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COPPER AND CADMIUM SULPHIDE NANOPARTICLES CAN INDUCE MACROMUTATION IN *NIGELLA SATIVA* L. (BLACK CUMIN)

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Abstract: Dry seeds(moisture content: 5.0%) of *Nigella sativa* L. (Family: Ranunculaceae; common name- black cumin, spice of commerce with immense therapeutic uses) are exposed to chemically synthesized copper (Cu) and cadmium sulphide (CdS) nanoparticles (NPs) at the doses of 0.25, 0.50 and 1.00 µg/ml for 3 and 6 h durations. EMS (ethyl methanesulphonate–0.25, 0.50 and 1.00%, 3 and 6 h durations) and gamma irradiations (25, 50, 100, 200 and 300 Gy; ^{60}Co source) are used as positive control. The objective of the work is to foresee whether NPs can induce stable phenotypic mutation. The present communication highlights macromutation types and frequency, mutagenic efficiency and effectiveness and meiotic chromosome behaviour in treated materials and suggests the efficacy if NPs in inducing mutation in *N.sativa* and crop improvement.

Keywords: Cu- and CdS-NPs, Macromutants, Meiotic analysis, Mutagenic efficiency and effectiveness, *Nigella sativa*

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AN AMINO ACID SEQUENCES BASED COMPUTATIONAL ANALYSIS OF ENZYME CYTIDYLATE KINASE

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Abstract: Computational analysis has been established for hypothetical study of amino acid sequences of the enzyme cytidylate kinase that derived from various programs and databases. Cytidylate kinase enzyme is widely distributed enzyme among bacteria and fungi. In the present study, thirteen full length amino acid sequences cytidylate kinase were retrieved, collected and subject to multiple sequence alignment (MSA), regular expression identification, domain identification, discovering individual amino acid composition, and construction of phylogenetic trees. Multiple sequence alignment revealed that three glycine, one lycine, one arginine and one valine were identically found in all the bacterial and fungal sources of cytidylate kinase. The two major sequence clusters were constructed by phylogenetic analysis. One cluster contains two species of fungi and six species of bacteria, where as other contain five species of only fungi. The amino acid composition results revealed that the average frequency of amino acid leucine is 9.29 % in fungi, where as alanine 13.61 % in bacteria. In addition, six unique motifs were also identified in the group analysis.

Keywords: Motif, Phylogentic analysis, Multiple sequence alignment, Cytidylate Kinase, Domain

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PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF *ELAEOCARPUS GENITRUS* (RUDRAKSHA) SEEDS

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Abstract: In the present investigation phytochemical and antibacterial activity of *Elaeocarpusganitrus* (Rudraksha) seeds were studied with the methanolic and acetonic extract. The major phytochemical constituents screened were tannins, flavonoids, steroids, reducing compounds carbohydrates and alkaloids, alcohol and protein. It has been observed that maximum phytochemical compounds were present in methanolic and acetonic extract of *E. ganitrus.*The phytochemical screening was done to as certain the presence of bioactive components present in selected plant extract.Antibacterial activity in terms of minimum inhibitory concentration (MIC) of the extracts was studied with paper disc diffusion method and zone of inhibition was measured in mm. It has been observed that MIC was ranging from 11.25-21.25 mm for methanolic and 15.5-22mm for acetonic extract respectively. It is concluded that Rudkraksha seeds have many useful phytochemicals and possess significant antifungal/antibacterial activity.

Keywords: Phytochemical screening, Antibacterial activity, Rudraksha

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ASSESSMENT OF YIELD LOSSES AND SCREENING OF PEA CULTIVARS FOR RESISTANCE TO ROOT ROT OF PEA CAUSED BY*FUSARIUM SOLANI* F.SP. *PISI*

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Abstract: Pea is an important legume crop widely cultivated throughout the world. Peas are grown in over 87 countries all over the world (Mcphee, 2003), providing food for humans and feed for domestic animals (Hargrove, 1986; Hulse, 1994; Patriarca *et al*., 2002).Although, peas have enormous nutritional qualities and have been considered to be the predominant export crop in world trade, representing about 40% of the total trade in pulses (Oram and Agcaoili, 1994).

Keywords: Pea, Legume crop, Root rot, Disease

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EFFECT OF CROP ESTABLISHMENT METHOD AND IRRIGATION SCHEDULES ON PRODUCTIVITY AND WATER USE OF WHEAT

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Abstract: A field experiment was conducted during 2014-15and 2015-16 at Meerut, Uttar Pradesh. The grain yield (46.52; 47.63 and 44.01 and 44.88 q ha^{-1}), straw (60.57; 61.55 and 59.94; 102.75 q ha^{-1}) biological yield (107.09; 109.40 and 102.75; 104.82 q ha^{-1}) was and harvest index (43.39; 43.49 and 42.53; 42.77) significantly higher in B_{90-4} and 4 cm irrigation at

IW/CPE 0.8 during both the year. Physiological traits, yield attributes and yields were significantly influenced by land configuration and wheat irrigation schedules. In land configuration systems, $B_{90-4}$and 4 cm irrigation at IW/CPE 1.2 displayed significantly higher water use efficiency (2.53; 2.51 and 2.19; 2.18 kg m^{-3}) compared with other treatments. However irrigation schedules × land configurationinteraction was significant for yield attributes grain, straw and biological yield except 1000 grain weight.

Keywords: Land configuration, Irrigation schedules IW/CPE, Water use efficiency

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BIO-EFFICACY OF AZOXYSTROBIN 11% + TEBUCONAZOLE 18.3% SC ON ONION IN ANDHRA PRADESH

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Abstract: Field trials conducted against Azoxystrobin 11% + Tebuconazole 18.3% SC on Onion in Andhra Pradesh. Experimental findings with the data pertaining to efficacy of different fungicidal formulation on the purple blotch incidence showed that all the treatments were significantly superior over control in reducing the disease severity. Azoxystrobin 11% + Tebuconazole 18.3% SC @ 750 & 1000 ml/ha is superior and lowest disease incidence was recorded (17.15 & 18.05 respectively) and proved to be the best. Highest yield was obtained in treatment sprayed with the Azoxystrobin 11% + Tebuconazole 18.3% SC @ 1000 ml/ha and it was on par with Azoxystrobin 11% + Tebuconazole 18.3% SC @ 750ml/ha with the highest cost benefit ratio of 1:2.16.

Keywords: Bio-efficacy, Azoxystrobin, Tebuconazole, Purple blotch

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ASSESSMENT OF HONEY DEW EXCRETION BY NON -TARGET BPH, *NILAPARVATA LUGENS* STAL.ONDIFFERENT IR-64 *BT* RICE EVENTS

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Abstract: The experiment was undertaken at greenhouse of Entomology and Department of Plant molecular biology &biotechnology, CoA, Raipur during 2014 and 2015.Area marked due to honey dew excretion by BPH under different IR64 Bt rice events ranged from 15.52 to 24.85 mm^2. The maximum marked area (24.85 mm^2) was observed in IR-64-C followed by TN-1-C (23.58 mm^2) with minimum in Ptb-33-C (15.52 mm^2) during 2014. Whereas during 2015, new starved female was released and new filter paper was kept inside the funnel to receive the honey dew in all the rice events were ranged from 11.72 to 20.43 mm^2. The maximum marked area (20.43 mm^2) was observed in IR-64-4 followed by IR-64-1 and TN-1-C (23.58 mm^2), respectively and minimum in Ptb-33-C (11.72 mm^2). On the basis of two years, pooled mean of honey dew area marked under different rice events was ranged 13.62 to 21.43 mm^2. The highest honey dew excreted on IR64 Bt events was noticed (21.43 mm^2) in IR-64-4 followed by TN-1-C (20.84 mm^2) and minimum in Ptb-33-C (13.62 mm^2) within 24hrs. releasing of BPH. The descending order of honey dew excretion by starved female on Bt events was as IR-64-4> TN-1-C > IR-64-C> IR-64-1> IR-64-2> Ptb-33-C. The area of honey dew excretion by female on *Bt* rice and on non-transgenic control rice plants did not differ significantly.

Keywords*:* Bt protein, Non-target insect BPH, Honey dew excretion

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ANTIFUNGAL ACTIVITY OF SOME MEDICINAL PLANT EXTRACTS AGAINST HUMAN PATHOGENIC FUNGUS *ASPERGILLUS NIGER*

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Abstract: The present investigation was carried out to observe the antifungal activity of *Alstonia scholaris Argemone maxicana, Datura alba, Solanum nigrum and Solanum xanthocarpum.* For this purpose effect of different alcoholic extract concentration was observed on growth performances of *Aspergillus niger* on 5^{th} and 7^{th} day. Our result shows that alcoholic extract concentrations inhibit radial growth of this fungus. Results also indicate that inhibition of fungal growth increase with the increase in the concentration of alcoholic extracts.

Keywords: Antifungal activity, Alcoholic extract, *Aspergillus niger,* Medicinal plants

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EFFICACY OF BIO-AGENTS AND ORGANIC AMENDMENTS AGAINST *SCLEROTIUM ROLFSII* CAUSING COLLAR ROT OF CHICKPEA

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Abstract: Chickpea is cultivated throughout the Chhattisgarh state and mostly grown in kanhar soil in Chhattisgarh plains. However, chickpea productivity is low due to susceptibility of the crop to different biotic and abiotic stresses. The collar rot disease of chickpea caused by *Sclerotium rolfsii*, which is soil borne and fast spreading fungus, causes considerable damage to the plant stand. The collar rots of chickpea caused by *S. rolfsii*, can cause considerable loss to plant stand when soil moisture is high and temperature is warm (nearly 30^0C) at sowing time. Drying of plants with foliage turned slightly yellow before death, scattered throughout the field is an indication of collar rot infection. The study of bio-agent and organic amendment application revealed that all the treatments significantly increased seed germination and reduced collar rot incidence. Seed treatment with bio-agent *Trichoderma* and Neem cake application in soil was found to be the most effective recording maximum seed germination and minimum mortality followed by *Trichoderma* with Mustard cake and *Trichoderma* with Karanj cake combination under natural condition.

Keywords: Collar rot of chickpea, *Sclerotium rolfsii, Trichoderma spp,* Bio-agents

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INSECT PESTS COMPLEX ASSOCIATED WITH BASMATI RICE WITH WESTERN PLAIN ZONE OF UTTAR PRADESH, INDIA

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Abstract: Insect pests complex associated with basmati rice were studied during *Kharif*, 2014 and 2015 at Crop Research Center of Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut. During the study period, fifteen

insect species were encountered on basmati rice in western plain zone of Uttar Pradesh which belong to 7 orders *viz*. lepidoptera (yellow stem borer, leaf folder, striped rice stem borer, rice case worm and swarming caterpillar), homoptera (green leaf hopper, brown plant hopper, and white backed plant hopper), heteroptera (rice gundhi bug), hetroptera (rice mealy bug), coleoptera (rice root weevil and white grub), isoptera (termite) and orthoptera (*Kharif* grass hopper and grass hopper).

Keywords: Insect pests, Basmati rice, Grass hopper

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PLANTS AS A SOURCE OF DIURETIC ACTIVITY AND STUDY OF 3-(6-ARYLIMIDAZO[2,1-B]THIAZOL-3-YL)-2-METHYLCHROMONE SYSTEM AS DIURETIC AGENT

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Abstract: Diuretic agents increase urine volume and are effective in heart failure , renal failure and maintain Na^+ ion balance. They are also effective in hypertension and nephrosis. Though plants possess diuretic activity , but their delayed action needs to use quickly acting agents . In this paper study on 3-(6-Arylimidazo[2,1-b]thiazol-3-yl)-2-methylchromones as diuretic agents is being discussed . Lead for diuretic activity has been found in this system .

Keywords: Diuretic activity, Chromones, Lead, Structure activity relationship (SAR)