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## Cultivation of *dracaena Fragrans Cv. Massangeana* as an intercrop in guava in different spacing pattern

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#### Abstract

The present investigation “Cultivation of *Dracaena fragrans* cv. *Massangeana* as an intercrop in guava in different spacing pattern” was conducted in Research Field, Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, during March, 2020 to August 2020. The seedlings were planted at a plot of 1 meter with various spacing pattern. The experiment was laid out with nine treatments replicated thrice in Randomized Block Design. The plants were watered immediately after planting and at weekly intervals during growing period. Based on the present investigation it is concluded that T6 65cm x 55cm spacing pattern as an intercropping system in Guava (*Psidium guajava* L.) gave best plant height (cm), number of leaves per plant, plant spread (E-W and N-S), leaf area (cm<sup>2</sup>), leaf length (cm), leaf width (cm) fresh leaf weight (g), dry leaf weight (g), Days taken for sprout formation after harvest and Vase life (days) of *Dracaena fragrans* cv. *Massangeana*.

**Keywords:** Spacing, randomized block design, growth, yield and *dracaena fragrans* cv. *massangeana*

#### Introduction

Cut foliage are important component of the floricultural industry, largely used as fillers in bouquet making and flower arrangements. In general, plants that are deep green with long lasting evergreen properties are commonly used by the floral industry as accents in floral arrangements (Schlosser and Blatner, 1997) Corn plant (*Dracaena fragrans* CV *Massangeana*), a member of the family Asparagaceae, is one of the important cut foliage crops used in country. It is exported to different countries from India. *Dracaena fragrans* is native to the African region of Upper Guinea, growing in humid, tropical forests. *Dracaena fragrans* CV *Massangeana*, characterized by its sword-shaped dark green leaves with a yellow stripe running along the centre, is among the *dracaena* cultivars fast gaining the attention of commercial growers.

Corn plants grow fairly slowly from one or more thick canes (stems) that produce long, narrow leaves (like those of corn) toward the top. This growth habit gives them a similar appearance to a palm tree, which is why they're sometimes referred to as “false palms.” They make good houseplants because they are tall and narrow, typically only reaching around 4 to 6 feet tall in containers, and they can withstand a fairly significant amount of abuse from casual indoor gardeners. Spring time is ideal for starting new plants, though you can typically pot nursery plants indoors at any time of year.

In India it is grown on a large scale in Kerala, Karnataka, and Kolkata. It is grown for diverse purposes. Its cultivation is becoming popular around the cities for its extensive use as cut foliage, in making bouquets, flower arrangement, in ornamental gardening it is used for indoor gardening, Edges and as pot plants etc.

It is also found suitable for intercropping in rubber, cocoa and coffee plantations. In India it is grown on a large scale in Kerala, Karnataka, and Kolkata and found to be more profitable than the main crop. As it is shade loving plant without much care it can be grown well with the main crop. Intercropping means the growing of short terms cash crops in the intervening or inter space available between two rows of main crop till it attains to proper bearing age. This will be provided greater opportunity for proper management practices under the guava plantation through intercropping *dracaena* plants. Intercropping can not only improve the health of orchard but also generate additional income and employment to the farmers, without any adverse effect on guava production.

Increased leaf production, Quality of leaf (leaf length, Leaf colour), Increased vase life are the important objectives to be recognized in commercial foliage production. With corn plants, fertilize lightly since the plants store nutrients in their canes.

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Use calcium supplements (chelated calcium or even gypsum) to prevent leaf-tip burn. Dracaenas are very sensitive to excess fluoride and boron. They most likely get this “excess” fluoride and boron from fertilizer. The cornstalk plant can burn rather easily when either of these two elements gets out of balance.

The commercial productions of ornamental plants are increasing worldwide. Its monetary value has significantly increased over the last two decades and there is a great potential for continued further growth in both domestic and international markets (Jain, 2002). About 212.5 million plants including 157 million ornamental plants amounting to 78% of the total production have been reported (Pierik, 1991 a,b). About 156 ornamental genera are propagated through tissue culture in different commercial laboratories worldwide (Rout 2006).

### Materials and Methods

The present investigation “Cultivation of *Dracaena fragrans* cv. *Massangeana* as an intercrop in guava in different spacing pattern” was carried out at Horticultural Experimental Field, Department of Horticulture, Naini Agriculture Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, during Rabi season of 2020-2021. The experiment was laid out with nine treatments replicated thrice in Randomized Block Design. Different treatment combinations were different spacing pattern that is T1(75cm x 75cm), T2(75cm x 70cm), T3(75cm x 65cm), T4(75cm x 60cm), T5(75cm x 55cm), T6(65cm x 55cm), T7(65cm x 60cm), T8(65cm x 65cm), T9(65cm x 70cm). The objectives were to assess growth and yield of *Dracaena fragrans* 'Massangeana' when it is planted as an intercrop in guava, the growth and yield of *Dracaena fragrans* 'Massangeana' when planted in less spacing than the recommended, to study vase life of leaf in distilled water. The observations were recorded on the parameters like plant height (cm), number of leaves per plant, plant spread (E-W and N-S), leaf area (cm<sup>2</sup>), leaf length (cm), leaf width (cm) fresh leaf weight (g), dry leaf weight (g), Days taken for sprout formation after harvest and Vase life (days).

Treatment notation	Treatment Combination
T <sub>1</sub>	75cm x 75cm
T <sub>2</sub>	75cm x 70cm
T <sub>3</sub>	75cm x 65cm
T <sub>4</sub>	75cm x 60cm
T <sub>5</sub>	75cm x 55cm
T <sub>6</sub>	65cm x 55cm
T <sub>7</sub>	65cm x 60cm
T <sub>8</sub>	65cm x 65cm
T <sub>9</sub>	65cm x 70cm

### Results and Discussion

The findings of the present experiment entitled, “Cultivation of *Dracaena fragrans* cv. *Massangeana* as an intercrop in guava in different spacing pattern” is being presented and discussed in the following pages under appropriate headings. Data on vegetative growth and leaf weight and yield observations were analyzed and discussion on experiment findings in the light of scientific reasoning has been stated.

#### Effect of Cultivation of *Dracaena fragrans* cv. *Massangeana* as an intercrop in guava in different spacing pattern

The experimental findings based on parameters are summarized below.

The maximum plant height (28.49, 41.31, 53.77, 63.81, 76.43 7.63 and 108.35cm) at 30, 60, 90, 120, 150 and 180 DAT was observed in T6 65cm x 55cm cm, whereas the lowest value plant height (20.35, 32.19, 38.23, 48.63, 59.5, 68.33 and 82.37cm) at 30, 60, 90, 120, 150 and 180 DAT was observed in T1 75cm x 75cm. The maximum number of leaves per plant-1 (5.93, 7.83, 8.64, 14.12, 18.71, 24.58, 33.36) at 30, 60, 90, 120, 150 and 180 DAT was observed in T6 65cm x 55cm cm, whereas the lowest value number of leaves per plant-1 (3.82, 5.09, 6.52, 10.49, 13.18, 15.84, 28.14) at 30, 60, 90, 120, 150 and 180 DAT was observed in T1 75cm x 75cm. The maximum plant spread (cm) (28.52, 36.10, 43.52, 55.45, 64.65 and 81.71cm) at 30, 60, 90, 120, 150 and 180 DAT was observed in T6 65cm x 55cm cm, whereas the lowest value plant spread (cm) (24.43, 28.79, 34.61, 45.39, 50.42 and 67.76cm) at 30, 60, 90, 120, 150 and 180 DAT was observed in T1 75cm x 75cm. The maximum leaf area (333.75cm<sup>2</sup>) was found in T6 65cm x 55cm, whereas the lowest leaf area (199.29cm<sup>2</sup>) was observed in T1 75cm x 75cm. The maximum leaf length (50.52cm) was found in T6 65cm x 55cm, whereas the lowest leaf length (29.33cm) was observed in T1 75cm x 75cm. The maximum leaf width (9.28cm) was found in T6 65cm x 55cm T7 65cm x 60cm, T8 65cm x 65cm, T9 65cm x 70cm and T5 75cm x 55cm, whereas the lowest leaf width (5.20cm) was observed in T1 75cm x 75cm. The Maximum fresh leaf weight (22.30g) was found in T6 65cm x 55cm, whereas the lowest fresh leaf weight (13.83g) was observed in T1 75cm x 75cm. The Maximum dry leaf weight (6.09g) was found in T6 65cm x 55cm, whereas the lowest dry leaf weight (2.43g) was observed in T1 75cm x 75cm. The minimum days taken for sprout formation after harvest (36.84) was found in T6 65cm x 55cm, whereas the highest days taken for sprout formation after harvest (49.48) was observed in T1 75cm x 75cm. The maximum vase life (13.30days) was found in T6 65cm x 55cm, whereas the highest vase life (9.58days) was observed in T1 75cm x 75cm.

**Table 1:** Effect of different spacing patten non-growth and yield parameters of *Dracaena fragrans* cv. *Massangeana* as an intercrop in guava (*Psidium guajava* L.) Block

Treatment notation	Treatment Combination	Plant height (cm)	Number of leaves plant <sup>1</sup>	Plant spread (cm)	Days taken for sprout formation after harvest	leaf area (cm <sup>2</sup> )	Leaf length(cm)	Leaf width (cm)	fresh leaf weight (g)	Dry leaf weight (g)	Vase Life (days)
T <sub>1</sub>	75cm x 75cm	82.37	28.14	67.76	49.8	199.29	29.33	5.20	13.83	2.43	9.58
T <sub>2</sub>	75cm x 70cm	90.43	30.15	77.21	45.38	272.38	41.71	6.22	15.32	3.79	10.36
T <sub>3</sub>	75cm x 65cm	92.55	30.34	77.36	44.68	283.86	43.65	6.38	16.39	4.34	10.97
T <sub>4</sub>	75cm x 60cm	91.71	30.95	78.28	44.45	287.64	44.65	6.58	16.50	4.65	11.70
T <sub>5</sub>	75cm x 55cm	90.50	31.23	78.33	43.32	316.48	45.04	7.27	17.80	4.69	11.75
T <sub>6</sub>	65cm x 55cm	108.35	33.36	81.71	36.84	333.75	50.52	9.28	22.30	6.09	13.30
T <sub>7</sub>	65cm x 60cm	107.29	32.42	80.12	37.92	327.55	47.50	9.15	21.42	5.85	13.21
T <sub>8</sub>	65cm x 65cm	105.80	32.19	80.08	39.43	324.78	46.79	8.56	20.32	5.51	12.52
T <sub>9</sub>	65cm x 70cm	104.27	31.71	79.94	40.38	225.04	47.14	8.45	19.84	5.38	12.35

F-Test	S	S	S	S	S	S	S	S	S	S	S
C.D. at 0.5%	0.371	0.332	0.455	0.874	6.859	0.793	0.185	0.463	0.134	0.33	
S.Ed. (+)	0.175	0.704	0.965	1.85	14.541	1.681	0.391	0.982	0.284	0.699	

### Conclusion

From the present investigation it is concluded that individual T<sub>6</sub> 65cm x 55cm spacing pattern as an intercropping system in Guava (*Psidium guajava* L.) gave best plant height (cm), number of leaves per plant, plant spread (E-W and N-S), leaf area (cm<sup>2</sup>), leaf length (cm), leaf width (cm) fresh leaf weight (g), dry leaf weight (g), Days taken for sprout formation after harvest and Vase life (days) of *Dracaena fragrans* cv. *Massangeana*.

### Future scope

The present investigation reveals that *Dracaena fragrans* cv. *Massangeana* can be grown successfully in Allahabad condition as intercrop in guava. *Dracaena fragrans* cv. *Massangeana* is an important cut foliage with high commercial value. It is having high export demand in various countries. By growing this plant farmers can increase their income by increased production and this can be grown as an intercrop under guava or any other trees so area under production also can be increased.

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### Conflict of Interest

As a Corresponding Author, I Greeshma baby, confirm that none of the others have any conflicts of interest associated with this publication.

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