EFSA opinion on the use of *Trichilogaster acaciaelongifolii*ae against invasive *A. longifolia* and observations on the BCA process

Sybren Vos, Marco Pautasso, Mike Jeger

Animal & Plant Health Unit, EFSA

Workshop on Evaluation and Regulation of Biological Control Agents
Budapest 2015-11-23/24
1/ EFSA PLH Panel Scientific opinion on the release of Trichilogaster acaciaelongifoliae

2/ PLH Panel observations on BCA release procedure

3/ Assessing environmental risks
SCIENTIFIC OPINION

Risk to plant health in the EU territory of the intentional release of the bud-galling wasp *Trichilogaster acaciaelongifoliae* for the control of the invasive alien plant *Acacia longifolia*¹

EFSA Panel on Plant Health (PLH)²,³

European Food Safety Authority (EFSA), Parma, Italy

ABSTRACT

The EFSA Panel on Plant Health was requested by the European Commission to assess the risk to plant health in the European Union if the Australian bud-galling wasp *Trichilogaster acaciaelongifoliae* was released for the control of the invasive alien plant *Acacia longifolia* in Portugal. *T. acaciaelongifoliae* feeds on *A. longifolia* and


**BACKGROUND**

- *Acacia longifolia* is posing threat to local biodiversity in costal sand dunes and a variety of other habitats

- Voluntary release of *Trichilogaster acaciaelongifoliae* for control of the invasive plant in Portugal

- Is the wasp harmful to other species (in particular native plants) than *A. longifolia*?
PLH Panel was requested by the European Commission to provide a scientific opinion on the risk to plant health posed by *Trichilogaster acaciaelongifoliae* for the EU territory focusing on:

- Establishment
- Spread
- Impact
Qualitative assessment was performed in line with:

- EFSA Guidance on:
  - transparency in the scientific aspects of risk assessment
  - on a harmonised framework for risk assessment in PLH
  - on identification and evaluation of risk reducing options in PLH
- (ISPM) No 3 on the import and release of non-indigenous BCAs
- EPPO guidance on the safe use of BCAs

Data from host range tests (Coimbra University & Polytechnic institute);
Data on the EU distribution of Acacia spp. (Procurement project (Stichting Dienst Landbouwkundig Onderzoek);
Literature review and Expert knowledge
T. acaciaelongifoliae prefers a warm temperate, fully humid, warm summer type climate (Cfb). In South Africa the wasp has developed best under Mediterranean, mild with dry, warm summer (Csb) too.
## ESTABLISHMENT:CULTIVATION OF ACACIA SPP. IN THE EU

<table>
<thead>
<tr>
<th>Acacia spp</th>
<th>Host status</th>
<th>Countries with cultivation</th>
<th>Scale</th>
<th>Number of nurseries</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. <em>dealbata</em></td>
<td>No</td>
<td>Croatia, France, Germany, Greece, Italy, Spain, UK</td>
<td>About 400 ha in Liguria (Italy), 18 million stalks (France), common as street tree in Spanish cities (some of the A. <em>dealbata</em> production in Italy and France is actually of A. <em>retinodes</em>)</td>
<td>11 (Germany), 5 (Greece), 7 (Italy), 36 (UK)</td>
</tr>
<tr>
<td>A. <em>floribunda</em></td>
<td>Yes</td>
<td>France, Greece, Italy</td>
<td>-</td>
<td>3 (France), 4 (Greece), 2 (Italy)</td>
</tr>
<tr>
<td>A. <em>longifolia</em></td>
<td>Yes</td>
<td>France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, UK</td>
<td>Grown in many gardens in Cornwall, UK</td>
<td>9 (France), 6 (Germany), 3 (Greece), 1 (Ireland), 10 (Italy), 5 (the Netherlands), 7 (Spain), 3 (UK)</td>
</tr>
<tr>
<td>A. <em>melanoxylon</em></td>
<td>Spill-over</td>
<td>Germany, Greece, UK</td>
<td>Popular in gardens in coastal areas of the UK</td>
<td>4 (Germany), 1 (Greece), 6 (UK)</td>
</tr>
<tr>
<td>A. <em>saligna</em></td>
<td>No</td>
<td>Germany, Greece, the Netherlands, UK</td>
<td>Commonly found in gardens and as a street tree in the UK</td>
<td>4 (Germany), 2 (Greece), 2 (the Netherlands)</td>
</tr>
<tr>
<td>A. <em>retinodes</em></td>
<td>Under testing, but unlikely</td>
<td>France, Germany, Italy, UK</td>
<td>See above</td>
<td>9 (Germany), 9 (UK)</td>
</tr>
</tbody>
</table>
ESTABLISHMENT

INVASIVE ACACIA LONGIFOLIA ESTABLISHED IN 4 EUROPEAN COUNTRIES

Preparatory work to support pan European pest risk assessment: Trichilogaster acaciaeloagifoliae

Figure 5. Distribution of A. longifolia in Italy, Portugal, Spain and France.
ESTABLISHMENT: HOST RANGE

- Phylogenic analysis of Acacia spp. and host tests (Kleinjan & Hoffmann, 2013)
PAIRED T. ACACIAE LONGIFOLIAE CHOICE TESTS

from Marchante, 2011

A. melanoxylon
A. longifolia
C. striatus
A. longifolia
V. vinifera
A. longifolia

% of branches with eggs

0 20 40 60 80 100
### RATINGS FOR ESTABLISHMENT AND SPREAD

#### Establishment within the target-areas in Portugal

<table>
<thead>
<tr>
<th>Source</th>
<th>Likelihood</th>
<th>Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>moderately likely</td>
<td>medium uncertainty</td>
</tr>
<tr>
<td></td>
<td>(based on the previous experience in South Africa)</td>
<td>(due to the switch between hemispheres)</td>
</tr>
</tbody>
</table>

#### Spread to non-target-areas outside of Portugal

<table>
<thead>
<tr>
<th>Source</th>
<th>Likelihood</th>
<th>Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural</td>
<td>moderately likely (due to the fragmented host populations)</td>
<td>medium uncertainty (because of little information on dispersal by wind)</td>
</tr>
<tr>
<td>Human-assisted, intentional</td>
<td>moderately likely (due to the experience in South Africa)</td>
<td>low uncertainty</td>
</tr>
<tr>
<td>Human-assisted, inadvertent</td>
<td>unlikely</td>
<td>high uncertainty</td>
</tr>
</tbody>
</table>
CONSEQUENCES ON INVASIVE ACACIA LONGIFOLIA

- Reproductive potential, vegetative growth and ultimately population density of invasive alien A. longifolia are reduced substantially

- Negative impacts of invasive alien A. longifolia on biodiversity, ecosystem functioning and services are reduced substantially

- Negative impacts of current control measures of invasive alien A. longifolia are reduced substantially
CONSEQUENCES TO CULTIVATION OF A. LONGIFOLIA AND A. FLORIBUNDA

Moderate

- Any use of cultivated A. *longifolia* and A. *floribunda* would be affected by the BCA if it spreads to the areas of production

- There is a trade in ornamental A. *longifolia* and A. *floribunda*, but the scale is limited compared to other ornamental species (including other *Acacia* spp.) that are not hosts of the BCA

- Amenity plantings are more likely to be affected than ornamentals in a dynamic production chain and trade

- Other ornamental Acacias can be substituted for A. *longifolia*
CONSEQUENCES TO OTHER PLANT SPECIES

• In the *Mimosidae*, there has been extensive testing of the host range, with the status of *A. retinodes* unclear, whereas *A. melanoxylon* and *Paraserianthes lophanta* are identified as a spill-over hosts.

• In other subfamilies of the *Fabaceae*, only *Cytisus striatus*, *Cytisus monspessulanus* (= *Teline monspessulana*) and *Spartium junceum* have been tested. For the latter two plant species, there is no evidence that they are hosts. For *C. striatus*, due to the lack of robust information, there is uncertainty over its host status.

• *Vitis vinifera*, because of its importance, has been tested and found not to be a host.
<table>
<thead>
<tr>
<th>Consequences</th>
<th>Rating</th>
<th>Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>for invasive <em>A. longifolia</em> and <em>A. floribunda</em></td>
<td>massive</td>
<td>medium uncertainty (because the switch between hemispheres might make establishment difficult)</td>
</tr>
<tr>
<td>for cultivated <em>A. longifolia</em> and <em>A. floribunda</em></td>
<td>moderate</td>
<td>Medium uncertainty (information on trade and control measures is missing)</td>
</tr>
<tr>
<td>for other plant species</td>
<td>minor</td>
<td>Low uncertainty for hosts other than <em>A. retinodes</em> and <em>C. striatus</em>, where the uncertainty is medium to high.</td>
</tr>
</tbody>
</table>
1/ EFSA PLH Panel Scientific opinion on the release of Trichilogaster acaciaelongifolii

2/ PLH Panel observations on BCA release procedure

3/ Assessing environmental risks
Statement on the assessment of the risk posed to plant health in the EU territory by the intentional release of biological control agents of invasive alien plant species

EFSA Panel on Plant Health (PLH)
HOW IS THE PROCESS ORGANIZED IN OTHER COUNTRIES?

A summary of the procedures used and institutions involved in the assessment of the risk posed by BCAs of invasive alien species was provided for:

Australia, Canada, New Zealand, Switzerland and the USA

Weed BCAs have been extensively and successfully used (after testing and authorization for release) outside Europe
DECISION MAKING PROCESS: NEW ORGANISMS FOR RELEASE

1. Type of application selected
   - Liaison between applicant and ERMA New Zealand staff
   - Moana consultation and other interested parties as appropriate

2. Application submitted
   - ERMA New Zealand staff check that application is complete

3. Formal receipt

4. Working days

5. Minister, other special parties and public notified

6. Public consultation period begins

7. Submissions lodged

8. Working days


10. Approaches to Risk
    - Likelihood and magnitude - Risk Awareness

11. ERMA New Zealand staff consolidate all information

12. Working days

13. Public hearing

14. HSNO ACT 1996
    - Notification of decision

15. Authority Decision
    - Do benefits outweigh risks?

16. HSNO ACT 1996
    - ERMA Decision-making committee (co-opted experts used if necessary)

17. Working days

METHODOLOGY

PROTOCOLS AND POLICIES

ASSESSMENT OF SIGNIFICANT EFFECTS

- Risks
- Costs
- Benefits

- Environment
- Public Health
- Māori Culture & Traditions
- Social Impact
- Economic

OTHER FACTORS (eg spiritual, ethical)

Identification of Effects

(Risks, Costs and Benefits)

ERMA New Zealand, 20 Customhouse Quay, c/o Waring Taylor St and Customhouse Quay, P.O. Box 131, Wellington • Phone: 64 4 916 2426  Fax: 64 4 914 0433 • www.ermnz.govt.nz
WHAT THE PLH PANEL SUGGESTS FOR THE EU

Proponent EWG1: Specialists/experts
Harmonised Risk assessment for BCAs

- Evaluation of host specificity tests
- EU wide/Bioclimatic area
- Negative and Beneficial consequences

Review EWG2: Independant scientific reviewers
Data & Risk assessment

Decision makers
Science based decision
OUTLINE

1/ EFSA PLH Panel Scientific opinion on the release of Trichilogaster acaciaelongifoliiiae

2/ PLH Panel observations on BCA release procedure

3/ Assessing environmental risks
ERA IN PLH CONTEXT

EFSA PLH Guidance on a harmonised framework for pest risk assessment and the identification and evaluation of pest risk management options by EFSA

Identification of the need of further, detailed guidance on how to assess the environmental aspect of risk assessment linked to plant health issues

Clear guidance is provided for defining the scenarios and include the lists of questions to address in the assessment in EFSA PLH guidance on environmental risk assessment.
HOW TO FRAME AN ERA BASED ON ES

Flux diagram representing stages/pathways for an ERA of invasive species based on biodiversity and ES

Driving force: any factor that changes an aspect of an ecosystem (BIOMASS)

SPU (Service Providing Unit): environmental component responsible for the genesis and regulation of the ES
THE ASSESSMENT PROCEDURE

- Scenario assumptions (SPU, temporal horizon, spatial scale, resistance/resilience/management)

- Assessment of the effect on biodiversity

- Assessment of the effect on ecosystem services (SPU $\rightarrow$ modified functional traits $\rightarrow$ modified ecosystem processes $\rightarrow$ change in ES provision levels)

- Uncertainty associated to the evaluation
EXPERTS ASSESSMENTS

- **Time horizons:** Short term (ST) and long term (LT)
- **Potential Abundance (ST and LT)**
- **Scaling factors:** Resistance; Resilience; Management \(\rightarrow\) ST and LT

<table>
<thead>
<tr>
<th>Rating</th>
<th>Minimal</th>
<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
<th>Massive</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPACT</td>
<td>Zero or negligible</td>
<td>[0%, 5%]</td>
<td>[5%, 20%]</td>
<td>[20%, 50%]</td>
<td>[50%, 100%]</td>
</tr>
<tr>
<td>PROBABILITY</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rating</th>
<th>IMPACT</th>
<th>PROBABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMAL</td>
<td>IMPACT</td>
<td>PROBABILITY</td>
</tr>
<tr>
<td>Minor</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For each ESS and Bc (when relevant for the IAS) the experts provide a probability distribution for both ST and LT

### Ecosystem services

- Food
- Fibre
- Genetic resources
- Biochemicals, natural medicines
- Ornamental resources
- Fresh water
- Air quality regulation
- Climate regulation
- Water regulation/cycling/purification
- Erosion regulation
- Soil formation and nutrient cycling
- Photosynthesis and primary production
- Pest and disease regulation
- Pollination

### Biodiversity components

- Genetic diversity
- Native species diversity
- Native habitat, community and/or ecosystem diversity
- Threatened species
- Habitat of high conservation values
THANKS

The EFSA Working group on T. acaciaelongifoliae

Members: Mike Jeger Chair, Richard Shaw and Wopke van der Werf
Hearing experts: Helia Marchante, Robert Luttik and Andrea Allavena
Procurement: Stichting Dienst Landbouwkundig Onderzoek
EFSA Staff: Marco Pautasso

&

The EFSA Plant Health Panel