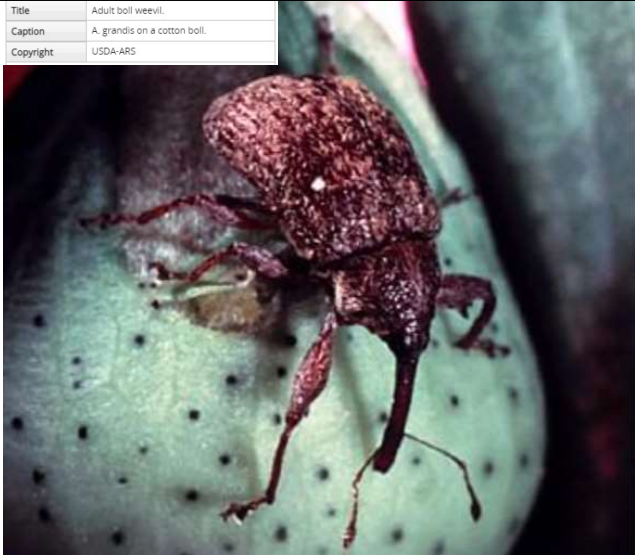



Title	Adult boll weevil
Caption	A. grandis on a cotton boll.
Copyright	USDA-ARS



The Invasive Species Compendium; a global, Open Access resource covering plant pathogens and other invasives of special interest to the USA

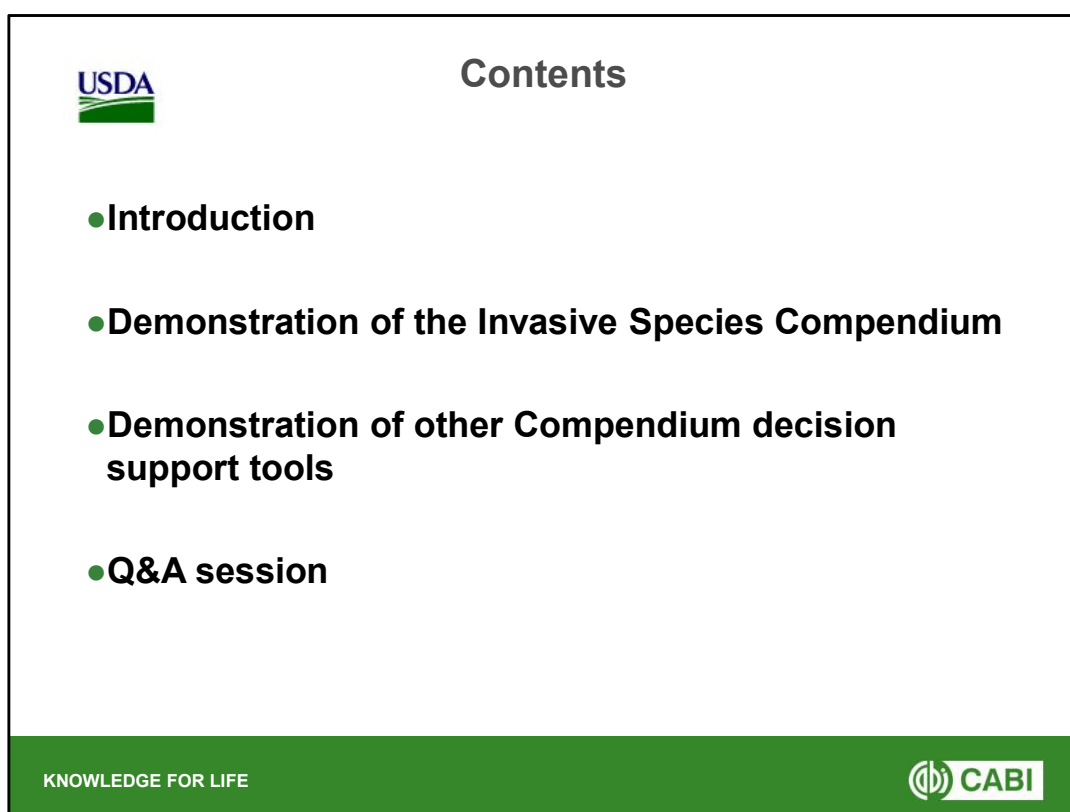
Lucinda Charles¹, Gareth Richards¹, Julius Fajardo², Hilda Diaz-Soltero³, Rose Hammond², Tim Widmer², Lesley McGillivray¹, Patricia Neenan¹, 29.04.21. Webinar for the American Phytopathological Society.
1. CABI 2. USDA-ARS 3. USDA-APHIS

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The Invasive Species Compendium; a global, Open Access resource covering plant pathogens and other invasives of special interest to the USA

Lucinda Charles¹, Lesley McGillivray¹, Julius Fajardo², Hilda Diaz-Soltero³, Rose Hammond², Tim Widmer², Gareth Richards¹, Patricia Neenan¹, 29.04.21. Webinar for the American Phytopathological Society.

¹. CABI, ². USDA-ARS, ³. USDA-APHIS.



10.00 min: Introduction to CABI and USDA's involvement with the Invasive Species Compendium (Gareth Richards, Compendium Programme Manager, CABI)

20.00 min: Demonstration of the Invasive Species Compendium highlighting data published on 50 of the most important plant pathogens selected for coverage by The Federal Interagency Committee on Invasive Terrestrial Animals and Pathogens (ITAP) Subcommittee on Plant Pathogens. (Lucinda Charles, Content Manager, Compendium Programme, CABI)

15.00 min: Demonstration of other Compendium decision support tools; the Crop Protection Compendium, Horizon Scanning Tool and Pest Risk Analysis Tool. (Lucinda Charles, Content Manager, Compendium Programme, CABI)

15:00 min: Q&A session



The Compendium Programme

- Crop Protection Compendium, 1998
- Forestry Compendium, 2000
- Animal Health and Production Compendium, 2002
- Aquaculture Compendium, 2006
- Invasive Species Compendium, 2012 – **Open Access**
- Horticulture Compendium, 2018

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The Compendium Programme at CABI has a history of over 25 years, starting with the development of the Crop Protection Compendium.

In each compendium, CABI compiles datasets, illustrations and information on the subject area. Useful linkages are created between these data, and search and mapping functions enhance their use as data visualization and decision support tools.

For most of the compendia, including the Invasive Species Compendium (ISC), development has been resourced through the building of Development Consortia. Member organizations paid a joining fee, enabling a seat at the table of the steering group, limited free access to the product and ability to purchase additional licenses at reduced prices. After development, costs of subsequent maintenance for most of the compendia were then offset by sales revenue.

The ISC is an exception to this model. To support the Compendium to remain free to users, the Development Consortium was maintained and expanded to support five years of free access after launch. Since 2017, the ISC has been maintained as an Open Access product through funding from DFID (Department for International Development, UK, now the Foreign, Commonwealth and Development Office) and Directorate-General for International Cooperation (DGIS, Netherlands) in support of CABI's Action on Invasives Programme.

Workshop participants outside USDA headquarters, Washington DC.

From left to right: Robert Nowierski, Jefé Leão Ribeiro, Patricia Neenan, Doug Holy, Nick Pasiecznik, Hilda Diaz-Soltero, Lynn Jackson, Peter Scott, Barbara Njie, Jim Reaves, Eileen Welch, Ernest Delfosse, Elizabeth Dodsworth, Bonnie Harper-Lore, Ed Sheffner, Theophilus Mlaki, Robert Hedlund, Fatimah Iskandar, Mushtaq Ahmed, Bridget Baird, Tony Leaney, Karen Eason, Catherine Brisson, Gary Matlock, Trevor Nicholls, Elaine Hoagland, Michael Horak, Jennifer Molnar, Christian Boren, Kenneth Hinga, James Space, Louise Dumouchel, Martin Parr, Jeffrey Morissette, Sarah Simons, Ken Farr



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USDA agencies have been consortium members in all the CABI Compendia; Aquaculture Compendium, Animal Health and Production Compendium, Crop Protection Compendium and Forestry Compendium.

A principal driver of the ISC's development was the documented requirement for a database of invasive species to be created with the cooperation of CABI in The US National Invasive Species Management Plan 2001: Action Item 53 "The National Invasive Species Council, led by USDA, will produce an Invasive Species Compendium for North America. The Compendium . . . will include a broad array of searchable information relevant to the biology, distribution, and management of invasive species. . . The project will be undertaken in close cooperation with CABI."

An inception workshop was held in Washington DC in 2004. It was decided that it would be more beneficial to US efforts to mitigate the effects of invasive species if a global database were developed that would also identify invasive threats beyond its borders. The development of the Invasive Species Compendium gained the full support of the USDA and fundraising efforts began.




The Invasive Species Compendium

Global Development Consortium


- Australia: ACIAR
- Australia, Group Membership (CRCNPB, GRDC, HAL, IACRC)
- Canadian Food Inspection Agency
- Canadian Forest Service
- Canadian International Development Agency
- Caribbean Plant Health Directors Forum
- EC
- France: Ministère de l'écologie, de l'énergie, du développement durable et de la mer
- India, Ministry of Agriculture
- Malaysian Agricultural Research and Development Institute
- Mexico: Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO)
- Mexico, National Health, Safety and Quality Service for Agri-Food
- Monsanto

- Netherlands Ministry of Agriculture, Nature and Food Quality
- Secretariat of the Pacific Community
- Swiss Agency for Development and Cooperation
- Syngenta Crop Protection
- UK Department for Environment, Food and Rural Affairs (Defra)
- UK Department for International Development (DFID) / CABI / FARA
- US Agency for International Development
- USDA Agricultural Research Service
- USDA Animal and Plant Health Inspection Service
- USDA Foreign Agricultural Service
- USDA Forest Service
- USDA Invasive Species Coordination Program
- USDA Natural Resources Conservation Service
- USDA Rural Development
- USDOC NOAA's National Ocean Service
- USDOJ Fish and Wildlife Service

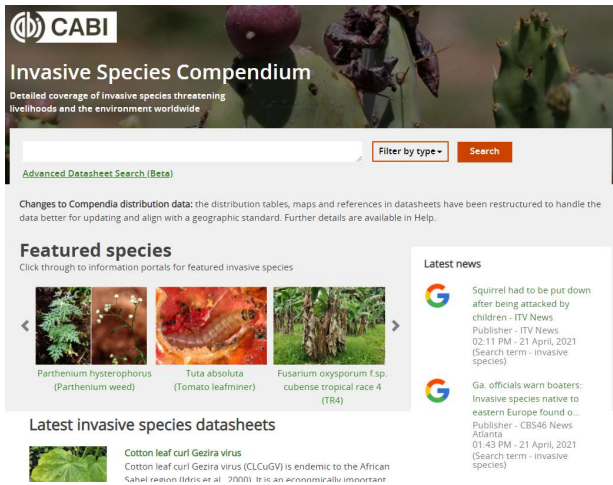
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The Invasive Species Compendium is the result of a collaboration between CABI, USDA and an international Development Consortium of over 30 organizations from the government, development assistance and private sectors.


In addition, collaborations with expert organizations include the European and Mediterranean Plant Protection Organization (EPPO), the World Organization for Animal Health (OIE), and the IUCN's Invasive Species Specialist Group (ISSG). It is these organizations, along with those of the Development Consortium, represented by policy makers attending and interfacing with CABI, that have guided the development of the ISC, and their contributions have ensured that the ISC meets the needs of their policies and regulatory environments.




The Invasive Species Compendium was launched in 2012



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The ISC is an online, open access website updated weekly that contains crucial information for farmers, invasive species managers and government personnel to prevent, control, and eradicate invasive species. The information compiled for each species is presented as a concise factsheet to enable their use in decision support. For each species, a detailed review of literature is performed by a species expert who summarizes scientific information into a detailed datasheet. Each datasheet is peer reviewed by scientific experts, edited by CABI, and complemented with photos, distribution maps, and references. Once completed, the datasheet is uploaded in the CABI Invasive Species Compendium (cabi.org/ISC). The open access Horizon Scanning Tool, built over the top of ISC database, uses information on distribution and biology of the invasive species to assist prioritization of surveillance and prevention efforts to address the cross-border translocation of invasive species. Currently, there are over 10,000 datasheets in the ISC, including 2,300 detailed datasheets on invasive species and a further 300 datasheets on pathways of introduction, habitats, natural enemies, host organisms, etc.



Content enhancements supported by the USDA and US Fish and Wildlife Service

Leaf number:
05 August 2020



Datasheet Type:
Invasive Species
Host Plant

Preferred Scientific Name:
Chenopodium toxicaria

Preferred Common Name:
crack-grass

Taxonomic Tree:
Domain: Eukaryota
Kingdom: Plantae
Phylum: Spermatophyta
Subphylum: Angiospermae
Class: Monocotyledonae

Summary of Invasiveness:
Chenopodium toxicaria is one of the most common species of *Chenopodium* in Asia and has been

- 780 invasive plant species in Caribbean islands or rim countries

Leaf number:
10 December 2019



Datasheet Type:
Invasive Species
Host Plant

Preferred Scientific Name:
Indigofera suffruticosa

Preferred Common Name:
red indigo

Taxonomic Tree:
Domain: Eukaryota
Kingdom: Plantae
Phylum: Spermatophyta
Subphylum: Angiospermae
Class: Dicotyledonae

Summary of Invasiveness:
I. suffruticosa, a perennial herb or woody shrub, is native to the Americas but has been widely introduced elsewhere as a source of dye and for medicinal purposes and has commonly

- 330 “Invasives Causing Extinction” with documented effects on species listed under the US Endangered Species Act



Leaf number:
23 November 2019

Datasheet Type:
Invasive Species
Host Animal

Preferred Scientific Name:
Caranx cava


Preferred Common Name:
Barnacle wrasse

Taxonomic Tree:
Domain: Eukaryota
Kingdom: Metazoa
Phylum: Chordata
Subphylum: Vertebrata
Class: Actinopterygii





- 25 potential aquatic invasive species that were not yet in the USA. Funded by US Fish and Wildlife Service


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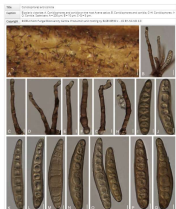
USDA APHIS has prioritized work to enhance the ISC in the past 15 years and a large proportion of species covered have direct relevance to the USA. We have focused on creating datasheets on invasive species in the USA or in the world that affect our agricultural crops and natural environments, including invasive plants, plant pathogens and insects, and many datasheet authors and reviewers have been USDA employees. For example, since 2012 the Caribbean Invasive Plant Species Project has contributed to the ISC with a total 780 datasheets of invasive plant species in Caribbean islands or rim countries. As part of a USDA program of work called Invasives Causing Extinction, invasives covered in the Compendium include 330 with documented effects on species listed under the US Endangered Species Act. The US Fish and Wildlife Service funded publication of 25 datasheets on potential aquatic invasive species that were not yet in the USA. The US Lacey Act regulation now lists 16 of those species.






Datasheets published on 50 of the worst plant pathogens that are either in the US and have potential for further spread, or represent a new threat if introduced




Federal Interagency Committee on Invasive Terrestrial Animals and Pathogens (ITAP) Subcommittee on Plant Pathogens

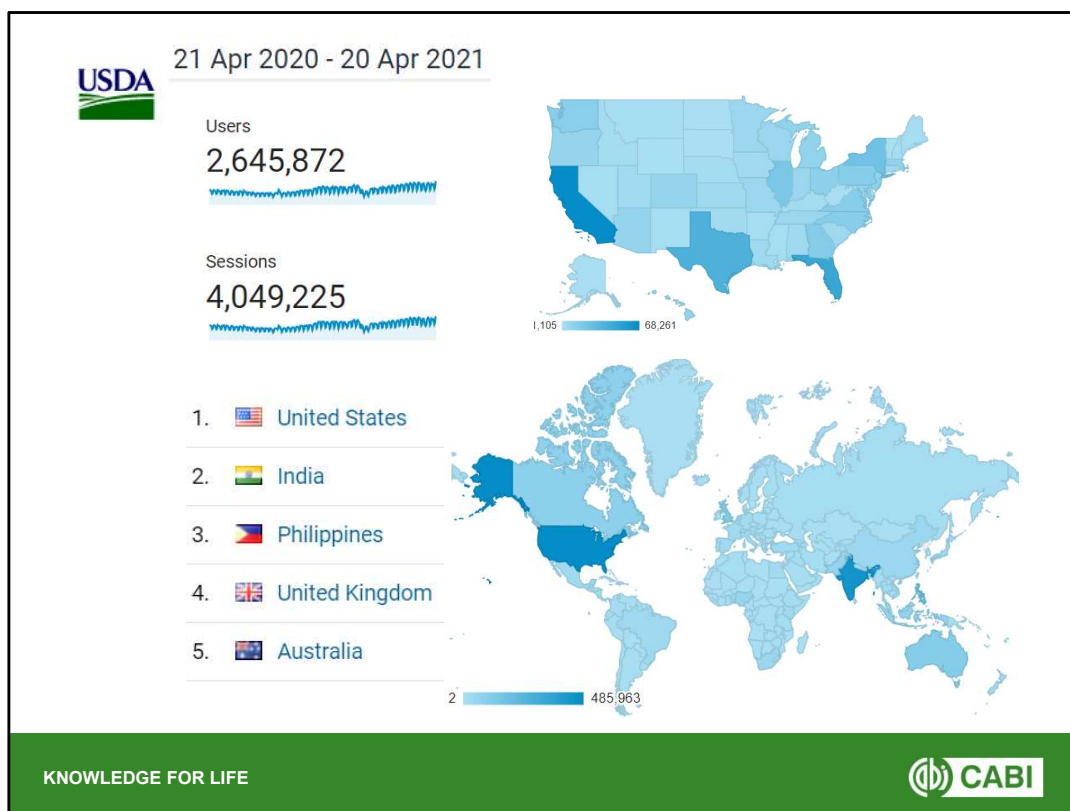




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The Federal Interagency Committee on Invasive Terrestrial Animals and Pathogens (ITAP) Subcommittee on Plant Pathogens has identified the worst plant pathogens that are either in the US and have potential for further spread, or represent a new threat if introduced. Datasheets were compiled and published in the ISC on 50 of these pathogens. The following plant pathogens are now represented in the ISC by detailed datasheets.

Agropyron mosaic virus, Anguina tritici, Bipolaris victoriae, Blumeria graminis, Candidatus Phytoplasma australiense, Candidatus Phytoplasma phoenicium, Candidatus Phytoplasma solani, Candidatus Phytoplasma trifolii, Candidatus Phytoplasma pini, Citrus leprosis virus C, Clover yellow mosaic virus, Cocksfoot mottle virus, Coniothyrium glycines, Cotton leaf curl disease complex, Cotton leaf curl Gezira virus, Cowpea mild mottle virus, Cucumber green mottle mosaic virus, Cucurbit aphid-borne yellows virus, Diplodia seriata, Fusarium oxysporum f.sp. medicaginis, Fusarium oxysporum f.sp. niveum, Fusarium oxysporum f.sp. vasinfectum, Grapevine red blotch virus, Heterodera ustini, Kuehneola uredinis, Meloidogyne enterolobii, Meloidogyne incognita, Mycosphaerella gibsonii, Pantoea stewartii, Pear blister canker viroid, Pectobacterium brasiliense, Peronosclerospora philippinensis, Peronospora belbahrii, Phytophthora alni (species complex), Phytophthora austrocedri, Phytophthora ramorum, Plantago asiatica mosaic virus, Podosphaera spiraeae, Pseudocercospora fuligena, Pseudomonas cichorii, Raffaelea lauricola, Raffaelea quercivora, Ralstonia solanacearum, Sclerophthora rayssiae var. zae, Thecaphora frezii, Tomato apical stunt viroid, Tomato leaf curl New Delhi virus, Tuberose mild mottle virus, Verticillium dahliae, Xanthomonas vasicola pv. vasculorum



The Compendium has proven to be an excellent tool for disseminating this knowledge. It is well-used and accepted within the invasive species scientific community. Between April 2020 and April 2021, the ISC was visited by over 2.6 million individuals (Google Analytics) in 238 geographical regions that are described by Google Analytics as a 'country'. Over 480,000 of these users accessed the Compendium from the USA.

CABI and the USDA are continually looking to improve the coverage of the ISC, with particular reference to the biosecurity requirements of the USA. Future plans include expanding coverage of Caribbean invasives to include the most important invasive insect species in the region in tandem with the similar development to increase the coverage of insect plant pests with the ITAP. Following the USDA's contribution towards the development of the Horizon Scanning Tool, CABI and USDA are exploring other opportunities to create functionality to expose the data collated within the ISC to provide further decision support for its key users and deriving maximum benefit from the wealth of data that has been collated.



Contact

isc@cabi.org

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 gracias
 zikomo
 tak
 ke itumetse

thank you

CABI is an international intergovernmental organisation, and we gratefully acknowledge the core financial support from our member countries (and lead agencies) including:



Ministry of Agriculture and
Rural Affairs,
People's Republic of China



Australian Government
Australian Centre for
International Agricultural Research



Agriculture and
Agri-Food Canada



Ministry of Foreign Affairs of the
Netherlands



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Agency for Development
and Cooperation SDC

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