To determine the agronomic potential of biofuel crops in southern Africa

Approach

Suitable areas were identified based on the biophysical requirements of potential biofuel crops. These included rainfall and daily temperatures for the length of the growing season of individual crops, terrain profiles and soil conditions. The EcoCrop Model was used to identify climatically suitable areas. An exclusion approach was used to mask out all areas where soils were not suitable, rainfall was too low for dryland cropping, more than 60% of the grid cell was forest, slope was greater than 16% or the area was zoned for conservation.

Main Objectives

To determine the agronomic potential of biofuel crops in southern Africa

Angola, Mozambique, Zambia, Zimbabwe appear to have a high biophysical suitability for biofuel crops including sugarcane, cassava and sweet sorghum. For the short-term sugarcane, especially if supplementary irrigation is available, appears to be the most suitable crop as it has high yields in the region and is a well understood crop from an agronomic perspective. Further it is currently grown in all the identified countries.

Conclusions

- Large areas of southern Africa have high biofuel production potential BUT these areas are not currently unused.
- South Africa has a low potential to expand into biofuel due to most suitable land already being dedicated to commercial food production.
- Zambia and Mozambique have a high potential, but care will be needed to ensure that subsistence farmers gain true benefit if their land is being converted to biofuel.
- The high yield gap in these areas makes it possible to greatly increase production of existing or new crops.
- Sugarcane (possible with supplementary irrigation) is the most suited crop for the short term, but alternate crops such as cassava and sweet sorghum may have high potential in the future.