



# Ensuring Seed Quality by Uniformity in Seed Testing

## **Role of Seed Testing In the Future World**

**Dr. Andreas Wais**  
ISTA Secretary General  
Turku, Sep. 10, 2019





*An international, non-profit association  
of seed testing laboratories  
and individual seed professionals*

*ISTA operates under the governance  
of the governments of member countries  
and distinct economies*



# ISTA FACILITATES SEED TRADE SINCE 1924



**1876** Friedrich Nobbe published his famous Handbook of Seed Science, and the Motto of the Meeting held in Hamburg that year was “uniformity in seed testing”, later becoming the ISTA logo

**1924** 26 countries participated in the meeting held in Cambridge, and the International Seed Testing Association was founded

**1931** At the request of FIS (ISF), ISTA adopted the first ‘International Rules for Seed Testing’, as well as establishing the ISTA Certificates Scheme

**1950** The ISTA Congress was held in Washington DC, the first outside of Europe, and demonstrated that, after 13 years of interruption by World War II, ISTA was indispensable to seed business

**1995** During the ISTA Congress held in Copenhagen, ISTA Membership was opened to private laboratories and private seed companies

**1996** To ensure harmonised seed testing worldwide, ISTA initiated the Quality Assurance Programme to accredit seed testing laboratories. The first ISTA Member Laboratory was audited under the new set-up in this year

**2004** During the ISTA Congress held in Budapest, it was agreed to consider accreditation as a purely technical task, and the responsibility to give authorisation to issue ISTA International Seed Analysis Certificates was given to the ISTA Executive Committee



Photo courtesy of NIAB, UK.





# NOBBE'S QUESTIONS 150 YEARS AGO

- Is the seed sold to farmers of the desired botanical species?
- How many seeds are of the desired botanical species?
- What other botanical species can be found in the seed sold?
- Does the seed sold have the potential to produce a healthy plant?
- [https://www.youtube.com/watch?v=hK\\_wNrJu09Q](https://www.youtube.com/watch?v=hK_wNrJu09Q)



# NOBBE'S REQUIREMENTS 150 YEARS AGO



- Science-based Laboratory Testing
- Sampling is critical
- Standardised Methods for all tests needed (Rules)
- All Tests completed before seed sold to end-user
- Statistics is fundamental to Seed Testing





# ISTA OBJECTIVES

(1) develop, adopt and publish **STANDARD PROCEDURES** for **sampling and testing seeds** and promote uniform application of these procedures, for evaluation of seeds moving in international trade

(2) **PROMOTE RESEARCH** in all areas of seed science and technology





# GLOBAL MEMBERSHIP

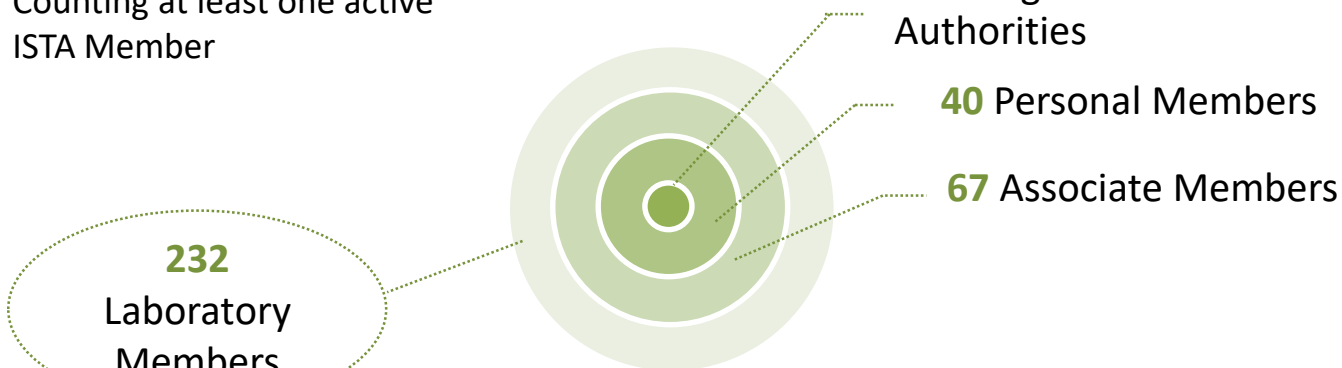
## 81 COUNTRIES

Counting at least one active  
ISTA Member

67 Designated  
Authorities

40 Personal Members

67 Associate Members



**232**  
Laboratory  
Members

**Last Accredited  
Laboratories in  
Senegal and  
Pakistan**



# ISTA STRUCTURE



## EXECUTIVE COMMITTEE 2019-2022

President

Steve Jones



Vice President

Keshavulu Kunusoth



Immediate Past President

Craig McGill



Members-at-large

Ignacio Aranciaga

Valerie Cockerell

Sylvie Ducournau

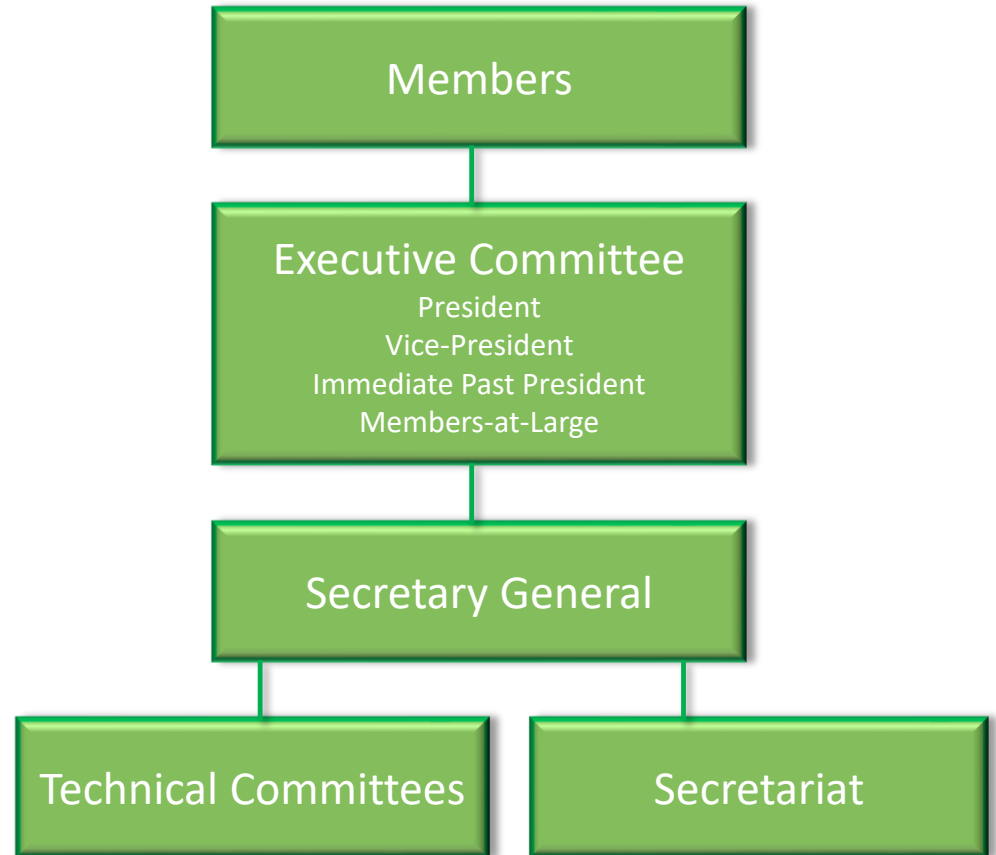
Ruel Gesmundo

Berta Killermann

Claid Mujaju

Leena Pietilä

Rita Zecchinelli







# ISTA STRUCTURE

## Government Governance

**Personal Members** may become **Designated Members** (and **Voting Members**), if nominated by their **Designated Authorities**.

**Designated Members** have passive (and if **Voting Members** also active) voting rights during ISTA Ordinary Meetings.

This means that finally the **Designated Authorities (Government Representatives)** vote on Articles, Rules, Membership Fees, Accreditation, the Executive Committee Members etc. of the Association.



# ISTA PILARS



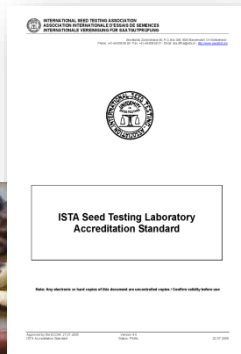
International  
Standardisation of  
Reporting Results



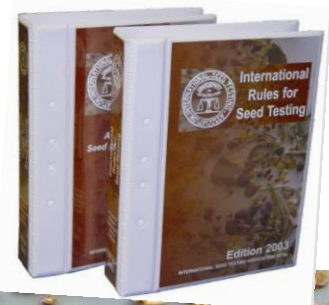
International  
Standardisation of  
Methodologies



Dissemination of  
Knowledge



International  
Standardisation of  
laboratory performance





# 20 TECHNICAL COMMITTEES

ADVANCED TECHNOLOGIES COMMITTEE  
BULKING AND SAMPLING COMMITTEE  
FLOWER SEED COMMITTEE  
FOREST TREE AND SHRUB SEED COMMITTEE  
GERMINATION COMMITTEE  
GMO COMMITTEE  
MOISTURE COMMITTEE  
NOMENCLATURE COMMITTEE  
PROFICIENCY TEST COMMITTEE  
PURITY COMMITTEE  
RULES COMMITTEE  
SEED HEALTH COMMITTEE  
STATISTICS COMMITTEE  
SEED STORAGE COMMITTEE  
TETRAZOLIUM COMMITTEE  
VARIETY COMMITTEE  
VIGOUR COMMITTEE  
EDITORIAL BOARD (SST)  
SEED SCIENCE ADVISORY GROUP  
WILD SPECIES WORKING GROUP



Involving about **270** technologists and scientists around the globe



Over **250** seed professionals receive training yearly in ISTA workshops



# PUBLICATIONS

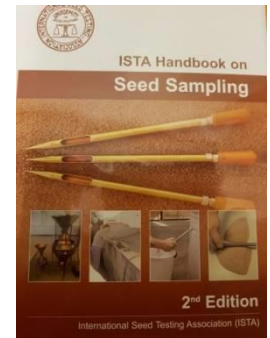


## 4 LANGUAGES

The International Rules for Seed Testing are published **online** in **English, French, German and Spanish**

## 14 HANDBOOKS

All new editions published **online**



## 2 TIMES PER YEAR

Seed Testing International (STI),  
ISTA's bi-annual news bulletin  
Published as **hard copy and online**

## 800 PAGES

Of Seed Science and  
Technology (SST) published  
**open access online**



## NEW VERSION SINCE MARCH 2019

ISTA Reference Pest List  
End 2019 more than **65 CROPS**  
Published **online (seedtest.org)**



# ACCREDITATION



1996

Introduction of the quality assurance program to accredit seed testing laboratories\*

EVERY

3

## YEARS

The frequency to which ISTA Accredited laboratories are audited, in order to obtain re-accreditation

ABOUT

50

## AUDITS

About 30 are performed by ISTA fulltime employed and about 20 by external auditors each year

144

ISTA ACCREDITED LABORATORIES WORLDWIDE



### INTERNATIONAL SEED TESTING ASSOCIATION CERTIFICATE OF ACCREDITATION

This is to certify that the ISTA Member Laboratory

is accredited to the ISTA Seed Testing Laboratory Accreditation Standard by ISTA in accordance with Article 15(c)(15) of the Articles of the International Seed Testing Association (ISTA).

The scope of accreditation includes:

Sampling  
Purity and other seed determination  
Germination  
Viability  
Verification of species and variety  
Moisture content  
Weight determination  
Seed vigour

as detailed in the accompanying appendix to this certificate.

This accreditation is valid for three years commencing September, subject to continuing compliance with ISTA requirements. During this period the accredited laboratory is authorised to issue ISTA Seed Analysis Certificates.



The certificate is only valid with the accompanying annex

\*The term seed testing laboratory also counts for only-sampling entities





# ISTA PROFICIENCY TESTS

ISTA offers the following PT's:

## Standard Proficiency Test Programme Plan 2020-2022

### Standard PT

- 3 Standard PT/a

### GMO PT

- 1 PT/a

### Seed Health PT

- 1 PT/a

### NEW: DNA PT

- 1 PT/a

Round	Species	Test round scope	Crop group	Size	Crop group
PT20-1	Phaseolus vulgaris	GER, VIG (conductivity), MOI	4	B	Pulses
PT20-2	Allium porrum	PUR, OSD, GER, TZ, TSW	6	B	Vegetables
PT20-3	Festuca pratensis	PUR, OSD, GER, OIC	1	C	Grasses
PT20-3	Felicia sp.	GER	8	-	Flowers
PT21-1	Zea mays	GER, VIG (radicle emergence), MOI	2	B	Cereals
PT21-1	Ulmus sp.	GER, TZ	7	-	Forest
PT21-2	Medicago sativa	PUR, OSD, GER, TZ, OIC, TSW	3	A	Small legumes
PT21-3	Fagopyrum esculentum	PUR, OSD, GER	5	B	Other agricultural species
PT22-1	Glycine max	GER	4	C	Pulses
PT22-2	Spinacia oleracea	PUR, OSD, GER	6	B	Vegetables
PT22-3	Lolium perenne	PUR, OSD, MOI, TZ, OIC	1	C	Grasses

Participation is free for member laboratories (mandatory for accredited laboratories depending on their scope of accreditation) and at cost for non-members.



# ISTA CERTIFICATES



## ISTA CERTIFICATES: VISAS FOR INTERNATIONAL SEED TRADING

Only ISTA-accredited laboratories are authorised to issue ISTA Certificates for seed analysis.

By reporting seed test results on ISTA Certificates, the issuing laboratory assures that the sampling and testing has been carried out in accordance with the ISTA Rules.

ISTA Certificates are accepted by many authorities and are mentioned into the Seed Act of several countries.

The ISTA Certificates are assuring that the test results are reproducible, true and represent the quality of the seed.

An **Orange International Seed Lot Certificate** is issued when both sampling from the lot and testing of the sample are carried out under the responsibility of an ISTA-accredited laboratory.



Orange for Seed Lots  
(including Sampling)

Blue for Seed Samples and  
Mixtures

About 200 000  
certificates issued  
globally every year





# THE NEXT CENTURY

- Technologies
- Timeliness
- Tests
- Tradition



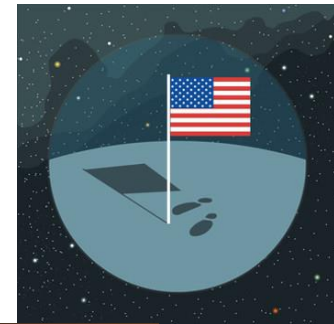


# THE NEXT CENTURY - TECHNOLOGIES



## ➤ To the Moon and Back

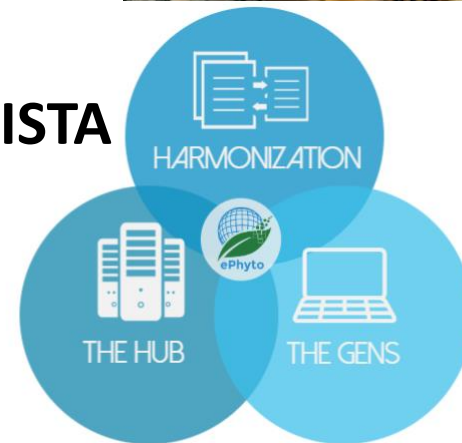
- Image Analysis or Multispectral Imaging (Purity, OSD, Germination...)
- KISS – Simple and Easy Ways (Mobile Apps)
- Trainings (from Classic Workshops to Online Trainings, Webinars, Helpline Chats...)
- New Test using New Technologies (Invisible Insect Damage inside Seeds...)



# THE NEXT CENTURY - TIMELINESS

## ➤ Time is Money and can Ruin a Season

- ePhyto sets the scene (eISTA Certificates)
- Quicker Communication within ISTA
- Quicker Adaptation of Table 2A
- Quicker Tests



# THE NEXT CENTURY - TESTS

## ➤ Alternatives and Quicker Test and Results

- **Germination:**
  - Radical Emergence
  - Electronic Conductivity
  - Bioassays
  - Viability
  - ...
- **Moisture**
- **Higher Throughput**

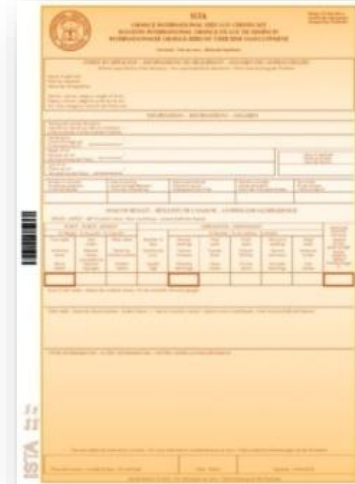


# THE NEXT CENTURY - TRADITION



## ➤ The Nobbe Requirements

- Science-bases Laboratory Testing
- Sampling is critical
- Standardised Methods for all tests needed (Rules)
- All Tests completed before seed sold to end-user
- Statistics is fundamental to Seed Testing





# ISTA INVESTS INTO NEXT CENTURY

- **Technologies**
- **Timeliness**
- **Tests**
- **Tradition**



# INTERNATIONALLY RECOGNIZED





# Thank you



And  
Follow us on





# ISTA

## ANNUAL MEETING



25-28 MAY, 2020  
VERONA, IT



# ISTA

## ANNUAL MEETING



31 MAY  
- 03 JUNE,  
2021

## CAIRO, EGYPT

