

Influence of spacing, time of planting and seed corm size on yield of elephant foot yam [*Amorphophallus paeoniifolius* (Dennst.)] Nicolson cv. GAJENDRA under South Gujarat conditions

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Accepted : March, 2010

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ABSTRACT

An experiment was formulated and conducted under AICRP on tuber crops during *Kharif* season of 2003-04 and 2004-05 at Rambhas Farm, Krishi Vigyan Kendra of Navsari Agricultural University, Gujarat, India. Three spacing's, four planting dates and four corm sizes were evaluated on elephant foot yam variety Gajendra, in split plot design. Elephant foot yam corms planted from March to April, sprouted faster in South Gujarat conditions. Spacing also played crucial role. Bigger size corm (1 kg), planted at the spacing of 75 cm x 50 cm in the month of May, gave the highest yield (99200 kg/ha).

Key words : Elephant foot yam (EFY), Spacing, Corm size, Planting time and yield

Tuber crops over the past many years have created a niche in the food security of millions of people, especially in the tropical and subtropical regions of the world, as they form the third most important food crops after cereals and grain legumes.

Amorphophallus paeoniifolius (Dennst.) Nicolson, locally known as elephant foot yam (EFY) belongs to the botanical family Araceae, and sub family Lasioideae of the monocotyledons, is an important tropical tuber crops grown for edible corms as well as for its use as a treatment of digestive disorders. There is ample scope for its adoption as a cash crop due to the high production potential and popularity as a vegetable. In addition, it is used in pharmaceutical preparation in Ayurvedic medicines. The crop is vegetatively propagated by corms.

Elephant foot yam is basically an underground stem tuber. Its cultivation is more or less limited to India, Philippines, Indonesia, Sri Lanka and South East Asia. It has high dry matter production capability per unit area than most of the vegetables. It is a highly remunerative crop and is hence profitable.

Standardization of planting time and planting distance is prerequisite for the beneficial cultivation of any crop. In the present study, the effect of planting time, seed corm size and spacing on yield of elephant foot yam *Amorphophallus paeoniifolius* (Dennst.) Nicolson was investigated.

MATERIALS AND METHODS

The experiment was conducted under AICRP on

tuber crops at Rambhas farm, Krishi Vigyan Kendra of Navsari Agricultural University during the *Kharif* season of 2003-04 and 2004-05. Different corm sizes (T_1 -125 g, T_2 -250 g, T_3 -500g and T_4 -1 kg) were planted on different dates (D_1 - 5th March, D_2 - 5th April, D_3 - 5th May and D_4 - 5th June) with three spacing (S_1 - 75 cm x 50 cm, S_2 - 75 cm x 75 cm and S_3 - 100 cm x 100 cm). Experiment was laid out in Split Plot Design. The data recorded on corm yield were statistically analyzed by appropriate procedure to Split Plot Design as describe by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

Result (Table 1) showed that the time of planting played important role in sprouting of elephant foot yam. Corms planted from March to April sprouted faster. Verma *et al.* (1992) observed that planting date had a significant effect on the corm bulking rate (CBR). Peak CBR occurred between late July and early September. Planting on 1st March recorded maximum CBR whereas, planting on 15th June recorded the lowest CBR.

Spacing also played crucial role. Maximum yield was obtained in closure spacing (75 cm x 50 cm). Singh *et al.* (1997) also observed same type of correlation between corm yield and spacing. Corm yield was greater at the narrowest spacing. George and Nair (1993) observed that when *Amorphophallus paeoniifolius* corms weighing 250, 500 or 750 g were planted at different spacings of 60 x 45, 90 x 45 or 90 x 90 cm, corm yield was decreased

Table 1 : Effect of spacing ,time of planting and seed corm size and on yield (kg/ha) of elephant foot yam cv. GAJENDRA under South Gujarat conditions

Sr. No.	Treatments	T ₁ (125 g)	T ₂ (250 g)	T ₃ (500g)	T ₄ (1.0kg)
1	D ₁ S ₁	24000	39777	62889	94533
2	D ₂ S ₁	22888	32267	56222	96888
3	D ₃ S ₁	23511	32355	66266	99200
4	D ₄ S ₁	17400	32044	47066	82611
5	D ₁ S ₂	15467	22370	45200	64000
6	D ₂ S ₂	15422	23170	45777	74074
7	D ₃ S ₂	14962	20266	37037	62074
8	D ₄ S ₂	12859	22548	31526	56681
9	D ₁ S ₃	9016	13916	24600	38250
10	D ₂ S ₃	8983	15500	23166	35183
11	D ₃ S ₃	8117	10800	22583	36363
12	D ₄ S ₃	6300	12750	20033	33100
	S.E.±	C.D.	C.V. (%)		
D	2754.87	NS	21.19		
S	686.06	1973.06			
DS	1431.10	4098.75	18.56		
T	1944.93	8752.22			
DT	1133.76	3142.62			
ST	964.78	2688.3			
DST	1971.36	5464.34	13.26		

NS = Non significant

with wider spacing. The highest corm yield of 39.62 t/ha was obtained with seed corms weighing 500 g planted at 60 x 45 cm spacing. Goswami and Sen (1992) has reported the similar type of results.

When bigger size seed tuber (1 kg) planted at 75 cm X 50 cm in the month of May, it gave the highest yield (D₃S₁T₄) (Table 1). Sen *et al.* (1996) observed larger and whole seed corms produced higher corm bulking rates, average corm weights and total corm production in elephant foot yam. Mishra and Mishra (1980) reported the optimum seed corm size of elephant foot yam for planting in Bihar was from 0.5 to 1 kg; planting heavier or lighter corms was not profitable. 5 set sizes (50, 100, 150, 200 or 250 g) of *Amorphophallus paeoniifolius* were grown at 30 x 25, 30 or 35 cm spacing. Corm yield was highest (85.8 t/ha) with larger sets grown at closure spacing (Das *et al.*, 1995). The results of the present investigation are in agreement with those reported by Dutta *et al.* (2003) as well as Sen *et al.* (1984).

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