

Rome, February 18th-19th, 2025



NationalprogramsofClassicalBiologicalControl of the invasive alienpestsHalyomorpha halys and Drosophilasuzukit in Sardinia (Italy)

### Laura Loru National Research Council Research Institute on Terrestrial Ecosystems





Consiglio Nazionale delle Ricerche

# **CNR IRET Conference**

Rome, February 18th-19th, 2025

Alien species are animals, plants or other organisms that are introduced by humans, either intentionally or accidentally, into areas outside of their natural range.

**Invasive alien species** impact native biodiversity, ecosystems services or human economy and well-being

**Biological invasions** are a global consequence of an increasingly **interconnected world** and the **rise in human population**.

**Global warming** exacerbates current invasions and facilitate new ones, amplifying their ecological, economic, and human-health impacts.

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**Insects** are one of the taxa with the highest frequency of introduction due to their high diversity, biological properties, and close association with human activities.

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Halyomorpha halys (Stål) (Hemiptera Pentatomidae)



Drosophila suzukii Matsumura, 1931 (Diptera Drosophilidae)

Both species native from east Asia D. suzukii first detection in Italy: 2009 H. halys first detection in Italy: 2012



*H. halys* attacks a wide range of fruits, horticultural and ornamentals crops



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**D.** suzukii is a pest of soft-fruits and cherries



**Integrated pest management** tools often fail to effectively reduce invasive pest infestations. Current pest management techniques rely on non-selective insecticides, which negatively affect the biocoenosis while increasing the production costs.





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# Egg parasitoid of *H. halys*



*Trissolcus japonicus (*Ashmead 1904) Hymenoptera Scelionidae

5 mm

Egg masses of H. halys





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"Criteria for the reintroduction and repopulation of native species referred to in Annex D of the Decree of the President of the Republic of 8

September 1997, n 357, and for the introduction of non-native species and population".





### **Dossier contents:**

i) information on the biology and ecology of the target pest and the selected antagonist;

ii) data about host-specificity testing and data already available in literature; iii) environmental and economic impacts

of the proposed release;

iv) probability of the parasitoid establishment and spread in the proposed release sites;

v) release schedule and post-release monitoring program;

vi) contingency plan to mitigate potential undesired environmental impacts; vii) map and vegetation of release sites;



# Technical – Scientific Committee

**CNR IRET Conference** 

Two Technical –Scientific Comittees were established within the frame of the action of the Ministry of Agriculture, Food Sovereignty and Forest.

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The Committees are coordinated by Consiglio per la Ricerca in Agricoltura e l'analisi dell'economia agraria (CREA) and comprise:

- scientific experts (from University, CNR, Edmund Mach Foundation, Laimburg Research Center, Enea etc.).
- representatives of the regional Plant protection Services.



### **OBJECTIVES**:

 securing annual permissions for the release of the exotic parasitoids from the Ministry of the Environment (but also Ministry of Health and Ministry of Agriculture, Food Sovereignty and Forests);

D. suzukii Committee

2021

- developing rearing and distribution systems for parasitoids to support field releases;
- coordinating release and monitoring activities across participating regions.















# F **CNR IRET Conference** Rome, February 18th-19th, 2025 **Consiglio Nazionale** delle Ricerche G. brasiliensis rearing D.suzukii rearing WT 10H2 0 IN: 07/02 OUT: 11/02 F: 13 0 0 Inoculum from Laimburg Research Centre



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Pre- and post-release fruit samplings are performed according to the national protocol.

In laboratory, fruits were incubated for at least 35 days at 22°C and drosophilid pupae were regularly collected and isolated in plastic tubes for emerging fly or parasitoids.

*G. brasiliensis* did not emerge from either *D. suzukii* or non-target drosophilid pupae.

G. brasiliensis has not yet established in Sardinia Work in progress....



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## **Perspectives of management of future ecosystems**

**Non-native invasive** arthropod species threaten biodiversity and food security worldwide, resulting in substantial economic, environmental, social and cultural costs;

Classical Biological Control (CBC) is regarded as a cost-effective component of integrated pest management programs to manage invasive arthropod pests sustainably;

CBC programs constitute a reactive management response to an invasive pest after it has become well-established, widespread, and problematic

Proactive Biological Control researches identify prior to their establishment pest species that have high invasion potential and are likely to cause economic or environmental damage once established.

Risk assessment and approval of the biological control agent to release are carried out in advance of the arrival of the pest improving CBC effectiveness.

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<sup>1</sup> USDA-ARS-European Biological Co Agropolis, 34980 Montferrier-sur-Le: <sup>2</sup> Association Nationale des Producter <sup>3</sup> Invasive Species and Poliinator Hea <sup>4</sup> Corresponding author: gmartel @anp.	ntrol Laboratory, Campus Inte z, France urs de Noisette, Louberie, 472 ith Research Unit, USDA-AR: pn.eu	rnational de Baillarguet, 810 Avenue 90 Cancon, France 5, Albany, CA 94710, USA	du Campus		
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