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Effect of organic nutrition practices on the growth of papaya (*Carica papaya* L.) fruit crop under Precision farming techniques

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Abstract

The experiment reported that the combined application of biofertilizer with organic manures influences the plant growth by enhancing root biomass, increase in yield total root surface facilities, higher absorption of nutrients by reducing higher consumption of natural source of energy. Organic fertilizer have proved great potential to increase the biomass and productivity of wide range of crops. Biofertilizer have great importance to deterioration of natural and environmental pollution. The experiment comprised of three replication and twelve treatment. The treatment T₁₂ gave highest plant height (179.56cm), Stem girth (45.56cm), petiole length (75.56 cm). The Minimum days to taken flowering (72.14 days) was recorded under treatment T₁₂. These treatment T₁₂ consisting of combination of different organic manure such as vermiwash, neem seed extract, cow urine with recommended dose of fertilizers. And the lowest plant height, stem girth, petiole length was found in treatment T₁.

Keywords: Organic, nutrition, practices, papaya, *Carica papaya* L.

Introduction

In the fruit of papaya have higher nutritive value with higher production potentiality. Papaya features a wide run of versatility of adaptability, highly returns per unit zone and increased natural product fruit requests for table purposes owing to its high nutraceutical value coupled with low calorific esteem. Papaya development within the nation has largely remained peri-urban, catering supply of fruits to urban markets. The generation is intensive characterized by chemical based inputs and is profoundly profitable. The longterm affect of chemical based cultivation practices on the production system and is create adverse effect. A few of them included weakening in richness of soil fertility and quality, increasing pest and disease including weeds which affect the productivity. (Ravishankar 2010) [7]. Papaya (*Carica papaya* L.) is far reaching all through India and in globe considered as one of the foremost critical, financial and nutritious fruit crop of India with wealthy cancer prevention agents, flavonoids carotene and vitamins,. Due to its simple developing and early fruiting capacity, it occupied critical positions in kitchen garden, and home back space for utilization of family and commercial production. (Chanda K.K. *et al.* 2014) [3]. The development of seedlings of papaya in a protected environment favors the growth and development of higher quality physiological and sanitary plants. This should be need to drained holders where the seedlings are created alter their improvement complying with culture medium, when compared to the method used in the field, with constrained space for root development. (Heerandra Prasad *et al.* 2017) [6]. In India, the important papaya developing states are Andhra Pradesh, Kerala, Tamil Nadu, Orissa, Assam, West Bengal, Gujarat and Maharashtra. In present day farming of crop, due to nonstop utilize of inorganic fertilizers with least or no utilize of natural organic manures, the cultivable lands are quickly exhausted in natural carbon substance and becoming unfertile and applying numerous supplement lacks. (Kaswala *et al.* 2017).

Material and Method

The experiment was conducted at Precision Farming Development Center, College of Agriculture, IGKV, Raipur (C.G.). Raipur is set within the fertile plains of Chhattisgarh Region. It's set between 22° 33' N to 21°14'N Latitude and 82° 6' to 81°38'E Longitude. The typical elevation of the place is 307 meters higher than the mean water level. The Experiment was conducted Randomized Block Design (RBD) with three replications and twelve treatments. For a minimum of fifteen days, the dug pits are exposed to sun and packed with

well decomposed Farm Yard Manure using top soil as well as subsoil separately in equal proportion. After this top soil mixer was filled first at the bottom of the pit. The pits were filled 15-20 cm above the ground level. Used cooper based fungicide 2 gm in each pit. Forty five days old Seedling of papaya were planted at experimental field Precision Farming Development Center. The depth of pits was dug for planting is 60×60×60 cm with the help of rope or khurpi. The seedling are transplanted with biodegradable polybags. With the support of measuring tape and string, plant height was calculated from 90, 150, 270 days after transplantation. The height of the plant was determined from soil to the rising tip of the plant's main stem. The height of the plants was in centimeters. Randomly five plants per treatment were selected for stem girth measurement in centimeter. Stem girth was measured with the help of measuring scale and thread and measuring scale above 15 cm from ground level. Five petioles were chosen per plant and the length of the petiole was measured by measuring scale in centimeters from the base of the petiole to the base of the leaf lamina and averages was worked out. The days taken to first flowering from transplanting are determined by counting the number of days from the date of transplantation to the first flowering. And afterwards averages was calculated.

Result and Discussion

The experimental Results concluded that the growth

attributing characters of papaya fruit crop like plant height (286.34cm), was recorded highest in T₁₂ (80% RDF + Vermiwash + Neem seed extract + cow urine) at 270 days after transplanting showed considerably greater than the other treatments. Stem girth (45.56cm), was also found maximum under treatment T₁₂ (80% RDF + Vermiwash + cow urine + neem seed extract), at 270 days after transplanting followed by treatments T₁₁ with stem girths (43.52). Similarly the treatments T₆ & T₅, T₇ & T₈ and T₃ & T₄ with stem girths of (41.51cm) & (40.75 cm) and (39.31cm) & (38.86 cm), and (36.35cm) & (35.36 cm) were at par to each other, the minimum stem girth was recorded under T₁ (29.19 cm) respectively. Effect of different organic manures on petiole length was found highest in T₁₂ (80% RDF + Vermiwash + cow urine + neem seed extract), at 270 days after transplanting. It was (75.56 cm), highest under treatment T₁₂ and it was found at par with T₁₁ (54.41 cm), whereas, the lowest petiole length was recorded under T₁ (53.34 cm) followed by T₉ (55.31 cm) respectively. Minimum days to taken flowering (72.14 days) under treatment T₁₂ it was followed by other treatment T₁₁ (80% RDF + Vermiwash + Neem seed extract) i.e. (77.34 days) viz. T₁₀ (79.69 days), T₆ (80.18), T₇ (89.10 days), T₅ (89.61 days), T₈ (91.35 days), T₂ (96.10 days), T₃ (98.48 days), T₄ (101.14 days), T₉ (105.79 days) and T₁ (108.47 days) had been recording delayed flowering in ascending or increasing order. The control T₁ was the late in flowering taking (108.47 days).

Table 1: Effect of organic manures on growth parameters of papaya (*Carica papaya* L.)

Treatments	Plant height (cm) (270 DAT)	Stem girth (cm) (270 DAT)	Petiole length (cm) (270 DAT)	Days to taken first flowering
T ₁ : RDF + Control	230.85	29.19	53.34	108.47
T ₂ : RDF(80%) + vermicompost (3kg/plant)	266.39	38.26	64.41	96.1
T ₃ : RDF(80%) + neem seed extract (1kg)	263.77	36.35	57.29	98.48
T ₄ : RDF(80%) + Madhuka cake (1kg)	263.22	35.36	56.54	101.14
T ₅ : RDF(80%) + vermiwash (1lt)	274.42	40.75	67.66	89.61
T ₆ : RDF(80%) + cow urine (1lt)	277.20	41.51	69.51	80.18
T ₇ : RDF(80%) + neem seed extract (1lt)	269.69	39.31	66.60	89.1
T ₈ : RDF(80%) + PSB (50g)	266.39	38.86	65.49	91.35
T ₉ : RDF(80%) + Pseudomonas straita @20g culture/plant	258.37	32.36	55.31	105.79
T ₁₀ : RDF(80%) + vermiwash + cow urine	279.36	42.33	70.43	79.69
T ₁₁ : RDF(80%) + Vermiwash + Neem seed extract	280.52	43.52	73.67	77.34
T ₁₂ : RDF(80%) + Vermiwash (1L) + cow urine (1L) + neem seed extract (1L)	286.34	45.56	75.56	72.14
S.E(m)	0.62	0.57	0.62	2.49
CD (p=0.05)	1.83	1.69	1.84	7.37

Conclusion

Based on the results of this investigation, it can be concluded that the application of 1L Vermiwash + 1L Cow urine + 1L neem seed extract/Plant along with the recommended dose of fertilizers (80%) found the best treatment, where the growth of plant like stem girth, plant height, petiole length and days taken flowering can be significantly influenced.

References

- Italiya AP, Patel PS, Patel TU, Narendra Singh, Kaswala AR. Growth, yield and economy of papaya as influenced by organic and integrated nutrient management farming system under South Gujarat condition. SSN: 0974-4908 <http://rels.comxa.com> Res. Environ. 2017;10(5):414-417. Life Sci. rel_sci@yahoo.com
- Chauhan Archana. Studies on integrated nutrient management in plum cv. Santa Rosa. Ph.D. Thesis. Dr Y.

S. Parmar University of Horticulture and Forestry, Nauni, Solan, H.P. (INDIA), 2008.

- Chandra KK. Growth, Fruit Yield and Disease Index of *Carica Papaya* L. inoculated with *Pseudomonas straita* and Inorganic Fertilizers. Chandra, J Biofertil Biopestici. 2014;5:2.
- Fawzi MIF, Shahin FM, Elham Daood A, Kandil EA. Effect of organic and biofertilizers and magnesium sulphate on growth yield, chemical composition and fruit quality of Le-Conte pear trees.) net.sciencepub.www://h 12(8;2010N), 2010.
- Georg KS. Andersson, Maj Rundlo F, Henrik G Smith. Organic Farming Improves Pollination Success in Strawberries, 2012.
- Heerendra Prasad, Paramjeet Sajwan, Meena Kumari, Solanki SPS. Effect of Organic Manures and Biofertilizer on Plant Growth, Yield and Quality of Horticultural

- Crop: A Reweiv. International Journal of Chemical Studies. 2017;5(1):217-221.
7. Ravishankar H, Karunakaran G, Srinivasamurthy. Performance of Coorg Honey Dew Papaya under Organic Farming Regimes in the Hill Zone of Karnataka. Proc. Ind IS on Papaya Eds.: N. Kumar *et al.* Acta Hort. 2010;851, ISHS 2010.
 8. Osman SM, Abd El-Rhman IE. Effect of Organic and Bio N-fertilization on Growth, Productivity of Fig Tree (*Ficus carica* L.). Research Journal of Agriculture and Biological Sciences. 2010;6(3):3195-328, 2010 © 2010, INSI net Publication.
 9. Vielma MS, Pablo RHL, Luzmeri M, Salcedo F. Effect of vermicompost as an organic amendment on the initial growth of papaya (*Carica papaya* L.) cv. Maradol Amrilla plants. Revista Cientifica UDO Agricola. 2009;9(2):322.
 10. Sivarama Krishna VNP, Reddy MLN, Dorajee Rao AVD, Venkataramana KT, Sudhakar P. Effect of nutritional substitution on growth, flowering & fruit yield of papaya cv. Arka Prabhat Plant Archives. 2018;18(1):1000-1004.