

UNIVERSITY OF KWAZULU-NATAL



Potential to Expand Sugar Cane Cultivation in Southern Africa:
an assessment of available and suitable land

Dr Helen Watson

COMPETE Workshop 22 June 2007
 Mauritius Sugar Industry Research Institute

Cane Resources Network For Southern Africa

www.carensa.net




 EUROPEAN COMMISSION
 Research Directorate-General






Phillips, T., 2002: Agro-Economic Assessment of the Potential to Produce Fermentation Ethanol Alcohol in Africa, RPTES Program

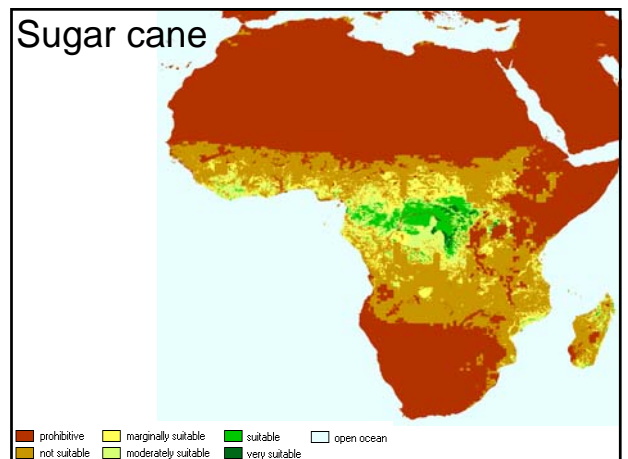
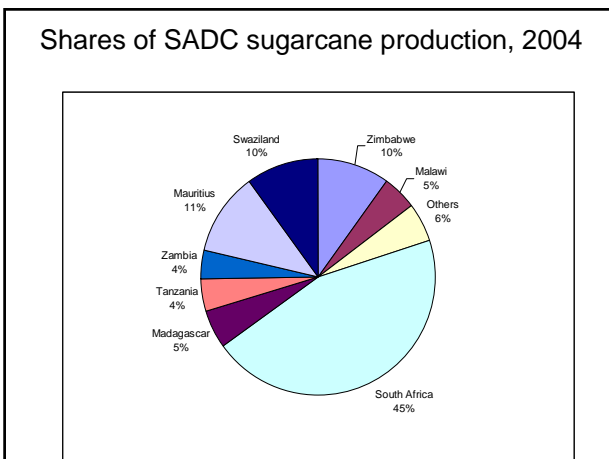
- 50% increase over 2000 production
- Require expansion of 200 000 ha
- Create 100 000 jobs

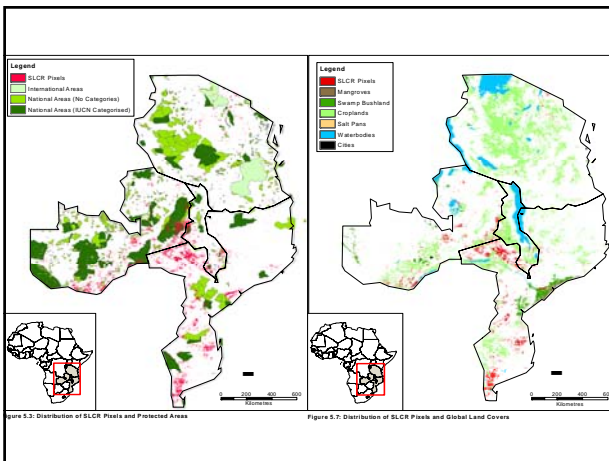
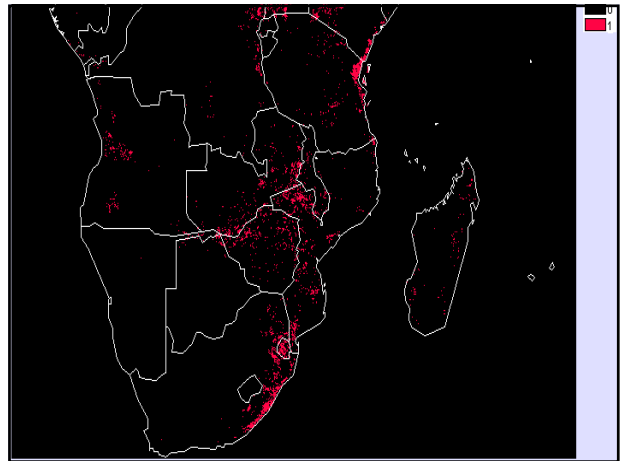
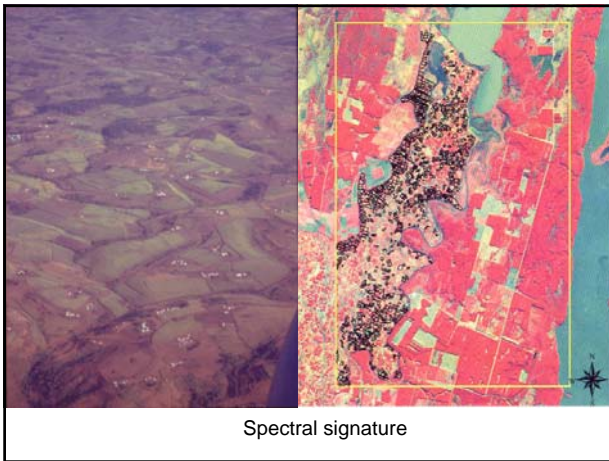
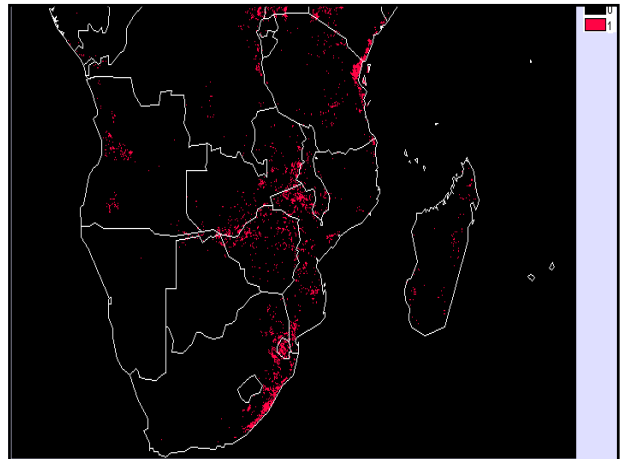
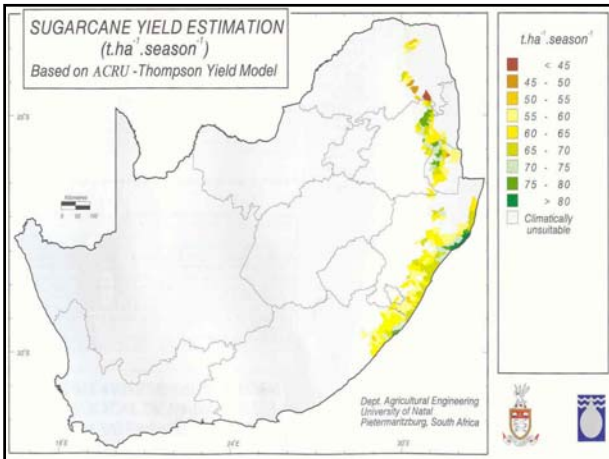



Southern African Development Community (SADC)



SADC Country Profiles





- ### Climatic constraints
- Perennial
 - 4500-6500 kgs/ha setts
 - Up to 24 mths +
 - Photosensitive
 - >1200 hrs Sunshine/yr
 - < 800 mm/yr only if irrigate
 - 800-1200 mm/yr can rain feed
 - 1200 - 1500 mm/yr rain fed
 - Temperature oC
 - Mean annual 26 – 34
 - Germination > 8.5
 - Sprouting & rooting > 20
 - No growth < 15 & > 38
 - Chlorotic leaves @ 0
 - Young plants, buds & leaves die @ - 3
 - Stalks of mature plants die @ - 5
 - Whole mature plants die @ -11.5
 - Highest sucrose big day/night difference & 10-20 during ripening

Soil constraints

- depth of 80-90 cms
- loam texture
- granular structure
- infiltrate and store water water
- good supply of Ca, N,P, organic matter
- pH 6 - 8



	Malawi	Mozambique	Zambia
Sugar cane & similar grasses spectral signature: Miombo	5.28 %	5.06 %	3.9 %
Protected areas removed	4.23 %	4.75 %	2.70 %
Slopes > 16 % removed	4.13 %	4.68 %	2.70 %
Crop land removed	2.35 %	4.16 %	2.05 %
Land under sugar cane removed	2.29 %	4.16 %	2.05 %
Total area in hectares	322 000	4029 000	1852 000

Total: 6203 000ha: for 50% over 2000 production need 200 000ha
31X more than needed in just these 3 countries

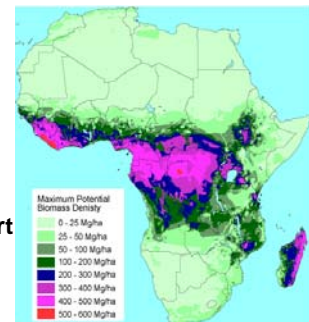
Competence Platform on Energy Crop & Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa

www.compete-bioafrica.net



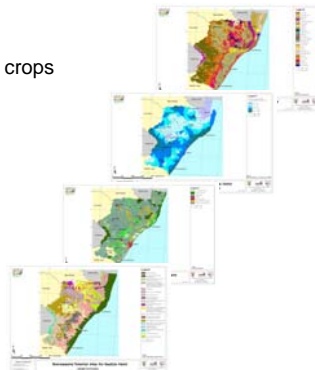
Synthesize sources categorizing land surface patterns in Africa: identify land

- not available
 - suitable for biomass production*
 - suitable to convert
- * dependent on crop

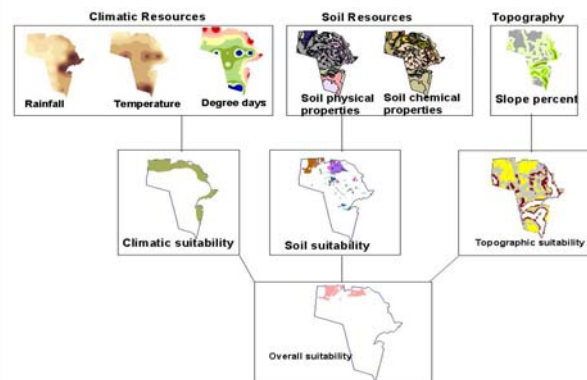


Not available: non- biophysical constraints

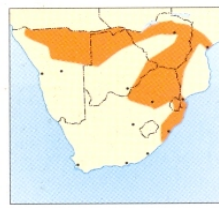
- land use: protection, food crops
- population nodes
- potential markets
- historical sites
- cultural sites
- transport infrastructure
- water sources
- land reform



Land info: climatic, terrain, soil & ecological opportunities and constraints



- Sugarcane
- Soya beans
- Palm oil
- Sunflower
- Sweet Sorghum
- Jatropha
- Cassava
- Indigenous plants with bioenergy potential



Evaluate indigenous agricultural practices & land use knowledge systems to identify potential bioenergy plant species.

