Int.J.Curr.Microbiol.App.Sci (2017) *6*(12): 2861-2864

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 6 Number 12 (2017) pp. 2861-2864**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2017.612.333

Effect of High Density Planting on Quality of Curry Leaf (*Murraya koenigii* Spreng.)

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Keywords

HDP, Curry leaf, Leaf yield and quality.

Article Info

Accepted:
21 October 2017
Available Online:
10 December 2017

A B S T R A C T

A field experiment on effect of high density planting on quality of curry leaf was conducted at Department of Spices and Plantation Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Periyakulam during 2011-13. The experiment was layed out in randomized block design with six treatments. Biometrical observations were made from randomly selected five plants and were subjected to statistical analysis. The result reveled that, among the six level of high density planting registered the highest leaf quality as essential oil content (0.156 per cent), crude protein (5.3 per cent), iron content (3.41 per cent), calcium content (834.55 mg per 100 g) and phosphorous (0.71 per cent).

Introduction

Murraya koenigii, commonly known as *curry* leaf or *kari patta* in Indian dialects, belonging to Family Rutaceae which represent more than 150 genera and 1600 species1. Murraya Koenigii is a highly values plant for its characteristic aroma and medicinal value. Curry leaf is originated from Tarai region of Uttar Pradesh (India). It is a perennial nutritious herbal spice crop grown for its aromatic leaves. The crop has been introduced to South India when the Dravidians moved to south with the arrival of Aryans from Persia. Besides, being a spice crop curry leaf plays a major role in the Siddha, Ayurveda and Unani systems of medicine due to its wide range of medicinal properties. Fresh leaves of curry leaves on distillation give a yellow coloured volatile oil with a strong spicy odour, pungent and clove like taste (Goudra *et al.*, 1992). The essential oil has very good antibacterial and antifungal activity. The seeds of curry leaf are having some insecticidal or repellant properties (Balaji, 1988). Curry leaf is extensively used in South India and Sri Lanka for its authentic flavor (Gowdra, 1990). In Tamil Nadu it is cultivated on commercial

scale in Coimbatore, Erode, Madurai, Salem and Trichirapalli districts. The importance of plant population (PP) as a factor determining growth and yield has been well established for the major curry leaf production areas.

Materials and Methods

A field experiment on effect of High Density Planting on yield and quality of curry leaf was conducted at Department of Spices and Plantation Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Periyakulam during 2011-13. The experiment was laid out in a randomized block design with six treatments as follows:

Data on leaf yield as leaf quality as essential oil content (per cent), crude protein (per cent), iron content (per cent) and calcium content (mg per 100 g) were recorded. The data were subjected to statistics analysis as the method suggested by Panse and Sukhatme (1985).

Results and Discussion

The effect of plant population on essential oil content of the curry leaf is furnished (Table 1 and Figure 1).

The essential oil content exhibited significant differences among the treatments.

The maximum essential oil content was recorded at spacing of T_3 – 0.6 x 0.9 m (0.156 %) it was closely followed by T_5 – 0.9 x 1.2 m (0.148 %) compared to minimum recorded in T_1 – 0.45 x 0.45 m (0.128 %).

The crude protein content exhibited significant differences among the treatments. It ranged from 3.9 % to 5.3 %. The maximum crude protein content was recorded at spacing of T_3 – 0.6 x 0.9 m (5.3 %) it was closely followed by T_5 – 0.9 x 1.2 m (4.8 %) compared to minimum recorded in T_1 – 0.45 x 0.45 m (3.9 %) followed by T_2 – 0.6 x 0.6 m (4.2 %).

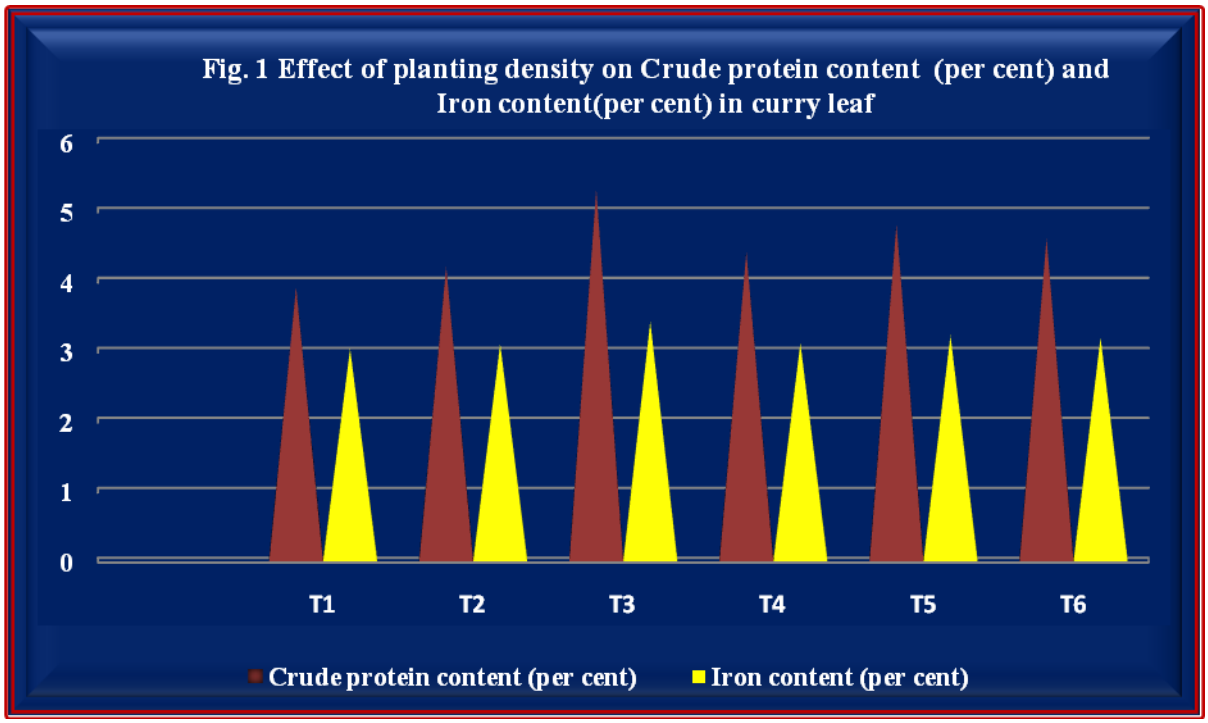
The experiment was laid out in a randomized block design with six treatments

Treatments	Details
T_1	0.45 x 0.45 m
T_2	0.6 x 0.6 m
T_3	0.6 x 0.9 m
T_4	0.9 x 0.9 m
T_5	0.9 x 1.2 m
T_6	1.2 x 1.2 m

Table.1 Effect of HDP on essential oil content (per cent) and calcium content (mg per 100g) of curry leaf

Treatments	Essential oil (per cent)	Calcium content (mg per 100g)
T_1	0.128	780.65
T_2	0.132	810.68
T_3	0.156	834.55
T_4	0.137	817.54
T_5	0.148	832.14
T_6	0.144	826.34
Mean	0.141	816.38
SEd	0.003	11.74
CD (0.05)	0.006	25.04

Fig.1 Effect of planting density on crude protein content (per cent) and Iron content (per cent) in curry leaf



The maximum iron content was recorded at spacing of T_3 – 0.6 x 0.9 m (3.41 %) it was closely followed by T_5 – 0.9 x 1.2 m (3.21 %) and T_6 – 1.2 x 1.2 m (3.18 %) compared to minimum recorded in T_1 – 0.45 x 0.45 m (3.02 %) followed by T_2 – 0.6 x 0.6 m (3.09 %). The calcium content exhibited significant differences among the treatments. It ranged from780.65 mg/100g to 834.55 mg/100g. The maximum calcium content was recorded at spacing of T_3 – 0.6 x 0.9 m (834.55 mg/100g) it was closely followed by T_5 – 0.9 x 1.2 m (832.14 mg/100g) and T_6 – 1.2 x 1.2 m (826.34 mg/100g) compared to minimum recorded in T_1 – 0.45 x 0.45m (780.65 mg/100g) followed by T_2 – 0.6 x 0.6 m (810.68 mg/100g).

In the present study, among the six level of density, high density planting at 0.6 x 0.9 m (T_3) recorded significantly higher quality of curry leaf. The obtained results showed that plant density has significant effect on the percentage and yield of the basil essential oil (Seyed Abbas Mirjalili and Elahe Poorazizi, 2014). The density factor becomes significant on the percentage of the essential oil at 1% level and also becomes significant on the yield of it at 5% level. These results are due to the fact that at low density, the competition between the plants reduced and hence, each plant has more space and produces more leaves. Therefore the rate of produced essential oil increases at low densities. Thus, by increasing the plant density the yield of essential oil increases. Moreover, it should not be neglected that increase in plant density will also affect the dry weight that, in turn, could affect the yield of essential oil. Also, the essential oil ratio of plants under extra light is more than the ratio for the plants of ordinary light and biosynthesis of the essential oil is highly dependent on light conditions. Hence, by increasing the rate of biosynthesis, production of the extract could in overall increase in thyme (Letchamo and

Gosselin, 1995). In this research, the yield of essential oil has been achieved at low density (40 plants in m^2) and the results could be interpreted in *Ocimum* (Arabaci and Bayram, 2004).

Hence, it could be concluded that high density planting T_3 (0.6 x 0.9 m) would results in better quality *viz*., Essential oil, crude protein, iron and calcium content in curry leaf. Further, the density of planting which would facilitate the cultivation of curry leaf under high density of planting.

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How to cite this article:

Jagadeeshkanth, R.P., R. Sankaranarayanan and Suresh, V. 2017. Effect of High Density Planting on Quality of Curry Leaf (*Murraya koenigii* Spreng.). *Int.J.Curr.Microbiol.App.Sci.* 6(12): 2861-2864. doi: https://doi.org/10.20546/ijcmas.2017.612.333