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SYSTEMATICS, TAXONOMY AND GENETIC RESOURCES OF CUCUMBER FOR SUCCESSFUL UTILIZATION IN BREEDING AND GENETIC IMPROVEMENT

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Abstract: The cucumber (*Cucumis sativus*) is an economically important vegetable crop cultivated and consumed worldwide. Cucumbers originated from India and cultivating from at least 3000 years. It belongs to family Curcubitaceae, the two subfamilies namely Zanonioideae and Cucurbitioideae belongs to Curcubitaceae which also includes 118 genera and 825 species. With eight tribes under the latter subfamily, i.e., Cucurbitioideae, genus *Cucumis* is grouped under tribe Melothrieae. Further, it is divided into two groups *Cucumis* ($2n=2x=14$ and 24) and *Melo* ($2n=2x=24$) that contain five cross-sterile species groups. This review has attempted to create a better understanding on cucumber, its origin, distribution, taxonomy, botanical description, floral biology and genetic diversity. Cucumber is an annual plant; there are three main types/varieties of cucumber slicing, pickling, and seedless within which several cultivars have been created. A cucumber bears monoecious, gynoecious type of sex expression and commercially all gynoecious hybrid plants having parthenocarpy trait, which suits for protected cultivation.

Keywords: Cucumber, Genetic resources, Systematics, Taxonomy

IMPACT OF TANNERY EFFLUENTS ON SOIL OF KANPUR CITY

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Abstract: The primary polluter of the environment is the tannery industry and there is a strong possibility of water and soil pollution due to discharge of informal wastes. More than 250 chemicals are used in the production of leather and other toxins like toxic organic chlorinated phenols, toxic CrVI and other toxic pollutants such as sulphide, phenolic compound, magnesium, sodium, potassium, lead, zinc, pesticide residues, mineral salt, dye releases a complex mixture of pollutants. CrVI and chlorinated phenol toxic to human as well as biota or ecosystem or environment is the basic major sewage. Chromium is the most dangerous. It is very popular in the tanning industry because it strengthens leather. Its waste from is hexavalent chromium or CrVI- people have to face diseases like lung cancer, headache, dizziness, allergic reaction, asthma and liver failure etc. Tannery water contain hazardous pollutants with mainly dark brown colour, foul smell and dangerous pollution with some waste material and persistent organic compounds in various quantities. Excess amount of this water mix with the soil and has adverse effect on the plants and vegetables growing it. The waste material generated from tannery industries can be treated in many ways- there is a need to upgrade the CETP (common effluent treatment plant) in industrial area so that the higher quantity of effluents can be treated. CETP (common effluent treatment plant) plant should be checked monthly. Instead of giving the responsibility of monitoring the treatment plants to the water corporation, cooperative societies themselves should be formed and they can manage the process of sewage treatment. Most of the tanneries in industrial area are chrome tannery, hence chrome recovery plant should be set up.

Keyword: Tannery effluent, Treatment plant, Toxic pollutants, Tannery industry

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Abstract: Hemipteran bugs are playing a major role in agriculture as pests. An attempt is made to catalogue the Hemipteran bugs diversity in various crop ecosystem viz., daincha, redgram and cotton in Agricultural College and Research Institute, Killikulam during April to July 2023. A total of 1189 individuals belonging to 9 species, 9 genera and 6 families were collected during the study. Lygaeidae was the most abundant family (38.35%) followed by Coreidae (30.28%), Pentatomidae (19.26%), Membracidae (10.09%), Dinidoridae (1.51%) and Phyllorhoridae (0.50%). The dusky cotton bug, *Oxycarenus hyalinipennis* was the most dominant species which constituted 38.35 per cent of the total individuals. The abundance of hemipteran bugs fluctuated widely over the months and June 2023 was the most active month (n=570) followed by May 2023 (n=504), April (n=92) and July 2023 (n=23). The Stink bug, *Nezara viridula* was the dominant species in June 2023 which constitute 43.76% of total insects in Daincha field. In the redgram field, redgram pod bug, *Clavigralla gibbosa* was the dominant species (94.49%) in the month of May. The red cotton bug, *Dysdercus koenigii* was the most dominant species (98.70%) in the month of May 2023 in cotton. The Simpson's Index, Shannon-Weiner diversity, Berger-Parker Dominance Index and Margalef's species richness indices for the hemipteran fauna were 0.24, 1.60, 0.38 and 1.10, respectively, indicating their good diversity in the study area.

Keywords: Hemiptera, Diversity, Diversity indices, College campus, Killikulam

UTILISATION OF MARKET REJECTED OVERRIPE FRUITS OF PINEAPPLE (*Ananas comosus* (L.) MERR.) VARIETY MAURITIUS

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Abstract: Disposal of overripe and market-rejected pineapple (*Ananas comosus*(L.) Merr)fruits poses a serious economic and sustainability challenge. This study focuses on physico-chemical characterization of pineapple wastes and the valorisation of peel waste as substrate for *nata* production with *Acetobacter xylinum*. The juice, peel, and pomace of market-rejected fruits recorded total sugar content of 11.10±0.08 %, 7.33±0.02%, and 5.68± 0.01% respectively, making them ideal substrates for fermentation. *Nata de pina*, with a thickness of 8 mm and an average yield of 34.62 %, could be obtained from pineapple peel waste, highlighting its potential as a valuable substrate for *nata* production. The rich amount of fiber, cellulose, and carbohydrates observed with the peel and pomace makes them highly suitable for biorefinery processes, supporting a circular bioeconomy model.

Keywords: *Nata de pina*, Pineapple waste, Physico-chemical properties, Valorization

SURVEY FOR THE OCCURRENCE OF GROUNDNUT ROOT ROT DISEASE CAUSED BY *MACROPHOMINA PHASEOLINA* (TASSI.) GOID IN SOUTHERN DISTRICTS OF TAMIL NADU

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Abstract: A survey was conducted in major groundnut growing areas of Tirunelveli, Thoothukudi and Tenkasi districts to assess dry root rot disease incidence and to collect infected plant samples from the surveyed areas. Maximum percent disease incidence of 54.33 was recorded in Killikulam village of Thoothukudi district. Four isolates of *Macrophomina phaseolina* namely GM1, GM2, GM3 and GM4 were obtained from the samples collected from Serndhamaram, Killikulam, Pudur and Surandai respectively. The isolates were morphologically identified by observing colony colour, colony texture, growth rate and production of sclerotia. Under pathogenicity test, all the isolates were found pathogenic and the isolate collected from Killikulam (GM2) recorded highest disease incidence by causing complete wilting of plants and proved its virulence.

Keywords: Root rot, *Macrophomina*, Groundnut

ON FARM TRIALS: ROLE OF PRODUCTION ENHANCEMENT IN WHEAT (*TRITICUM AESTIVUM* L.) IN ARID REGION OF WESTERN RAJASTHAN

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Abstract: A farmer's participatory field experiment was conducted during two *rabi* seasons of 2020-21 and 2021-22 at farmers' fields in Lohawat, Kalimai, Siyonka baas and Bhojka villages of Jodhpur district of Rajasthan on loamy fine to coarse and medium to low in fertility status. The study aimed to analyze the performance and adoption of improved new agriculture technology is a crucial aspects under innovation diffusion process and the most important forenhancing agriculture production at a faster rate. These aspect On Farm Trials technology is one of the most powerful tools for assessment and transfer of technology. The present study was find out the production enhancement and economics through On Farm Trials technology of wheat on farmers' fields. The technology On Farm Trial recorded additional pooled yield over farmers' practices under OFTs the grain, straw and biological yields of wheat was increased 17.08, 13.63 and 15.10 percent over farmers' practices. Adoption of improved package of practices under OFTs in wheat cultivation recorded higher B:C ratio 4.66 as compared to farmers' practices 4.07 and net returns under OFTs was Rs. 101700 and farmers' practices Rs 84325 recorded. Improved technology (OFTs) grain, straw and biological yields was 41.8, 54.2 and 96q/ha as compared to farmers' practices 35.7, 47.7 and 83.4 q/ha.

Keywords: Economics, Farm trial, Productivity, Wheat

EFFECT OF FOLIAR APPLICATION OF NUTRIENTS, GROWTH REGULATORS AND COLD STORAGE ON PHYSIOLOGICAL PARAMETERS OF SAPOTA

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Abstract: A field experiment was conducted to study the effect of foliar application of nutrients and growth regulators on physiological parameters of sapota, at Department of Fruit Science, College of Horticulture, Mudigere, University of Agricultural and Horticultural Sciences Shivamogga during the year 2017-18. The experiment was laid out with fifteen treatments replicated three times in randomized complete block design. In the present investigation, application of calcium chloride (CaCl₂) at 1 per cent resulted minimum weight loss (10.00 %), fruit decay (19.40 %) with maximum days to ripen (25.17 days), shelf life (26.67 days) and fruit firmness (1.00 kg/cm²) under low temperature (12°C) storage.

Keywords: CaCl₂, Pre-harvest, Shelf life, Growth regulators

EVALUATION OF M₃ MUTANT STOCK OF KODO MILLET (*PASPALUM SCROBICULATUM* L.) FOR ECONOMICALLY DESIRABLE PLANT TYPE

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Abstract: The current experiment study on induced mutation in kodomillet (*Paspalum scrobiculatum* L.) was carried out in Kharif 2023 at the Research cum Instructional Farm of S.G. College of Agriculture and Research Station, Kumhrawand, Jagdalpur, Bastar (C.G.). Induced Percentage improvement in M₃ generation of mutant lines of kodomillet compared with check varieties Indira kodo-1. For the assessment of percentage improvement in mutant lines of kodomillet among 500 mutant lines evaluated, 110 mutant lines are best performed for number of grains per panicle, 111 mutant lines exhibited better improvement for grains weight per panicle and 110 mutant lines performed best for test weight when compared to check variety (Indira kodo-1). The maximum improvement in the manifestation of yield was showed by number of grains per panicle followed by grains weight per panicle, test weight and length of raceme suggesting scope for improvement in these traits.

Keywords: Kodomillet, *Paspalum scrobiculatum*, Induced mutation, Gamma rays, Mutants

**GENETIC ASSESSMENT OF FINGER MILLET (*ELEUSINE CORACANA* L.)
GERMPLASM CULTIVATION FOR CROSSABILITY PARAMETERS AND GRAIN
YIELD**

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Abstract: The trail was conducted in Finger millet (*Eleusine coracana* L.) undertaken at the Research cum Instructional Farm of S.G. College of Agriculture and Research Station, Kumhrawand, Jagdalpur, Bastar (C.G.) during *Kharif* 2023. The genetic divergence was estimated in finger millet developed by multivariate analysis using mahalanobis (1936). 100 genotypes of finger millet grouped into six clusters based on D^2 analysis. The Cluster I and Cluster III was largest with 24 lines followed by Cluster II with 20 lines, Cluster IV with 17 lines and Cluster V with 10 lines but Cluster VI was lowest 9 lines. D^2 values were computed intra- and inter-cluster D^2 and D values using divergence analysis. The maximum intra-cluster distance was found in cluster IV indicating in within cluster. The highest inter- cluster distance was recorded between Cluster V and cluster IV followed by Cluster VI and II indicates a significant genetic distance between current generations. Cluster VI and II came next each the higher genetic divergence of these clusters and the higher level of heterotic expression and a range that then from mixing genotypes from these clusters in the resulting segregating populations. In current experiment of D^2 analysis suggested that there by exhibiting higher genetic diversity and thus genotypes of these cluster may be used for inter varietal hybridization programme for getting higher yielding recombinants in finger millet.

Keywords: Finger millet, *Eleusine coracana*, Genetic diversity, Cluster analysis