

The Use of Adelaide Technique, to Determine Available Browse of Shrubs

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THE AVAILABLE browse was determined by Adelaide technique through a step-wise regressions in the form of : $Y=a+bx_1+cx_2$, where x_1 and x_2 are the width and height, respectively of the selected shrubs not exceeding 1.5 meters. Results show that the co-efficient of determination (R^2) of these regressions were 0.62, 0.83, 0.60 and 0.80 for the shrubs *Leptadenia pyrotechnica*, *Acacia nilotica*, *Acacia raddiana* and *Acacia seyal*, if the estimated weight was used. Hence, the available shrub biomass was found to be 145.7, 282.4, 200.4 and 508.4 gm for the above-mentioned shrubs. On the other hand, when the calculated weight was used, R^2 for the same plants and the same order as above were 0.60, 0.87, 0.72 and 0.95 and available shrub biomass was 54.3, 123.4, 176.8 and 188.0 gm. The Adelaide technique in its simple application was found to be reliable, non-destructive and not time consuming.

Keywords : Adelaide technique , *Acacia nilotica*, *Acacia raddiana* ,
Acacia seyal, *Leptadenia pyrotechnica*, Shrubs, Biomass.

Rutherford (1979) in his review: Plant-based techniques for determining Available Browse (shrub biomass) and Browse (shrub biomass) utilization, stressed the difficulties of measuring forage which are peculiar to shrub lands and which are not encountered in grasslands. He observed that "at the present stage of development of techniques it is simply not possible to prescribe to the practical worker a particular browse measurement technique that is assured of succeeding under his particular conditions". To solve this dilemma Andrew *et al.* (1979) and (1981) have discussed three techniques that show promise for estimating shrub biomass non-destructively in the field. These are: Visual estimation, Dimensional measurement and the Capacitance probe.

Visual estimation was developed for use in grasslands and forblands (Pechanec & Pickford, 1937). Woodroffe (1941) described an adaptation of the technique for shrubs which was used in the Yudnabirra grazing experiment in Australia (Trumble & Woodroffe, 1954). Several Australian workers have used versions of a visual estimation technique to assess Chenopod shrub pastures (Leigh & Mulham, 1966; Squires, 1976 and Noble & Totterdell, 1978)

Measurements like height, width, and length of individual shrubs, when combined in various ways, have been shown by different researchers to correlate