OVERVIEW OF THE GLOBAL 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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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**

2016 Seed Import and Export Data (ISF)

- Only seed exports with a value greater than USD 1 million have been reported
- Flower seed includes seed of herbaceous and non-herbaceous plants cultivated mainly for flowers
- Field crops seed includes seed of pulses, cereals, industrial crops and forages
- Vegetable crops seed includes seed of all vegetable crops
- Potato seed and mushrooms are not included

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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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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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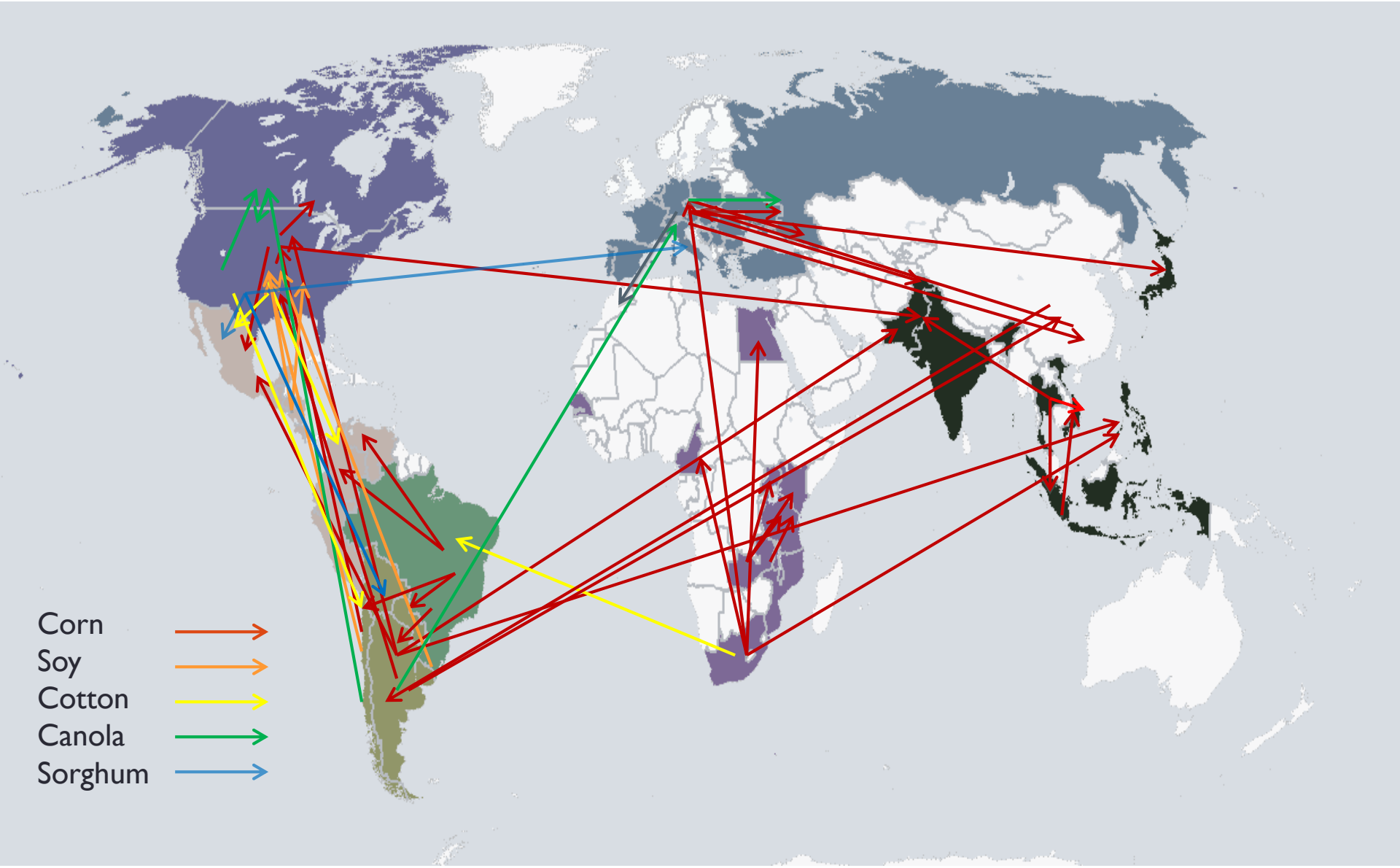
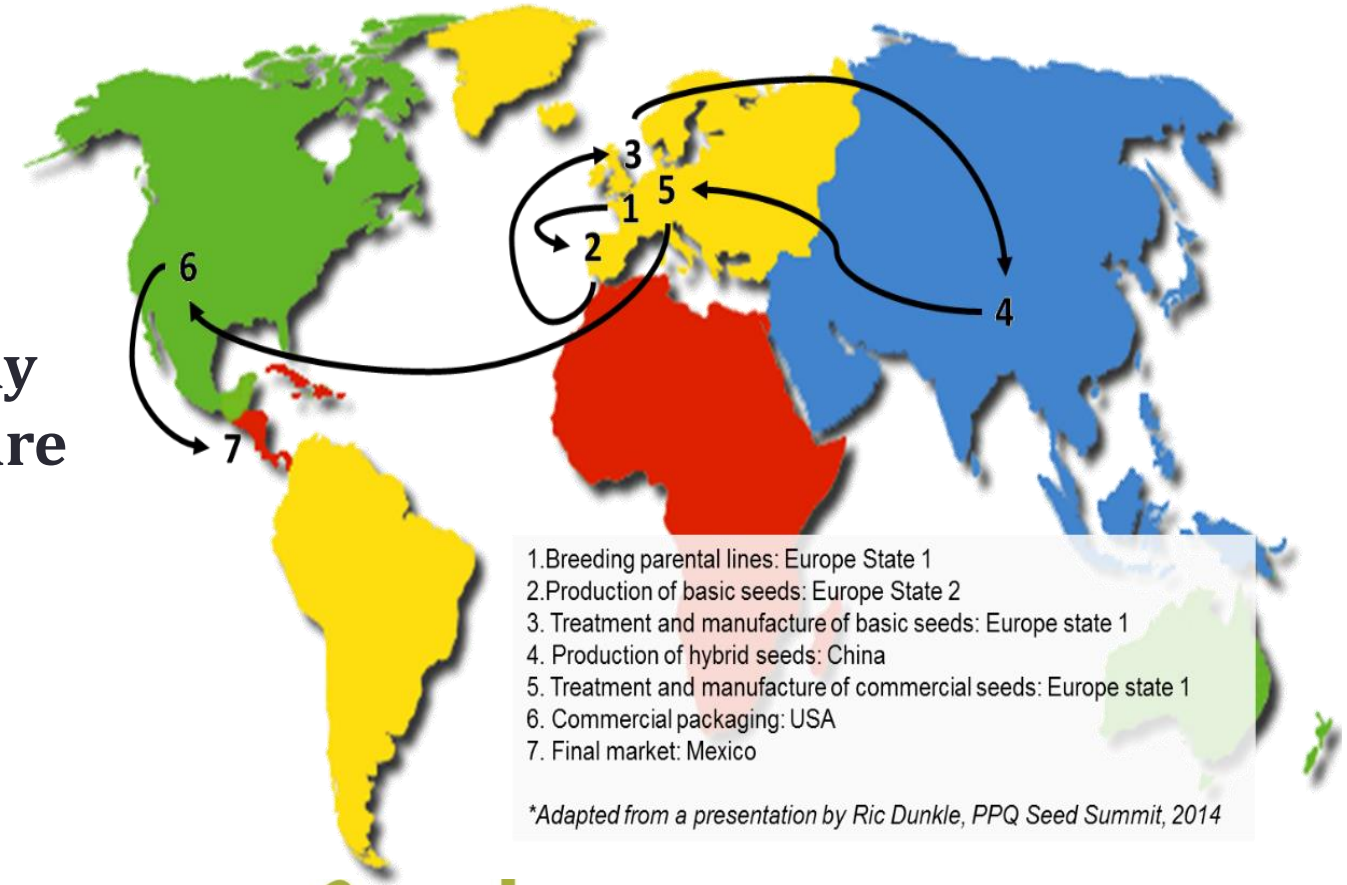
Global Seed Flows



Challenges of Regulating Seed Trade

- **Increasingly global nature of seed industry**



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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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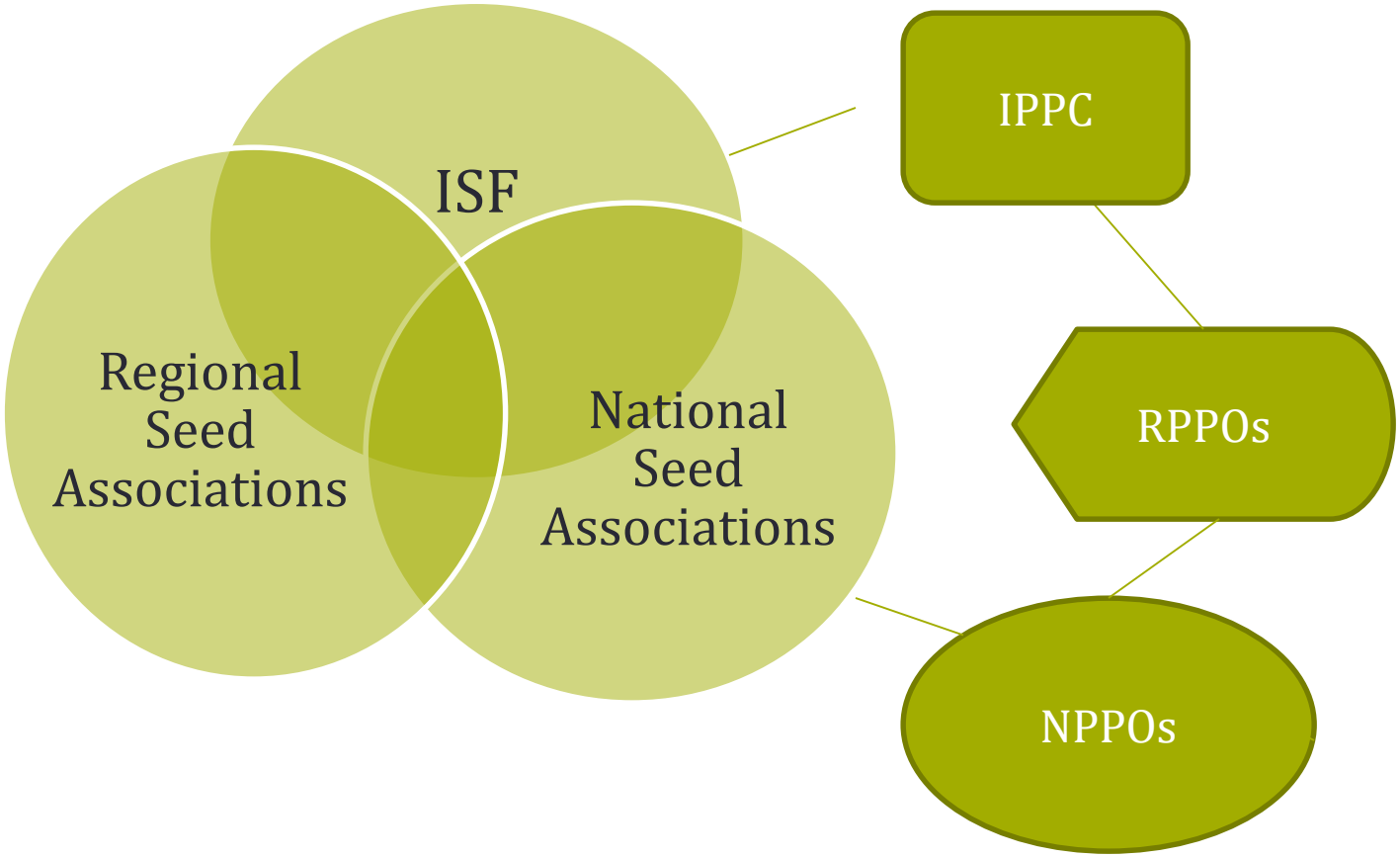
Global Seed Network



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Global Seed Network Functions

- Communication
- Annual/biennial congresses and joint meetings
- Phytosanitary committees at each level
- Science/research foundations
- Work together on common issues (harmonization)
- NSAs connect to NPPOs; ISF connects to the IPPC
- RPPOs connect to the IPPC and NPPOs; liaison with the global seed network
- NSAs work closely with their respective NPPOs

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Issues That Disrupt Seed Movements

- Rapidly increasing phytosanitary requirements, country by country (specific requirements for each pest)
- Rapidly loosing 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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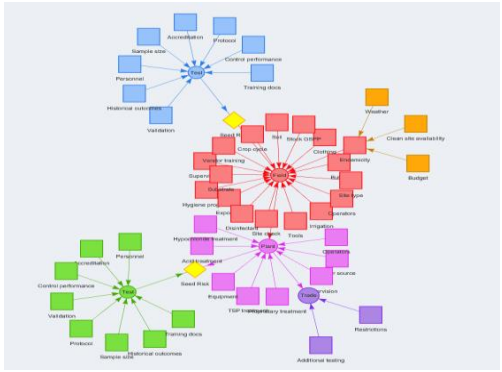
Possible Solutions

- 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