



# Spotlight on Agriculture

No 2

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## CHARCOAL PRODUCTION IN THE KARSTVELD FACTS TO PONDER UPON

### INTRODUCTION

It is a well known fact that when one plant species is removed out of the system it is usually replaced by another plant species, which in most cases is a less desirable species. Bush encroachment is the natural replacement of the herbaceous cover by an undesirable woody component. Charcoal production is thus the removal of an already undesirable woody component which occurs because of the mismanagement of the natural rangeland. Injudicious removal of this undesirable woody component can result in a disaster - for instance one undesirable woody species replaced by the same species or another forming a coppice situation. The most aggressive encroachers in the Karstveld are *Acacia mellifera* (Black Thorn), *Dichrostachys cinerea* (Sickle Bush) and *Terminalia prunioides* (Deurmekaar). These three bushes also produce the best quality charcoal. Bush densities in the Karstveld may vary from 2900 to 21400 bush per hectare, averaging 10 000 bush per hectare. Factors that determine the economic viability of charcoal production and which should be taken into account when removing the woody component for charcoal production in a bush encroached area are: bush densities, composition of the woody component, the height classes (age) and the diameters of the different woody components.

### PERCENTAGE CONTRIBUTION OF THE DIFFERENT WOODY COMPONENTS TO THE TOTAL BUSH POPULATION IN THE KARSTVELD

<b>ACACIA MELLIFERA (BLACK THORN)</b>	<b>9</b>
<b>DICHRSTACHYS CINEREA (SICKLE BUSH)</b>	<b>15</b>
<b>TERMINALIA PRUNIOIDES (DEURMEKAAR)</b>	<b>14</b>
<b>OTHER ACACIAS</b>	<b>1</b>
<b>NON-THORNY FODDER TREES AND SHRUBS</b>	<b>61</b>
<b>AGRESSIVE ENCROACHERS (38%)</b>	



*Bush harvested  
for chips 1980  
(sickle bush coppicing  
of same area -  
photo 1996)*

### AVERAGE STEM DIAMETERS (MM) OF THE THREE AGGRESSIVE ENCROACHERS IN THE DIFFERENT HEIGHT CLASSES

HEIGHT CLASS	< 1 METER	1-2 METERS	2-4 METERS	> 4 METERS
AVERAGE (mm)	9	17	43	90

BUSH IN THE ORDER OF 20 MM TO 150 MM IS SUITABLE FOR CHARCOAL PRODUCTION

**PERCENTAGE CONTRIBUTION OF THE TOTAL BUSH POPULATION IN THE DIFFERENT HEIGHT CLASSES**

HEIGHT CLASS	< 1 METER	1-2 METERS	2-4 METERS	> 4 METERS
AVERAGE (mm)	49	26	*14	*11

\*ONLY 25% OF THE TOTAL BUSH POPULATION IS SUITABLE FOR CHARCOAL PRODUCTION

**CALCULATIONS VS ACTUAL BUSH HARVESTED IN THE FIELD**

- CALCULATIONS OF THE PERCENTAGE OF BUSH THAT CAN BE HARVESTED FOR CHARCOAL PRODUCTION**

38% OF THE TOTAL BUSH POPULATION IS AGGRESSIVE ENCROACHERS

25% OF THE AGGRESSIVE ENCROACHERS IS THICK ENOUGH TO BE HARVESTED (20 MM-150 MM) FOR CHARCOAL PRODUCTION

AVERAGE OF 10 000 BUSH PER HECTARE - ONLY 9.5% IS SUITABLE TO BE HARVESTED

- SURVEYS IN THE FIELD WHERE BUSH WAS HARVESTED**

(AVERAGE OF THREE SITES)

	BUSH / HA	BUSH / HA	TOTAL	
	STANDING	HARVESTED		
AVERAGE	9229	*779	10008	*7,8%

**AN EXAMPLE IN THE FIELD OF A CRITICAL SITUATION WHICH IS PRONE TO COPPING IF AFTER-CARE IS NOT APPLIED**

SPECIES	HEIGHT CLASSES / PERCENTAGE CONTRIBUTION				PERCENTAGE HARVESTED
	<1 METER	1-2 METERS	2-4 METERS	>4 METERS	
BLACK THORN	*23	-	-	-	
SICKLE BUSH	8	1	1	1	
DEURMEKAAR	8	7	-	2	
OTHER TREES AND SHRUBS	20	17	2	2	
<b>TOTAL</b>	<b>59</b>	<b>25</b>	<b>3</b>	<b>5</b>	<b>*8</b>

\*8% of the total population was harvested.

Very often an aggressive encroacher bush species is not visually prominent however may be dominant as a small bush and contribute significantly to the total population. In this case all the black thorn bushes were smaller than 50 cm and contributed \*23% to the total population. Sixteen percent of the total population also consisted of the two other aggressive encroacher species smaller than one meter. If after-care is not applied to control these bushes smaller than one meter high, coppicing will occur and aggravate rather than alleviate the problem. It is therefore of cardinal importance that an after-care programme be part of a bush control programme.

It is of cardinal importance that the bushes smaller than one meter be treated with one or other form of after-care to prevent coppicing of these smaller bush which will aggravate bush encroachment rather than alleviate it.