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Short Communication

Effect of Nitrogen and Phosphorus Fertilizers and Organic Manure on Growth and Yield of Indian Aloe (*Aloe barbadensis* Mill.)

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In the Thar desert, Indian aloe (*Aloe barbadensis* Mill.), commonly known as *guarpatha*, is traditionally cultivated for vegetable, pickle and medicinal purposes. The gel produced from its mature pads is used in industry to prepare shampoo, face creams and moisturising agents (Singh *et al.*, 1995). Aloe can be grown on soils in low fertility soils (Anonymous, 1959; Singh *et al.*, 1995). Some farmers around Bikaner have planted aloe offshoots after applying wood ash to enhance their establishment and subsequent growth (Pareek and Inder Mohan, 1995). Information on the use of organic or inorganic fertilizers in its cultivation is not available. However, preliminary observations have shown that the crop responds to application of FYM and compost (Singh *et al.*, 1995).

A field experiment was conducted at NRCAH Farm on loamy sand having 89.5% sand, 6.4% silt and 4.1% clay, 1.2 g kg^{-1} organic carbon, 12 kg ha^{-1} available P, 180 kg ha^{-1} available K, pH 8.2 and 0.03 dS m^{-1} electrical conductivity. The experiment comprised six treatments: no manure and fertilizers (control, T_1); 100 t FYM ha^{-1} (T_2); 125 kg P_2O_5 ha^{-1} (T_3); 125 kg N ha^{-1} (T_4); 100 t FYM + 125 kg P_2O_5 ha^{-1} (T_5) and 100 t FYM + 125 kg P_2O_5 + 124 kg N ha^{-1} (T_6). The entire dose of FYM and phosphorus in the form of diammonium phosphate (DAP) was applied as basal dose at the time of transplanting, while nitrogen was applied in the form of urea in four split doses, i.e., first at the time of transplanting and the remaining three doses after each picking of pads during the year. The experiment was conducted in randomised block design with four replications. The plot size was 2 x 2 m. Six-month-old suckers of sweet type from Bikaner local were planted at row x plant spacing of 60 x 60 cm in pits (15 cm deep) in the month of February 1996. In the first month of planting, watering was done at weekly interval and thereafter, fortnightly watering was done. The pads were harvested quarterly. The total pad yield obtained in four pickings during a year have been presented on hectare basis.

The data pertaining to pad yield and yield attributes are given in Table 1. The fresh weight of pads was the highest (43.95 t ha^{-1}) in treatment T_6, while other treatments also increased the yield over control. Application of nitrogen alone increased pad yield more than that by combined application of FYM and phosphorus fertilizer, while application of FYM alone was better than application of phosphorus alone.

Table 1. Effect of nitrogen, phosphorus and organic manure on the pad yield and yield attributing characters of Indian aloe

Treatment	Yield (t ha^{-1})	Pad length (cm)	Pad width (cm)	Pad thickness (mm)	No. of pads $plant^{-1}$	No. of suckers $plant^{-1}$
T_1	10.90	36.22	9.10	6.44	2.35	1.38
T_2	24.70	41.74	11.45	7.38	3.00	2.96
T_3	20.65	38.05	10.90	7.25	3.00	2.50
T_4	32.85	43.10	11.85	7.95	3.10	4.50
T_5	26.07	44.37	12.84	8.00	3.08	3.32
T_6	43.95	36.00	12.84	8.05	3.33	5.34
SEM±	1.25	1.31	0.25	0.20	0.05	0.07
CD (P=0.05)	2.56	2.70	0.65	0.70	0.15	0.16

Pad length was significantly more with T6 treatment and was statistically at par with that in T_5 treatment. Application of nitrogen fertilizer and FYM alone increased the pad length over that in control and by application of phosphatic fertilizer. Similarly, the maximum pad width (12.84 cm) was recorded in T_5 and T_6 treatments. Pad thickness increased on application of manure and fertilizer and was higher in T_4, T_5 and T_6 treatments. Number of pads per plant was the highest in treatments receiving nitrogen alone or in combination with FYM and phosphatic fertilizer. The same trends were observed for number of suckers per plant.

It is well known that application of nitrogenous fertilizers increases vegetative growth and flesh content of leafy crops. Similar results in increasing pad length, width, thickness and fresh pad weight were obtained in Indian aloe by application of nitrogen alone or in combination with manure and fertilizers. In poor soils, application of even FYM alone increased the pad yield. Thus, Indian aloe does respond to application of organic and nitrogenous fertilizers as also reported by Singh *et al.* (1995). However, further studies are needed on these aspects to optimise the use of nutrients to obtain maximum productivity and quality in Indian aloe.

References

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