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ROLE OF PLANT GROWTH REGULATORS IN HYBRID SEED PRODUCTION

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Abstract: The production potential of vegetable seed production depends on many factors, among them; plant growth regulators appreciably influence the growth, yield and quality of produced seed. Plant growth regulators play an important role in the formation of [flowers](#), [stems](#), [leaves](#), [shedding of leaves](#), and the development and ripening of [fruit](#). Plant growth regulators shape the plant, affecting seed growth, time of [flowering](#), the sex of flowers, [senescence](#) of leaves, fruit drop and quality seed. Therefore the available literatures relating to the response of plant growth regulators on seed yield, flowering and quality of seed crops carried out at various places in India and abroad have been briefly reviewed in order to throw light on our existing knowledge, for understanding role of plant growth regulators.

Keywords: PGR, Seed production, Gamotocides, Seed yield

ROLE OF MICROORGANISM FOR ECO-FRIENDLY AGRICULTURE

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Abstract: The cost of chemical fertilizers is much higher than bacterial compost. Bacterial composts maintain fertile ground, biological power and pollution-free environment; 5% - 10% yields can be increased. In drought-prone areas, bacterial compost is similar to nectar, where there is a shortage of water; the crop will not be good. In such a situation, the farmers do not take the risk of using expensive fertilizers. During the time of the rising sun or i.e. after noon, the utility will increase, at this time the micro-organism can be used at night by using its function and speed, to view the used farming and taken advanced benefits. Micro-organisms do not leave any toxic effects on the environment and crops; they have specific destruction characteristics of the targeted insects. With their use the development of immunity has been found to be low in insect, using these insects can also be controlled which are not destroyed by the normal pesticides they are safe for the beneficial pest of the cultivation.

Keywords: Agronomic Practice, Bacterium, Bacterial Compost, Resilient Agro-ecosystem

EFFECT OF WEED MANAGEMENT PRACTICES ON GROWTH AND YIELD OF SESAME (*SESAMUM INDICUM* L.)

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Abstract: A field experiment was conducted during the *Kharif* Season of 2009-10 at Research farm, project coordinating Unit (Sesame and Niger). Jabalpur, Madhya Pradesh to study the effect of Pre-emergence herbicides, alone or in conjunction with manual weeding on weed pressure, productivity and economics of Tit (Sesame indicum L.) Podiumthaliana @ 0.50 kg/ha as pre-emergence (PE) + one hand weeding at 40 DAS, reduced the weed biomass similar to recommended practice of weed control i.e. hand weeding twice done at 20 & 40 DAS. Application of oxyfluorfen @ 0.15 Kg/ha as pre-emergence (PE) was found more remunerative as it recorded the higher value of NMR and B:C ratio (6446 and 1.64) as compared to other treatments.

Keywords: Til, Herbicide, Weed management

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ISOLATION AND CHARACTERIZATION OF NATIVE *AZOTOBACTER* ISOLATES FROM RHIZOSPHERIC SOIL SAMPLES

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Abstract: A total of thirty *Azotobacter* isolates were obtained and characterized on the basis of their colony morphology, microscopy and biochemical test. Isolates were repeatedly subcultured on *Azotobacter* agar (Mannitol) medium to obtain pure cultures of *Azotobacter*. All the isolates showed creamy translucent, mucoid, and circular shape colony morphology. Colonies having *Azotobacter* like morphology were microscopically analyzed and those depicting oval-rod shaped Gram negative bacteria were selected. All *Azotobacter* isolates were further characterized by different biochemical test. Isolates A-2, A-8, A-16, A-23, A-24 and A-28 showed positive results in all the biochemical tests (Triple sugar iron agar test, Citrate utilization test, Methyl red test, Voges-Proskauer test, Catalase test, Oxidase test, Nitrate reduction test, Urease test, Starch hydrolysis test and Motility test). Further, antibiotic sensitivity profiling of these isolates was done all the isolates were found resistant to Amoxycylav and Erythromycin and all were inhibited by the Ciprofloxacin by forming a clear zone of 15mm. All isolates were also tested for Phosphorus solubilization activity on PVK medium and none of the isolates were able to solubilize phosphorus. These *Azotobacter* isolates were tested for physiological efficiency on different pH (6, 7, and 8). All isolates grew well on alkaline medium of pH value 8. Twenty five isolates grew well at pH 6 and 7. It was observed that A-13, A-17, A-19, and A-20 showed no growth at pH 7. Results showed that A-15, A-19 and A-20 were unable to grow at pH 6.

Keywords: Isolation, *Azotobacter*, Phosphorus solubilization, Characterization

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DESIGN AND DEVELOPMENT OF INCLINED PLATE SEED METERING MECHANISM FOR CHICKPEA INTENSIFICATION

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Abstract: Physical properties of chickpea i.e. average aspect ratio, surface area, bulk density, true density, moisture content and porosity of chickpea were observed 75.54 %, 157.379 mm², 709.55 kg/m³, 875.50 kg/m³, 19.81 % and 18.62 %

respectively. Mean spacing was found more accurate in 45° inclination of seed box from horizontal which was 20.03 cm. and average field efficiency and time required for one ha was 63.63% and 0.44 h/ha respectively.

Keywords: Planter, Chickpea, Inclined

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FORAGING ACTIVITY OF STINGLESS BEE, *TETRAGONULA IRIDIPENNIS* SMITH (HYMENOPTERA-APIDAE-MELIPONINAE) IN SUNFLOWER

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Abstract: A field observation was undertaken during 2018-19 to study the foraging activity of stingless bee on different hours of the day on sunflower. The observation was started from 2nd week of April 2019 to 4th week of May 2019. The population of bee (5.05 bees/ 5 plants/5min/plot) was recorded in between 8.00-9.00AM. It was recorded least among all over the five observations. However, its population was increased suddenly and reached its peak (8.17 bees/5plant/5min) in between 10.00 to 11.00AM followed by (5.17 bees/5plants/5minutes) at 12.00- 13.00 PM, (7.14 bees/5plants/5 minutes) at 14.00-15.00 PM and (5.12 bees/5plants/5 minutes) in between 16.00-17.00PM. The maximum blooming period and population of bees was recorded on 1st week of May 2019 (9.08 bees/5plants/5 minutes) followed by 4th week of April (7.92 bees/5plants/5 minutes) and 3rd week of April (6.56 bees/5plants/5 minutes) however, the lowest population was recorded on 4th week of May (3.6 bees/5plants/5 minutes).

Keywords: Foraging activity, Sunflower, Stingless bee, *Tetragonula iridipennis*, Meliponinae

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SURVEY AND SURVEILLANCE OF WHEAT POWDERY MILDEW IN MAJOR GROWING AREAS OF NORTHERN HILLS AND PLAINS, INDIA

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Abstract: Powdery mildew is very important foliar disease of wheat among major wheat growing areas of northern hills and plains in India which results in huge economic loss. Disease first appear on the lower leaves, varied in appearance depends on the location and continue to produce white mycelial growth on all plant parts up to the maturity of crop. Survey results revealed that the disease severity of powdery mildew in all the wheat growing areas of northern part of India is low to moderate (0 to 7). The disease severity was varied among different stage of the crop and places to grown but there was no significant difference among the cultivation practices. Maximum disease severity grade was recorded in Dhaulakuan district i.e 6 in 2012-13 and 7 in 2013-14, whereas minimum disease severity was recorded in Ludhiana, Ambala and Kaul i.e. 3 and 2 during the year 2012-13 and 2013-14, respectively.

Keywords: Powdery mildew, Northern hills, Survey, Wheat

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PLANT GROWTH PROMOTING PSEUDOMONAS STRAINS EFFECTIVELY ENHANCE PLANT GROWTH OF ORYZA SATIVA.

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Abstract: Aim of present study is to evaluate the effect of PGPR *Pseudomonas* strains on plant growth activity of paddy crop. All *Pseudomonas* strains were isolated from rhizosphere of paddy crop. *Pseudomonas* strains were isolated on King's B medium and fluorescent *Pseudomonas* strains were characterized by biochemical tests. Further, three *Pseudomonas* strains which were IAA positive, HCN positive and Phosphorous solubilize strains named as *Pseudomonas* PS1, PS2, PS3. Total 04 treatments were prepared and these were *Pseudomonas* PS-1 + Paddy seed, *Pseudomonas* PS-2 + Paddy seed, *Pseudomonas* PS-3 + Paddy seed and uninoculated seed (control). Few plant growth parameters such as seed germination, plant height, fresh weight and dry weight of paddy crop were recorded. *Pseudomonas* PS1 showed highest seed germination which was 58.33% more as compared to control. These isolated plant growth promoting *Pseudomonas* strains increased root and shoot length by at least 100 and 50 % more respectively as compared to control. Highest root length has been observed in *Pseudomonas* PS2 treatment but highest shoot recorded in *Pseudomonas* PS1. Further, all strains increased fresh weight and dry weight of root by at least 354 and 202 % more respectively as compared to control but *Pseudomonas* PS1 enhanced 379.27 and 218.57 % more fresh weight and dry weight of root respectively as compared to control. *Pseudomonas* PS1 treatment showed highest fresh and dry weight of shoot by 207.3 and 459.46 % respectively. All results suggested that *Pseudomonas* strains effectively increase plant growth in Paddy crop.

Keywords: *Pseudomonas*, IAA, HCN, Phosphorous solubilization, Paddy crop

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GENE ACTION STUDIES ON SEED YIELD AND QUALITY TRAITS IN RED SWEET PEPPER (*CAPSICUM ANNUUM L. GROSSUM*)

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Abstract: Selection of suitable breeding methodologies in bringing desirable improvement in crop require the complete knowledge about the nature of gene action involved in the inheritance of quantitative and quality traits. Gene action of fruit yield and quality traits in sweet pepper (*Capsicum annuum L. grossum*) were studied through half-diallel analysis excluding reciprocals of 15 F₁ hybrids derived by crossing 6 parental lines. The present study indicated the preponderance of non-additive gene action for days to first flowering, fruit set, number of fruits per plant, fruit weight, fruit yield kg per plant, days to first ripe fruit harvesting, number of seeds per fruit, seed weight per fruit, seed yield per fruit, thousand seed weight and percent seed recovery. For fruit yield per plant dominant component of variance was observed which revealed the presence of non-additive gene action, hence heterosis breeding is required to be followed for exploitation of these traits. The preponderance of non-additive gene action in the inheritance of all the traits studied clearly suggested exploitation of heterosis breeding for the improvement of these traits and the presence of sufficient hybrid vigour in different hybrid combinations.

Keywords: Gene action, Sweet pepper, Variance, Half-diallel, Fruit yield

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PATH ANALYSIS OF YIELD DETERMINANTS IN CHILLI (*CAPSCIUM ANNUUM L.*)

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Abstract: The experiment was conducted at research farm of IGKV, Raipur with sixteen genotypes of chilli during the rabi season of 2016-17. In the present investigation, path coefficient analysis was carried out taking fruit yield per hectare as dependent variable and rest of the sixteen characters as independent variables. The highest positive direct effect which contributed towards fruit yield per hectare was observed via fresh weight of fruits (0.891), followed by fruit yield per plant (0.856), number of primary branches (0.251), number of fruits per plant (0.200), plant height (0.150), number of seeds per fruit (0.105), dry matter % of fruits (0.104), number of pickings (0.061) and stem girth (0.017). Negative direct effects on fruit yield per ha was exhibited by fruit length (-0.479), days to first picking (-0.391), fruit girth (-0.267), days to 50 % flowering (-0.157), days to first flowering (-0.113), dry weight of fruits (-0.101) and stalk length (-0.056). The results suggested that due emphasis should be on to the genotypes that are having maximum high positive direct effect on fruit yield per hectare.

Keywords: *Capscium annum*, Direct effect, Indirect effect, Path analysis, Yield component