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GENETIC RESOURCES OF SMALL MILLETS IN TELANGANA: DIVERSITY, DISTRIBUTION AND CONSERVATION

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Abstract: Small millets are a group of crops with small grains having extraordinary capability to thrive under extreme climates and these coarse cereals are the staple food of marginalized population. In Telangana, currently, small millets are under cultivation in about 3,833 hectares area largely in the districts of Mahaboobnagar, Jogulamba-Gadwal, Nagarkurnool, Yadadri-Bhuvanagiri and Vikarabad with a production of 6,142 tonnes during 2019-20. Information on diversity in small millet crops with different landrace names that occur/ cultivated and germplasm conserved from Telangana is given. The scope and future perspective for sustaining small millet genetic resources are also discussed.

Keywords: Small millets, Telangana, Diversity, Conservation

PHYSICO CHEMICAL CHARACTERIZATION OF SPENT WASH GENERATED DURING ALCOHOL PRODUCTION FROM SWEET SORGHUM JUICE AND ITS IMPACT ON GERMINATION AND SOIL MICRO FLORA

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Abstract: The main objective of this research was to characterize the spent wash generated during alcohol production from sweet sorghum juice (SWSSJ) for its P^H, BOD, COD, TSS and TDS and to study their effect in different concentration on seed germination of selected crops. The SWSSJ was acidic and having BOD and COD value in the range of 22900 mg/l and 35600mg/l respectively. The TSS and TDS of spent wash was found to be 3700mg/l and 8000mg/l respectively. Five different seeds – Soya bean, Black chick pea, White peas, Green gram and Rajma were used to study the effect of different dilution of spent wash in petri plates viz Control without spent wash, 5%, 10%, 15%, 20%, 50% and 100% spent wash. Based on the observation noted in petri dish study, the pot study was done with 2 seeds – White peas and Black chick pea with Control (without spent wash), 5%, 10%, 15% and 20% spent wash dilutions. After 15 days of sowing, the soil of different treated pots was studied for number of bacterial and fungal colonies. From the study, it is concluded that the SWSSJ containing high level of plant nutrients can be made available to the plants with proper dilution for the better growth and development of the crop.

Keywords: Sweet sorghum, Characterization, Germination, Soil micro flora

EFFECT OF DIFFERENT CARBON SOURCE ON MYCELIAL GROWTH & CHLAMYDOSPORE PRODUCTION OF PADDY STRAW MUSHROOM (VOLVARIELLA VOLVACEA)

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Abstract: *In vitro*, an experiment was conducted to know best carbon source for growth and biomass of two best performing isolates (BYT VV-02 & BYT VV-05) of *Volvariella volvacea* seven carbon source i.e., glucose fructose maltose dextrose sucrose mannitol & Control was studied found that Sucrose was significantly fastest Radial growth & Chlamydo spores production followed by Dextrose and Glucose while slowest Radial growth & Chlamydo spores production reported in control (without carbon source) followed by Mannitol, Fructose, Maltose & Sorbitol in both isolates of *Volvariella volvacea*.

Keywords: Radial growth, Biomass, Isolates, *Volvariella volvacea*

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CONTROL OF CONTAMINATION BY MODIFIED STERILIZATION PROCESS USING PLANT PRESERVATIVE MIXTURE IN THE *IN VITRO* CULTURES OF *BAMBUSABALCOOA*

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Abstract: *Bambusa balcooa* was one of the commercially important sustainable bamboo species. Establishment of contamination free cultures is crucial step for the successful micro propagation procedures. The nodal explants of *B. balcooa* were treated with different chemicals and antibiotics. An efficient surface sterilization procedure includes the sequential use of different chemicals like 0.5% NaOCl (Sodium hypochlorite), 0.1 % Mercuric chloride treatment, 0.2% Carbendazim, 70% Ethanol resulting in healthy growth of the plants by eliminating the exogenous contamination. Among the different antibiotics incorporated into the MS media (Murashige and Skoog, 1962), addition of PPM (Plant Preservative Mixture) (0.5 ml/L) was found to be effective in controlling the contaminants like bacterial and fungal growth which reduced to 8.33±1.67%.

Keywords: Antibiotics, Contamination, Micropropagation, Plant Preservative Mixture, Surface sterilization

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INFLUENCE OF ORGANIC SOURCES, INDUSTRIAL BY- PRODUCTS AND INORGANIC FERTILIZERS ON GROWTH AND YIELD OF RADISH

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Abstract: The pot experiment was conducted in Department of Soil Science and Agricultural Chemistry, Annamalai University to evaluate the response of radish (*Raphanus sativus* L.) with organic sources and industrial by-products combined with inorganic fertilizers. The results showed that application of 100% RDF + FYM@ 25 t ha⁻¹ (T₅), significantly increased the growth attributes like shoot length (18.92 cm), number of leaves plant⁻¹ (14), leaf length (20 cm), leaf breadth (11cm), leaf area (219.6 cm²) and yield attributes viz., root length (19.4 cm), single root weight plant⁻¹ (281.9 g), root yield pot⁻¹ (845.9 g) and shoot yield pot⁻¹(501.9g).

Keywords: Radish, Leaf area, Fertilizers, Shoot yield, Leaf length

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SPATIAL DISTRIBUTION OF ORGANIC CARBON AND AVAILABLE NUTRIENTS IN THE SOILS OF KVK, SADALPUR, HARYANA

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Abstract: The use of GIS to map the spatial variability of soil fertility gives crucial information for present and future usage. To assess the geographical distribution of nutrients, 14 surface soil samples from KVK Sadalpur (Haryana) were collected. The soils in the research area ranged in texture from loamy sand to sandy loam, and their pH ranged from neutral to alkaline (7.40-8.20). Organic carbon levels were determined to be low to medium, ranging from 0.10 to 0.53 percent. Limited CV values indicated low variation in organic carbon (OC). The amount of nitrogen (N) available was low, ranging from 91.00 to 126.00 kg ha⁻¹ with a mean of 101.27 kg ha⁻¹. The available potassium (K) levels in the soils ranged from 181.00 to 5.38.00 kg ha⁻¹, with an average of 291.11 kg ha⁻¹. As evidenced by CV values, available K had a lot of variance i.e. 1272. The available phosphorous (P) in the soils of the study area ranged from 4.00 to 45.00 kg ha⁻¹, with an average value of 14.53 kg ha⁻¹. Zinc, iron, copper, and manganese had mean values of 0.78, 2.95, 1.26, and 9.94 mg kg⁻¹, respectively, and ranged from 0.09-1.72, 0.77-8.96, 0.16-0.28, and 3.20-6.87 mg kg⁻¹. Low variance revealed that zinc (0.21), iron (2.95), copper (1.26), and manganese (4.94) had little fluctuation. The nutrient spatial variability maps provide insight into the area's fertility state and will aid in the easy monitoring of precision fertiliser management..

Keywords: Spatial variability, Nitrogen, Phosphorus, Micronutrients, Mapping

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“IN VITRO CALLUS GENERATION FROM NODAL EXPLANT OF MADHUCA LONGIFOLIA VAR. LATIFOLIA (ROXB.) A. CHEV.”

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Abstract: The present investigation entitled “*In vitro* callus generation from nodal explant of *Madhuca longifolia* var. *latifolia* (Roxb.) A. Chev.” was conducted in the Tissue culture laboratory of Department of Forest Biology and Tree Improvement, Forest College and Research Institute, Mulugu, Siddipet during 2020-2022. The main objective of the present study was generation of callus from nodal explants. A protocol was developed for *invitro* propagation and indirect organogenesis by using young nodal explants. The media was standardized and Callus generation was observed after four weeks on the surface of nodal explants. The nodal explants cultured on MS (Murashige and Skoog) supplemented with 0.5mg/L BAP + 0.1mg/L IAA had induced maximum calli response (26.00±0.40) and minimum calli response (10.50±0.64) in media of MS 0.25BAP + 0.1 IAA.

Keywords: *In vitro* callus, *Madhuca longifolia*, Investigation

IMPACT OF FRONTLINE DEMONSTRATION ON ORGANIC NUTRIENT MANAGEMENT IN OKRA IN MAMIT DISTRICT, MIZORAM, INDIA

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Abstract: Frontline demonstration on organic nutrient management of okra was conducted by KVK Mamit during the period from 2019-20 and 2020-21 in different location of Mamit District. KVK provided all critical inputs *i.e.* seeds, FYM, bio fertilizers etc. to the farmers. The productivity and economics of 20 FLD farmers as well as 20 non-FLD farmers were investigated during 2019-20 and 2020-21. The results of FLD revealed that yield of the demonstration were recorded 79 q/ha and 83 q/ha in subsequent years with a mean of 81 q/ha against the potential yield of 100 q/ha. The per cent increase yield in demonstration 29.51 during 2019-20 and 20.29% during 2020-21 respectively. The mean technology gap of 19.0 q/ha has indicates that there is still big scope for increasing the yield. The average ranges of extension gap (14.0 – 18.0 q/ha) and technology index (17.00 - 21.00%) were during the period under study. The demonstrated field gave higher mean gross return (Rs. 170,300 /ha) and mean net returns (Rs. 96,000/ha) with average benefit: cost ratio (2.29) compared to the local checks (2.01). Present results clearly show that the yield and economics of okra can be boost up by adoption of recommended technology. Overall it is concluded that frontline demonstrations (FLD) proved an effective tool for increasing the productivity of okra.

Keywords: FLD, Okra, Organic nutrient management, Technology gap, Extension gap, Yield, Economics

EFFECTS OF INTEGRATED WEED MANAGEMENT ON WHEAT YIELD AND YIELD ATTRIBUTES

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Abstract: The present investigations entitled “Effect of integrated weed management on growth and yield of Wheat (*Triticum aestivum* L.)” was conducted in the crop research farm of Agronomy department of CPU Kota, during ‘Rabi’ seasons of 2019-20 and 2020-21. The experiment was design in a Randomized Block Design with fourteen treatments with three replications including control. The treatments were allocated randomly in all the plots with three replications with crop spacing 22.5 × 5 cm. The major weeds that were present in wheat were *Parthenium hysterophorus* L., *Phalaris minor* L., *Chenopodium album* L., *Vicia hirsuta* L., *Cynodon dactylon* (L.) Pers and *Cyperus rotundus* L. In general, it was observed in the two years field trial that the emergence pattern of the major weeds in wheat in the experimental field were almost similar and did not differ much in both the years. On the basis of the current investigation, it can be said that in a wheat tank, a pre-emergence application of Metribuzine at 0.3 a.i. kg/ha and a post-emergence application of metsulfuron methyl at 0.3 a.i. kg/ha produced the lowest weed population, the highest yield, and the most favourable yield attributes, as well as the highest net return and benefit-cost ratio.

Keywords: Wheat, Grain, Yield, Weed management, Investigation

**A STUDY ON ECONOMIC FEASIBILITY FOR CULTIVATION OF QUINOA
(*CHENOPODIUM QUINOA* WILLD.) IN SOUTH-EASTERN RAJASTHAN**

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Abstract: Quinoa (*Chenopodium quinoa*) is a dicotyledonous plant endemic to South America's Andean highlands. Quinoa is a strategic crop with the potential to contribute to food security and sovereignty in this context because of its nutritional quality, genetic variety, resilience to harsh climate and soil conditions, and cheap production cost. The cost of cultivation was the highest (Rs 51900.00 ha⁻¹) under the treatment combination of 45 cm spacing along with the highest Nitrogen scheduling of 120 kg. The benefit cost ratio was maximum (5.67) under treatment combination of 45 cm spacing and 120 kg Nitrogen scheduling. Hence, it was evident that combination of 45 cm spacing and 120 kg nitrogen was obtained the maximum benefit.

Keywords: Economic feasibility, Net return, Gross return, Benefit cost ratio