AND MULCHING ON YIELD AND ECONOMICS OF TOMATO (*LYCOPERSICON ESCULENTUM* MILL.)

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Abstract: The present study was conducted during two consecutive Rabi seasons of 2016-17 and 2017-18 with aim to find out the effect of transplanting dates and mulching on fruit yield, yield parameters and economics of treatments of tomato cv. Azad T-6. The study was consisted four different dates of transplanting (D₁-15th October, D₂-31st October, D₃-15th November and D₄-30th November) and four treatments of mulch (M₁-Black polyethylene, M₂- White polyethylene, M₃- Bio Mulch (Paddy straw) and M₄-control) the experiments were laid out in Factorial Randomized Block Design. The study revealed that the crop transplanted on 30th October produced and mulching with bio mulch paddy straw produced maximum number of fruits per plant, average fruit weight and marketable fruit yield and Un-marketable fruit total yield during both the years, respectively. The crop planted on 30th October and application of bio-mulch found economic as compared to other treatments. Maximum benefit cost ratio was calculated with crop planted on 30th October and grown with bio mulch during both the years.

Keywords: Tomato. Different dates of planting, Mulching, Fruit yield, Net return

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ANTIMICROBIAL ACTIVITY OF CITRUS FRUITS ON CERTAIN PATHOGENIC MICROORGANISM

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Abstract: The main objective of present study was to study the antibacterial effect of *Citrus limon* juice extract against *Escherichia coli*, *Salmonella*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Staphylococcus aureus*, *Streptococcus pyogenes*. Extract of *Citrus limon* juice was prepared for antibacterial study and Norfloxacin was taken as control antibiotic. The antibacterial activity of *Citrus limon* juice extract was detected by using agar well diffusion method. In the present study it was observed that *Citrus limon* juice extract showed maximum antimicrobial activity against *Staphylococcus aureus* which was 115% more as compared to Norfloxacin (10mg/ml). Similar results have been observed against bacteria such as *Salmonella*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Staphylococcus aureus*, *Streptococcus pyogenes*. These results confirmed that *Citrus limon* is a very important and effective medicinal plant against bacterial.

Keywords: *Citrus limon*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Staphylococcus aureus*, *Streptococcus pyogenes*

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COMPARATIVE STUDY OF MICROBIAL CONTAMINATION IN FRUIT JUICE IN LOCAL MARKET AT DEHRADUN

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Abstract: The aim of the present study is microbial analysis of freshly prepared orange juices sold in the markets of Dehradun (Uttarakhand). Bacterial count and yeast count has been done by spread plate method and pour plate method. Isolated strains were characterized on the basis of microscopy and certain biochemical tests. Orange juice at Suddhowala showed more microbial count as compared to Premnagar, Dehradun. Microscopy examination and biochemical tests confirmed that Orange juice collected at Suddhowala contained *Escherichia coli*, *Staphylococcus aureus*, *Saccharomyces cerevisiae* and *Penicillium sp.* but *Lactobacillus sp.*, *Salmonella sp.*, *Saccharomyces cerevisiae*, *Aspergillus niger* were isolated from Orange juice at Premnagar. Our results clearly, suggested that orange juice at local market contained various type of microbial contaminant and such type of orange juice is not good for health.

Keywords: Orange, *Saccharomyces cerevisiae*, *Penicillium sp.*, *Lactobacillus sp.*, *Salmonella sp.*, *Aspergillus niger*