

SHORT COMMUNICATION

THE EFFECTS OF GROWTH REGULATORS AND HERBICIDES ON THE
TUBER FORMATION OF *ELEOCHARIS DULCIS*

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The effects of growth regulators and herbicides have been observed on the tuber formation of *Eleocharis dulcis* after 180 days of treatment. The fresh mass of above-ground, underground and total plant material has been determined. The lower concentrations and higher concentrations of Pb, DPU, produced promotory effects, while MH and 2, 4-D produced promotory effects at lower concentrations and inhibitory effects at higher concentrations. The maximum tuber development, the mass of above ground and total plant material were found in 10 mg/l of DPU. In MH and 2, 4-D, the tuber formation, mass of above ground, underground and total plant material were decreased as the concentration increased.

Eleocharis dulcis (Cyperaceae), a native plant of China is valued for its edible tubers all over the world and distributed throughout the orient (Hodge, 1956). Tubers are the rich source of starch and have some medicinal value. In the present study attempts have been made to assess the effects of certain growth regulators and herbicides on tuber development.

Tubers were collected from the field, washed with water and surface sterilized with 0.1% mercuric chloride. These were then treated with aqueous solution of lead (Pb), diphenyl-Urea (DPU), Maleic hydrazide (MH) and 2,4-D in the concentrations of 5, 10, 20, 50 and 100 mg/l for 6 hours. The tubers were transferred to the earthen pots with five replicate. Experiments were conducted from May to December 1985 and the plants were taken out from the pots after 180 days from day of sowing, washed in running water and observations were taken. Tubers, stolons, roots and shoots were separated. Fresh parts of aerial and underground were weighed. The number of tubers and their fresh weight were also recorded.

Average number and mass of tubers, and mass of plants were calculated from different sets of treatments. In Pb lower and higher concentrations produced promotory effects on tuber development and the average mass of tubers. In DPU, 10 mg/l produced 4 times more tubers and 6 times more mass of tubers than the control and maximum (14.16 g) mass of above ground and 22.95 g of total plant material. Harada *et al.* (1978) have shown that 5 ppm of DPU promoted tuber formation while 50 ppm had

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Table I. Number and mass of fresh tubers, ratio between mass of tubers and mass of above ground and under ground plant material and total plant material of *Eleocharis dulcis* developed under the influence of growth regulators and herbicides after 180 days of sowing

Conc. mg/l	LEAD					
	Total No. of fresh tubers	Total mass of fresh tubers in gms.	Averg. mass of fresh tuber gm/tuber.	Av. mass of above ground plant material in gms.	Av. mass of underground plant material in gms	Av. mass of total plant material in gms.
5	2.9	3.161	1.090	3.060	3.400	8.990
10	2.5	2.700	1.080	6.960	1.970	10.950
20	0.0	0.000	0.000	0.000	0.000	0.000
50	1.6	1.632	1.020	4.080	2.170	5.020
100	3.2	3.360	1.050	4.140	2.350	9.070
Control	1.3	0.741	0.570	3.080	1.230	5.290
CD at 5% P	0.221	0.162	0.209	0.197	0.189	0.656
Diphenyl-Urea						
5	3.7	4.033	1.090	6.390	1.390	11.980
10	4.8	4.656	0.970	14.160	3.060	22.950
20	2.6	2.574	0.990	6.260	5.360	10.070
50	2.8	3.388	1.210	8.220	5.634	16.960
100	1.9	1.178	0.620	7.080	1.570	10.020
Control	1.3	0.741	0.570	3.080	1.230	5.290
CD at 5% P	0.28	0.162	0.681	0.122	0.140	0.270
Maleic Hydrazide						
5	2.6	2.280	0.880	6.010	1.240	11.950
10	2.2	1.804	0.820	5.630	3.080	10.186
20	2.0	1.500	0.750	4.770	2.410	9.130
50	1.5	1.104	0.736	2.870	1.330	5.240
100	0.0	0.000	0.000	0.000	0.000	0.000
Control	1.3	0.741	0.570	3.080	1.230	5.290
CD at 5% P	0.18	0.212	0.040	0.106	0.120	0.821
2,4-D						
5	1.7	0.969	0.570	4.080	1.910	7.070
10	1.5	0.465	0.319	3.960	1.100	4.640
20	1.2	0.192	0.160	3.860	1.000	4.380
50	0.0	0.000	0.000	0.000	0.000	0.000
100	0.0	0.000	0.000	0.000	0.000	0.000
Control	1.3	0.741	0.570	3.080	1.230	5.290
CD at 5% P	0.18	0.050	0.032	0.090	0.106	0.102

delaying tuber formation on *Eleocharis Kuroguwai*. However, lower concentrations of MH and 2,4-D strongly inhibited tuber formation. Lower concentrations of MH produced promoting results in comparison to 2,4-D. Harada *et al* (1978) had observed reduction of about 28% in tuber growth at higher concentration of certain herbicides.

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