



## EFFECT OF DIFFERENT HERBICIDES / CERTAIN CHEMICALS ON *CELOSIA ARGENTEA* L. WEED PLANT

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### ABSTRACT

*Celosia argentea* L is one of the most dominating herbaceous annual weed found in all semiarid crop fields like groundnut, cowpea, jowar, raddish, maize, green gram and hyacinth bean. Spermosphere of *C. argentea* L promotes the germinability of dormant weed plants by secreting chemicals into the soil. *C. argentea* reduces the crop yields by promoting the growth of microorganisms, and also it inhibits the germinability of surrounding crop plant seeds by producing allelo chemicals into the soil. Different concentrations of 2, 4-D and Potassium chloride were sprayed on to healthy plants of *Celosia argentea* L grown in garden conditions and their effects were recorded. Potassium chloride is used as a nutrient fertilizer. And 2, 4-D will be degraded in the soil by microorganisms within 2-3 weeks without causing any harmful effects.

**Keywords:** 2, 4-D, Potassium chloride, *Celosia argentea* L.

### INTRODUCTION

Countries like India where 70% farmers depend on agriculture. Weeds cause an annual loss of 2000 crores to Indian agriculture which is more than the combined losses caused by insects, pests and diseases. Due to their enormous reproductive capacity, huge seed banks in the soil, viability and dormancy of the seeds, sociability with crops, ecological races with in the weed population, synchronizing the biological clock with that of crop and Allelopathic effects; *Celosia argentea* L causes a severe reduction in crop yield [1]. In India weeds account for losses as high as 45%. Farmers in India and many other countries of the world spend a major part of their life fighting weed and weed hazards. The aim of the weed control is to manage the vegetation on land and in water bodies in such a way it will encourage the growth of plants beneficial to our interests at a particular place and time and will suppress the remaining relatively unwanted plant species [2].

### MATERIALS AND METHODS

The *Celosia argentea* seeds directly sown in earthen pots of 6×1 which contained 1:3 ratios of cattle manure and soil. The seedlings appeared in one week

sowing. The seedlings were watered day after day for better growth. The *Celosia argentea* plants were kept in direct sunlight in the botanical garden.

In order to find out cheap mode of herbicidal / chemical action on *Celosia argentea* L., different concentrations of 2, 4-D and Potassium chloride were prepared with distilled water. These were sprayed with atomizer on to 80 days old healthy plants of *Celosia argentea* grown in earthen pots in Botanical garden. They were tagged after spray with the above herbicide/chemicals and were observed from the next day onwards for about one month.

### RESULT

Out of many concentrations tried on *C. argentea* L. Potassium chloride (at 1% concentration), 2, 4-D (2% concentration) had herbicidal effects within three days. It was found to induce many physiological changes like decolouration, defoliation and wilting of leaves and also complete drying of plants.

### DISCUSSION

In order to find out cheap mode of herbicidal action on *Celosia argentea* L., 2% 2,4-D and 1%

Potassium chloride are found to induce many physiological changes observed like decolouration, defoliation and wilting of leaves .The net result is the death of the plant. The mode of mitochondrial activities, photosynthesis, protein and nucleic acid metabolism and enzymes. Herbicides affect the mitochondrial activities by uncoupling the reactions action of contact herbicides is the weakening and disorganization of cellular contents by leakage of cellular contents. Most of the herbicides affect the respiration and responsible for ATP synthesis or by interfering with electron transfer and energy transfer. Herbicides inhibit photosynthesis by inhibiting the Hill reaction and the production of O<sub>2</sub> from water in photo system II. Inhibiting the transfer or transport of electrons in photo system II, and inhibiting the non-cycling photophosphorylation or ATP synthesis [2].system II. Inhibiting the transfer or transport of electrons in photo system II, and inhibiting the non-cycling photophosphorylation or ATP synthesis [2].

For example the aqueous foliar leachates from *Cajanas cajan*, *Albizia lebbek*, *Cassia tora* & *Cassia fistula* are quite effective and inhibit the seed germination by 73.88%, 47.2%, 11.25% and 41.02% respectively.

These plants can be exploited for biocontrol of *Parthenium hysterophorus*, keeping this aspect of biocontrol, in consideration; it is not suitable for the control of *Celosia argentea*, because of the dormancy of seeds. Out of many chemicals and herbicides tried on *C.argentea* KCl (1%) can be recommended for control of *C.argentea* plants in the crop fields.

Under warm and moist conditions 2, 4-D persists for only 2-3 weeks. However MCPA for 6-8 weeks and 2, 4, 5-T is more resistant to breakdown and may persist in the soil for 2 to 12 months. In all cases, microbial decomposition is one of the important factors through which the herbicides are degraded in the soil. 2, 4-D is degraded by microorganisms of the genera *Pseudomonas*, *Achromobacter*, *Flavobacterium*, *Cornebacterium*, *Arthrobacter* & *Sporocytophaga*. And are capable of breaking the organic herbicide molecule resulting in deactivation of the compound. Potassium chloride is a naturally occurring mineral that is an excellent source of the plant nutrient. Potassium is needed for protein and enzyme synthesis and activation. It involved in maintaining proper water balance and also needed for photosynthesis. So potassium chloride is used as a nutrient fertilizer [4].

#### The Effect of 2% 2, 4 – D, on the healthy plants of *Celosia argentea* L.



Healthy plant of *Celosia argentea* L.



2 % 2, 4-D on *C.argentea* L.

#### The Effect of 1% KCl on the healthy plants of *Celosia argentea* L.



## CONCLUSION

Among the 2% 2, 4-D and 1% Kcl; Kcl (1%) can be recommended for control of *C.argentea* plants in the crop fields.

## REFERENCES

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