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MANAGEMENT REPORT

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Submitted to the U.S. Agency for International Development; Bureau for Global Problems,  
Field Support and Research; Center for Economic Growth

Establishment of Productive Rangeland  
with High-Yielding Fodder Shrubs

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## 1. Scientific Summary

Rangeland production of cattle, sheep and goats is a principal source of livelihood for the populations of marginal habitats in semi-arid parts of Southern Africa. Overgrazing and poor management of natural rangelands, however, have led to erosion and desertification. The overall objective of this program is to establish fodder reserves composed of high-yielding perennial shrubs and trees in such areas, in order to contribute to the establishment of a sound economic base for impoverished rural farming populations. The specific objectives are to (a) introduce promising fodder shrubs and trees to target areas for performance and palatability trials, (b) introduce sustainable land use principles and test such on plots of introduced fodder shrubs, (c) select the most promising species and individual shrubs of high nutritional value for cultivation on poor soils in areas where rainfall is irregular and (d) develop procedures for clonal propagation of the selected shrubs which might lead to the establishment of centers in South Africa for large-scale fodder shrub propagation and distribution.

The program, in general, continues to proceed as planned.

Nutritive value determinations of some of the indigenous forage species at Northern Cape sites have continued. Analysis of other material has been postponed because of the delay in transfer of funds for the project, but, hopefully, will be resumed soon. A new investigation has begun on the influence of environment (different sites) on the nutritive value of *Cassia*. A first grazing trial on Hatfield Elite F1 *A. nummularia* has given preliminary information on the relative palatability of shrubs. These will be regrazed (after pruning and regrowth) in the winter of 2003.

Plantings of promising indigenous and exotic species were made at sites in the Nama Karoo, Bushmanland, Namaqualand and Pretoria in South Africa during the period covered by this report. *A. glauca*, which is doing very well at Lovedale, is being multiplied from cuttings for wider evaluation at different sites. The influence of ruminant digestion on germination and, hence, seed dispersal, of a range of species is being studied. Fundamental studies on reproduction in *Boscia* spp and the response of this species to pruning treatments in different agro-ecological zones are also being conducted.

Studies on clonal propagation at BIDR continue to address improvement of systems for the *Atriplex* species, further elaboration of a process for *C. sturtii* and on somatic embryogenesis of *Haloxylon aphyllum*.

All other lines of study, reported on in the previous Annual Report, continue to be pursued.

## **2. Scientific Issues**

A planned visit to Israel by the South African collaborators has been delayed, as has a more extended visit of a Ph.D. student and a technician for training on aspects of clonal propagation, due to concerns for personal security. The immediate result is a delay in bi-directional transfers of information, technology and of training. The student and technician are now scheduled to come to the BIDR in August. Since spring is the appropriate season to view grazing and the effects of water harvesting, the collaborating scientists have rescheduled their visit for a year, to spring 2004. The Israeli investigators will attempt to compensate by visiting South Africa earlier than had been planned.

## **3. Managerial Issues**

Work at UP has been severely hampered by financial difficulties. Costs have largely been covered temporarily from other research budgets, while purchases of equipment and some aspects of the work, including more detailed analyses of plant material, have been delayed. We believe that the various causes of these delays, stemming from both BGU and UP, have been rectified and that funds will begin to flow properly shortly.

We intend to submit a request for changes in the budget shortly.

## **4. Special Concerns**

Please see report of the decision to delay visits to Israel, reported in 2. Scientific Issues, above.

## **5. Collaboration, Travel, Training and Publications**

As mentioned above, the South African collaborators delayed their travel and that of a graduate student and technician to Israel because of the “intifada” and war in Iraq. The Israeli investigators do intend to continue with their planned visits to South Africa. Graduate and postdoctoral students at both institutions are conducting their work on aspects of this program. Graduate students in at UP are addressing aspects of the nutritional quality of drought-tolerant fodder shrubs and on aspects relating to the selection, propagation and establishment of drought tolerant species. At BGU a graduate student and postdoctoral fellow are addressing aspects of shrub selection and clonal propagation. Local collaboration in South Africa continues with members of the public and private sectors, including the Department of Water Affairs and Forestry, an extension agent of the Northern Cape Department of Agriculture, ranchers in the Northern Cape and grassland scientists from the Grootfontein Agricultural Center (Middelburg, Eastern Cape).

## **6. Request for A.I.D. or BOSTID Actions**

none