

Tracking Soybean Rust and Other Invasives

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PPQ's mission

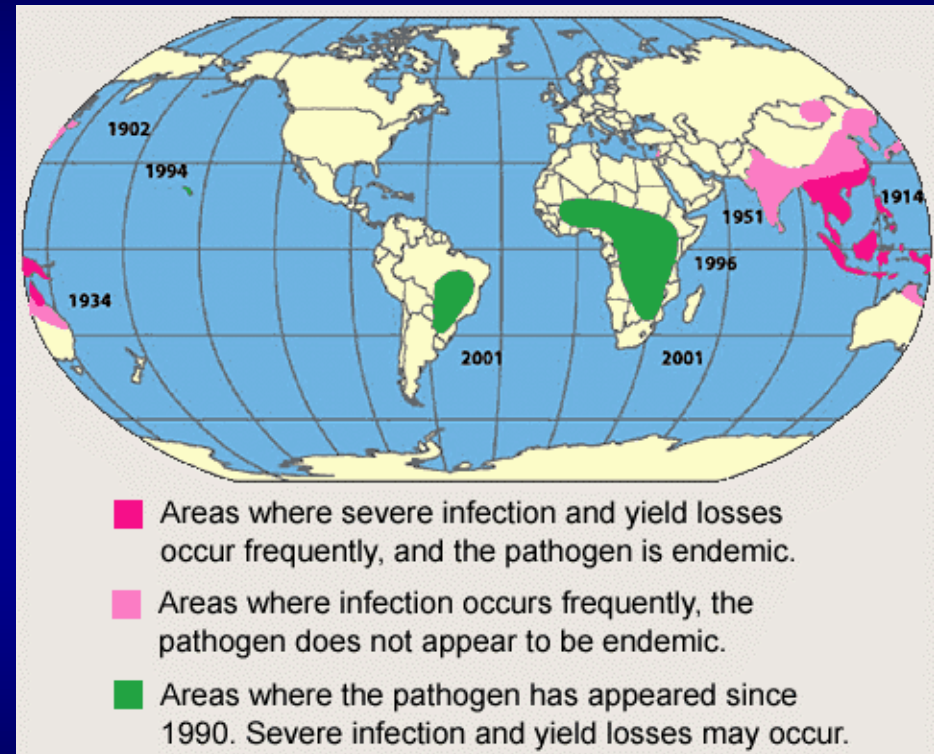
APHIS-PPQ safeguards agriculture and natural resources from the risks associated with the entry, establishment, or spread of animal and plant pests and noxious weeds. Fulfillment of its safeguarding role ensures an abundant, high-quality, and varied food supply, strengthens the marketability of U.S. agriculture in domestic and international commerce, and contributes to the preservation of the global environment.

Overview

- Soybean rust (*Phakopsora pachyrhizi* and *P. meibomia*)
- Ralstonia (*R. solanacearum* R3B2)
- Emerald ash borer (*Agrilus planipennis*)
- Giant Hogweed (*Heracleum mantegazzianum*)

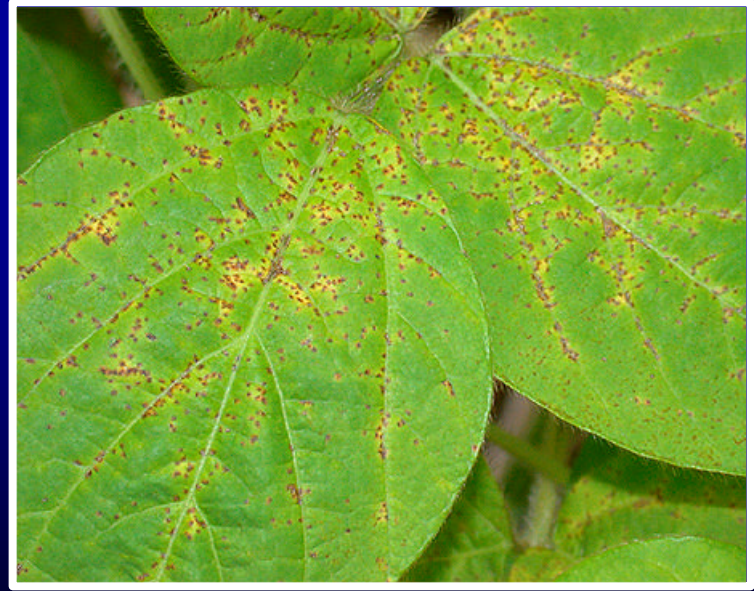
Soybean rust

- Fungal species complex made up of two species (*Phakopsora pachyrhizi* and *P. meibomia*)
- *P. pachyrhizi* is more aggressive than *P. meibomia*.
- Range includes Asia, India, Australia, Africa, S.A., Hawaii, and Puerto Rico.
- Wide host range including crops such as soybean (*Glycines max*) and bean (*Phaseolus vulgaris*)
- Agricultural Bioterrorism Protection Act of 2002



Symptoms

- Can attack leaves, stems, petioles and cotyledons



Symptoms (cont.)



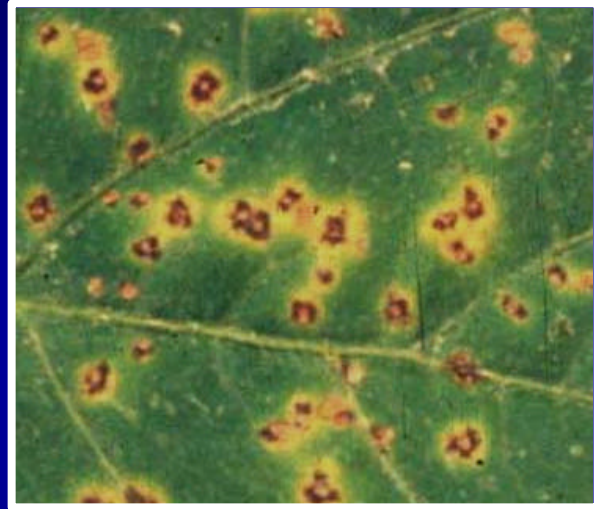
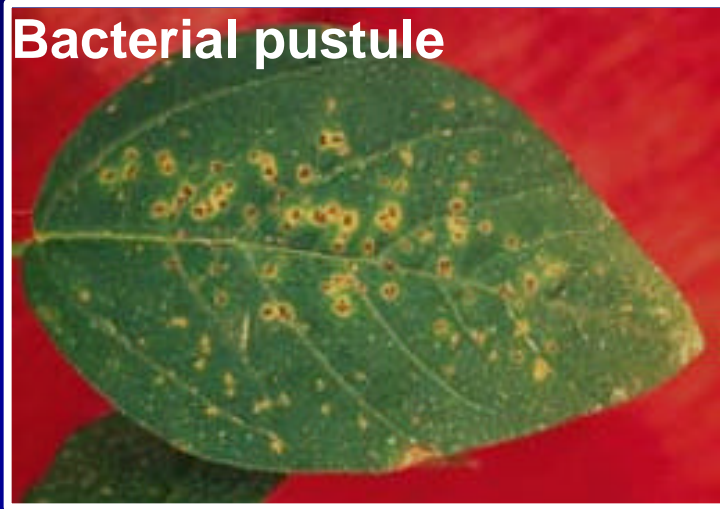
Damage

- High levels of infection cause yellowing/browning of fields and premature senescence
- Yield losses are 10-80% depending on environmental conditions and soybean variety
- All commercial varieties are highly susceptible

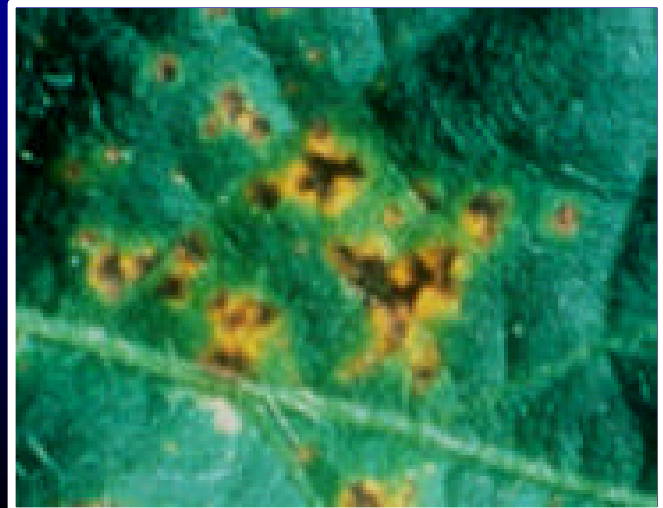
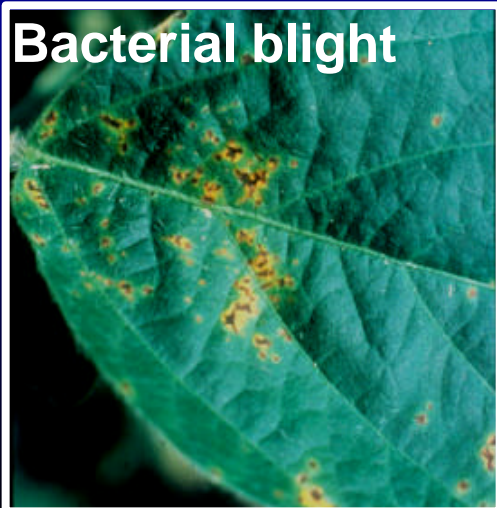


Similar diseases

Bacterial pustule



Bacterial blight



What is APHIS doing?

- Early detection



For more information...

...check the web at:

www.aphis.usda.gov/ppq/ep/soybean_rust/

www.apsnet.org/online/feature/rust/

www.ncpmc.org/soybeanrust

or call:

APHIS information hotline 1-888-661-8083

Ralstonia

- Bacterial pathogen
- Found in Europe, Asia, Central and South America, Australia and Africa
- Huge host range including solanaceous crops (e.g., tomato and potato) and geraniums
- Agricultural Bioterrorism Protection Act of 2002



The threat?

- Causative agent for potato brown rot
 - Losses more than \$950 M/year
 - 1.5 M hectares infested
 - Incidence is increasing
- Rs32 is adapted to lower temperature than other races
- Its ability to remain latent in the environment (water, soil and weed hosts)



Transmission

- Disease is transmitted through contaminated irrigation water, soil, equipment or by transplanting infected plants



APHIS success story



For more information...

...check the web at:

www.aphis.usda.gov/ppq/ep/ralstonia/



Emerald Ash Borer: A new pest on ash



Background

- Coleoptera: Buprestidae
- *Agrilus planipennis* (Emerald ash borer; EAB) is related to the bronze birch borer and two-lined chestnut borer
- An exotic beetle introduced from Asia (native to China, Korea, Japan, Mongolia, eastern Russia, Taiwan)
- Attacks and kills green, white and black ash trees



What has it done?

- In southeastern Michigan EAB has infested roughly half of the ashes
 - Of the 11 million forest ash trees
 - 5.5 million are dead or dying
 - Of the 650,000 landscape ash trees
 - 290,000 are dead or declining
- WI has ~600M forest ash trees

Symptoms



Symptoms (cont.)



I think I found it! Now what?

- If it is an insect:
 - Collect some in a vial containing rubbing alcohol or ethanol
 - Write down exactly where you found it
- If damage is found:
 - Write down where the tree is located
- Contact:
 - APHIS PPQ 608-231-9545
 - WI DNR 608-275-3273
 - WI DATCP 608-224-4573
 - UW extension 608-262-6510



Giant Hogweed: A Carrot on Steroids?



Background

- Invasive, noxious weed
- Native to Caucasus Mtns. (Asia minor)
- Planted as a curiosity in gardens
- Federal Noxious Weed List



Public health hazard

- Can cause painful, burning blisters; scarring
- Temporary or permanent blindness

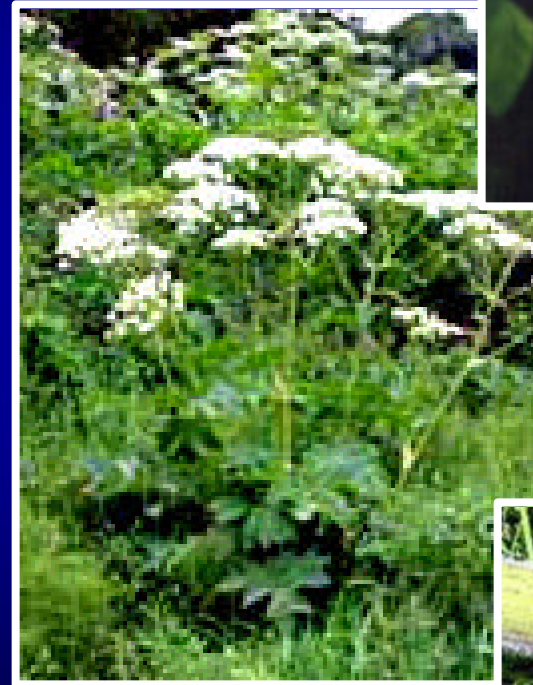


Identification

Giant Hogweed



Cow Parsnip



Identification (cont.)



Cow parsnip (left) and giant hogweed (right) leaf comparison

Think you found it?

- **Contact:**
 - **APHIS PPQ** **608-231-9545**
 - **WI DNR** **608-275-3273**
 - **WI DATCP** **608-224-4573**
 - **UW extension** **608-262-2792**



Photo credits:

- **Soybean rust:**
 - USDA ARS (Glen Hartman and Reid Frederick)
 - **Ralstonia:**
 - WI DATCP
 - John Elphinstone, *Central Science Laboratory, DEFRA, York, UK*
 - **EAB photo credits:**
 - Michigan State University
 - USDA APHIS PPQ
 - WI DNR
 - **Giant hogweed photo credits:**
 - Mass. Dept. of Agriculture
 - King Co. Natural Resources and Parks
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