OVERVIEW OF PHYTOSANITARY REGULATORY CHALLENGES AND OPPORTUNITIES: GLOBALLY, REGIONALLY, AND IN THE U.S.

Ric Dunkle, Senior Director, Seed Health and Trade

ASTA Import/Export Workshop

Tacoma, WA

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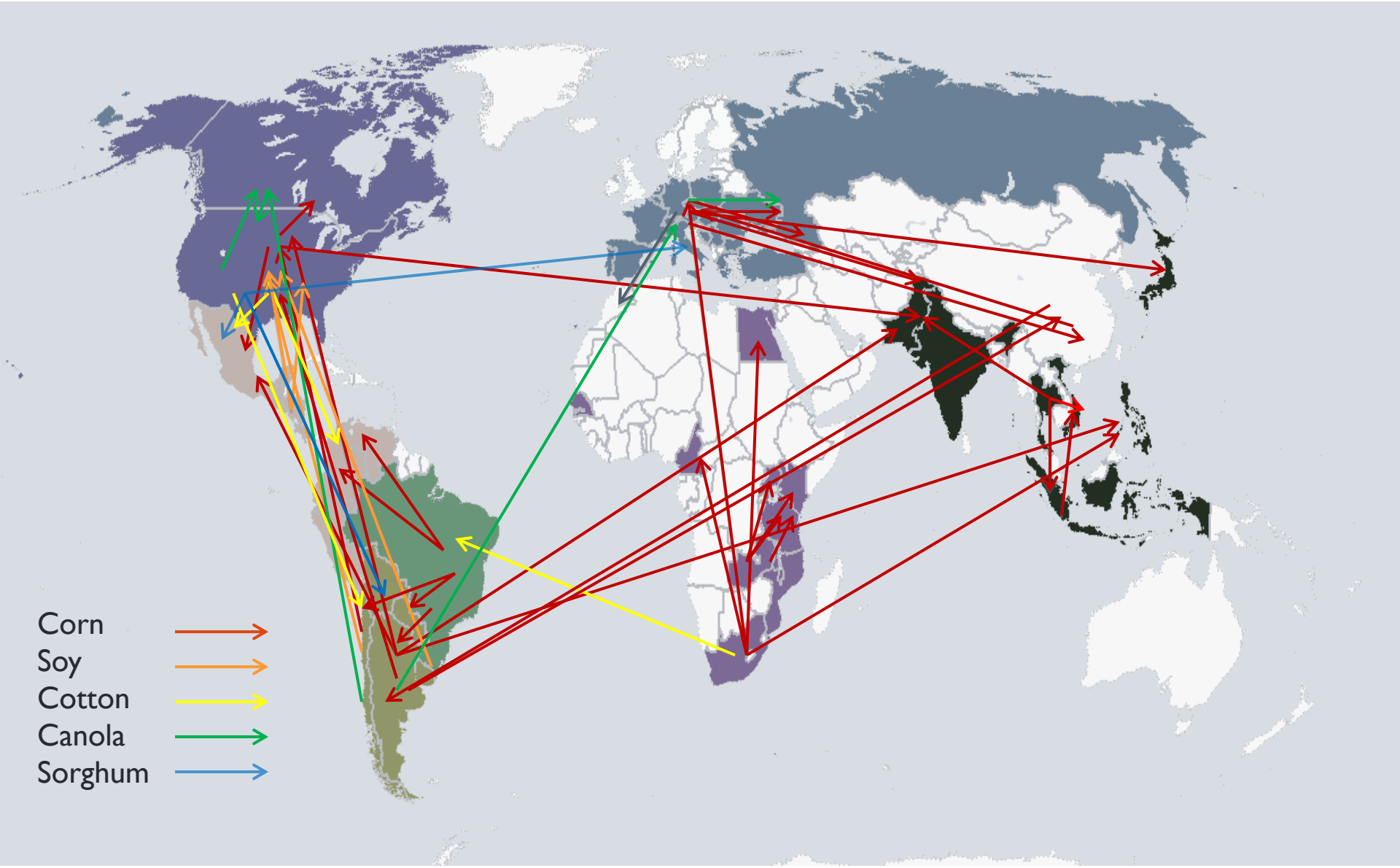
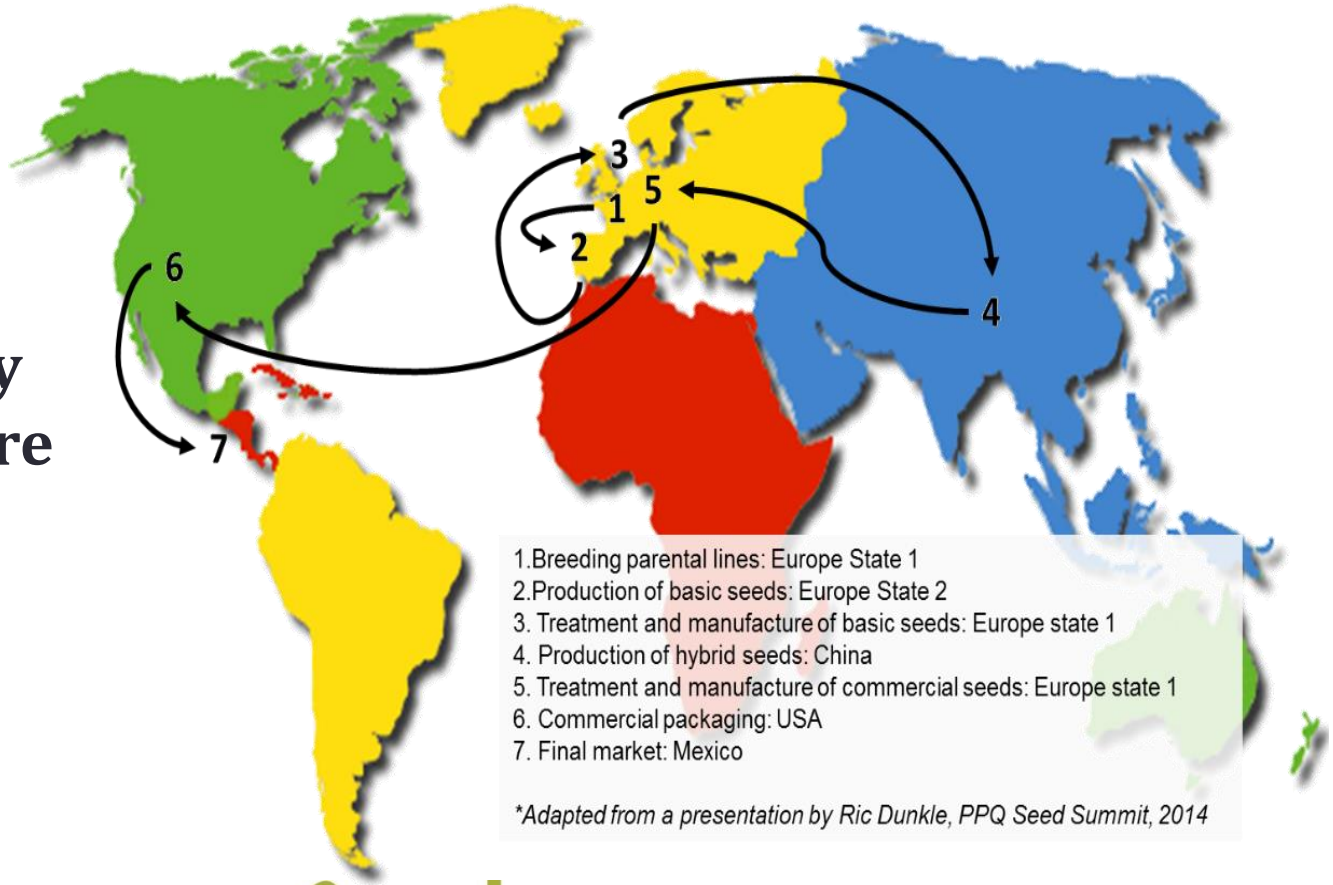
Global Seed Flows



Challenges of Regulating Seed Trade

- **Increasingly global nature of seed industry**



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Global Seed Exports (2016 ISF Data)

REGION	QUANTITY (MMT)	VALUE (MILLIONS USD)
Europe	3,051,707	6,968
N. America (NAPPO)	610,624	2,123
Asia/Eurasia	394,508	1,322
S. America	186,773	789
Africa	197,542	165
C. America/Caribbean	288	31
GRAND TOTAL	**4,435,089**	**11,378**

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Global Seed Imports (2016 ISF Data)

REGION	QUANTITY (MMT)	VALUE (MILLIONS USD)
Europe	3,934,175	5,810
N. America (NAPPO)	297,012	1,714
Asia/Eurasia	435,323	2,201
S. America	114,082	484
Africa	97,057	395
C.America/Caribbean	2,512	52
GRAND TOTAL	**4,971,946**	**10,954**

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Global Seed Exports/Imports

SEED TYPE	% QUANTITY	%VALUE
VEGETABLE	2.5	34.9
FLOWER	0.1	2.5
FIELD	97.4	62.6

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Major Seed Exporting Countries (2016 ISF Data)

COUNTRY	QUANTITY (MMT)	VALUE (MILLIONS USD)
USA	322,097	1,672
France	502,960	1,708
Poland	241,915	106
Netherlands	136,419	1,829
Italy	104,660	352
Mexico	91,658	
Argentina	75,752	106
Brazil	53,578	
Chile	36,522	274
Canada	196,869	567
Other (61 countries)	2,672,659	4,764
TOTAL	**4,435,089**	**11,378**

Major Seed Importing Countries (2016 ISF Data)

COUNTRY	QUANTITY (MMT)	VALUE (MILLION USD)
Belgium	656,866	291
Italy	750,438	571
Netherlands	559,043	836
Spain	303,629	540
USA	201,855	977
Mexico	34,914	462
Canada	60,243	275
Brazil	50,795	137
Argentina	35,379	112
Chile	7,469	52
OTHER COUNTRIES (103)	2,321,325	6,701
TOTAL	**4,971,956**	**10,954**

What Makes Seed Different?

- Diversity within the sector: over 300 seed species are marketed internationally-each one has its own unique phytosanitary issues
- Movement of seed pre-commercial – small lots often treated the same as commercial quantities
- High investments in technology: genetic (for pest and disease resistance, drought tolerance, consumer traits); seed coatings and primer technologies; seed treatment technology
- Customer demands for quality and performance often reduce phytosanitary risk

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Trends in the Global Seed Industry

- Consolidation
- Just-in-time shipping
- Market expansion
- More varieties/more breeding programs
- More shipments of small seed lots
- Higher value seeds
- More sophisticated seed production (QM) practices
- More re-export
- Rapidly increasing organic seed production

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Issues That Disrupt Seed Movements

- Rapidly increasing phytosanitary requirements, country by country (specific requirements for each pest)
- Rapidly losing chemical phytosanitary treatment materials
- Problems with movement of small seed lots (breeder and foundation seed lots)
- Increase in testing at POEs
- Increased reliance on indirect seed testing methods (PCR, etc.): are levels of sensitivity biologically relevant?
- Time to clear shipments at POEs
- Interpretations of harmful organisms lists

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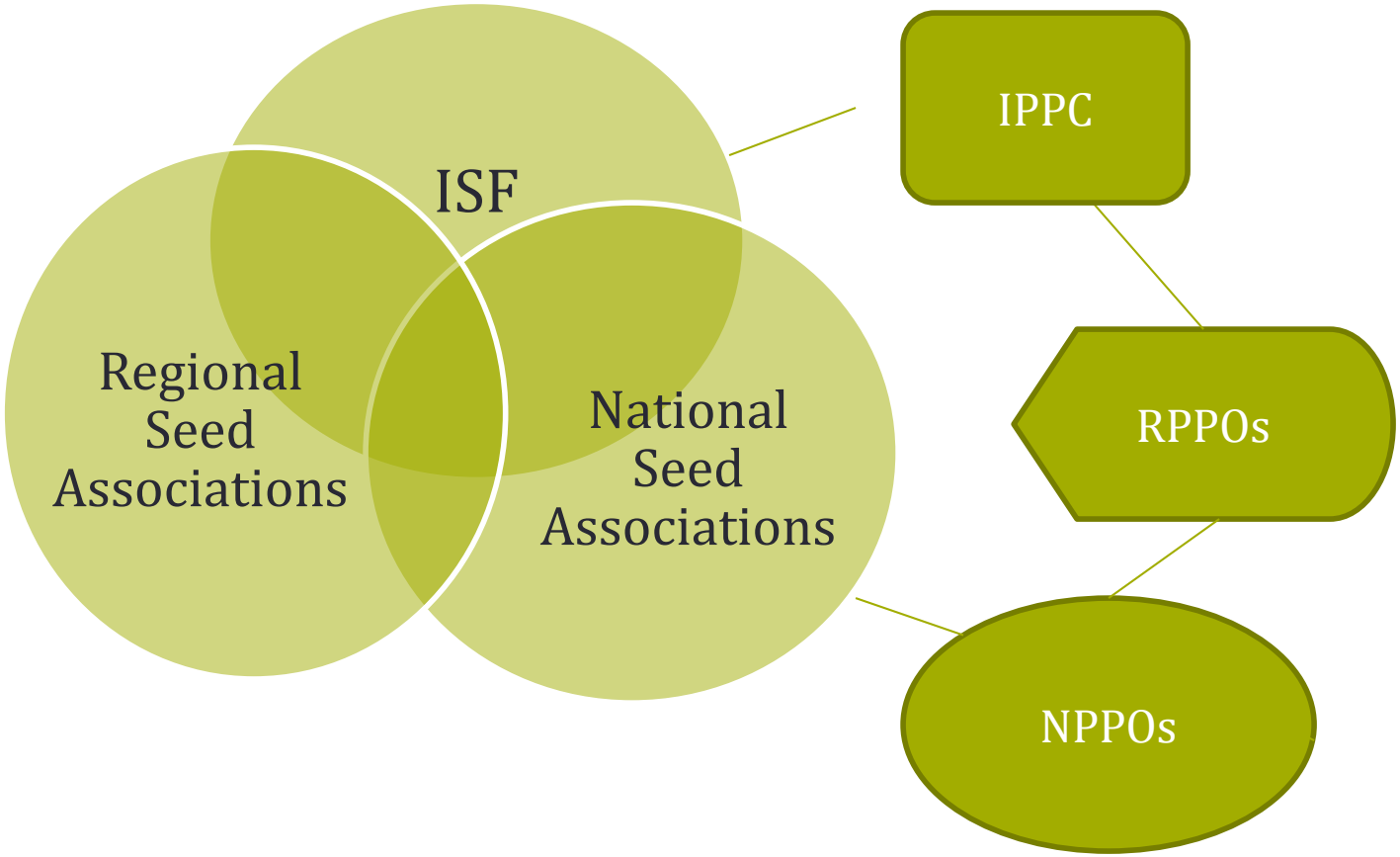
Global Seed Network



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Opportunities

- Global:
  - ISPM 38: seed-specific guidance on PRA, better definition of the seed pathway, re-export, recognition of systems approach
  - ISPM 38 annex: new IPPC project
  - ISF systems approach projects and activities
  - ISF regulated pest database; ASTA seed pest database
  - 2020 International Year of Plant Health (IYPH)
  - E-Phyto
  - Communications

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Opportunities: Regional

- SAA, APSA interactions
- Regional workshops (e.g. NAPPO Hemispheric ISPM 38 workshop last March; Brazil ISPM 38/systems approach workshop last September)

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Opportunities: National

- ASTA communications network: APHIS, FAS, CBP, states
- ASTA International Executive Committee (IEC): country working groups, strategic planning, UES
- Embassy visits (Washington D.C.; U.S. embassies in other countries)
- Representation to Federal agencies, Congress
- ReFreSH initiative
- ASTA video on seed production
- Phytosanitary risk reduction model
- ASTA WTO Response WG

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Challenges

- Harmonization at the global level:
  - Language (additional declarations)
  - Pest status
  - Role of seed in spread/establishment of pests
  - Implementation of systems approach at a multilateral level: how recognize industry QM programs as a phytosanitary measure?
  - Phytosanitary seed treatment issues mounting!
  - Primary role of IPPC/international standards
- International seed movements are complex!

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Challenges... continued

- Understanding where best to mitigate phytosanitary risk
- Trend by many countries (including the U.S.) toward off shore risk mitigation
- How to deal with diseases that are asymptomatic
- Trend toward requiring seed health testing over phytosanitary field inspection for many pathogens
- Trend toward molecular testing methods:
  - Sensitivity of some tests may exceed biological relevance
  - Viruses/viroids: difficult to confirm results with biological methods (bioassay, grow-out methods not practical)

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Challenges….continued

- Regarding molecular testing methods…
  - Few internationally validated methods
  - Difficult to use for small seed lots (require large sample sizes)
  - How resolve discrepancies in test results?
  - Depending on the pathogen, lab contamination can be an issue
  - Resistant varieties can still test positive!
- Seed as a pathway: what about cases where seeds can serve to transport pests that have no consequences on the seed or resultant plants (e.g. spinach Phomopsis, pospiviroids associated with tomato and pepper seed)

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Challenges....continued

- Export certification: APHIS, states (NPB), PExD, industry: we all need to be on the same page!
- Federal orders: relatively new in the seed industry; need to find ways to prevent use of them
  - Joint industry/APHIS efforts; e.g. USIT
  - Potential use of systems approaches (ReFreSH)…but still a long way to go
- Research needed : seed transmission; biological significance, role of seeds as a pathway. Biggest challenge: viruses/viroids
  - But: hard to do for Q-pests: need containment facilities or do the research where the pest exists

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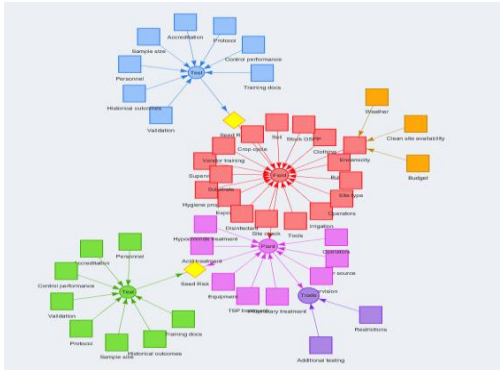
Possible Solutions

- Utilize guidance in international standards (ISPM 38!)
- One of industry's biggest issues: when is seed a pathway?
- Better testing methods/interpretation of results
- Consider the role seed QM production and processing systems play in managing phytosanitary risk (what risk is left) – Phytosanitary Risk Reduction Estimation Model
- Develop alternatives to consignment-by consignment phytosanitary certification (use of systems approaches)



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QUESTIONS & ANSWERS

COUNTRY-SPECIFIC PHYTOSANITARY CHALLENGES

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General Bilateral Issues

- Import Permits often include technically unjustified pests
- New or changed phytosanitary requirements often are not communicated
- Countries often have different requirements for the same pest
- High frequency of re-testing at POEs (Mexico, Korea)
- Often high rates of false positives/false negatives between countries
- Many NPPOs develop, or contract with entities to develop seed tests

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The Story of Korea

- Korea often holds shipments and tests for pests that are not AD requirements (not on IPs; not in PExD)
- Example: Pseudomonas syringae pv atrofaciens/sorghum
- Many other pest species have been similarly tested for on other seed species, resulting in many shipment rejections
- Why? Because these pests are on its official Hazardous Organisms List (HOL)
- HOLs list all pest species that a given country considers are Q pests. They are not linked at all to hosts

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Korea…continued

- Korea's PSA test was not nearly specific enough – it cross reacted to many other organisms
- Korea was initially reluctant to share its method….because it was developed internally, it was considered sovereign
- ASTA and ISU have been slogging through Korea's HOL to identify technically justified seed pests, then develop information on testing methods, epidemiology, etc.
- About 150 of its 6,000 HOL pests are potentially seed issues
- These pests have been added to ASTA's seed pest database

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Australia

- Australia often specifies test methods and labs whose results it will recognize/accept
- Recent veg seed issues: tomato and pepper seed: pospiviroids, ToBRFV, ToMMV; cucurbit seed: CGMMV, KGMMV
- New very strict tolerance for rodent droppings in grass seed (0.01%)

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European Union

- New/revised phytosanitary import requirements enter into force December 14 (**draft Commission Implementing Regulation- Ares(2019)5318433 & /1-14)**
- ASTA provided comments October 18
- New testing requirement for ToBRFV became effective November 1: requires seed be tested prior to entry into the EU
- Revising corn seed PRA for Stewart's wilt

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Mexico

- **New WTO notification**: Shipping is free of Alternaria brassicicola. Diaporthe phaseolorum var. meridionalis, Passa / ora fu / va. Septoria / ycopersici. Pseudomonas syringae pv. tomato, Pseudomonas viridiflava. Xanthomonas arborico / a, Xanthomonas euvesicatoria, Xanthomonas perforans. Tomato mosaic virus (ToMV) and Tomato Brown Rugose Fruit Virus (ToBRFV).

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Mexico…..continued

- Application in Holland of the sequence of the following treatments:
-
- a) immersion in hot water at 50 • c for a period of 30 minutes, followed by
- b) A broad spectrum fungicide to choose from the following list:
-
- • Captan (72 - 144 g of I.A. / 100 kg of seed)
- • Thiram (80-160 g of I.A. / 100 kg of semilla)
- • Mancozeb (250 g of I.A. / 100 kg demi)
- • Fludioxonil (2.54 - 4.99 g of I.A. / 100 kg of seed)
- • 0 a fungicide authorized in the Netherlands for the control of fungi in tomato seeds.
-

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Mexico…..continued

- ToBRFV (tomato brown rugose fruit virus):
  - Detected in 2018; rapidly spread throughout Mexico (all 23 states infected; primarily in greenhouses)
  - Mexico imposed a seed test requirement (different from international method)
  - Initially very high rejection rates (>40%)
  - Two ASTA-funded research projects launched

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Brazil

- Normative 16, 52 follow-up activities
- Importation of small seed lots is a major problem
- Small seed lots systems approach (ReFReSH) pilot project under construction
- Workshop held last October

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Russia

- **Decree 128:** establishes a (bureaucratic) process for obtaining an import permit:
  - Declaration of pest freedom for each seed species
  - Non GMO
  - Company has a business relationship with a Russian import company
  - Company prepared to ship seed species plus volumes of each
  - Company provides this info to APHIS who then delivers to VPSS

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United States

- ASTA WTO Response WG established
- NSHAPP: cucurbit seed/CGMMV pilot project
- ReFReSH Initiative
- Spinach Phomopsis
- Federal Orders: new to the seed industry!
  - Pospiviroids/tomato and pepper seed
  - ToBRFV (pending)
- APHIS Plants for Planting Manual

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QUESTIONS & ANSWERS