



Submission No 101

Review of Australia's Relationship with the Countries of Africa

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Senator Michael Forshaw, Chair,
Joint Standing Committee on Foreign Affairs, Defence and Trade

Dear Senator Forshaw,

This submission, made on our own behalf and that of Murdoch University addresses the following Terms of Reference of the *Inquiry Australia's Relationship with the Countries of Africa*

- cultural, scientific and educational relations and exchanges;
- development assistance co-operation and capacity building;

Background

Murdoch University has engaged heavily with Africa in the discipline of sustainable agriculture and training related to this over the last 15 years. Our partners have invariably been ACIAR and GRDC combining with the local State Departments or Ministries of Agriculture, and Universities in the target African countries. These countries include Morocco and RSA, as well as many others across sub Saharan Africa particularly Kenya and Ethiopia. Murdoch University's particular skill sets that are attractive to Africa are in nitrogen fixation, cereal pre-breeding and legume development, and biosecurity, combined with applied sociology. These are applied skill sets most appropriate to the development of agricultural research capacity in Africa.

Reason for engagement with Africa – Australian benefit

In response to a requirement that Australia develops a set of agricultural crops and plants resilient to climate change, we began a global acquisition of genetic material (mainly legumes and their nodule bacteria rhizobium) in 2001. Although we scoured the world's rangelands, in southern Africa we discovered a unique range of legume plants adapted to the same soils and climate that we expect to experience in southern Australia in 2020-2050.

Over the decade 2000-2010 it became desirable to facilitate access to these valuable genetic resources in RSA; the present a rare opportunity to develop new agricultural plants that might render the arid parts of southern Australia resilient to climate change. Hence, in 2004 Murdoch University established a formal germplasm exchange program with the Government of RSA. This was expedited by the long term relationship between African scientists and those of the Crop and Plant Research Institute at Murdoch University, who have supported African agriculture in the field of nitrogen fixation strongly since 1997.

These communications and relationships further led to the development of an ACIAR funded research program in grazing legumes in the Eastern Cape of RSA (ECCAL <http://aciar.gov.au/project/LPS/2004/022>) which has been ongoing since 2006. This agricultural research project has enabled the continued collection, storage and evaluation of plant and bacterial genetic material of potential value to Australian agriculture. From this research, the first grazing legume from Africa adapted to the arid and acid of southern Australia is projected to be commercially released in Australia in 2012. We have several scholarly publications which name new nodule bacteria from Africa discovered during this research.

This relationship between Murdoch University scientists and researchers in southern Africa has been recognised recently by the Bill and Melinda Gates Foundation (BMGF). The BMGF has launched a \$20 million agricultural research program based upon nitrogen fixation in sub-Saharan Africa (SSA). Murdoch University Professor Howieson is on the four- man steering committee of this program (2010-2013) which covers seven countries across SSA. The program is envisioned to run for 10 years and is called N2Africa (www.n2africa.org/).

Similarly, in 2010 ACIAR launched a \$20 million legume – based agricultural aid program in eastern Africa, in which Murdoch University staff play a fundamental role. Combined with the BMGF program and ECCAL, Murdoch University will be training a large number of African scientists in agricultural science at tertiary level in this decade.

In cereal pre-breeding, Murdoch University through A/Prof Mehmet Cakir and GRDC is working with Kenya, Ethiopia and RSA in building resistance to Russian Wheat Aphid and rust strain UG99 into wheat cultivars. This is a biosecurity activity of value to all three countries.

Murdoch University represented Australia at the African “Celebration of Assistance to Agricultural Science” in The International Symposium on Biological Nitrogen Fixation in Africa, Capetown in November 2010.

Reason for engagement with Africa – African benefit

The African benefit from our scientific engagement can be summarised as

1. better agricultural practices that lead to ensuring food security in Africa for the region’s overall stability
2. establishment of research networks with African scientists that can enhance both research capacity and training opportunities

Through this long term involvement with African agriculture, and its communities and scientists Murdoch University have come to understand the African operating environment and would like to make the following points relevant to this enquiry:

- the African continent contains plant and bacterial genetic resources that are well adapted to the soils and long term climate of Australia that might be invaluable for our ongoing agricultural evolution
- from these genetic resources a second generation of agricultural plants can be developed for Australian agriculture in recognition of climate change, and is underway
- continued access to these genetic resources will rely upon long term relationships between Australian and African scientists and hence we encourage the Australian Government to potentiate this through organisations such as ACIAR.
- Australia can contribute substantially to agricultural development in Africa, particularly in the disciplines of legume science and nitrogen fixation, and cereal pre-breeding, primarily through training of African scientists and demonstration of farming technologies
- These activities can offer valuable experiences for Australian post doctoral level scientists hence we submit that Australian aid programs in Africa should also facilitate training of Australian scientists
- A substantial opportunity exists to increase the productivity of Africa's grasslands through the introduction of grazing legumes (however this has been attempted many times over the last 50 years with minimal success, mainly because the studies on legume adaptation are not combined with a sophisticated sociological and economic understanding). Our current experience in ECCAL in RSA indicates meaningful change can be achieved
- because of the social structure and rapid change of personnel in many African countries it is essential that aid related research be embedded in strong African Institutions.
- in our experience the role of applied sociologists in delivering aid via improved agricultural production technologies in Africa within systems of complex land tenure is pivotal. Thus the approach from Murdoch University has always been multidisciplinary, combining agricultural science with sociology and politics.

Murdoch University appointed an African Projects Liaison Officer in March 2010.



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 Dec 31 2010