

Southern Africa

Financial year	Regional expenditure	Percentage of total bilateral expenditure	Board target as percentage of expenditure
2003-04	\$745,392	2.9	<5%)
2002-03	\$1,219,403	4.6	5-10%
2001-02	\$1,343,916	5.5	5-10%

In 2002-03, the Board, in consultation with the Minister, reviewed the expenditure targets for each of the five regions. It was decided to reduce the target range for southern Africa to less than 5 per cent beginning in 2003-04. This decision was consistent with the *Statement to Parliament by the Minister on Australia's Development Cooperation Program* in September 2002. The bilateral African program, now largely focused on the Republic of South Africa, is 2.9 per cent of total bilateral expenditure.



ACIAR regional team leader for Southern Africa: Dr Bill Winter.

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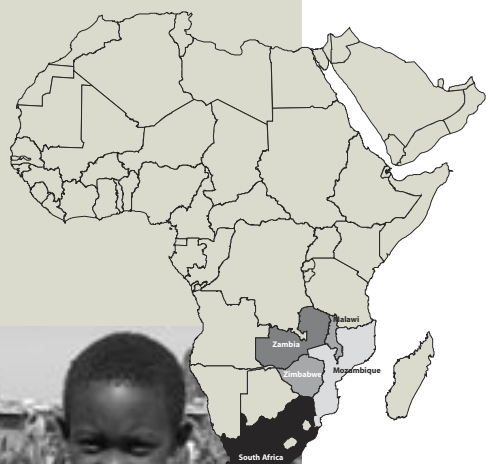


Cattle dip

Southern Africa

Active projects in 2003–04	10
AOP budgeted expenditure in 2003–04	\$857,892
Actual bilateral country expenditure in 2003–04	\$611,352
Bilateral country expenditure in 2002–03	\$1,219,403
Bilateral country expenditure in 2001–02	\$1,343,916

Key performance indicators	Performance 2003–04
<ul style="list-style-type: none"> Emerging cattle farmer groups shown to make sound management and marketing decisions independent of project researchers. 	Fourteen farmer teams in Limpopo and North Western Provinces have implemented project results with the aim of improving profit, and have exceeded their target levels.
<ul style="list-style-type: none"> Identification of Eucalyptus hybrids to be trialled in low-rainfall environments. 	In the Republic of South Africa three species of Eucalyptus and three hybrid Eucalyptus crosses including several provenances have been identified. Work is proceeding on making crosses and testing.



Position

ACIAR has been involved in research in Africa since 1983, with around 40 projects completed. The focus for ACIAR's bilateral program over the last three years has been on southern Africa (Republic of South Africa (RSA), Zimbabwe and Mozambique). Multilateral projects led by International Agricultural Research Centres have in the past carried out activities in a number of central, eastern and western African countries as well as southern Africa. New projects focus on South Africa, emphasising crop–livestock systems and forestry, with an emphasis on delivering benefits for previously disadvantaged emerging farmers.

Achievements

Profitability in the smallholder cattle sector continues to rise following research that demonstrated no barriers to entry into commercial markets based on the quality of beef from cattle breeds grazed by poor farmers. Fourteen farmer teams are involved in focused action to test and develop methods to further increase profitability. This includes different **drivers of profitability** with information on successful actions disseminated to farmer-support teams for extension. This has included a Field Day targeting resource-poor farmers with demonstrations of outputs from the project, resulting in substantial interest being generated amongst poor farmers.

The potential of eucalypts to meet timber production shortfalls is being investigated in RSA. Selection of potential hybrids for planting on dry marginal lands that otherwise have little agronomic value is under way. Five dry-zone eucalypt species are being trialled in a vegetative propagation study, with two provenance trials in progress. Research



continues to **screen eucalypt species for susceptibility to a rust fungus** that has affected eucalypts planted in southern Africa and South America. Sixteen seedlots are being inoculated. The role of climatic events in triggering outbreaks is being defined, and a model designed to predict such events is under development.

Low levels of **soil fertility in southern Africa substantially prevent crops** reaching their yield potential. Appropriate fertiliser applications can overcome this, but very few smallholder farmers understand the value of applying fertilisers. Simulation modelling of potential fertiliser inputs and other interactions has been successfully used in maize systems in an ongoing project in Malawi and Zimbabwe. Farmers involved have been quick to see the potential benefits on offer after modelling of interactions between climate, fertiliser use and perennial crops. The APSIM suite of crop simulation modules has underpinned the development of decision-support tools developed through participatory research with farmers. The effect of phosphorus and farmyard manure can now be modelled and the effect of planting legumes on soil nitrogen levels has been demonstrated. Scaling up of decision-support trees (charts) and simple rules-of-thumb continues in Malawi. A new project is introducing this participatory approach to northern RSA.

A similar participatory approach was used in a project that introduced improved forages and ley-legumes (legumes sown to increase soil nitrogen) to RSA and Zimbabwe. A range of **legumes was introduced and evaluated** in several farming systems—intercropped with maize and sorghum, in natural pastures for grazing, and as protein supplements for dairy and beef production. A number of promising lines have been identified for cropping and animal production systems. There is also greater knowledge of cropping behaviour, such as soil nitrogen interactions in a range of environments. The project also had an unintended positive impact, significantly boosting the development of community interactions between farmers, extension workers and researchers.

A vaccine currently used against ticks does not impart complete tick control and similar vaccines have storage and distribution problems.

Two new vaccines are being developed, with initial trials in Zimbabwe showing one as a feasible option for cattle in RSA. Vaccines against the tick-borne diseases anaplasmosis and babesiosis are being tested **using cryo-preservation to improve their efficacy**. Tests to date have revealed freeze-drying at the right temperature will ensure the vaccines are viable for up to four months. Work to develop optimal container shapes and volumes to support cryo-preservation are now under way.



Eucalyptus grandis



Vaccine field trials



*Leading scientists from across Africa were provided with **training in water use and soil fertility management**. They received training through interaction with CSIRO and State agencies from Perth to Toowoomba, and visited farms applying the latest technology in both fields.*

Computers enable the answers to farmers' questions in Africa



When Sevi, Derrick and Samuel first heard about simulation modelling and agreed to participate in a three-day workshop they had possibly never seen a computer. In all likelihood they and their 18 colleagues had no idea what computers could do and how valuable they could be to farmers. The three farmers from Mkhubazi village in Tsholotsho, Zimbabwe,

soon discovered otherwise. They were introduced to computer simulations by a group of researchers involved in ACIAR-supported work on linking participatory farming with modelling, using APSIM.

The farmers were encouraged to ask 'what if' questions, which the computer simulation would answer for them. Sevi was the first to see its potential, after being presented with a graph showing crop yields based on past years rainfall. "Why is the sorghum yield in a year with more than 800 millimetres rainfall less than the yield in a year with only 480 mm?" This stimulated discussion, allowing farmers to test their knowledge and ideas and validate these. Derrick saw the potential for using manure on small cropping areas to improve quality without investing more money. Before the simulation he believed "the effort from manure is not worth it". After seeing the simulation recommending he collect and use manure Derrick responded "this is what I will do". Samuel, a wealthier farmer saw that even a single bag of nitrogen fertiliser, when used on his land, would result in significant benefits in most seasons. By the end of the three-day workshop the initial group of 21 farmers had grown to more than 30, all of whom realised that the simple changes modelled could provide them with real benefits.



Realising the promise and potential of African agriculture
Science and technology strategies for
improving agricultural productivity
and food security in Africa

Executive summary



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