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EVALUATION OF WEED CONTROL EFFICACY OF KLASS 80 WP (DIURON) IN JUHU AIRPORT, BOMBAY INDIA

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Summary

This paper summarises the results of the field trial of Klass 80 wettable powder (wp) the first Diuron-based herbicide manufactured in India by Hoechst, Schering and AgrEvo Limited. Klass 80 wp (Diuron) is found to be useful in controling weeds which attract birds hazardous to aircraft safety because of the plant food and animals preyed upon by these birds as well as the roosting resting and nesting facilities provided by this vegetation cover on airport grounds.

Key Words: Chemicals, Habitat Modification

INTRODUCTION

Plants growing on airport grounds attract birds directly for the vegetable food as well as the resting, roosting and nesting facilities they provide. This vegetation cover is also attactive to birds because they harbour innumerable types of insects, worms, reptiles and other animals preyed upon by them. In order to reduce the population of birds which endanger the aircraft safety at aerodromes and reighbourhood, it is recessary to keep the vegetation growth under control. On the shoulders of runways and taxi-tracks several species of weeds grow of which the physical removal is both difficult and time-consuming. Considering the problems of manual weeding operations, chemical weed control efficacy of klass 80 wp (Diuron) was evaluated by field trial at a selected airport.

MATERIAL AND METHODS

The efficacy of klass 80 wp as a herbicide to control weeds in non-crop area was evaluated during the monsoon of 1994 at Juhu Civil Airport, Bombay. Klass 80 wp (Diuron) is chemically N - (3,4- Dichloro phenyl) - N, N-dimethylurea, a colourless, odourless and non-inflamable crystalline solid with metting point 158-159°C, vapour pressure $<10^{-8}$ m bar and solubility 42 ppm in Water (25°C) as well as 5.3% in acetone (27°C). The active ingredient, Diuron, is taken up by the roots of germinating weeds and translocated into the young leaves, where it interacts with the Hill Reaction of photosynthesis (Hartley & kidd 1991, Meister, Sine, Fitzgerad & Miller II 1995). Chlorosis and finally necrosis follows within a few (3-8) days depending upon plant species, temperature and soil conditions. To a certain degree Diuron is taken up via leaves and penetrates directly to the site of action. This foliar action takes place only with young, tender leaves ie in early post - emergence. For foliar activity at later growth stages, or on leaves with a thick waxy entiele, addition of surfactants, or very high product dosages, or both are required. After application the active ingredient remains in the upper layer of soil. It is activated by soil moisture only. Duration of weed control varies between two and 12 months according to dosage, soil type and environmental conditions.

Klass 80 wp other rate of (@) 30,40 and 50 Kg/Hectare (HA) was sprayed on fully grown weeds (6 inches to 3 feet tall plants) and each treatment was replicated thrice. Soil of the plots at Juhu acrodrome was sandy loam in nature and plot size was 50 sq m each. Herbicide was sprayed using knapsack-sprayer fitted with flood-jet nozzle using 1500 litre spray volume per HA. Trial plots had variety of annual and perennial weeds with 100 percent weed cover. Observations on Percent weed control were recorded 30, 60, 90, 180 and 270 days after spraying the chemical on the plots. To assess the long term efficacy of the herbicide observations have to be recorded at regular intervals till the emergence of weeds is noticed.

OBSERVATIONS

Important Weed Species in Different replications were observed as under :

Replication I

Sorghum helepense, Echinochloa colonum, Alysicarpus sp., Corchorus aestuens, Hibiscus sp., Phyllanthus sp., Commelina bengalenses, Ipomoea sp., Cyperus sp., Sesamum indicum, Sesbania indicum, Digitaria sp., Lantana camara.

Replication II

Alysicarpus vaginalis, Alternanthera viridis and perennial grasses

Replication III

Alysicarpus vaginalis, Phyllanthus sp., Capillipedium sp., Celosia argentia, Tridax procumbens, Anotis nudiflora and perennial grasses.

TABLE 1. Effect of Klass 80 wp

Treatment (Kg/HA)	Percent Weed Control (Mean of three replications)				
	30 DAA	60 DAA	90 DAA	180 DAA	270 DAA
Klass 80 wp-30	95.00	97.00	95.00	90.00	85.00
Klass 80 wp-40	96.00	98.00	95.00	95.00	95.00
Klass 80 wp-50	98.60	99.00	95.00	95.00	95.00
Untreated *	00.00	00.00	00.00	00.00	00.00

DAA-days after herbicide application * 100% weed cover in untreated plots

RESULTS AND DISCUSSION

klass 80 wp at all the test dosages gave excellent overall weed control upto 270 days after application. *Lantana camara* and *Sesamum indicum* were found tolerant to klass 80 wp @ 30 and 40 Kg/HA. however at 50 Kg/HA these plants showed some susceptibility in the from of tipburning and stunted growth. Reemergence of *Cynodon dactylon* and *Saccharum spontaneum* was noticed in Klass 80 wp @ 30 and 40 Kg/HA, 60 days after spray of herbicide

CONCLUSION

Klass 80 wp in the range of 30 - 50 Kg/HA can be used as a total weed killer on fully grown Weeds to obtain acceptable weed control upto 180 - 270 days.

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