Compilation of key conservation, ABS and economic data on 13 bio-trade species and additional information

Done by SAEOPA

KM Swanepoel & W du Toit

June-July 2020













# Scope of work and deliverables

- <u>The objective</u>: Supporting the ABioSA programme to compile a summary document with the key conservation, ABS and economic data (including support documents mentioned in the summary document) of the 13 species within South Africa and obtain additional Marula nut information from their members based on the template.
- Specie data compilation:
  - These value chains and products are supported by ABioSA and some other meso organisations in various formats, hence the need to have access to up-to-date and consolidated data on these species.
  - Although the information within the value chains of these species are plentiful, it is unfortunately fragmented, with analysed and aggregated data being scarce.
  - Private and public decision-makers in the biotrade sector find the information in overload which leads to a reduction in decision quality.
- ABioSA is committed to provide accurate analysed data and information through its project activities to contribute towards changing this situation. Annex : Current species spread sheet.



# Data sheet on 13 species assigned by GIZ - ABioSA

- Aloe (Aloe ferox)
- Baobab (Adansonia digitata)
- Buchu (Agathosma spp.)
- Cape chamomile (*Eriocephalus spp.*)
- Imphepho (Helichrysum spp.)
- Marula (Sclerocarya birrea)
- Honeybush (Cyclopia spp.)



- Kalahari melon (Citrullus lanatus)
- Rooibos (Aspalanthus linearis)
- Rose geranium (*Pelargonium var Rose*)
- Wild ginger (Siphononclilus aethiopicus)
- Umsuzwane (Lippia javanica)
- Lanyana, Lengana, Mhlonyane, Umhlonyane, Wilde-als (Artemisia afra)



- Data gathered on 13 species in spreadsheet
  - Internet searches where own data were outdated and needed verifying
  - Emails, WhatsApps and personal calls
- Additional findings
  - Summary provided on research and development
  - Import, export and re-export information
  - Informal trade figures
- Recommendations



Available onl	ine at www.sciencedirect.com
000	ScienceDirect

South African Journal of Botany 75 (2009) 185-195

SOUTH AFRICAN JOURNAL OF BOTANY

www.elsevier.com/locate/sajb

Review

Artemisia afra: A potential flagship for African medicinal plants?

N.Q. Liu, F. Van der Kooy\*, R. Verpoorte

Division of Pharmacognosy, Section of Metabolomics, Institute of Biology, Leiden University, PO Box 9502, 2300RA Leiden, The Netherlands Received 11 July 2008; received in revised form 4 November 2008; accepted 6 November 2008



Artemisia afra added to the list



# Four focus areas to be filled per specie

Sustainable use and conservation

Non-detrimental finding, biodiversity management plan, resource assessment, harvesting guidelines and climate adaption

Access and benefit sharing

Number and type of permits, TK holders, ABS, training engagement, prior informed consent, material transfer agreement, bio-cultural community protocol

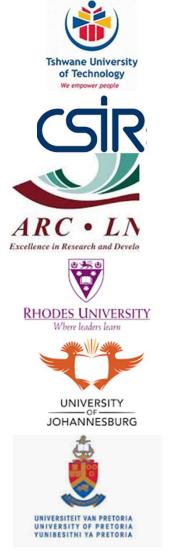
Economic information

Cultivation and harvesting status, number of producers, volumes of products, associations and contacts, donors, sector development plans, region of production

### Research and development database



Level of research, distribution and chemical analysis, commercialization and value adding, monographs, standards, branding



# Sustainable use and conservation

Some species well developed, but most underdeveloped

	Sustainable use and conservation												
	Non-	Biodiversity	Reso	urce assessment	Stages of use	Harvesting guidelines				Clineste			
Species	detrimental Finding (NDF)	Management Plan (BMP)	Yes /No	By whom & is it available?	(national/ regional over use)	Yes /No	What year?	Current working groups?	By whom & is it available?	Climate change adaptation			
Aloe ferox	Yes (DEFF)	Yes (GIZ, draft)	Yes	SANBI Yes	National (monitored by the Aloe Council of SA)	Yes	2013	Yes (Eastern Cape)	SAEOPA Yes	Yes (SANBI)			
Marula	No	Yes (IDC)	Yes	Yes UJ & Grahamstown Univ	National	Yes	2010	No	IDC	Yes			
Baobab	Yes EcoProducts	Yes	Yes	Sarah Venter	National and regional	Yes	2012	Yes (SADC)	African Baobab Alliance SAEOPA	Yes			
Kalahari melon	No	Yes	No	N/A	National and regional	Yes	2013	No	N/A	Yes			
Rooibos	Yes	Yes	Yes	SA Rooibos Council	National	Yes	2007	Yes	South African Rooibos Council	Sensitive			
Buchu	Yes	Yes	Yes	Buchu forum	National	Yes	2011	Yes	DALRRD	No			
Wild ginger	Yes	Yes	Yes	IPUF	Regional	Yes	2014	Yes	DALRRD	Yes			
Rose geranium	Yes	Yes	Yes	SAEOPA	Regional	Yes	2014	Yes	DALRRD	Yes			
Lippia javanica	Yes	Yes	No	N/A	Regional	Yes (SAEOPA)	2016	Yes	DALRRD	Yes			
Cape chamomile	Yes	Yes	No	N/A	National	Yes (SAEOPA)	2013	Yes	DALRRD	No			
Helichrysum	Yes	Yes	No	N/A	Regional	Yes (SAEOPA)	2012	Yes	DALRRD	Yes			
Honeybush	Yes	Yes (Albert Ackhurst)	Yes	SA Honeybush Association	National	Yes (Albert Ackhurst)	2014	Yes	DALRRD	Yes (Albert Ackhurst)			
Artemisia	No	No	No	N/A	Regional	Yes	2012	No	N/A	Unsure 🕨			



environmental affairs Department: Environmental Affairs REPUBLIC OF SOUTH AFRICA

Access and Benefit sharing

mostly lacking few species done



	Access and benefit sharing												
				BSA benefit		aining/engageme		Prior	Material				
Species	Number of permits estimated	Biotrade, bio- prospecting integrated	IK/TK holders identified	sharing agreement in place	ABS	Contract	Negotiation	Industry/ value chain	Conservation / sustainable use engagement	Informed Consent (PIC)	Transfer Agreement (MAT)	Bio-cultural Community Protocol (BCP)	
Aloe ferox	30 -{40} (DEFF)	All 3	Not finalised yet	Unknown	ABioSA	ABioSA	BIA	BIA	BIA	Unsure	Unsure	Unsure	
Marula	2 (4 in pipeline) {11}	Biotrade	Not finalised yet	>20 possibly Limpopo	ABioSA	ABioSA	BIA	BIA	BIA	Unsure	Unsure	Unsure	
Baobab	1	Biotrade	KhoiSan	Yes	No	No	No	No	Yes	Unsure	Yes	Yes	
Kalahari melon	2	All 3	Yes KhoiSan	Yes	No	No	No	No	No	Unsure	Yes	Unsure	
Rooibos	13	All 3	Yes KhoiSan	Yes	SA Rooibos Council & SKA Attorneys	Yes	Yes extensively	Yes	Yes	Yes	Yes	Yes	
Buchu	6 [13]	All 3	Khoi-khoi & San	Yes	ABioSA	ABioSA	BIA	BIA	BIA	Unsure	Not finalised yet	Busy	
Wild ginger	5	All 3	Not finalised yet	Not known	ABioSA	No	No	Yes	Yes	Unsure	No	Unsure	
Rose geranium	0	All 3	Not finalised yet	Global crop status	ABioSA	No	No	Yes	N/A	Unsure	No	Unsure	
Lippia javanica	1	All 3	Not finalised yet	Some	ABioSA	No	No	Somewhat	No	Unsure	Yes	Unsure	
Cape chamomile	2	All 3	Not finalised yet	No	ABioSA	No	No	No	No	Unsure	No	Unsure	
Helichrysum	2	All 3	Not finalised yet	No	ABioSA	No	No	Somewhat	No	Unsure	No	Unsure	
Honeybush	4	All 3	KhoiSan & wildharv com	Yes	SA Honeybush Association	Yes	Yes extensively	Yes	Yes	Yes	Yes	Yes	
Artemisia	2	Unsure	Unsure	No	No	No	No	Yes	Unsure	No	No	Unsure	

### Economic information production

small volumes in most while actual production figures low and not generally shared



						Economic						
	On national			Estimated	Volumes	Volumes for re-	Existing	association	Other donor			
Species	list for sustainable harvesting	On national list for cultivation	Cultivated privately, & by whom	number of exisitng producers	estimated average (kg/ton per annum)	exports from neighbouring countries	Name of association	Contact name & cell	organisations working on the species?	Sector develop- ment plan	Key region(s) in RSA	Key region
Aloe ferox	Yes	No	Yes few entrepreneurs	>20	300 t	Unknown	Yes Aloe Council of SA	Prof B van Wyk 082 800 4134 or Tertius Cloete	No	ABioSA	Western Cape Eastern Cape	South Afri
Marula	Yes	No	Experimnetal sites & IDC programme since April 2020	<50	160 kg	Namibia and Zimbabwe 200T	SAEOPA	Marula Guys Steyn Potgieter +26 814 013 376	No	ABioSA	Limpopo	SADC
Baobab	Yes	No	Yes Sarah Venter's initiaitve	<20	5	Unsure	SAEOPA	Dr Sarah Venter 082 374 9534	No	ABioSA	Limpopo	SADC
Kalahari melon	No	No	Yes by producers commer- cialising it as a crop	<20	4	Zimbabwe 2T -5T	SAEOPA	Obed Nelovholwe 082 549 1454	No	ABioSA	All provinces	SADC
Rooibos	Yes	No	Yes by commercial producers	>500	14 000-30 000	Requested SARC	SA Rooibos council	Marthane Swart 084 511 8937	No	ABioSA	Western Cape	Western C
Buchu	Yes	Yes	Yes extensively by producers	<50	<500 t	None	Buchu forum	Ulrich Feiter 082 375 0533	No	ABioSA	Western Cape	Western C
Wild ginger	No	No	Yes experimental & commercial	<20	Unsure	Swaziland and Mozambique. Volumes not known	none	Gill Banda 082 921 2931	No	ABioSA	KZN, Mpumalanga, Limpopo	SADC
Rose geranium	No	No	Yes exclusively	>20	<200 kg	Rwanda 50kg	SAEOPA	Karen Swanepoel 082 081 6077	No	ABioSA	E Cape, W Cape, KZN, Mpumalanga, Limpopo	RSA
Lippia javanica	No	Yes	Yes experimental & commercial	<20	<100 kg	Unsure	SAEOPA	Karen Swanepoel 082 081 6077	No		All provinces except W Cape	SADC
Cape chamomile	No	No	Exclusively	<10	<50 kg	None	SAEOPA	Werner Bester 082 334 3324	No	ABioSA	Western and Eastern Cape, Freestate	Western a Eastern Ca Freestat
Helichrysum	No	Yes	Small-scale cultivation	<10	<100 kg	None	SAEOPA	Herbs-Aplenty 082 338 5550	No		All provinces	SA
Honeybush	Yes	Yes	Yes by producers commer- cializing it as a crop	<20	290 ha 130 t	Requested SAHTA	SA Honeybush Association	Albert Ackhurst 083 733 2271	No	ABioSA	WC & EC	Western C
Artemisia	No	No	Yes by commercial producers	<10	Dried <100 kg Oil <100 kg	Botswana volumes unknown	SAEOPA	Flip Minnaar 083 303 8253 Elliot Ndlovu 072 379 5367	No, but Univ Lesotho intense researching	All possible	Most provinces	SADC

# Research and development

a lot is done, not well known, not well applied in value adding



				Res	earch and develop	ment database compile	d by SAEOPA f	rom IPUF and S	A Botanists' infor	mation		
	Species	Extensively	Some	Limited	Distribution, hybridizing, chemical composisiton & properties	Commercialized, value added	Chemistry	Properties	Monograph	Standard	Branding	Branding
	Aloe ferox	Yes			Yes	Yes	Yes	Yes	Yes	Yes		
	Marula	Yes			Yes	Yes	Yes	Yes	Yes	Listed		
	Baobab		Yes		Yes	Yes	Yes	Yes	Yes	In process		
t	Kalahari melon			Yes		Yes	Yes	Yes		Listed		
	Rooibos	Yes			Yes	Yes	Yes	Yes	Yes	Agricultural Product Standards Act, 1990 (Act 119 of 1990)	Brande	ed
	Buchu	Yes			Yes	Yes	Yes	Yes	Yes	Listed		
	Wild ginger		Yes		Yes	Yes	Yes	Yes	Yes	No		
	Rose geranium	Yes			Yes	Yes	Yes	Yes		In process		
	Lippia javanica			Yes	Yes		Yes	Yes	Yes	Listed		
	Cape chamomile			Yes	Yes		Yes	Yes		Listed	-	
	Helichrysum	Yes	Yes		Yes		Yes	Yes		Listed		
	Honeybush	Yes			Yes	Yes	Yes	Yes		Agriculture product standard	EPA	
	Artemisia	Yes			Yes	Yes	Yes	Yes	Yes	Νο		

### CONTINENTAL DIVERSITY OF COMMERCIALISED MEDICINAL PLANTS



Reason for low % commercialized, probably no documented information.

Species numbers from Govaerts 2001, Taxon 50, 1085

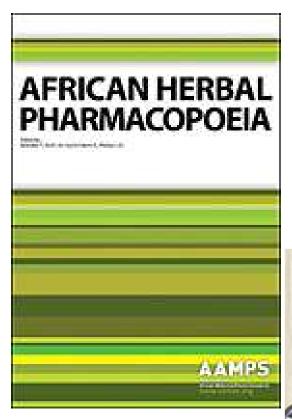


# What % of spp commercialized?

	plant spp	#commerc	% total	%commerc
Africa	74000	83	21.1	7.6
Australia	26000	14	7.4	1.3
South America	115000	64	32.9	5.8
Asia	151000	434	43.1	39.5
Europe	13600	336	3.9	30.6

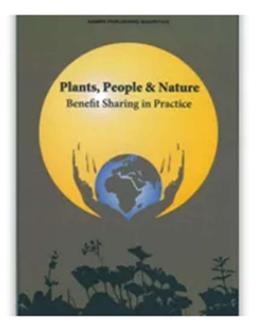
Reason for low % commercialized, probably no documented information.

Species numbers from Govaerts 2001, Taxon 50, 1085



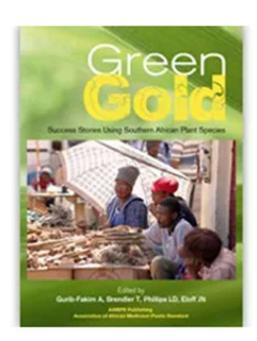
- Lack of suitable technical specifications and quality control standards for African medicinal plants and herbal medicines is considered to be a major barrier to regional and international trade and an important reason why traditional medicine has not been widely integrated into African primary health care.
- AAMPS (Association for African Medicinal Plants Standards) is a nonprofit company registered in Mauritius dedicated to the development of quality control and quality assurance standards for African medicinal plants and herbal products.
- The African Herbal pharmacopoeia currently provides comprehensive information on fifty-two important African medicinal plants.
- Currently more species added





### People, Plants and Nature

22 case studies of benefit sharing in practice, with regards to medicinal plants.



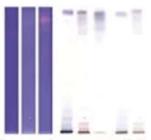
### Green Gold

A book about 10 medicinal plants that have been successfully commercialised in the SADEC region <sup>6</sup> on a dry weight basis), semens of diosphenol (= at 40% of the tool oil is *A. benäine* (more or less ad bybrids). The level of n.*A.* denlike but high (ca. bulphar-cornaining minor Ble for the characteristic 3 flavour of buchu oil fins et al., 1996).

solds, especially distartin s; also claimed to have 7-digheoside and rutin), imary references giving 4 composition of buchta recrete of distartin as the & Bisset, 2003) seems to st poper decisiling quality acbu tablets (El-Shufae & retic effects are attributed 1 (Wichtl & Bisset, 2003; haps terpinen-4-ol (abas s).



人



Chrastanoguana of actions owned separated by 26 and EMW from left to right and visualized unlier UV and by using the variable and animalizitytic spray mag

NIR Spectroscopy



### Plant monographs

Individual monographs



### Monograph of Artemisia afra

#### ARTEMISIA AFRA HERBA

Participan Attentials Afra Herba consists of the serial parts of Artentials afra Jacq, as WBS (Astencess). Senanzina

Vernacular names vide als (A), vermixed, unbioryane (Ab, Z, Ta), legans (S) Description



ex; serial para decidures in regiona cing cell withers, representing from the pring: leaves finely-divided, silve-mey presence of the hairs, up to Somm ion wide; sowers (Jan-June) incomplouous ide: figwers (Jan-, borne at the ends of branches in globos

鐵錢 0 -髄 Pipers 3 - min

Pipers 2 - Res d

Figure 3 - inclusional instances Distribution of the second seco

Hillard, O.M. (1977). Comprehen in Notal. Pp. 348-361. University of Notal Press, Pietermeithurg.



onte pelos-broen polen grene, a20y



Videspread in all provinces of South Atrica exceptes Northern Cape, site Leadths, Seattland and northwards into topical Atrica; usually in montane tabilate along forset margine and streamsides.

Quality standards

identity tests





This layer chromatography on allos pel using as solvert a minute of tokens destry etercit. 7244 acetic acid (1:1:1). Reference compound cinecia (0,1% in chicroform). Nethod according to form the form

San Ruf L of Major Reference works

R-values of major compounds: 0.25 (prey); 0.31 (blue grey); 0.01 (masses); 0.06 (purple); checks: 0.54 (blue currie)

Pignin 8 - HPLC spectrum

HPLC on Carokume, method eccording to According to

Methanol extract: (Figure 6) Retention times (mina): 10.02; 10.00; 13.53;

Ethanol (79%) soluble extractive value: no less than 0.0% (range 0.39-30.34%)

20.01:20.32



Figure 7 - cheinikal constituents

Microchemical tests in our laboratories indicated the presence of territies and sepories but not of situations apposed on their studies have identified the therpense or and Swaryth and theight as well as the alterna conditionations is were as the anames carry constraint reconstrain the inserve of South Africa a of Artensinia afta<sup>2</sup>. Investigation of ine faronoids revealed the presence of two ethyl others. In an analysis of the pane indicates of this species, 10 gualantides and 5 glaucoldes wave detected in the overground parts of the plant ". Analyses of the essential cits obtained from the leaves of a number of South African populations

earers or a number of South Attican population of this species have demonstrated considerable variation in oil composition. The major components of the oil appear to be to and j-tupione (77.240.1%), 1.5-clinois (1.2-13.7%), compton (4.6-23.1%) and o-pitene\*. Other Silbaragel, R., Speaitner, Hand Paulduran, G. 1990; Nise-velatile constituents of Attentics of a

(1996) Nutriviation continuent of Architecture appr Education Conson 12(1): 651–665.
<sup>6</sup> Wellenverhet, R., Mann, K., and Valanti-Vistaileen, K.M. (1999). External flavorooid appycenes in Artomics and scene farther Anthenisidae (Antanamas). Physics (40): 600–610.

Patterspie 66(2): 463-463.
Joligarcia, J., Klemenger, H., Bohlman, F. and Garon, S. (1990). Ginacoldan and grainsolidin from Jonamiza gluo hyperholensory 27: 1129-1134.
"Geron, R., Dann, S., Mari, S., Gandida, M.G. and Scholds, E.Y. (1992). Antimizational and estimation properties of the viriality (association) and estimation for home. Summary performance on each structure of home. Summary performance on each structure



Dosage forms Used mainly as an aqueous decodion or infusion applied externally or taken ontily, the extremely bitter taste being masked by the addition of sugar or honey. Fresh leaf may be added to boiling water and the vapours inhaled

#### Medicinal uses

For the treatment of cough, croup, whooping cough, insuenze, fever, diabetes, pastro-intestinal

External As an inhalation for the relief of headache and The an exception for the line of measure/M AVA manal comparison or a lotter to that havenomical, in the distinct practice, head has in the lotter of the coeffit to mixely enable consistent or placed in boiling water as a seam bath for mentual pain or size citization. Advances the size and a special seterably as a positive to mixels instantant of all agraces to induct a distillation of performance of a spaces. appled as a lotion to treat hearto

#### Pharmacology/bioactivity

Arithistaminic and narcotic analossic effects have Arthlapervice and nerotic analysis of effects have been reported following pre-intravely rest (T. F. Fruch, pers. comm. In "). The visities of obtained free overground parts of Arthenius and and the second parts of Arthenius and the arthonous and the second parts of Arthenius and the arthonous models with a first or a pre-entropy decolarustion of  $\beta$ -arctene and Indels add.

Ananys for antimaliarial activity of extracts obtained from the divid activity parts of Terazonian plants showed weak activity parts of Terazonian heigherun of partsi where and dishicromethane extracts but no activity of methanolis extracts (hypocanthine uptales assay), Investigation of antifamour activity in the mouse, of them hast extracts (50% ethanol) of fourth African

<sup>7</sup>George, E., Webber, L., Venter, M. and Geordiner, J.R. (1990). The development of Arteoutro offic Incq. as a new meantial oil urup. *Journal of Resental Of Descentils* 215-220. (1995). The development of Attornation of the long as a same manufact of a stop. Accord of Kansten LOV Realizable, 21:5-20.
\*Randing, A., (1996). Zulin Madelinal Phene ps. 23:5-221. University of Natal Phane, Fetenmenhiltung:
\* Wommen, H., Natarya, M.M.R., Rayo, D.M., Maryanaki, L.S., and K.Fanadi, V.A. (1996). Antimukeid activity of Transmiss medical phase. *Neurocolocity*, 56(2):672-70.

#### collections of A arts, showed no activity against

of the origoner (LDe s.c. in mice 17 Smyleg) appears to be greater than that of the (J-account (LDe s.c. in mice 24.2 mg/leg)<sup>(1)</sup>. The scalability of LD-ga, a.c. in mice 44.2 mg/leg)<sup>(1)</sup>. The scalability of the scalabil Advances of the transmission of the second s Contraindications

Thujone isomers are reported to be abortfacient and emmanagooic<sup>4</sup> and the use of this harb during pregnancy is not recommended. Traditional healers and herballate confirm this view. shows for activity in this assay. In the same study anti-encoded activity was demonstrated in vitro against Cescontabilitie slegare, by water and DOH establish, at concentrations of 1 Graph and 2 Donghis. A heater establish proved inactive at both concentrations. The same study found water and without establish to be loading in an in-vitro assay for anti-encoded activity (Dramode Antibidica) Precautions Gee adverse reactions above.

#### Dosage

The marks of an investigation of optitolicity and gridelia activity of 16 Dock Artican plant pandes whereas that approxima strategist of Adminia and In the assay, to head, Vero, Jakate 161, AM-2 and CDA-60 cala. Similar extends, in a cell culture article is used to be according to molecular activity of ether Cossascile 52 visus or HSV-1. An inflation may be made with two tablespoons! (a7 log) of dried ground harb to which is added one litre of boiling water. The minime is strained when cold. If thesh harb is used, four tablespooneful of chopped leaf are infused with one itre of boiling water.



The taxisty of Plasters, a common component of the essential cities of Americais, Sakia, Thuje and subcassive or protonged Ingestion Include medicasses, surplicit, terror, consultance and thit plastereditor of the first, a fractasses of the plastereditor of the first, a desitter of these of the law 12<sup>o</sup> constraining that particular of a biothese constaining that parts of the law 13<sup>o</sup> of the law 10<sup>o</sup> constraining bander in 5<sup>o</sup>/sites of the law 10<sup>o</sup> constraining bander in 5<sup>o</sup>/sites of the law 10<sup>o</sup> constraining plasters of the law 10<sup>o</sup> constraining that and in Plance in 5<sup>o</sup>/site of constraint specifications of a bander of the law 10<sup>o</sup> constraint specification of a bander of the law 10<sup>o</sup> constraint specifications of law 10<sup>o</sup> constraints specifications specificatio research is aimed at selection of low-trujone reces of Artembia for oil production. The toxicity

<sup>10</sup> Clarkes, A.J. (1995). Actomophetic constituents of eners. Standard: Advanced phase. Journal of Windows J.J. (2004). Action standard standard within a standard standard standard standard within a standard standard standard of "Tamenick, F.T. (1997). An endeding of the total of particular distribution of the total of particular distribution." Mice Stanis, Mice Standard University of Standard Standard Standard Standard University of Standard Standard Standard Standard University of Standard Standards. The Standard Standard University of Standards. <sup>10</sup> Anne. (1999). The Monde Jacker (11<sup>4</sup> edition): pp. 1079-1040. Marck etc.), inc., Rainway, USA. <sup>10</sup> Tamarand, R. and Paken, T. (1009). Summittal of andige a guide for hardle one performance Pp. 109-200. Charachill Lengeneres, Editational, <sup>10</sup> Narrall, C.A., Andonan, L.A. and Poliform, J.D. (1996). Hinted and Editories: a guide for hardle one performance pp. 201-202. The Parameterized Press, Parameterized pp. 201-202. The Parameterized Press.

#### WORMWOOD

Artemesia is a potent medicinal plant used for everything from colds and flu treatment all the way to malaria





Association for African Medicinal Plants Standards



### Monograph Siphonochilus aethiopicus

#### SIPHONOCHILUS AETHIOPICUS RHIZOMA

#### Definition

Siphonochilus Aethiopicus Rhizoma consists of the fresh or dried sliced rhizome of Siphonochilus aethiopicus (Schweinf.) B. L. Butt (Zinglberaceae).

#### Synonyma

Kaempferia aethlopica (Schweinf.) Benth. Kaempferla ethelae J. M. Wood Vernacular names Indungulo, isiphephetho (Z),

Description Macroscopical 1,2





Kiew, K. Y. (1980). Taxonomic studies in the gamus Kaempferia (Zingibaraceae). Notes of the Royal Botanic Garden (Edinburgh) 38(1): 1-12.
<sup>8</sup> Pooley, E. (1998). A field guide to the wild flowers of Kwamulu-Natal and the eastern region. Natal Flora Publications Trust, Durban.

Deciduous aromatic rhizomatous plants, bisexual or female, to 1m high; leaves 30-400 × 50-90mm, glabrous; flowers (Oct-Feb) 2-6, faintly scented, borne just above ground level in inflorescences separate from the leaf shoot, white to bright pink with yellow markings on lip; corolla tube white, 30-40mm long; tepal lobes 60-80mm wide.

Microscopical



#### Figure 3: microscopical features

Characteristic features are: pale golden brown cork tissue, the suberised cell walls staining with Soudan IV (2); thin-walled parenchyma cells of the central stele (1) containing abundant starch grains; the latter are oval or kidney-shaped (3), bright yellow-brown oleoresin cells scattered throughout the parenchyma (4); the absence of fibres, tannin and lignified tissue.

#### Crude drug

Collected as required or found in the marketplace as light brown-burf fleshy rhizomes, sometimes with roots attached; cone-shaped with transverse ring markings; similar in colour to commercial ginger (Zingiber officinale) but lacking the pungency of the latter, a distinct cambium visible when freshly cut: fracture crisp; odour scented aromatic.

#### Geographical distribution

Formerly rare in forests of KwaZulu/Natal, Mpumalanga, Northern Province and Swaziland; now almost extinct in the wild in





Quality standards

#### **Identity tests**

Thin layer chromatography on silica gel using as solvent a mixture of toluene: diethyl ether:1.75M acetic acid (1:1:1). Reference compound cinecie (0, 1% in chloroform). Method according to Appendix 2a. R<sub>2</sub> values of major compounds: 0,34 (grey-mauve); 0,38 (grey-mauve); 0,49 (grey-mauve); 0,57 (grey-mauve); 0,76 (tangerine); dineole: 0,79 (blue-purple)



HPLC on C<sub>18</sub> column, method according to Appendix 2b.

#### Major compounds:

Methanol extract: Retention times (mins): 7.31; 8.04, 8.48, 8.60



Figure 6: HPLC spectrum

Ethanol (70%) soluble extractive value: not less than 1.7% (range: 1.70-3.06%, determined according to the method of the BHP, using 15g fresh material extracted with 100mi 70% ethanoi, taking 25mi allquots)

Volatile oil content: not < 0.33%

Purity tests

Assay

Little is known of the secondary chemistry of this species. A report of the volatile oil composition of an unidentified Kaempferia (now Slohonochilus) species appeared in 1915 <sup>3</sup> and ongoing work has identified o-terpineoi and a sesquiterpene as constituents 4 of the oil in S. aethiopicus thizome.



e-Testined Siptonechelus sesquitarpenoid

#### Figure 7: chemical constituents

Dosage forms A piece of fresh rhizome is chewed.

Medicinal uses

Treatment of cough, cold, sinusitis, malaria, menstrual pain."

#### Pharmacology/bloactivity

No In vitro antimicrobial activity of aqueous extracts of Siphonochilus aethiopicus against Pseudomonas aeruginosa, Candida albicans, Staphylococcus aureus or Mycobacterium smegmatis was observed, in the concentrations used for disc assays in our laboratories.

The decongestant and antimicrobial activity of many essential oils probably largely accounts for the popularity of this species as a decongestant and antibiotic. Preliminary work has demonstrated prostaglandin-Inhibitory (COX-1 assay) activity for ethanolic extracts of S.aethlopicus tuber and 10.7

#### Contraindications

#### Adverse reactions

None recorded

5 Lindsey, K., Jäger, A.K., Raidoo, D.M. and van Stadan, J. (1999). Screaning of plants used by Southern African traditional healers in the treatment of dyumenorthoea for prostaglandinsynthesis inhibitors and uterine relaxing activity. Journal of Ethnopharmacology 64: 9-14.

#### Precautions

No special precautions

#### Dosage

To be determined





Not yet available Major chemical constituents

<sup>1</sup> Goulding, E. et al. (1915). Journal of the Chemical Society 107: 314.

nomic studies in the ge

"Holzapfel, C.W. et al. (in prep.).

Chamren

Stohonochther.

#### None known.

# Brochure of *Helichrysum*



### agriculture, forestry & fisheries

Department:

Agriculture, Forestry and Fisheries **REPUBLIC OF SOUTH AFRICA** 

smake of keeigeed is stimulating and helpful for inservice. The Kheichei used the leaves and fewers as bedding, hence the name "keeigeed", translated as "bedding stuff". A pleasant and effective insect repellent against files and mesquitees can be made by burning a minture of Melichrysum odomtissimum and menia atra leeves.

#### References

Van West, N.-K., Van Cantholessen, N. S. Cheriston, N. 1987. Machined plants of South Abian. First patience, Protocol Wines Patilizations. Tan Web, K.-K., Yan Cambinares, K. & Davista, K. 2000. Ministrat plants of South Abian Surveys addies. Patients: Drive Patientics. Yes Web, Br.R. & Wes, M. 2024. Standard plants of the contal Personal Street

Parties inform these parties and interesting Destinate Fluit Protection Private Flug X280 Report total port 407 13 103 8079

Pas 407 13 20 MITS Break DPP Backgroup



2012

### Kooigoed







#### lineffe and Halibyan allestinitum ........... Buttlaning (Regist) (Xangatti (

#### Background

Keeigeed is a strong arematic perennial herb er shrublets. About 245 species of Melichrysum occur in South Africa, of which the best knewn and commonly used medicinal plants are K cymosum, K odomtizzi-mum, K, petiolare and K, nuditolium, The Atrikaans name keeigeed reflects the traditional use as bedding material. The plant belongs to the family Asteracean Keeigend engineted in South Africa and is distributed frem the Seutpansberg in Limpepe, highlands of the Mpumalanga, midlands of NasaZulu-Natal, the North-Eastern Pres State, the Cape Diskensberg meuntains and the central areas of Eastern Cape and acress the Cape felds meuntains of the Cedarberg, Jenkersh Orberg in Venthumsders as far as the Persnaula in the Minstern Cape

#### Description

The plant can great about 25 cm high.

LABURG The dense, arematic feliage consists of roundish or

evel-shaped leaves which are covered with silvergrey hers.

#### Figures

The fewers are very sherily pedicellate (almost sessile), ef medium size (20 to 30 mm diameter) and bright yellow in colour. The plant flowers in spring (September-Nevember) er summer (December-February). Tiny creamy-white flewers make up abun-

#### dent flewer heads on long stalks which add to the decerative effect of this plant in mid-summer. The small fewer heads are about 3 mm long, each com-prising up to 15 small forets.

Ster The plant has gravish-white, densely leafy stems.

#### 100

The fruit has a barrel-shaped, 5-ribbed, glabreus echane and is ± 1 mm lang.

#### **Climatic and soil requirements**

Keeigeed is best planted in full sun in well-drained. meist, rich, learny seil and is telerant of peer seils. It prefers a temperature of 50-55 °C.

Cultural practices

Planting Keeigeed should be planted in autumn (March),

#### Propagation

Reeigend is propagated by send and stem cuttings. Pertilation The plants can be fertilized with lets of compost, but

de net particularly require it. Naturally it is cultivated without the use of any fertilizers.

The plant should be mederately impated, especially in winter as it tends to become intected with fungus and mere regular watering may be needed in het, dry, inland regions, Keeigeed requires eccasional to infrequent impation and seems to thrive during periods of

#### Winned control

Ne herbicides are currently registered for the central of woods in this plant. Manual wooding is the only preven safe method of weed central that can be applied at present. Mulch is successful in reducing invesions of broad-loafed woods, but grasses and sedges remain problematic.

#### Disease control

The plants can be intected with fungus diseases and dis-back in a plot of land. Registered chemical centrel can be used when the disease is severe. Good santary practices are the best way to control disback because the fungus lives inside the plant and cannot be completely controlled by fungicide spray.

#### Peet control

The plant is susceptible to rest ret in poerly drained sells. The retten plants should be removed. Application of registered fungicides is recommended.

#### Harvesting methods

Fresh leaves may be picked as seen as the plant has enough foliage to maintain growth. The leaves or seeds should be picked after the dea has disespeared, but before the sun becomes too het.

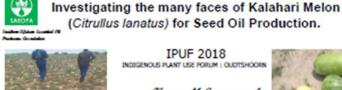
#### Uses

Keeigeed is a popular medicinal plant used to treat eliments such as coughs, colds, intections, monstruel pain and headaches. The leaves are used by Rasteferiens to make an infusion to treat asthma, chest problems and high bleed pressure. Keeigeed is also nhaled as a protective cleanser and as a pain reliever. It is also used as a facial cream for pimples, as a performe, as a repellent for parasites and insects and as incense to reise the geoduil of the ancesters. The











INTRODUCTION Count binds is a plant quecies in the tently Countributers, a vice the flowering plant originally from sub-field son Africa. It is commonly known and sufficient for its full. Traditionally it is used in many resides for cooking and as supported in many SACC and Nothern Although court/les It is now used in committee and as a source of vit 8.

Many common names for Kaladard meters Incidence of American metion, which we be tracked in the (94) Libelicela Libernasterices, Kelkier (W) ( Faarie (ROuisen) mahatavah (Teurena)

Edword (siZula and Baltitional) An H-Raingel Intole (Karlin, mil) elalate (Valletanta) Solo-Ne Seattled ratio higo-Tahi (vienda or higona) Rhani (versia)

It has the same bottomical name as the sufficient fluit, band trate verticity different in many locations in Studient Africa Reterante, Ziritative Zantila, Linpope and North West provinces produce merions of meny eduptes, colours, hors specified to editpositiant plain colour metores in general t ripe mesons made need is brink prix to bright set. wiel De There is a wide variety in the physiology of the plant and it is

(a) a short is the movie, full, finds and evolution. If may be used as indications to Statistic Africa, but have has been conforming as the available of the point as its documented as used in the pyramids of Equip, Patietan. Japan, Islaal and Nigeria.

Cituitus lecatus is cold pressed at the moment in Namitias, Robusena, Zandas and Roch. Africa for a very popular her straightening product in South Africa.

temperature preserve interview in the original provided the state of VIII is the original scheme by the state of the preserve to the proper state that the state of the original scheme types and qualities of the original scheme types and the state of the scheme the proper states and the original scheme to be instanted by principal scheme to be principal scheme to be instanted by principal scheme to be princip Important to see the difference between commentally grown purpoin seed of , national on seed of and that of faisher) Melon seed of

The plant proved to be a true survivor in times of chought which uses a the same to people, farmers and animals. Official lands is not threatened and its status is described as "Least Concert' by Reinando et al. 2008. Yet the

inducers of the oil as well as the consumer needs darily on one details about the variety of the fluit, the seeds and the

ACKNOWLEDGENENTS en fan Soft Fin Barten Afte famile Di en fan Name fan er fan en

Discussion The variety of the plant is closing in the fluit, seeds and fresh as well as in the analysis. This is not acceptable for sound Hafteding The bollenical name Cirulha levelue might not be sufficient

**IPUF 2018** 

INDIGENOUS PLANT USE FORUM : OUDTSHOORN

and

Ched K Nelouholve ded novad @ omoil com

Kaxen M Swanepoel vano all omail com

to describe Routherth Africa matures because of its variations. Due to the high demand for the oil for operation, further lesis and stacks are needed and selections should be done for optimal cultivation and production. Review have to be set for the oil used in formulations. It has the potential to fit the gap in the market for contractor, where Argen of its used contently.

The same of the metal variety which produced of should be belied penetically to prior of the same origin.





Relative and a star way was been as a second Arrist Longenberger and the second Earthrain of Analysis









Cape Chamomile Oil the Origin of its Blue Colour

They have used and have the last that the market are not preside composeds of the plast but are prediced during distribution. Introduction on the president which we assure is being in the proop of Descension of they characterize of its produced heavy adminished places of Discopital provessions. Of Messawary is in Corp. Neurosci. It provide the of the discopital produces of the anti-trade of the discopital place of the second s

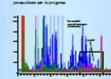


Figure 1- Connecting area

Martia and Methods

In addition to the works on persons the compactions a commercial Case Characteria of an infecti-te states (Paper A, Talle I).

(a) High of Same (b) How the stand of marked of the two presence. The of largely two provided by Consense National Database, 20, (Streamber 1993) (a) 1 and of presential of two application on a stillar pri subsec (Charao. Song and risation) with interact. The black basics was collected and momentaned failuated by Tat.C. at 1977 Databasey place states pri two momental and interactivity in project. Allow momentations this schedure, was used for GLC and GLC 405.

GLO 107 5995; Colomo Plenomene 229 5, New 8 623 (-4, 6 23);emble distance, newtor par Ny Serry Individe, integration program PCData from 65975 and 15975, spik imprising program 1723 and 15976.

and a second state of the second seco of samples of doted plant material rocks and in the Processor wave chalifiend in the following to be observed that the blar schem appeared about in four after scheme (for procedure. The scheme bit as to assure that the blar scheme in mathematic scheme (for the scheme in scheme bit as to assure that the blar scheme in scheme (for the scheme) (for the scheme in scheme in the scheme) (for the scheme in scheme in the scheme in the scheme in scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in the scheme in scheme in the scheme in the scheme in the scheme in the scheme in scheme in the sch in a 2 h hours ben de Bargen

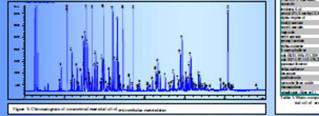
lars an in set is a smalle

#### Read 5

The largest of R parameters is one or basis of with eleft in the stress of the parameter is order to a static left strength of the parameters of the stress of the stress state ( $\phi_i$ ). The parameters are stress of the stress state ( $\phi_i$ ). The parameters of the stress is stress destination ( $\phi_i$ ). To brance the parameter is because the stress of th as because it have the failed and of by where an avoid of the failed and of by where any stores had possed for the minor to the hydrogeneous backson of the old

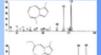
decomposes of (a), (b) and (b) are in Approx A. Dedoning the pa-prox as well as the model of ODMA from paths in the model of ODMA from (b) was present to be (1)-thereing in decomposes with the decompose of the intervence of the decompose of the second decomposed of the decomposed 

en species of both probe the hypital base probe



CLO MA







012-MD - 1075993; Colones: Chevropack (27-92) Wine 8.255 (d., 8.25)un Hite Hadrana, carrier part day & Stallman, a rays rate program. 702 one free 2011 in 2011; inpress 2017]; definite HP MID 2011 (h. definite larger at 2017]; definite HP MID References

[3] D. E. van W. yh, S. van Chaladowen, N. Omerik, Medical Phase of Death Agrics, Dirks Publications, Stratus, ZA 1997 (2) D. Board et al., Charatheteries the study of Ecosystelic processing secondial and CE Assister comparately. Professor B: Florencel, Vol.S. April Map 1974, 12-16.





### Australian New Crops Web Site

Supported by the Rural Industries Research and Development Corporation

### Listing of Interesting Plants of the World

Popularity of Sclerocarya caffra over time

[Plots of numbers of papers mentioning Scierocarya calina (filled column histogram and left hand axis scale) and line of best fit. 1926 to 2006 (complete line, with equation and % variation accounted for, in box on the left hand side); Plots of a proportional micro index, derived from numbers of papers mentioning Scierocarva canna as a proportion (scaled by multiplying by one million) of the total number of papers published for that year (broken line frequency polygon and right hand scale) and line of best fit, 1926 to 2006 (broken line, with equation and % variation accounted for, in broken line box on the right hand side)]

Total Mentions (Biological Abstracts/Biosis Previews):

#### References

Hemborg AM, Bond WJ (2007) Do browsing elephants damage female trees more? African Journal of Ecology 45, 41-48. Contact: Hemborg, Asa M.; Univ Cape Town, Dept Bot, ZA-7700 Rondebosch, South Africa

Ojewole JAO (2007) Anticonvulsant effect of Sclerocarya birrea (A. Rich.) Hochst. subsp caffra (Sond.) Kokwaro (Anacardiaceae) stem-bark aqueous extract in mice. Journal of Natural Medicines 61, 67-72. Contact: Ojewole, John A. O.; Univ KwaZuku Natal, Fac Hlth Sci, Dept Pharmacol, Private Bag X54001, ZA-4000 Durban, South Africa

Dai X, Page B, Duffy KJ (2006) Indicator value analysis as a group prediction technique in community classification. South African Journal of Botany 72, 589-598. Contact: Duffy, K. J.; Durban Inst Technol, Ctr Syst Res, POB 983, ZA-4000 Durban, South Africa

Kadu CAC, Imbuga M, Jamnadass R, Dawson IK (2006) Genetic management of indigenous fruit trees in southern Africa: A case study of Seleroearya birrea based on nuclear and chloroplast variation. South African Journal of Botany 72, 421-427, Contact: Dawson, I. K.: 23 Burton Stone Lane, York YO30 6BT, N Yorkshire, UK





Legislative Review: Review of the Regulatory and Policy Framework relating to the Harvesting of Wild Honeybush (Cyclopia spp.)

> STANDARDS LEGISLATION









EADP 696: THE DEVELOPMENT OF GUIDELINES FOR THE SUSTAINABLE HARVESTING OF WILD HONEYBUSH

Western Cape: Department of Environmental Affairs and Development Planning

Service Provider: Caroline Gelderblom Consulting





### Aloe Council of South Africa

Fostering Aloe In Their Natural Habitat

# Standard for *Aloe ferox*



### Standards Bulletin



May 2007

TECHNICAL COMMUNIQUE

#### NEW STANDARD (SANS 368) PUBLISHED FOR LOCAL ALOE INDUSTRY

The aloe industry (based on the Aloe vera plant) is arguably the largest of all medicinal plant industries, with a worldwide turnover of more than \$110 billion. The turnover of just one American company producing tonic drinks based on Aloe is reportedly more than \$2 billion.

"If the South African aloe industry, based on the indigenous Aloe ferox, can be improved and gain only 1 % of the international aloe trade, then a turnover of more than 51 billion can be realised" said Prof Ben-Enk van Wijk, Chairperson and Director of the Aloe Council of South Africa. "Growth in the local industry would also create more jobs in rural areas, where unemployment is high and jobs are desperately needed. That is why the publication of this standard (SANS 368, Aloe raw material) is so important for the local aloe industry if it is to gain a foothold in first world markets and compete successfully with the highly organised Aloe vera industry.

The problem is that Aloe vera is currently used as the international standard. So when local Aloe ferox products are exported, they are measured against the Aloe vera standards, and it is then claimed that the product is not acceptable. By having a national standard to work to, South African exporters will then be able to convince overseas importers that their product is of high quality'. Van Wyk continued.

This standard was developed to cater for all role players in the industry, and does not contain unrealistic and complicated analytical procedures. The main feature is transparency: the levels of required chemical compounds in the raw material product must be revealed, so that the client can make his own judgement about its suitability for his purpose.

"In other words, SANS 388 does not make any value judgements about one type of aloe producing a better raw material than another. The use of the standard will ensure that Aloe ferox material is of a high quality, and that the active ingredients and other ingredients are openly specified," he concluded.

In essence, the standard specifies requirements and test methods for Aloe ferox raw material intended to be used in consumer products including health, cosmetic, health food, medicinal, veterinary and industrial products. While primarily developed for Aloe ferox, it could be applicable to other aloe species.

For further information, please contact:

To purchase the standard: Standards Sales at the SABS Telephone 012 428-6883 Fax 012 428-6928 Email sales@sabs.co.za Standards coming for
1) Pelargonium var Rose
2) Baobab
3) Marula
4) Lippia
5) Helichrysum
6-10) ?



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

· serve



### Rooibos and Honeybush export standards

STAATSKOERANT, 23 JANUARIE 2015

No. 38398 5

GOVERNMENT NOTICE GOEWERMENTSKENNISGEWING

#### DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES DEPARTEMENT VAN LANDBOU, BOSBOU EN VISSERYE

No. 18

23 January 2015

AGRICULTURAL PRODUCT STANDARDS ACT, 1990 (ACT No. 119 OF 1990)

#### STANDARDS AND REQUIREMENTS REGARDING CONTROL OF THE EXPORT OF ROOIBOS AND ROOIBOS MIXTURES: AMENDMENT

I, Billy Malose Makhafola, appointed as Executive Officer in terms of section 2(1) of the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990), hereby give notice under section 4(3)(c) of the said Act, that --

- (a) the standards and requirements regarding control of the export of rooibos and rooibos mixtures as stipulated by Government Notice No. R. 1983 of 23 August 1991 and promulgated in Government Notice No. 1369 of 20 September 1996, as amended by Government Notices Nos. 2285 of 23 November 2001 and 568 of 2 July 2010 are hereby amended; and
- (b) the amendments mentioned in paragraph (a) --
  - shall be available for inspection at the Office of the Executive Officer: Agricultural Product Standards, Harvest House, 30 Hamilton Street, Arcadia, Pretoria;
  - (ii) may be obtained from the Executive Officer: Agricultural Product Standards, Department of Agriculture, Forestry and Fisheries, Private Bag X343, Pretoria, 0001, tel. no. (012) 319-6059 on payment of the prescribed fees or may be obtained from fax no. (012) 319-6055, or e-mail: <u>vvonneT@deff.gov.ze</u> or <u>http://www.deff.gov.ze</u>; and
  - (iii) shall come into operation seven days after publication of this Notice.

B.M. MAKHAFOLA Executive Officer: Agricultural Product Standards



Be a yardstick of quality. Some people aren't used to an environment where excellence is expected.



DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

STD. No. B-11

AGRICULTURAL PRODUCT STANDARDS ACT, 1990 (ACT No.119 OF 1990) DRAFT STANDARDS AND REQUIREMENTS REGARDING CONTROL OF THE EXPORT OF HONEYBUSH, GREEN HONEYBUSH AND HONEYBUSH MIXTURES

The Executive Officer: Agricultural Product Standards has stipulated under section 4(3)(a)(ii) of the Agricultural Product Standards Act, 1990 (Act No.119 of 1990), the standards regarding the quality and the requirements regarding the packing, marking and labelling of honeybush, green honeybush and honeybush mixtures.

## Recommendations

٠

٠

٠

	Econo	mic
Species	Key region(s) in RSA	Key region
Aloe ferox	Western Cape Eastern Cape	South Africa
Marula	Limpopo	SADC
Baobab	Limpopo	SADC
Kalahari melon	All provinces	SADC
Rooibos	Western Cape	Western Cape
Buchu	Western Cape	Western Cape
Wild ginger	KZN, Mpumalanga, Limpopo	SADC
Rose geranium	E Cape, W Cape, KZN, Mpumalanga, Limpopo	RSA

- The prevalence of the species and the distribution of it in the provinces should be considered in respect of equal representation.
- Most the species in the Western Cape (7 out of 13)
- KwaZulu-Natal (4 out of 13), of which most have already been thoroughly researched and markets created. Most essential oils exported are from KZN.
- Lesser known plants in the rest of South Africa are being replaced e.g. *Ximenia* and Manketti on the priority list with plants better known even though **already commercialized** e.g. Rooibos, Honeybush and Aloe ferox
- Bulk vegetable oils are from Limpopo
- The grouping/clustering of the species needs to be revised
  - Some botanicals were added, e.g. teas and others used in dried form
  - Others than for teas in tinctures and extracts.
- Different to the distillation of essential oils or pressing of vegetable oils.

Some species can be processed and applied in more than one way and will overlap into more categories. See the recommendation of categories of processing in the table below.



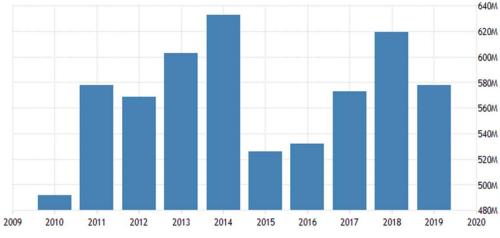
Lippia javanica	All provinces except W Cape	SADC
Cape chamomile	Western and Eastern Cape, Freestate	Western and Eastern Cape, Freestate
Helichrysum	All provinces	SA
Honeybush	WC & EC	Western Cape
Artemisia	Most provinces	SADC

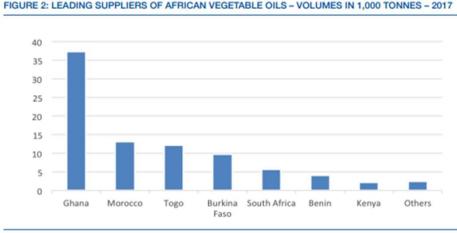
# Processing index and by-products included

	Dried as tea or spice	Distilled	Pressed	Extracts / tinctures	Other by-products
Lippia javanica (Lemon bush, fever bush)	Leaves	Leaves			Possibly hydrolat
Eriocephalus spp. (Cape chamomile)	Leaves	Leaves			Possibly hydrolat
Sclerocarya birrea (Marula)	Bark		Seeds		Nuts eaten fresh Seed cake used for animal feed.
Aloe ferox	Leaves				Crystals and powdered
Pelargonium var Rose (Rose geranium)	Leaves	Leaves			Possibly hydrolat
Cyclopia (Honeybush)	Leaves				
Helichrysum spp. (Impepho)	Leaves	Leaves			Smoked and used burnt in ceremonies
Siphonochilus (Wild ginger)		Root		Root	
Artemisia afra (Lengana, Wormwood)	Leaves	Leaves		Leaves	Inhaled for chest problems. Possibly hydrolat
Citrullus lanatus (Kalahari melon)			Seeds		Seedcake for animal feed, pulp for energy drinks
Adansonia digitata (Baobab)			Seeds		Seedcake and powder for super foods
Aspalanthus (Rooibos)	Leaves	Leaves		Leaves	
Agathosma (Buchu)	Leaves	Leaves		Leaves	SAEOPA Southern African Essential Oil Producers' Association

# South African exports declining in US\$

- South Africa exports of essential oils, perfumes, cosmetics, toiletries was US\$577.85 Million during 2019, according to the United Nations COMTRADE database on international trade.
- South Africa exports of essential oils, perfumes, cosmetics, toiletries data, historical chart and statistics - was last updated on July of 2020.





COMTRADE | TRADINGECONOMICS.COM

Source: ITC



### Importing markets for SA re-exported by SA

List of importing markets from Southern African Development Community (SADC) for a product reexported by South Africa

Product: 3301 Essential oils, whether or not terpeneless, incl. concretes and absolutes; resinoids; extracted ...

Sources: ITC calculations based on UN COMTRADE statistics.

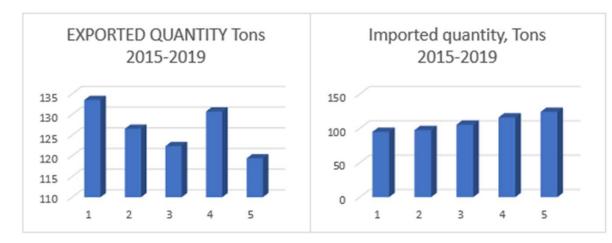
	2017	2018	2019	Deserves		
Importers	Reexported unit value, South African Rand/	Reexported unit value, South African Rand/Tons	Reexported unit value, South African Rand/Tons	Reexported value in 2019, South African Rand thousand	Reexported quantity in 2019, Tons	
World		188,885	214,092	2,569.11	12	
Southern African Development Community (SADC) Aggregation		124,573	169,074	1,183.52	7	
Mozambique		197,493	230,931	461.86	2	
Zimbabwe		46,082	180,415	360.83	2	
Zambia		157,995	105,843	317.53	3	
Malawi				43.3	0	
Congo, Democratic Republic of the				0	0	
Angola		46,082		0	0	



Ximenia

# Future aspects of other species

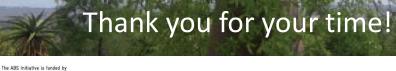
- In the light of the current agricultural renaissance, a section addressing the potential of modern technologies and green energy could be added to the assignment as an additional investigation or follow up activity.
- Improvement of the methods of agro-processing is desperately needed to fill the increasing demand for volumes, safety and quality control.
- No attention was given to this important aspect yet although it affects the outcome of economic performance of the producers.











International to a francophonie

Federal Ministry for Economic Cooperation and Development





Federal Department of Economic Affairs, Education and Research EAER State Secretariat for Economic Affairs SECO







