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Short Communication

ESTIMATION OF LEAF AREA IN CERTAIN GRAPE CULTIVARS

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The present communication aimed at calculation of leaf area constant of six cultivars and correlation between leaf area, leaf length and width. Leaf constant value of these cultivars will be helpful to determine the actual leaf area for biometric studies.

Key words : Grape, leaf area, leaf length, leaf width, leaf area constant

The importance of leaf area in plant vigour, productivity in quantity and quality is immense as the leaves are prime organs for synthesis of carbohydrates and other organic substances. Manivel and Weaver (1974) have suggested biometric correlation between leaf area and length, width of leaf and petiole length in 'Grenache' cv. of grape and Arora and Chanana (1975) has studied 10 other cultivars i.e., Anab-e-Shahi, Banquabad, Beauty Seedless, Cardinal, Fosters seedling, Gold, Himrod, Kishmish Charni, Perlette and Thompson Seedless to test feasibility of biometric correlation between leaf area and length, width of leaf and petiole length and Gill and Brar (1984) has calculated leaf area constant as 0.8 in Perlette and 0.87 in Delight cultivars of grape. The present study is aimed at calculation of leaf area constant of six other cultivars and correlation between leaf area, leaf length and width.

Twenty five leaves with their petioles were plucked at random and actual leaf area was determined by leaf area meter (LICOR 3600). Leaf length and leaf width of respective leaves were also recorded. Correlation between leaf length, leaf width and leaf area were calculated. Leaf length and width (at the widest point) were measured with the help of a Digital caliper (CD-6^{11} Mitutayo). The estimated leaf area was obtained by multiplying length and width of the leaves. Values of the leaf constant was obtained as the ratio of actual area to estimated leaf area.

Relationship between leaf length and leaf area

The correlation existed between leaf area and leaf length indicated that leaf area is a function of leaf length in all the cultivars under study (Table 1). Significant correlation between leaf length and leaf area was also observed by Manivel and weaver (1974) and Arora and Chanana (1975).

Relationship between leaf width and leaf area

Similar to leaf length, leaf width also showed significant correlation with leaf area in all the cultivars under study, which shows that leaf area is also a function of leaf width (Table 2). Therefore, leaf width may also be used as one of the criterion for determining the leaf area. Present findings are also in a close conformity of the observations of Manivel and Weaver (1974) and Arora and Chanana (1975).

The leaf area constant values obtained for different cultivars were given in Table 1. The actual leaf area can be calculated by multiplying the length and width (at the widest point) with

Table 1. Leaf area constant values of six grape cultivars

Cultivar	Leaf length cm	r	Leaf width cm	r	Estimated leaf area sq. cm	Actual leaf area sq. cm	Leaf constant
Arka Soma	9.796	0.5660	12.988	0.6262	127.23	101.275	0.796
Arka Majestic	9.544	0.9020	12.116	0.9378	115.64	93.55	0.809
Tas-e-ganesh	9.176	0.7367	10.608	0.8778	97.34	66.09	0.679
Angur Kalan	7.020	0.6000	8.905	0.4600	62.52	52.45	0.839
Convent Large Black	6.936	0.8079	9.000	0.7860	62.429	58.56	0.938
Azabella	8.079	0.079	9.380	0.7728	75.79	62.22	0.821

*r correlation coefficient

the constant of respective cultivars as it is useful for estimating the leaf area without removing them from the plant and the constant can be used at any stage of crop (Gill and Brar, 1984). Direct measurement require detachment of the leaves and are therefore unsuitable for biometric studies requiring continuous observation of the same leaf till its maturity and full growth or when the number of leaves is too small to permit detachment. (Mohan Kumaran *et al*, 1964).

Correlations obtained between leaf length, leaf width and leaf area of Arka Soma, Arka Majestic, Tas-e-Ganesh, Angur Kalan, Convent Large Black, Azabella, indicated that leaf area was a function of leaf length and leaf width in dependently in all cultivars. Hence, for the determination of leaf area leaf length or leaf width, can be usefully employed. The leaf constant values of these cultivars will be helpful to determine the actual leaf area for biometric studies.

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