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ECO FRIENDLY EFFECT OF PYRIDOXINE AQUEOUS SPRAYS ON GROWTH, LEAF NPK CONTENTS AND HERB YIELD OF PEPPERMINT (MENTHA PIPERITA L.)

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ABSTRACT

A field experiment was conducted during late Rabi season (Jan-May 2014) on Peppermint (Mentha piperita L.) to study the effect of different concentrations of pyridoxine aqueous sprays solutions (0.01, 0.02, 0.03, 0.04 and 0.05%) applied 40 days after sowing on growth (Leaf no., fresh and dry weight per plant), leaf NPK (at 50, 70, and 90 days) content and herb yield (t/ha) at harvest. It was observed that 0.03% pyridoxine aqueous sprays solution was best for the most of growth characteristics. Moreover, the herb yield was also noted that maximum with the same 0.03% pyridoxine aqueous sprays solution. The leaf NPK content showed a gradual decrease at all selected growth periods.

Keywords: Pyridoxine, Growth Parameters, Leaf NPK Content and Herb Yield.

I. INTRODUCTION

Productivity of a plant could be thought of initially as a combination of its capacity for growth, favorable biochemical reactions leading to fungal yield potential. It seems probable that many more widely useful commercial properties of plants could be improved by selection of the appropriate cultural practice to affect the physiology of the plat in the required way. Profitable investigations, as in might be conducted in such qualities as growth, herb yield and essential oils used for flavoring. Economics of production would ultimately decide the profitability of peppermint oil production and optimization of inputs would be necessary prerequisite if peppermint production has to be adopted with economic viability in the country. Mentha piperita L. (Peppermint) comes in the second largest group of essential oils. Treatment of seeds with very dilute solutions of B-Vitamins that stimulated the growth of roots in the seedlings so that they could explore efficiently. The soil around them (Ahmad, 1975, Afridi et al., 1979). There effects would be ultimately manifested in better growth and higher productivity coupled with considerable fertigue economy (Samiullah et al., 1985, Ansari 1986). The present author decided, therefore to study the effect of different concentrations of aqueous pyridoxine solutions application on growth leaf nutrient (NPK) content at various stages as well as on herb yield at harvest in peppermint Mentha piperita L.

II. MATERIALS AND METHODS

This field experiment was performed during late “Rabi” season of 2014 in a sandy loan soil at experimental field of G.F. College, Shahjahanpur. The experiment was designed to study the effect of different concentration (0, 0.01, 0.02, 0.03, 0.04 and 0.05 % aqueous solution) of pyridoxine applied at 40 days to sowing on foliage on growth (leaf no. fresh and dry weight / plant), leaf nutrient (NPK) content at 50, 70 and 90 days to sowing and herb yield (t/ha) at harvest in 2 x 2 sq.m bed. The sowing was done on 5 January 2014 a uniform dose of 50 kg N, 60 Kg each of P and K was grown uniformly to each bed. FYM W 20 q/ha was uniformly used during field preparation. The crop was irrigated fortnightly. The harvesting was done on 10 May 2014. The weeding was done when required, 1 % aqueous Bavistim treatments to stolons before sowing uniformly for 2 hours.

Table 1. Effect of different concentrations of pyridoxine aqueous sprays solutions on growth, peppermint (*Mentha piperita L.*).

Stage Concentrations Pyridoxine	Growth Characteristics			
	%	Leaf No.	Fresh wt / plant (g)	Dry wt / plant (g)
50 days	0.00	120.10	10.50	3.20
	0.01	125.10	15.20	3.80
	0.02	132.30	20.50	4.10
	0.03	135.30	35.10	6.10
	0.04	130.10	30.10	5.80
	0.05	130.05	30.10	5.70
70 Days	0.00	180.20	18.20	5.10
	0.01	195.30	24.10	7.20
	0.02	205.50	44.50	8.90
	0.03	230.30	55.60	10.20
	0.04	210.10	50.50	90.10
	0.05	208.50	50.40	9.10
90 Days	0.00	205.10	30.10	8.10
	0.01	230.50	60.20	20.20
	0.02	280.10	84.10	25.25
	0.03	315.10	115.10	30.10
	0.04	305.10	110.20	24.90
	0.05	305.00	111.10	24.95

III. RESULTS AND DISCUSSION

Table 1 clearly indicates that there was a gradual increase in leaf number, fresh and dry weight / plant as a result of increased pyridoxine concentrations, 0.03 % proved most effective as reported by Guenther (1955) who maintained that a plant would respond to exogenous supply of the vitamins levels were low. This would be expected to solve some of the controversies and imperfectly explained observations.

Similarly a gradual decrease in leaf (NPK) nutrient content throughout shows very common dilution with growth effect (Table 2) Kishor and Abbas (2003). As far as the herb yield was concerned (Table 3), highest value was noted in 0.03 % aqueous pyridoxine solution. 46.61 % more than control, showing most optimal level of vitamin (Pyridoxine) in peppermint (*Mentha piperita L*).

Table 2. Effect of different concentrations of pyridoxine aqueous spray on leaf nitrogen content solutions on Leaf NPK content of peppermint (*Mentha piperita L.*).

Stage Concentrations Pyridoxine	Growth Characteristics			
	%	Leaf nitrogen content %	Leaf phosphorus %	Leaf protein %
50 days	0.00	0.88	0.45	0.80
	0.01	0.92	0.50	1.10
	0.02	0.98	0.55	1.15
	0.03	1.10	0.58	1.20
	0.04	1.10	0.48	1.15

	0.05	1.14	0.48	1.15
70 Days	0.00	0.88	0.40	0.68
	0.01	0.90	0.48	0.70
	0.02	0.96	0.52	0.80
	0.03	0.98	0.54	0.90
	0.04	0.98	0.44	0.80
	0.05	1.10	0.44	0.80
90 Days	0.00	0.80	0.29	0.50
	0.01	0.84	0.34	0.55
	0.02	0.88	0.38	0.58
	0.03	0.94	0.40	0.60
	0.04	0.98	0.32	0.52
	0.05	0.98	0.32	0.54

Table 3. Effect of different concentrations of pyridoxine aqueous sprays solutions on herb yield (t/ha).

Pyridoxine Concentration (%)	Herb Yield (t/ha)
0.00	12.55
0.01	14.60
0.02	16.20
0.03	18.40
0.04	16.20
0.05	14.40

C.D at 5 %
* Significant

IV. CONCLUSION

Experiments clearly displayed there was a gradual increase in leaf number, fresh and dry weight / plant as a result of increased pyridoxine concentrations. The 0.03 % concentration was most effective that a plant would respond to exogenous supply of the vitamins levels were low.

Similarly a gradual decrease in leaf (NPK) nutrient content throughout shows very common dilution with growth effect. As far as the herb yield was concerned, highest value was noted in 0.03 % aqueous pyridoxine solution. 46.61 % more than control, showing most optimal level of vitamin (Pyridoxine) in peppermint (*Mentha piperita L*).

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