# ISF Systems Approach

## Considerations for seed companies and NPPOs

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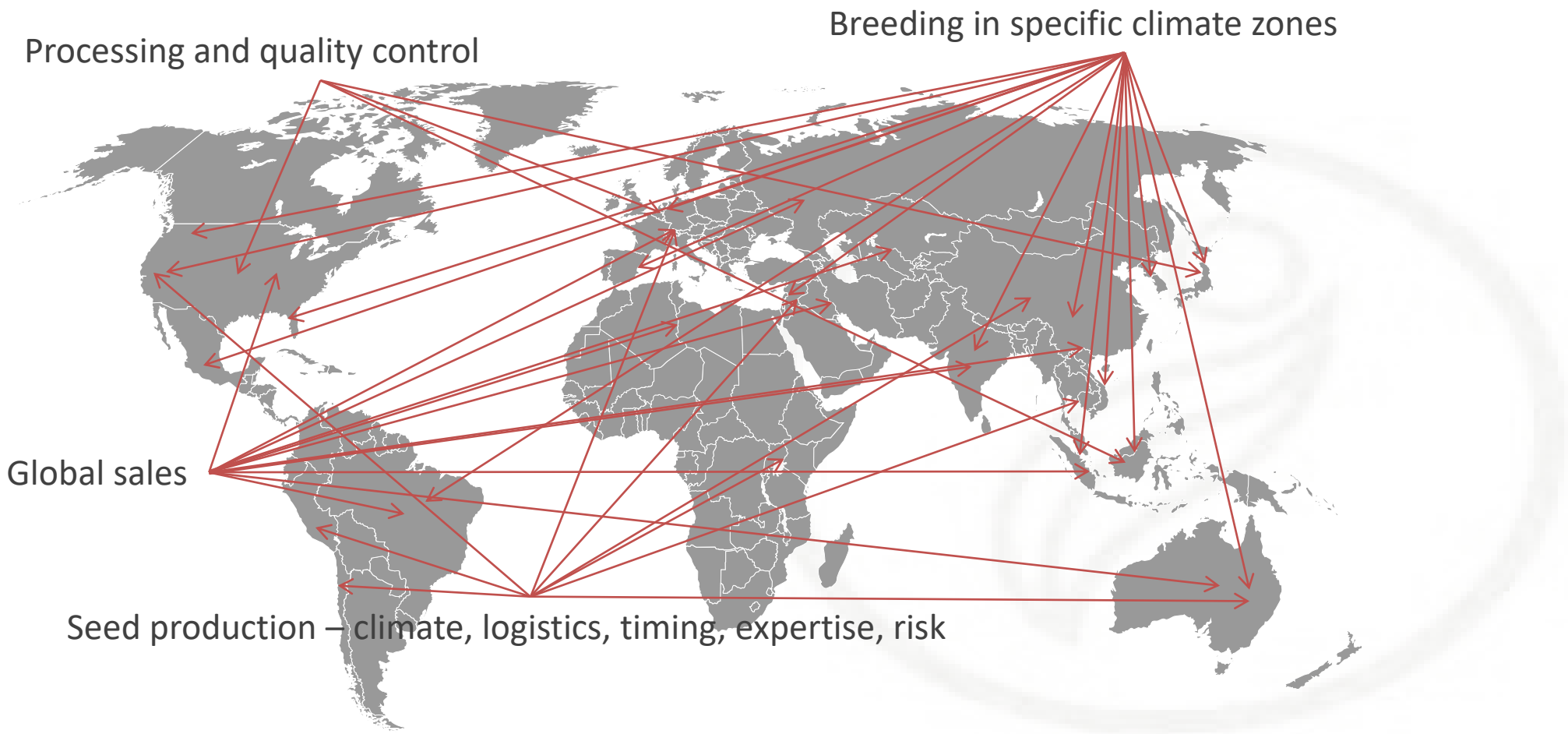
# Vegetable seed business is global  - import and export are essential



# Challenges in seed trade and possible solution

## Challenges in the current trade system

- Consignment-by-consignme
- Increasing number of s ...its and variation bet
- Import requ ...uickly
- Requir ...or pests a ... a pathway
- ...portant business practice - ...fulfill the needs of all countries ...n the chain
- ...vement of small lots of seeds for research and breeding purposes increasingly difficult

COMPLEXITY

## Systems Approach as possible solution

- Approved companies produce 'Systems Approach-seed'
- Multilateral acceptance: seeds move easily between all countries where a systems approach has been agreed
- Phytosanitary certificates without the specification of individual pests
- An alternative option for countries to participate

# Complexity - cucumber regulated pests

A large number of pests is regulated worldwide for cucumber

**92 pests**

- ✓ 13 bacteria
- ✓ 28 fungi
- ✓ 14 insects
- ✓ 9 nematodes
- ✓ 25 viruses
- ✓ 2 viroids
- ✓ 1 oomycete

(ISF Regulated Pest List database)

| | | |
|---|---|---|
| Acalymma vittata | Ditylenchus destructor | Pseudomonas putida |
| Acidovorax avenae subsp. avenae | Ditylenchus dipsaci | Pseudomonas syringae pv. lachrymans |
| Acidovorax citrulli | Erwinia carotovora | Pseudomonas syringae pv. syringae |
| Alternaria brassicicola | Erwinia tracheiphila | Pseudomonas tabaci |
| Alternaria cucumerina | Frankliniella spp. | Pseudomonas viridiflava |
| Alternaria dauci | Fusarium oxysporum f. sp. cucumerinum | Pseudoperonospora cubensis |
| Arabis mosaic virus (ArMV) | Fusarium oxysporum f. sp. melonis | Pythium spp. |
| Aspergillus niger | Fusarium oxysporum f. sp. zingiberi | Rhodococcus fascians |
| Athelia rolfsii | Gibberella avenacea | Sclerotinia sclerotiorum |
| Bactrocera spp. | Helicoverpa zea | Septoria cucurbitacearum |
| Baris granulipennis | Heterodera schachtii | Solenopsis invicta |
| Beet curly top virus (BCTV) | Hop stunt viroid (HSVd) | Squash leaf curl virus (SLCV) |
| Botryotinia fuckeliana | Kyuri green mottle mosaic virus (KGMMV) | Squash mosaic virus (SqMV) |
| Capsicum mosaic virus (PMMoV) | Liriomyza trifolii | Strawberry latent ringspot virus (SLRSV) |
| Cepaea hortensis | Maconellicoccus hirsutus | Thanatephorus cucumeris |
| Chalara elegans | Macrophomina phaseolina | Tobacco ringspot virus (TRSV) |
| Choanephora cucurbitarum | Meloidogyne incognita | Tobacco streak virus (TSV) |
| Cladosporium cucumerinum | Melon necrotic spot virus (MNSV) | Tomato black ring virus (TBRV) |
| Clavibacter michiganensis pv. michiganensis | Muskmelon mosaic virus | Tomato leaf curl New Delhi virus (ToLCNDV) |
| Colletotrichum capsici | Mycocentrospora acerina | Tomato ringspot virus (ToRSV) |
| Colletotrichum dematium | Myiopardalis pardalina | Tomato spotted wilt virus (TSWV) |
| Colletotrichum dematium f. sp. spinaceae | Nacobbus aberrans | Trichodorus primitivus |
| Colletotrichum orbiculare | Pantoea stewartii subsp. stewartii | Trogoderma granarium |
| Cucumber green mottle mosaic virus (CGMMV) | Pea early browning virus (PEBV) | Trogoderma spp. |
| Cucumber leaf spot virus (CLSV) | Pear blister canker viroid (PBCVd) | Trogoderma variabile |
| Cucumber mosaic virus (CMV) | Phoma lingam | Urdbean leaf crinkle virus (ULCV) |
| Cucumber vein yellowing virus (CVYV) | Phomopsis sclerotioides | Verticillium albo-atrum |
| Cucumber yellows virus | Phomopsis vexans | Watermelon mosaic virus (WMV) |
| Diaphania nitidalis | Pratylenchus brachyurus | Xanthomonas campestris pv. cucurbitae |
| Didymella bryoniae | Pratylenchus coffeae | Xiphinema diversicaudatum |
| | Prunus necrotic ringspot virus (PNRSV) | Zucchini yellow mosaic virus (ZYMV) |

# Complexity – cucumber requirements for *Pseudomonas*

Import requirements for the same pest vary from country to country.

Also: variation in text requirements for ADs

| | |
|---|---|
| Pseudomonas syringae | The country of origin is free from;The seeds have been tested in an official laboratory and found free from;The seeds will be tested on-arrival to proof freedom of |
| | The seeds originate from plants that were inspected during the active growing season and found free from;The seeds have been tested in an official laboratory and found free from;The seeds will be tested on-arrival to proof freedom of |
| Pseudomonas syringae pv. lachrymans | El envío está libre de |
| | El envío fue sometido a seguimiento fitosanitario en el sitio de producción y se encontró libre de |
| | El envío procede de áreas libres de;El envío está libre de |
| | El producto está libre de |
| | El producto se encuenta libre de |
| | En el país de origen no están presentes las siguientes plagas;El envío procede de un semillero que fué oficialmente inspeccionado durante el período de crecimiento activo y encontrado libre de;De acuerdo con el resultado del análisis oficial de laboratorio, usando la técnica, el envío se encuentra libre de |
| | Free from |
| | Las semillas provienen de un semillero que fue oficialmente inspeccionado durante el periodo de crecimiento activo y encontrado libre de |
| | Les graines sont indemnes de |
| | Mandatory treatment |
| | The consignment is free |
| | The parent crop was field inspected during active growth and found free of |
| | The seed was harvested from mother plants which were inspected during active growth and found practically free from |
| | The seeds are free from |
| Pseudomonas syringae pv. syringae | Mandatory treatment |
| Pseudomonas syringae pv. Tabaci | Libre de |
| Pseudomonas viridiflava | El envío está libre de |
| | El producto se encuentra libre de |
| | Envío libre de las siguientes plagas |
| | Libre de |
| | Mandatory treatment |
| | The seeds are free from |

# Complexity reduction

## ISF Regulated Pest List Database- science based information about seed as a pathway

| Seed Species | Regulated pests (no.) | References cited (no.) | Is seed a pathway? | | | |
|---|---|---|---|---|---|---|
| | | | **Yes** | **Pathway not proven** | **No** | **Not a host** |
| Bean | 97 | 413 | 23 | 14 | 41 | 19 |
| Brassica | 118 | 380 | 10 | 13 | 52 | 43 |
| Carrot | 92 | 259 | 4 | 7 | 43 | 38 |
| Cucumber | 92 | 205 | 4 | 10 | 50 | 28 |
| Eggplant | 76 | 467 | 2 | 11 | 49 | 14 |
| Lettuce | 64 | 156 | 3 | 10 | 36 | 15 |
| Melon | 71 | 178 | 6 | 16 | 33 | 16 |
| Onion | 94 | 183 | 7 | 12 | 43 | 32 |
| Pepper | 110 | 256 | 9 | 21 | 46 | 34 |
| Spinach | 38 | 105 | 9 | 3 | 13 | 13 |
| Squash & pumpkin | 55 | 208 | 5 | 9 | 29 | 12 |
| Tomato | 181 | 579 | 15 | 36 | 89 | 41 |
| Watermelon | 60 | 212 | 4 | 9 | 31 | 16 |
| *Total* | *1148* | | *101* | *171* | *555* | *321* |
| | | **Total (%)** | **9** | **15** | **48** | **28** |

76% do not warrant to be regulated!

# Basis for issuing phytosanitary documents is mostly: ‘area/ country/ ...free from’, field inspections, seed testing, treatment

*Field inspections*

*Seed testing/ treatment*

Pre-planting | Pre-harvest | Harvest | Post-harvest

*‘Area free from…’*

**But seed companies do much more to manage phytosanitary risks**

# Seed companies have many procedures in place to prevent the production and sales of infected seed lots

- use of resistant plants
- use of healthy seeds
- seed treatment
- crop management
- field selection
- soil treatment
- geographical isolation
- sanitation of water

- hygiene measures
- field inspection
- field sanitation
- parent plant testing
- crop treatment
- protected environments
- sanitation of water

Pre-planting | Pre-harvest | Harvest | Post-harvest

- hygiene measures
- timely harvest
- harvest method
- disinfectants during seed extraction

- seed testing
- seed storage
- seed treatment
- sanitation
- mechanical sorting
- seed packaging and sealing

# Systems Approach

Develop a system for phytosanitary certification that incorporates current industry practices and elements found in ISPMs.

The term ‘Systems Approach’ has been used in the industry while developing thoughts about such a system.

Other existing concepts or definitions in the framework of IPPC may be useful for the development of the system.

# Elements of Systems Approach

Essential elements from an industry point of view:

The system:

- is in line with international agreements (WTO) and standards and guidelines (ISPMs)
- offers an alternative way for phytosanitary certification for seed companies with certified pest management practices
- strives for global harmonization
- is science- and risk-based
- is accessible to both small and large seed companies
- is flexible across different crops
- recognizes and incorporates industry practices

# THE VISION

One globally accepted Systems Approach that serves as an alternative to existing pest risk management options to secure phytosanitary certification for the international movement of seed

Global acceptance via IPPC

# Then...

Seeds can be shipped between countries that participate as the system gives confidence that relevant pest risks have been appropriately addressed and mitigated by certified companies in the countries that participate

No more additional declarations are needed as the system provides confidence that relevant pest risks have been appropriately addressed and mitigated

N.B. Implementation will take time and there will be challenges – e.g. transition periods

# Approach

- Work with International Plant Protection Convention (IPPC) – global acceptance. Proposal to write an Annex to ISPM38 was approved.
- Involve NPPOs from the beginning - create support.
- Start small and work from success – limited number of countries, pilot.

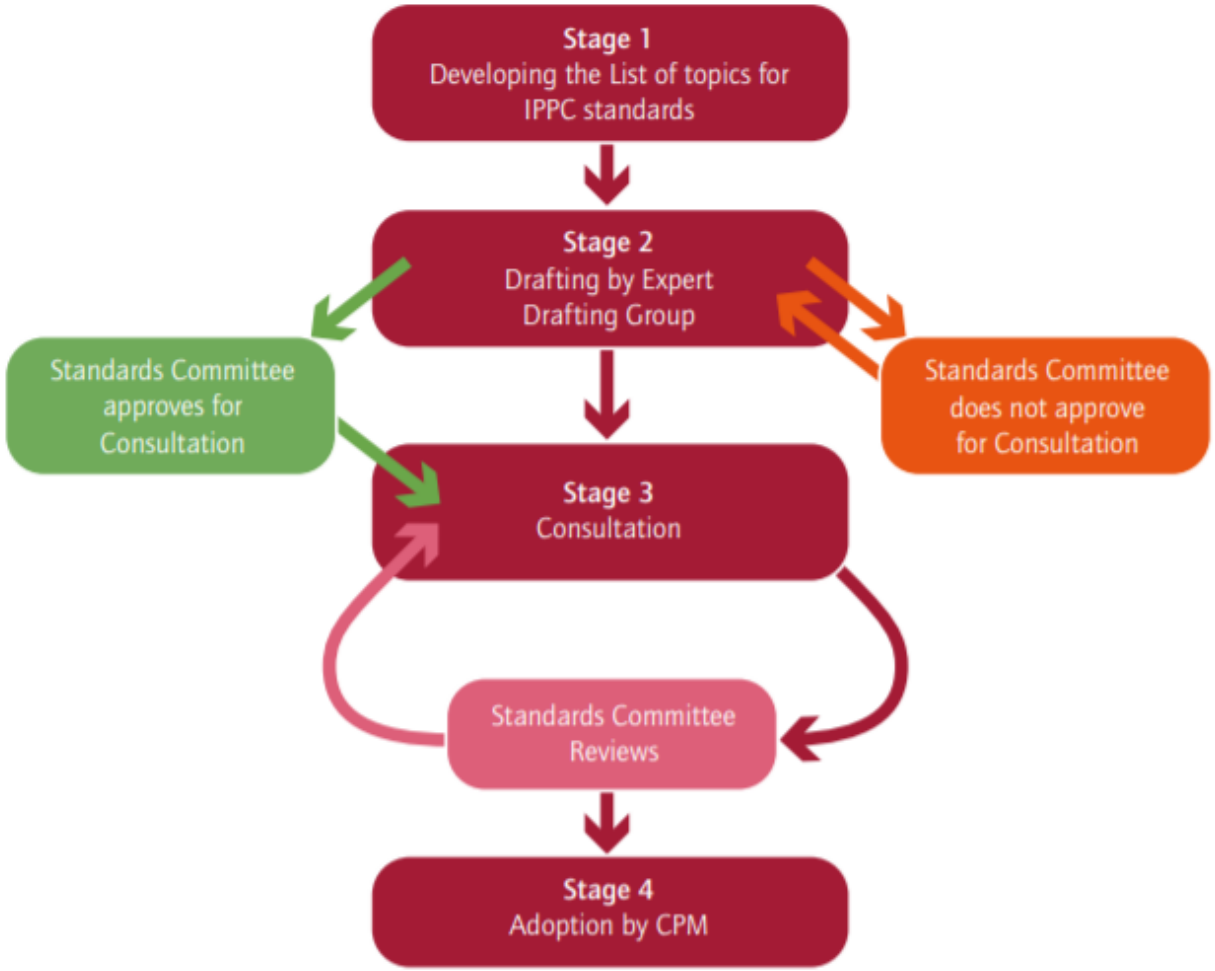
# ISF Systems Approach Expert Group Activities

- Foundation of ISF Systems Approach WG  (Oct 2017)
- Rome meetings with NPPO-experts  (2018, 2019)
- System comparison workshop with industry experts (Oct 2018)
- Writers workshop with industry experts to prepare first draft industry brief (Apr 2019)
- Industry brief, incl. revision (May 2021)
- IPPC working papers (Oct 2021)
- Workshops cucumber seed production experts (2021)

Ongoing:

- Pilot – CL, NL, US, AU
- Concept paper

# Status of the IPPC Standard Setting Process




**Stage 1**

- ✓ Submission of topic (Aug. 2018, NAPPO)
- ✓ CPM decides about priority (Apr. 2019)
- ✓ Steward was appointed (USA)
- ✓ Steward prepares Draft Specification
- ✓ Standards Committee (SC) approves Draft Specification for consultation
- ✓ Country consultation for Draft Specification: July – Aug. 2020
- ✓ SC to approve specification
- ✓ Call for members of Expert Working Group

**Stage 2**

- ✓ EWG to draw draft Annex for ISPM 38
- SC approves for consultation (on agenda May 2023)

**Stage 3**

- Country consultation for Draft Annex (more than one time is possible)
- SC reviews draft

**Stage 4**

- Adoption by Commission on Phytosanitary Measures (CPM)

# Pilot

**Goal -**

Try and reach agreement about how Systems Approach could work with a small number of NPPOs representing countries where seed production, processing and sales takes place.

Trial a complete pathway from production to processing/re-export to commercial planting

- Four countries have agreed to participate: country of production (Chile), country of re-export (USA, NL), country of import (sales) (AU)
- Proposed crop: cucumber
- Bilateral meetings with NPPOs to explain background and get a feel for feasibility/ bottlenecks
- Meeting with all four NPPOs
- Milestone: agreement about pilot process on paper
- Milestone: actual shipment of  seeds

Output of pilot: information to support IPPC.  Show that multilateral acceptance is possible

## Systems Approach Video

https://youtu.be/qwm0w2mRRfc

## ISF Regulated Pest List Database

https://pestlist.worldseed.org/public/pestlist.jsp

# Seed is Life