

EFFECT OF FOLIAR SPRAY OF ERGOSTIM ON GROWTH AND LEAF PRODUCTION OF MULBERRY

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ABSTRACT

"Ergostim", a proprietary biostimulant was used in the present study. Ergostim at 0.05%, 0.075% and 0.1% aqueous solution was sprayed once and twice during each leaf crop period under a 5 leaf crop schedule in irrigated mulberry garden. Results indicated that two aqueous sprays of Ergostim 0.05%, 0.075% and 0.1% significantly increased the linear growth and number of leaves per plant as well as leaf yield over single spray and also control. It was found that two aqueous sprays of 0.05% Ergostim gave highest net return of Rs.3,223/ per ha per year than that of 0.075% and 0.1% of Ergostim sprays. The Cost-benefit ratio indicates a single spray of 0.05% Ergostim is more cost effective.

KEY WORDS : Ergostim, Linear Growth, Leaf Yield, Economics.

'Ergostim', a proprietary product based on Acetyl thiozolidine Carboxylic acid (ATCA) and folic acid has been successfully tried in European countries to increase the crop productivity in crops like cereals, vegetables, fruit trees and industrial crops (Radice and Scacchi, 1982). As there is no report of usage of Ergostim in mulberry, the present experiment was undertaken to study its effect on growth and leaf yield.

MATERIALS AND METHODS

Ergostim, a proprietary formulation containing 5% N-acetyl thiozolidine -4- Carboxylic acid (derivative of L-cysteine) and 0.1% folic acid with adjuvant in buffered solution obtained as gratis from M/s Montari Industries Ltd., New Delhi, was used. The experiment was conducted in a randomised block design with 8 treatments and 3 replications during 1991-92 at the Regional Sericultural Research Station, Salem. The mulberry garden used for this experiment was 4 year old, and the variety was Kanva-2 (M-5) with 2'x2' spacings in irrigated condition. The treatments were: 0.05%, 0.075% and 0.1% Ergostim, single spray and two sprays, water spray (control) and no spray (absolute control). One spray was given on 20th day after pruning/leaf harvest and second spray was given on 15 days after 1st spray. Five trials were conducted at the interval of 70 to 75 days. Data on growth and leaf yield were recorded and pooled data of all

trials were analysed statistically (Kempthorne, 1952).

RESULTS AND DISCUSSION

It is evident that foliar application of Ergostim has improved the linear growth (Table 1). The maximum length of shoot (174 cms) and maximum number of leaves per shoot (27) were noticed in plots treated with two foliar sprays of 0.1% Ergostim and minimum length of shoot (150 cms) and minimum number of leaves per shoot (21) were noticed in control and absolute control. The beneficial effect of Ergostim may probably be due to cell elongation as well as increase in level of plant growth hormone viz., indole acetic acid and indole propionic acid as evidenced in wheat coleoptile (Radice and Scacchi, 1982).

The quantum of mulberry leaf production in Ergostim treated plots was higher and found to be significant over control and absolute control (Table 1). It is evident that the foliar application of Ergostim has enhanced the quantum of leaf production to the tune of 8 to 16 per cent control. Plots sprayed twice with 0.05% 0.075% and 0.1% Ergostim produced more leaf than the plots sprayed once with 0.05% 0.075% and 0.1% Ergostim. The control and absolute control plots registered the least leaf yield. The increase in productivity of mulberry leaf may be due to enhancement of activity in enzyme system

Table 1. Effect of Ergostim on the growth and leaf yield of mulberry*

Treatment	Length of shoot (cm)	No. of leaves/shoot	Leaf yield in kg/ha/yr	% of increase over control
0.05% Single spray	153	23	28,513	8.09
0.075% Single spray	159	24	29,211	10.74
0.1% Single spray	162	25	29,535	11.97
0.05% Two spray	168	25	30,206	14.52
0.075% Two spray	171	26	30,152	14.31
0.1% Two spray	174	27	30,664	16.25
Control (Water spray)	150	22	26,377	--
Absolute Control (No spray)	150	21	25,867	--
'F' test indication	**	**	**	--
CD at 5%	8	2	392	--

** Significant at P=0.01; * Mean of 5 trials.

Table 2. Economics of Ergostim spray on mulberry leaf yield

Concentration (%)	Frequency of spray	Cost of Ergostim / ha (Rs)	Labour wages (Rs)	Total Expenditure (Rs)	Leaf yield / ha (kg)	Extra leaf yield over control	Cost of extra leaf (Rs)	Net profit	Cost benefit ratio
0.05	1	900	360	1260	28512	2135	3203	1943	1:1.54
0.075	1	1350	360	1710	29211	2834	4251	2541	1:1.48
0.1	1	1800	360	2160	29535	3158	4737	2577	1:1.19
0.05	2	1800	720	2520	30206	3829	5743	3223	1:1.28
0.075	2	2700	720	3420	30152	3775	5662	2242	1:0.70
0.1	2	3600	720	4320	30664	4287	6430	2110	1:0.49

Cost of Ergostim is Rs.1440/- per l; Cost of 1 kg of leaf is Rs.1.50 (prevailing rate in Tamil Nadu)

Labour wages Rs.18/- per manday; 4 labourers / ha/spray.

particularly catalase, peroxidase, phosphatase, apyrase where ATCA of Ergostim interferes with biochemical and physiological pathway leading to the increase in biomass production as confirmed in other plantation crops.

Economics of Ergostim was worked out (Table 2) and it was found that two aqueous sprays of 0.05% Ergostim gave maximum net return of Rs.3,223/= per ha per year than the two aqueous sprays of 0.075% and 0.1% Ergostim, and this is due to higher cost of input (Ergostim). Although net profit is found to be highest in the treatment where two sprays of Ergostim were given, but the cost-benefit ratio indicated that single spray of 0.05%

Ergostim is more cost effective than the double spray. The finding of the experiment is useful to the farmers to increase the leaf productivity by foliar spray of 0.05% Ergostim in the mulberry garden apart from the usual recommended package of practices of manures.

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