

Soils and land use potential of portion 7 of Wittedrift No 306 situated in Bitou Municipality.

A soil investigation was conducted on a portion of the property where the owner wishes to plant honey bush tea as a commercial venture. The area investigated is +/- 25 hectare in extent and 13 soil profiles were dug to establish the soil patterns, types and extent thereof. The soils were described and classified according to Soil Classification – A taxonomic system for South Africa, Soil working group, 1991.

Description of the area under investigation. (See Map)

The area lies within the steeply incised coastal plateau and are generally sloping. Northern aspects are dominant and consist of shoulder and mid slopes with slopes % ranging from 6 to 18%. A smaller area of southerly aspect with shoulder and mid slopes ranging from 3 – 15% occurs to the south western corner of the area under investigation.

The climate has been classified as warm-temperate with an all-year rainfall distribution pattern with a long term mean annual precipitation of +/- 670mm.

The underlying geology is Enon conglomerates of the Uitenhage Group with tertiary clay deposits. The soils are generally of duplex origin with sandy loam to sandy clay loam top soils underlain by clay sub soils. Common rounded stones are found within the profiles.

The soils were classified and described in table A. Duplex soils of the Sepane and Kroonstad soil forms occur on the shoulders and southern aspects. Soil of the Valsrivier and Oakleaf soil forms occur on the northern aspects. Topsoil depths vary between 25 and 35cm with fine sandy loam to sandy clay loam textures. A moderately strong crumb structure was found in the top soils. The sub soils are generally moderately strong blocky structured (stronger in the Sepane form).

Agricultural Potential

The agricultural potential is based on availability of knowledge on the physical features (soil types, terrain) climate and farming options in the larger Plettenberg Bay area. The soil texture, soil depth (effective) and potential erodability are the main factors affecting the agricultural potential. The soil water holding capacity is of utmost importance in dry land farming while under irrigation it affects the application rates and scheduling. The erosion hazard is influenced by slope angle, soil texture and structure, effective rooting depths and management and climatic influences.

The top soils have a crumb structure with a fairly strong texture and a gradual transition to the subsoil. The soils have a fairly high water holding capacity with a high infiltration capacity.

The agricultural potential for various dry land and irrigated crops are presented in table B.

Planting of honey bush tea under irrigation or dry land.

Land preparation.

1. In order to incorporate the ameliorants (lime, phosphate, etc) the soil will need some preparation. Shallow chisel ploughing on the northern aspects is suggested.
2. The soils on the southern aspects are much wetter and some ridging, +/- 75cm wide and +/- 30cm high, is suggested in order to create enough rooting volume, with good internal drainage. At the same time the ameliorants can be incorporated. The slopes are not very long and down slope ridging perpendicular to the contour, is suggested. Temporary contour furrows every +/- 18-20m can further control potential erosion. A cover crop eg. oats can be sown to consolidate the topsoil.
3. On unit 3, the northern aspects, mulching of the plant rows are of the utmost importance to curb transpiration to keep the soil moist and cool. Use materials from the area such as plant debris and alien plant chips (eg. Pines and Acacia's) from the farm. This will allow for the plants to survive short droughts and to conserve irrigation water.

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7 October 2016

TABLE A - Brief description of soils

Soil Unit	Topography	Soil form and family	Brief description of soil
1	Ridge, 2 - 5% slope, west-east running	Sepane 1210 Klapmuts 1120	Fine sandy loam mottled, dark grey, 30cm deep top soil, crumb structure overlies structured clay sub soil. Wet clay underneath. Effective soil depth = 25-35cm
2	South-south-eastern aspect 8 - 15% mid slopes	Sepane 1110 dominant	As above Effective soil depth = 25-30cm
3	Northern aspect, 8 - 15% mid slopes	Valsrivier 1211 Tukulu 1220	Fine sandy loam, dark brown, 30 - 35cm deep, crumb structure, overlies red brown structured clay loam to clay to 75cm depth. Effective soil depth = 30-60cm.

TABLE B - Potential of various crops

Dry land Crops	Unit 1	Unit 2	Unit 3	Notes
Winter Cereals	High	Low	Moderate - High	Only no-till Only no-till Ridge Unit 2 - Moderate
Winter annual pasture	High	Low	Moderate - High	
Summer annual pasture	Moderate	Moderate	Moderate	
Vegetables	None	None	None	
Honey bush	Moderate	Low	Moderate - High	
Irrigated Crops				
Pastures - annual	High	Moderate	High	High erosion risk
Vegetables	Moderate	Low	Low	
Vineyards	Moderate (Ridges) *	Low	High	
Macadamias	Moderate (Ridges)	Low	High	
Fynbos (Protea etc.)	Moderate (Ridges)	Moderate (Protea spp)	High	
Honey bush	Moderate (Ridges)	Moderate (Ridge)	High	
	* Ridge to add soil volume and allow drainage for optimal growth			