



RESEARCH ARTICLE

EFFECT OF FERTIGATION, SPLITTING AND MULCHING ON FIRST FLOWERING HEIGHT (CM), FIRST FLOWER INITIATION AND DAYS TO FRUIT MATURITY AFTER TRANSPLANTING OF PAPAYA CV. RED LADY (786)

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ABSTRACT

An experiment was conducted on “Effect of fertigation, splitting and mulching on first flowering height (cm), days to first flower initiation and fruit maturity after planting of papaya (*Carica papaya* L.) cv. Red Lady” with twelve treatments viz., 1st factor three levels of N and K₂O @ 100, 80 and 60 % of RD (200:200:250), 2nd factor two levels of split and 3rd factor two levels of mulching of black plastic mulch @ 20 % area coverage (50 μ) in RBD with factorial concept and three replications at two locations i.e. 1) Regional Horticultural Research Farm, Navsari. 2) Fruit Research Station, Gandevi, Navsari Agricultural University, Navsari (Gujarat) during 2012-13. The papaya plants receiving treatment N and K₂O @ 100 % RDF (F₁) after transplanting of seedlings was relived first flowering height (cm), first flower initiation and days to fruit maturity after transplanting of papaya cv. ‘Red Lady’ during same year at both places and in pooled analysis also of investigation. Adoption of fertigation level @ 100 % RDF recorded the significantly papaya plants receiving treatment N and K₂O @ 100 % RDF (F₁) after transplanting of seedlings was relived minimum first flowering height (cm), first flower initiation and days to fruit maturity after transplanting of papaya cv. ‘Red Lady’ during same year at both places and in pooled analysis.

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INTRODUCTION

Papaya having uncertainty in flowering and fruiting is a large perennial herb. Papaya is best suited in tropical climatic conditions having assured irrigation facilities. The mature fruits are available for harvesting after 150-160 days of flowering and fruits remain available from about further four to five months or so. Papaya has wide range of suitability for growing. For instance, it is suitable for growing in kitchen garden, monoculture and most suitable to grow as intercrop in mango orchard. Papaya grows vigorously and continuously, it has a continuous demand for nutrients. They must be supplied to keep it in good health and high bearing. Papaya crop is commercially grown in the states like Andhra Pradesh, Gujarat, Karnataka, West Bengal, Madhya Pradesh & Maharashtra (Anonymous, 2014).

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MATERIALS AND METHODS

An experiment was conducted with twelve treatments in Factorial RBD with three replications at two locations i.e. 1) Regional Horticultural Research Farm, Navsari. 2) Fruit Research Station, Gandevi, Navsari Agricultural University, Navsari (Gujarat) during 2012-13. Papaya var. Red Lady was planted at a spacing of 2.4 x 1.8 m. The lateral lines of 16 mm diameter with online two drippers (8 L/hr) were placed 30 cm away on either side of papaya plant. The system was operated at 1.2 Kg/cm² pressure on alternate day and fertigated @ 200:250g N and K/plant. Nitrogen and potash were applied in the form of urea and muriate of potash, respectively as per treatment, in 14 splits (S₁) and 18 splits (S₂) equal splits starting from 45 and 15 days after transplanting, subsequently at 15 days intervals through drip irrigation. Recommended dose of phosphorus applied in two equal splits first at 1½ month and second at 3 months after transplanting. All agronomical practices in vogue were employed from time to time. The

statistical analysis was done by using method of Panse and Sukhatne, (1967).

were applied in 18 and 14 splits through fertigation. Thus, regular and continues availability of nutrients for longer period helped to synthesis and deposition of photo-assimilates.

Table 1. Effect of fertigation and splitting on first flowering height (cm), first flower initiation height and days to fruit maturity after transplanting of papaya seedlings cv. Red Lady (786)

Factor levels	First flowering height (cm)			First flowering (Days)			Fruit maturity after transplanting (Days)		
	Gandevi	Navsari	Pooled	Gandevi	Navsari	Pooled	Gandevi	Navsari	Pooled
Fertilizer levels									
F ₁	75.32	76.57	75.95	110.33	108.58	109.46	260.60	261.37	260.99
F ₂	77.58	78.74	78.16	113.75	111.06	112.41	263.14	264.92	264.03
F ₃	83.49	84.16	83.83	122.08	122.56	122.32	276.16	277.63	276.90
S. Em.±	2.02	2.00	1.39	2.59	1.74	1.54	2.82	2.40	1.81
C. D. @ 5%	5.93	5.89	3.97	7.60	5.12	1.26	8.28	7.04	5.16
Split levels									
S ₁	81.76	82.90	82.33	118.61	116.85	117.73	270.76	272.10	271.43
S ₂	75.83	76.75	76.29	112.16	112.28	112.22	262.50	263.85	263.18
S. Em.±	1.64	1.64	1.15	2.12	1.42	1.26	2.31	1.96	1.50
C. D. @ 0.05	4.81	4.80	3.28	6.21	4.17	3.60	6.76	5.74	4.26
C. V. (%)	8.89	8.72	8.80	7.79	5.30	6.68	3.10	3.10	3.40

Note: All interactions were found non-significant.

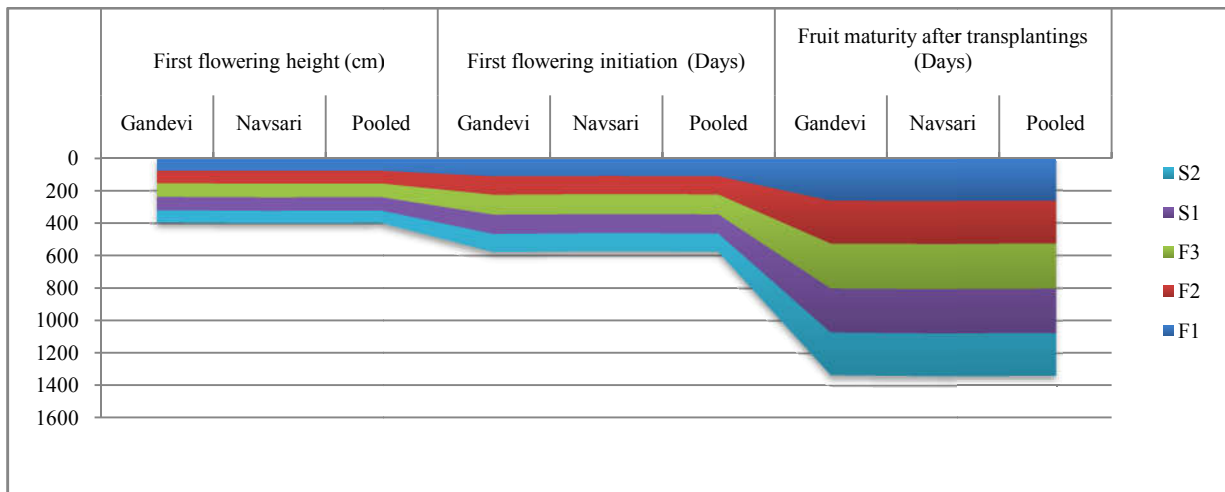


Figure 1. Effect of fertigation and splitting on first flowering height (cm), first flower initiation and days to fruit maturity after transplanting of papaya seedlings cv. Red Lady (786)

RESULTS AND DISCUSSION

The response of different levels of fertigation, split and mulching application after papaya planting with first flowering height (cm), days to first flower initiation and days to fruit maturity after planting by individual or in combination at higher and lower concentrations are discussed below. In the present investigation, there was found significant effect of different treatments on first flowering height (75.32cm, 76.57cm and 75.95cm), days to first flower initiation (110.33, 108.58 and 109.46 days) and days to fruit maturity after transplanting (260.60, 261.37 and 260.99 days) of papaya cv. Red Lady at Gandevi, Navsari and in pooled study respectively. The minimum first flowering height (cm), days to first flower initiation height and days to fruit maturity after transplanting of seedlings of papaya (Table-1 or Figure- 1) were recorded with N and K₂O @ 100 % RDF (F₁) which is closely influenced by F₂ (80% @ N and K₂O RDF) and S₂ (18th split) has been due to size of individual leaf. In present study, nitrogen and potassium.

This might was led to induce better growth, fruit bud differentiation (FBD) and increased flower production with significant level (Agrawal *et al.*, 2010; Jeyakumar *et al.*, 2010; Yadav *et al.*, 2011) which supported the findings of present study. It was also reported in other fruit crops like phalsa (Singh and Sharma, 1961) and guava (Dikshit *et al.*, 2010). Results pertaining to attribute like minimum first flowering height (cm), days to first flower initiation and days to fruit maturity after planting could be due to improved number of photosynthetic activity and respiration of plants as influenced by different levels of fertigation, split and mulching. These findings were in conformity as well as justified that the application recommended NPK in splits after planting in fruit crops likes coconut, sapota (Gnanamurthy and Manickasundram, 2001), sweet orange (Anonymous, 2010), mandarin (Shirgure *et al.*, 2001) and papaya (Singh *et al.*, 2004; Agrawal *et al.*, 2010; Dikshit *et al.*, 2010; Jeyakumar *et al.*, 2010; Anonymous, 2011). Crop duration was reduced by fertigation and early flowering in banana (Mahalakshmi *et al.*, 2001).

Conclusion

The results of one year study inferred that, the application F_1 (N and K_2O @ 100 % RDF) was favorable to influenced the first flowering height (cm), first flower initiation and days to fruit maturity after transplanting of papaya. In case of first flowering height (cm), days to first flower initiation and days to fruit maturity after transplanting were mostly influenced by S_{18} (18 split) application of F_1 (N and K_2O @ 100 % RDF) treatment after 15 days intervals application after transplanting the seedling of papaya cv. Red Lady.

REFERENCES

- Agrawal, N.; Panigrahi, H. K.; Tiwari, S. P.; Agrawal, R.; Sharma, D. and Dikshit, S. N. 2010. Effect offertigation through water-soluble fertilizers on growth, yield and quality of papaya (*Carica papaya*L). National Seminar on Precision Farming in Horticulture, pp:507-510.
- Anonymous 2010. Proceedings of zonal research & extension advisory council meeting, Citrus Research Station, Tirupati.
- Anonymous 2014. *Indian Horticulture Database*, Papaya, pp: 100.
- Bhalerao, P. P. and Patel, B. N. 2012. Effect of Foliar Application of Ca, Zn, Fe and B on Papaya: Response of Papaya to Foliar Application of Nutrients, Lambert Academic Publishing.
- Dikshit, S. N.; Sonkar, K.; Soni, A. K.; Sharma, D.; Panigrahi, H. K.; Samadhiya, V. K. and Saxena, R. R. 2010. Studies on growth, yield and physico-chemical parameters of guava (*Psidium guajava* L.) cv. L-49 through drip irrigation and mulching under agro-climatic condition of chhattisgarh plains. *National Seminar on Precision Farming in Horticulture*. pp: 405.
- Gnanamurthy, P. and Manickasundram, P. 2001. In: advances in integrated nutrient management system for sustainable crop productivity and soil fertility, Tamil Nadu Agricultural University, Coimbatore, pp: 110-116.
- Jeyakumar P.; Kumar, N. and Soorianatha Sundaram K. 2001. Fertigation studies in papaya (*Carica papaya*L.). *South Indian Hort.*, 49:71-75.
- Jeyakumar, P.; Amutha, R.; Balamohan, T. N.; Auxcilia, J. and Nalina, L. 2010. Fertigation improves fruit yield and quality of papaya, *Acta Horticulturae*, No.: 851.
- Lal, G.; Sen, N. L. and Jat, R. J. 2000. Yield and leaf nutrient composition of guava as influenced by nutrients. *Indian J. Hort.*, 57 (2): 130- 132.
- Mahalakshmi, M, N.; Kumar, Jayakumar P. and Soorianathasundara, K. 2001. Fertigation study in banana under normal system of planting. *South Indian Hort.*, 49 (Special): 80-85.
- Panase, V. G. and Sukhatme, P. V. 1967. Statistical Methods for Agricultural Workers. ICAR, New Delhi pp. 187-197.
- Ravichandran.; Kumar, N.; Jeyakumar, P.; Soorianathasundaram, K. and Vijayakumar, R. M. 2002. Influence of planting density and nutrient levels on growth and yield of papaya cv. CO-2. *South Indian Hort.*, 55(1):23-29.
- Shirgure, P. S.; Srivastava, A. K. and Singh, S. 2001. Fertigation and drip irrigation in Nagpur mandarin (*Citrus reticulata* Blanco). *South Indian Horticulture*, 49-50: 95-97.
- Singh, D. K.; Paul, P. K. and Ghosh, S. K. 2004. Growth, yield and fruit quality of papaya as influenced by different levels of N, P and K. *Hort. J.*, 17 (3): 199-204.
- Veerannah, L. and Selvaraj, P. 1984. Studies on growth, dry matter partitioning and pattern of nutrient uptake in papaya. National seminar on papaya and papain production, TNAU, Coimbatore, pp. 76-78.
- Yadav, P. K.; Yadav, A. L.; Yadav, A. S.; Yadav, H. C. and Singh, Y. P. 2011. Effect of integrated nutrient nourishment on yield attributes and economics of papaya (*Carica papaya* L.) cv. Pusa dwarf. *Plant Archives*, 11 (1): 307-309.
