

## INFLUENCE OF BIO- K AND INORGANIC FERTILIZERS ON GROWTH AND YIELD OF TOMATO (*LYCOPERSICON ESCULENTUM* MILL)

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**Abstract:** The study on influence of Bio-K and inorganic fertilizers on growth and Yield of tomato (*Lycopersicon Esculentum* Mill) was carried out at Department of Horticulture, Vasantrya Naik Marathwada Agricultural University, Parbhani (M.S.) during the year 2004-05. Among the various combinations overall performance of treatment T<sub>3</sub> which received Bio-K 1ml per lit. of water and RDF of NP and 50 per cent K was found superior in increasing plant height, number of branches per plant, number of leaves per plant, days for 50 per cent flower, number of fruits per plant, total yield per hectare, shape index, juice per cent, peel per cent, TSS and ascorbic acid than rest of the treatments under study. While the treatment control recorded less vegetative growth, flowering, yield parameters.

**Keywords:** Bio-k, Growth, inorganic fertilizers, Yield.

**Introduction:** Considerable progress has been made in vegetable research and development but with the increase in population compulsion could be not only to stabilize agricultural production but also to increase it further in sustainable vegetable production. Nitrogen promoted vegetative growth, flower and fruit set. High level of phosphorus to root zone is essential for rapid development, good utilization of water and other nutrients by plants. Potassium level also exerts a strong influence on metabolism in tomato fruits. Fruits from potash deficient plant were low in total soluble solids, sugar, acid content and lycopene pigments. To uptake the potassium (K) from soil in a very right way an activator that is Bio-K (Amrut Akash) is prepared by botanically activated and potentialized botanical extract of ginger, adulsa and vidang using plant residues. By spraying this bio-K on different levels the efficiency of roots of sucking nutrient will be increased. Thus the trial entitled "Influence of bio-K and inorganic fertilizers on growth and yield of tomato" was undertaken.

**Material And Methods:** The present investigation entitled "Influence of bio-K and inorganic fertilizers on growth and yield of tomato (*Lycopersicon esculentum* mill.)" was conducted at Department of Horticulture, Vasantrya Naik Marathwada Agricultural University, Parbhani (M.S.) A field experiment was laid out in Rabi season of 2004-05 in Randomized Block Design with thirteen treatments and three replications. The treatment details are as follows:

T <sub>1</sub>	Bio-K 1 ml/lit of water + RDF of NP and K
T <sub>2</sub>	Bio-K 1 ml/lit of water + RDF of NP and 75% K
T <sub>3</sub>	Bio-K 1 ml/lit of water + RDF of NP and 50% K
T <sub>4</sub>	Bio-K 1 ml/lit of water + RDF of NP and 25% K

T <sub>5</sub>	Bio-K 2 ml/lit of water + RDF of NP and K
T <sub>6</sub>	Bio-K 2 ml/lit of water + RDF of NP and 75% K
T <sub>7</sub>	Bio-K 2 ml/lit of water + RDF of NP and 50% K
T <sub>8</sub>	Bio-K 2 ml/lit of water + RDF of NP and 25% K
T <sub>9</sub>	Bio-K 3 ml/lit of water + RDF of NP and K
T <sub>10</sub>	Bio-K 3 ml/lit of water + RDF of NP and 75% K
T <sub>11</sub>	Bio-K 3 ml/lit of water + RDF of NP and 50% K
T <sub>12</sub>	Bio-K 3 ml/lit of water + RDF of NP and 25% K
T <sub>13</sub>	Recommended dose of N, P and K (control)

Parbhani Yashashri variety was used for the experiment. Different potassium level have been applied with recommended dose of N and P one day before transplanting. Amrut Aksash (Bio-K) is a homeopathic formulation by using Adathoda Vasakas 1ml(0.01%), Officinals 1ml (0.01%), Bmbejin ribes 1ml(0.01%) and Aqua solvent 99.97 per cent was sprayed with three sprays at 15 days interval from time of transplanting i.e. first spray at vegetative growth stage, second spray at flower initiation stage and third spray at flowering stage. The biometric observations were recorded and subjected to statistical analysis.

### Results and Discussion:

**Vegetative parameters:** Data presented in Table 1 indicated that the application of bio-fertilizer and Inorganic fertilizer with various level increased the vegetative growth of plant as compared to the control. Significantly maximum plant height (103.05 cm), number of branches (9.45) and number of leaves per plant (107.06) were recorded in treatment T<sub>3</sub> applied with Bio-K 1 ml/lit of water + RDF of NP and 50%K, while minimum plant height (91.21 cm), number of branches per plant (7.08) and number of

leaves per plant (89.90) were recorded in treatment T<sub>13</sub> i.e. RDF of NP and K. The plants in control might have been deprived of essential elements. Hence, lesser growth was observed application of Bio-K 1 ml/lit. of water + RDF of NP and 50 per cent K might have been providing more nutrients and showed more height number of branches as well as more number of leaves per plant. The results are in a agreement with the results of (kumaran *et.al.*,1998) in tomato.

**Flowers and Yield Parameters:** Treatment T<sub>3</sub> required less number of days (40.00) for 50 per cent flowering, while treatment control required more

number of days (44.00) for 50 per cent flowering. The treatment T<sub>3</sub> (Bio-K 1 ml/lit. of water + RDF of NP and 50% K) produced more number of fruits (45.15 per plant) and total yield per hectare (406.38 q), while less number of fruits (35.58 per plant) and total yield (300.27 q/ha) in control. The treatment T<sub>3</sub> resulted in more plant height and more number of leaves per plant which further ultimately resulted in higher plant yield. The results are in conformity with the findings of (Felipe and Casmova, 2000) who studied the effect of K (0, 90, 180, 270 kg/ha) on the yield and number of fruits per plant and noted that the best treatment was 180 kg/ha.

Tr.No.	Treatments	Vegetative parameters			Flowering	Yield parameters	
		Height of plant (cm)	No.of branches per plant	No.of leaves per plant	Days for 50 per cent flowering	No.of fruits per cent	Total yield (q/ha)
T <sub>1</sub>	Bio-K 1 ml/lit of water + RDF of NP and K	93.67	8.02	97.17	43.33	40.19	360.09
T <sub>2</sub>	Bio-K 1 ml/lit of water + RDF of NP and 75% K	95.83	8.52	97.20	44.00	40.67	368.24
T <sub>3</sub>	Bio-K 1 ml/lit of water + RDF of NP and 50% K	103.05	9.45	107.06	40.00	45.15	406.38
T <sub>4</sub>	Bio-K 1 ml/lit of water + RDF of NP and 25% K	99.93	8.64	105.80	41.00	39.99	399.72
T <sub>5</sub>	Bio-K 2 ml/lit of water + RDF of NP and K	96.06	8.93	100.60	45.00	38.78	384.90
T <sub>6</sub>	Bio-K 2 ml/lit of water + RDF of NP and 75% K	93.93	7.96	95.56	43.00	37.48	355.18
T <sub>7</sub>	Bio-K 2 ml/lit of water + RDF of NP and 50% K	92.8	7.75	92.99	44.00	37.17	348.89
T <sub>8</sub>	Bio-K 2 ml/lit of water + RDF of NP and 25% K	99.31	9.10	105.18	43.00	36.78	396.66
T <sub>9</sub>	Bio-K 3 ml/lit of water + RDF of NP and K	97.79	8.96	100.99	44.00	37.25	389.72
T <sub>10</sub>	Bio-K 3 ml/lit of water + RDF of NP and 75% K	98.65	9.06	103.76	42.00	35.35	393.05
T <sub>11</sub>	Bio-K 3 ml/lit of water + RDF of NP and 50% K	94.33	8.64	99.57	42.00	32.22	378.33
T <sub>12</sub>	Bio-K 3 ml/lit of water + RDF of NP and 25% K	92.43	7.66	91.22	43.00	33.48	340.83
T <sub>13</sub>	Recommended dose of N, P and K (control)	91.21	7.08	89.90	44.00	35.58	300.27
	SE $\pm$	2.227	0.320	2.435	0.71	1.280	16.53
	CD at 5%	6.492	0.933	7.098	2.069	3.730	48.19

#### References:

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