

Fig. 3.-Vegetation with a low canopy cover taken next to a borehole.

The soil forms present in the area, which were revealed by the boreholes, were Arcadia, Bonheim, Oakleaf, Rensburg and Valsriver.

The maximum depth of observable grass roots varied between 400 mm and 2000 mm . In most cases the majority of grass roots were observed in the uppermost 100 mm of each transect with a decreasing root-count with increasing depth. The only exception to this trend was the rooting pattern of a single sample in the Oakleaf Form where the majority of roots occurred above the neocutanic B horizon, at 200 to 300 mm depth. The average root-count for all the transects is illustrated graphically in Fig. 1. The vegetation surrounding the boreholes was mainly grass with species of Cynodon, Diplachne, Eragrostis, Panicum and Themeda identifiable and only isolated forbs present. It was possible in most cases to follow the grass roots from the above-ground plant to the bottom of the borehole. The grass cover in the vicinity of the boreholes varied from high to low (Figs $2 \& 3$ ). Correlation co-efficient tests on the correlation
between grass root-count and maximum observed grass root-depth, soil forms present in the area, vegetation cover and species present in the vicinity of each borehole, indicated little or no correlation between these factors. It would therefore seem that the root-count and root-depth of the abovementioned grass species are independent of the described soil forms as well as the vegetation cover. Furthermore, grass roots of the species observed are confined mainly to the first 100 mm of soil but may penetrate to depths of two metres or more. The authors thank Dr J.C. Scheepers for comments and suggestions.

## REFERENCE

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R. H. Westfall* and R. Drewes**

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## sectors of the transvanl province of south africa

Natural science field researchers usually describe the precise location or boundaries of their areas under study (for example, Edwards, 1981). Concise reference to the broad location of regions studied is often also necessary, particularly for use in the abstract of the published accounts of results. Past references to broad regions of the Transvaal province of South Africa have revealed considerable inconsistency and confusion, for example, when the term 'northern Transvaal' is used with reference to work done in the vicinity of Pretoria and to that on the border with Zimbabwe.

Although common language usage may influence the choice of terms to describe various sectors of the Transvaal, the information conveyed by regional terms, especially to other researchers unfamiliar with Transvaal, should preferably be consistently used across the different natural scientific disciplines.

In an attempt to place the choice of terms to describe broadly but concisely different sectors of the irregularly outlined Transvaal on a neutrally acceptable, logical footing, the following simple approach was used. The main point of reference taken, was the centre of gravity of the plane surface representation of the Transvaal (1976 boundary). This point was found to be $25^{\circ} 02^{\prime} \mathrm{S} ; 28^{\circ} 53^{\prime} \mathrm{E}\left( \pm 1^{\prime}\right)$. The proposed divisions are made relative to this point. The scheme is flexible to cater for specific needs by allowing overlapping entities.

The proposed terms for the sectors are given below in menu form, with their boundaries indicated in Fig. 4.

Choice 1 (halves): north half Transvaal south half Transvaal


Fig. 4.--Sectors of the Transvaal. The circle that runs through Pretoria represents the limits of the central Transvaal. Base map by courtesy of Dr J. M. Anderson.

Choice 2 (halves): east half Transvaal west half Transvaal
Choice 3 (quadrants):

Choice 4 (quadrants): north-eastern Transvaal north-western Transvaal south-eastern Transvaal south-western Transvaal northern Transvaal southern Transvaal eastern Transvaal western Transvaal central Transvaal

## Choice 5:

The last-mentioned central Transvaal is designed to overcome the problem of the high degree of sector divisibility in the region surrounding the central point and equals an area one ninth that of the Transvaal. This assumes a linear centre third fraction that converts to area in the form of $(1 / 3)^{2}=$ $1 / 9$ with a resulting radius of 100 km .

It follows that for any given point in the Transvaal
there is a choice of at least four defined sector descriptions, whereas in the central part there is a choice of five. The choice of an appropriate term will normally be determined by that sector in which the locality(ies) of interest is (are) most centrally placed.

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M. C. Rutherford* and R. H. Westrall*

[^1]
[^0]:    * Botanical Research Institute, Department of Agriculture, Private Bag X101, Pretoria 0001.
    ** Agricultural College, Private Bag X804, Potchefstroom 2520.

[^1]:    *Botanical Research Institute, Department of Agriculture, Private Bag X101, Pretoria 0001.

