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Phytoremediation Technology, Heavy Metals Effect on Germination Rate of Seeds

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Abstract: Phytoremediation is the use of plants and associated soil microbes to reduce the concentrations of contaminants within the environments.Heavy metals like Pb, Cr, Cd are dangerous for plants. It has an impact on plants and human beings. Seed germination rate is affected by heavy metals. Brassica (Mustard) nigra plant seeds shows different germination rate in percentage. Germination rate decreases on exposure to CdCl2 as compared to control and it increases on further remediation of heavy metals.

Keywords: Phytoremediation, heavy metals, germination, remediation, cadmium.

I. INTRODUCTION

Phytoremediation is the use of plants and associated soil microbes to reduce the concentrations of contaminants within the environments.It is price- effective, solar driven technology.Phytoremediation is an effective technology consists of method, mechanism,phytoextraction,phytostabilization,phytodegradation,Rhizofiltration,Phytovolatalization[1-6].Phytoremediation is biotechnological application of plants for waste utilization and conversion to reduce, assimilate, degrade and metabolise environmental pollutants like heavy metals, hydrocarbons, fertilizers, pesticides organic, inorganic masses in soil and water. Phytoremediation may be a cluster of technologies, that use plants to reduce, degrade, or immobilized environmenta l,toxins.Phytoextractions,conjointlycalled,phytoaccumulation,phytoabsorption,andPhytosequestration[1-6].This method reduces soil metal concentration by cultivating plants with a high capability for metal accumulation in shoots. Plants extract massive concentrations of heavy metals into their roots,translocate, transfer the heavy metals to above than ground shoots or leaves and manufacture great quantity of plant biomass that may simply be harvested.Rhizofiltration technique is used in clean up contaminated waste water or acid mine drainage by absorption or precipitation.

Phytostabilization is phytoimmobilization,holding of contaminated soil and sediments in place of vegetation and to immobilized cyanogenic contaminants in soils.It happens through the action, precipitation, complexation or metal valence reduction. For eggrasses, sedges, forage and reeds. Phytovolatalization involves the use of plants to take up contaminants from the soil transforming them into volatile kind and transporting them into the atmosphere.eg Se, transpiration.Phytodegradation conjointly called Phytotransformation,involvesuptake,metabolization degradation of contaminants at within the plant or within the soil sediments,sludges,groundwater or surface water by enzymes produced and released by the plant [3].Heavy metals are naturally found in earth.

They are employed in several modern-day applications like agriculture, medicine, industries etc.Heavy metals once drop by anthropogenic activities in soil through food chain affects the plants animals and humans.At low concentration germination rate is germination rate is high in percentage but at high concentration germination rate is lower and on further remediation of heavy metals increases at higher percentage.

II. AIMS AND OBJECTIVE

Aim is to study the Phytoremediation technology and study the effect of heavy metals on germination rate of seeds of plant and study of advantages of Phytoremediation technology.

Objective is to study the effect of heavy metals ie cadmium on seeds of Brassica nigra plant.

III. MATERIAL AND METHODS

Pots are taken.Seeds are grown in soil.It is treated with CdCl2.Observed for few days.Germination rate is observed.Germination rate in percentage can be estimated as number of seeds germinated to the total number of seeds.

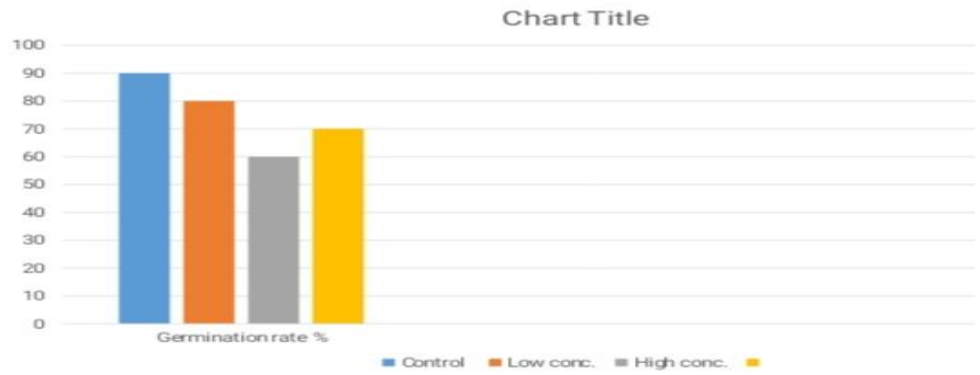
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IV. TABLE AND FIGURE

	Germination rate in Percentage %	
Control	90%	
Low concentration	80%,84%	
High concentration	60%,70%	

Brassica(Mustard)nigra germination rate in%



V. RESULTS AND DISCUSSION

At low conc.of Cadmium seeds are germinated at high percentage ie 80%.At High conc.of cadmium seeds are germinated at 60%, after few days or weeks remediation takes place and seed germination increases to 70%.

Conclusion-1Phytoremediation is the use of plants and associated soil microbes to reduce the concentrations of contaminants within the environments.Phytoremediation is an effective technology consists of method phytoextraction, phytostabilization, phytodegra dation, Rhizofiltration, Phytovolatalization for remediation of heavy metals.At low concentration germination rate is high in percentage but at high concentration germination rate is lower and on further remediation of heavy metals increases at higher percentage.

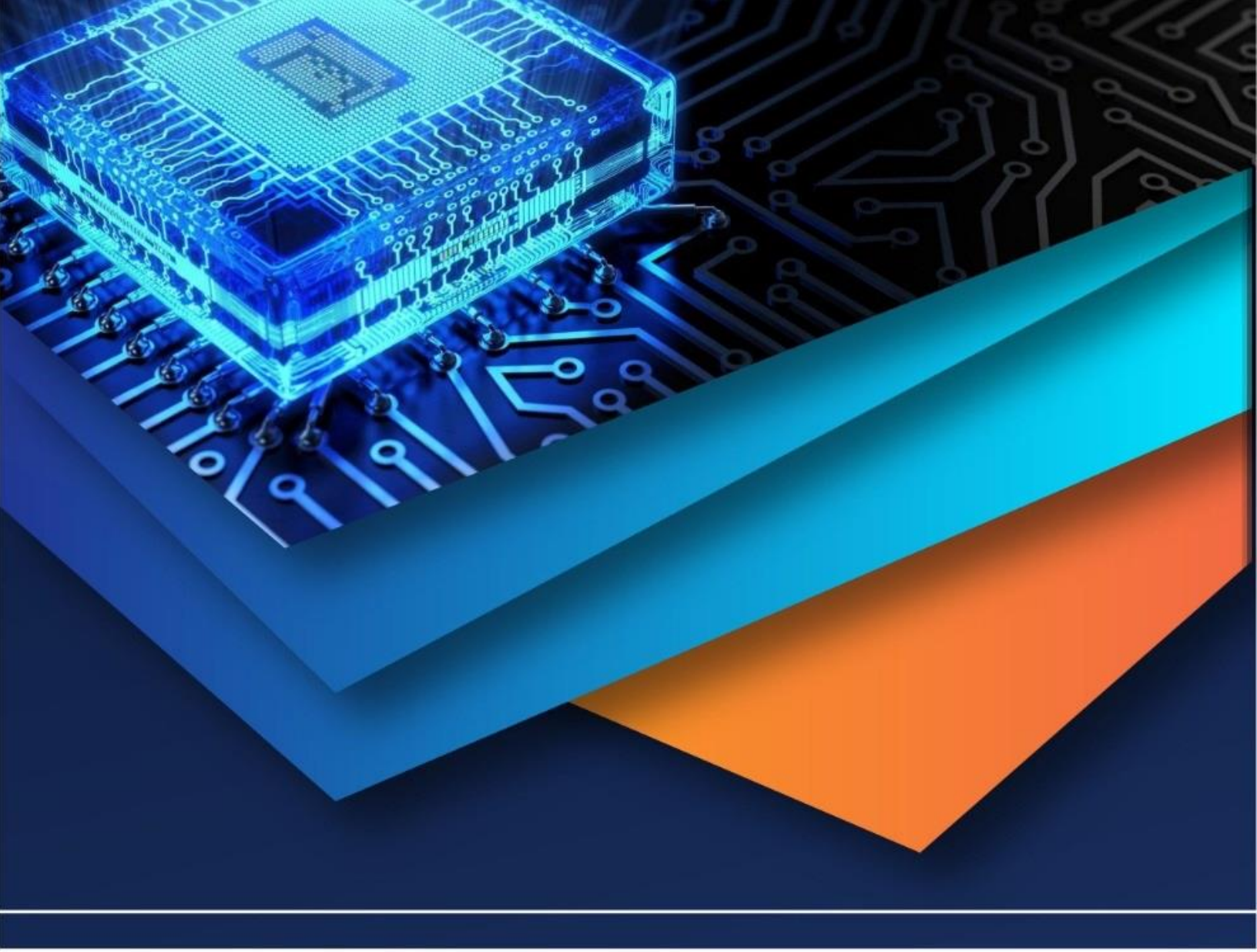
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