

Performance of Fruit set, Yield and different Attributes of Kiwi Fruit Varieties under West Kameng District of Arunachal Pradesh

N. D. Singh, T. S. Mishra and A. K. Singh

Krishi Vigyan Kendra
West Kameng, Dirang 792 104 (Arunachal Pradesh)

ABSTRACT

An experiment was conducted to evaluate five varieties of Kiwi viz. Allison, Bruno, Hayward, Monty and Abbott at Dirang, Bomdila and Salari areas under the district in the year 2011-12. 50 per cent leafing was observed after 87, 72, 78, 82,83 days in Abbott, Bruno, Monty, Hayward and Allison varieties respectively after pruning in the first day of February. The 50 per cent flowering was observed in Bruno in 42 days and the Hayward taking the longest time of 46 days. Bruno and Abbott varieties took 14 days to fruit set after flowering while minimum days for fruit set (13 days) was recorded in Allison. The maximum number of fruits per variety, average weight of fruits, fruit yield per plant, number of fruits per plant and fruit yield per ha, highest T.S.S. were recorded in Allison variety. Higher fruit diameter and maturity days were observed in Bruno. Highest fruit length was recorded in Hayward variety. The higher score for appearance, taste, flavour and over all acceptability was accorded to Allison followed by Hayward. Thus, on the basis of yield, taste, flavour and overall acceptability, Allison is the best under West Kameng district of Arunachal Pradesh, India.

Key words: Fruit set, Yield, Kiwi, Variety, Arunachal Pradesh.

INTRODUCTION

Kiwi fruit (*Actinidia deliciosa chev.*) is a unique and delicious fruit among temperate fruits having high vitamin 'C' (80-100 Mg/100g) and Vitamin 'A' (175 I.U/100g) content. Kiwi fruit though being introduced very lately in the year 2000, is gaining popularity in the mid- hill parts of Arunachal Pradesh. The crop though being a new entrant in the area is luring the attention of farmers owing to its high returns per unit area, easy management and its resistance to number of pests and diseases. It was however grown since long on commercial basis in other parts of the country like Himachal Pradesh, Jammu and Kashmir, Uttrakhand, Meghalaya, Nagaland, and Nilgiri hills of south India etc. A warm sub-temperate climate with an annual precipitation of 100-150 cm is the prerequisite for ideal Kiwi cultivation. The West Kameng District of the state Arunachal Pradesh located at 91° 30" to 92° 40" E longitudes and 26° 54" to 28 01" N latitudes with its unique and diverse topography and

climatic condition harbors different varieties of temperate fruits.

The kiwi fruit is a healthy choice among fruits as it prevents asthma, wheezing and coughing, especially in children, protects our DNA from mutations, provides a healthy amount of antioxidants and vitamins and helps prevent colon cancer due to its high fiber content. Ripe fruits are being utilized in the preparation of jam and kiwi juice. A judicious pruning is required every year to regulate vegetative growth and fruiting as fruiting occurs only from current growth which arises from a bud development of the previous season. An essential management practice is to undertake summer pruning which involves removal of current year's growth as it affects the vegetative growth of the plant and modifies plant to fruit ratio, bud number and microclimate within the canopy Taylor and Ferree (1986). Therefore, the present investigation was undertaken with an objective to find out the suitable variety having higher yield and T.S.S as well as with better

Corresponding author e-mail: ndsingh62kvk@gmail.com

chemical properties, qualities and acceptability among consumers.

MATERIALS AND METHODS

The investigation was carried out on 6 (six) years old plant of kiwi fruit cv. Hayward, Allison, Abbott, Bruno and Monty planted at a spacing of 4m x6m and trained on T-bar trellis system during 2011-2012. The experiment was laid out in Randomized Block Design with three different replications. Three plants of each variety from every replication were randomly selected for observation on fruit set, yield and yield parameters. The total soluble solids were determined by hand refractometer. The statistical analysis was done as per procedure described by Panse and Sukhatme (1985).

RESULTS AND DISCUSSION

The lowest number of days to 50 per cent leafing after pruning was recorded in Bruno 72 days and while Abbott took 87 days to reach 50 per cent leafing stage. The 50 per cent flowering was attained in Bruno in 41 days and the maximum number of days (46 days) to 50 per cent flowering were recorded in Hayward (Table 1). The lowest days of fruit set were recorded in Allison 13 days and highest days of fruit set were

recorded in Bruno 14 days. Significantly, highest length of fruit was recorded in Hayward 6.05cm and lowest length of fruit in Bruno 5.28cm. The highest width of fruit was recorded in Bruno 4.57cm and lowest width of fruit was recorded in Allison 3.73cm. The fruit weight was maximum in Hayward 73.18 gm and it was minimum in Monty 48.96 gm. Non significantly, the lowest days (172 days) of maturity were recorded in Abbott and highest days to maturity (176 days) in Allison. The highest days of ripening were recorded in Allison 197 days and lowest days of ripening were recorded in Hayward 189 days. The variation in fruit diameter, fruit length and pulp thickness might be based on the fact that every genotypes has its own nature in development of fruits which may be varied due to various physiological phenomenon, viz. photosynthetic efficiency, rate of translocation of photosynthesis from source to sink and photo-respiration that takes place in the plant body Dinesh *et al* (2000). The total soluble solids were found in Allison followed by Hayward, whereas minimum T.S.S was found in Abbott. The variation in TSS in varieties might be due to their genetic makeup and the nature of the variety which govern the chemical composition of the fruits. These results are in accordance with the finding of Chandel *et*

Table 1: Days taken to 50 per cent leafing and 50 per cent flowering different varieties

Treatment	50% leafing (in days)	50% flowering (in days)	Total flower (in days)
V ₁ : Allison	83	43	50
V2: Bruno	72	41	500
V3: Hayward	82	46	52
V4: Monty	78	42	47
V5: Abbott	87	44	52
CD _{0.05}	NS	NS	NS

Table 2: Physico-chemical properties, yield attributes and yields of different Kiwi varieties

Treatment	Fruit set (days)	Fruit maturity (days)	Fruit ripening (days)	Fruit length (cm)	Fruit diameter (cm)	Fruit weight (gm)	T.S.S	Yield per plant (kg)	Yield (q/ha).
V ₁ : Allison	13.60	176.80	197.00	5.52	3.73	51.12	8.60	54.40	226.84
V2: Bruno	14.20	175.80	191.80	5.28	4.57	64.27	7.62	27.87	116.21
V3: Hayward	13.40	172.20	189.40	6.05	3.42	73.18	8.52	35.18	146.70
V4: Monty	13.80	176.00	190.40	5.32	3.95	48.96	8.00	44.33	184.86
V5: Abbott	14.20	172.00	191.80	5.52	3.98	52.86	6.51	42.37	176.68
CD _{0.05}	NS	NS	NS	0.5	0.24	12.15	NS	NS	NS

* **Significant at 5% and 1% levels. NS = Non significant, TSS = Total soluble solids

al (2004). The highest number of fruits per plant, yield per plant and fruit yield per hectare were given by Allison. The lowest values of these parameters were observed in Bruno among evaluated varieties. The variations in yield attributes of Kiwi might be due to various physiological phenomenon, viz. photosynthetic from source to sink and photo-respiration that took place in the plant body and different genetic constitution of varieties, which are responsible for expression of genetic characters under a particular set of environment. Moreover, yield performance of any variety is considered as a cumulative effect of yield attributes Marini *et al* (1982). The maximum average yield per plant, yield per ha and over all acceptability was recorded to Allison followed by Hayward, Bruno, Monty and Abbott (Table 2).

CONCLUSION

Based on the parameters of the experiment carried out in five different varieties of the fruit in a fruiting season in the trail area, the highest score

for appearance, taste, flavour, fruits per variety, yield per plant, and maximum yield per hectare was recorded in Allison followed by Hayward. Thus, based on the overall performance among the five varieties Allison is recommended as to be the ideal variety suitable in the district of West Kameng in Arunachal Pradesh.

REFERENCES

- Chandel, J.S., Bharti, O.A. and Rana, R.K.2004. Effect of pruning severity on growth, yield and fruit quality of kiwifruit (*Actinidiadeliciosachev.*) *Indian J Hort* **61**: 114-17.
- Dinesh, M.R.,Reddy, B.M.C. and Reena, N.A. 2000. Varietal improvement of Papaya. *J Appl Hort* **2**: 121-23.
- Marini, R.P. and Barden, J.A. 1982. Yield, fruit size and quality of three apple cultivars as influenced by summer or dormant pruning. *J American Soc Hort Sci* **107**: 474-79.
- Panse, V.G. and Sukhatme, P.V. 1985. *Statistical method for Agricultural Workers*, Indian council of Agricultural Research, New Delhi, pp.145-48.
- Taylor, R.H. and Ferree, 1986. The influence of summer pruning and fruit cropping on the carbohydrate, nitrogen, and nutrient composition of apple trees. *J American Soc Hort Sci* **111**: 342-46.