



SHC activities 2022-2023

Presenter: Ruud Barnhoorn (Naktuinbouw)
Location: Verona (IT)
Date: 30 May 2023

- Members resigned:



Valérie Grimault (FR) Chair



Mark Buimer (NL)

- New Members:



Shih Min Su (TW)



Luciana Ferrand (Arg)

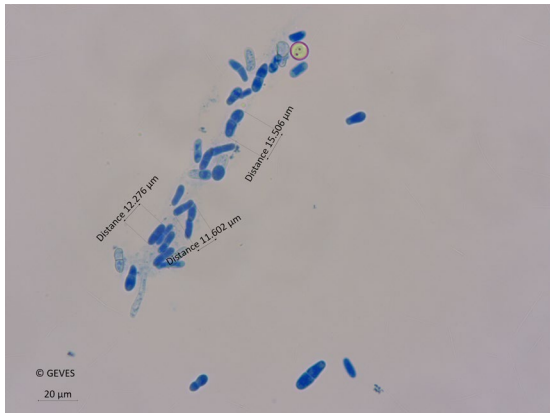


Dr. Nagamani Sandra (IND)

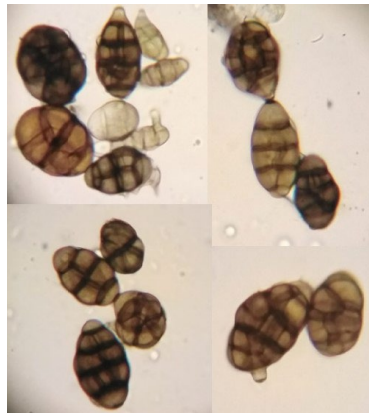
| | | Country | Active since |
|----|---------------------------------|-----------------|--------------|
| 1 | Chair: Ruud Barnhoorn | The Netherlands | 2019 |
| 2 | Ilaria Alberti | Italy | |
| 3 | Rouke Bakker | New Zealand | |
| 4 | Gary Munkvold | United States | |
| 5 | Dorota Szopinska | Poland | |
| 6 | Rosa Piña González | Chile | 2016 |
| 7 | Xiulan Xu | China | 2017 |
| 8 | Stephan Brière | Canada | 2018 |
| 9 | Isabelle Serandat | France | 2019 |
| 10 | Marian Mc Ewan | United Kingdom | 2019 |
| 11 | Kohei Osaki | Japan | 2019 |
| 12 | Dr Mahesh | India | 2021 |
| 13 | NEW: Luciana Ferrand | Argentina | 2022 |
| 14 | NEW: Dr. Nagamani Sandra | India | 2023 |
| 15 | NEW: Shih-Min Su | Taiwan | 2023 |

In search for a vice-chair to complete the committee!

- **Harmonisation effort for all SH methods:**
 - Specify the rules on sample size to be tested per test.
 - Adapt the description of dilutions and recording CFU for bacteria test protocols
- **Update of protocols by adding high quality pictures**



Conidia of Ascochyta pisi



Conidia of Alternaria radicina



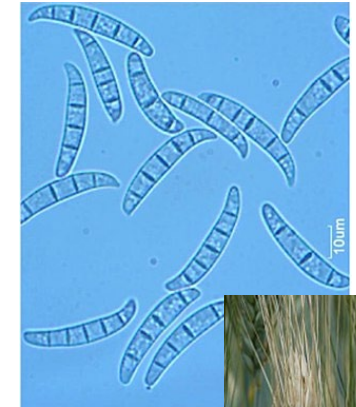
Parastagonospora nodorum

- **Revision of all the chapters of the seed health handbook**
 - New version to be published by the end of the year

- **Projects under progress:**

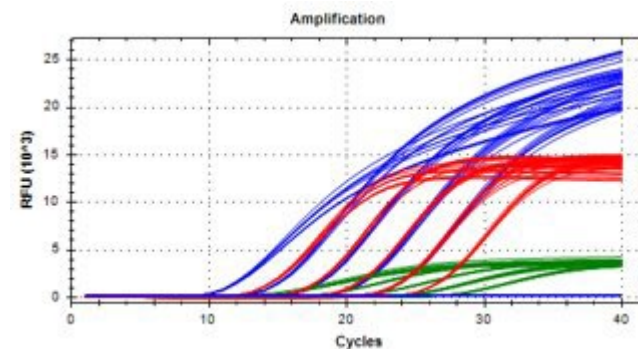
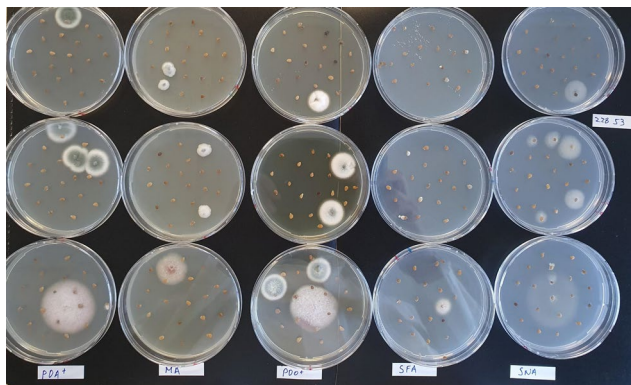
- ***Fusarium* (11 species)/cereals, NIBIO and Kimen Seed Lab:**

- Method: media grow-out -> suspect analysis via morphological identification
- Analytical Specificity, Selectivity, Analytical Sensitivity and Robustness completed
- Comparative test currently running -samples prepared and shared with participants



- ***Fusarium oxysporum* f.sp. *lycopersici* in tomato, Naktuinbouw:**

- Method: media grow-out -> suspect qPCR -> pathogenicity assay
- Analytical Specificity, Selectivity, Analytical Sensitivity and Robustness completed
- Comparative Test to be organized (In search of CT participants)



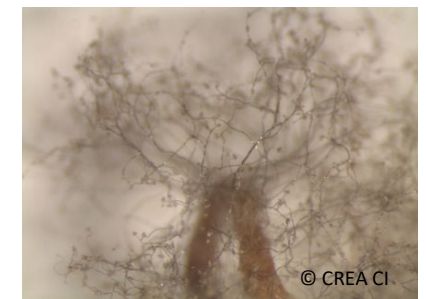
- **Projects under progress:**

- ***Ascochyta rabiei* on chickpea, GEVES:**

- Method: medium -> morphological identification-> pathogenicity assay (optional)
- Analytical Specificity, Selectivity, Analytical Sensitivity and Robustness completed
- Comparative test to be shipped to participants in July

- **Gray mold on hemp (*Botrytis cinerea*), CREA:**

- Method: Seed blotter -> suspect analysis via morphological identification
- Analytical Specificity, Selectivity, Analytical Sensitivity and Robustness completed
- Comparative test sample preparation in progress, homogeneity of the infected seed batches to be determined.



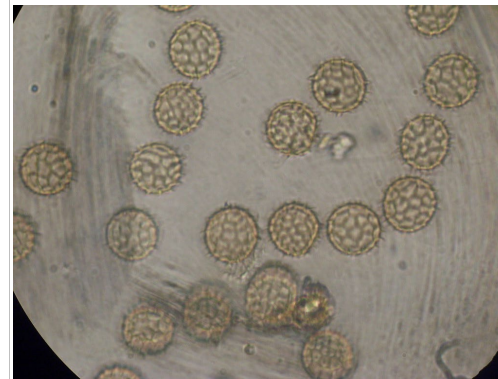
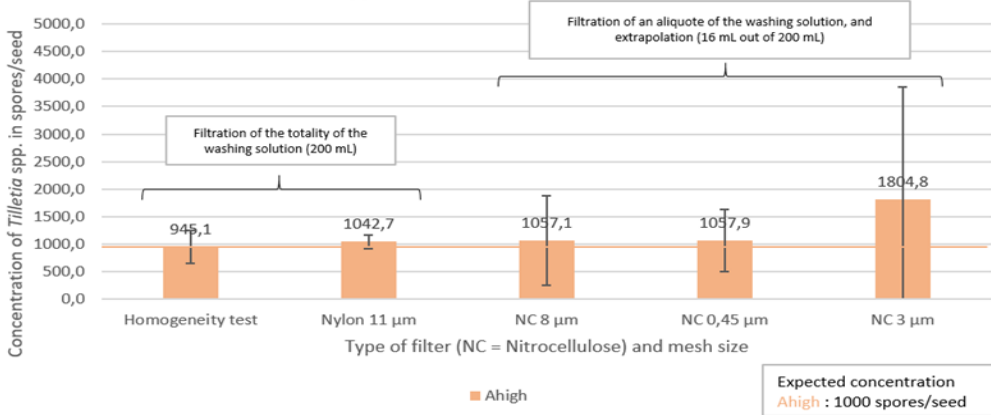
Method development and validation

• Projects under progress:

• *Tilletia* species/wheat, GEVES:

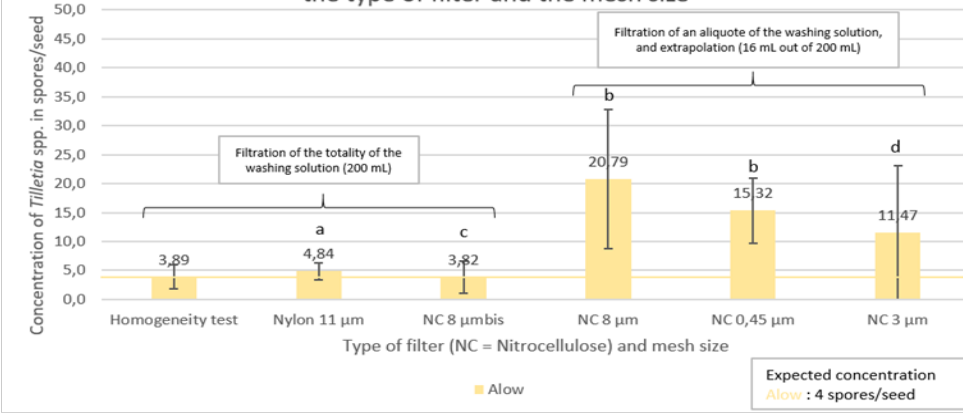
- Method: Seed soak -> extract filtration -> Teliospore count by microscopy
- Protocol optimisation ongoing, focus on filter use performance.

Concentration of *Tilletia* spp. in spores/seed observed depending on the type of filter and the mesh size



Tilletia carries, teliospores
Hyacint Mtz

Concentration of *Tilletia* spp. in spores/seed observed depending on the type of filter and the mesh size



→ High heterogeneity with NC filters

→ Need many NC filters if all washing solution need to be read

Overestimation : only an aliquot of the washing solution was filtered and induced extrapolations

• Various detection thresholds recommended for *Tilletia* in different countries

- France : 0 spores/seeds
- Germany : 20 spores/seeds
- Austria : 10 spores/seeds

Proposition :

Validation of performance criteria on several modalities/options (shaking, filtration and centrifugation steps)

Once the method is validated, give the laboratories the freedom to choose

- Projects under progress:

- 6. *Pseudomonas syringae* pv. *glycinea*/soybean, NHSS

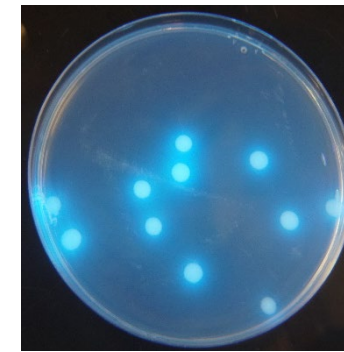
- Method:

| Fluorescence | oxydase | esculin | Levan | PT |
|-------------------------|---------|---------|-------|--|
| blue or no fluorescence | - | - | + | By soaking of seeds in a suspension of the suspect isolate and sowing in potting soil : Typical greasy lesions at the puncture site after 6–10 days |

- Validation plan reviewed and approved
- Analytical specificity and sensitivity in progress
- In search of CT participants



Pseudomonas savastanoi pv. *glycinea* on LBCA






Fluorescence screening for *Pseudomonas savastanoi* pv. *glycinea*



Seed inoculation greasy lesion

Proficiency tests



- **Definition of gaps between basic PTs' organization and Seed Health PTs**
 - **SOP to better harmonize between PTs and with PTCOM has been executed**
 - Result is that PT's are so different in execution compared to the guidelines set by the PTCOM that harmonisation is not possible.
 - SHC to review it's PT guidelines (2023-2024)
- **PT's completed**
 - *Microdochium nivale* and *M. majus* on *Triticum* spp. (7-022) 9 labs 
 - *Phomopsis* complex on *Glycine max* (soybean) seeds (7-016) 17 labs 
 - *Pseudomonas syringae* pv. *lisi* in *Pisum sativum* (pea) seeds (7-029) 6 labs 
- **Planned PT's:**
 - *Xanthomonas hortorum* pv. *carotae* in *Daucus carota* (carrot) seeds (7-020)
 - *Parastagonospora nodorum* in *Triticum aestivum* subsp. *aestivum* (wheat) seeds (7-014)
 - *Acidovorax valerianellae* in *Valerianella locusta* (corn salad) seeds (7-030)

Special project: ISTA Reference Pest List



ISTA Reference Pest List – *current version (Ver. 9, July 2022)*



Free tool online
(ISTA website)



Infographics: ISTA

23 hosts ■ 333 seed-borne pests ■ 146 “seed pathway” ■ 558 scientific references

- **ISTA Reference Pest List project (extension 2023-2024) granted**
 - **Plant species to be included:**

plant group I



- Garlic (*Allium sativum*),
- Amaranth (*Amaranthus viridis*)
- Wax gourd (*Benincasa hispida*)
- Nyger (*Guizotia abyssinica*)
- Roselle (*Hibiscus sabdariffa*)
- Drumstick tree (*Moringa oleifera*)

plant group II



species grown under (sub)tropical climates

- Citrus fruits (*Citrus* spp.)
- Coffee tree (*Coffea* spp.)
- Papaya (*Carica papaya*)
- Pomegranate (*Punica granatum*)

plant group III

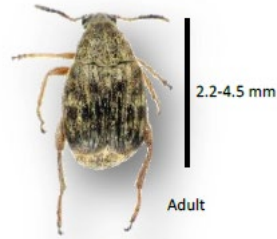


- Finger millet (*Eleusine coracana*)
- Proso millet (*Panicum miliaceum*)
- Little millet (*Panicum sumatrense*)
- Sonoran millet (*Panicum sonorum*)
- Pearl millet (*Pennisetum glaucum*)
- Foxtail millet (*Setaria italica*)

Special projects: Insect detection in seeds

Exploration of methods for detecting insects in seed lots

- ISTA funded project 2021-2023
- SHC + ATC collaboration
- Aim = Effective forms (larvae)



What: Meeting on insect detection in seeds

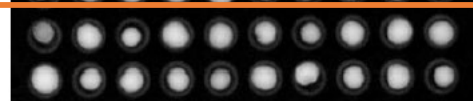
When: 31 May 2023

Where: Main venue / Mascagni

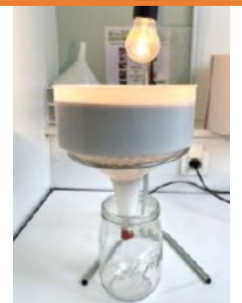
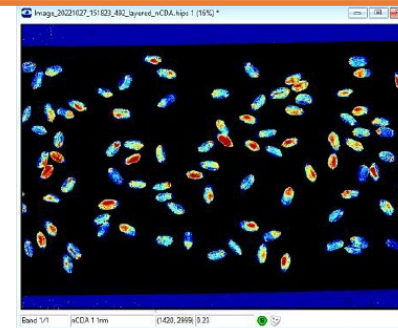
Time: 16:30 – 17:30

Test methods

- Seed sampling
- Biological
- Microscopy
- X-ray
- Insect respiration
- Surface imaging (MSI)
- Barcoding

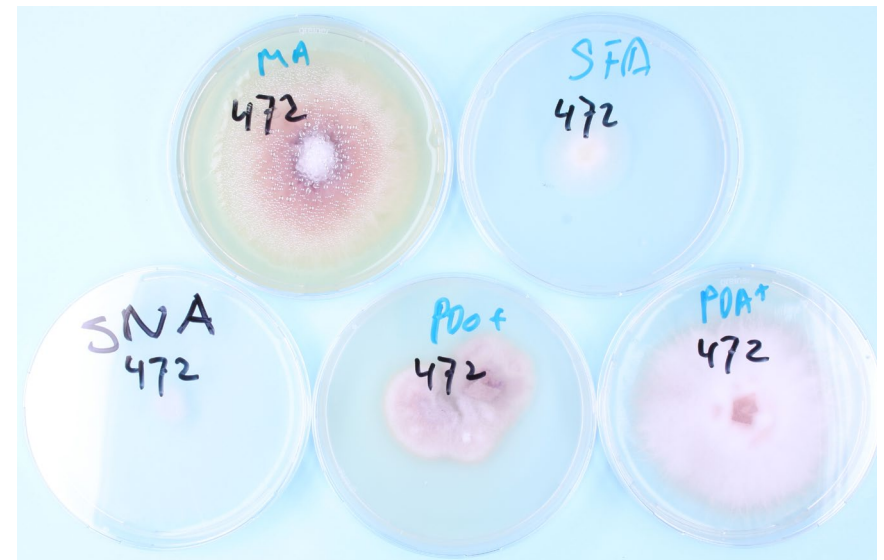


the Wheat weevil



Special projects: New

- Lab based pathogen identification image collection project
 - Project lead: Nicole Calliou, SGS, Canada/Nicolas Denancé, Geves, France
 - Aim: Creation of a Seed health pathogen image collection with intended use to
 - Serve as a training tool for next generation seed pathologists
 1. Serve as a reference illustration tool for seed-borne pests detected by seed health tests
 2. Visualization of the different characters seed-borne pathogens can have under different growth conditions such as:
 - Type of growth media
 - Incubation time
 - Incubation temperature
 - Type of light
 - Etc.



- Input from SHC:
 - Validation of detection method *Tilletia* sp.
Geoffrey Orgeur
 - ISTA Pest list update
Nicolas Denancé
- Several posters presented

• ISPP Webinar 2023



Webinar
“CHEMICAL TREATMENTS TO MANAGE SEEDBORNE PATHOGENS”
21 April 2023, 4 pm GMT+2 

ORGANISERS: ISPP Seed Pathology Committee, in cooperation with ISTA, ISF and AIPP

WELCOME ADDRESS
Gianfranco Romanazzi – Chair of ISPP Seed Pathology Committee
Rose Souza Richards – Seed Health Manager of International Seed Federation
Ruud Barnhorn – Vice Chair of ISTA Seed Health Committee

TALKS
Michael Klueken – Bayer
Synthetic pesticides for management of seedborne pathogens
Jay-Ram Lamichhane – INRAe
Chemical seed treatment of field crops: is it worth it?

DISCUSSION

To join the webinar and ask questions, the registration link is <https://us06web.zoom.us/join/register/tZ0lcOqrqz0iGtCBEtM-SjXs6kspgJczDM9u>. The webinar will be also delivered on the page (2) ISPP Seed Pathology Committee | Facebook

 ISPP Seed Pathology  ISPP Seed Pathology  ISPP Seed Pathology  ispp_seedpathology  ISPP Seed Pathology

Expected: Workshop (*Leptosphaeria maculans*) and SH Seminar Canada, 2024



Thank you!



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