



Phytosanitary Databases: A Key Tool in Seed Trade

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What is Pest Listing?

- Identification of pests (pathogens) of phytosanitary concern
- For each pest identified: collection, evaluation, and objective interpretation of scientific and technical information of phytosanitary significance
 - Relationship to seed (is seed a pathway?)
 - Geographical distribution
 - Seed inspection and testing methodologies
 - Available treatments
 - Regulatory (phytosanitary) requirements

Why pest listing?

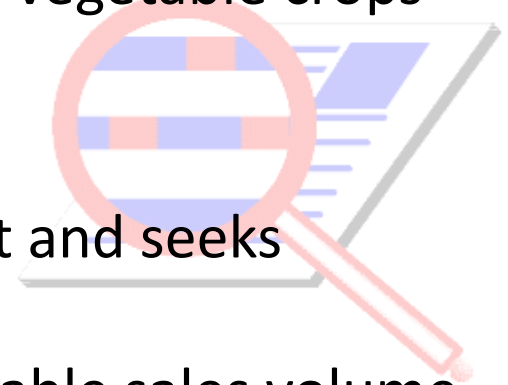
- **Address Phytosanitary Barriers to Trade**
 - Disruptive and costly--field inspections and lab tests
 - Promote science based national regulations
 - Elimination of irrelevant phyto ADs--technically unjustified or not scientifically sound
- **Provide information for Pest Risk Analyses**
 - Often required by the importing country
 - Organizes required scientific data and/or research
 - Allows for better allocation of resources
- **Pest Listing by the Seed Industry**
 - Establishes the seed industry as a credible partner in pest management
 - Quick reference to see what is available in terms of risk mitigation (seed tests and seed treatments).



Two Industry Initiatives:

International Seed Federation

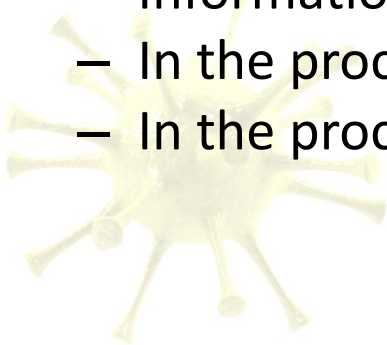
- **Crop-based: establish meaningful, science based, relevant pest lists for vegetable crops to facilitate the harmonization of phytosanitary requirements.**
 - Based entirely on phyto AD requests for vegetable crops
 - Reviewed by companies and peers
 - References are checked and verified
 - Information is standardized, transparent and seeks feedback
 - Represents 90% of all commercial vegetable sales volume
 - http://www.worldseed.org/isf/pest_lists_db.html



Two Industry Initiatives:

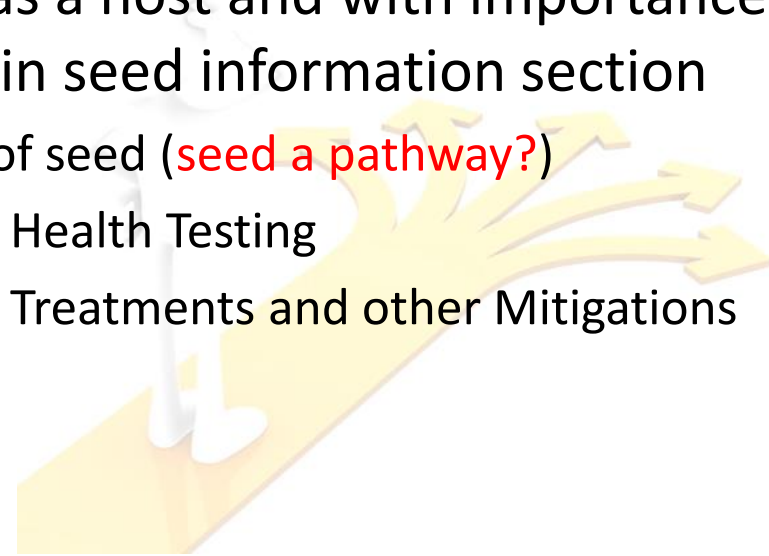
American Seed Trade Association

- **Pest-based: Provide scientific data and resources for Pest Risk Analyses required for establishing scientifically sound Phytosanitary requirements.**
 - Focuses on pests regulated by the NPPO's in the America's, primarily.
 - Since pests are regulated, the list is pest-based (Prioritized based on US Seed Industry needs)
 - Includes vegetable and agronomic crops
 - Pathway, seed testing and mitigation for each host/pest combination.
 - References are verified
 - Information is also standardized, transparent and seeks feedback
 - In the process of being harmonized with ISF
 - In the process of being converted to a web-based application



ASTA Seed Pest Database (SPD) Procedure

- Preliminary information on pest name, distribution, host range-primarily from CABI Database, Description of Plant Viruses, USDA GRIN Database.
 - Information on presence in the US
 - Information on presence in importing country
- Each crop listed as a host and with importance to US Seed industry is listed in seed information section
 - Determine role of seed (**seed a pathway?**)
 - Determine Seed Health Testing
 - Determine Seed Treatments and other Mitigations



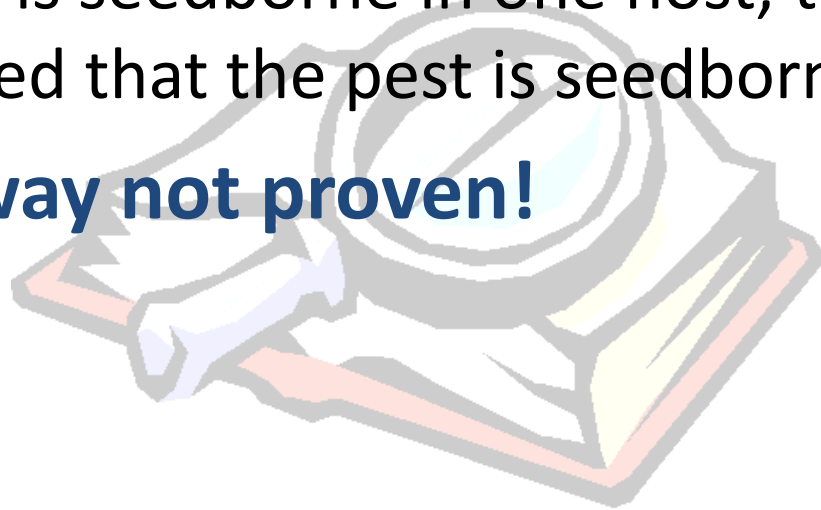
Seed as a Pathway:

“ . . . is our primary concern. ...placement of pathogens in a category of seedborne vs. seed transmitted does not necessarily equate to a certain risk level. There is a range of risk for each category depending on the pathogen and export/import situation.” – USDA APHIS Feedback to ISF, 2009

| Seed as a Pathway Definitions | |
|-------------------------------|--|
| Yes | Seed proven through controlled experiments or surveys of seed samples to be seedborne or seed transmitted. |
| Yes, experimentally | Seed shown to be infested with pathogen in laboratory experiments, but no data known or presented to confirm natural infection of seed |
| No, Pathway not proven | Seed may have been listed or inferred as a pathway for the pathogen, but no data known or presented to confirm pathway |
| No | No evidence that seed is a pathway through controlled experiments, seed sample surveys or practical knowledge of seed production. Or crop is not known to be a host of the pathogen. |

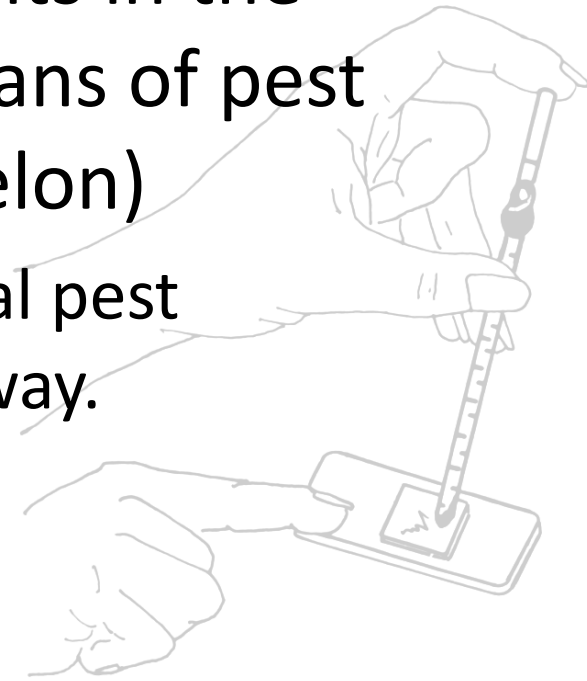
Information Analysis/Interpretation

- Often **CABI (other)** cites an author who has listed the pest as “seedborne” based on:
 - **Similar viruses** are known to be seed borne (nepoviruses; Lister and Murant, Neergaard)
 - The pest is seedborne in one host, therefore it is speculated that the pest is seedborne in all hosts.
- **No, Pathway not proven!**



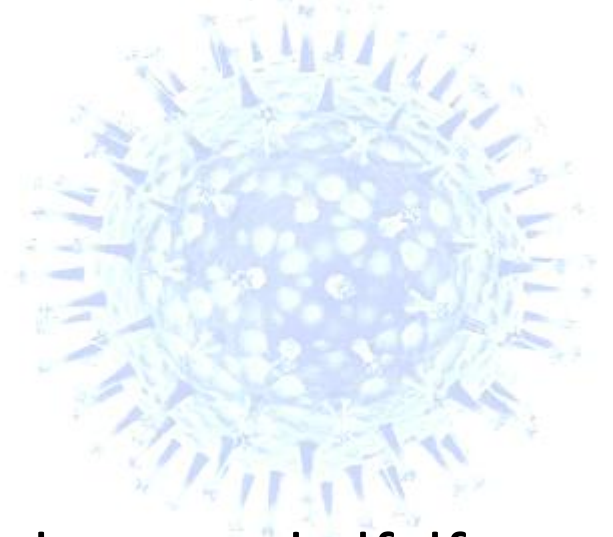
Information Analysis/Interpretation

- Author conducts seed experiments in the laboratory, often by artificial means of pest introduction. (SqMV in watermelon)
 - No evidence presented that natural pest infections result in seed as a pathway. (nepoviruses)
- Yes, **experimentally**



ASTA SPD Summary

- 64 pests have been listed to date;
 - 11 bacteria
 - 19 fungi
 - 30 viruses
 - 4 nematodes or parasitic plants
- Primarily pests of vegetable, corn, soybean and alfalfa
 - 227 host/pest combinations
 - 69 “yes”—pathway proven (30%)
 - 16 “yes, experimentally” (7%)
 - Remaining 63% seed is not a pathway, not proven to be a pathway or the crop is not a host of the pest



ISF Pest Listing Data Summary

- 34% are 'Not a Host'
- 43% are 'No, seed is not a pathway'
- 14% are 'Pathway not proven'
- 9% are 'Yes'
- Most of the 'Pathway not proven' are not known to be a significant concern to the seed industry. Information based on experimental evidence, limited observations, dated literature, etc.
- 90% of Phyto AD requests are irrelevant.
– (major vegetable crops)



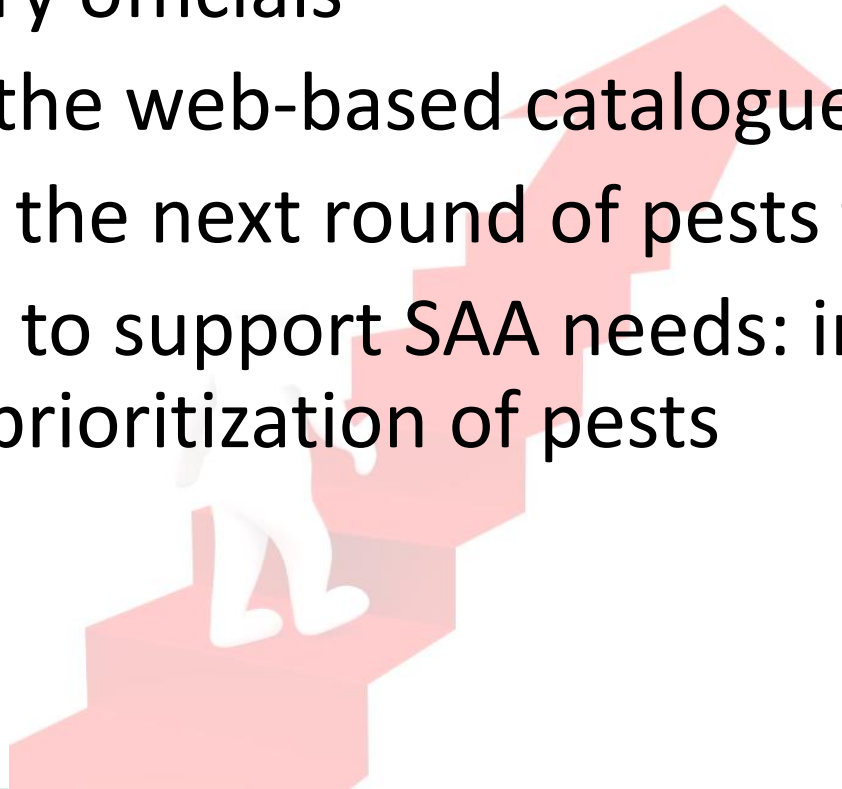
Demonstration

<http://www.phytodatabase.org>



Next Steps

- Continue harmonization with ISF efforts
- Corroborate information and data with US Regulatory officials
- Develop the web-based catalogue
- Prioritize the next round of pests to be listed
- Continue to support SAA needs: information sharing; prioritization of pests





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