

REACTION OF N:P:K AND ORGANIC MANURE IN DRAGON FRUIT (HYLOCEREUS UNDAUS L.)

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ABSTRACT

Present study conducted at research farm of FASAI, Rama University, Kanpur during rabi 2023-2024 to reaction of N:P:K and organic manure in Dragon fruit (*Hylocereus undatus* L.) Experiment trial have been conducted in RBD with 3 replication using 11 different treatment viz., viz. T_0 = Control, T_1 = NPK (100% RDF), T_2 = NPK (50% RDF)+45% FYM, T_3 = NPK (50% RDF)+45% poultry manure, T_4 = NPK(50% RDF)+45% vermicompost, T_5 = NPK(25% RDF)+65% FYM, T_6 = NPK(25% RDF)+65% poultry manure, T_7 = FYM(25% RDF)+65% vermicompost, T_8 = 100% F.Y.M, T_9 = 100% vermicompost and T_{10} = 100% poultry manure. Experimental finding shows extreme plant height 46.80 cm, Total branches per plant 4.30 and main stem diameter (22.60 cm), plant canopy (N to S: 16.50cm³), plant canopy (E to W: 19.38cm³), total sprouting 6.35, New shoots height (58.20), and survival percentage (100%) of plant were recorded for T_4 (NPK: 50% RDF+50% vermicompost) followed by T_3 (NPK (50% RDF) +50% poultry manure). Experimental control exhibited least performance in comparison to all treatment.

Key words: vermicompost, poultry manure, NPK, RDF, FYM,

Introduction

Dragon fruit (*Hylocereus Polyrhizus*) belongs to the cactaceae family (Cactaceae) and is originally native to North, Central, and South America. Dragon fruit requires a warm climate, so it grows well even in semi-arid tropics, generally grown in tropical and subtropical regions and is non-menopausal fruit. Ripe *H. Polyrhizus* fruits have an attractive red-purple skin, and the flesh was soft and juicy, containing small black seeds. Since this fruit was recommended as healthy fruits, many countries such as Nicaragua, Colombia, Vietnam, Australia, United States, Thailand, Taiwan (Merten, 2003 and Jamilah et al., 2011), and Malaysia have grown *H. polarize*. Eat lean *H.*). It's a long-day plant which produces beautiful flower on blooming at night, and known as Lady or "Queen of the Night". The fruit is one of the most beautiful fruits of the cactus family, large size, bright red skin with green scales, no rough surface, red flesh containing small black seeds, easy to swallow. Average fruit weight is 360 g. The fruit tastes best when ripened when fully red and breathless. The main advantage of this fruit is that it can be planted and grown for 20 years, and 1,000 to 2,000 dragon fruit trees can be planted per hectare.

Regarding the various applications of dragon fruit, dried flower buds are used to make homemade medicine, while immature stems of *H. undatus* are edible and can be consumed as vegetables. In Taiwan, dried flowers are eaten as vegetables. In addition, they can be used as

fresh table fruit or as juice, jam, or preserves, depending on the desired flavor. Restaurants frequently employ it as juice and in fruit salads, claim Luders and Mc Mahon, G. (2006) [16]. Because dragon fruit has a lot of vitamin C, regular consumption helps prevent coughing and asthma. It also speeds up the healing of cuts and wounds.

Dragon fruit's health benefits include its abundance of flavonoids, which help alleviate vaginal discharge bleeding issues and cardio-related issues. Dragon fruits are high in fiber, but they also help with meal digestion. The B vitamin group (B1, B2, and B3), which is abundant in dragon fruit, plays a significant role in health benefits. While vitamin B2 in dragon fruit functions as a multivitamin, it also helps to restore and enhance appetite loss. Vitamin B1 aids in boosting energy production and in the metabolism of carbohydrates. Additionally, vitamin B3, which is found in dragon fruit, helps to reduce bad cholesterol and gives skin a smooth, hydrated appearance.

Materials and Methods

Current experiment " reaction of N:P:K and organic manure in Dragon fruit (*Hylocereus undatus* L.) " . program is implemented in the experimental areas of the Department of Horticulture of Rama University, under the agro-climatic conditions of Kanpur. The test area is between 24,470 and 26,560 degrees North and 83,120- and 80,660-degrees East Longitude. Annual rainfall in the area is about 1,012.4 mm. The soil in the experimental area was 65% sand, 26% silt, 14% silt, pH 7.2, and EC soil. (dSm-1) at 250°C is 0.28, carbon dioxide 0.35%.

Treatments combination

T ₀	Control
T ₁	NPK (100%RDF)
T ₂	NPK (50%RDF)+45% FYM
T ₃	NPK (50% RDF)+45% poultry manure
T ₄	NPK(50% RDF)+45% vermicompost
T ₅	NPK(25% RDF)+65%FYM
T ₆	NPK(25% RDF)+65% poultry manure
T ₇	FYM(25%RDF)+65% vermicompost
T ₈	100% F.Y.M
T ₉	100% vermicompost
T ₁₀	100% poultry manure

Trt.	Trt. combination	Plant height (cm)	number of branches	main stem circumference (cm)	Plant canopy north to south(cm)	Plant canopy east to west(cm)	Number of sprouting	New shoots height (cm)
T ₀	Control	34.70	2.80	8.90	10.50	8.50	3.05	30.30
T ₁	NPK (100%RDF)	38.40	3.00	9.20	11.00	11.00	3.50	39.20
T ₂	NPK(50%RDF)+45% FYM	45.40	3.70	13.97	14.90	16.30	4.70	57.50
T ₃	NPK (50% RDF)+45% poultry manure	47.20	3.90	14.80	16.80	17.30	5.00	57.90
T ₄	NPK(50%RDF)+45% vermicompost	46.80	4.30	22.60	16.50	19.40	6.40	58.20
T ₅	NPK(25% RDF)+65%FYM	40.80	3.60	11.20	12.80	13.40	4.30	46.50
T ₆	NPK(25% RDF)+65% poultry manure	42.20	3.40	11.90	13.30	13.60	3.80	49.60
T ₇	FYM(25%RDF)+65 % vermicompost	43.20	3.70	11.92	13.40	14.00	4.50	51.50
T ₈	100% F.Y.M	38.40	3.50	9.40	11.50	11.60	4.00	44.50
T ₉	100% vermicompost	40.40	3.00	11.10	12.60	12.80	4.20	45.60
T ₁₀	100% poultry manure	39.40	3.60	9.80	12.50	12.40	4.20	44.60
F- test		S	S	S	S	S	S	S
S. Ed. (±)		3.314	0.381	2.693	1.266	1.032	0.399	5.705
C. D. (P = 0.05)		6.839	0.786	5.557	2.611	2.129	0.824	11.774

Result and discussion

Experimental finding exhibits significant increasing on average maximum plant height (47.80 cm) in 180 Days, **Larcher (2000)**, followed by number of branches (4.30) and main stem circumference (22.30 cm) plant canopy (N to S: 17.44cm³), plant canopy (E to W: 20.38cm³), number of sprouting (6.40), new shoots height (59.20), and Survival % (100%) for treatment T₄ (NPK (50% RDF) +50% vermicompost).

Highest plant height has been observed in T₄ (NPK50% RDF+50% vermicompost) with (47.80cm), followed by T₃ (NPK 50% RDF+50% poultry manure) with (47.20cm) while lowest plant height, recorded in T₀ (control) with (34.70 cm). Highest plant height had been observed in T₄ (NPK50% RDF+50% vermicompost) (47.80cm), followed by T₃ (NPK 50% RDF+50% poultry manure) with (47.20cm) while least value of plant height has been observed for T₀

(control) with (34.70cm).

The extreme value for branches/plant has been observed in T₄ (NPK50% RDF+50% vermicompost) (4.30), trailed by T₃ (NPK 50% RDF+50% poultry manure) (3.90) whereas it has been observed least in T₀ (control) with (2.80).

The least first sprouting days recorded in T₄ (NPK50% RDF+50% vermicompost) (20.70), tracked by T₃ (50% RDF+50% poultry manure) (22.50) and maximum sprouting days value noted in T₀ (control) with (58.80).

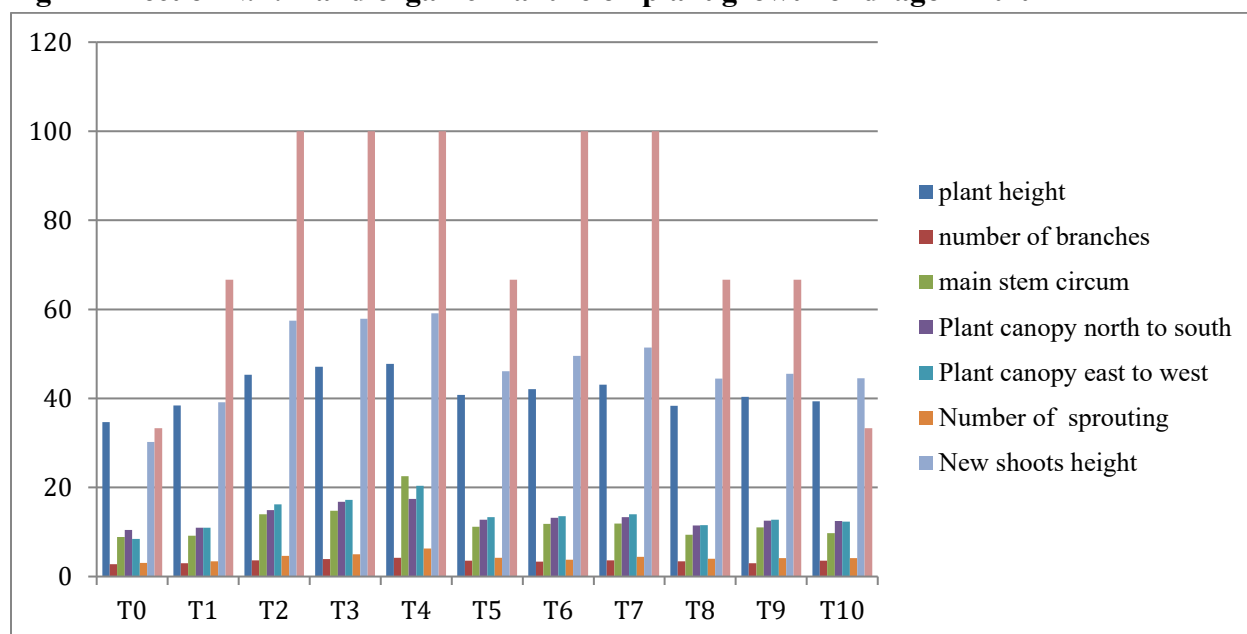
Highest new shoots height noted in T₄ (NPK50% RDF+50% vermicompost) (59.20), followed by T₃ (50% RDF+50% poultry manure) (57.90) and it has been reported lower in T₀ (control) (30.30).

Highest value of canopy N to S (North to South) was recorded in T₄ (NPK50% RDF+50% vermicompost) (17.50) followed by T₃ (NPK 50% RDF+50% poultry manure) with (16.80) while the minimum was recorded in T₀ (control) with (10.50).

T₄ (NPK50% RDF+50% vermicompost) with (20.40) exhibited highest plant canopy (E to W) and T₃ (50% RDF+50% poultry manure) showed 17.30 while lowest value has been recorded in T₀ (control) with (8.50).

Highest sprouting/plant noted in T₄ (NPK50% RDF+50% vermicompost) (6.40), trailed by T₃ (50% RDF+50% poultry manure) (5.00). While control (T₀- 3.05) exhibited least sprouting/plant.

T₄(NPK50% RDF+50% vermicompost) and T₃ (50% RDF+50% poultry manure) shown 100% plant survival while it was noted in T₀ (control) (33.40).

Fig– 1 Effect of N.P.K and organic manure on plant growth of dragon fruit

Conclusion

Present finding reveals that treatment T₄ (NPK (50% RDF) +45% vermicompost) was found beneficial in terms of maximum vegetative growth (46.80 cm) and maximum fruit yield. So, this treatment combination is suggested to the farmer to get healthy plants and maximum yield. Its treatment combination results the 100-plant survival so ultimate loss due to death could be stopped thus helps in loss management.

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