

THE SOUTH AFRICAN VINEYARD LANDSCAPES: IMPACT ON LONG TERM CULTURAL PRACTICES

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Abstract

This paper follows the one presented by Saayman at the International Symposium on Landscapes of Vines and Wines in the Loire Valley during July 2003. Where Saayman's paper described the heritage and development of South African vineyard landscapes, this one focuses on how the landscape is used to assist in decision-making concerning the most important long term practices.

The diversity of South African vineyard landscapes, especially those in the Western Cape, prevents the application of recipes in vineyard practices. In this region, viticulture is practiced on coastal plains, undulating foothills and mountain slopes ranging from below 10m to above 500m altitude. These variations occur over short distances, frequently within one kilometer. A huge variation in soil type and exposure to sea breezes further increase the complexity of the landscape. Evidently the choice of rootstock and scion cultivar is critical and frequently situations are found where more than one rootstock and certainly more than one scion clone must be used in the same block.

Clearly, it is very difficult to create homogeneous vineyard blocks in this diverse landscape. Examples are presented of how to define vineyard block boundaries. Cool sea breezes during summer are responsible to prevent excess leaf and berry temperature increases. The choice of row direction is an important decision to utilize this beneficial wind effect, and where possible SW-NE row directions are used.

To create vineyard blocks on varying soil types is difficult. An important tool in this regard is to standardise on the distance between rows and to vary the distance between vines in the row according to the vigour potential of the soil. Examples of this, as well as how the landscape affects the choice of the trellising system, are presented.

Introduction

Saayman (2003) described the heritage and development of the South African vineyard and wine landscapes. He stated that "although heritage (tradition) is principally of human origin and occupies a very prominent place in vineyard landscapes, South African vineyards also boast unique and very diverse land form and soil landscapes, a natural heritage of geological processes and time, greatly impacting on mesoclimate and vine performance".

It is this diversity that dominates cultural decision-making regarding placement of cultivars, vineyard block boundaries, row direction, vine spacing and trellising system. In this presentation the focus will be on the variation in vineyard landscapes and how it affects the application of long term viticulture practices.

Viticulture in South Africa is practiced between 34 and 27 degrees southern latitude including Mediterranean, semi-arid, temperate maritime and summer rainfall regions (Fig 1) but this paper will focus only on the Mediterranean region (Western Cape).

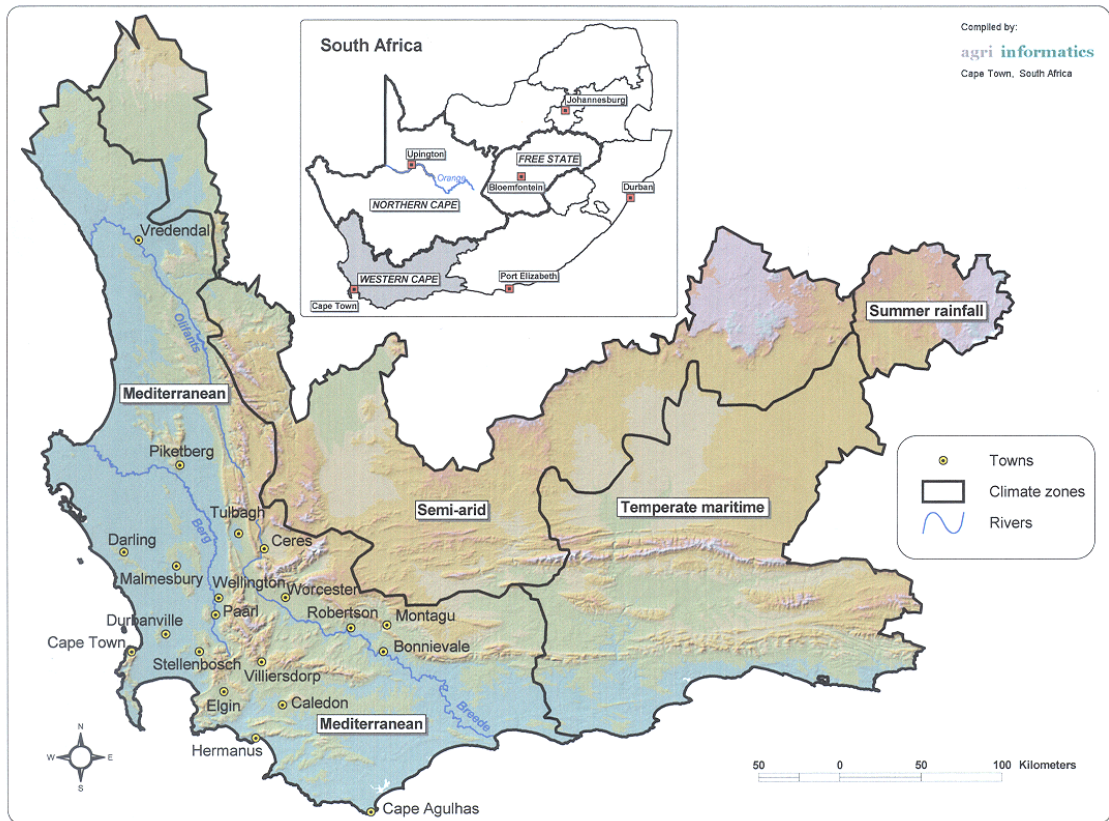


Fig. 2

Fig. 1 Major climatic regions of the Western Cape

Landscape and choice of cultivars

The general vineyard landscape of the Western Cape is characterised by coastal plains, undulating foothills and mountain slopes with altitudes ranging from below 10m to above 500m (Fig. 2). These occur over very short distances.



Fig. 2 Different altitudes of viticultural landscapes in the Coastal Region

The proximity to the sea as well as the effect of sea breezes affect the mesoclimate experienced at all landscape positions and must be considered in the choice of scion cultivars.

The choice of rootstocks is dictated by the soil found at a specific site and it varies from high potential reddish and yellowish brown granitic soils to low potential duplex soils consisting of coarse, bleached sand on wet day (Saayman, 2003).

Normally, in the Western Cape, south facing slopes are cooler than slopes facing in any other direction although frequently south westerly and even west facing slopes are found that are as cool due to the effect of south westerly sea breezes occurring most summer days during the afternoon (Fig. 3). These cool slopes are normally chosen to plant cultivars such as Sauvignon blanc and Merlot. Without the effect of sea breezes, east facing slopes are normally cooler than west or north facing slopes and these localities are normally chosen for cultivars such as Shiraz. North facing slopes with well buffered soils are normally chosen for cultivars such as Cabernet Sauvignon and Pinotage.

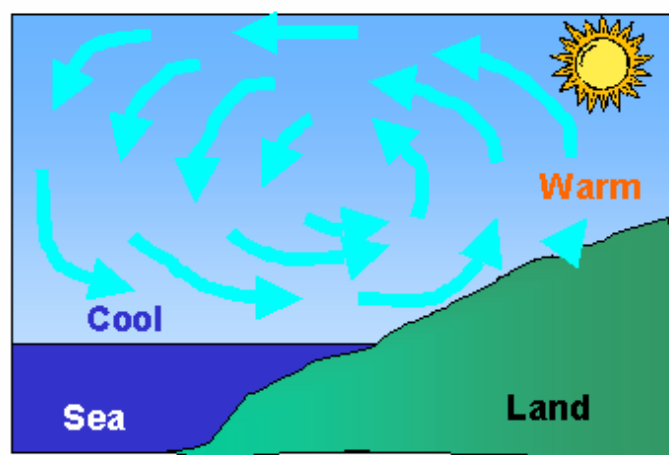


Fig. 3 Sea-breeze-exposed sites are cooled down during summer

Landscape and vineyard block boundaries

The previously mentioned variation in the potential of the soil for vigour which occurs over very short distances (Saayman, 2003), demands proper attention to the outlay of vineyard

blocks. A scientifically designed soil map (Fig. 4) is used to demarcate block boundaries in a conscious effort to create vineyards with homogeneous vigour. As far as possible, soil type boundaries are used to demarcate vineyard block boundaries (Fig. 5).

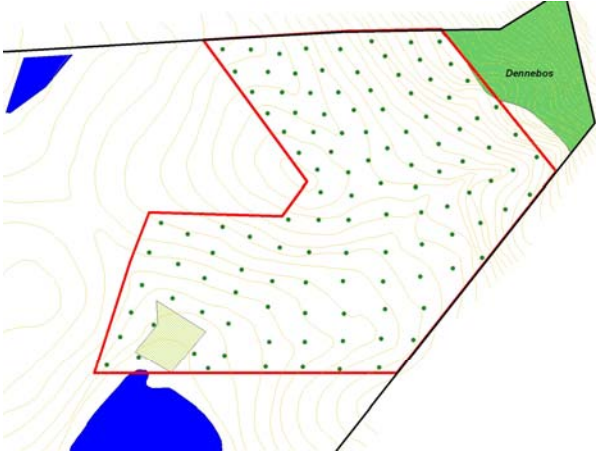
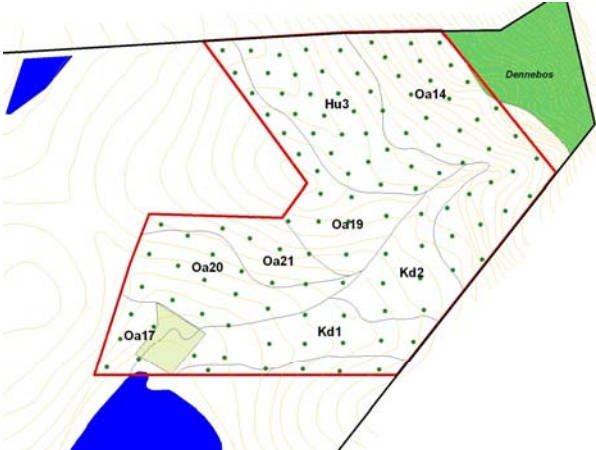


Fig. 4 Profile pits are dug to describe different soil types as basis for a soil map



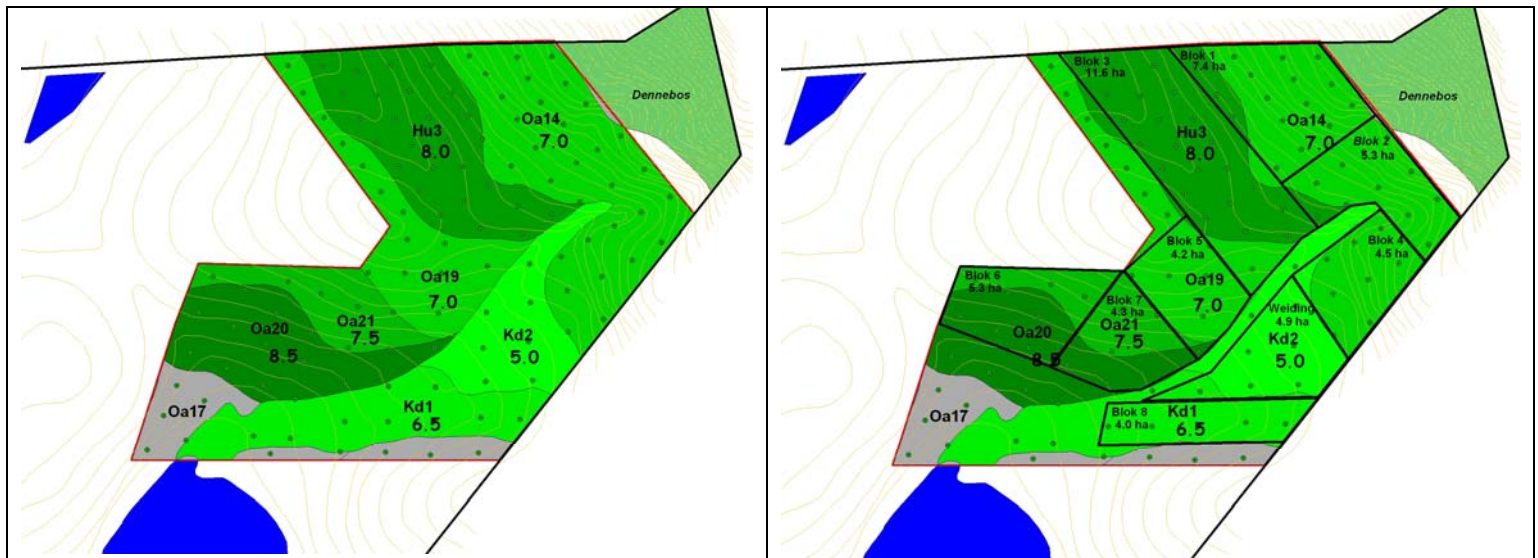


Fig. 5 Soil type boundaries are used to define block boundaries

Landscape and choice of row direction

The Western Cape can be classified as a warm viticulture region and therefore special efforts are made to utilise the natural airflow that occurs during the warm summer months. It is especially the cool sea breezes that are regarded as beneficial for normal physiological processes in the grapevine (Hunter, 2004). Subdued leaf and grape temperatures are beneficial for photosynthesis as well as normal grape berry metabolism. Therefore, row directions that coincide with dominant cool breezes (mostly south west – north east) are chosen as far as the topography (especially the steepness of the slope) allows it. (Fig. 6)



Fig.6 Row direction coincide with wind direction (SW-NE) as far as possible

Landscape and choice of vine spacing

The variation in soil type (Fig. 7a) that is inherent to the landscape frequently does not merit the choice of the same vine spacing. Although the distance between rows is normally standardised on the narrowest which is practically possible, the distance between vines in the row is varied according to the potential of the soil for vigour. Closer vine spacing is used on

soils with a low vigour potential while wider vine spacing is used on soils with a high vigour potential (Fig. 7b). The rationale behind this is to create a vineyard with homogeneous shoot length to ensure the smallest possible variation in grape composition (Archer, 2001; Archer & Hunter, 2004).



Fig. 7 Soil variation that normally occurs in the Western Cape (A) is managed by adapting in-row vine spacing according to the potential for vigour (B).

Landscape and the choice of trellis system

The choice of trellis system (mostly vertical) is based on the potential of the soil for vigour. When higher vigour levels are expected, the trellis system must be larger and *vice versa*. The principle is that the system should accommodate the growth and not limit it. The height of the trellis system dictates the shoot length which is obtained and should always provide enough leaves (16-18) per shoot to ripen two clusters.

Higher lying sites in the landscape normally induce less vigour and accordingly smaller trellis systems (1,8m – 2,1m pole length) are chosen. Lower, midslope sites, especially those with deep reddish and yellowish brown apedal soils normally induce strong vigour and accordingly larger trellis systems (2,4m pole length) are chosen.

General

The modern trend with vineyard outlay is to blend the development with the surrounding landscape. On flat aspects the normal straight-line rectangular or square block design is used, while on undulating or rolling landscapes efforts are made to soften the vineyard- landscape contrast by using curved block boundaries. Furthermore, special efforts are made to rid the natural landscape of all alien vegetation. These efforts markedly improved the return of the indigenous fynbos vegetation and the integration thereof into viticultural developments.



Fig.8 Utilising the natural environment in vineyard outlay