

RESPONSE OF MEDICINAL YAM (*DIOSCOREA FLORIBUNDA* MART AND GAL) TO MICRONUTRIENTS

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Medicinal yam (*Dioscorea floribunda*) Mart and Gal), a natural source of diosgenin, is being cultivated in several parts of India in recent years. Being a heavy feeder of nutrients, its response to fertilization depends mainly on the fertility status of the soil (Anon, 1975). The large scale use of major nutrients, many a time, leads to unexpected deficiency of micronutrients. Many such instances have been reported with high yielding varieties from different parts of India (Halemani *et al.* 1975). The higher levels of mineral fertilizers added frequently result in antagonistic effect between applied major and micronutrients (Bingham and Garber, 1960; Ellis *et al.*, 1964). With this background, the present studies were carried out to know the response of medicinal yam to soil and foliar application of different micronutrients either individually or in combination.

Materials and Methods

The experiment was conducted at the Horticultural Experiment Station of Indian Institute of Horticultural Research, Hesaraghatta, Bangalore during 1978-79 and 1979-80 under irrigated condition on clay loam soil. The fertility status of the experimental field is presented in Table 1. There were 13 treatments (Table 2) involving soil and foliar application of different micronutrients either singly or in combination along with 3 control. A randomised block design was adopted with three replications. The net plot size was 5.4 sq.m. The crop was supplied with a uniform dose of 300 kg N, 150 kg P_2O_5 and 150 kg K_2O per ha. Phosphorus and potassium were applied at the time of planting and nitrogen was applied in two equal splits, one during July and the other during September. Application of micronutrients through soil was done at the time of planting and foliar spray was done during August when the crop had attained sufficient foliage. The neutralised micro-nutrient solution of 0.5 per cent concentration was used for foliar spray at the rate of 2000 litres/hectare (1080 ml/5.4 sq.m). Medicinal yam (Cv. FB (C)-1), was planted with a spacing of 60 x 30 cm in the first week of May and harvested in March during both the years. Only crowns were used as the planting material which were pre-treated with 0.3 per cent Benomyl to check the tuber rot. Diosgenin content in tubers was determined by the procedure developed by Selvaraj (1971) and expressed on dry weight basis.

pH	6.3
Organic carbon (%)	0.40-0.55
Available P (kg/ha)	6.6-7.1
Available K (kg/ha)	116-129
Available Fe (ppm) (DTPA extractable)	12.00
Available Mn (ppm) (DTPA extractable)	12.80
Available Cu (ppm) (DTPA extractable)	3.50
Available Zn (ppm) (DTPA extractable)	2.24

Table 2. Tuber yield its components diggins contents and yield of medicinal yam as affected by different treatments

Treatment	Tuber spread, cm.		Tuber weight, g/plant		Tuber yield, q/ha		D.N. content, %	Diggings, min yield, kg/ha
	1978-79	1979-80	1978-79	1979-80	1978-79	1979-80		
1 NPK + Fe sulphate, 10 kg/ha, soil	193.5	197.7	260.7	248.6	133.82	123.98	2.54	108.60
2 NPK + Mn sulphate, 10 kg/ha, soil	192.8	208.8	238.5	277.9	118.20	135.80	2.80	95.98
3 NPK + Zn sulphate, 10 kg/ha, soil	182.0	182.8	287.5	242.4	115.41	118.52	2.82	94.05
4 NPK + Cu sulphate, 10 kg/ha, soil	174.4	187.8	232.8	250.6	118.20	120.48	2.97	94.78
5 NPK + B as broax, 10 kg/ha, soil	174.8	194.8	202.5	207.9	113.70	181.48	3.05	108.23
6 NPK + Mo as molybdate, 2.5 kg/ha, soil	184.2	191.4	24.3	256.5	120.89	125.92	2.81	80.81
7 NPK + combination of 1 to 6, soil	184.5	190.9	219.5	244.2	108.99	120.29	2.80	91.84
8 Foliar application of FeSO ₄ + NPK, soil	159.1	190.8	211.8	258.8	104.80	124.11	8.08	104.88
9 Foliar application of MnSO ₄ + NPK, soil	181.3	182.0	248.8	254.5	112.91	124.88	2.49	98.07
10 Foliar application of ZnSO ₄ + NPK, soil	184.5	202.9	185.5	278.3	87.70	188.85	2.95	74.58
11 Foliar application of CuSO ₄ + NPK, soil	177.7	191.8	242.7	252.1	116.11	123.48	2.88	95.58
12 Foliar application of Fe, Mn, Zn, Cu + NPK, soil	140.0	155.7	192.9	202.8	91.91	99.88	2.18	52.92
13 NPK alone, soil	198.7	217.0	289.5	291.4	180.78	140.341	8.01	108.60
S.E.m ±	24.4	18.3	82.2	23.7	16.8	11.73	0.82	18.58
C. D. 5%	N.S.	N.S.	N.S.	N.S.	N.S.	84.24	N.S.	49.02

സംഗ്രഹം

ഔഷധ കാവത്തുകളിൽ സൂക്ഷ്മ മൂലകങ്ങളുടെ പ്രതികരണം മനസ്സിലാക്കുന്നതിന് ബാംഗ്ലൂരിലെ ഹോർട്ടിക്കൽ ഗവേഷണ ഇൻസ്റ്റിറ്റ്യൂട്ടിൽ 1978-79 ലും 79-80 ലും നടത്തിയ പഠനത്തിൽനിന്നും ജലസേചിത സാഹചര്യത്തിൽ വളർത്തപ്പെടുന്ന കാവത്തുകളിൽ മണ്ണിലൂടെയോ, പർണ്ണപോഷണം മൂലമോ സൂക്ഷ്മ മൂലകങ്ങൾ നൽകുന്നത് കാവത്തിന്റെ വിളവനേയും ഡയോസജനിൻ ലഭ്യതയേയും കുറയ്ക്കുന്നതായി കാണപ്പെട്ടു. ഈ സൂക്ഷ്മ മൂലകങ്ങളിൽതന്നെ ഇരുമ്പ്, മാംഗനീസ്, സിങ്ക്, ചെമ്പ് എന്നിവയുടെ പർണ്ണപോഷണത്തിന്റെ പ്രതികരണം വളരെ ഗണ്യമായും അനുഭവപ്പെട്ടു.