GMO Committee Activity Report 2023

Enrico Noli and René Mathis

Membership

Chair: Enrico Noli (Italy) **Vice-Chair:** René Mathis (France)

GMO Committee Members:

1. Laura Bowden (United Kingdom)
2. Tajinder Grewal (Canada)
3. Andrea Jonitz (Germany)
4. Beni Kaufman (USA)
5. Jean-Louis Laffont (France)
6. Benoit Maes (Belgium)
7. Dwarkesh Parihar (India)
8. Elena Perri (Italy)
9. Kirk Remund (USA)
10. Ray Shillito (USA)
11. Ana Laura Vicario (Argentina)
12. Bruno Zaccomer (France)

ECOM liaison officer: Vanessa Sosa (Uruguay)

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Scope

- Plant biotechnology plays a growing role in agriculture worldwide having the potential to foster sustainable development through the breeding of healthier and more resilient crops

- The Adventitious Presence of GM seeds in non-GM seed lots, and the Trait Purity of GM seed lots are important aspects of seed quality

Scope

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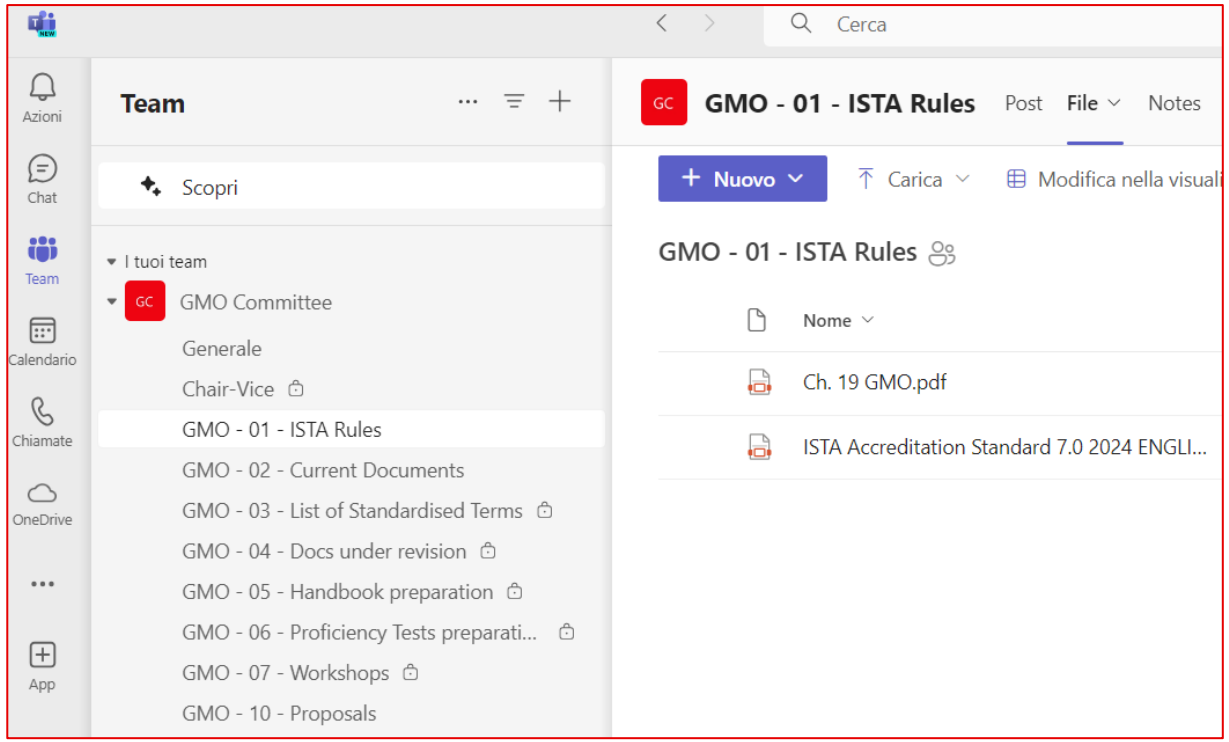
- 2001 ISTA Position Paper on GMO Testing
- 2002 First ISTA PT on GMO
- 2005 Specified Trait Testing introduced in ISTA Rules (Chapter 8 “Variety testing”)
- 2006 First Accreditation of ISTA Labs for GMO Testing
- 2014 Novel Chapter 19 “Testing for Seeds of Genetically Modified Organisms”
- 2022 Chapter 19 thoroughly revised

Overview of the Committee

- "Constitutive" activities and Special projects
- Current re-organization of working groups and definition of responsibilities

Name	ISTA Rules (Ch.19)	Publications		List Standardized Terms	Workshops & Seminars	ISTA GMO Website	Proficiency Tests			Special Projects					
		HandBook	On activity of Committee				Administr. (Expert Group)	Seed procure-ment	Possible collaboration with SCST	Statistical tools for GMO Testing	ATC Contact	Revision og PDE for TP	Standardise reporting on ISTA certificates	Non-GM assays for facilitating PDE	Genome Edited crops
				find Leader	find Leader	find Leader	new members?		continue?			find Leader			
Enrico Noli	L	L		TL	TL	TL	m							L	
René Mathis	m	L		m											
Ana Laura Vicario	m	m		m							L				
Andrea Jonitz	m			m											
Bruno Zaccomer	m	m		m	m	m		m				L	L		
Dwarkesh Parihar	m														
Elena Perri	m	m		m									L		
Jean-Louis Laffont	m	m			m	m	m			C					
Kirk Remund	m	m			m	m				m					
Ray Shillito	m	m													
Tajinder Grewal	m			m											
Laura Bowden	m	m													
Benoit Maes	m							L							
Beni Kaufman	m	m												m	

Overview of the Committee



Organisation of the committee webspace

- Improve communication
- Facilitate activity of working groups

List of Standardised Terms

Species
Objective 1
Objective 2
Technologies
Assay type
Unit of observation
Traits
Proteins
Coding Sequences
Promoters
Terminators
Constructs
Events (UID/EN)
Enhancers
Introns
Leaders
Regulatories
Transit peptides
Vector fragments

- Make more uniform and transparent the “Scope of accreditation” of laboratories on the ISTA website
- Be of guidance to Auditors in evaluating applications and assessing data supporting accreditation
- Facilitate uniformity in the issuing of ISTA certificates with GMO testing results
- **Now available on ISTA website (GMO page)**
- **It needs maintenance!**

Improved GMO SoA at the website

(example from one GM-accredited lab)

Testing for genetically modified organisms (GMO)

- GMO: Glycine max / PCR
- GMO: Glycine max / Rt-PCR
- GMO: Zea mays / Rt-PCR
- GMO: Zea mays / Lateral flow strip
- GMO: Zea mays / PCR

previous version

Testing for genetically modified organisms (GMO)

- GMO: Zea mays, Adventitious Presence, rtPCR, Qualitative, Seed bulk(s) or groups(s), SYN-IR162-4
- GMO: Glycine max, Adventitious Presence, rtPCR, Qualitative, Seed bulk(s) or groups(s), MON-89788-1
- GMO: Glycine max, Adventitious Presence, rtPCR, Qualitative, Seed bulk(s) or groups(s), MON-877Ø8-9
- GMO: Zea mays, Adventitious Presence, rtPCR, Qualitative, Seed bulk(s) or groups(s), MON-ØØ6Ø3-6
- GMO: Zea mays, Adventitious Presence, rtPCR, Qualitative, Seed bulk(s) or groups(s), MON-89Ø34-3
- GMO: Zea mays, Adventitious Presence, Lateral Flow Strip (LFS), Qualitative, Seed bulk(s) or groups(s), Cry3Bb1
- GMO: Zea mays, Adventitious Presence, Lateral Flow Strip (LFS), Qualitative, Seed bulk(s) or groups(s), Cry34Ab1
- GMO: Zea mays, Adventitious Presence, Lateral Flow Strip (LFS), Qualitative, Seed bulk(s) or groups(s), CP4 EPSPS
- GMO: Glycine max, Adventitious Presence, rtPCR, Qualitative, Seed bulk(s) or groups(s), MON-877Ø1-2

current version

Document revision

- PT-SOP-22 GMO PT seed check and sample preparation
- Acc-D-05A Performance Data Evaluation for the assessment of presence and estimation of level of seed with specified traits in seed lots (ver 3.0)
- Acc-D-05 Performance Data Evaluation for Specified Trait Purity (under way)

Workshops

- **GMO Testing: Statistical aspects and implementation of the Performance-Based Approach**

  2-3 June 2023 at CREA, Tavazzano (LO) Italy

  Topics: Testing Plan Design, Reporting of results, Performance Data Evaluation, Method Validation/Verification

- Future: open for proposals, even in collaboration with other Committees (e.g. Variety)

Proficiency Tests

- PTs on GMO with seeds are essential for accreditation under the PBA
- Not running at prescribed frequency due to organizational and international movement issues (basically phytosanitary aspects or issues inherent to GMO)

- Close collaboration of GMO Committee, ISTA Secretariat and Industry
- Major role of Preparing Laboratory for preliminary assessment of country-specific requirements and control of necessary documentation (phytos, import permits, etc.)
- Searching for new Preparing Laboratory for PT 24 (should be *Zea mays*)

- Evaluate additional solutions to increase PT frequency: use of devitalized seeds, flours, non-GM materials

GMO Testing Handbook

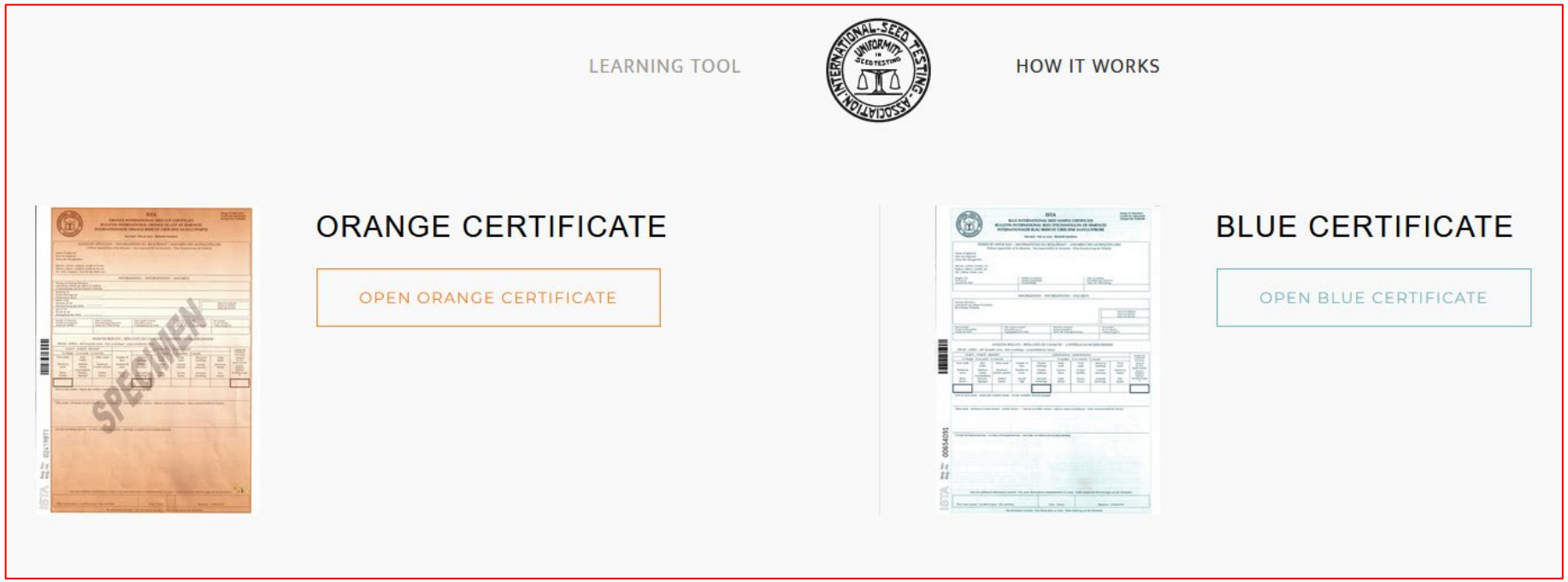
- No significant progress made in the past year on this project due to other priorities
- Still work to be done in some Sections
- “New” technologies should be included (Digital PCR, NGS, KASP, etc.)
- New committee members have volunteered
- External experts will be invited to contribute on specific topics (in working groups)

- Hopefully work will be facilitated by document sharing in common webspace

Future projects

- **Guidance to labs for reporting of GMO test results on ISTA certificates**

  Implementation of the online tool on the ISTA web site also for GMO

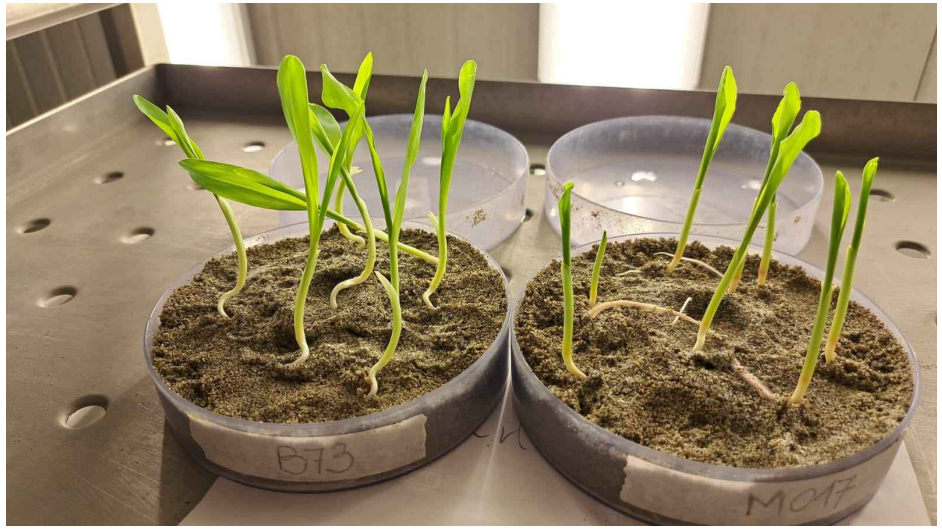


Future projects

- **Development of non-GM assays for facilitating PDE**

  For gaining GMO accreditation labs must demonstrate their competence in analyzing GM-spiked seed samples, but GM seeds are often unavailable in many countries

  The availability of a method analogous to current GMO detection methods, but designed to detect a common non-GM sequence, could facilitate this task



Future projects

- **Genome-edited (or NGT) crops**


ISTA

Annual Meeting 2023
Verona, Italy

ISTA testing on NGT plants

Enrico Noli
ISTA GMO Committee - University of Bologna

ISTA Seminar - May 29
From Biodiversity to Diversification: resources, tools and technologies to meet new challenges

- In different jurisdictions NGT plants are viewed differently regarding being GMO or not
- Some products are unanimously considered as GMO
- NGTs and GMOs are products with specified traits
- The testing for traits, technically, is independent on their legal status and also on their nature
- The current ISTA approach to GMO/specified trait testing is in principle applicable also to NGT seeds
- Testing for traits produced by conventional techniques is currently in the scope of Variety TCom. A collaboration between the two committees should be initiated

Acknowledgments

We thank for their collaboration

- Nadine Ettel, TCOM Manager
- Branislava Opra, Accreditation Department
- Vanessa Sosa, ECOM Liaison Officer

ISTA ANNUAL MEETING 2024
01-04 JULY
CAMBRIDGE, UNITED KINGDOM

Thank you