

Biological Control Possibilities for the Southwest

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Types of Weed Biological Control

❖ Classical/Introduction

❖ Augmentation

❖ Conservation

Promising and Future Biological Control Agents for Western US Weeds

- ❖ African Rue
- ❖ Russian Knapweed
- ❖ Russian Thistle
- ❖ Russian Olive

African Rue – *Peganum harmala*

❖ Just starting process – Establish importance of weed and begin search for agents.



African Rue – *Peganum harmala*

- ❖ Produced viable seeds under a desk
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African Rue Stem Borer - *Thamnurgus pegani*



Russian Knapweed - *Rhaponticum repens*

- Actively Searching for Agents



Nematode - *Subanguina picridis*



Russian Knapweed - *Rhaponticum repens*

- Gall wasp from CABI

(Centre for Agricultural Bioscience International)



Aulacidea acroptilonica

Released in Canada

Waiting for approval in US

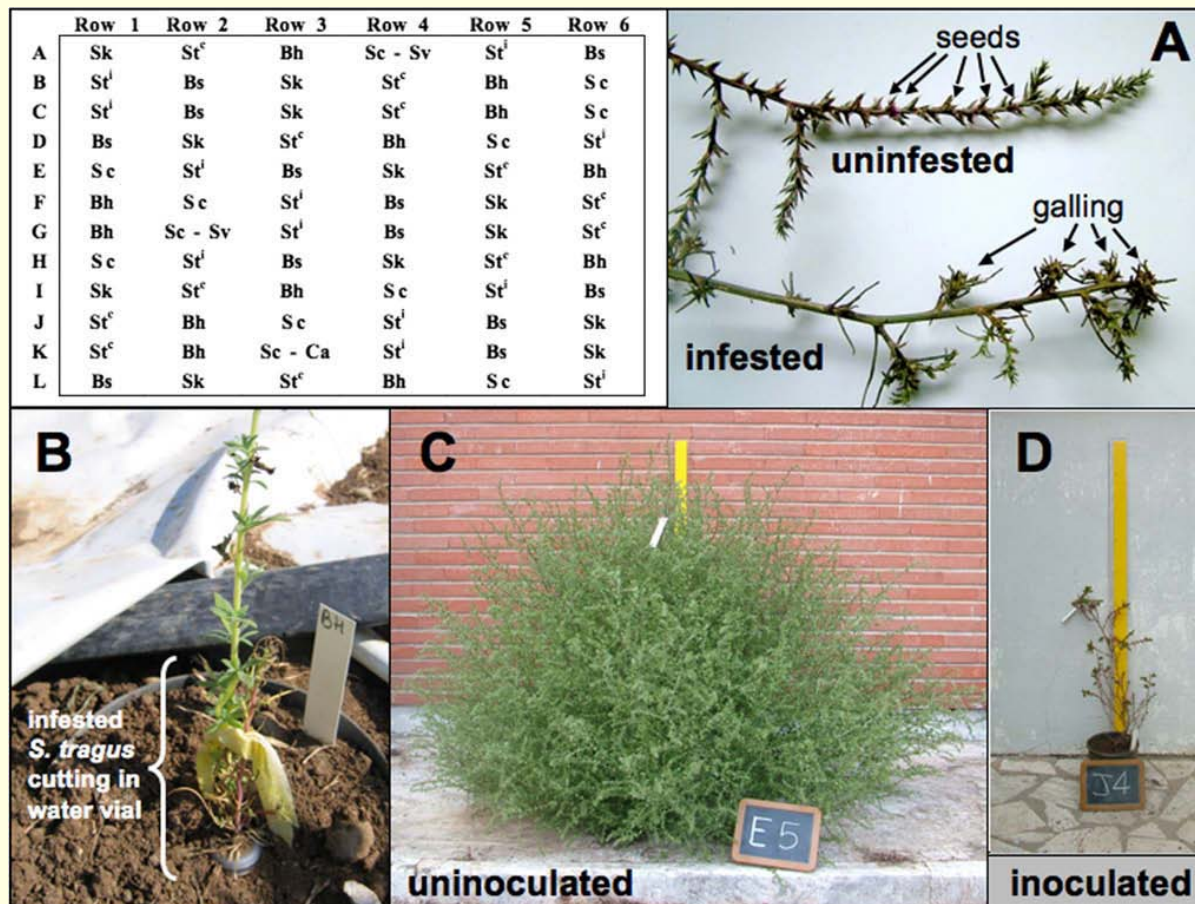


Russian Thistle – *Salsola* spp.



Russian Thistle – *Salsola* spp.

Blister Mite - *Aceria salsolae*



Permits requested
in 2004
No decision yet..

Russian Thistle – *Salsola* spp.

Pyralid Moth – *Gymnancyla canella*



Stem weevil, *Anthypurinus biimpessus*
from Tunisia in quarantine tests

Root weevil, *Cosmobaris scolopacea* from
Sicily testing in Italy



Russian Olive – *Elaeagnus angustifolia*



UGA1237067

Russian Olive – *Elaeagnus angustifolia*

Psyllids – *Trioza magnisetosa* and *T. furcata*



Leaf beetle, *Altica balassogloi*



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❖ **Augmentation**

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Augmentation

- ❖ Inundative releases to augment existing populations (don't expect offspring to help)
 - Agents must be priced competitively with other control options
- ❖ Inoculative release - (do expect offspring to help)
 - Expand Existing Geographic Ranges

Augmentation – Inoculative release

- ❖ Inoculative release - (do expect offspring to help)
 - Expand Existing Geographic Ranges

Southwest invasive weeds will increase

- Take advantage of our neighbors
- Interstate and intrastate movement
- Establish insectaries

Aquatic Weeds

Water hyacinth – *Eichhornia crassipes*



Water hyacinth
Eichhornia crassipes

**Before Biological
Control**



Neochetina weevils

**After Biological
Control**



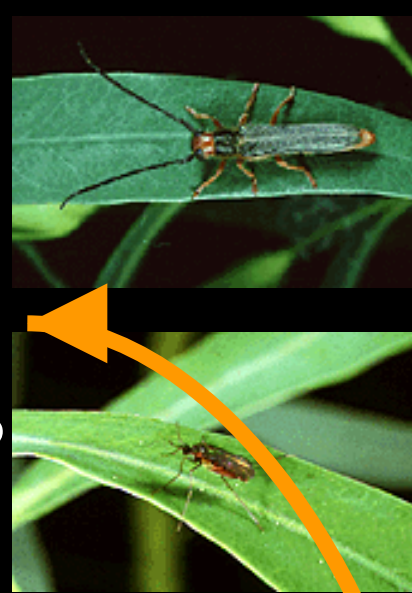
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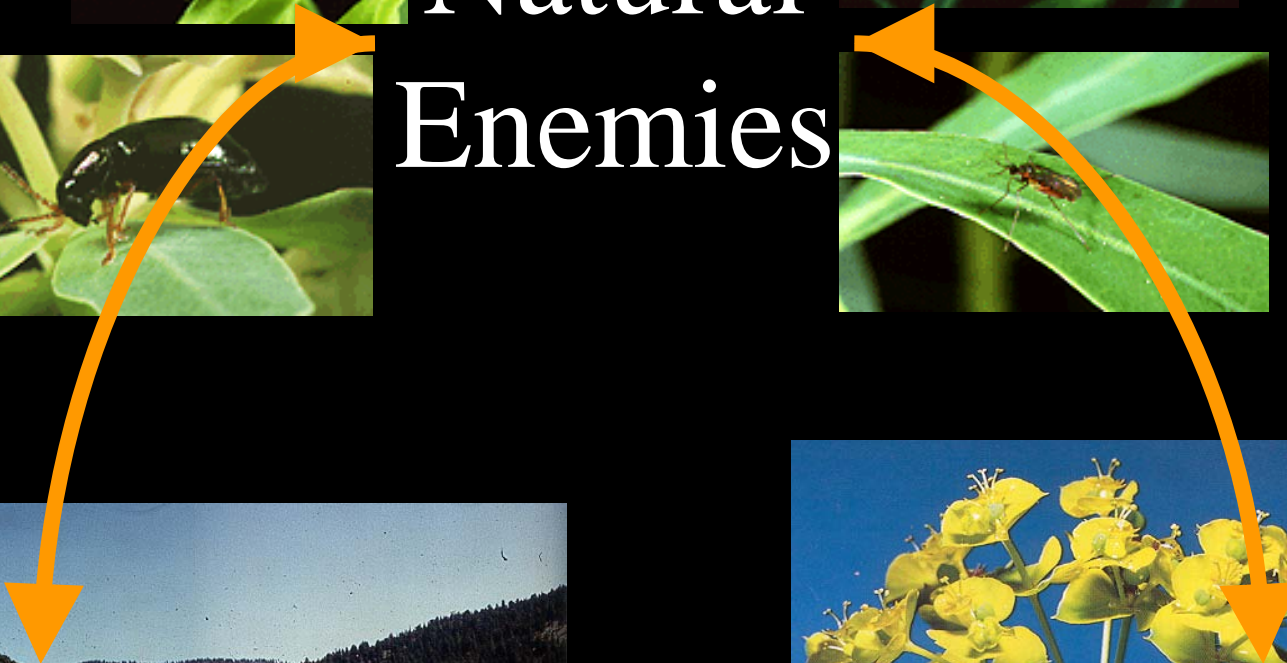
❖ **Conservation**

Natural Enemies



Environment

Weed



Integrated Weed Management

