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### Performance of Kiwi in Mid Hill Region of Himachal Pradesh

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**Abstract:** Himachal Pradesh is the fruit basket for the country. Many temperate fruits like apple, pears, peaches, cherries, apricots, almonds, plums, etc are cultivated here. Another group of fruit which are Kiwi, pomegranate, strawberries now also seen in the orchards of Himachal. People are switching to Kiwi cultivation instead of traditional apple cultivation. Mid-hills and valleys of Solan, Sirmaur, Mandi, Kullu and Shimla districts are ideally suited for kiwi cultivation. It believes that its good initiative towards crop diversification and also profitable for the farmers. In few areas of Shimla, Kullu and Mandi districts, the apple production has sunk because of climatic changes, and this climatic change had turned fortunate for kiwi cultivation as cash crop. Performance of five varieties of kiwi viz., Allison, Abbott, Bruno, Hayward, Monty was evaluated at Indian Agricultural Research Institute, Regional Station, Shimla. Similar age plant were selected under uniform management practices with respect to nutrition and irrigation were adopted for all the varieties. Kiwi plants of different varieties were transplanted in the field at 4m apart under square system of planting. Observation on fruit characters like fruit length, breadth, fruit weight and fruit yield /tree, quality parameters viz; acidity, TSS, reducing and non reducing sugar were recorded from 2013-16. The highest fruit weight was recorded in Allison (71.76 g) closely followed by Hayward (70.25g) and minimum recorded in Abbott (50.21g). The maximum fruit length was observed in Bruno (55.2 mm) with minimum in Monty (49.39 mm). Fruit width was highest in Monty. Fruit yield was varied from 29.85 kg/tree to 45.15kg/tree. TSS in kiwi fruits varied from 9.89% to 12.45% and reducing sugar varied from 7.8%- 11.3%. Acidity content in kiwi fruit was varied from 0.95% to 1.21% in different varieties.

#### INTRODUCTION

Kiwifruit (*Actinidia deliciosa*) also known as Chinese Gooseberry is among the very few recent

introductions which have surpassed in popularity due to its tremendous commercial potential in the sub-Himalayan region. Kiwi is grown widely in New

Zealand, Italy, USA, China, Japan, Australia, France, Pakistan, Iran, Chile and Spain. In India, Kiwi was first planted in the Lal Bagh Gardens at Bangalore as an ornamental tree. With extensive research and development support its commercial cultivation has been extended to the midhills of Himachal Pradesh, Uttarakhand, Jammu and Kashmir, Sikkim, Meghalaya, Arunachal Pradesh and Nilgiri hills. Chinese Gooseberry has tremendous commercial potential in the Sub-Himalayan and other temperate fruit growing regions of India and has emerged as a success story, after apple, in temperate fruit production (Chandel *et al.*, 2004). It is a deciduous vine which can withstand wide climatic conditions. For high yield and quality fruits, it requires 700-800 chilling hours below 7°C to break its rest period in the winter otherwise the bud break may be delayed. It is a vigorous, perennial vine trained to a structure that gives support to the shoots and fruits when grown commercially. The mature vine has a permanent framework of cordons. The plants are either female, male or monoecious. Fruits mature during late summer to autumn, depending on the region with firmness decreasing slightly in the later stages of ripening. Fruits are generally harvested at an average total soluble solids of 8-10 °Brix. The fruits are consumed fresh or processed (Pandey and Sharma, 2000). Fruit size and quality are the most important characteristics affecting price and marketing of kiwifruit.

## MATERIAL AND METHODS

The investigation to assess the performance of Kiwi cultivars was carried out from 2013 to 2016 at ICAR-Indian Agricultural Research Institute, Regional Station, Shimla. Five kiwi cultivars Hayward, Monty, Allison, Bruno, Abbott, were planted in the field at 5m apart under square system of planting. Five plants of each variety were selected for assessing their performance. The uniform management practices with respect to nutrition and irrigation were adopted for all the cultivars. The yield parameters and quality

traits, like fruit length, breadth, weight and fruit yield /tree, TSS, sugar, acidity were recorded during harvesting of fruits. Size of fruit and stone was recorded with the help of vernier calliper. TSS was determined with the help of digital hand refractometer. Titrable acidity was estimated against N/10 NaOH. Sugar estimation was done as per A.O.A.C. (2012) method.

## RESULTS AND DISCUSSION

### Fruit and Quality traits

Data presented in Table 1 revealed that there was significant variation in different parameters of yield and quality of Chinese gooseberry fruits. Average fruit weight varied from 50.21g to 71.76 g with maximum in Allison (71.76g) closely followed by Hayward (70.25g) and minimum in Abbott (50.21g). Fruit length varied from 51.22 mm to 55.12mm with maximum in Bruno (55.12g) closely followed by Allison (54.88g), Hayward (54.15 g) and minimum in Monty (49.25g). Width of fruit was maximum in Monty (46.25g) and minimum in Abbott (34.51g) rest were in between these two varieties. Fruit yield was recorded maximum in Allison (45.15kg/tree) and minimum in Hayward (29.85 kg/tree). Variation yield characters in different cultivars may be attributed to genetic feature of individual variety and along with agrotechnique management. The fruit yield/tree increases with the increasing age and canopy of the plant upto certain stage. Shukla *et al.* (2009) have also observe similar fact in aonla. The highest percentage of “A” grade fruit (Table 1) was recorded maximum in Allison (61.46% and minimum in Abbott (38.52%) rest were in between these two varieties. TSS in kiwi fruits varied from 9.89% to 12.45% with maximum in Monty (12.45%) and minimum in Bruno (9.89%). The highest reducing sugar was recorded in Allison (11.3%) followed by Monty (9.12%), Hayward (8.8%) and minimum in Abbott (7.8%). Non-reducing sugar was observed to be the maximum in Allison (7.6%) and it was recorded minimum in cultivar Abbott

**Table 1**  
**Performance of kiwi in mid hill region of Himachal Pradesh**

S.No.	Varieties	Av. Fruit weight (g)	Fruit Length (mm)	Fruit Width (mm)	Yield (kg/tree)	A grade fruit (%)	TSS (%)	Reducing sugar (%)	Non reducing sugar (%)	Acidity (%)
1	Allison	71.76	54.88	45.25	45.15	61.46	11.12	11.3	7.6	1.12
2	Abbott	50.21	51.22	34.51	32.12	38.52	12.15	7.8	4.5	0.95
3	Bruno	55.31	55.12	34.52	42.18	40.31	9.89	8.5	4.8	1.01
4	Hayward	70.25	54.15	41.25	29.85	42.47	10.15	8.8	5.1	1.10
5	Monty	69.21	49.39	46.25	41.75	52.45	12.45	9.12	5.8	1.21

(4.5%). Acidity content in kiwi fruit was varied from 0.95% to 1.21% in different varieties. The variation in quality attributes in Kiwi cultivars have been also reported by Singh *etal* (2012) in Kiwi and Shukla *etal* (2009) in aonla.

### REFERENCES

- AOAC, (2012). Official methods of analysis, Association of official analytical chemist 19<sup>th</sup> edition, Washington D.C., USA.
- Shukla Arun K, Singh D and Shukla Anil K. 2009 Performance of aonla cultivars under arid region of India. *Indian J Agric Scs.* 79 (11): 849-852.
- Singh N. D., Mishra T. S., Singh A. K (2012) Performance of Fruit set, Yield and different Attributes of Kiwi Fruit Varieties under West Kameng District of Arunachal Pradesh. *Journal Of Krishi Vigyan*, 1 (1):58-60.
- J.S. Chandel, O.A. Bharti and R.K. Rana (2004) Effect of pruning severity on growth, yield and quality of kiwi (*Actinidia deliciosa* Chev.). *Indian J. Hort.*, 61:114-117.
- G. Pandey and Y.P. Sharma (2000) Kiwi Fruit-T.K. Chattopadhyay (Ed.)-A text book of pomology, Kalyani Publisher, New Delhi-4, pp 311.