

Update on USDA Biological Control of Weeds Projects

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Tamarix sp. (saltcedar) and
the *Tamarix* leaf beetle
Diorhabda elongata



Tamarix* sp. heavily damaged in the background by *Diorhabda elongata

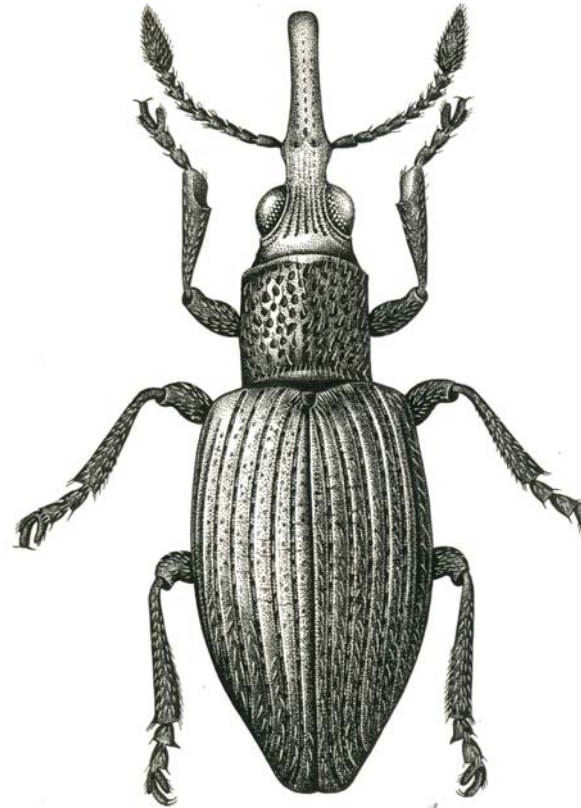
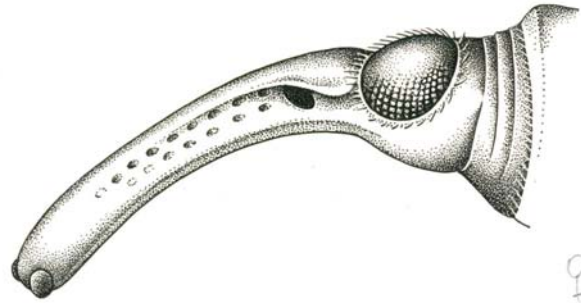


***Tamarix* sp. heavily damaged by
*Diorhabda elongata***



Xanthoxylum solstitialis
Yellow Starthistle





The yellow starthistle stem
and root crown boring apionid
Ceratapion basicorne



A yellow starthistle root crown
damaged by *Ceratapion basicorne*

Puccinea jaceae var. *solstitialis*

**Release of this yellow starthistle rust
planned for Spring 2003**

**Russian thistle *Salsola tragus*
(also known as Tumbleweed)**



***Aceria salsolae* on
*Salsola tragus***



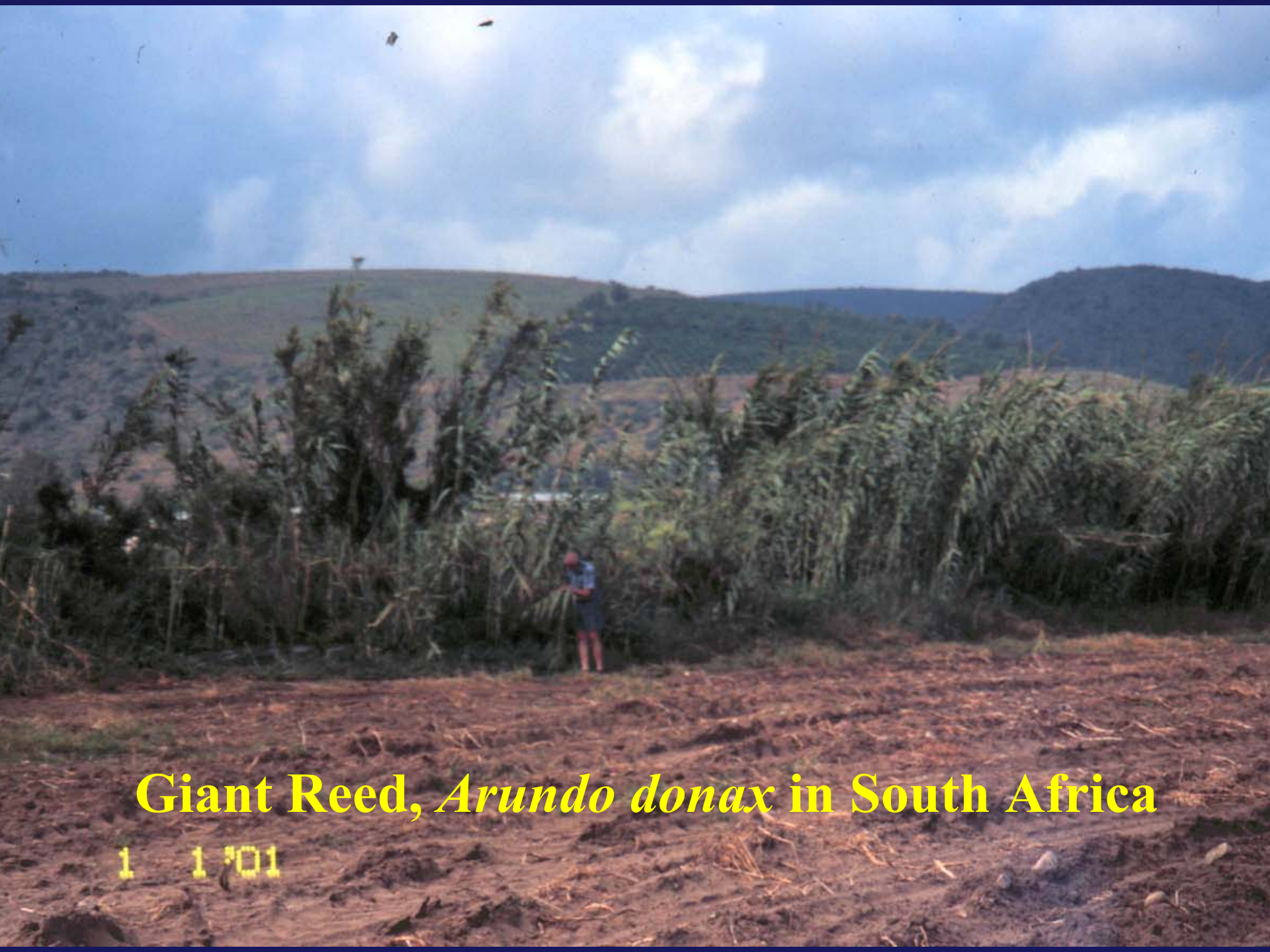
Healthy cutting



**Infested plant
from Greece**

A microscopic image showing a long, thin, segmented eyelash against a dark green background. At the tip of the eyelash, a small, white, multi-segmented mite is attached. The mite has a bulbous body and several thin, hair-like appendages extending from it.

***Russian thistle blister mite,
Aceria salsolae,
on human eyelash***



Giant Reed, *Arundo donax* in South Africa

1 1701

For more information on the *Arundo donax* project contact Tom Dudley

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Cape ivy -
(Delawarea odorata)

Formerly known as
Senecio mikanooides
and German ivy







January 2001- Joe Balciunas returns from South Africa with *Digitivalva* moths and *Parafreutreta* flies.

April 2001 - the first laboratory generations of *Digitivalva* and *Parafreutreta* emerge & first quarantine host range tests are set up.

Digitivalva delaireae (Lepidoptera:Plutellidae)



Leaf mining and stem boring moth



Digitivalva damage
on stems (left), and leaves (right)

Digitivalva
damaged Cape ivy

12 20 '00



Max Chau, Chris Mehelis, and Eve Lednicky
USDA-ARS-WRRC-EIW, Albany California

**A no choice /
host added
test**



Digitivalva delaireae host range tests (USDA)

non-target plants tested (4 test plants + Cape ivy / test)

- Family Asteraceae, Tribe Senecioneae
 - *Erechtites glomerata*
 - 2 *Euryops* sp.
 - 4 *Packera* sp.
 - 7 *Senecio* sp.
 - *Luina hypoleuca*
 - *Petasites frigidus*
- Other Asteraceae - 3 genera
- Family Araliaceae - 2 *Hedera* sp.

NONE had *Digitivalva* development or damage

Parafreutreta regalis (Diptera: Tephritidae)



Cape ivy gall fly



Parafreutreta regalis host range tests (USDA & PPRI)

non-target plants tested (4 test plants + Cape ivy / test)

Family Asteraceae, Tribe Senecioneae

– 3 *Cineraria* sp., 1 *Erechtites* sp., 3 *Euryops* sp., 1 *Mikaniopsis* sp.,
4 *Packera* sp., 16 *Senecio* sp., 1 *Luina* sp., 1 *Petasites* sp.

Other Asteraceae - 14 genera

Family Araliaceae - 2 *Hedera* sp.

Family Brassicaceae - 2 genera

Family Chenopodiaceae - *Beta vulgaris* var. *cicla*

NONE of these test plants had galls.

Parafreutreta Impact Assessment - Trial 1 (in plexiglass sleeve cage)





Parafreutreta Impact Assessment - Trial 2 (In metal screen cage)





Dr. Stefan Naser

**PLANT PROTECTION
RESEARCH INSTITUTE**



RIETONDALE

**NAVORSINGSINSTITUUT
VIR PLANTBESKERMING**



**Liame
van der Westhuise**

Cooperators at PPRI in Rietondale

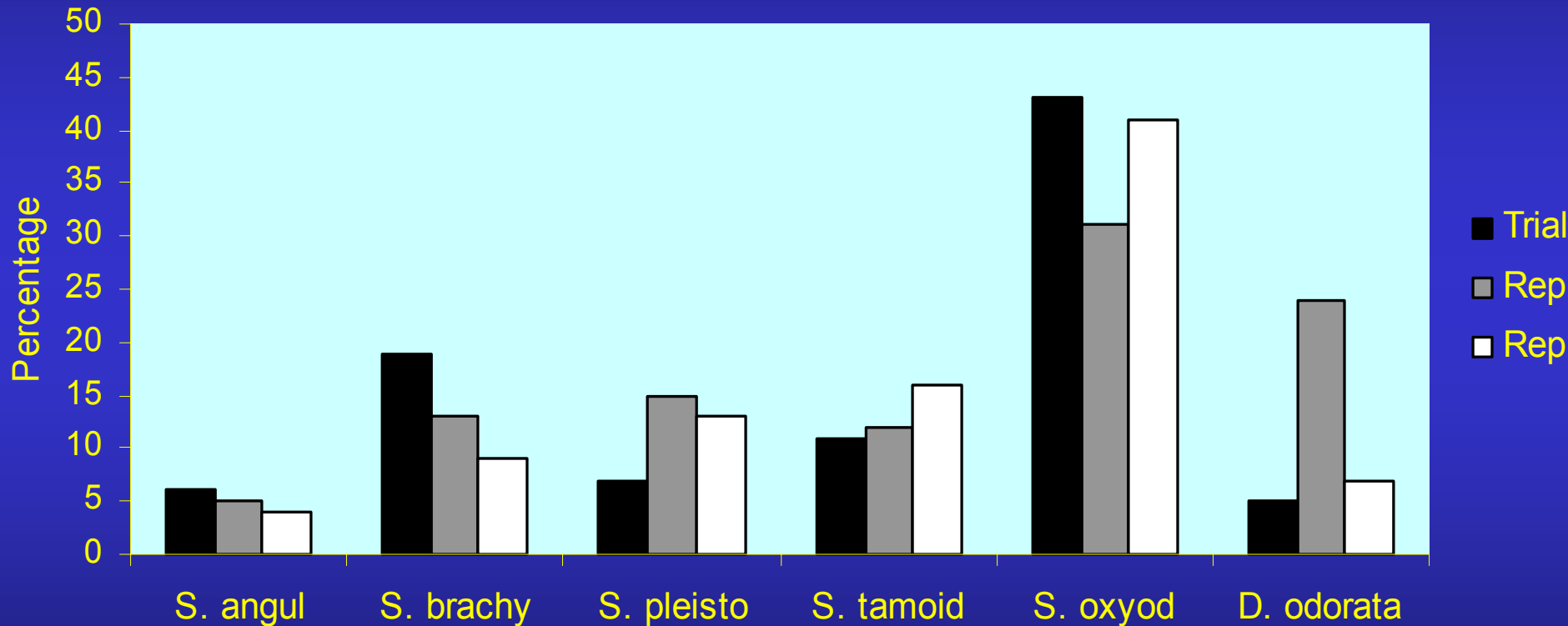
Pretoria, South Africa

Diota rostrata (Lepidoptera: Arctiidae)

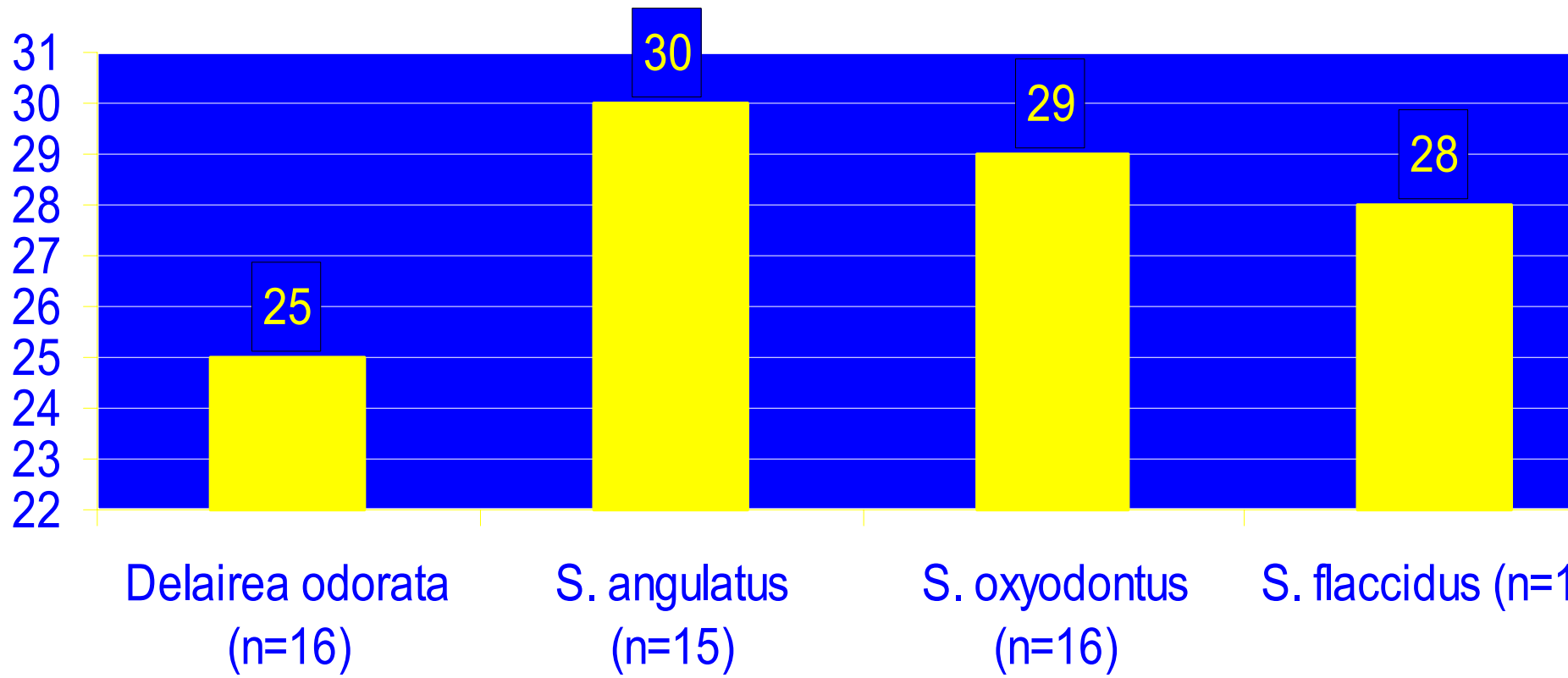
A leaf feeding
moth



Number of eggs laid by *Diota rostrata* on each plant species (% of total eggs laid)



Developmental time from larva to adult of *Diota rostrata* larvae on leaves of four different host plants at ambient conditions with daily summer temperatures ranging between 21- 27 C. Trials were replicated 3 times.



Phalacrid beetles on Cape ivy flowers



Larvae



Adult

Cercospora sp. fungus on Cape ivy leaves



Cape Ivy BioControl Project

Annual Costs

- \$300,000 - Scientist, technicians, quarantine space in Albany (USDA)
- \$50,000 - Greenhouse technician and supplies (CalTrans - \$25,000)
- \$60,000 - South African studies (CalEPPC)
- \$410,000 **TOTAL**

Funding Constraints

- Project length (10-20 years)
- Weak Economy
 - Government agencies
 - Private Groups and individuals
- Numerous other weeds
- Additional subprojects in S. Africa
 - Flower=feeding insects
 - *Cercospora* pathogen

Cape Ivy Research Needs

- \$60,000 for research in South Africa
- Research “gap” must be avoided
- Native Senecioneae plants

South Africa Research Year 6 [2003]

\$60K required

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