SAPIA NEWS

SOUTHERN AFRICAN PLANT INVADERS ATLAS

April 2008 ARC-Plant Protection Research Institute **No. 7**

Patron in Chief: Nelson Mandela

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You are invited to participate in the SAPIA phase II project.

Submit records online at : Weeds and Invasive Plants website www.agis.agric.za/wip

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SAPIA phase II—reminders

SAPIA phase II focuses on emerging invasive species. The public is invited to submit records for the species that have been highlighted in the SAPIA newsletters as well as any other species that they may be aware of.

Please only submit records of alien plant species that are growing beyond the confines of cultivation e.g. along roads, rivers, in urban open space, in disturbed or undisturbed natural areas. If you are uncertain about the identification of a plant then send a dried, pressed specimen preferably with flowers and/or fruits to Lesley Henderson. Good digital photos are also acceptable.

SAPIA needs your support!

Please submit records to the Weeds and Invasive Plants website www.agis.agric.za/wip

Public participation is vital to the SAPIA II project. If you should have any trouble in submitting records at the WIP site then rather e-mail them to Lesley Henderson at Henderson@sanbi.org

All the SAPIA Newsletters are posted at WIP and can be downloaded free of charge

Pompom weed update

Pompom weed (*Campuloclinium macrocephalum*) continues to expand its range. SAPIA surveys have added many new localities in Mpumalanga (see map overleaf). The National Road Agency in North West detected (and treated) pompom weed along the N14 near Barberspan which is approximately 300 km west of Pretoria. New sightings of pompom weed in the Eastern Cape have not been confirmed.

Good news from KwaZulu-Natal is that all known pompom weed sites have again been treated as well as the N2 between Piet Retief and Pongola which is a major route for pompom invasion into KZN. Well done to Michael Braack and his teams from KZN DAEA!

Efforts are being made in the Barberton/ Badplaas area to control pompom weed. Thanks to Working for Water, Forestry and the persistent pleas of Marjorie Nuns.

Pompom weed—on the march

The map shows all the known localities of pompom weed in the SAPIA database until the end of February 2008. New SAPIA records for 2007/2008 are shaded in blue.

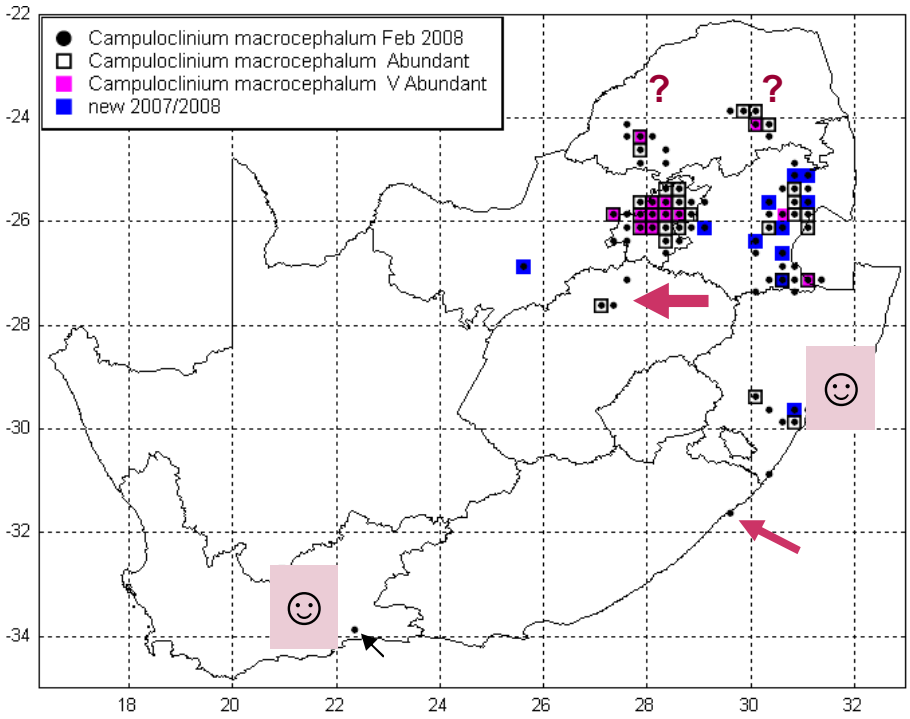
Pompom weed is under control in KZN and W Cape.

Pompom weed needs urgent attention in the Free State.

What is the status of pompom weed at Port St Johns in the E Cape?

What control measures are being undertaken in Limpopo? The Waterberg and Wolkberg are threatened by pompom weed.

Gauteng—there is an urgent need to contain pompom weed—the isolated plants and small patches on the periphery of the invasion front need the most urgent attention.



Chemical and biological control of pompom weed

Two herbicides have been registered for use against pompom weed—Brush-Off (Metsulfuron methyl 600g/kg) made by DuPont, and Access 240 (Picloram 240g/litre) made by Dow AgroSciences. Herbicides should be applied onto actively growing plants that are starting to produce inflorescences.

The rust fungus (**1**) first detected on pompom weed in Pretoria in the summer of 2006 has been found almost throughout the distribution range of the weed. No studies have been done to determine the effect of the fungus on the growth and survival of pompom weed. It is suspected that mature plants will gradually lose vigour and eventually die; the fungus is likely to be lethal to seedlings.


1 S. Neser

Three insect species are currently being reared and tested in quarantine—a stem-galling thrips (**2**) and two flower-feeding Lepidopterans (**3** & **4**)


2 A.J. McConnachie


3 S. Neser


4 S. Neser

Progress with legislation

The revised regulations under the Conservation of Agricultural Resources Act, Act 43 of 1983 (CARA) have not yet been published for public comment.

The regulations on alien and invasive species under the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA) are being re-drafted following a workshop facilitated by the SANBI CEO, Dr Tanya Abrahamse, in early April 2008. Many issues were addressed at the workshop and gaps identified in the October 2007 draft regulations. A mini task team consisting of key stakeholders will be responsible for the revised draft which will then be circulated to all the workshop participants.

CARA
(Department of Agriculture)
and
NEMBA
(Department of Environmental Affairs and Tourism)

Emerging invasive grasses

Reed sweet grass

Reed sweet grass (*Glyceria maxima*)(= *Poa aquatica*) is an aquatic reed-like grass native to Eurasia. It is perennial, rhizomatous, with an unbranched erect stem 1– 2.5 m high, growing in and adjacent to aquatic habitats. Its expanding root system allows it to grow into areas of open water, such as dams, lakes and streams. It can form dense monospecific stands that are a threat to native wetland biodiversity. It is also a valuable fodder grass, although toxic at times, causing prussic acid poisoning of cattle. It has been cultivated in KwaZulu-Natal since at least 1960 but it is only in recent years that it has been observed as an invader in the Mkomazi, Mzimkulu and Mzimvubu catchments (personal communication D. Kotze, University of KZN).

Reed sweet grass can be distinguished from the indigenous reeds (*Phragmites* spp.) by its shorter stature, larger and non-silky/fluffy spikelets, and unfringed membranous ligule (as opposed to ligule of fringed hairs). It has been proposed as a category 2 invader under the revised CARA, meaning that it can be cultivated for fodder in demarcated areas providing the landowner has received a permit from the Department of Agriculture and that steps are taken to prevent its spread.


D. Kotze


D. Kotze


D. Kotze


D. Kotze

Tussock paspalum

Tussock paspalum (*Paspalum quadrifarium*) is a perennial grass that grows in large bluish-green bunches or tussocks up to 2 m high. It is native to Uruguay, Paraguay, Brazil and Argentina and is a natural component of the Flooding Pampa grasslands in Argentina. In South Africa it prefers moist conditions and is found along roadsides, in valleys and between plantations. It is an emerging invader in KwaZulu-Natal where it has been recorded from the Melmoth area (November 2000 by J. Goodall of ARC-PPRI), along the N2 between Kokstad and Port Shepstone, and along the R56 to Richmond and Pietermaritzburg (March 2008 by F. de Wet of Enviropulse CC).

Tussock paspalum can spread rapidly from rhizomes and seed and aggressively forms extremely dense infestations in a few years. It can be distinguished from two other large and invasive *Paspalum* spp. (*P. dilatatum* and *P. urvillei*) by the narrowly pyramidal branching pattern of its inflorescence (see photo) and the almost glabrous/ shortly-hairy spikelets which are purplish-brown in colour.

Tussock paspalum has been proposed as a category 1a invader under the revised CARA—priority species requiring urgent attention.


F. de Wet


C. Evans, River to River CWMA, Bugwood.org

Emerging ornamental weeds

Lindenleaf sage

Lindenleaf sage (*Salvia tiliifolia*) is an erect, pubescent, annual herb up to 1 m high, native to Mexico, Central America and north-western South America. It is a member of the mint family Lamiaceae.

Its leaves are bright green, soft, oppositely arranged; with each alternate pair at 90 degrees to the next. It flowers in late summer to autumn; the tiny blue flowers, 5–10 mm long, are arranged in spikes up to 25 cm long. The fruit is a small nutlet.

Lindenleaf sage has been cultivated as an ornamental. So far it has been recorded as invasive in Gauteng, Mpumalanga and KZN. It occurs on roadsides, rocky hillsides and can form dense clumps under the canopies of trees.

Legislation: None. It has been proposed as a category 1b (prohibited) invader under the revised CARA.

Alternative indigenous plants: the many *Plectranthus* species

Creeping knotweed

Creeping knotweed, sometimes called pink buttons, (*Persicaria capitata*) (= *Polygonum* capitatum) is a perennial herb native to the Himalayas, China and other parts of Asia. It belongs to the family Polygonaceae.

It is glandular-hairy, with reddish-brown stems, 10–30 cm long, that root at the nodes. Leaves have a V-shaped blotch on both surfaces. Flowerheads measure 5–10 mm across. The fruit is a black, shiny nut c. 2mm long.

Creeping knotweed has been cultivated as an ornamental groundcover but can spread prolifically. It prefers full sun but also grows in partial shade. It has spread from cultivation to roadsides, disturbed grassland and the margins of forests and plantations, in Limpopo, Mpumalanga and Swaziland.

It is naturalised and invasive in many parts of the world, including tropical Africa, Europe, North America, Hawaii, Australia and New Zealand.

Legislation: None. It has been proposed as a category 1b (prohibited) invader under the revised CARA.

Polka-dot-plant

Polka-dot-plant (*Hypoestes phyllostachya*) is an erect, perennial, woody-based herb to 1 m high and is native to Madagascar. It is a member of the family Acanthaceae.

The stems are slender, dark green and softly hairy. Leaves are softly hairy, dark green, spotted pink or lavender, up to 5 cm in length. Tiny lilac flowers are produced in spikes.

Polka-dot-plant has been cultivated as an ornamental. It is a moisture and shade-loving species and seeds prolifically. It invades the margins and understoreys of forest. It is naturalised in Australia and Hawaii.

Legislation: None. It should not be cultivated in conservation areas where it can spread into nearby forest.

Alternative indigenous plants: *Hypoestes aristata* , *Plectranthus ciliatus.*

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The Weeds Research Division of the Plant Protection Research Institute is responsible for research on the ecology and control of invasive alien plants in South Africa. These plants were introduced either intentionally (e.g. for ornamental use or agroforestry purposes), or accidentally (e.g. in livestock feed) and now threaten biodiversity and agriculture. In addition, they reduce run-off from water catchments, thus diminishing flow in streams, and adversely affect the quality of life of communities.

- Biological control
- Chemical control
- Bioherbicides
- Integrated control
- Monitoring the emergence and spread of invasive alien plants

We are on the Web:

www.arc.agric.za

see PPRI Newsletter

for current news from the Weeds Research Division

Read PPRI Newsletter No. 75 for the following news from the Weeds Research Division:

- New state-of-the-art quarantine facility at Cedara
- PPRI's pathology unit and gall rust for the biological control of Yellow Bells (*Tecoma stans*)
- SAPIA surveys and a nightmare of *Rubus* taxonomy

Biological control of invasive plants

Queen of the night (*Cereus jamacaru)* before and after attack by the mealybug (*Hypogeococcus festerianus*)
Photos: S. Neser, H. Klein and L. Henderson

Biological weed control is the use of natural enemies to reduce the vigour or reproductive potential of an invasive alien plant. The principle is that plants often become invasive when they are introduced to a new region without any of their natural enemies. The alien plants therefore gain a competitive advantage over the indigenous vegetation, because all indigenous plants have their own natural enemies that feed on them or cause them to develop diseases. Biological control is an attempt to introduce the alien plant's natural enemies to its new habitat, with the assumption that these natural enemies will remove the plant's competitive advantage until its vigour is reduced to a level comparable to that of the natural vegetation. Natural enemies that are used for biological control are called biocontrol agents.

The potential risk posed by a candidate biocontrol agent is determined by biocontrol researchers through extensive host range studies (specificity tests) that are carried out in a quarantine facility. These trials determine the range of plants that a potential biocontrol agent is able to use as host plants throughout its life cycle, as well as its host plant preferences. Permission to release a biocontrol agent will be sought only if the host-specificity tests prove without doubt that the potential agent is sufficiently host-specific for release in this country. To be regarded as sufficiently host-specific, the candidate agent must be either monophagous (i.e. the insect feeds on only one plant species, the target weed in this case) or it could have a slightly wider host range, provided that none of the additional host plants occur in South Africa or surrounding countries, either as indigenous or introduced crop plants.

South Africa is regarded as one of the world leaders in the field of biological control of invasive alien plants. Since the 1930s we have brought 27 invasive alien plant species under biological control. In the process, 99 species or biotypes of natural enemies were released, 74 of which became established. Remarkable successes have been achieved with either controlling or reducing the invasive potential of many invasive plants including cacti, aquatic weeds, Australian wattles, chromolaena and lantana. Seed feeders feature strongly in many of our projects. Tested and safe biocontrol agents are distributed in co-operation with the *Working for Water* Programme of the Department of Water Affairs and Forestry.