

The logo for the 7th Seed Congress of the Americas. It features a large, stylized number '7' composed of three horizontal bars in blue, white, and blue. To the right of the '7' is the word 'th' in orange, followed by 'Seed' in green, 'Congress' in green, and 'of the Americas' in green. The text is all in a bold, sans-serif font.

**7<sup>th</sup> Seed  
Congress  
of the Americas**

*Promoting Seed  
Business in  
the Americas*

*September 9 - 11, 2019  
Buenos Aires, Argentina*

**International Seed Testing Association (ISTA)  
ISTA's contribution to phytosanitary seed testing**

**Steve Jones, PhD, MRSB**  
ISTA President (2019 to 2022)  
Canadian Food Inspection Agency (CFIA)





**Steve Jones, PhD, MRSB**  
**Diagnostic Test Supervisor of Seed Certification Testing Unit**  
**Seed Science & Technology Section**  
**Saskatoon Laboratory**





*What is meant by phytosanitary seed testing?*

*How does ISTA help contribute?*

*I believe in many ways and  
I will explain why I say that....*



# Terminology on seed-associated pests

- **Pests:** bacteria, fungi, oomycetes, viruses, or nematodes that are **pathogenic** or **saprophytic** on seed
- **Seed-borne:** a pest **carried by seeds externally or internally** that may or may not be transmitted to plants growing from the seeds, causing their infestation.
- **Seed-transmitted:** a seed-borne pest that is **transmitted via seeds directly to plants** growing from these seeds, causing their infestation.
- **Seed is a pathway:** seed is a **means of entry and establishment** for pests in **new geographic areas**.

## *In summary:*

**Any bugs/diseases spread via seed but also regulated weed seeds**



International  
Plant Protection  
Convention



International  
movement of seeds



contrôle  
rences



*But what is ISTA?*

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

*And how can ISTA help?*

*ISTA operates with the governments of member  
countries and distinct economies to create  
international standard methods*



# ISTA FACILITATED SEED TRADE SINCE 1924



Photo courtesy of NIAB, UK.

## Internationally Recognised





# KEY ISTA OBJECTIVE

To develop, adopt and publish **STANDARD METHODS/PROCEDURES**  
for both the **sampling and testing of seeds**

*Then promote the uniform application of these procedures,  
for evaluation of seeds moving in international trade*

**Methods developed for use in domestic seed certification and the  
international trade of seed under OECD**

**.....but they can be equally effective for phytosanitary purposes**



# ISTA STRUCTURE



## EXECUTIVE COMMITTEE 2019-2022

President

Steve Jones CANADA

Vice President

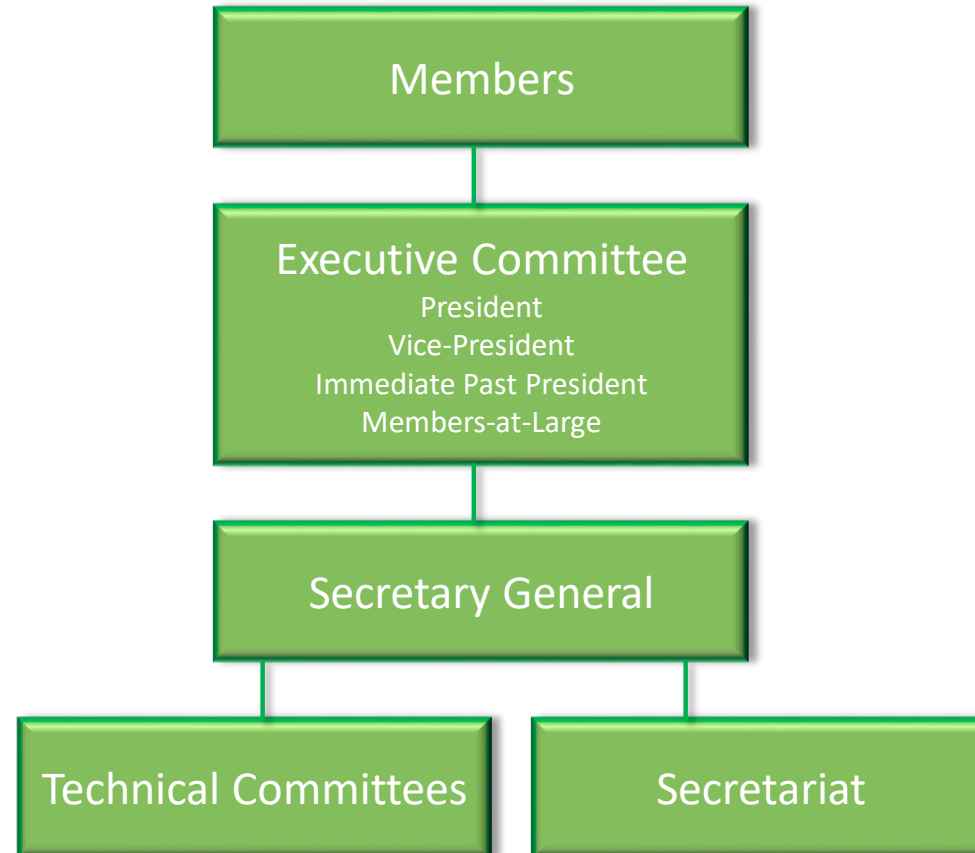
Keshavulu Kunusoth INDIA

Immediate Past President

Craig McGill NEW ZEALAND

Members-at-large

Ignacio Aranciaga	ARGENTINA
Valerie Cockerell	UNITED KINGDOM
Sylvie Ducournau	FRANCE
Ruel Gesmundo	PHILIPPINES
Berta Killermann	GERMANY
Claid Mujaju	ZIMBABWE
Leena Pietilä	FINLAND
Rita Zecchinelli	ITALY



# ISTA PILLARS



International  
Standardisation of  
Reporting Results



Dissemination of  
Knowledge



International  
Standardisation of  
Methodologies



International  
Standardisation of  
laboratory performance

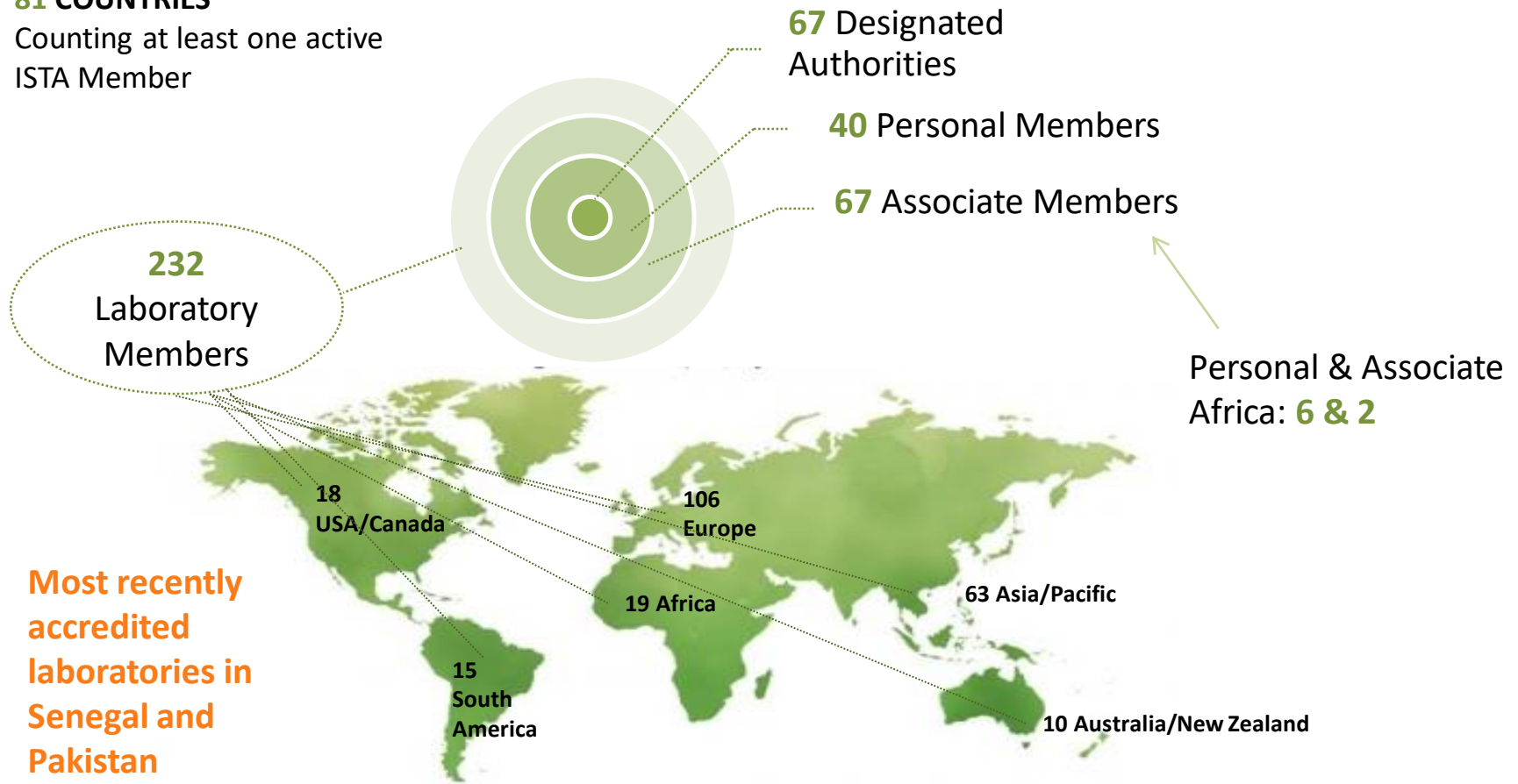


# GLOBAL MEMBERSHIP



**81 COUNTRIES**

Counting at least one active ISTA Member



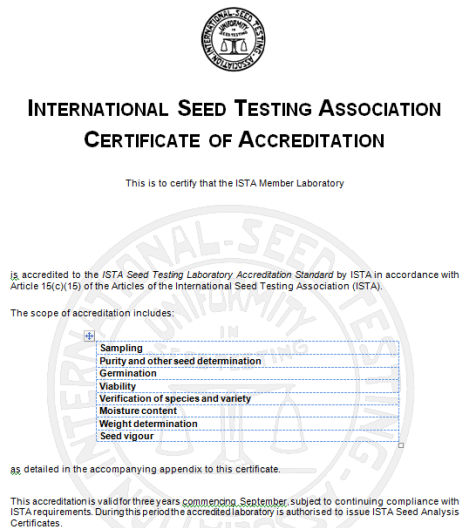
**Most recently accredited laboratories in Senegal and Pakistan**



# ACCREDITATION



In **1996** introduction of the quality assurance program to  
accredit seed testing laboratories/sampling only entities



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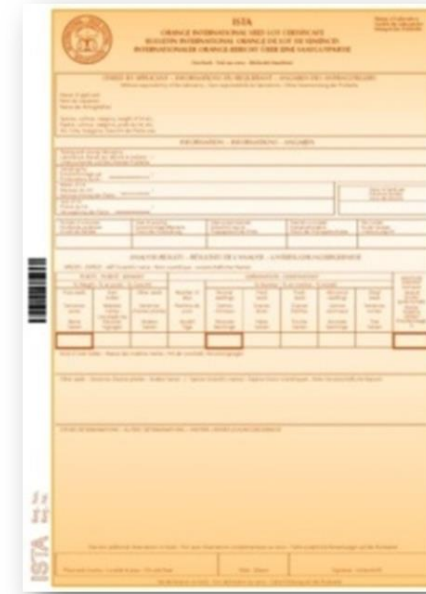
**ISTA ACCREDITED LABORATORIES WORLDWIDE**



# ISTA CERTIFICATES

**Orange (OIC) for Seed Lots**  
**Maximum lot size with sampling and testing under ISTA laboratory's control**

**Blue (BIC) for Seed Samples and Mixtures**  
**Some countries issue on grain shipments, as sampling is not required by an ISTA sampler and there is no maximum lot size**



About **200 000** certificates issued globally every year



# TESTS FOR PHYTOSANITARY PURPOSES



ISTA SEED HEALTH TESTING METHODS

METHODS FOR WEED SEED DETECTION AND IDENTIFICATION  
(CHAPTER 3 AND 4 OF ISTA RULES)

TESTS FOR NEMATODES, INERT MATTER AND INSECTS

TRAINING WORKSHOPS IN:  
SEED HEALTH, SAMPLING, ANALYTICAL PURITY AND SEED MORPHOLOGY





# 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

**PROMOTE RESEARCH AND USE SCIENCE TO  
DEVELOP VALIDATED STANDARD METHODS**



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



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



# PUBLICATIONS



## Four OFFICIAL LANGUAGES

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

## 14 HANDBOOKS

All new editions published **online**



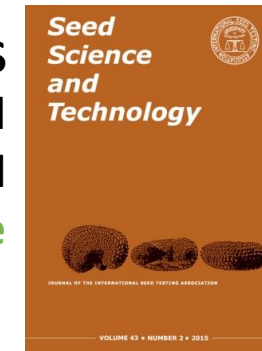
## Two TIMES PER YEAR

Seed Testing International (STI)  
ISTA'S news bulletin

Published as **hard copy and online**  
([seedtest.org](http://seedtest.org))

## 800 PAGES

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



## NEW VERSION MARCH 2019

ISTA Reference Pest List **10 CROPS**

By end of 2019 more crops  
Published **online** ([seedtest.org](http://seedtest.org))



# ISTA SEED HEALTH TESTING METHODS



32 METHODS ON ISTA WEBSITE FREE DOWNLOAD AND USE

INTERNATIONAL STANDARD METHOD WITH ISTA'S VOTING SYSTEM

SEVERAL DEVELOPED WITH ISF VIA ISHI

[www.seedtest.org](http://www.seedtest.org)

<https://www.seedtest.org/en/seed-health-methods-content---1--1452.html>



# DISEASES OF PHYTOSANITARY IMPORTANCE



## ISTA Reference Pest List:

*An annotated list of seed-borne  
diseases  
(curated & updated)*

**Nicolas Denancé**



# ISTA Reference Pest List: Focused on 10 agricultural crops



# ISTA Reference Pest List - Current version (v4.0)

					
cotton 	40	22	7		v1.0
sorghum 	85	46	14		v1.0
sunflower 	54	24	14		v1.0
triticale 	31	21	10		v1.0
wheat 	65	52	18		v1.0
soybean 	85	36	13		v2.0
rice 	47	55	12		v3.0
barley 	55	18	11		v4.0
oat 	31	23	5		Updates due
Rapeseed 					September 2019

	Done
	493 articles
	297 pests
	9 crops

For 104 pests:  
 “seed is a pathway”  
 = High risk of  
 dissemination through  
 seed lots

Updates due  
 September 2019

# WEED SEEDS

## Seed Identification



### CROP SPECIES UNDER ANALYSIS AND OTHER SEEDS

A fundamental skill for ISTA laboratories

Part of the %Purity and Other Seed Determination tests  
(Chapters 3 and 4)

Identification to species level for difficult species may not be required in seed certification e.g. *Amaranthus* spp.

But at the request of the customer and if the laboratory has the skilled people it can be done and reported on an ISTA certificate



# Canadian Prohibited Weed Seeds

## Weed Seed Order Examples



ISMA [www.idseed.org](http://www.idseed.org)

Other websites: GEVES <https://www.geves.fr/tools/i-d-seed/>

Seed Images [www.seedimages.com](http://www.seedimages.com)

GRIN <https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysimple.aspx>



# INERT MATTER

- Soil
- Sclerotia
- Ergot Bodies
- Animal Faeces

CAN ALL BE REPORTED ON AN ISTA CERTIFICATE AS A %

PART OF ISTA CHAPTER 3 THE % PURITY TEST

The number of decimal places reported is normally 1 but at the request of the applicant it can be more e.g. 0.001% soil



# NEMATODES



ISTA METHODS FOR EXAMPLE:

**7-031:**

**Filtration method for detection of *Ditylenchus dipsaci* in *Medicago sativa* (alfalfa); *D. dipsaci* and *D. gigas* in *Vicia faba* (faba bean) seed**



# INSECTS



**CAN ISTA LABS IDENTIFY INSECTS TO THE SPECIES LEVEL? NO  
BUT....**

**The presence of live or dead insects can be reported on an ISTA certificate (e.g. under Inert material: dead insect parts (0.1%))**

**Is this a future need for industry on an OIC?**





# HOW ISTA CONTRIBUTES TO PHYTOSANITARY TESTING



- Standardized Methodologies: **# ISTA RULES (GOVERNMENTAL VOTING)**
- Standardized Performance: **# ACCREDITATION PROGRAM**
- Standardized Reporting of Results: **# ISTA CERTIFICATES**
- Benchmarking of Performance: **# PROFICIENCY TESTS**
- Access to Knowledge: **# ISTA PUBLICATIONS**
- Continued Education: **# ISTA WORKSHOPS**
- Professional Networking: **# ISTA COMMITTEES & EVENTS**



# Thank you



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