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Performance of Chinese gooseberry for yield and quality traits

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ABSTRACT: *The study was carried out at Horticultural Research Farm of Indian Agricultural Research Institute, Regional Station, Shimla. The experimental trees of five cultivars viz., Allison, Abbott, Bruno, Hayward, Monty with uniform age were selected. The uniform management practices with respect to nutrition and irrigation were adopted for all the cultivars. The grafted plants of apricot cultivars were transplanted in the field at 4m apart under square system of planting. Observation on yield attributing traits like fruit length, breadth, fruit weight and fruit yield /tree, quality parameters viz; acidity, TSS, reducing and non reducing sugar were recorded during 2013 and 2014. 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

Chinese Gooseberry (*Actinidia Deliciosa*) popularly known as Kiwifruit is among the very few recent introductions which have surpassed in popularity due to its tremendous commercial potential in the sub-Himalayan region. In India, Kiwi was first planted in the La 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, Utterakhand, 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 2014 at ICAR-Indian Agricultural Research Institute, Regional Station, Shimla. Five kiwi cultivars Hayward, Monty, Allisson, 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 calliperse. TSS was determined with the help of digital hand refractometer. Titrable acidity was estimated against

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N/10 NaOH. Sugar estimation was done as per A.O.A.C. (2012) method.

RESULTS AND DISCUSSION

Yield parameters

Data presented in Fig. 1 and 2 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). Maximum fruit weight was recorded in Hayward (92.68g) and minimum highest weight was with Abbott (67.94g) rest were in between these two varieties (Fig. 1). 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 *etal* (2009) have also observe similar fact in aonla.

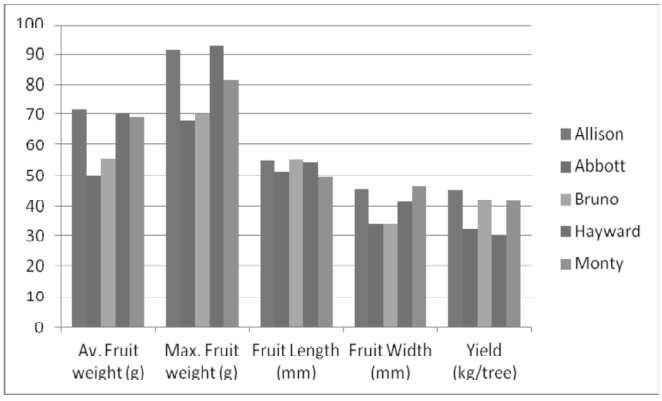

Figure 1: Performance of Chinese gooseberry varieties for yield parameters

Quality parameters

The highest percentage of "A" grade fruit (Fig. 2) 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

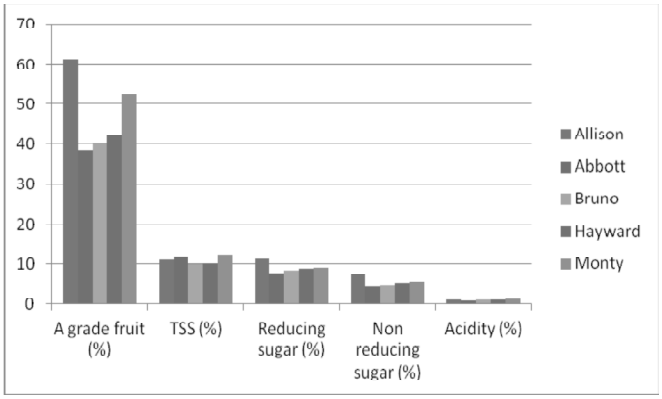

Figure 2: Performance of Chinese gooseberry varieties for quality parameters

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 (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 *et al.* (2012) in Kiwi and Shukla *et al.* (2009) in aonla.

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