

**BUILDING HUMAN CAPACITY TO ENHANCE RESEARCH
INTO THE BIOLOGICAL CONTROL OF
INVASIVE ALIEN PLANTS IN SOUTH AFRICA**

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**AN INITIATIVE OF THE NATIONAL
WORKING FOR WATER PROGRAMME**

***THE ROLE OF BIOLOGICAL CONTROL IN THE MANAGEMENT OF
INVASIVE ALIEN PLANTS IN SOUTH AFRICA***

- ***An historical perspective.*** The practice of biological control is the use of selected, tested and safe agents (usually plant-feeding insects or plant pathogens) to curtail the spread and damage caused by invasive alien plants. The first of these projects in South Africa was in 1913. Initially, only invasive cactus species were targeted. By the early 1960s, the emphasis expanded to include problem plants in the 'Fynbos' biome, and, then, more recently, invasive species in other types of natural habitats were also subjected to biological control. Many of the South African projects have been innovative and highly successful. Recent cost-benefit analyses have demonstrated exceptionally high returns on investment for biological control, even for the least successful of these projects. The inception of the Working for Water Programme in 1995 has significantly enhanced biological weed control in South Africa. The benefits include: sustainable funding; considerable investments in research (now exceeding R12 million per annum); improved international collaborations, especially in Africa, in concert with the NEPAD programme; and the re-organisation of biological control personnel into five co-operative research teams (see below), that include entomologists, plant pathologists, ecologists and resource economists.
- ***Recognition for biological control of invasive alien plants in South Africa.*** The exceptional successes of biological control researchers in the Plant Protection Research Institute (PPRI), and their associates at some Universities, were recognised recently by the South African National Science and Technology Forum. The Weeds Division of the PPRI was chosen as the overall winner in the section for "those organisations that have made the most significant contribution to Science, Engineering and Technology over the last ten years". The citation for this award reads as follows: "For the biological control of invading alien plants, both terrestrial and aquatic, that threaten natural resources and biological diversity. This involves the identification of natural enemies (i.e. agents) of the target weed species from the plants' country of origin; the study and host-specificity testing of these natural enemies; and eventually the release of those species that are damaging to the target weed, yet hold no threat to either the indigenous vegetation or to crops. Some 90 species of biological control agents have been released to control 47 invading alien plant species in South Africa alone, and work has been undertaken elsewhere, particularly in Africa. These initiatives have resulted in the savings of millions of Rands, the restoration of many dams and rivers to functionality, and successful management of certain

forestry and agricultural activities involving alien plant types, and has made a large contribution to the social upliftment of many communities. South Africa is recognised as one of the leaders in the world in this technology and application, and in undertaking this work for conservation purposes.”

BUILDING RESEARCH CAPACITY IN THE BIOLOGICAL CONTROL OF INVASIVE ALIEN PLANTS IN SOUTH AFRICA

Research into biological control is one of the cornerstones of the Working for Water (WfW) programme, which is aimed at increased water supplies through the successful management of invasive alien plants in this country. There is an urgent need to expand our levels of expertise and to build human capacity in this field. Thus, suitably qualified and motivated persons are invited to apply for funding and to become involved in this highly successful, exciting and rewarding field of research. WfW has recently allocated about R7 million, over a three-year period, to provide incentives and encouragement for able people to enter this field. The funding will be allocated through contractual arrangements with WfW and recognised South African research, and higher education institutions. The initiative is intended to encourage participation in the field of biological control of invasive plants and to benefit, primarily, but not exclusively, talented younger people and those previously disadvantaged by the political dispensation in South Africa. An additional objective is to stabilise and improve existing levels of capacity by encouraging people presently engaged in biological control to entrench their positions for the long-term, by improving their qualifications and skills.

- ***Who would be eligible for support?*** People who succeed in obtaining funding under the auspices of this capacity building initiative will be suitably qualified or suitably experienced individuals interested in biological control of problem plants, in entomology, plant pathology, ecology, botany and other disciplines directly-related to weed biological control. The intention is to build the capacity of South Africans to enable them to participate in weed biological control research for the long-term benefit of this country. Thus, as far as student support is concerned, South African citizenship or permanent residence status, is a requirement. Successful persons may include:
 - students at Universities or Technicons undertaking project work and studies relevant to biological control of invasive plants, as part of their honours degree (or equivalent) programmes;
 - higher degree (MSc or PhD level) students at Universities or Technicons whose course work and/or thesis work is directly related to biological control of invasive alien plants;
 - post-doctoral students, experts or advisers (who could include non-South Africans) whose work would benefit research on the biological control of invasive alien plants in South Africa; and
 - persons presently employed at South African institutions that practice biological control of invasive plants, who wish to up-grade their formal qualifications or skills.
- ***Which research proposals will be funded?*** All eligible persons must undertake work that furthers the objectives of WfW in building research capacity in biological control of invasive alien plants in South Africa. This

means that any innovative research proposal on weed biological control, from any recognised South African institution is eligible for support. Obviously, one of the objectives of the capacity building initiative is to attract people from institutions and departments that may not have been involved in this field of research in the past. It is recognised that newcomers to the field may find it difficult to produce competitive proposals, because their institutions may lack a tradition in biological control of invasive plants, or because they lack the experience and infrastructure required. Thus, institutions or departments in this category may choose to join up in a co-operative agreement with an established research team. Presently there are five biological control research teams supported by WfW, as follows. (i) Lantana, Barbados gooseberry and trifid weed (research team leader, Dr Cheryl Lennox, PPRI Stellenbosch and Cedara); (ii) Australian acacias, myrtle, and cluster pine (Dr Brian van Wilgen, CSIR, Stellenbosch); (iii) water hyacinth (Prof. Martin Hill, Rhodes University, Grahamstown); (iv) mesquite (prosopis species), eucalyptus and jacaranda (Mr Arne Witt, PPRI, Pretoria); and (v) emerging weed species in South Africa (Dr Terry Olckers, PPRI, Cedara and Pretoria). There is also an active group in biological control of invasive plants at the University of Cape Town, headed by Prof. John Hoffmann, who work on cactus weed problems, and who co-operate closely with the group that is doing research on Australian acacias, and with the prosopis team. Proposals that stress research co-operation and teamwork will have the best chances of success.

- ***Budgets and criteria for the allocation of funding.*** The capacity building initiative is limited to an allocation of just over R2.3 million per annum, for three years. Thus, grandiose, very expensive schemes cannot be funded. The WfW Committee set up for the purpose (see below) will preferentially fund coherent, imaginative proposals that best fit with the objectives of the capacity building initiative in biological control, and that provide support mostly for younger, previously disadvantaged people. Funding will be allocated where the Committee considers that there is the best chance of recruitment of individuals into weed biological control, and the best chance of continuity that will lead to a sustained increase in human capacity in this field. Budgets should allow for all reasonable expenses incurred by individual recipients of support. It is most important to stress that WfW, and the participating institutions, cannot assure successful applicants that there will be ready employment at the end of their support period. Therefore, it would strengthen the case for funding, and act as an added incentive to prospective students, if the proposals could include a strategy, and accompanying budget, that would assist successful participants in seeking future employment in the field of biological control of invasive alien plants in South Africa.
- ***How to apply for funding from the capacity building initiative in biological control of invasive plants.*** Individuals may *not* apply for support on their own behalf, and there are no application forms. Individuals seeking support must work through a person in authority at a recognised South African institution of their choice. Thus, *all* proposals for support must come from persons in authority (e.g. Deans, Directors, Heads of Departments, appointed higher degree Supervisors) at Universities, Technicons, or Research Institutes. Institutional authorities are

invited to submit proposals on behalf of individuals or small groups. Bearing in mind the objectives of the capacity building initiative in biological control, and the emphasis on co-operative programmes, proposals for support should be imaginative and be structured so that they are appropriate to the circumstances of the individuals concerned, and to the requirements of their respective institutions.

- **Submission of proposals.** Proposals should be submitted as soon as possible (see “Deadlines for proposals”, below) by registered mail to Ms. Karen Burns, Administrator, Biological Control Capacity Building Initiative, P. O. Box 320, Stellenbosch, 7599, or electronically to kburns@mweb.co.za. The proposal should give an account of what is intended and explain how that will accord with the objectives of the capacity building initiative. Proposals should not exceed the equivalent of five A4 pages of typescript. However, each proposal should be accompanied by concise accounts (each not to exceed one A4 typed page) that deal with the following five aspects of the application. (i) An account of activities in the institution or department that have related to, or could now relate to, the biological control of invasive alien plants in South Africa. (ii) A summary of the supervisor(s) curriculum vitae. (iii) The summarised curriculum vitae of each of the people/students who would be potential beneficiaries of the proposal. (iv) A timetable for the intended activities, together with (v) a suggested budget (see below). Please note, in drawing up proposals, that all activities funded under the auspices of this scheme must be completed by the end of the present funding cycle i.e. by 31 August, 2006.
- **Deadlines for proposals.** Proposals may be submitted at any time before the end of next year (2004). However, a special Committee appointed by WfW will start screening proposals and allocating funding within the next few months, as from 24 November 2003. Thus, early proposals will enjoy an obvious advantage: they have a chance of approval for support before the funding is depleted. Late applicants, during 2004, should contact Ms Karin Burns (see above) to check whether there is still funding available, before expending time and effort on the preparation of a proposal.
- **Administrative processing of proposals.** Starting on 24 November 2003, all proposals received will be assessed by a special WfW Committee appointed for the purpose. The Committee comprises:
 - Dr Alice Bosa-Barlow (Member, WfW Review Panel on Biological Control)
 - Dr Christo Marais (WfW Biological Control Research Manager)
 - Prof. Cliff Moran (Consultant, Chair of WfW Review Panel on Biological Control)
 - Mr Nceba Ngcobo (Chair). (WfW Biological Control Project Manager)
 - Dr Helmuth Zimmermann (Director, Weeds Division, PPRI, WfW Review Panel Member)
 - Ms Karin Burns (Capacity Building Project Administrator).

The Committee may require the proposer(s) to elaborate on the original submission, or to attend preliminary discussions in Pretoria, Cape Town or Stellenbosch, or to receive representatives of the Committee for on-site discussions. As necessary, WfW will fund these preliminaries.

This Committee will deal, essentially, with the implementation of the scheme. A second WfW Committee (Chaired by Prof. W. R. Siegfried), will consider the wider context of this initiative. It will put in place goals and plans for possible continuation of funding into the future, if that is warranted by the success of the scheme and by a sustained demand for suitably qualified experts in this field.

- **Progress reports.** Continuation of funding will depend on satisfactory progress assessments which will be done every six months and which will be more or less elaborate depending on circumstances and the levels of funding involved. At least, the Committee will require brief reports on progress by the supervisor or institutional authority, but may also require meetings, discussions, or on-site assessments. Progress on the capacity building scheme as a whole will be reported to the WfW Review Panel on Biological Control of Weeds, which meets twice a year.
 - **Further details.** Persons in authority at institutions who wish to submit proposals and who require additional information can contact Ms Karen Burns, Administrator, Biological Control Capacity Building Initiative, at the mailing address or e-mail address given above (see "Submission of proposals"). Please note that WfW does not wish to enter into direct discussions with individual students who may be potential or actual beneficiaries of support.
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