

05

AWARD  
Tech Report  
Series

# Enhancing Alien & Invasive Species Identification & Control

Resources & training opportunities

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# 1 Overview

The RESILIM-O Restoration and Rehabilitation programme has to date highlighted a number of priorities for building resilience in the Olifants Basin, which have highlighted the need to address the negative impact of forestry operations in the catchment on biodiversity and water resources in the Blyde and Klaserie sub-catchments. Challenges in terms of complying with the requirements of relevant forestry and environmental legislation in terms of SFM have been identified by restoration practitioners working in the above sub-catchments.

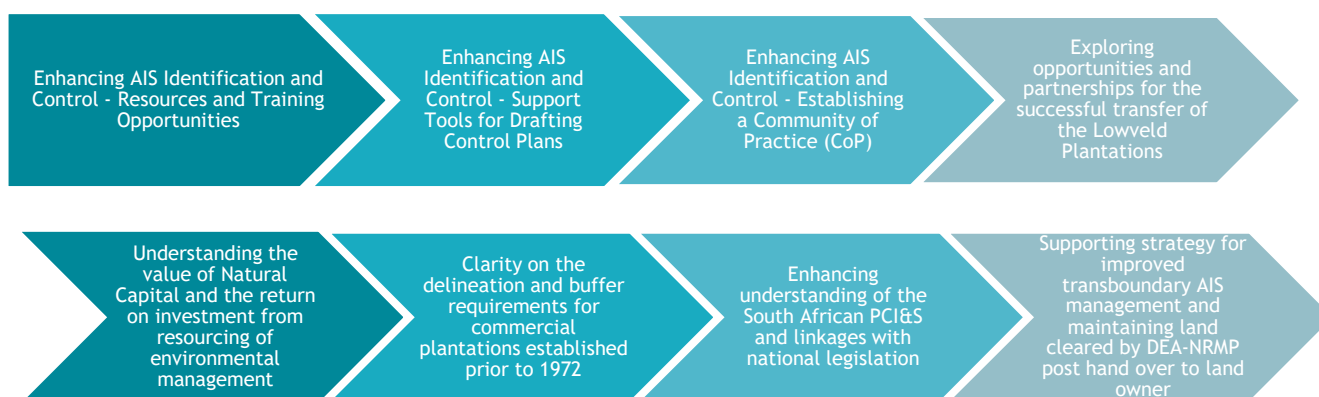
These priorities include, for example, the need to:

- Conserve biodiversity and sustainably manage high priority ecosystems by supporting collective action informed by adaptive strategies and practices; and
- Reduce vulnerability to climate change and other factors by supporting collective action informed by adaptive strategies and practices

Direct and indirect impacts from plantation forestry operations in the Blyde and Klaserie sub-catchments of the Olifants Basin are recognised to have significant negative impacts on biodiversity and water resources in these catchments, which undermine resilience. This component of the Resilim O project therefore aims to develop the capacity of target stakeholders to enhance sustainable forest management (SFM). Developing capacity to improve forest management to reduce and mitigate the negative impacts of forestry operations on biodiversity and water resource in the Blyde and Klaserie sub-catchments (high biodiversity areas and strategic water resource areas in the Olifants catchment) will contribute to resilience building. Engagement of key stakeholders in the forestry sector in the Blyde and Klaserie sub-catchments highlighted a number of challenges to sustainable forest management. Through a social learning process, these challenges were explored with stakeholders to identify capacity constraints underlining these challenges. A capacity development strategy was then developed to address the core capacity constraints.

The strategy includes eight components:

## 8 COMPONENTS OF THE CAPACITY DEVELOPMENT STRATEGY



This document addresses component 1 of this capacity development strategy, **Enhancing AIS Identification and Control - Resources and training opportunities.**





## 2 Introduction

The National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004) and its accompanying Alien and Invasive Species Regulations (2014, AIS Regs) can be difficult to interpret, which can be a challenge for implementation. Such challenges include difficulties in identifying AIS and implementing appropriate and effective measures to eradicate, control and contain invasions.

Resources are therefore needed to enhance understanding of AIS, their identification and characteristics, and control measures. The purpose of this document is therefore to provide an overview of available AIS identification and control resources (materials, training opportunities, etc.) to enhance capacity.

The current NEM:BA - AIS Regulations were published in the Government Gazette on 1 August 2014 and came into effect on 1 October 2014. There have since been amendments to the Regulations, with the latest draft amendments out for comment (due mid-2018). The Department of Environmental Affairs (DEA) is the administering authority for the Act.

The text box to follow provides the purpose of NEM:BA, followed by links to the Act, its Regulations and the most recent AIS Lists.

### NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT 2004 (NO. 10 OF 2004, NEM:BA)

*The purpose of the Act is “To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.”*

- **NEM:BA (Act No. 10 of 2004):**  
[https://www.environment.gov.za/sites/default/files/legislations/nema\\_amendment\\_act10.pdf](https://www.environment.gov.za/sites/default/files/legislations/nema_amendment_act10.pdf)
- **NEM:BA - AIS Regulations, 2014:**  
[https://www.environment.gov.za/sites/default/files/legislations/nemba10of2004\\_alienandinvasive\\_speciesregulations.pdf](https://www.environment.gov.za/sites/default/files/legislations/nemba10of2004_alienandinvasive_speciesregulations.pdf)
- **Alien And Invasive Species Lists, 2016:**  
[https://www.environment.gov.za/sites/default/files/gazetted\\_notices/nemba10of2004\\_alienandinvasive\\_specieslists2016.pdf](https://www.environment.gov.za/sites/default/files/gazetted_notices/nemba10of2004_alienandinvasive_specieslists2016.pdf)







## 3 Resources for AIS Identification and Control

There are a range of resources available online that should be used to enhance AIS identification and control capacity. Such resources include legislation overviews and guidelines, identification and information materials, knowledge sharing platforms and training opportunities. Some of these resources have been elaborated on below, providing an overview and links to their website links. These resources have been selected as they best suit the needs of the project stakeholders.

### 3.1 Information Resources and Materials

#### 3.1.1 Invasive Species South Africa

A web-based portal that hosts information, resources, news related to animal and plant invasive species in the country, and event and training opportunities. The portal has a 'Legislation' section that provides easy-to-follow overview and links to relevant legalisation (both national and provincial), policy, declarations, control guidelines and the National Strategy for Dealing with Biological Invasions in South Africa (DEA, 2014).

There are also provincial portals that provide resources and information that are specific to the area, including news articles, "Top 20 invasive Species" information, legislation and a discussion platform.

- National portal: <http://invasives.org.za/>
- Provincial Portal: <http://mpumalanga.invasives.org.za/>

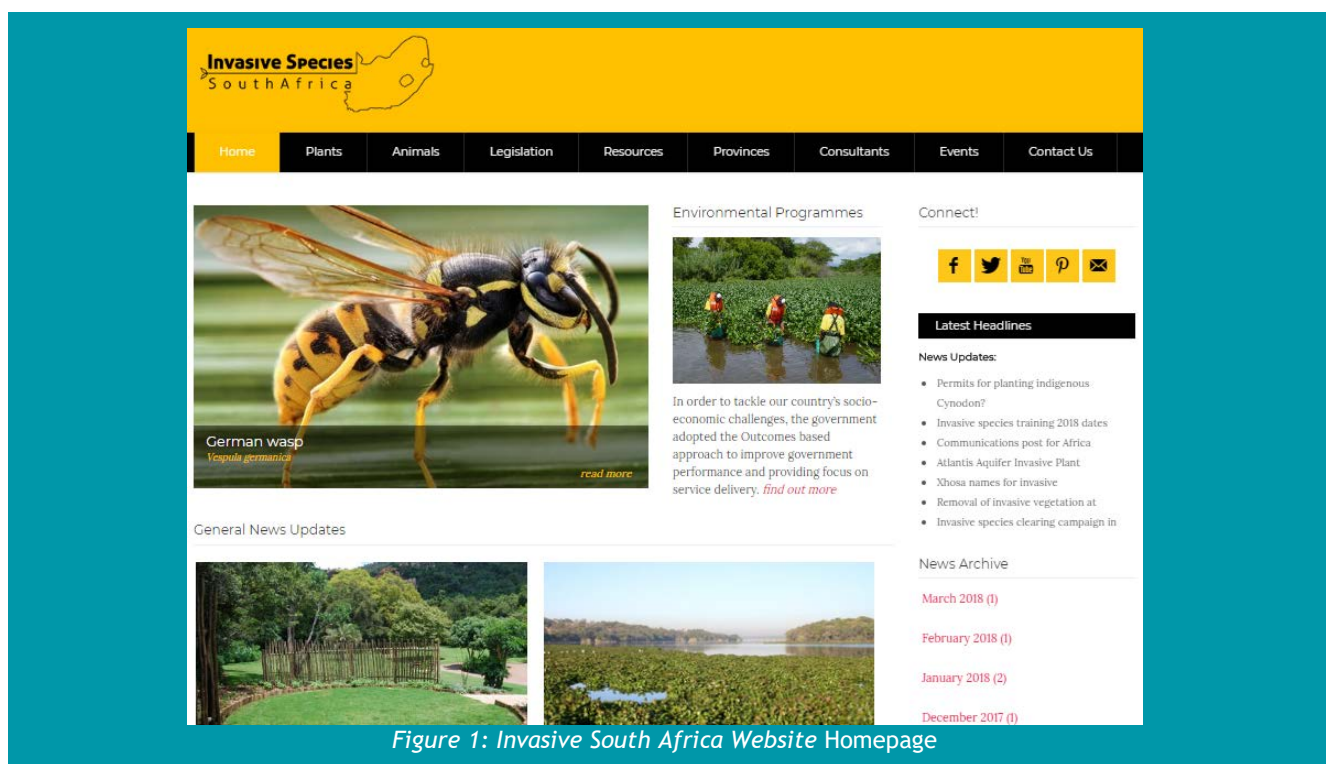


Figure 1: Invasive South Africa Website Homepage





South Africa's Invasive Species Legislation

National Legislation | Provincial Legislation | Metropolitan Policy | Declaration Of Invasive Species | Control Guidelines | National Strategy

The Department of Environmental Affairs (DEA) manages IAS under the National Environmental Management: Biodiversity (NEMBA) Act 10 of 2004. Go to National Environmental Management: Biodiversity Act 10 of 2004 for more information.

National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEMBA). This act aims to provide the framework, norms, and standards for the conservation, sustainable use, and equitable benefit-sharing of South Africa's biological resources. [Click here](#) for more information.

**NEMBA Invasive Species Regulations - 1 August, 2014**  
On 1 August 2014, the Invasive Species Regulations were published in the Government Gazette. They became law on 1 October, 2014.

Please find below a copy of the entire NEMBA Regulations as they appeared in the Government Gazette on 1 August 2014.

[NEMBA 1 August 2014 - Regulations](#)

[Download](#) [Open](#)

**Latest NEMBA Invasive Species Lists - 29 July, 2016**  
An updated set of Invasive Species Lists (as per the NEMBA Regulations) were published on 29 July 2016. This legislation becomes law on 1 October 2016 and replaces any earlier lists. The entire document published is available for downloading below.

[NEMBA Invasive Species Lists @ 29 July 2016](#)

[Download](#) [Open](#)

**Invasive Species Lists - Individual Lists - 29 July, 2016**  
Individual lists of invasive species pertaining to various groups of flora and fauna (as published in the Invasive Species Lists published in the Government Gazette on 29 July 2016) are listed below for your convenience.

[NEMBA Invasive Species Lists @ 29 July 2016 - List 1 - National list of Invasive Terrestrial and Fresh-water Plant Species](#)

[Download](#) [Open](#)

[NEMBA Invasive Species Lists @ 29 July 2016 - List 2 - National List of Invasive Marine Plant Species](#)

[Download](#) [Open](#)

[NEMBA Invasive Species Lists @ 29 July 2016 - List 3 - National List of Invasive Mammal Species](#)

[Download](#) [Open](#)

[NEMBA Invasive Species Lists @ 29 July 2016 - List 4 - National List of Invasive Bird Species](#)

Figure 2: Invasives South Africa 'Legislation' tab

# Mpumalanga Invasives Forum

Home | News | Resources | **Top 20 Invasive Species** | Discuss | Consultants | Contact

## Top 20 Invasive Species

Coral creeper (Antigonon leptopus)	Moth catcher (Araujia sericifera)	Yellow-flowered Mexican poppy (Argemone Mexicana)	Butterfly orchid tree (Bauhinia purpurea)
Spear thistle (Cirsium vulgare)	Common thorn apple (Datura stramonium)	Honey locust (Gleditsia triacanthos)	Morning glory (Ipomoea indica)

Figure 3: Mpumalanga Invasives Forum Website - 'Top 20 Invasive Species' tab





**Yellow-flowered Mexican poppy**  
*Argemone mexicana*

**Common name:**  
Yellow-flowered Mexican poppy

**Scientific name:**  
Argemone Mexicana (Papaveraceae)

**Alternative common names:**  
Devil's fig, Texas poppy (English); Geelblom; geelblombloudissel (Afrikaans); ugdluthukela (isiZulu)

Very spiny annual herb growing up to 90cm high with stems that exude a yellow sap when cut. Grey or bluish-green spiny leaves with prominent white veins. Bright yellow flowers appear from September to January. Spiny, egg-shaped green fruit capsules turn brown and release numerous small black seeds. Poisonous, sap and spines cause skin irritation.

**Additional Info**

Where does this species come from?  
Mexico

What is its invasive status in South Africa?  
Existing legislation: CARA 2002 - Category 1 NEMBA - Category 1b

**News**

**Top six problem plant species in Mbombela**  
These six alien invasive plants cause serious negative impacts on the ecosystems of Mpumalanga province. Perhaps the most significant of these impacts is the widespread loss of habitat. This area experiences heavy invasions of unwanted plant species. Some of the worst invasive species to be recorded include: 1. Lantana (Lantana...  
[Read more...](#)

**The seven worst creepers and vines in Mpumalanga**  
Invasive alien plants are regarded as one of the most important threats to biodiversity in the Kruger National Park (KNP). Creepers and vines have been found in KNP rest camps and villages. Below is a list of invasive vines and creepers which are found in the KNP. Also invasive plants...  
[Read more...](#)

**Mbombela Invasives Facebook Page is launched**  
Interested in invasive species in Mpumalanga? A brand new Facebook page - Mbombela Invasives - is being launched to coincide with the inaugural 2016 Mbombela Invasive Species Forum (23 August, 2016 @ 12pm). Quantifying the nature and extent of listed invasive species occurring on all public land under the control...  
[Read more...](#)

Figure 4: Mpumalanga Invasives Forum Website - Detailed information on AI Plants (Top); 'News' tab (Bottom)

### 3.1.2 Agricultural Research Council - Plant Protection Research (ARC - PPRI) Factsheets/Leaflets

The PPRI “focuses on ecologically sound management strategies for agricultural pests, plant diseases and invasive plants, and promotes the use of advantageous organisms to strengthen agricultural production in a sustainable way, through research, technology development and technology transfer”. The PPRI’s Weeds Research Programme that is focuses on generating knowledge and information on the ecology and control of invasive alien plants (IAPs) in South Africa. The Programmes webpage hosts information on IAPs (including distribution), relevant legislation, control and management measures, fact sheets, and links to other information and resources.

The factsheets are concise 2 page documents that can be downloaded and printed to be used in-field. The programme has also compiled a book - *Alien Weeds and Invasive plants, A Complete Guide to Declared Weeds and Invaders in South Africa* by Lesley Henderson, which can be purchased by contacting the ARC



Weeds Research Programme. In addition, The Programme, in collaboration with SANBI, has compiled a list of Xhosa names for invasive species to aid the identification of AIS.

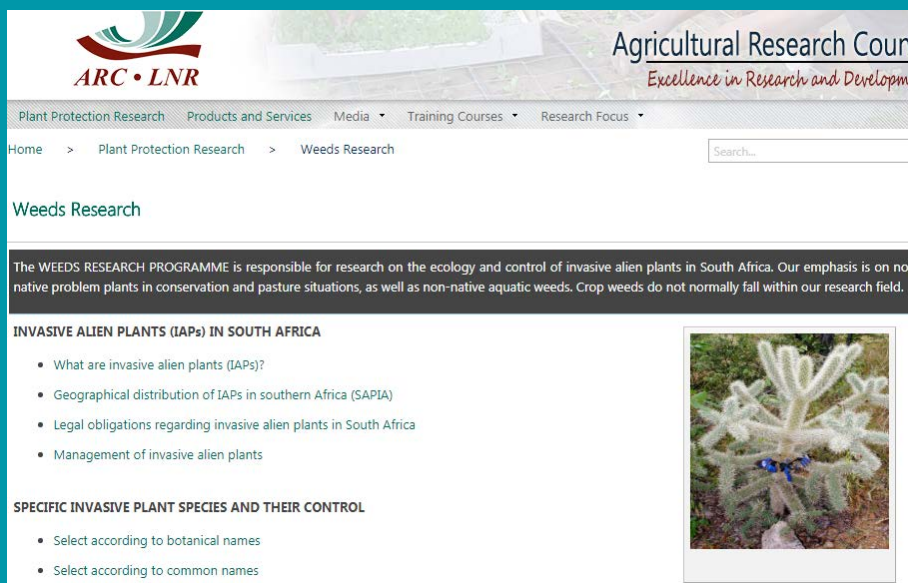


Figure 5: ARC:PPRI - Weed Research Programme webpage

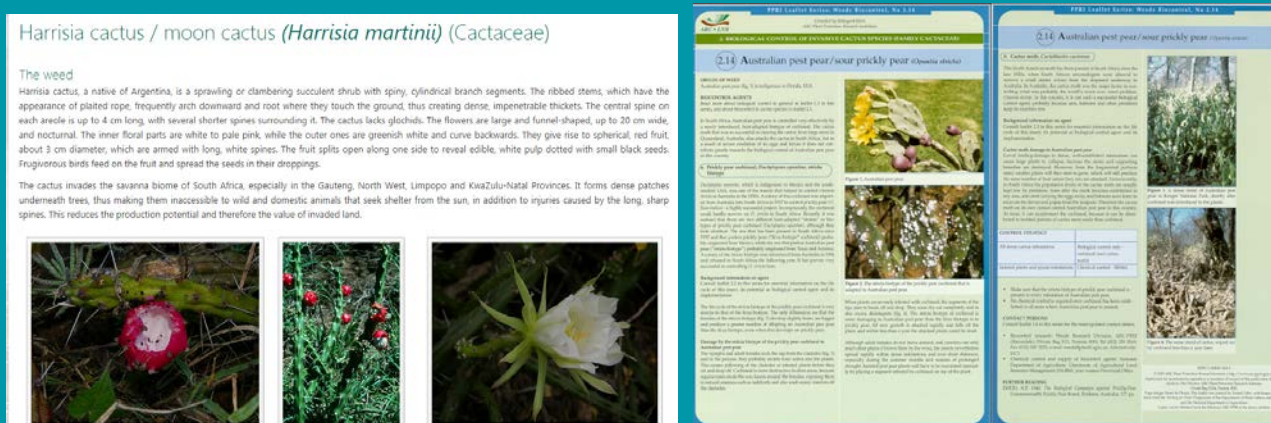


Figure 6: Weed Research Programme - Detail on AIS (Left); 2 page fact sheets (Right)

- Weeds Research Programme: <http://www.arc.agric.za/arcppri/Pages/Weeds%20Research/Weeds-Research.aspx>

### 3.1.3 South African National Biodiversity Institute (SANBI)

The SANBI “leads and coordinates research, and monitors and reports on the state of biodiversity in South Africa”. The SANBI website has a resource section that hosts biodiversity information for the country, with links to documents, frequently asked questions (FAQs), infobases, atlases and libraries that have been developed by themselves and their partners.

- SANBI Resource portal: <https://www.sanbi.org/resources/>



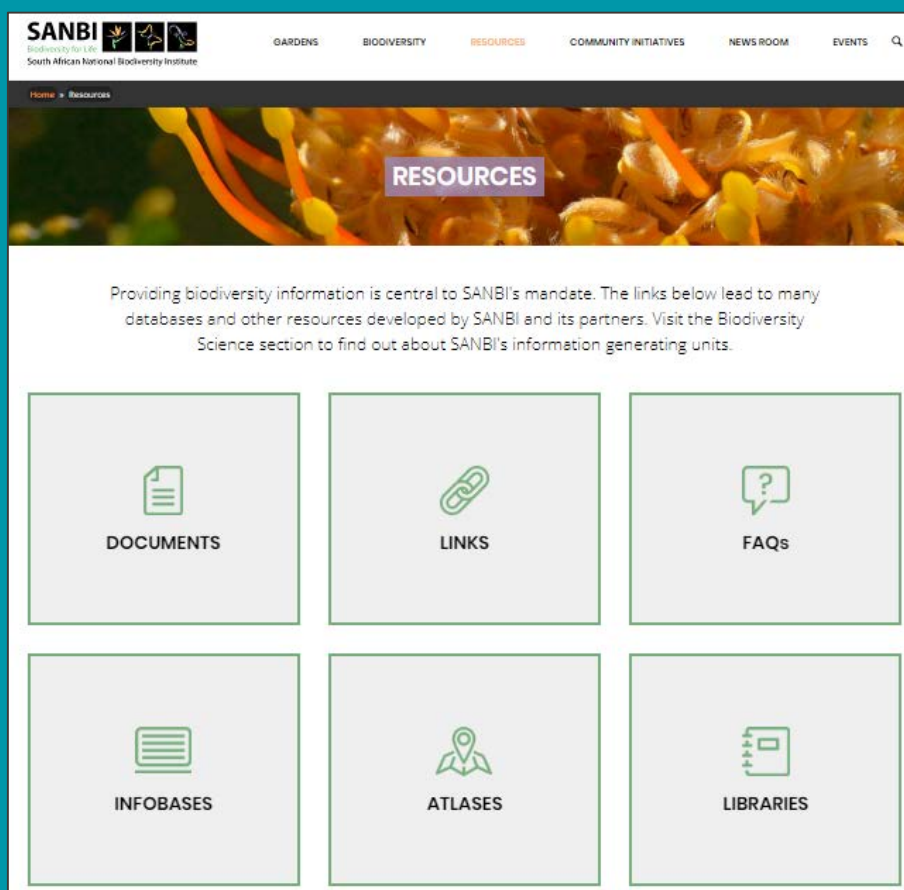


Figure 7: SANBI Website - 'Resources' tab

SANBI's Mpumalanga Regional section is in the process of developing a regional online portal which will host local information and resources, as well as management plans for category 1a species. The regional office also has capacity to offer support for identification of species. Stakeholders in the region are encouraged to report new and emerging invasion (species and area invasions) to SANBI so that they can be added to the database.

### 3.1.4 Forestry South Africa (FSA) Environmental Guidelines for Commercial Forestry Plantations in South Africa, 2018

FSA has compiled a guideline (with the latest 2018 version being the third edition) to provide guidance “on the management of plantation forestry that minimises the impacts of forestry operations on the physical environment”. The guideline includes “statutory requirements and best management practices which are recommendations which will minimise the impact of forestry operations on the environment”. Chapter 2: Legal Requirements of the FSA Environmental Guidelines is of particular importance as it provides overviews of relevant legislation and reference to applicable sections, as well as Chapter 5: Integrated Pest Management which provides insight on an applicable approach. Appendix 2: National Environmental Management: Biodiversity Act Alien and Invasive Species Regulations provides further legal guidance.



■ 2018 Guideline:

[http://www.forestry.co.za/uploads/File/industry\\_info/environment/FSA%20Environmental%20Guidelines%202018.pdf](http://www.forestry.co.za/uploads/File/industry_info/environment/FSA%20Environmental%20Guidelines%202018.pdf)



Figure 8: FSA Environmental Guidelines (2018) Cover and Table of Contents

## 3.2 Training Opportunities

### 3.2.1 Invasive Species Training

The South African Green Industries Council (SAGIC), in collaboration with Invasives South Africa, hosts annual Invasive Species Training Events in centres around the country. In 2018, the training events will take place in Cape Town and Durban (May), and in Johannesburg (June).

The course is divided into four modules (cost of R935 per module):

1. Identification and Legislation (Day 1) - Learn to identify the basic invasive species, categories and legislation
2. Directives and Control Plans (Day 2) - How to manage declarations, permits, pre-directives, directives and control plans
3. Theory: Herbicides and Control Methods (Day 3) - Introduction to herbicides and how to use them
4. Practical: Spraying Herbicides (Day 4) - A practical learning experience in the field with industry experts.





Upon completion of modules 3 and 4; an official Herbicide Operator's Certificate will be issued. These training events are held annually, alternating between events in the main centres (Cape Town, Durban and Johannesburg), and regional events.

There is potentially opportunity to request that a local training event be held, provided there is commitment from a range of partners to ensure there are sufficient attendee numbers to justify a local event. To submit such a request, contact can be made with SAGIC's Invasive Species/Training division ([invasives@sagic.co.za](mailto:invasives@sagic.co.za)).

- 2018 Training Advert: <http://sagic.co.za/training/>
- Booking form: <http://sagic.co.za/wp-content/uploads/2018/03/Invasive-Species-Training-2018-Fillable.pdf>

The advertisement is a flyer for the 2018 Invasive Species Training. It features a teal background with a central white box containing text and a SAGIC logo. On the left side of the white box, there is a vertical strip of images showing a bird, purple flowers, and yellow flowers. The text in the white box includes the title '2018 Invasive Species Training', the organization 'South African Green Industries Council', and a 'Booking Form' section. It lists four modules: Module 1 (Identification & Legislation), Module 2 (Directives & Control Plans), Module 3 (Theory: Herbicides & Control Methods), and Module 4 (Practical: Spraying Herbicides). It also provides training dates for Cape Town, Durban, and Johannesburg, along with times and a cost per module of R935 (incl. VAT).


Figure 9: SAGIC 2018 Invasive Species Training Advert

### 3.2.2 Pesticide Control Operator (PCO)

The South African Green Industries Council (SAGIC), in collaboration with Invasives South Africa, hosts a correspondence course for gaining a Pesticide Control Operator (PCO) licence. The course is “*designed for anyone operating in the management of invasive alien species field, who needs to become a licensed PCO*”. The course consists of six chapters and tutorials, which are provided in a training manual study packs. Participants are required to attend a herbicide practical day and complete a theory examination. The costs of the course in 2017 were R6500 for the correspondence option (study materials, practical day and exam) and R8950 for the mentoring option (study materials, 5 day mentoring sessions, practical day and exam). Dates and details of the 2018 training have not yet been announced.



- 2017 PCO Training Advert and Booking Form:  
<http://sagic.co.za/wpcontent/uploads/2017/08/Herbacide-Training-2017-Final-Fillable-1.pdf>



## 2017 Invasive Species Training

### South African Green Industries Council

Invader Plant Specialists (Pty) Ltd

## Booking Form

Online Correspondence Course  
towards Pesticide Control Operator (PCO) Licensing

Please fill in the booking form in order for us to issue you with an invoice

**Your Information**

<b>Your Name:</b>		
<b>ID No.:</b>		
<b>Organization:</b>		
<b>Cell:</b>		<b>Email:</b>
<b>Where do you live?</b>	<b>Town:</b>	<b>Suburb:</b>

A PCO qualification is only granted once you have attended a SAGIC herbicide practical day, passed the theory exam and attended mentoring sessions with a registered PCO.

**Times:**  
09h00 – 16h00 (Practical Day)  
09h00 – 12h00 (Examination Day)

**Costs (Incl. VAT):**  
R 6 500 (Book + Practical + Exam = correspondence)  
R 8 950 (Book + 5 day classroom + Practical + Exam = hands on)

Herbicide practical days will take place on the following dates and venues:

**Johannesburg**  
Practical Day - 27 October 2017  
Examination - 28 October 2017

**Cape Town**  
Practical Day - 19 October 2017  
Examination - 20 October 2017

**More dates are planned for 2018 and will be announced soon.**

Figure 10: SAGIC 2017 PCO License Training Advert

## 3.3 Newsletters and Portals

### 3.3.1 South African Plant Invaders Atlas (SAPIA) News

SAPIA Newsletter is an initiative of the Weeds Programme of Plant Protection Research Institute (PPRI) within the Agricultural Research Council (ARC). The newsletter has been in production for over 10 years (over 40 editions) and is typically produced quarterly. Each edition contains recent information on invasive plant species in South Africa.

Lesley Henderson (ARC-PPRI, Weeds Research Programme) is the current newsletter editor and SAPIA coordinator and can be contacted via email - [l.henderson@sanbi.org.za](mailto:l.henderson@sanbi.org.za) . The newsletter is available on the ARC and Invasives South Africa webpages, or can be emailed directly to individuals (contact the newsletter editor to subscribe).

- SAPIA News: <http://www.invasives.org.za/resources/sapia-news#2017>





Figure 121: A recent edition of SAPIA News

### 3.3.2 Environment.co.za

Environment.co.za is a “news article, blog, forum and community site covering environmental issues from South Africa, Sub-Saharan Africa, Africa and Worldwide”. The site categorises environmental issues and provides regular updates, information and articles related to each topic. The Weeds, Invaders and Alien Vegetation category is of particular relevance.

- Weeds, Invaders and Alien Vegetation section: <https://www.environment.co.za/weeds-invaders-alien-vegetation>



Figure 13: Environment.co.za Newsletter Homepage



**award**  
The Association for Water and Rural Development

AWARD is a non-profit organisation specialising in participatory, research-based project implementation. Their work addresses issues of sustainability, inequity and poverty by building natural-resource management competence and supporting sustainable livelihoods. One of their current projects, supported by USAID, focuses on the Olifants River and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems to sustain livelihoods and resilient economic development in the catchment.

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### **About USAID: RESILIM-O**

USAID: RESILIM-O focuses on the Olifants River Basin and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems that support livelihoods and resilient economic development in the catchment. The 5-year programme, involving the South African and Mozambican portions of the Olifants catchment, is being implemented by the Association for Water and Rural Development (AWARD) and is funded by USAID Southern Africa.

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