

## EFFECT OF FOLIAR SPRAY OF MICRONUTRIENTS ON DIFFERENT GROWTH STAGES OF MULBERRY (*Morus alba* Linn.,)

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### ABSTRACT

Field experiments were conducted to study the effect of micronutrients on growth and yield of mulberry at the Department of Sericulture, Tamil Nadu Agricultural University, Coimbatore. Zn (0.25%), B (0.25%) Mn, Fe and Mo each at 0.5% were sprayed with control on 20th day and 20th day and 40th day after pruning in mulberry during 1991-92. Spraying FeSO<sub>4</sub> (0.50%) and ZnSO<sub>4</sub> (0.25%) on 20th day and 40th day after pruning recorded higher values in plant height, number of leaves/plant, leaf area and leaf yield in mulberry.

(Mulberry (*Morus alba* Linn.) has gained fresh grounds in recent years as an economically viable crop fetching high monetary returns. Krishnaswami *et al.*, (1971) observed that the growth and development of silkworm larvae *Bombyx mori*, L. and the economic characters of cocoon were greatly influenced by the nutritional content of the mulberry leaves.) Day and Gupta (1974) observed improvement in yield of mulberry leaf with Zn application Lokanath and Shivashankar (1986) found increased yield in mulberry leaf by boron application. Vishwanath (1979) obtained increased foliage yield with 2.5 kg/ha of Mn through foliar sprays. However, in recent years, with the intensification of cultivation, micronutrient deficiencies in soils have been observed to limit the maximum potential yields of mulberry. The present investigation was, therefore, undertaken to study the influence of various micronutrients sprayed at

different stages of crop growth on the leaf yield of mulberry.

### MATERIALS AND METHODS

MR 2 variety of mulberry was pruned and spraying of various micronutrients was taken up at two stages i.e., 20 and 40th day after pruning at three different seasons viz., June 91, October 91, and January '92 at the Tamil Nadu Agricultural University, Coimbatore. The experiments were conducted in split plot design with three replications. Five micronutrients Zn (0.25%), B (0.25%), Mn (0.5%), Fe (0.5%) and Mo (0.5%) were taken up for the study. Micronutrients were sprayed at 20th day of pruning, 20th and 40th day of pruning with one control (no spray). Periodical observations on plant height, number of leaves and leaf area were recorded. Leaf area was measured using leaf product method (Kasivishwanathan and

**Table I.** Plant height (cm) in mulberry as influenced by foliar application of micronutrients

	I Crop (June 91)			II Crop (Oct. 91)			III Crop (Jan. 92)		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
M <sub>1</sub>	157	167	137	152	161	133	147	159	141
M <sub>2</sub>	148	158	132	149	156	132	147	159	139
M <sub>3</sub>	147	158	140	146	156	148	147	158	130
M <sub>4</sub>	157	167	133	157	163	136	148	160	140
M <sub>5</sub>	148	160	137	148	161	134	139	155	138
CD									
M	8.6		7.4		4.2				
S	7.2		8.1		7.5				
M at S	2.1		16.5		7.5				
S at M	16.0		18.1		7.5				

S<sub>1</sub> - Foliar spray on 20th day of pruning

S<sub>2</sub> - Foliar spray on 20 and 40th day of pruning

S<sub>3</sub> - Control

M<sub>1</sub> - Zn 0.25%

M<sub>2</sub> - B 0.25%

M<sub>3</sub> - Mn 0.5%

M<sub>4</sub> - Fe 0.5%

M<sub>5</sub> - Mo 0.5%

Table 2. Influence of micronutrient sprays on number of leaves / plant in mulberry

	I Crop (June 91)			II Crop (Oct. 91)			III Crop (Jan. 92)		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
M <sub>1</sub>	142	152	135	158	160	152	156	159	147
M <sub>2</sub>	149	152	140	152	152	143	150	154	141
M <sub>3</sub>	139	157	135	155	153	147	143	148	141
M <sub>4</sub>	157	161	141	154	156	143	155	159	151
M <sub>5</sub>	147	154	138	149	148	139	145	146	143
CD									
M		9.6		7.1		5.3			
S		4.5		3.3		3.2			
M at S		2.2		9.3		7.8			
S at M		10.1		7.4		7.1			

Table 3. Leaf area (cm<sup>2</sup>) of mulberry as influenced by micronutrients spray

	I Crop (June 91)			II Crop (Oct. 91)			III Crop (Jan. 92)		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
M <sub>1</sub>	86.3	102.6	82.8	89.8	105.1	78.8	85.7	95.5	80.5
M <sub>2</sub>	85.1	95.2	85.5	83.8	92.0	79.7	76.8	86.6	62.2
M <sub>3</sub>	84.6	96.2	81.9	87.8	101.1	80.5	76.0	85.8	83.4
M <sub>4</sub>	91.6	104.8	81.9	91.8	103.7	82.3	86.8	98.2	84.1
M <sub>5</sub>	86.1	90.3	82.5	82.0	89.8	80.4	75.1	84.2	74.5
CD									
M		7.24		5.5		7.8			
S		3.46		5.1		7.7			
M at S		7.74		10.9		16.1			
S at M		2.20		11.49		17.2			

Table 4. Leaf yield (kg/ha) of mulberry as influenced by foliar application of micronutrients

	I Crop (June 91)			II Crop (Oct. 91)			III Crop (Jan. 92)		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
M <sub>1</sub>	3667	6000	4167	3917	4583	2883	3750	4833	3083
M <sub>2</sub>	4500	5083	2917	3417	3333	2917	3333	3833	2917
M <sub>3</sub>	3417	4917	3083	4000	4250	3333	3500	3833	3417
M <sub>4</sub>	3667	5167	3667	4083	4750	2917	3917	4833	3417
M <sub>5</sub>	3250	3417	3000	3833	4333	3167	3083	3917	3250
CD									
M		833		417		167			
S		500		167		167			
M at S		1833		500		333			
S at M		1116		365		333			

Sitarama Iyengar, 1966). Leaf yield was obtained by the sum totals of different pickings from corresponding plots together with the final harvest after the rearing was over.

## RESULTS AND DISCUSSION

### Plant height (cm)

Spraying FeSO<sub>4</sub> at 0.5 per cent on 20th and 40th day of pruning influenced the plant height

significantly during second and third seasons whereas during 1st season it was influenced by ZnSO<sub>4</sub> 0.25 per cent (Table 1).

### Number of leaves / plant

The number of leaves when pooled over pickings showed that FeSO<sub>4</sub> at 0.5 per cent sprayed at 20th and 40th day of pruning influenced greatly during 1st and second seasons whereas it was on

par with ZnSO<sub>4</sub> 0.25 per cent during third season (Table 2). Greater influence of Mg at 1.25 kg and Fe at 5.0 kg was earlier reported by Lokanath and Shivashankar (1986).

#### Leaf area (cm<sup>2</sup>)

The leaf area was influenced significantly by the foliar spray of FeSO<sub>4</sub> (0.5%), ZnSO<sub>4</sub> (0.25%) and FeSO<sub>4</sub> (0.5%) at 20th and 40th day during 1st, 2nd and 3rd seasons respectively (Table 3). Significant influence of Mg and Fe at 2.5 kg/ha was also observed by Lokanath and Shivashankar (1986).

#### Leaf yield (kg/ha)

The leaf yield of mulberry was increased by the foliar application of FeSO<sub>4</sub> (0.5%) and ZnSO<sub>4</sub> (0.25%) sprayed at 20th and 40th day after pruning (Table 4).

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### RESEARCH NOTES

## RELATIVE PERFORMANCE OF LINSEED CULTIVARS UNDER SATPURA PLATEAU CONDITION

Linseed is an important crop grown for various industrial use. The productivity (209 kg/ha) in Madhya Pradesh is low compared to the national average (266 kg/ha). With a view to obtain relatively higher yielding variety, nine linseed varieties were planted for four years (1980-81 to 1983-84) at the Zonal Agriculture Research Station, J N K V V, Chhindwara (M.P.). The crop was

fertilised with 30 Kg N and 15 Kg P<sub>2</sub>O<sub>5</sub> per hectare.

It is evident (Table) that R-7, R-17 and J L S - 1 matured as early as 105 days while R-575 matured late by ten days (115 days). Jawahar 23 - 10 has taken 110 days to mature. Jawahar 23 - 10 and R-575 exhibited white flowers while others have blue flowers.

Table 1. Yield of linseed varieties during 1980-81 to 1983-84.

Variety	Grain yield (kg/ha)				Mean yield (Pooled)	Days to		Flower colour
	1980-81	1981-82	1982-83	1983-84		Flower	Maturity	
Jawahar 23-10	2063	1667	917	1197	1460.8	59	110	White
SPS 49-2	2000	1605	775	1007	1346.8	58	112	Blue
R-552	1980	1641	804	708	1283.3	57	108	Blue
R-556	2055	1476	804	700	1258.8	58	112	Blue
R-575	1900	1590	815	720	1256.3	62	115	White
JLS-1(C)	2025	1514	742	704	1246.3	53	107	Blue
R-7	1833	1490	735	777	1208.8	52	105	Blue
R-17	1725	1549	776	729	1194.8	54	105	Blue
T-397 (C)	1596	1528	696	701	1130.3	57	107	Blue
C.D. at 5%	238	132	-	130	145.7			

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