



United States Department of Agriculture

Improving Inspection Programs Using Risk-Based Sampling

Robert Griffin, Christina Devorshak, and
Barney Caton

Animal and Plant Health Inspection Service,
Plant Protection and Quarantine

Message

- Inspection is a useful (stand-alone) phytosanitary procedure

- But could perhaps be best used to improve inspection *programs*
 - Example: Plant propagative materials

What is inspection?

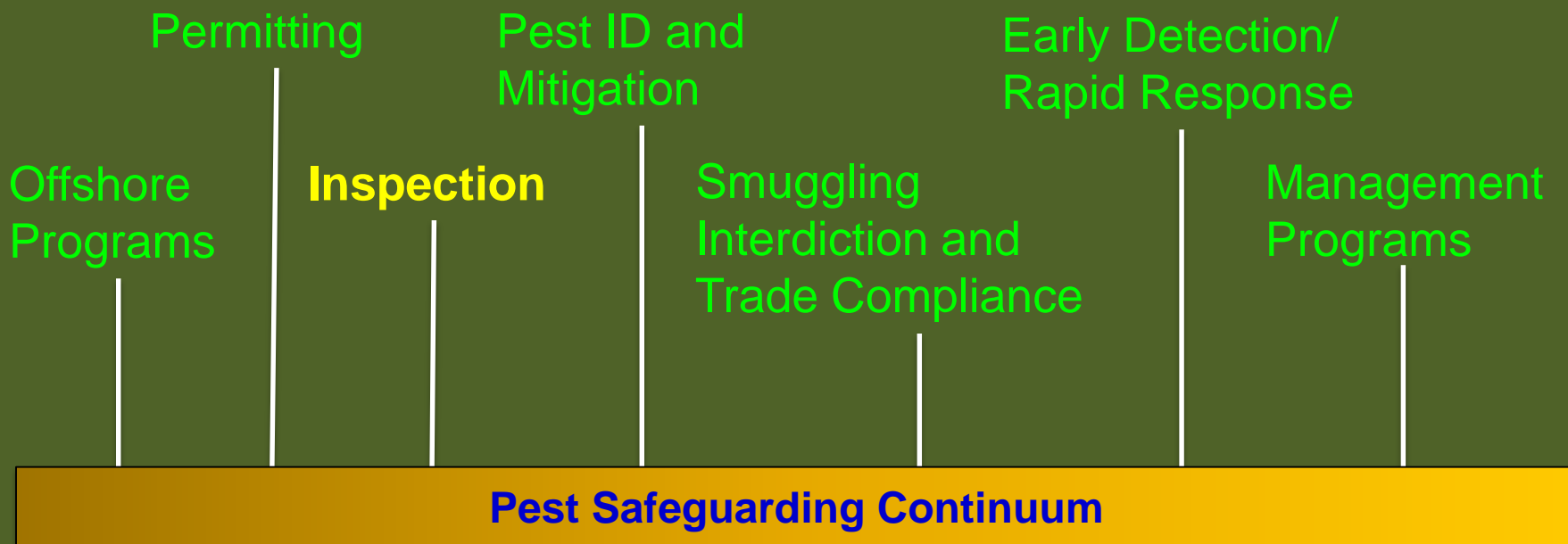


“Official **visual** examination of plants, plant products or other regulated articles to determine if pests are present and/or to determine compliance with phytosanitary regulations.”

Objectives of Inspection (ISPM 23)

- Detect pests that are present
- Verify effectiveness of measures
- Confirm compliance with regulations
- Detect organisms for which risk has not yet been determined
- *Deter exporters from sending infested goods*
- *Provide useful information for programs*

Inspection in a Phytosanitary Context



“We were a very effective *first* line of defense.”

Miami Inspection Station Officer, August 10, 2016

Other Inspectional Issues

- Usually based on sampling, not 100 percent
- Not all pests visually detectable
- Inspectors are not perfect

- **Thus, not 100 percent effective**
 - Implies some tolerance for “leakage”
 - Rate reduction at best, *not* elimination

Sampling Issues

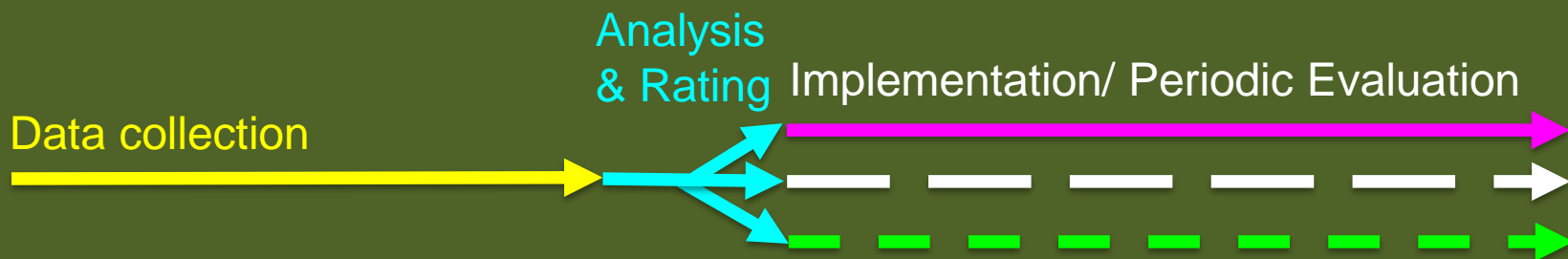
- PPQ: traditionally use **2 percent sampling**
 - Detection level varies with lot size
 - Rate estimates not valid/comparable
 - Unfair; trading partners can manipulate
- Improved sampling
 - 5% detection level with 95% confidence, assuming 80% efficiency
 - More meaningful rates, more fair, etc.
 - Instituted in FY15 in plant inspection stations

Risk-Based Sampling

- Direct inspections away from lower risk goods toward higher risk goods
 - More efficient
 - Less resources used on lower risk goods
 - More resources used on higher risk goods
 - Incentives for industry to be cleaner
 - Feedback between inspection and targeting
 - Places inspection in a better context
 - Lets inspectors see impacts on programs

Ratings-Based Approach

- PPQ experience (e.g., cut flowers)
- Rate combinations by risk
 - Ideal = producer-taxon
 - Practical (currently) = country-genus
- Implement after data collection and rating phases, then monitor



RBS Implementation by PPQ

- Pathway
 - Propagative material
 - Plant inspection stations (PPQ inspectors)
- FY15 Description
 - 91,698 shipments; 512 genera; 40 countries
 - 5,001 combinations (>10 shipments = 1,398)
 - 467 pest-related actions
 - Mean action rate = 0.005

Example Rating Scheme

Action Rate	Upper Limit	Risk Rating	No. combinations
>0.01	Any	High	139
>0.0-0.01	Any	Medium	53
0.0	>0.10	Medium	591 [644]
0.0	0.05-0.10	Low	330
0.0	<0.05	Very Low	285

- Example incentives
 - Low = Inspect 1 of 5
 - Very Low = Inspect 1 of 10



Potential Inspections

Rating	Current		Under RBS		Proportion
	Shipments	Plants	Shipments	Plants	
High	13,504	277,718,787	13,504	277,718,787	1.0
Medium	24,981	316,863,337	24,981	316,863,337	1.0
Low	17,304	127,649,476	3,461	25,531,371	0.2
Very Low	36,179	662,158,084	3,618	66,217,639	0.1
Totals	91,698	1,384,389,684	45,564	686,331,134	0.5

- Note: Savings can be directed into greater sampling intensity on higher risk combinations

Conclusions

- Inspection is often used less than ideally
 - Stand-alone procedure
 - Fixed-percentage sampling too common
- More optimal use
 - Improved statistically-based sampling
 - Information for RBS programs
 - Greater efficiency
 - Industry incentives, fairness
 - Feedback between inspections and targeting
 - Better context for inspections in safeguarding

International Symposium, July 2017?

- Trend to implementation
 - Australia
 - Early stages: EU, New Zealand, Japan, Mexico
 - USA
 - PPQ implementation ongoing
 - CBP with other agencies; ag cargo in future
- Opportunities
 - Review academic studies
 - Share lessons learned
 - Begin harmonization

BEFORE WE CROSS THE THRESHOLD INTO
THE ETERNAL DARKNESS OF THE SWIRLING
ABYSS - ANY FRUITS OR VEGETABLES?

