

2nd International Conference on Agricultural & Horticultural Sciences

Radisson Blu Plaza Hotel, Hyderabad, India February 03-05, 2014

The genotoxic effects of cadmium nitrate on cyto-morphological parameters of *Capsicum annuum* L. Rumana Aslam, M Y K Ansari, Sana Choudhary, Towseef Mohsin Bhat and Nusrat Jahan

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Mutation breeding has become increasingly popular in recent times as an effective tool for crop improvement. The chief advantages of mutation breeding is its ability to improve a single feature in a variety without significantly altering the otherwise desirable make up of agronomic characters. In this study heavy metal will also be tried to induce mutation. Heavy metals are stable environmental pollutants which are highly toxic to biological organisms. The Excess amount can cause some genotoxic and mutagenic effect inducing cyto-morphological changes. They cause DNA damage and oxidative changes. Moreover, some of these changes may be found beneficial for crop improvement. Plants, which constitute a main link in the food chain, are often used to evaluate the genotoxic and mutagen potential of risk factors, due to the highly preserved structure of their genetic material. The present experiment was design to investigate the genotoxic effects of metal (Cd) on *Capsicum annuum* L. seeds were treated with 5 different concentrations (i.e. 20, 40, 60, 80 and 100 ppm) in the form of nitrate. The result shows that the higher concentrations significantly reduced plant height, pollen fertility, and yield; higher concentrations also caused variations in the plants at the seedling and mature stages. Higher concentrations showed detrimental effects on the pairing of homologous chromosomes and spindle formation. The results also showed that the cytological abnormalities i.e., laggards, bridges, fragments, precocious separation, multivalents were increased with the increasing metal concentrations and the higher concentrations of Cd are more chromotoxic and mutagenic causing genetic variability in *Capsicum annuum* L.

Biography

Rumana Aslam is a Ph.D. research student in Cell and Molecular Biology and Genetics Section in Department of Botany Aligarh Muslim University Aligarh-India-2022. She has also completed M. Phil from the same Department in 2009.

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Management of *Meloidogyne incognita* in *Phaseolus vulgaris* by combined application of biofertilizers and chemical fertilizer

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The experiment was carried out to study the effect of combined application of biofertilizers (Trichoderma viride and Pochonia chlamydosporia) and nitrogen fertilizer (urea) in the management of root knot nematode (Meloidogyne incognita) and on the growth of Phaseolus vulgaris. The plants were grown in the soil treated with 20 N and 40 N urea. One week old seedling were treated with both the biofertilizers and inoculated with 1,000 J₂ of the root knot nematode, simultaneously. The result indicated that treatment with the higher dose of urea and biofertilizers (40 N+80 ml) significantly increased the plant length, plant weight, leaf area and yield; the number of galls and the number of egg masses per plant significantly decreased. By treating the plants with the higher dose of bio and chemical fertilizers highest and significant values of chlorophyll, carotenoid, protein, nitrogen and phosphorus contents mg/g, and NRA contents in the leaves were observed. From the finding it can be inferred that combined application of biofertilizers and chemical fertilizers not only improved the plant growth but also helped in managing the root-knot nematode by decreasing the nematode population significantly. It may be concluded that combined application of these biofertilizers (*T. viride* and *P. chlamydosporia*) and chemical nitrogen (urea) fertilizer can be used in the management of the root -knot nematode.

Biography

Rushda Sharf has completed her M.Sc. in Botany from, Aligarh Muslim University and presently pursuing her Ph.D. in section of Plant Pathology and Nematology, Department of Botany Aligarh Muslim University, Aligarh.

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