



Effect of Spacing and Corm Size on Growth and Yield of Elephant Foot Yam (*Amorphophallus paeoniifolius*) Under South Gujarat Conditions

Amorphophallus paeoniifolius (Dennst.) Nicolson cv. "Gajendra" locally known as Suran (elephant foot yam) belongs to the family Araceae and sub family Lasioideae of the monocotyledon. It is an important tropical tuber crop grown for edible corms as well as for its use in the treatment of digestive disorders. There is ample scope for its cultivation as a commercial crop due to its high production potential and popularity as a vegetable. In addition, it is used in pharmaceutical preparations in Ayurvedic medicines. The crop is vegetatively propagated by corms.

Elephant foot yam is basically, an underground stem tuber. Its cultivation is confined 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.

Standardization of spacing and sett size is a pre-requisite for the profitable cultivation of any crop. Hence, in the present study, the effect of seed corm size and spacing on growth and yield of elephant foot yam *Amorphophallus paeoniifolius* (Dennst.) Nicolson cv. Gajendra was investigated.

The field experiment was conducted in Gajendra variety of elephant foot yam at Regional Horticultural Research Station under the aegis of ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari, Gujarat during the *Kharif* season of 2009-10 (April-October). The soil of the experimental site is deep black cotton belonging to the order inceptisols. Chemical analysis of initial soil samples revealed that the soil reaction was alkaline (pH: 8.12) with electrical conductivity 0.23 m mhos cm^{-1} , medium organic C (0.58%), low available N (240 kg ha^{-1}), high available

P (39.5 kg ha^{-1}) and K (535.0 kg ha^{-1}) contents. The climate of the location is typically tropical, characterized by fairly hot summer, mild winters and more humid and warm monsoon. The total rainfall received during the crop growth period was 71.33 mm and the average maximum and minimum temperatures were 32.15°C and 23.62°C respectively

The experiment was laid out in Randomized Block Design with three replications. Nine treatment combinations including three corm sizes (P_1 -250 g, P_2 -500 g and P_3 -750 g) and three different spacing (S_1 - 60 cm x 60 cm, S_2 - 75 cm x 50 cm and S_3 - 75 cm x 60 cm) were evaluated. The crop was irrigated. Farmyard manure @ 15 t ha^{-1} and fertilizers to supply NPK @ 100: 50: 150 kg ha^{-1} were applied. Farmyard manure was applied at the time of land preparation. Full dose of P and half of N and K was applied in pits at the time of planting. The remaining dose of N and K was applied at 45 days after planting, i.e., at the time of weeding and earthing-up. The data recorded on growth and yield parameters were statistically analyzed as described by Panse and Sukhatme (1967).

The study indicated that medium size corm, P_2 (500 g) planted at the widest spacing, S_3 (75 cm x 60 cm) was beneficial for getting significantly higher yield in elephant foot yam (74.59 t ha^{-1}) (Table 1). The effect of corm size and spacing on plant height of elephant foot yam was not significant during the course of investigation. The largest diameter of 24.57 cm was also noticed in the above treatment combination. The result of the present investigation is in agreement with those reported by Mishra and Mishra (1980), Sen et al. (1984), Goswami and Sen (1992), Das et al. (1995), Dutta et al. (2003) and Saravaiya et al. (2010).

Table 1. Effect of spacing and corm size on growth and yield of elephant foot yam

Treatments	Plant height (cm)	Corm diameter (cm)	Corm yield (t ha ⁻¹)
P ₁ S ₁	92.67	19.50	51.09
P ₁ S ₂	104.33	19.03	42.21
P ₁ S ₃	96.00	20.50	60.33
P ₂ S ₁	112.33	21.93	34.09
P ₂ S ₂	101.00	22.87	47.59
P ₂ S ₃	116.00	24.57	74.59
P ₃ S ₁	108.33	20.63	39.76
P ₃ S ₂	96.33	21.53	34.60
P ₃ S ₃	106.00	22.03	40.11
CD (0.05)	NS	1.44	13.79

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¹Department of Vegetable Science, ASPEE College of Horticulture and Forestry, Navsari - 396 450, Gujarat, India

²Horticulture Polytechnic, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari - 396 450, Gujarat, India

Corresponding author: J.C. Patel
e-mail: jignesh_427@yahoo.co.in

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J.C. Patel¹
N.B. Patel²
S.N. Saravaiya¹
K.D. Desai¹
G.S. Tekale¹