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Content

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TRIKETONE HERBICIDES: A REVIEW ON THEIR EFFICACY, PHYTOTOXICITY AND RESIDUES ESTIMATION

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Abstract: Triketone herbicides arecommonly used for weed management incereal crops.Their efficacy studies more emphasized on weed management in maize. This review highlights the findings of scientific investigations throughout the world on the efficiency, phytotoxic effects, and residual analysis of triketone herbicides. The available scientific literature reveals that these herbicides when applied at recommended doses ensures the desired effects on targetweeds, mainly in post-emergence application and exhibiting favorable toxicological effects to non-target biota and the environmental profile. According to the studies realized so far, triketone herbicides are mainly analyzed on liquid chromatographic systems and extracted with mostly used QuEChERS technique. Future prospects should focus on the risk assessment of these herbicides and theirmetabolic products so as to exclude the toxicological effects.

Keywords: Triketone, herbicide, efficacy, phytotoxicity, residue analysis

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PHYSIOLOGICAL, BIOCHEMICAL AND MOLECULAR CHANGES UNDER HEAT STRESS IN BREAD WHEAT

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Abstract: Global warming is a major issue of concern for the last few years, as it affects the growth and development of the cropthat reduced crop productivity. Among the crops, wheat is facing threat to high temperatures which is a primary source of food for the large population in developing countries. Though, plants have developed numerous mechanisms to adapt to the rising temperature, the negative impact of heat stress on wheat production is high. This review focused on the major effects of heat stress on the physiological and biochemical parameters of wheat. Also, the miRNAs expression under several high-temperature treatments and their involvement in the regulation of various heat stress-related genes were noticed.

Keywords: High temperature, miRNAs, heat tolerant, osmolytes, global warming

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PREPARATION AND PROPERTIES EVALUATION OF LIGNIN-BASED ADHESIVE IN *BORASSUS FLABELLIFER* L. FIBER COMPOSITES

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Abstract: This work aimed to develop a phenolic resin for partially replacing phenol with lignin in phenol-formaldehyde resin preparation and its application in *Borassus flabellifer* petiole fiber reinforced particle board. The lignin was extractedfrom rice straw using an alkaline treatment with 10% NaOH solutionand analyzed through FTIR spectroscopy. The phenol was replaced by lignin in different proportions as 10%, 20%, and 30%, and a Control Phenol formaldehyde was prepared as per standard. The obtained resin was analyzed for the parameters like pH, solid content,and Flow time as per standard. The particle board was prepared by using PF with 10 % resin content at21kg/cm^2 pressure and 150 ℃ temperature for 15 minutes in a hot press machine.The particle boards were tested for their physical (density, moisture content, water absorption- 2 hours and 24 hours, and thickness swelling due to surface absorption-2 hours)and mechanical (modulus of rupture, modulus of elasticity, internal bond strength, and screw withdrawal strength) properties as per IS-3087(2005). The properties of particleboards bonded with LPF resins were found to be comparable and high performing to those of the control-bonded particle boards. The results indicated that the 10% phenol replaced with lignin was the best-performing treatment.

Keywords- Rice, Phenol-formaldehyde resin, *Borassus flabellifer*, Petiole, Fiber

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PROCESS PROTOCOL DEVELOPMENT FOR WHOLE UNRIPE NENDRAN BANANA POWDER

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Abstract: Nendran, a French plantain cultivar, possess high content ofantioxidants, resistant starch, minerals anddigestible fibre. The plantain peel is also rich source of dietary fibre and protein content. Flours supplemented with dried whole banana flour can be used to develop various functional foods.Sixpretreatments and three airdrying temperatures were evaluated to optimise cabinet tray drying process for unripe Nendran banana slices.Pretreatment of banana slices with citric acid (0.3%) alone or in combination with ascorbic acid (0.3%) for 10 minutes followed by cabinet drying at 70℃ for 7 hours yielded good quality whole unripe Nendran banana powder.

Keywords: Banana, Nendran, Raw banana flour, Citric acid

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INTEGRATED NUTRIENT MANAGEMENT ON SUMMER MOONG BEAN (*VIGNA RADIATA* L.)

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Abstract: The main background of the study is objectives to study integrated effect of fertilizers, manures on growth,yield and quality of mungbean, to investigate the effect of bio-fertilizers on growth, yield andquality of mungbean, to assess the interactive effect of different treatments, if any and to evaluate the economics of different treatments.The present experiment was laid out inthe Research Farm, Department of Agronomy Agriculture, Indore, during 2021 and 2022.. The land topography of the experimental site wasalmost uniform with an adequate surface drainage.The conjunctive use of F8 -RDF

(75%) + Compost (5 t/ha) + (Rh+ PSB) and seed treatment with Rhizobium or PSB were determined to be the most successful treatments, according to thefindings of a one-year trial

Keywords: Fertilizers, Mungbeans, Economics, Nutrient

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EVALUATION OF QUALITY OF UNDERGROUND IRRIGATION WATER OF NAGAUR DISTRICT WITH SALINITY, SODICITY AND ALKALINITY CONTAMINATION

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Abstract: In this study, some important chemical parameters of underground water of the area were evaluated for the criteria of irrigation water quality. Higher values of pH, EC, SAR and RSC make the underground water unfit for irrigation purposes. One hundred fifty underground irrigation water samples were collected from various tehsils of Nagaur district during 2018-19. Based on salinity the classes of irrigation water were recorded normal water (0.66%), Low salinity water (39.34%), Medium salinity water (60%) and based on sodicity the classes of irrigation water were recorded normal water (2%), Low sodicity water (74.66%), medium sodicity water (23.34%) and based on alkalinity the classes of irrigation water were recorded non alkaline water (30%), Normal water (2%), Low alkalinity water (44.66%), medium alkalinity water (16%), high alkalinity water (7.34%). Majority of the water samples are fall under low to medium suitable category of water for irrigation purposes.

Keywords: Irrigation water quality, pH, Electrical conductivity, Sodium absorption ratio, Residual sodium carbonate

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EFFICACY OF FENAZAQUIN AGAINST SPIDER MITES AND ITS POTENTIAL TOXICITY TO NON-TARGET SPECIES

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Abstract: Fenazaquin is a new acaricide of the quinazoline group. It could be more hazardous to non-target species. Very scanty information is available on the efficacy of fanazaquin towards controlling spider mites and its toxicity effects over non-target species present in the environment. Present study was aimed to decipher information over these crucial aspects. Okra crop was grown in field following recommended agronomical practices. Fenazaquin was sprayed at recommended dose of 125 g a.i. ha^{-1} and double dose of 250 g a.i. ha^{-1}. It was observed that the efficacy of fenazaquin was significant in controlling the infestation of spider mites *Tetranychus urticae* Koch in okra crop at both applied doses. However, double dose showed significantly more detrimental toxicity effects towardscoccinellid beetlepredator*Stethorus punctillum*, pollinators *Apis mellifera*and soil acarine population. Recommended dose caused less toxicity to non-target species. It was found that fenazaquin application at recommended dose could provide effective control over *Tetranychus urticae* along-with maintaining good environmental health.

Keywords: Fenazaquin, Toxicity, *Stethorus punctillum*, *Apis mellifera*, Population

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FUNCTIONAL PARTITIONING IN EARLY SOWN *WITHANIA SOMNIFERA* DUNAL. LINN. ATTACKED BY *HADDA* BEETLE

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Abstract: Ashwagandha (*Withania somnifera Dunal. Linn.*); a root medicinal plant is also known with other names like Indian ginseng, Queen of Ayurveda, Winter cherry and Ajagandha. It is distributed inthe major area in the central-western provinces of India. It is containing withaferin-A, 12-deoxywithastramonolide, and withanolide A as the major bioactive compounds with pharmacological importance.*Hadda* beetles (*Henosepilachna vigintioctopunctata*); a polyphagous pest is reported to attack this plant however, there is no information available on the impact of the said pest on growth, development and yield of ashwagandha due to *hadda* beetle attack. In an early (June) sown ashwagandha crop, the attack of the *hadda* beetle caused severe defoliation in August and September. The intensity of the defoliation was so high that almost 95% of the leaves were defoliated. This has resulted in an altered biomass accumulation pattern causing the leaf mass fraction to decline from 0.184 in August to 0.041 in September. This was not a true representation of functional partitioning as photosynthates were already invested in leaves which were being eaten up by the pest. Further, a true recording of biomass allocation could not be done in a condition when biomass data of a leaf became unavailable due to severe defoliation caused by the attack of *hadda*beetles in ashwagandha.

Keywords: Ashwagandha, Biomass allocation, Defoliation, *Henosepilachna vigintioctopunctata*, Leaf mass fraction

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EFFECT OF ORGANIC MANURES AND ZINC LEVELS ON GROWTHAND YIELD ATTRIBUTES OF RADISH (*RAPHANUS SATIVUS* L.)

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Abstract: A field experiment was carriedout during *Rabi* season of 2020-21 at Horticulture farm of SKN College of Agriculture, Jobner, to find out the effect of organic manures and zinc on growth, yield and quality of radish. This experiment was conducted in factorial randomized block design with three replications. The experiment consisted of sixteen treatment combinations including four organic manures and four levels of zinc. Significantly higher plant height (31.60 and 35.53 cm) at 45 DAS and at harvest and number of leaves per plant (10.15 and 11.30) at 45 DAS and at harvest, respectively were recorded in treatment poultry manure 3.6 t/ha but maximum leaf area (266.81 cm^2), chlorophyll content in leaves (1.83 mg/g), root diameter (6.07 cm), root length (20.53 cm) root yield (258.86 q/ha) were recorded in treatment vermicompost @ 3 t/ha. Among the zinc levels significantly higher plant height (31.61 and 35.94 cm) at 45 DAS and at harvest, number of leaves per plant (10.15 and 11.37) at 45 DAS and at harvest, respectively, leaf area (267.71 cm^2), chlorophyll content in leaves (1.82 mg/g), root diameter (6.04 cm), root length (20.39 cm) and root yield (253.30 q/ha)were recorded in treatment $ZnSO_4$ @ 25 kg per ha but these parameters were at par with $ZnSO_4$ @ 30 kg per ha. The combinations of vermicopost and zinc significantly influenced the yield components and yield of radish.

Keyword: Growth,Organic manure, Radish, Zinc

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COMPARATIVE EFFICACY OF FUNGICIDES, *TRICHODERMA VIRIDE* AND NEEM IN THE MANAGEMENT OF WHITE RUST OF INDIAN MUSTARD

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Abstract: The reduction in productivity and quality of mustard are caused by numerous biotic and abiotic stresses. White rust disease is caused by an obligate biotrophic fungus *Albugo candida*, occurs wherever cruciferous crops are grown in the World and is responsible for considerable yield losses. To study the management of white rust few experiments were conducted at Guru Kashi University, Talwandi sabo (Punjab) under the laboratory conditions and for that different components namely; fungicides (Mancozeb, Ridomil and Carbendazim), biological control agent (BCA-*Trichoderma viride*) and botanical oil extract (*Azadirachta indica*) were used at different concentrations on sporangial germination of *Albugo candida* under two type of treatments (Pre Treatment & Treatment after disease infection). The research revealed that, all the fungicides and *Trichoderma viride* were performed better in pre-treatment than treatment after infection while Neem oil was effective post infection as compare to pre-treatment.

Keywords: *Albugo candida*, White Rust, Disease Management, *Trichoderma viride*

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CONSTRAINTS PERCEIVED BY THE KRISHI VIGYAN KENDRA BENEFICIARIES IN ADOPTION OF SELECTED SCIENTIFIC INTERVENTIONS

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Abstract: The current study was carried out in Kashmir Valley to determine the various barriers to adoption of selected scientific interventions that beneficiaries of Krishi Vigyan Kendra perceived. For the purpose of this inquiry, 358 beneficiaries were chosen at random. The study findings showed that the main constraint for farmers was "Lack of timely availability of planting material," that is ranked first. Followed by the "Lack of timely availability of fertilizers/pesticides," that is ranked second, and "Inadequate supply of other inputs likes organic manure vermi-compost," this is ranked third. In case of suggestion given by the respondents to overcome a constraint, the agency should be fixed for various vital inputs that was ranked first, followed by a single window loan application system, was ranked second, and government-set prices for fertilisers and insecticides, was ranked third.

Keywords: Constraints, KVK beneficiaries, Selected scientific interventions

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MORTALITY OF NEEM (*AZADIRACHTA INDICA* L.) BY PHANEROGAMIC PLANT PARASITE *DENDROPHTHOE FALCATA* (L.F.) IN KARNATAKA

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Abstract: Studies undertaken on the health status of trees on road sides revealed mass mortality of neem trees bordering the roads as well as the trees bordering farmer's field in Chitradurga and Tumkur districts of Karnataka. It was confirmed that the trees were dying due to severe infestation of *Dendrophthoe falcata* (L.f.) (Loranthaceae) and hence the need for protecting these trees to get the innumerable ecosystems services in sustainable way is discussed.

Keywords: *Dendrophthoe falcata*, Medicinal properties, Mortality, Neem, Parasite