Management of information on biocontrol agents for invasive alien plants in South Africa

Hildegard Klein & Andrew McConnachie
ARC-Plant Protection Research Institute
Invasive alien plants (IAPs)
Biological control: The use of host-specific natural enemies to bring about the long-term or sustainable control of the target plant.
Biocontrol agents available against IAPs in SA

- Released 106 spp or biotypes of agents
- 75 became established
- Brought 28 IAP spp under complete or substantial biological control

<table>
<thead>
<tr>
<th>Measures of success in SA biocontrol projects</th>
<th>Projects resulting in complete control</th>
<th>Projects resulting in substantial control</th>
<th>Degree of control unknown</th>
<th>Projects resulting in negligible control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No other control measures needed to reduce weed to acceptable levels</td>
<td>Other methods still needed, but less effort is required because the weed infestation is reduced in size and/or, density</td>
<td>Too recent for meaningful evaluation, or the programme has not been evaluated</td>
<td>Damage inflicted by agents, but control of weed entirely reliant on other control measures</td>
</tr>
</tbody>
</table>
Info needed by land managers & implementation officers

• Which agents available
• What can agents be expected to do & their requirements
• How to identify them & know that they are present
• Who is relevant expert & who can provide agents
• How to release agents & care for them
• What additional control measures are required
Feedback needed by biocontrol researchers

- Releases made by others
  - Who made release
  - Site-specific info for IAP: coordinates, vegetation type, climatic conditions
  - Info pertaining to agents: insects alive/dead, active
- Sightings of agents
- Need for agents
- Impact of agents (if possible)
Info not currently available to researchers

- Releases by
  - National & Provincial Departments of Agriculture
  - Some offices in WfW
  - Land owners
Availability of info generated by researchers

- Published in print
Availability of info generated by researchers

On internet: [www.arc.agric.za](http://www.arc.agric.za) >> Quick links >> Invasive Alien Plants
On internet:
www.arc.agric.za

Quick links >> Invasive Alien Plants

Management of invasive alien plants

Brochures on IAPs

The WEEDS RESEARCH PROGRAMME is responsible for research on the ecology and control of invasive alien plants in South Africa. Our emphasis is on non-native problem plants in conservation and pasture situations, as well as non-native aquatic weeds. Crop weeds do not normally fall within our research field.

INVASIVE ALIEN PLANTS (IAPs) IN SOUTH AFRICA

- What are invasive alien plants (IAPs)?
- Geographical distribution of IAPs in southern Africa (SAPIA)
- Legal obligations regarding invasive alien plants in South Africa

Management of invasive alien plants:

SPECIFIC INVASIVE PLANT SPECIES AND THEIR CONTROL

- Select according to botanical names
- Select according to common names
- Select from photo gallery

EDUCATIONAL RESOURCES

- Brochures/Fact sheets on invasive alien plants
- Terrestrial plants
- Aquatic plants
- Brochures/Fact sheets on weed biocontrol agents

OTHER SOURCES OF INFORMATION AND USEFUL LINKS

STAFF AND THEIR RESEARCH FIELDS
Target weed species in South Africa, their region of origin, and degree of biological control achieved, where applicable (see below for definitions): natural enemies studied, their feeding guilds or association with the host plant, year of release, establishment and degree of agent damage to the weed (if established) (see below for definitions)

<table>
<thead>
<tr>
<th>Target weed, region of origin, and degree of control</th>
<th>Natural enemy</th>
<th>Feeding guild</th>
<th>Agent status</th>
<th>Damage inflicted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARACEAE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pistia stratiotes</em> L. (water lettuce)</td>
<td><em>Neohydronomus affinis</em> Hustache (Coleoptera: Curculionidae)</td>
<td>Leaf and stem borer</td>
<td>Released 1985, established</td>
<td>Extensive</td>
</tr>
<tr>
<td>South America Complete</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ASTERACEAE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Ageratina adenophora</em> (Spreng.) R.M.King &amp; H.Rob. (formerly in Eupatorium) (Crofton weed) Central America Negligible</td>
<td><em>Passalora ageratinae</em> Crous &amp; A.R. Wood (=“Phaeoramularia” sp.) (anamorphic fungus; Mycosphaerellales: Mycosphaerellaceae)</td>
<td>Leaf spot pathogen</td>
<td>Released 1987, established</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td><em>Procecidochares utilis</em> Stone (Diptera: Tephritidae)</td>
<td>Stem galler</td>
<td>Released 1984, established</td>
<td>Moderate</td>
</tr>
<tr>
<td><em>Campuloclinium</em></td>
<td><em>Puccinia eupatorii</em> Dietel</td>
<td>Leaf rust</td>
<td>Not released,</td>
<td>Unknown</td>
</tr>
</tbody>
</table>


Availability of info generated by researchers

- Data on file at research institutions
- Images
Availability of info generated by researchers

- **SAPIA (Southern African Plant Invaders Atlas)**
  - Managed by Lesley Henderson (ARC-PPRI)
  - Provision for showing presence and absence of biocontrol agents
Centralization & management of info

- SANBI to adopt SAPIA database
- SANBI in best position to develop new, multi-faceted database – all IAPs and control
- User-friendly, accessed (on different levels) by researcher, land manager, implementation officer & civilian alike

More ideas please!