AHP Prioritization of Exotic Pests

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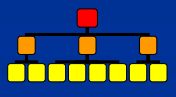
History of AHP Pest Prioritization

- Goal: provide support for PPQ resource allocation decisions
- Development of a single model for prioritization of pests from different taxonomic groups

Review of the Analytic Hierarchy Process



AHP MODEL

AHP MASTER PEST LIST

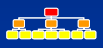
AHP PRIORITIZED PEST LIST

Pest Prioritization in Action!

AHP Core Team
National CAPS Committee

Biologists
Economists
AQI experts

AHP Model



CAPS Pest Prioritization Subgroup

Pest List Coordinator

Master Pest List

CAPS Pest Prioritization Subgroup

Biologists
Economists
AQI experts

Prioritized List

AHP Model Revision: Goals

- Criteria review by taxonomic group
- Reduced subjectivity
  - Economic criteria ($)
  - Biological criteria
- Improved measurement of entry potential
  - Pathways
  - Utilization of available data

Criteria Review

- Natural dispersal
- Survival mechanisms or structures
- Host or suitable habitat availability
- Remove
  - Potential rate of post-establishment spread
  - Pest and taxonomic group history of invasiveness

Reducing Subjectivity

- Economic criteria
  - Foreign trade (export) impact ($)
  - Domestic trade impact ($)
  - Public costs ($)

- Biological criteria
  - Taxon-specific parameters
  - Management of data gaps

Determination of Entry Potential

Pathways for entry:

- Commodities
  - Plants as food, plant trade, cut flowers, minimally processed plant products
  - Live aquatic and terrestrial organisms
- Shipping containers and packing material
- Transportation vehicles
- Mail/internet
- Travel
- Military
- Natural spread

Determination of Entry Potential

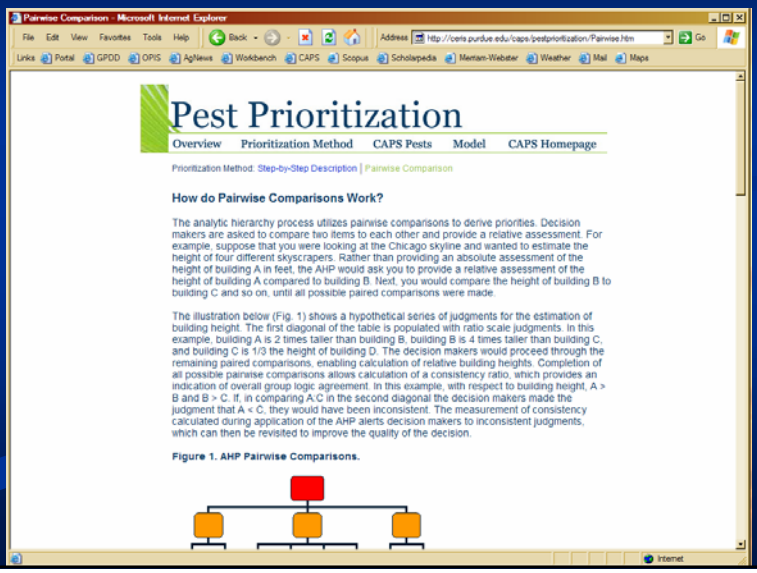
- Using pest interception data:
  - Rate of inspection (regulated vs. non-regulated cargo)
  - Difficulty of detection and identification
  - Record of identification (*e.g.*, plants not on noxious weed list)
  - Number of interceptions
- Smuggling potential (intentional and not intentional)
- Food products
- Plants and cut flowers

Challenges to AHP Prioritization

Resource intensive

- Maintaining the master pest list (Pest list coordinator)
  - Identifying new potential pests of concern
  - Prescreening pests (criteria)
  - Taxonomic and distribution updates
- Pest evaluations by subject matter experts
  - Questionnaire website
  - Time and resource management and setting priorities
- Revisions requiring additional pairwise comparisons

Communication of the AHP



AHP Prioritized Pest List

Priority	Scientific Name
0.944	*Phytophthora ramorum*
0.938	*Helicoverpa armigera*
0.897	*Planococcus minor*
0.880	*Dendrolimus superans sibiricus*
0.859	*Ceroplastes destructor*
0.838	*Ralstonia solanacearum*
0.820	*Achatina fulica*
0.812	*Unaspis yanonensis*
0.810	*Eudocima fullonia*
0.807	*Xanthomonas axonopodis* pv. *citri*

AHP Pests – Affected Commodities

Rank	Scientific Name	Common/Disease Name	Almonds (*Prunus dulcis*)	Apples (*Malus* spp.)	Asparagus (*Asparagus* spp.)	Barley (*Hordeum* spp.)	Beans (*Phaseolus* spp.)	Broccoli (*Brassica oleracea*)	Cantaloupes (*Cucumis* spp.)	Carrots (*Daucus carota*)	Celery (*Apium graveolens*)	Citrus (*Citrus* spp.)	Corn (*Zea* spp.)	Cotton (*Gossypium* spp.)	Cucumbers (*Cucumis* spp.)	Grapes (*Vitis* spp.)	Lettuce (*Lactuca* spp.)	Oats (*Avena* spp.)	Onions (*Allium* spp.)	Peaches (*Prunus persica*)	Peanuts (*Arachis* spp.)	Pears (*Pyrus* spp.)	Potatoes (*Solanum* spp.)
1	*Phytophthora ramorum*	Sudden Oak Death																					
2	*Helicoverpa armigera*	Old World Bollworm		■		▲	▲	■	■	■		▲	▲	▲	■		■	▲	▲	■	▲		▲
3	*Planococcus minor*	Passionvine Mealybug			■		■	■	■		■	▲	■	■	■	▲					■	■	▲
4	*Dendrolimus superans sibiricus*	Siberian Silk Moth																					
5	*Ceroplastes destructor*	Soft Wax Scale		■								▲										■	■
6	*Ralstonia solanacearum*	Bacterial Wilt of Potato					■							■							■		▲
7	*Achatina fulica*	Giant African Snail		■			■	■	▲	■		■	■	■	■	■	■		■		▲		■
8	*Unaspis yanonensis*	Arrowhead Scale										▲											
9	*Eudocima fullonia*	Fruit Piercing Moth		■					■			■			■	■				■		■	■
10	*Xanthomonas axonopodis* pv. *citri*	Citrus Canker										▲											
11	*Xylella fastidiosa* CVC strain	Citrus Variegated Chlorosis										■				■							
12	*Adoxophyes orana*	Summer Fruit Tortrix Moth		▲								■		■		■				▲	■	■	■
13	*Scirtothrips dorsalis*	Chilli Thrips			■		■		■	■		▲	■	▲	■	■			▲	■	▲	■	■
14	*Ceroplastus japonicus*	Japanese Wax Scale		■								▲								▲		■	
15	*Oxycarenus hyalinipennis*	Cotton Seed Bug											■	■		■						■	
16	*Agrilus biguttatus*	Oak Splendour Beetle																					
17	*Platypus quercivorus*	Oak Ambrosia Beetle																					
18	*Meloidogyne fallax*	False Columbia Root-knot Nematode			■		■			▲			■				■				■		▲
19	*Meloidogyne artiellia*	British Root-knot Nematode				■	■	■			■							■					
20	*Ditylenchus angustus*	Rice Stem Nematode																					

Pest Prioritization Teams

AHP Core Team: *Woody Bailey, Colin Brammer, Andrea Lemay, Laura Duffié, Dan Fieselmann*

National CAPS Committee

CAPS Pest Prioritization Subgroup: Brian Kopper, *Woody Bailey, Colin Brammer, Art Wagner, Greg Buntrock, Wayne Dixon, Kathleen Johnson*

CPHST Pest Prioritization Virtual Team: *Woody Bailey, Colin Brammer, Andrea Lemay (PPD RAS), Laura Duffié, Lisa Jackson, Tony Koop, Lynn Garrett, Keith Colpetzer, Paul Larkins (PPQ ER), Alison Neeley*

Thank you!

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