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Performance of some kiwifruit cultivars under Midhill condition of Himachal Pradesh

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Abstract : Five commercial cultivar of Kiwifruit viz., Abbott, Allisone, Bruno, Hayward and Monty were evaluated for quality assessment at optimum harvest maturity. Fruit weight, size, total soluble solids, firmness were higher in Hayward cultivar, while titrable acidity and total sugars were maximum in Bruno and Monty cultivars, respectively.

Key words : Kiwifruit cultivars, Fruit characteristics, Quality parameters

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Chinese gooseberry or Kiwifruit is native to China. It has gained a great popularity in New Zealand, USA, Japan, France and Italy during last two decades. In India, Kiwifruit was successfully introduced in Shimla hills of Himachal Pradesh during late sixties. It seems promising for cultivation in low and mid hills because of its hardy nature and adaptability to varied agro climatic conditions. In preliminary trials cultivar 'Allison' has shown promise for commercial cultivation because of its earliness, high sugars content and prolific bearing habit (Rathore, 1981). Despite the fact that the Kiwifruit in the recent year have shown tremendous potential for cultivation in mid hills of Himachal Pradesh, no information is available on performance of different Kiwi cultivars under low and mid hills condition. Therefore, the present study was undertaken to assess the performance of five commercial cultivars of Kiwi grown under mid hill zone of Himachal Pradesh.

The present investigation was carried out in the experimental block of Department of Pomology Dr. Y.S.P. UHF, Solan on twenty years old vines of five Kiwi cvs. namely Allison, Abbott, Bruno, Hayward and Monty. The experiment was laid out in Randomized Block Design and replicated thrice. The vines were planted at 6 x 4 m spacing. The fruits were harvested at commercial maturity

and subjected to quality evaluation. Fruit size was (length x diameter) recorded individually with the help of Vernier calipers. Flesh firmness was measured with an Effegi panetrometer-FT 327 and expressed as Newton (Force in kg 9.807). titratable acidity (%) and total sugars (%) were determined by standard AOAC methods (Horwitz, 1980), while total soluble solids (°B) of the juice was determined with an Erma refractometer (0 to 32 range). Starch (%) was estimated by the anthrone reagent method (Clegg, 1956). The bioelectrical conductance was recorded in m mhos/cm on a direct reading systonics -303 conductivity metre. The gas flow method as a described by Mayer *et al.* (1966) was employed for the quantitative measurement of respiration as CO₂ evolved in mg/ kg fruit/hour in by the fruit samples.

The data presented in Table 1 indicate that significantly highest (6.5 x 4.6cm) values for fruit size were recorded in Hayward cv. Followed, by Bruno (7.5 x 3.6cm) and Allison (6.5 x 3.9 cm), respectively where as Monty cultivar of Kiwifruit produce smallest fruits (5.6 x 3.7 cm). The highest fruit weight was also recorded in Hayward cultivars (80.03 g) and the lowest (48.15 g) values were recorded in Monty cultivar. At the time of commercial picking, Bruno cultivar of Kiwi produced soft fruit showing lowest flesh firmness (78.9 Newton), while

Table 1 : Physio-chemical fruit characteristics of some Kiwifruit cultivars (Pooled mean of two years)

Cultivars	Date of commercial picking	Fruit size (cm)		Fruit weight (g)	Flesh firmness (N)	Titrable acidity (%)	TSS (°B)	Sugars (%)	Bioelectrical conductance in mhos/cm	starch (%)	Respiration mg CO ₂ /Kg/h
		Length	Diameter								
Abbott	11 th to 18 th November	5.9	3.7	62.05	88.8	1.65	8.20	6.19	3.10	2.16	18.0
Allison	4 th to 11 th November	6.5	3.9	63.07	90.0	1.52	8.90	6.81	3.15	2.10	22.2
Bruno	11 th to 18 th November	7.5	3.6	66.33	78.9	1.75	9.20	6.97	3.52	2.25	17.4
Hayward	18 th to 25 th November	6.5	4.6	80.03	94.1	1.68	9.80	7.38	2.58	2.42	18.0
Monty	11 th to 18 th November	5.6	3.7	48.15	80.5	1.70	9.80	7.46	2.75	2.35	18.6
C.D. (P=0.05)	-	0.43	0.37	3.64	1.68	0.80	0.23	0.030	0.068	0.080	1.76

it was highest in Hayward cultivar (94.1 Newton). The highest titratable acidity was noticed in Bruno cultivar (1.75%). However, cultivar Allison was less acidic (1.52%). This might be due to fact that the cultivar Allison content higher amount of sugars (Rathore, 1981).

The total soluble solid (TSS) of fruit was significantly higher in Hayward and Monty cultivars (9.80 °B) which was significantly superior over remaining cultivars. The bioelectrical conductance which was measured by the leakage of electrolytes from membrane into cytoplasm was significantly higher in Bruno cultivar (3.52 m mhos/cm) followed by cultivar Allison (3.15 m mhos/cm) and its least value was recorded with Hayward cv. (2.58 m mhos/cm). The lowest (2.10%) and highest (2.42%) values of starch were recorded in Allison and Hayward cultivars, respectively. The rate of respiration was significantly higher in fruits of Allison (22.2 mg CO₂ / kg / h), while lowest respiration rate (17.4 mg CO₂ / kg / h) were recorded in Bruno cultivar of Kiwi. The present findings are in close agreement with the findings of Harris *et.al.* (1972), Rathore (1981) and Reid (1977).

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