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RESEARCH COMMUNICATION

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TOXICITY INDUCED BY PROPHENOPHOS AND CHLOROPYRIPHOS IN *LATHYRUS SATIVUS* L.

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Abstract: Dry seeds (moisture content: 3.22%) of grass pea (*Lathyrus sativus* L.; family: Fabaceae) are treated with different doses of (0.05, 0.1, 0.2 and 0.3 percent, 3h) of pesticides namely Prophenophos (common name: Carina50) and Chloropyriphos (Dursban), and attributes like seed germination frequency, seedling length, mitotic index, chromosomal aberrations and total protein and soluble sugar content have been analyzed. The objective of this work is to foresee the extent of biological damages caused by the chemicals, which may enable to administer appropriate doses that cause lesser environmental hazards. Results have been analyzed.

Keywords: Pesticides, Chromosomal aberration, Biological damage, Environmental hazards

EFFECT OF THRIPS POPULATION ON MANAGEMENT OF BUD NECROSIS VIRUS INFECTING TOMATO *LYCOPERSICON ESCULENTUM* MILL IN ANDHRA PRADESH

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Abstract: The closer the spacing resulted the lower was the thrips incidence. The thrips population was increased from 30 DAP to 50 DAP and then declined from 60 DAP. The thrips population was lowest in early planted crop and highest in late planted crop and medium in normal planted crop in *kharif* and *Rabi* seasons. The thrips population was highest in *kharif* followed by *Rabi* season. The thrips populations has a significant relationship with the stage of the crop.

Keywords: Bud necrosis virus, Tomato, Thrips population, Cultural practices

SURVEY OF VARIOUS PESTS AND DISEASES OF NIGER (*GUIZOTIA ABYSSINICA* CASS) CROP UNDER TRIBAL BELTS OF SOUTH GUJARAT

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Abstract: Niger (*Guizotia abyssinica* Cass) is an important minor oil seed crop. The Niger crop is found infested by number of diseases & pests, which causes harsh damage to the crop. The survey for Niger diseases was conducted during the *Kharif*, 2013 in different villages of Vandsa taluka of Navsari district, Kaprada taluka of Valsad district and similarly, in Dang district of Gujarat. The two major diseases viz., *Alternaria* and *Cercospora* leaf spot were noticed in the scale of 1.0 to 4.0

and 1.0 to 3.0 grades respectively. However, the incidence of powdery mildew disease was not observed but the infestation of *Cuscuta* was observed as a minor problem during the survey of Niger crop. Apart from this, in pest incidence hairy caterpillar was observed in scattered as well as in uniform population while, the population of aphids and white flies was not noticed in the field during the survey.

Keywords: Survey, Niger, Crop, Tribal

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OSMOTIC STRESS RESPONSE INDUCED ON EXPOSURE TO ENDOSULFAN AND MALATHION IN *LYCOPERSICON ESCULENTUM* MILL.

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Abstract: A study was conducted in the field of Department of Botany, D.N. College, Meerut using two crop varieties of Tomato, viz. Pusa Ruby and Pusa Early Dwarf. The plants were exposed to three different concentrations of pesticides namely Malathion and Endosulfan. Proline was estimated for osmotic stress response. It was observed that there was a high accumulation of proline which was concentration dependent. The increase in the values of proline were found to be more in Pusa Ruby than Pusa Early Dwarf which suggests that Pusa Ruby is comparatively a resistant variety. The enhanced accumulation of proline may be supportive to the tomato plants exposed to high concentration of pesticide. It might have helped the test crops under xenobiotic stress, to maintain membrane stability, water relations, and nitrogen and energy metabolism. It might also have helped to maintain the growth and yield of the pesticide treated plants. Proline acts as osmoprotectant under stress conditions. The free radicals are constantly generated under stress conditions that are quenched by an efficient antioxidant network in the plant body which acts as a supportive system in plant defense.

Keywords: Endosulfan, Malathion, Xenobiotic Stress and Osmolytes

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STUDIES ON BIO AND MODERN PESTICIDES FOR THE MANAGEMENT OF DIAMOND BACK MOTH, *PLUTELLA XYLOSTELLA* (LINN.) ON CAULIFLOWER

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Abstract: The present study was undertaken the most effective as well as economical viable insecticide for the control of diamond-back moth *Plutella xylostella* L. on cauliflower. One bio-pesticide i.e. *Bacillus thuringiensis* (WP) and six modern insecticides i.e. Imidacloprid (17.8% SL), Acetamiprid (20% SP), Thiomethoxam (25% WG,) Fipronil (5% SC), Cartap hydrochlorid (50% SP) and PII-0111 (20% WDG) with an adjuvant "Chipco" were tested against the diamond back moth under natural field condition. In all two sprays were applied in morning hours when the pest attained a desired level of larval population. The result indicated that all the treatments were superior to the control in reducing the larval population of DBM after both applications of the sprays. After the first and second sprays fipronil proved to be the most effective and also gave significantly higher yield as compared with other treatments. The next effective treatment was cartap hydrochloride, which also gave significant reduction in the larval population after first and second sprayings. It also gave better yield and higher per cent increase in yield over control. Other treatments, i.e., PII-0111, thiomethoxam, acetamiprid, imidacloprid and *Bacillus thuringiensis*, were least effective.

Keywords: Cauliflower, Pesticides, Management, Population

CUMULATIVE AND RESIDUAL EFFECT OF YIELD AND NUTRIENT UPTAKE BY RICE UNDER GERANIUM (*PELARGONIUM GRAVEOLENS*) –RICE (*ORYZA SATIVA*) CROPPING SEQUENCE AS INFLUENCED BY LEVELS OF PHOSPHORUS AND ZINC

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Abstract : A field experiment was conducted at Central Institute of Medicinal and Aromatic Plant, Lucknow to influence the cumulative and residual effects of phosphorus and zinc source of nutrient uptake by rice under geranium-rice cropping sequence. The 18 treatment combination consisted of 3 cropping system viz. geranium paired sole (40/80cm.) garlic sole (20×10cm.), geranium paired + garlic (1:4), three levels of phosphorus (0, 30 & 60 Kg. P₂O₅ ha⁻¹) and 2 levels of zinc (0 and 25kg. Zn SO₄ ha⁻¹) were evaluated in a factorial RBD design with three replication. Higher uptake of P by rice in grain in the plots of 80kg P₂O₅ ha⁻¹ supplied to geranium clearly indicate that there is a residual effect of P on the P uptake by succeeding crop. Hence, there is a net saving of 30kg P₂O₅ ha⁻¹ to achieve similar yield level to that of 30kg P₂O₅ ha⁻¹ applied in the plots of geranium received 40kg P₂O₅ ha⁻¹. P uptake by rice in grain was also enhanced upto 25kg ZnSO₄ ha⁻¹ applied over 30kg ZnSO₄ ha⁻¹ supplied to geranium crop. Residual effect of Zn on uptake of P followed the same trend to that of P – uptake under cumulative effect. Zn uptake by rice in grain increased significantly upto 30kg P₂O₅ ha⁻¹ in the cumulative treatment, However, under the residual treatment the uptake of Zn by rice in grain increased upto 80kg P₂O₅ ha⁻¹ applied to previous crop. Clearly indicate that higher doses of P may decrease the uptake of Zn by rice in grain. The net profit of rice after geranium paired system (Rs. 13,224.1 ha⁻¹) it was at par with rice after garlic sole (Rs. 13,758.1 ha⁻¹) system. Thus Geranium – rice sequence proved economical.

Keywords: Rice, Medicinal & Aromatic plants, Phosphorus, Zinc

POPULATION FLUCTUATION OF YELLOW STEM BORER AND LEAF FOLDER ON BASMATI RICE IN RELATION TO CLIMATIC CONDITIONS OF WESTERN UTTAR PRADESH, INDIA

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Abstract : Population fluctuations of yellow stem borer, *Scirpophaga incertulus* (Walker) and leaf folder, *Cnaphalocrocis medinalis* (Guenee) were assessed in basmati rice during *Kharif* 2014 at Crop Research Center of Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut. The first infestation of yellow stem borer was recorded on first week of August and reached its peak during middle of October when average temperature, relative humidity and rainfall ranged from 27.10 to 30.51 °C, 69.60 to 84.04 % and 0.30 to 7.56 mm, respectively. The population of leaf folder was first recorded in last week of July and reached at maximum level during end of September to start of October when mean temperature, relative humidity were 28.89 °C and 76.95 %, respectively. The population of yellow stem borer and leaf folder showed negative correlation with maximum and minimum temperatures, evening relative humidity and rainfall while morning relative humidity showed the positive correlation.

Keywords: Population fluctuation, Yellow stem borer, Leaf folder, Climatic factors

GENETIC STUDIES OF GENOTYPES FOR FRUIT YIELD AND ITS COMPONENT CHARACTERS IN TOMATO (*SOLANUM LYCOPERSICUM* L.)

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Abstract: The present investigation was conducted with twenty four hybrids along with their 10 parents (6 lines and 4 testers) were subjected to study the genetic variability indicated that genetic material in the present investigation possessed variability which provides sufficient basis for selection by breeder. The accessions revealed wide variability for characters evaluated. High estimates of PCV and GCV were obtained for number of secondary branches per plant, number of clusters per plant, number of fruits per cluster, number of fruits per plant, average fruit weight, pericarp thickness and total fruit yield per plot indicated a good deal of variability in those characters signifying the effectiveness of selection of desirable types for improvement. Phenotypic variances were higher than their respective genotypic variances thus revealing the role of environmental factors. High heritability assisted with high genetic advance as per cent of mean was observed for number of secondary branches per plant, number of fruits per plant, number of clusters per plant, average fruit weight (kg), pericarp thickness (mm), total fruit yield per plot (kg). Hence, simple selection based on phenotypic performance of these traits would be more effective.

Keywords: Genetic variability, Heritability, Genetic advance, F1 generation, Tomato

PATH ANALYSIS FOR YIELD AND YIELD COMPONENTS IN RICE (*ORYZA SATIVA* L.)

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Abstract: Seventy rice genotypes were studied for estimating the direct and indirect influence on grain yield. Path analysis revealed that the characters kernel length followed by days to maturity, number of effective tillers per plant, plant height, number of grains per panicle and 1000-grain weight were directly influencing the grain yield per plant. Hence, these characters need to be considered while designing a selection strategy for yield improvement of rice.

Keywords: Rice, Path analysis, Yield and Yield attributing traits