Annals of Arid Zone 26(1&2) : 1-4, 1987

FACTOR ANALYSIS OF FODDER YIELD COMPONENTS IN *LASIURUS SINDICUS* HENR.

M. S. YADAV and G. V. S. R. KRISHNA

Central Arid Zone Research Institute, Jodhpur

ABSTRACT

The sources of co nmon variation of fodder yield and seven of its components in *Lasiurus sindicus* were analysed using Centroid method of factor analysis. Three factors together accounted for most of the inter-correlations. Tiller number, branch number, green fodder yield and dry matter yield could be grouped as productivity factor; culm thickness, leaf breadth and leaf length as growth factor; plant height, leaf-stem ratio and leaf breadth as forage quality factor. The constitution of factors was same in the two environments. The loadings on quality factors were relatively unstable whereas the loadings on productivity and growth factors were stable. It is found that growth and productivity factors play a pivotal role towards diversity in the *L. sindicus*. Criterion of selection for breeding varieties rich in yield and quality of fodder is discussed.

INTRODUCTION

High yielding, nutritious and drought hardy *Lasiurus sindicus* Henr. is an important pasture grass of the Thar desert. It grows naturally on extensive areas in far west Rajasthan (precipitation 300 mm per an.). No work on varietal improvement in respect of fodder yield and its quality has been undertaken so far. An attempt in this direction has, therefore, been made.

Information on correlations among economic traits helps in designing suitable selection procedures. Little is known on the mechanism underlining such associations. Factor analysis, a form of multivariate analysis revealing the unidentified sources of common variations in a set of characters (Cattel, 1965) was used.

MATERIAL AND METHODS

Eighty one genotypes of *L. sindicus* collected from different parts of Thar desert were grown in a Randomised Block Design with two replications. Forty five days old seedlings were transplanted with 75 x 50 cm inter- and intra- row spacings, respectively, at Central Arid Zone Research Institute, Jodhpur. The experiment was conducted over two years (Kharif 1982 and 1983 treated as two environments E_1 and E_2). Observations were recorded on tiller number/plant, plant height (cm), culm thickness (mm), leaf length (cm), leaf breadth (cm), leaf-stem ratio, branch number/tiller, green fodder

Table 2. Significance of three loading factors for the variables in *Lasiurur sindicus* under the two environments

Variables	Environment 1	Environment 2
Productivity factor (1):		
Tiller number/ plant	0.66	0.62
Green fodder yield/plant	0.83	0.96
Dry matter yield/plant	0.90	0.86
Branch number/ tiller	0.40	ns
Growth factor (2):		
Leaf length	0.75	0.65
Leaf breadth	0.83	0.40
Culm thickness	0.60	ns
Forage quality factor (3):		
Plant height	-0 48	0.55
Leaf-stem ratio	0.74	ns
Leaf breadth	0.49	ns

ns = Factor loading below 0.40

The loadings on forage quality factors under the two environments varied wider than those on growth factor and productivity factor. Moreover, the contribution of the forage quality factors towards original communality was less. It can, therefore, be inferred that growth and productivity factors are the major causative influences for diversity. Almost half of the total communalities of environmental correlation matrix was due to the influence of factor-1 which positively effected the tiller uumber, branch number, green fodder yield and dry matter yield. Significant and positive correlations among the tiller number, green and dry matter yield in *Lasiurus sindicus* were also reported by Yadav and Krishna (1986). Therefore, selection of multi-tillered plant having several primary branches would lead to ultimate improvement in the green fodder or dry matter yield. The selection for culm thickness, long and broad leaves (under the influence of factor-2) may also be followed simultaneously.

REFERENCES

Cattel, R B., 1965. Factor analysis : An Introduction to essentials. 1. The purpose and underlying medels. Biometrics. 21: 190-215.

Holzinger, K. J. and Harman, H. H. 1941. Factor analysis. University of Chicago Press, Chicago.

Lawley, O. N. and Maxwell, A. E. 1963. Factor analysis as a method. Butterworths, London.

Yadav, M.S. and Krishna, G.V.S.R. 1986. Studies on variability, correlations and path ana'ysis in desert pasture grass *Lasiurus sindicus* Henr. Annals of Arid Zone. 25(2): 157-163.

Yadav. M. S. and Sreenath, P. R. 1975. Factor analysis of fodder yield components in *Pennisetum pedicellatum* Trin. Andhra Agricultural Journal. 22 (1 & 2) : 5-9.