



International Seed Testing Association

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Activity report of the International Seed Testing Association (ISTA) Committees 2019

This yearly Activity Report was prepared by the Technical Committees, the Executive Committee, and the Secretariat of the Association.

The document contains the reports of the Executive Committee, the Technical Committees and of the Secretary General and includes the financial statements of the International Seed Testing Association for 2019, the budget for 2019 and preliminary budget for 2020.

This document is submitted to all ISTA Designated Authorities, ISTA Members and ISTA Observer Organisations for information two months prior to the ISTA Ordinary General Meeting 2020.

The Activity Report was endorsed by the Executive Committee for submission to the ISTA Ordinary General Meeting 2020, to be held May 28, 2020, for acceptance by the nominated ISTA Designated Members voting on behalf of their respective Governments.

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A. Report of the Executive Committee (ECOM) 2019

1. Composition of the Executive Committee

This report has been prepared by members of the Executive Committee (ECOM) with specific input from Chairs of the ECOM Working Groups (WGs), for the period 1 January 2019 to 31 December 2019. Details from the February 2020 ECOM meeting are not included but will be reported at the 2020 annual ISTA meeting.

The Executive Committee 2019-2020 is composed of:

Officers:

Steve Jones (President)	Canada
Keshavulu Kunusoth (Vice President)	India

Members-at-large:

Craig McGill (Immediate Past President)	New Zealand
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

Ex-Officio member: Attilio Lovato (ISTA Honorary President), Italy

This is the first report for the 2019-2022 Executive Committee, elected at the Ordinary General Meeting in July 2019, Hyderabad, India. Many thanks to Joël Léchappe who left the ECOM in July 2019 at the end of his term as the first Immediate Past President of ISTA. At the meeting in Hyderabad Joël was made an Honorary Life Member of ISTA in recognition of his outstanding contribution to ISTA over the years. Thanks also go to Masatoshi Sato (Japan) and Mable Simwanza (Zambia) who retired from the ECOM in 2019, both had been excellent ambassadors for ISTA and advocates for their regions of the world.

Welcome to Sylvie Ducournau (France), Ruel Gesmundo (Philippines) and Claid Mujaju (Zimbabwe) who joined the ECOM in 2019. The first meeting of the new ECOM was 4 July 2019 and work continued by email and conference calls until the ECOM business meeting held in Bologna 10-14 February, 2020.

The work of the Executive Committee is guided by the 2019-2022 ISTA Strategy reviewed and voted on by the membership at the Hyderabad meeting. Implementation of the strategy is a key goal of the Association and within the Executive Committee implementation is achieved through input from the ECOM working groups. The role of the working groups is to propose solutions on specific topics and where appropriate develop policy for discussion and decision by the Executive Committee. The ISTA President is a member of all working groups.

The working groups established for the 2019-2022 triennium (working group Chair in brackets) are: Accreditation (Rita Zecchinelli), the Articles and By-Laws of the Association (Keshavulu Kunusoth), Designated Authority (Craig McGill), Events (Berta Killermann), International Relations (Craig McGill), Marketing and Publications (Berta Killermann), Science and Technology Working Group (Leena Pietilä), Seed Health (Valerie Cockerell), Technical Committees (Valerie Cockerell), Vegetable Seeds Industry (Bert Killermann). See sections 3.1 to 3.11 for reports from the Working Groups.

2. Meetings of the Executive Committee

The February 2019 ECOM meeting was hosted by Berta Killermann in Freising, Germany and included a meeting of the ISTA Vegetable Seed Industry Working Group.

There was also a joint ECOM meeting with the technical committee Chairs and Vice-Chairs. The meeting looked at long-range planning, needs of technical committees, including the ideal structure and means of operation for the ISTA Technical Committees (TCOMs).

The ECOM meeting reviewed the 100 000 CHF Special Project Fund applications, evaluated and reviewed the Proficiency Test Programme, updated the ISTA document "ISTA Information Paper on DNA Methods for Variety Testing", finalised planning for the 2019 Congress, approval of Rules proposals, discussion on succession for TCOM Committee Chairs, and approval of the locations for future ISTA meetings. The strategic plan of ISTA was reviewed in preparation for discussion and approval by the membership at the OGM in 2019.

ISTA is looking to focus and support the work of the Technical Committees, as well as expanding ISTA's marketing efforts, international representation and strengthening the relationship with the ISTA Designated Authorities and other seed sector organisations.

The ECOM meeting on 4 July 2019 was the first meeting of the new ECOM for 2019 to 2022 and was held in Hyderabad, India. The new ISTA President Steve Jones, the new Immediate Past President (Craig McGill) and returning ECOM members, outlined to the new ECOM members how the ECOM works and communicates. Membership of ECOM Working Groups and TCOM liaisons officers were reviewed and assigned, plans for the Verona annual meeting and other business decisions were made. The date and location of the February ECOM meeting was agreed.

3. Activities of the Executive Committee Working Groups

The Executive Committee working groups have worked on the following:

3.1 Accreditation Working Group

Members until 3 July 2019: Rita Zecchinelli (Chair), Berta Killermann, Valerie Cockerell, Joël Léchappe, Craig McGill, Masatoshi Sato, Florina Palada

Members from 3 July 2019: Rita Zecchinelli (Chair), Berta Killermann, Valerie Cockerell, Sylvie Ducournau, Florina Palada, Steve Jones.

Activities in 2019

The main task of the ECOM Accreditation Working Group (AWG) is to assist and support the ISTA Accreditation and Technical Department (ATD) in the accreditation related issues.

ISTA auditors

In 2019 the AWG has contributed to the selection process of a new system auditor to be employed at the Secretariat. This process is ongoing.

The AWG participated in the preparation of the workshops organized by the Accreditation Department, in cooperation with two Italian Laboratories (IT01 and IT03) and addressed to the ISTA auditors on DNA-based methods for variety testing (it took place in Bologna, Italy, in March 2019). The AWG also supported the

preparation of a second workshop for the ISTA auditors that will take place in Poland (PL05) in March 2020. It will be hosted by the Polish laboratory in Poznan and it will focus on topics relevant to both the system and technical elements of the ISTA audit.

Two quality assurance workshops for beginners were organised, one in Kosovo and one in India. In particular the first one was supported by the AWG.

The WG cooperated with ATD in strengthening the group of ISTA auditors. In 2019 new candidates were on training, both as auditors and as experts to be appointed to support the ISTA auditors.

Accreditation

Accreditation of laboratories, termination, suspension, reinstatement of accreditation. The WG has been cooperating with the ATD in the framework of the accreditation process of new laboratories and in discussions concerning the status of accredited laboratories. This was accomplished evaluating documents and performance results received from laboratories as well as drafting communications and reports.

Review of quality documentation

Reviewing and updating documents is a continuous ongoing process. In 2019 there was an intense discussion within AWG and ATD aimed at the revision of a new version of the ISTA Accreditation Standard for Seed Testing and Seed Sampling. It will be released in 2020. New versions of some directives have been discussed and issued, including those that define the Accreditation and Accreditation Scope Policy, the policy to assign an auditor for a specific audit, the use of the ISTA logo. They are available on the ISTA website https://www.seedtest.org/en/accreditation-documents-_content---1--3492.html. Other directives and procedures are still under discussion for updating. Among these, for example, the procedure that concerns multi-site laboratories.

Cooperation with the ISTA Technical Committees

The WG and ATD often had reasons to contact the ISTA TCOMs. For example, to clarify specific issues arising during audits or for clarifications relating to the ISTA Rules. The good collaboration and communication with the ISTA TCOMs are to be commended.

Proficiency Tests

A good collaboration has also been achieved with the Proficiency Test Committee and with the other TCOMs organizing Proficiency Tests. As agreed during joint meetings of the TCOMs Chairs and the Executive Committee, the project is to bring together the different Proficiency Tests under the same scheme.

Review of the audit system

The study is going on. Although the project is complex and it is not easy to estimate its effects, this should lead to establishing "categories" of laboratories, based on the scope of accreditation. The intention is to differentiate the duration and cost of the audit on this basis.

Special projects

The AWG has also supported special projects, such as the revision of the checklists used by auditors in different types of audits and the interactive ISTA Certificates, as a tool for the laboratory members.

3.2 The Articles and By-Laws of the Association Working Group

Members until 3 July 2019: Steve Jones (Chair), Craig McGill, Andreas Wais

Members from 3 July 2019: Keshavulu Kunosoth (Chair), Craig McGill, Andreas Wais
Steve Jones

The ISTA Articles Working Group developed two Articles change proposals that were approved by the membership at the 2019 meeting. The first removed the category of Industry Members and the second revised the time for publishing the minutes of the OGM to be a minimum of two months before the next Ordinary General Meeting.

An Articles change proposal is being prepared for the May 2020. The proposal will be distributed to the membership ready for voting.

3.3 Designated Authorities Working Group

Members until 3 July 2019: Joël Léchappé (Chair), Keshavulu Kunusoth, Craig McGill, Mable Simwanza, Grethe Tarp, Rita Zecchinelli, Andreas Wais

Members from 3 July 2019: Craig McGill (Chair), Keshavulu Kunusoth, Rita Zecchinelli, Leena Pietilä, Ruel Gesmundo, Berta Killermann, Sylvie Ducournau, Valerie Cockerell, Ignacio Aranciaga, Claid Mujaju, Andreas Wais, Steve Jones

The ISTA Designated Authorities, through their voting members, are the highest decision-making body in the Association. The ISTA Designated Authorities make a key contribution to defining the role and input of ISTA into the seed sector nationally and internationally. The main focus of the working group is on strengthening interaction between ISTA and its Designated Authorities. This is in close collaboration with the Secretary General and ECOM members, who meet with the Designated Authorities individually when visiting countries which have an ISTA Designated Authority. The working group prepared and coordinated a meeting with representatives of the Designated Authorities during the Congress in Hyderabad, India. Representatives from 24 ISTA Designated Authorities attended the meeting in Hyderabad.

The main topic discussed at the meeting was how to attract new and early career people into ISTA. A focus should be attracting new and early career people from the ISTA laboratories into the Association rather than just managers. Ways to attract new and early career people could include better use of electronic communication; re-badging the Technical Committees, who some see these as old-fashioned; defining small achievable steps and delivering on them, as well as making new and early career people more visible in ISTA. The Executive Committee will discuss these suggestions at its meeting in February 2020.

Other topics discussed were the nomination of the Designated Voting Member prior to the Ordinary General Meeting. A letter is sent through the post to the Designated Authorities, as not all the emails for the correct ISTA contact within a Designated Authority are known. The suggestion was that an email is sent with the Designated Members copied in. The Secretariat will copy Designated Members in to allow the Designated Members to follow up with their Designated Authorities if a nomination has not been received.

A meeting with the Designated Authorities is being prepared for May 2020, during the ISTA Annual Meeting in Verona.

3.4 Events Working Group

Members until 3 July 2019: Berta Killermann (Chair), Ignacio Aranciaga, Laura Bowden, Keshavulu Kunusoth, Craig McGill, Olga Stöckli, Masatoshi Sato, Mable Simwanza, Andreas Wais

Members from 3 July 2019: Berta Killermann (Chair), Rita Zecchinelli, Keshavulu Kunusoth, Craig McGill, Olga Stöckli, Andreas Wais, Steve Jones

The Events Working Group develops the events policy for the Association for discussion and approval by the Executive Committee and supports the Secretariat in the organisation of ISTA events, in particular Annual Meetings and Congresses.

In 2019 the working group was involved in the organisation of:

- a) the 32nd ISTA Congress 2019 in Hyderabad, India, including the elaboration of a common programme, the scientific seed symposium programme and the presentation of the Technical Committee work,
- b) the ISTA Annual Meeting 2020 in Verona, Italy, including the elaboration of a common programme and the Plant Health Seminar and
- c) finalisation of the location for the 2021 Annual Meeting and 33rd ISTA Congress 2022. The locations will be Cairo, Egypt (2021) and Christchurch, New Zealand (2022).

3.5 International Relations Working Group

Members until 3 July 2019: Joël Léchappé (Chair), Keshavulu Kunusoth, Craig McGill, Andreas Wais, Mable Simwanza, Olga Stöckli, Rita Zecchinelli

Members from 3 July 2019: Craig McGill (Chair), Keshavulu Kunusoth, Claid Mujaju, Ruel Gesmundo, Olga Stöckli, Sylvie Ducournau, Andreas Wais, Steve Jones

The International Relations Working Group undertakes activities that contribute to the implementation of the ISTA Strategy 2019-2022. The International Relations Working Group develops the international relations policy for discussion and approval by the Executive Committee, coordinates the representation of ISTA in international fora and optimises ISTA's contribution to these fora. Six areas of international collaboration have been identified where ISTA needs to be present and in a few cases strengthen its participation:

- a. Regulatory Organisations including at the national level, the Designated Authorities (DA) of member countries and international organisations such as OECD, FAO, UPOV, IPPC. ISTA has regular contact with FAO and OECD. ISTA participates at OECD Meetings as an observer organisation on a regular basis and also holds a meeting at either the ISTA Secretariat or OECD headquarters annually. Since 2019 ISTA has had observer status at IPPC. A face-to-face meeting between IPPC and ISTA is planned for 2020. When travelling internationally, the ISTA Secretary General meets with the Designated Authority in the country being visited.
- b. Organisations related to the accreditation work of ISTA such as the International Laboratory Accreditation Cooperation (ILAC). As an ILAC stakeholder, ISTA participates in the annual meetings organised by ILAC and is also publishing information on ISTA activities in ILAC's news bulletin.
- c. Scientific fora and collaboration with other associations such as ISSS (International Seed Science Society). ISTA is working with Hugh Pritchard as one of the organisers for the ISSS Triennial Meeting "Seed Innovation Systems for the 21st Century" to determine ISTA's contribution and representation at the meeting.
- d. Technical collaboration with other organisations to harmonise seed testing methods worldwide such as AOSA / SCST in the United States, ISTA usually has representation at the AOSA / SCST Annual Meeting and the ABRATES Congress in Brazil. ISTA works with ISHI through ISF.
- e. Collaboration and exchange of information with the seed trade and seed industry. At the international level this is ISF and at the regional level it is with organisations such as AFSTA, APSA, ASTA and ESA. A one-on-one meeting with ISF at either the ISTA Secretariat or ISF Secretariat is also held annually. ISTA has also begun collaboration at the regional level with the Seed Association of the Americas (SAA).

f. The World Seed Partnership, a collaboration between ISF, ISTA, OECD, UPOV and WFO, provides a platform for key information on seeds and the role of each organisation in the partnership within the seed sector. The aim of the World Seed Partnership is the improvement of security of seed supply nationally and regionally. In 2019 the World Farmers Organisation became a full partner in the World Seed Partnership. A common project was started in Myanmar in 2018 and a further one is scheduled for 2019 in Nigeria.

The International Relations Working Group has identified the international fora at which ISTA should be represented in 2020. The 2020 international representation has been approved by the Executive Committee.

3.6 Marketing and Publication Working Group

Members until 3 July 2019: Berta Killermann (Chair), Ignacio Aranciaga, Craig McGill, Leena Pietilä, Masatoshi Sato, Valerie Cockerell, Steve Jones, Andreas Wais, Fabiola Rivera.

Members from 3 July 2019: Ignacio Aranciaga (Chair), Berta Killermann Olga Stöckli, Andreas Wais, Fabiola Rivera, Yoana Uzunova, Steve Jones.

The Marketing and Publication Working Group aims to develop the marketing and publication policy in the Association for discussion and approval by the Executive Committee. It also supports and assists the Secretariat with marketing initiatives.

In 2019 a diverse range of digital marketing initiatives were undertaken using social media; including LinkedIn, YouTube, Twitter as well as the ISTA website and newsletter. The LinkedIn activities have continued with more regular posts. Twitter followers have tripled with an increased level of engagement. On the YouTube channel three new videos were created. In December 2019 there were 101 subscribers to the YouTube channel.

The Marketing and Publication Working Group has taken a special interest in upgrading the website, by providing input into enhancing it visually and ensuring a more user-friendly experience for the membership and other users. It has also invested time and effort in deciding on which steps to take in the near future to further enhance the website.

Some connections and discussions, in collaboration with the International Relations working group, have been made with Latin American and Spanish authorities to determine which 2020 events in the Spanish-speaking areas of the world are the most relevant for ISTA to attend.

At the same time the Marketing and Publication Working Group has worked with the Rules Committee to ensure the 2020 Edition of the International Rules for Seed Testing is available in the four languages: English, French, German and Spanish. To promote the availability of the Spanish Rules, a new marketing campaign was approved in 2019.

3.7 Science and Technology Working Group

Members until 3 July 2019: ECOM members of the working group: Leena Pietilä (Chair), Valerie Cockerell, Keshavulu Kunusoth, Joël Léchappé, Craig McGill, Andreas Wais.

The representatives from four technical committees were invited to join to the sub-working group. The committees proposed: Bert Van Duijn (Advanced Technology), Sylvie Ducournau (Germination), Ruoqing Wang (Purity) and Ernest Allen (Rules).

Members from 3 July 2019: due to the changes in the ECOM, the following changes were made:

ECOM members of the working group: Leena Pietilä (Chair), Valerie Cockerell, Sylvie Ducournau , Craig McGill, Andreas Wais, Steve Jones. The representatives from the technical committees to the sub-group as proposed by the committees: Bert Van Duijn (Advanced Technology), David Johnston (Germination), Ruoqing Wang (Purity) and Ernest Allen (Rules).

The purpose of the Science and Technology Working Group is to develop policy and oversee science and technology within the Association. The aim is to strengthen science and technology within ISTA and to facilitate the development and implementation of new tests based on new technologies. The aim is based in ISTA strategy goal 4 (Goal: Strengthen the Science and Technology underpinning ISTA to develop innovative research to make the link between scientific developments and applications in seed sampling and testing and to allow the requirements of the seed sector to be met).

The sub-working group made a Rule proposal to make it clear that technology can be used in seed testing and to clarify how new technologies can be taken into use in seed testing. The membership voted for the proposal in the OGM 2019.

The sub-working group also gave comments to the ISTA strategy that was under preparation in the spring 2019. The comments were given especially to the goal number 4 (Strengthen the Science and Technology ...).

The sub-working group has drafted a document 'Guidance on how to proceed with new technology'. The aim is to help the seed laboratories when they consider purchasing technology new to them. The document will be added to the ISTA website.

3.8 Technical Committee Working Group

Members until 3 July 2019: Valerie Cockerell (Chair), Craig McGill, Leena Pietilä, Andreas Wais, Nadine Ettel, Andreea Militaru.

Members from 3 July 2019: Valerie Cockerell (Chair), Craig McGill, Leena Pietilä, Ruel Gesmundo, Claid Mujaju, Andreas Wais, Nadine Ettel, Andreea Militaru, Andreas Wais, Steve Jones.

The Technical Committee Working Group develops Technical Committee policy for discussion and approval by the Executive Committee. It aims to identify ways in which the technical committees can operate more effectively and identify the means needed to enable this. This group also manage the 100 000 CHF Project initiative, provide initial evaluation of the project proposals and make recommendations to the ECOM for a decision on which projects to support. The ECOM decided that from July 2019 a third Sub-Group on Training would be created to work with the TCOMs to create a new strategy for training in ISTA.

100 000 CHF projects

Three of the four applications received were approved in 2019 for funding. All three projects included the use of image analysis technologies to determine potential value to seed testing laboratories. Testing focus across the three projects is for other seed determination, purity, germination and vigour. An update from the first year of project work will be given by each project leader at the annual Meeting in Verona 2020. The call for projects to be funded in 2020 has now closed and two applications are being evaluated.

During the February 2019 meeting in Freising the Executive Committee and Technical Committee Chairs and Vice Chairs took part in a special workshop to explore options on: how we work together, approaches that allow good collaboration internally and externally, potential topics/innovations that meet the current and future needs of ISTA members. A further meeting was held in June 2020 at the congress in Hyderabad, India. The next steps agreed by all participants included: revisiting the ISTA Validation process, particularly how can we shorten the time from start of the validation process to Rules proposal; and how to promote seed testing and interactions in developing countries. The ECOM now have a new Working Group Expansion of Seed testing in Developing Countries.

Finally, a lot of good work is going on to evaluate and encourage good communications within and between Technical Committees. One successful event was held in June organised by the TCOM Functioning sub

working group. Special thanks to Nadine Ettel and Bert Van Duijn as lead organisers. A report of the meeting is published in Seed Testing International April 2020 edition.

3.9 Membership Fees Working Group

Members until 3 July 2019: Steve Jones (Chair), Craig McGill, Joël Léchappe, Andreas Wais.

Members from 3 July 2019: Keshavulu Kunusoth (Chair), Craig McGill, Rita Zecchinelli, Valerie Cockerell, Andreas Wais, Steve Jones.

The aim of the Working Group on Membership Fees is to review and propose changes to the ISTA membership fees for laboratories, sampling entities, the additional fee for an accredited laboratory, personal and associate members.

In 2019 no changes to the membership fees were amended and the 10% discount for payments completed before 31 December 2019 were maintained.

3.10 Seed Health Working Group

There were no meetings of this working group in 2019.

3.11 Vegetable Seed Industry Working Group

Berta Killermann (Chair), Merel Langens (Vice-Chair)

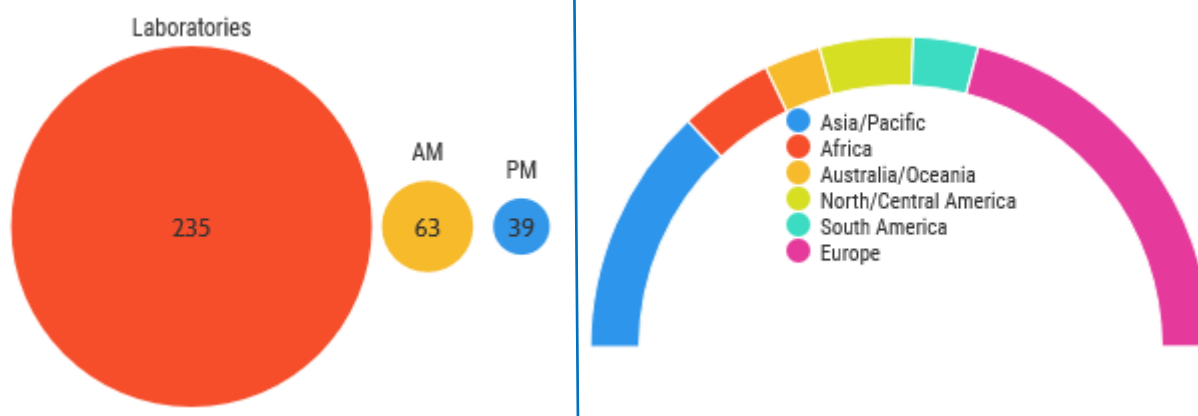
The Vegetable Seed Industry Working Group has members from the Seed Industry, ECOM, Technical Committees and ISTA Secretariat. The Working Group had a physical meeting in February 2019 and also met via conference calls. The discussions are on-going to organise an experiment together with the vegetable seed industry to increase the number of sub-lots of vegetable seeds. The possibility to reduce the weight of the working sample for the other seed determination for fruity crops is also under consideration.

B. Reports of the Secretary General, Proficiency Test Committee, Rules Committee, Editorial Board and Seed Science Advisory Group

1. ISTA Membership



ISTA Membership 2019

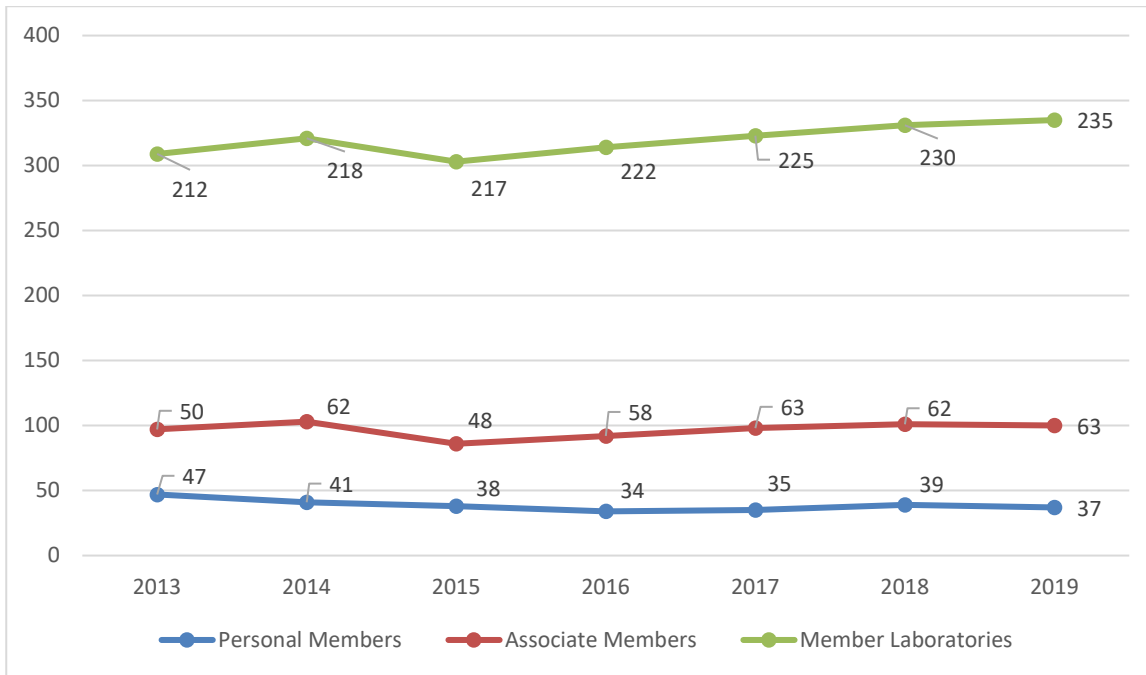


New ISTA Members 2019

Belgium
Brazil
France
Germany
India
Kosovo *New country*
New Zealand
South Korea
United Kingdom



ISTA Members 2013 – 2019



Honorary Members

According to section III., Article 4 (h) of the Articles of the ISTA:

“An Honorary Life Member is a person who in the opinion of the Association has made an outstanding contribution to the Association, and has been honoured by election to the status.”

The elected Honorary Life Members until 2018 are:

Grethe Tarp (2016)

Alison A. Powell (2013)

Ronald Don (2008)

Norbert Leist (2007)

Joël Léchappe (2019)

Furthermore, Attilio Lovato was elected Honorary President at the Congress 2001.

2. Activity Report of the Rules Committee June 2019 to December 2019

The Rules Committee is composed of the Honorary President, all the Chairpersons of the Technical Committees, the Chief Editor of SST, the AOSA Rules Committee Chair and the SCST Co-Chair. As part of joint initiatives with AOSA the AOSA/SCST Rules Chairs are ex-officio members with voting privileges within the ISTA Rules Committee, and the ISTA Rules Chair is an ex-officio member of the AOSA Rules Committee. The Chair and Vice-Chair of the Rules Committee are appointed by the ISTA Executive Committee (ECOM).

The Rules Committee members are:

Chair:	Ernest Allen	United States
Vice-Chair:	Sue Alvarez	United States
ECOM Liaison Officer	Ignacio Aranciaga	Argentina
Members:	Laura Bowden (MOI)	United Kingdom
	Ruojing Wang (PUR)	Canada
	Didier Demilly (PTC)	France
	Gillian Musgrove (GER)	United Kingdom
	Eddie Goldschagg (BSC)	South Africa
	Elisa Vieira (FTS)	Brazil
	Valerie Grimault (SHC)	France
	Fiona Hay (EDI)	Denmark
	Stefanie Krämer (TEZ)	Germany
	Jean-Louis Laffont (STA)	France
	Attilio Lovato (Honorary President)	Italy
	Enrico Noli (GMO)	Italy
	Alison A. Powell (VIG)	United Kingdom
	Hugh W. Pritchard (STO)	United Kingdom
	Bert van Duijn (ATC)	Netherlands
	Ana Laura Vicario (VAR)	Argentina
	Melanie Schori (NOM)	United States
	Rita Zecchinelli (FSC)	Italy
<i>Ex-officio:</i>	Randy Crowl (AOSA)	United States
	Desirae Jones (SCST)	United States
<i>Observer:</i>	Florina Palada (ISTA Secretariat)	

Activities

The Rules Committee is responsible for reviewing the annual Rules Proposals and ensuring that the proposals are technically consistent between the different Chapters. Rules proposals can come from anyone but are usually made by one of the Technical Committees and/or the ISTA Accreditation Department. The procedures for submitting proposals and adding new species to the ISTA Rules are outlined in the Introduction to the Rules. The Rules Chair is responsible for editing the Rules and presenting the proposals for vote at the Ordinary Meeting on behalf of the Executive and Rules Committees.

Staff at the ISTA Secretariat assists the Rules TCOM by collating the Rules Proposals and validation studies and then coordinating the translation and production of the revised Rules. Following the results of the annual voting meeting, the amended Rules are edited, translated and distributed to the membership. The revised electronic version of the ISTA Rules (2020 edition) was available to download by 1st January 2020. This was achieved due to the team work of the Rules TCOM; ISTA Secretariat; translators from French, German, Spanish laboratories; and proof setting in InDesign by Vanessa Sutcliffe of HeartWood Editorial (www.heartwoodeditorial.co.uk).

The ISTA secretariat does not provide ISTA Rules in hard copy. Instead, the ISTA rules are printable in electronic files which contains the English, French, German, and Spanish versions. It is worth remembering that if there is any doubt about the interpretation of the ISTA Rules the English version is the official reference version. For details on how to download the electronic version see the Publications section of the ISTA website.

The Rules Chair regularly receives enquiries on a range of issues relating to the interpretation of the Rules, often as the result of accreditation audits. These queries are very useful, and can lead to changes to the Rules and new proposals to help improve the implementation and understanding of the Rules. Enquiries often focus on how to complete the ISTA Certificates (Chapter 1 of the ISTA Rules). To assist laboratories in compiling with the requirements of Chapter 1 of the ISTA Rules see the “How to complete ISTA Certificates” which is available on the ISTA website at: https://www.seedtest.org/en/related-documents-_content---1--1253.html

Rules sales figures/downloads

Sales of online ISTA Rules for 2017 - 2019							
Item		2017		2018		2019	
		Sold	Income (CHF)	Sold	Income (CHF)	Sold	Income (CHF)
Royalties from direct download sales (remitted in USD)	Full Rules issues	44	CHF 18'540.00	43	CHF 19'297.00	37	CHF 16'000.00
	Single chapters	52	CHF 4'138.00	45	CHF 3'794.00	57	CHF 4'800.00
Sales via Secretariat (CHF)	Multiple-user access (e.g. non-member labs)	12	CHF 16'800.00	12	CHF 16'660.00	16	CHF 22'400.00
	Single-user access (Associate Members)	40	CHF 9'106.09	24	CHF 5'607.69	32	CHF 7'360.00
Total		148	CHF 48'584.09	124	CHF 45'358.69	142	CHF 50'560.00

Overview of Rules change proposals approved in June 2019.

Changes now effective in the 2020 Edition of the ISTA Rules approved at the ordinary general meeting in June 2019 can be found on the ISTA website at:

http://www.seedtest.org/en/international-rules-_content---1--1083.html

The supporting validation reports are also published at:

<https://www.seedtest.org/>

List of approved changes:

- A.1. Editorial Corrections
- B.1.2. Germination methods for *Salvia hispanica*
- B.1.3. Changes to the ISTA Stabilized List

Chapter 2: Sampling

- C.2.1. Revision of 2.5.1.5 Obtaining the submitted sample
- C.2.2. Revision of 2.5.1.6 Dispatch of the submitted sample
- C.2.3. Revision of 2.5.2.2 Sample reduction methods
- C.2.4. Revision of 2.5.2.2 Sample reduction methods (mixing before dividing)

Chapter 5: The Germination Test

- C.5.1.a. Germination method for *Glycine max* using Organic Growing Media
- C.5.1.b. Germination method for *Phaseolus vulgaris* using Organic Growing Media
- C.5.2. Germination method for *Zea mays* using TP (CCP)
- C.5.3. Addition of GA3 for *Avena sativa* in table 5A

C.5.6. Duration of final count: adding precision related to the extension of the duration and adapting the date of the final count when it ends on a non-working day.

Annex to Chapter 7: Seed Health Testing Methods

Revision of 7-019a: Modification of background text

Revision of 7-025: Modification of the method

Chapter 9: Determination of Moisture Content

C.9.2. Changes to time limits for drawing working samples

C.9.3. Adding additional possibilities to the desiccator

C.9.4. Requirements to sample storage – using moisture meter

Chapter 15: Seed Vigour Testing

C.15.1 Removal of requirements for a control seed lot for the radicle emergence test

C.15.2 Addition of a species to the radicle emergence test

Chapter 18: Seed Mixture Analysis

C.18.1 Purity and component analysis clarification

3. Accreditation Programme

Report of the Proficiency Test Committee and standard PT coordinator

This is an overview of the standard proficiency test program; the activity related to the seed health proficiency test and to the GMO Proficiency Test is presented under the related Committee chapters.

3.1 Proficiency tests 2019 preparation and dispatch

In 2019, four basic proficiency test (PT) were prepared by PT Leaders and dispatched to laboratories by ISTA Secretariat according to the 2017–2019 Programme Plan (see Table B.3.1).

Table B.3.1. List of species and test types for 2019

Round	Species	Test round scope	Test leader	Sample number	Number of participants
19-1	<i>Galega orientalis</i>	P, OSD, G, M	Mari Jürman	3x190	150
19-2	<i>Brassica napus</i>	P, OSD, G, TZ	Andrea Jonitz	3x230	200
19-3	<i>Hordeum vulgare</i> (January 2019)	P, OSD, G, TZ	Sarah Dammen	3x240	202
Purity Committee	MIX for training (January 2019)		Gerarda de Boer	210	202

P = purity, OSD = other seeds determination, G = germination, M = moisture determination, TZ = tetrazolium test, V = vigour, OIC = reporting on an ISTA Certificate, MIX = mixture of additional other seeds for seed identification

The statistical analysis and reports for the PT round 18-3 *Oryza sativa* (195 participants) has been done in the beginning of 2019.

One additional round on *Daucus carota* for so called 'mini PT' for laboratories applying for accreditation has been prepared and dispatch in April 2019.

3.2 Reporting of Proficiency test results

A summary report of each PT is available on ISTA website <https://www.seedtest.org/en/proficiency-test-rounds-content--1--3461--1193.html> . Complementary information and analysis according 2018 and 2019 PT

programme plan have been presented during the annual meeting in Hyderabad in June 2019 (<https://www.seedtest.org/upload/cms/user/15.PTC.pdf>).

The following diagrams represent the positive trend in performance of accredited laboratories versus non-accredited.

The Figures B.3.1–B.3.5 present the overall ratings of **accredited laboratories after participation in six obligatory test rounds**. The accredited laboratories that have not yet participated in six obligatory test rounds are not presented in the figures.

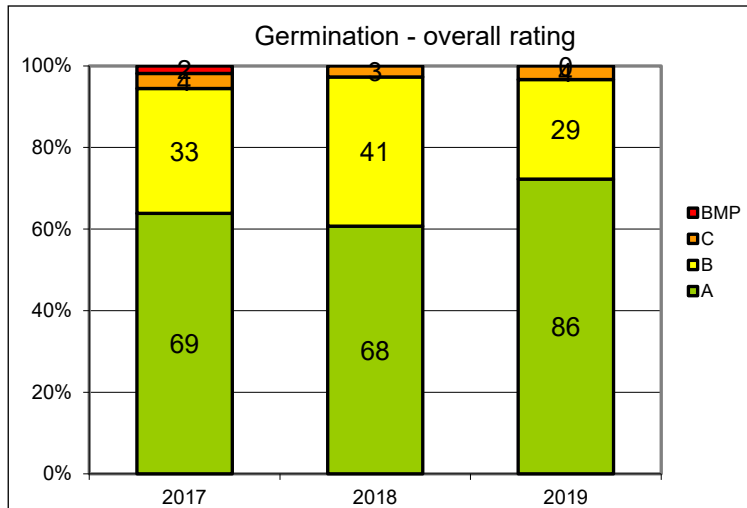


Figure B.3.1. Overall PT performance of accredited laboratories obligatory to participate in germination testing

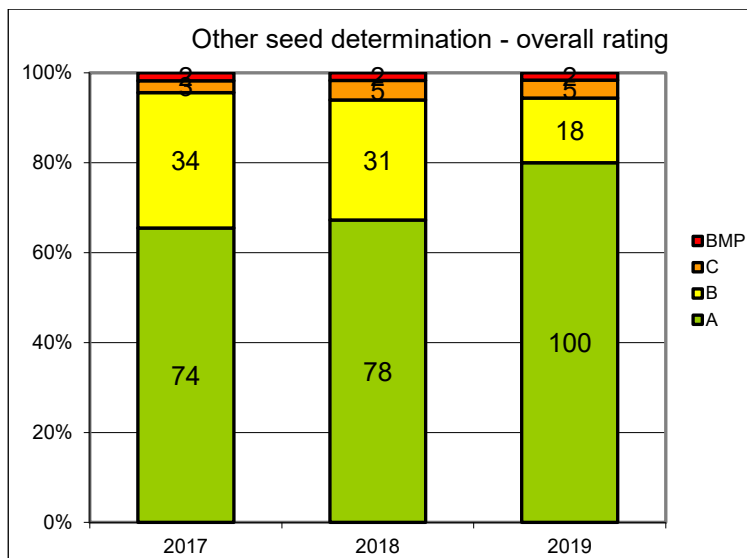


Figure B.3.2. Overall PT performance of accredited laboratories obligatory to participate in other seed determination

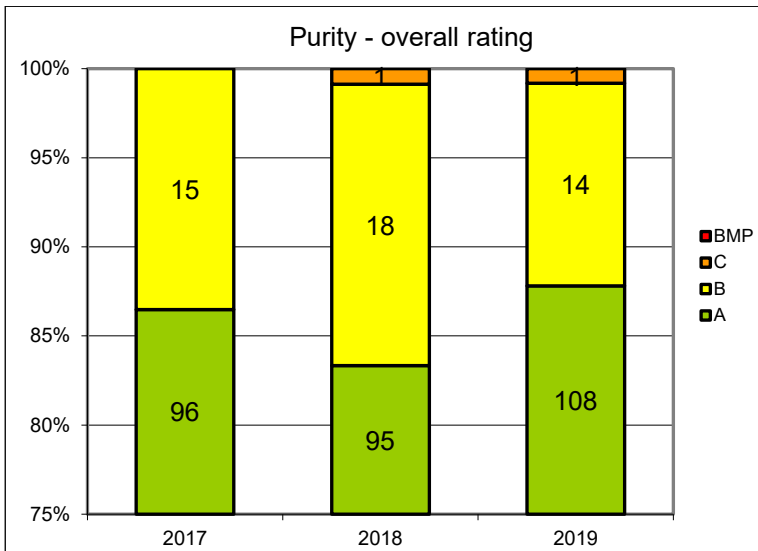


Figure B.3.3. Overall PT performance of accredited laboratories obligatory to participate in purity testing

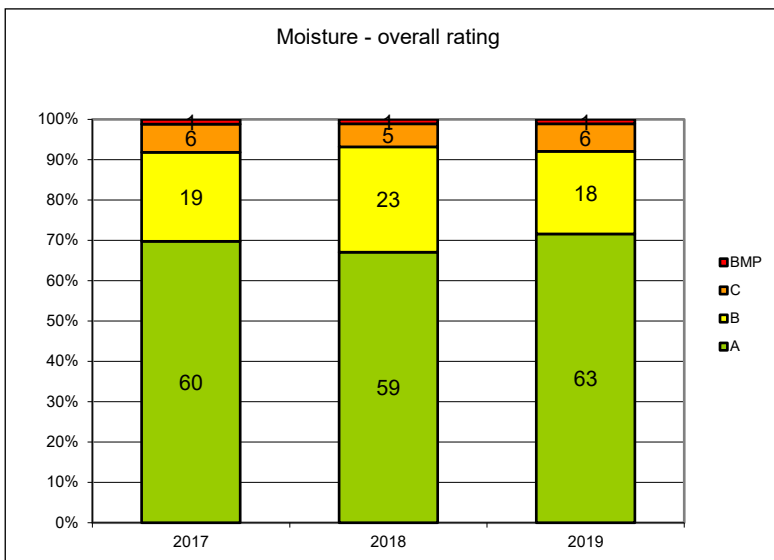


Figure B.3.4. Overall PT performance of accredited laboratories obligatory to participate in moisture testing

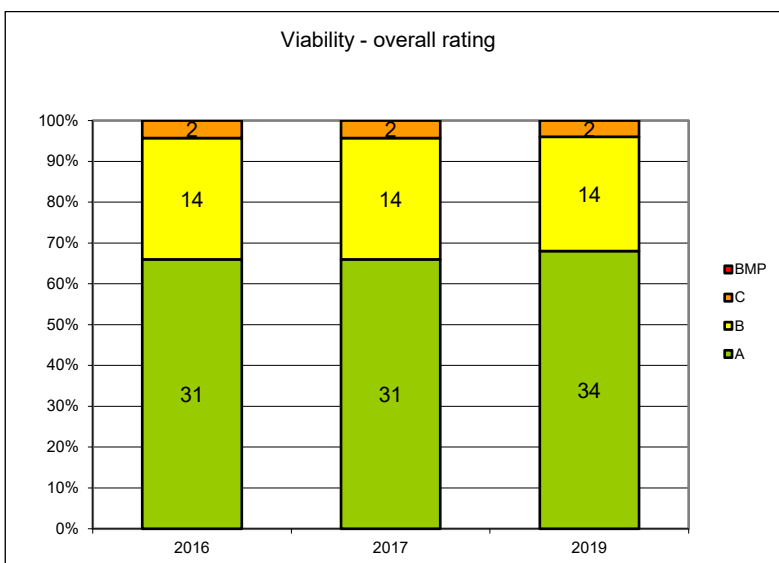


Figure B.3.5. Overall PT performance of accredited laboratories obligatory to participate in viability testing

In Figures B.3.6 to B.3.13, the in-round ratings are given for the last test rounds for germination, other seed determination and purity, moisture determination and tetrazolium testing, comparing performance of laboratories accredited for the corresponding test versus non-accredited laboratories.

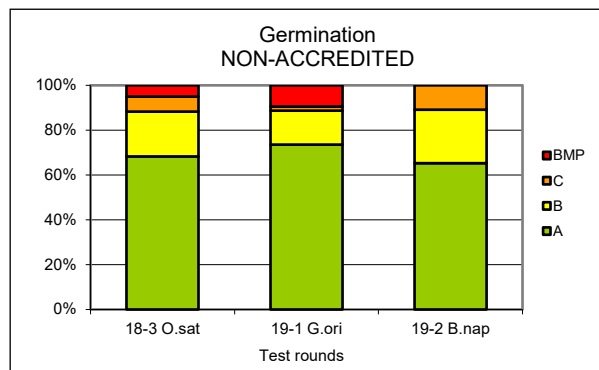
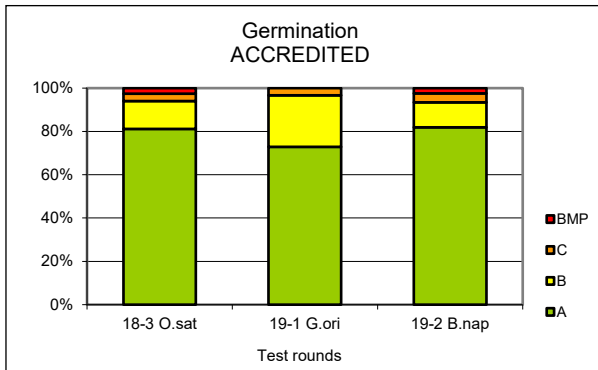


Figure B.3.6 and B3.7. Comparison of overall PT performance in germination testing

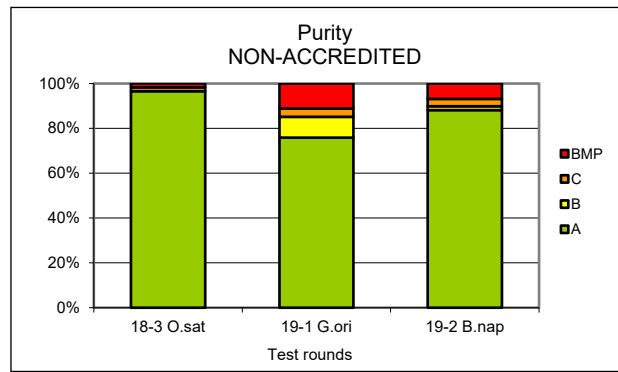
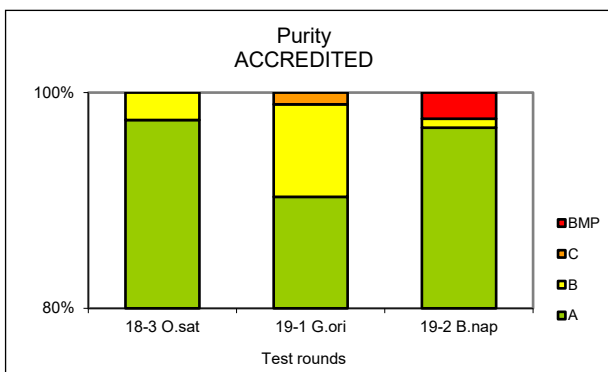


Figure B.3.8 and B3.9. Comparison of overall PT performance in purity testing

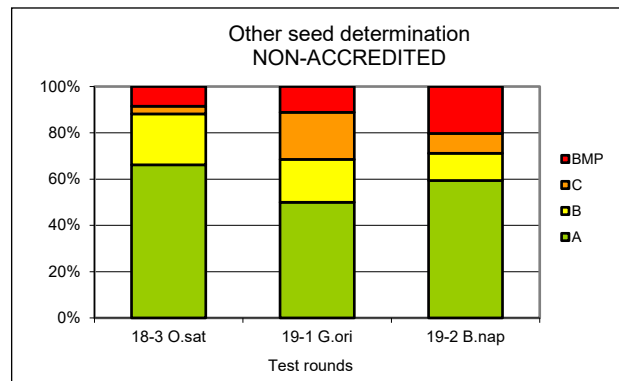
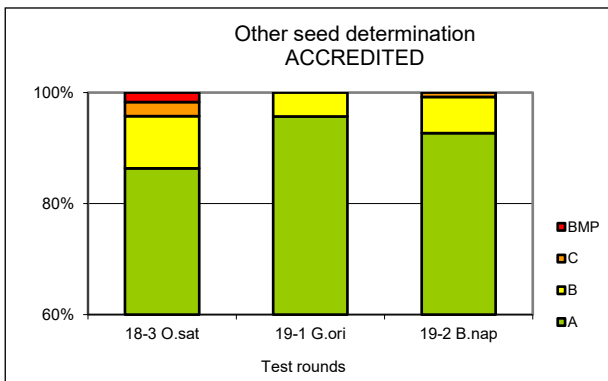


Figure B.3.10 and B3.11. Comparison of overall PT performance in other seed determination

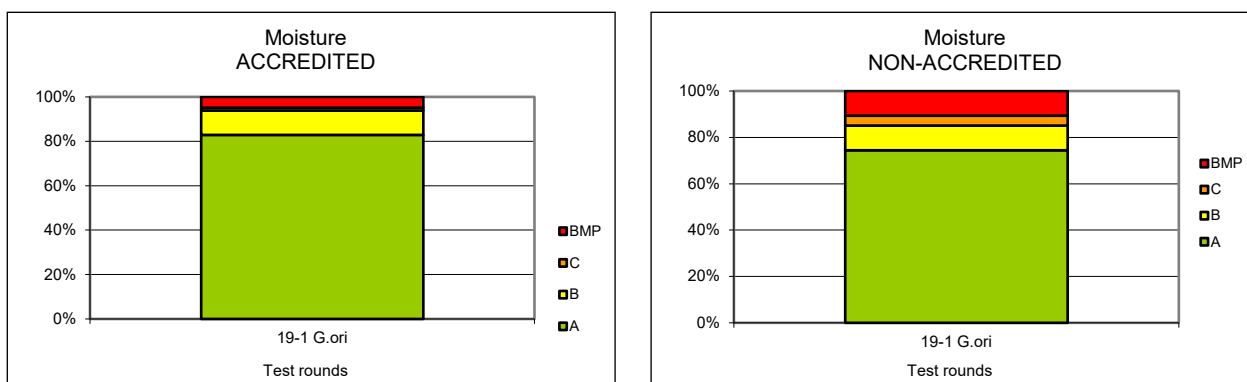


Figure B 3.12 and B3.13 Comparison of overall PT performance in moisture testing

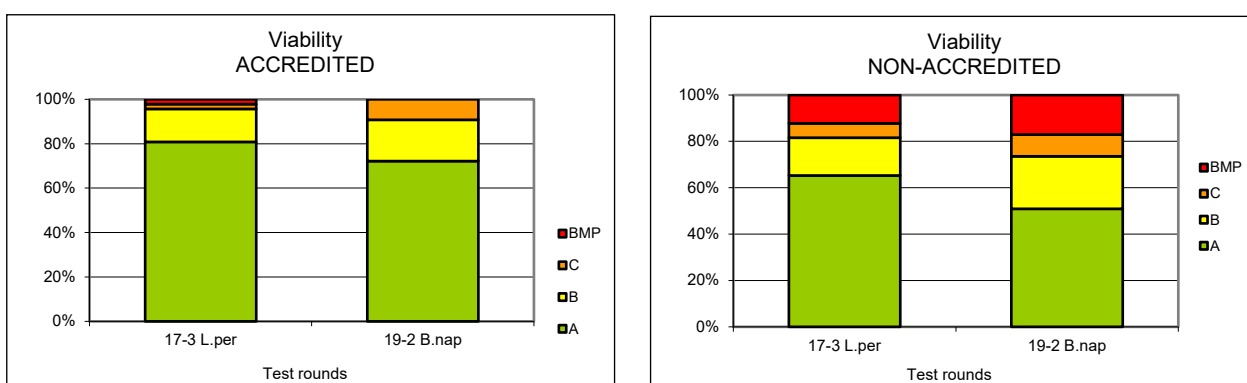


Figure B.3.14 and B3.15 Comparison of overall PT performance in viability testing (viability test was not part of the 2018 proficiency test programme)

3.3 Goals and objectives

The triennium programme plan 2020-2022 has been elaborated and approved by the Executive Committee. This programme is available on ISTA website

<https://www.seedtest.org/upload/cms/user/StandardProficiencyTestProgrammePlan2020-2022website3.pdf> .

In 2019, four members of the committee has been replaced. Andrea Jonitz DE, Mari Jürman EE, Dot Vittrup Pederson DK, Benno Voit DE have left the committee. We thank them all for their contribution to the PTs' preparations and discussions within the PTC. We welcome Suzanne Andersen DK, Pernilla Andersson SE, Monika Holubicová SK, Irena Gera (PL) as new members of PTC. These members will lead a PT in the triennium. Help and training from the PTC chair and standard PT Coordinator will be provided. In this sense, the confidential procedure for preparing samples for PTs has just been revised.

The Proficiency Committee contribute to the project decided by the ISTA Executive Committee after the workshop in Freising in order to investigate achievement of a uniform process for all proficiency tests (standard, seed health, GMO and varieties).

3.4 Audit programme

During the ISTA Congress, as in previous years, the ISTA auditors held a meeting on July1, 2019. A summary meeting report is published in Seed Testing International 156 providing details about the items that were discussed among the ISTA auditors.

3.5 Accreditation under the Performance- Based Approach

By the end of 2019, a number of 13 laboratories were accredited under the principles of the Performance-Based Approach:

Table B.3.16 Laboratories accredited under the principles of Performance-Based Approach

Country/Distinct economy	ISTA laboratory code
ARGENTINA	AR01
AUSTRIA	AT03
DENMARK	DK08
FRANCE	FR03
GERMANY	DE04
HUNGARY	HU01
ITALY	IT01 and IT03
JAPAN	JP03 and JP07
SERBIA	RS02
URUGUAY	UY02
UNITED STATES OF AMERICA	US11

3.6 Accreditation administration

The ISTA Accreditation and Technical Department has organised two Quality Assurance Workshops:

ISTA Workshop on Quality Assurance and ISTA Accreditation for Beginners in Kosovo

The workshop was hosted by the Kosovo Institute of Agriculture in Pejë. The lecturers were Florina Palada, Head of Accreditation and Technical Department, ISTA Secretariat, Rita Zecchinelli, ISTA Technical and System Auditor and Member of the ISTA Executive Committee and Eddie Goldschagg, Chair of the ISTA Bulking and Sampling Technical Committee.

ISTA Workshop on Quality Assurance and ISTA Accreditation for Beginners in India

The workshop was hosted by the Indo-American Hybrid Seeds (India) Pvt. Ltd. in Bangalore. The Laboratory representative, Dr. G.V. Jagadish and his team have been involved in the preparation of the workshop. The lecturers were Branislava Opra and Christine Herzog, ISTA Auditors.

ISTA Workshop for DNA based Methods

From 26 to 28 March, DISTAL (Dipartimento di Scienze e Tecnologie Agro-Alimentari) of the University of Bologna hosted the first Workshop for the ISTA auditors focused on the new methods included in the ISTA Rules for varietal testing: DNA-based methods for *Triticum* and *Zea mays*. The laboratory (IT01) is ISTA accredited for the above methods.

The need for this workshop was identified by the ECOM - Accreditation Working Group and approved by the full ECOM.

Workshop organiser were Florina Palada (Head of the Accreditation and Technical Department), Rita Zecchinelli (ECOM member and Chair of the ECOM - Accreditation working group) and Enrico Noli (GMO Committee chair). The excellent support received from Ana-Laura Vicario (Chair of the Variety Committee) and Daniel Perry (the Vice-chair of the Variety Committee) must be highlighted. Even they were not physically part of the Workshop they participated on-line to the discussion and contributed to clarify several specific aspects. The trainers were experts in the field: Enrico Noli (IT01), Chiara Delogu (member of the Variety Committee) and Lorela Andreani (IT03).

3.7 Document updates

The following is a list of ISTA accreditation documents relevant for member laboratories, were updated in 2019:

- Acc-D-07-ISTA Accreditation and Scope of Accreditation Policy
- Acc-D-08-ISTA internal policy to assign an auditor for a specific audit
- Acc-D-02-Use of ISTA Logo
- Acc-F-09 Application Form for (Re)Accreditation

- ISTA Accreditation Standard for Seed Testing and Seed Sampling, version 6.1. The translated version into French and Spanish is available and the translation into German and Italian is in progress.

3.8 Accreditation figures

In 2019, 51 accreditation audit visits were carried out. It was their first accreditation audit for five laboratories second audit for one laboratory, the third audit for four laboratories, the fourth audit for four laboratories and for five laboratories was the fifth audit. This year also two laboratories were audited for the sixth time, 26 laboratories seventh time and for four laboratories it was the audit number eight.

A complete list of accredited ISTA laboratories is shown in Table B.3.17. The regional distribution of the accredited laboratories is given in Figures B.3.19 a and b.

Table B.3.18 List of accredited laboratories – 2019

Country /Distinct Economy	ISTA Laboratory code
Argentina	AR01
Austria	AT04, AT04
Australia	AU01, AU02, AU06, AU07, AU09
Belgium	BE02, BE03
Bulgaria	BG01
Bolivia	BO01
Brazil	BR07, BR08
Canada	CA04, CA08, CA10, CA12
Switzerland	CH01
Chile	CL02
China	CN01, CN04
Czech Republic	CZ03
Germany	DE03, DE04, DE05, DE06, DE07, DE09, DE10, DE13, DE15, DE16, DE17, DE18, DE19
Denmark	DK03, DK04, DK06, DK08, DK09, DK11
Estonia	EE01
Egypt	EG01
Spain	ES01
Finland	FI01
France	FR02, FR03, FR06, FR07, FR08, FR09, FR11
United Kingdom	GB01, GB04, GB06

Greece	GR01, GR02
Croatia	HR03
Hungary	HU01, HU02
Indonesia	ID01, ID02
Ireland	IE01
Israel	IL01
India	IN05, IN06, IN07, IN12, IN14, IN16
Italy	IT01, IT03, IT06, IT07, IT09, IT10
Japan	JP01, JP03, JP05, JP06, JP07
Kenya	KE01
South Korea	KR02
Lithuania	LT01
Luxemburg	LU01
Latvia	LV01
Moldova	MD01
Malawi	MW01
Mexico	MX01
Netherlands	NL02, NL03, NL05
Norway	NO01
New Zealand	NZ01, NZ02, NZ03, NZ05
Philippines	PH03
Pakistan	PK01
Poland	PL05, PL07
Portugal	PT01
Romania	RO05, RO06, RO08
Serbia	RS01, RS02, RS03
Russian Federation	RU01, RU03, RU04, RU05, RU06, RU07
Sweden	SE02, SE07, SE09
Slovenia	SI01
Slovakia	SK01, SK02

Senegal	SN01
Thailand	TH03, TH04, TH05
Turkey	TR01
SCT of Taiwan, Penghu, Kinmen and Matsu	TW01
Tanzania	TZ02
Ukraine	UA01
Uganda	UG02
United States of America	US01, US03, US05, US06, US07, US10, US11
Uruguay	UY02
South Africa	ZA01, ZA03
Zambia	ZM01
Zimbabwe	ZW01
Total number of accredited laboratories 142	

There were 62 countries/distinct economies with at least one ISTA-accredited laboratory.

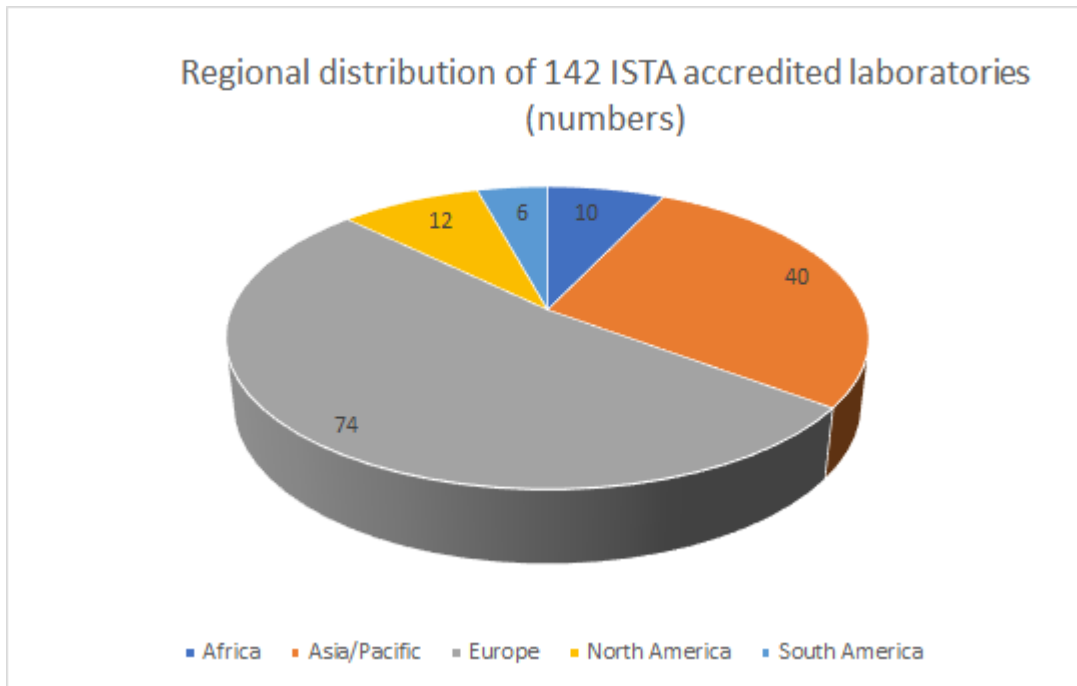


Figure B.3.19 a

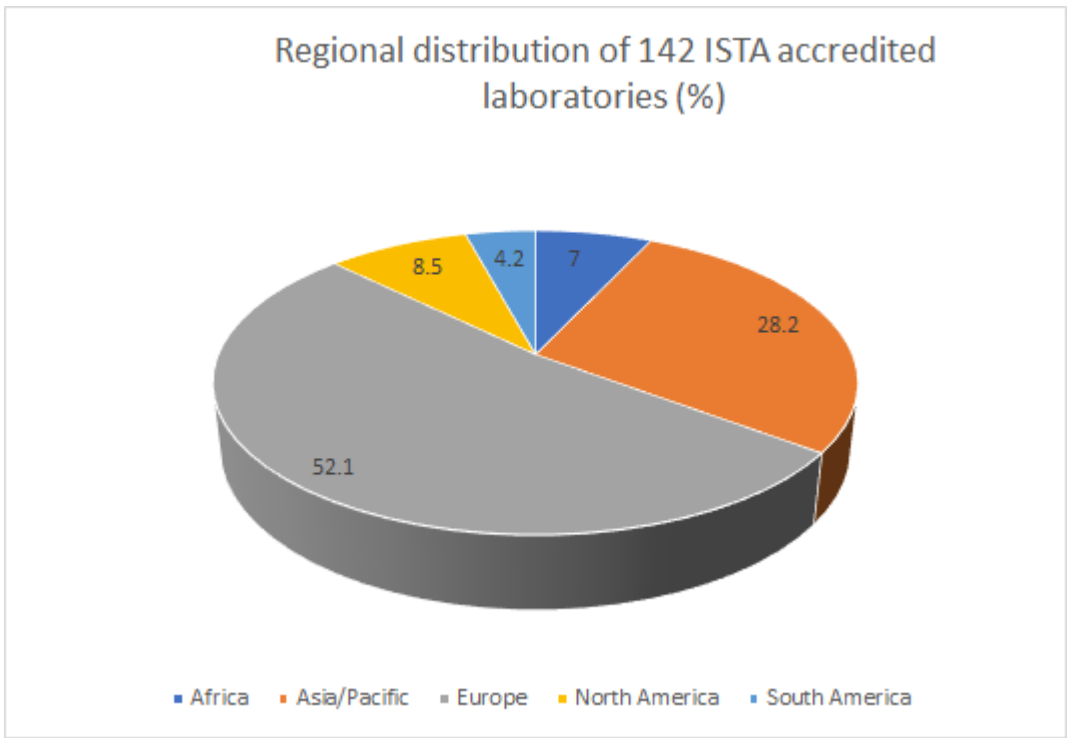
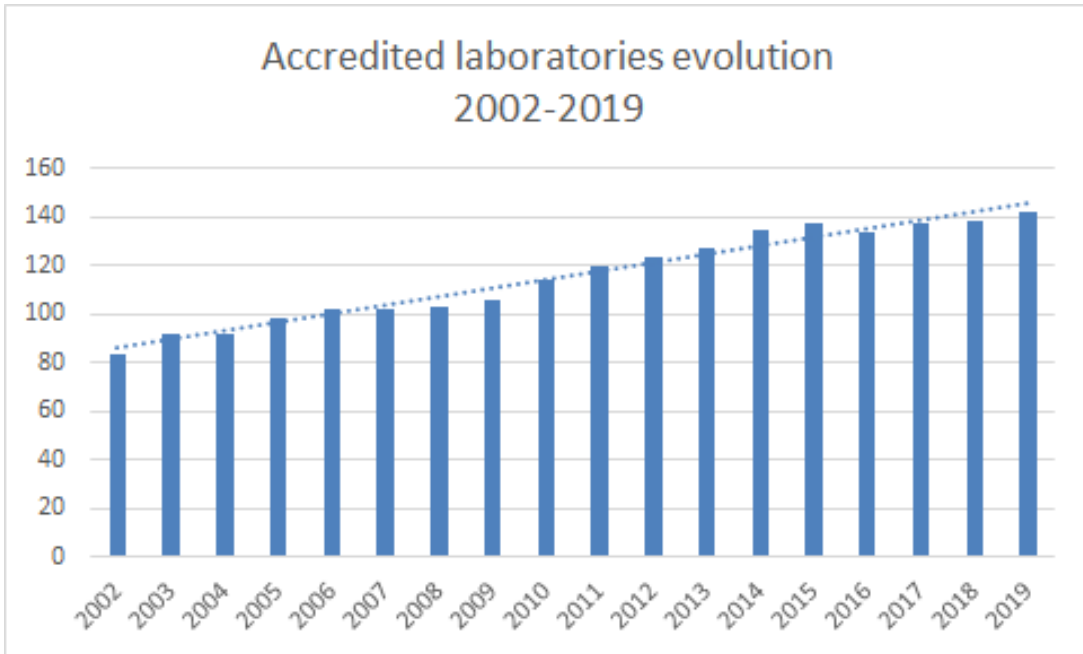


Figure B.3.19 b

Figure B.3.19 a and b. Regional distribution of the 142 ISTA accredited laboratories

Figure B.3.20 Number of ISTA accredited laboratories since 2002



3.9 New system auditor at ISTA Secretariat

The recruitment process for a new system auditor at ISTA Secretariat has been finalised.

3.10 Contracted auditors

In 2019 the Accreditation and Technical Department has continued to recruit new contracted system and technical auditors to perform ISTA audits.

At the end of 2019 two new contracted technical auditors and one technical auditor – Seed Health Expert, were approved to perform ISTA audits.

3.11 Sales of ISTA Certificates

A total of 175100 certificates were sold by the end of the year (Table B.3.21).

Table B.3.21 Sales of ISTA Certificates

Type of ISTA Certificates	2013	2014	2015	2016	2017	2018	2019
Orange International Seed lot Certificates	150700	190600	160300	158000	204000	190800	163700
Blue International Seed Sample Certificates	7400	6300	10700	8500	14100	15100	11400
Total	158100	196900	171000	166500	218100	205900	175100

4. ISTA Publications and Products

4.1 ISTA Handbooks and Proceedings

In 2019, total sales of publications amounted to 140, excluding copies of the International Rules for Seed Testing.

Table B.4.1. Total sales of ISTA publications 2015–2019

Type/year	2015	2016	2017	2018	2019
Handbook on Seed Sampling	11	19	8	7	6
Handbook on Seedling Evaluation	30	46	22	6	54
Handbook on Pure Seed Definitions	13	16	6	10	12
Handbook on Moisture Determination	10	15	9	8	11
Handbook on Flower Seed Testing	2	4	3	7	3
ISTA Working Sheets on Tetrazolium Testing Vol. I	6	8	3	6	4

ISTA Working Sheets on Tetrazolium Testing Vol. II	2	6	2	1	6
Various Handbooks/Publications	71	66	26	50	44
Total Publications sold	145	180	79	95	140

4.2 Calibration Samples

The Secretariat offers calibration samples of the grass species *Dactylis glomerata* (3.0 g) and *Poa pratensis* (1.0 g) for General Seed Blowers.

In 2019, 2 samples of *Poa pratensis* and 2 of *Dactylis glomerata* were sold.

5. ISTA Training and Education Programmes

5.1 ISTA Workshop overview

In 2019, 4 workshops were held on various seed testing subjects (Table B.5.1).

Country/Distinct Economy	Date	ISTA Event
Kosovo	April	ISTA Workshop on Quality Assurance and ISTA Accreditation for Beginners
India	June	Pre-Congress ISTA Workshop on Seed Morphology and Seed Identification for Purity and OSD Test
India	July	ISTA Workshop on Sampling, Purity, Germination and Moisture
India	December	ISTA Workshop on Quality Assurance and ISTA Accreditation for Beginners

6. Scientific Journal 'Seed Science and Technology': Report of the Editorial Board

Chief Editor:

Fiona R. Hay (The Philippines)

Deputy Editor:

Alison A Powell (United Kingdom)

Vigour (tests, causes of etc), physiology of ageing, also molecular aspects of ageing within limits (on the whole SST papers stay within these!), priming

Associate Editors:

Christophe Bailly (France)

Dormancy, ageing, cell signalling, oxidative stress, markers of seed vigour

Laura Bowden (United Kingdom)

Seed quality, priming, storage

Steven P.C. Groot (Netherlands)

Seed vigour, storage

Fabio Gresta (Italy)

Legume germination, hard seed coat, seed dormancy and dormancy breaking, scarification, seed treatment, weed germination, temperature, light

Valerie Grimault (France)

Seed Health

Brigitte Hamman (Switzerland)

Seed germination, seed quality, seed vigour testing, seed enhancement, chemical seed treatments, seed biochemistry and physiology, dormancy, longevity (storage)

Julio Marcos-Filho (Brazil)

Seed physiology and seed quality control, as seed vigour (relationship with seed performance; testing), germination, priming, storage, ..

David Mycock (South Africa)

Seed storage (orthodox and the range to Recalcitrant) in particular Cryostorage; Germplasm conservation; plant cell, tissue and organ culture; plant cell biology

Daniel Perry (Canada)

Variety identification, molecular or DNA markers, polymerase chain reaction (PCR), microsatellite, simple-sequence-repeat, single-nucleotide polymorphism (SNP)

Moctar Sacandé (United Kingdom)

Seed storage, recalcitrant species, germination/dormancy

Uma Rani Sinniah (Malaysia)

Tropical crops germination, storage

Michael Sussman (United States)

Biomolecular techniques and principles pertaining to biotechnology and molecular biology

Alan Taylor (United States)

Seed treatment and coating technologies; Seed water activity/moisture content; Seed quality related to germination/viability

Christopher Wood (United Kingdom)

low temperature storage, dormancy and orchid/palm related papers

Andrea Mondoni (Italy)

Seed dormancy, germination, storage

Shyam S. Phartyal (Germany)

Irfan Afzal (Pakistan)

Ibrahim Demir (Turkey)

Sergey Rosbakh (Germany)

The task of the editorial board is to edit the ISTA scientific journal „Seed Science and Technology“.

Seed Science and Technology (SST) is one of the leading international journals featuring original papers and review articles in all areas of seed quality and physiology as related to seed production, harvest, processing, sampling, storage, genetic conservation, habitat regeneration, distribution and testing.

SST is published in three issues per volume and year with approximately 600 pages.

6.1 Editorial figures for 2019

Papers received: 124

Papers accepted for publication: 37

Papers rejected: 72

Papers published in 3 (virtual) issues: $13 + 10 + 12 = 35$

Full papers in 3 issues: $4 + 5 + 6 = 15$

Research Notes in 3 issues: $8 + 4 + 5 = 17$

Editorial Articles in 3 issues: $1 + 1 + 1 = 3$

Pages published in 3 issues: $119 + 122 + 135 = 376$

Average number of pages per paper: 10.7

Issues published online: 2 (April, August); December issue is pending (29 January)

6.2 Additional activities:

In 2019, we started including an editorial article for each issue. The first was written by the Chief Editor; the second by ISTA immediate past president, Craig McGill; and the third by a member of the editorial board, Andrea Mondoni. The first editorial article was printed and distributed at the 2019 Seed Symposium / Annual Meeting.

6.3 Sales of ‘Seed Science and Technology’ 2015 – 2019

	2015	2016	2017	2018	2019
SST Print	144	125	101	0	0
SST Online Single	7	7	9	0	1
SST Print+ Online single	3	4	4	0	0
SST Print+ Online Multiple	8	6	5	0	0
SST OnlineMulptle	26	32	35	3	0
SST Back Issues, print	3	3	5	5	1
SST Dowload of Individual Chapters	14	23	27	18	9
SST Open Access Fee Full Lengh Paper				18	11

SST Open Access Fee Research Note				11	11
Total SST	205	200	186	55	33

7. Seed Science Advisory Group

MEMBERSHIP LIST			
			change comments
1	CHAIR: Alison Powell	United Kingdom	
2	VICE CHAIR: Brigitte Hamman	South Africa	
3	Birte Boelt	Denmark	
3	Francoise Corbineau	France	
4	Malavika Dadlani	India	New member from November 2019
5	Joel Lechappe	France	New member from November 2019
6	Stan Matthews	United Kingdom	
7	Alan Taylor	United States	
8	Manuela Nagel	Germany	New Seed Symposium convenor, replaced Laura Bowden
9	Jane Thomas	United Kngdom	
10	Adel Zayed	USA	New member from May 2019
	ECOM liaison: Leena Pietila	Finland	

Activities, based on Terms of Reference (TORs):

TOR 1: To provide a link between fundamental research and the use of that research to meet the needs of ISTA members.

A) Prediction of normal germination using an early radicle emergence count: This has been carried out in collaboration with the Germination Committee to investigate the hypothesis that an early radicle emergence count can predict normal germination. The SSAG analysed the data from the laboratories working on the project Data was received for oilseed rape (6 laboratories), perennial ryegrass (five laboratories) and cucumber (two laboratories). In all cases the laboratories have carried out counts of early radicle emergence as part of their routine standard germination tests on commercial seed lots. Significant predictive relationships were evident between the early radicle emergence count and final normal germination. A detailed report on the data was given at the 2019 ISTA Annual Meeting. An article to explain the project in terms of proof of concept, the results so far, future work and its final purpose has been submitted for publication in Seed Testing International in 2020.

This project continues in 2019-2022 with the collaboration of the new Germination Committee and will examine the potential for prediction of normal germination in other crop groups. Six ISTA laboratories have volunteered to complete the work and have identified species tested in their laboratories, from which up to 5 species will be selected for testing.

B) Use of tetrazolium chloride staining to predict germination of wild species: A project has been established to test this hypothesis on wild-flower species with the collaboration of the Flower Seed Committee. It is being led by the scientist who proposed this approach (Dr Maria Marin) who is also a member of the FSC. Four laboratories have volunteered to take part and potential species identified.

C) The Storage Committee have been approached regarding a possible project to use an early count of radicle emergence to predict storage potential in commercial storage conditions and / or as a rapid assessment of germination during gene bank storage. No laboratories from the committee have responded so far. Another ISTA laboratory has expressed interest in collaborating to test the hypothesis to predict storage potential in farm and commercial storage conditions.

TOR 2: Appraisal of evidence for techniques/equipment available for use in seed testing laboratories

The SSAG was approached during the ISTA Congress with a question regarding Seed-X and its use in seed quality analysis. An enquiry has been made to the company regarding the evidential basis of their claims. The response received will determine whether any further work on this will be carried out.

TOR 3: Respond to requests from ECOM and TCOM Chairs for advice related to scientific issues.

The SSAG has been involved in discussion regarding the evaluation of seeds given biocontrol or bio-stimulant treatments and the position of ISTA. A position paper is being prepared for submission to the February 2020 ECOM meeting.

8. Wild Species Working Group

MEMBERSHIP LIST			
			change comments
1	CHAIR: Gil Waibel	USA	
2	VICE CHAIR: Ruoqing Wang	Canada	
3	Riad Z. Baalbaki	USA	
4	Laura Bowden	United Kingdom	
5	Ted Chapman	USA	
6	Rachael Davies	United Kingdom	
7	Stefanie Krämer	Germany	
8	Heidi Larson	USA	
9	Sergio Pasquini	Italy	
10	Alison A. Powell	United Kingdom	
11	Victor Vankus	USA	
12	Rita Zecchinelli	Italy	
	ECOM liaison officer: Craig R. McGill	New Zealand	

Efforts in 2019 centered on the creation of the web site to house and disseminate information about testing seeds of wild species (basically focusing on those species with no rules in either the ISTA or AOSA rules). Major components of the web site will include methodology, recommended testing protocols, gallery of pictures, and a glossary. The methodology chapters about testing wild species: Purity, Germination, TZ, Moisture determination, Micro-cleaning and X-ray. Protocols will include purity, and germination testing as well as TZ testing for each

species. The gallery will include pictures of seeds. Each protocol for a species may also include images of seedlings and TZ's.

A report about the activities of the working group was presented at the AOSA meeting in Sparks, NV, USA, and at the ISTA meeting in Hyderabad, India. Activities and goals of the working group were discussed in a working group meeting in Hyderabad as well. Presentations about the working group were presented to the American Association of Seed Control Officials (AASCO) in San Antonio, TX; and to seedsmen at the ASTA/Western meeting in Kansas City, MO. It is gratifying to find support for this effort from many sectors of the seed industry. People are interested!

A programming company was chosen last year to develop our web site. We did a preliminary "Kick-off" to help determine what we wanted to achieve and an estimate of the cost. Efforts were made to raise additional funds, which were needed to proceed with the project. We now have adequate funding to start the programming process. It is our hope to have the programming completed in the first quarter of 2020, and our authors of the methodology chapters are working on their topics. We also have a small group developing a glossary of botanical terms designed for seed analysts. The testing protocols for species with no rules may never be completed, but we will begin on this massive project this year, and it will be interesting to see how the protocols turn out.

9. Report of the ISTA Secretariat

9.1 Secretariat staff

This report lists the activities and changes in the Secretariat during 2019, where the Secretariat went through a number of personnel changes:

The new TCOM administrator, Andreea Militaru, returned from maternity leave in May 2019 on an 80 % basis.

On Publication (Rules, ISTA Handbooks and Website) Vanessa Sutcliffe of HeartWood Editorial assists the Secretariat with respect to proofreading and InDesign publication now as well for the STI publication.

A junior auditor joined beginning 2019. The contract was terminated during probation.

Christine left the Secretariat at the end of 2019. A search company (Stanton & Chase) was as for recruiting a new System Auditor. The search was successful, and a new auditor will be employed within 2020.

Thus, at the end of the year 2019 the Secretariat numerates the following 12 member of staff corresponding to 10.5 full time equivalent employees:

Role	Name	%FTE
Secretary General	Dr. Andreas Wais	1
Head of Accreditation and Technical Department / Acting Secretary General	Dr. Florina Palada	1
TCOM Manager	Nadine Ettl	0.6
TCOM Administration	Andreea Nicoleta Militaru	0.8
System Auditor, Quality Management & Standard PT Coordinator	Branislava Opra	1
System Auditor	Christine Herzog	0.6
Accreditation and Audit Administration	Neelam Lagah	1
Finance, Sales and HR Administration	Agnes Hegedüs	1
IT/Publication Specialist	Sejal Patel	1
Events, Membership and Documentation Manager	Olga Stöckli	1
Publication, Marketing & Communication Specialist	Fabiola Rivera Navas	1
Marketing & Communication Assistant	Yoana Uzunova	0.5

9.2 Secretariat work

A long-term goal of the Secretariat is to move to another location in the area. The search is ongoing.

9.3 Function

9.3.1 Administration

Lead by Secretary General. The Administration team includes Agnes Hegedüs and Olga Stöckli.

The main tasks of Agnes are the financial administration, invoicing, settling all incoming and outgoing payments, ISTA publications and products sales administration, general office, HR assistance and time recording administration, as well as membership administration on the financial aspects.

Olga is responsible for the Events organization, Administration documentation and all Membership administration. She leads the documentation and preparation of the contractual agreements needed upfront ISTA events. Olga is responsible for the registration process. ISTA events include, but are not limited to, OGM, Congresses and ECOM Meetings. Membership administration includes receiving and responding to membership queries; managing the membership database; handling all communication with members regarding their membership and payments and coordinating the assignment of designated authorities and voting nominations. Olga's responsibility increased due to the implemented PL process for the Annual Meetings and Congresses

9.3.2 Human Resources

The Secretary General heads HR. Agnes Hegedüs took over HR Assistant tasks since 2017. Agnes finished her 2-years HR Administration external training program.

Agnes, Florina Palada and the Secretary General published the HR Handbook, which was successfully updated in 2019. The sources used were actual templates on the internet, HR Handbooks from previous assignments, HR handbooks from other companies in Zürich, legal information (like ObligationenRecht), worker protection requirements, information from Agnes' HR training and what were the rules at ISTA, but not fixed in writing. This HR Handbook reflects the state of the art for Kanton Zürich and is in force and lived since January 2018. The HR Handbook is part of the employment contracts.

In 2019 our pension fund provider was changed from AXA to SwissLife, which are still offering the insurance model to ISTA. This is also more cost effective to ISTA.

9.3.3 Finance

The Secretary General oversees the finances of the Association in the framework of the annual budget. Accounting is divided between Ronny Dossenbach of Buff Treuhand AG and Agnes Hegedüs. ISTA accounts are annually audited by BDO AG.

As requested by the auditors, the ECOM started a project to register the association in the Swiss Commercial Register as an Association. This project is ongoing and will allow ISTA to work more effectively and seamlessly with institutions within Switzerland. Last task was fulfilled by voting of the Annual General Meeting in Hyderabad.

End of 2019 the provider for travel booking was changed to Globetrotter. This made travel bookings a more seamless process. ISTA also joined a KMU initiative with Lufthansa group to regain benefits for bookings.

9.3.4 IT

Computing hardware, connectivity and software is outsourced to Prisma, the current website is hosted by MySign AG (maintenance of the website contents is done by the secretariat staff) and a 24/7 hardware maintenance is performed by Itris.

A software change to Office365 was done in 2019. This process is ongoing and under the project management of Sejal. This will de-risk the use of different systems used in the moment, which partly will not be supported anymore by Microsoft. Further this brings the opportunity to enable TCOMs, ECOM and other external cooperates (including auditors) to have access to areas of ISTA document drives, where it is needed for a seamless communication. The project will also allow TCOMs to increase their internal communication as well the communication with the Secretariat. The PURCOM is the first TCOM using O365, as well as the ECOM and some of their WGs.

9.3.5 Marketing

Social media and digital marketing

For one year the ISTA YouTube channel was re-activated and new videos were produced. On the YouTube Channel, we have 130 subscribers. The main updates in 2019 were the BSC training videos.

Further ISTA continued to use their Twitter account, which is used for quick information to the stakeholders and interested parties. ISTA has more than 650 followers on Twitter.

At the end of 2019, the ISTA LinkedIn profile counted over 5'200 followers. This corresponds to an increase of about 150 % as compared to the same time a year before. Posting on LinkedIn is done up to three times a week. The posts mainly include news about the association. LinkedIn allows more in-depth information as it is not limited to the number of signs, like Twitter.

Key performance indicator reports of all social media are shared within the Marketing Working Group.

The website received a visual update done from inside the Secretariat (Fabiola and Yoana). In 2020 a new CMS should be implemented, and further changes will occur. The change of CMS is necessary, as the old one will not be supported anymore and does not allow a lot of changes as well not a perfect view on mobile devices, which are more and more used.

World Seed Partnership

The World Seed Partnership (WSP) is a joint initiative by now five international organizations as the World Farmer Organisation (WFO) became a full member in 2019:

- International Seed Testing Association (ISTA)
- International Seed Federation (ISF)
- Organization for Economic Co-operation and Development (OECD)
- International Union for the Protection of New Varieties of Plants (UPOV)
- World Farmer Organisation (WFO)

The mission of the World Seed Partnership is to provide a focal point for information on internationally harmonised seed systems and to communicate their role in supporting sustainable agriculture.

Regular meetings and web conferences took place in 2019 in order to move this project forward. A project defined was a joined initiative in Nigeria. The Myanmar project from 2018 is still ongoing. New project was defined for 2020.

9.3.6 Representation

During 2019, ISTA was represented by the Officers, other ECOM Members, the Secretary General, other Secretariat staff or other ISTA members at all major events of partner organisations, international seed trade associations, scientific and other international organisations in the area of seed science and politics. This resulted in closer cooperation with SAA, AOSA/SCST, OECD, FAO, APSA, AFSTA, Euroseeds (formerly ESA), UPOV and ASTA. The Secretary General also visited several DAs.

9.3.7 Event organization

451 participants from 63 countries attended the International Seed Testing Association (ISTA) 32nd Congress in Hyderabad, India, 26 June-3 July. Both public and private organizations were represented, including Universities, companies and government agencies. The event was organized in collaboration with India's National ISTA Designated Authority.

9.3.8 Publications

ISTA Rules

The updating, formatting, coordination and integration of the different translations and other required maintenance of the source files performed by Vanessa Sutcliffe with support of the Secretary General, Nadine, Andreea, Fabiola with support from the Rules TCOM. In 2019 the Spanish language layer was introduced officially. Fabiola together with Ignacio Aranciaga and his team at INASE in Argentina coordinated this. The rules were published beginning of November to enable laboratories to access the changes on time.

Seed Testing International (STI)

An editorial team of STI consisted of Andreas, Florina and Sejal (as the responsible person for STI).

Mailing lists and distribution was organised by Agnes.

The two scheduled issues of STI (no.157 and no. 158) were successfully and timely produced and distributed due to the leadership of Sejal.

Seed Science and Technology (SST)

The Editorial Board headed by Fiona Hay edits SST.

Uploading of Fast-track and the final articles and amending the DOI registrations is implemented by SST typesetter Lucie Eng.

Current Website

Only the Marketing & Communication group at the Secretariat maintains the website upon request on Secretariat staff information depending on their relevant role.

The project towards the redesign and construction of a new ISTA website is described above.

Newsletters

Newsletters are prepared weekly by the Marketing team. Different members of the Secretariat staff depending on the subject contribute to these Newsletters. The provider of the Newsletter was changed to MailChimp and new registration of all recipients needed to be done due to the EU GDPR rules.

9.3.9 TCOM

Nadine does coordination of the TCOM work together with Andreea, this includes:

The on-going coordination and management of the TCOMs annual cycle including all reports and studies, information updating of the TCOM web sites.

Coordination and administration of the Method Validation Programme.

Set-up and coordination of the 100K-project as well as the SH-project (seed as a pathway), which is running in Geves.

Leading the organisation of the GMO and SH Proficiency Test rounds and communication with laboratories, data entry and management.

The Forest and Shrub Committee prepared in cooperation with OECD files and information on forest seeds. This information was published online under www.treeseedhandbook.info and presented during the OECD Forest Seed and Plant Scheme Meeting in Vienna in 2019. OECD will provide information on nursery practises. Sejal is leading this project.

Andreea is coordinating the workshops organisation, registration and management, TCOM Members and handling TCOM Membership Applications, updating TCOM website.

9.3.10 Accreditation

Florina manages the accreditation as Head of the Accreditation and Technical Department.

Auditing

Organized, arranged and partly performed by Florina, Branislava and Christine with support of Neelam, as well as a team of contracted system and technical auditors around the world.

Activities include:

- Pre-accreditation and pre-audit activities related to the interested laboratories/sampling entities
- Initial and re-accreditation audits of applicants and existing accredited laboratories/sampling entities
- Following up of corrective actions

Neelam provides the Audits administration and Certificate shipment and administration.

Neelam is providing administrative support to the Accreditation and Technical Department; this includes coordinating with the laboratories and the auditors the Audit schedule. Assisting with materials and documentation in preparation for audits. Making travel arrangements for the Auditors.

Organizing and conducting a Proficiency Test Programme as well as the Mini-Proficiency Test Programme

Standard PT is under the responsibility of Branislava. Christine and Neelam support Branislava.

Work includes:

- Obtaining seed for some Proficiency Test rounds
- Managing registration
- Obtaining relevant documents for shipment
- Shipment
- Data entry and analysis
- Reporting

Other activities of the Accreditation and Technical Department

- Organisation of Quality Assurance Workshops
- Training of the new system auditor at ISTA Secretariat
- Recruiting and training of contracted system and technical auditors
- Recruiting of a junior system auditor in the Secretariat for 2019
- Optimisation of the database

Certificates

Two projects are currently running concerning ISTA Certificates.

- Electronic Certificates. The feasibility project was led by Christine and performed by Massey University, Palmerstone North (NZ). The outcome report was received during 2019. Discussions with MySign were started on how the project could be realised within the frame of the feasibility study. This will enable the ECOM to decide to go for the future. The decision to go for electronic Certificates will influence the 2020 budget. The project is led by the Secretary General.
- Interactive Certificates: Christine is still leading this project, which should enable ISTA laboratories to learn more about ISTA Certificates and their use (how to fill where and what). They could also be used for trainings within ISTA laboratories. The project will be completed early 2020.

10. Finances of the Association

In January 2020, the ISTA accounts were audited by financial auditors BDO AG, who found them to be in well order. The report of the financial auditors is included after the presentation of the key financial figures.

The total turnover decreased by 2.6 % compared to previous year mainly due to less sales of Certificates. Therefore, the turnover increased to a total of 2'880'678 CHF for 2019, which is significantly lower than the 2019 budget (3'036'254 CHF). Reasons for this are highlighted below. The financial result shown for the year 2019 is positive, with a balance of 7'339 CHF. In 2019 also 150'000 CHF were taken from the reserves.

Some areas to highlight include:

Membership subscription: The increase of 56'695 CHF compared to previous year was unexpected due to the less use of the 10 % discount on early payments an increase of membership. The increase in 2019 was also higher than budgeted (56'512 CHF).

ISTA Congress: The ISTA Congress in Hyderabad was a great success with over 500 participants. Nonetheless, the budgeted number of about 700 participants could not be reached, Therefore, the income was less than budgeted (-96'166 CHF). As the registration fees were set to allow a greater number of participants to join the meeting and the income figures were not achieved, the calculated loss compared to budget increased as well despite the help of the Government of Telangana State (-229'932 CHF). One financially important result of the Congress was an increased request from South-East Asian countries to become member of ISTA and more local members asked for accreditation in 2020.

ISTA Rules sales: Sales increased marginally by 422 CHF compared to previous year due to the 2019 version of the ISTA Rules have the Spanish translation included for the first time. The discount of single chapter sales beginning of 2019 had no effect on the sales volume.

Accreditation: The change in the procedure for invoicing the audit fees in three instalments stopped 2019 and stayed merrily stable (-19'259 CHF). Due to more accreditations expected in 2020 a higher income is expected (60'230 CHF), which is partially a direct effect from the ISTA Congress in Hyderabad.

Seed Science and Technology subscriptions: The income from sales and publication fees dropped by 12'466 CHF compared to previous year. This is mainly due to the change to open access and less sales of previous (before 2018) issues.

ISTA draft Budget 2020	2018	2019	Proposed 2020	Proposed 2021
INCOME				
<i>Subscriptions</i>				
Annual Membership Subscription	1'175'409.95	1'232'104.72	1'194'708.60	1'200'000.00
Accreditation Subscription	160'392.92	164'046.75	164'089.44	165'000.00
Annual Meetings	151'364.81	217'834.24	142'740.00	145'000.00
Technical Committees WS	70'901.84	27'816.41	60'000.00	60'000.00
STI Advertisement	0.00	1'538.06	1'500.00	1'500.00
	1'558'069.52	1'643'340.18	1'563'038.04	1'571'500.00
<i>Service Centres</i>				
ISTA Rules	48'993.47	49'414.76	50'000.00	60'000.00
Accreditation Audits	593'096.59	573'567.63	634'798.00	600'000.00
Proficiency Test incl. GMO	25'570.00	6'410.00	12'000.00	15'000.00
QA Workshops	18'744.27	13'724.38	12'000.00	10'000.00
Seed Science and Technology	33'823.21	21'356.79	30'000.00	30'000.00
Technical Publications and calibration samples	27'450.69	25'051.40	25'000.00	25'000.00
Certificates	678'768.92	582'061.00	617'500.00	615'000.00
Website	0.00	0.00	0.00	0.00
	1'426'447.15	1'271'585.96	1'381'298.00	1'355'000.00
Losses in receivables	-25'298.18	-34'248.00	-10'428.00	-20'000.00
Total Income	2'959'218.49	2'880'678.14	2'933'908.04	2'906'500.00
EXPENDITURE				
<i>Direct Costs</i>				
Annual Meetings & Congresses	-166'398.30	-447'766.08	-176'475.25	-180'000.00
Executive Committee+President	-13'254.33	-59'606.89	-25'000.00	-25'000.00
Technical Committees WS and 3K grants	-149'829.12	-182'265.84	-96'000.00	-96'000.00
Seed Testing International	-32'882.74	-41'200.93	-30'000.00	-30'000.00
	-362'364.49	-730'839.74	-327'475.25	-331'000.00
<i>Service Centres</i>				
ISTA Rules	-14'356.51	-13'821.19	-22'000.00	-22'000.00
Accreditation Audits	-258'371.55	-251'879.66	-365'550.00	-350'000.00
Proficiency Test incl. GMO	-45'154.97	-14'841.82	-11'000.00	-10'000.00
QA Workshops	-9'196.87	-14'128.00	-11'500.00	-10'000.00
Seed Science and Technology	-62'029.58	-59'261.61	-55'000.00	-55'000.00
Technical Publications and calibration samples	-33'008.58	-12'285.20	-22'500.00	-20'000.00
Certificates	-95'544.71	-83'606.33	-65'000.00	-65'000.00
Provisions for fluctuations	-321'000.00	150'000.00	850'000.00	320'000.00
	-838'662.77	-299'823.81	297'450.00	-212'000.00
<i>Personnel expenses</i>				
Salaries	-1'059'807.80	-1'120'039.95	-1'179'425.07	-1'280'000.00
Social Security and insurances	-264'072.90	-272'576.25	-353'827.52	-384'000.00
Other personel expenses incl. Recruitments	-11'168.74	-18'990.97	-15'000.00	-5'000.00
Staff Training	-31'907.29	-18'757.69	-30'000.00	-30'000.00
Secretary General Cost not covered otherwise	0.00	0.00	-5'000.00	-5'000.00
	-1'366'956.73	-1'430'364.86	-1'583'252.59	-1'704'000.00
<i>Operating Costs</i>				
Office Costs	-226'095.74	-241'929.06	-299'000.00	-350'000.00
Travel Costs (International Representation)	-41'222.92	-32'362.13	-50'000.00	-50'000.00
Marketing Costs	-16'148.03	-26'060.89	-25'000.00	-25'000.00
Website	-53'870.40	-24'742.16	-40'000.00	-40'000.00
Projects	0.00	0.00	-889'360.83	-180'000.00
	-337'337.09	-325'094.24	-1'303'360.83	-645'000.00
Depreciation of tangible fixed assets	-4'031.04	-2'756.87	-2'000.00	-1'000.00
Financial costs	-20'328.28	-162'860.25	-15'000.00	-15'000.00
Financial income	3'637.66	54'809.17	1'500.00	2'000.00
Prior-period costs	-38'937.60	-13'793.06	0.00	0.00
Prior-period income	22'565.19	37'378.91	0.00	0.00
Total Expenses	-2'942'415.15	-2'873'344.75	-2'932'138.66	-2'906'000.00
Result	16'803.34	7'333.39	1'769.38	500.00

2019 YEAR END CLOSING	ACCOUNT 2017	ACCOUNT 2018	ACCOUNT 2019
ASSETS			
<i>Currents Assets</i>			
<i>Cash</i>			
Petty Cash (Accounts 1000,1001,1002)	2'462.35	2'320.21	6'008.88
Postal account (Accounts 1010,1011,1015,1016)	961'417.15	84'365.06	118'873.46
Zürcher Kantonalbank, current account (Account 1020)	5'131'164.95	6'456'233.50	1'477'830.92
Zürcher Kantonalbank, deposit account (Account 1021)	210'548.59	140'472.71	499'666.17
Zürcher Kantonalbank, USD account (Account 1025)	13'677.95	82'968.24	65'614.21
Zürcher Kantonalbank, EUR account (Account 1026)	71'587.38	22'117.95	1'079'575.20
Zürcher Kantonalbank, EUR account Congrss (Account 1030)	50'431.11	4'861.51	0.00
Zürcher Kantonalbank, GBP account Congrss (Account 1031)	23'855.71	62'316.93	58'723.24
	6'465'145.19	6'855'656.11	3'306'292.08
<i>Trade receivables</i>			
Membership subscriptions, certificates and publications (Accounts 1100,1111,1112,1113)	35'229.90	30'829.87	74'622.70
Allowance on doubtful accounts (Account 1120)	-5'000.00	-3'000.00	-7'000.00
	30'229.90	27'829.87	67'622.70
<i>Other accounts receivable</i>			
Other accounts receivable (Account 1109,1110,2320)	11'942.43	25'475.66	16'021.78
Withholding tax (Account 1150)	692.37	401.87	11'973.37
Value added Tax (Account 1155,1156,1157,2055,2057)	10'021.94	13'608.93	10'189.04
	22'656.74	39'486.46	38'184.19
<i>Accrued income and prepaid expenses</i>			
Prepaid expenses (Accounts 1300)	93'183.88	179'689.97	438'201.54
	93'183.88	179'689.97	438'201.54
<i>Fixed assets</i>			
Financial assets (Account 1400,1410)	145'636.00	135'724.00	3'319'441.98
Tangible fixed assets (Accounts 1500,1520)	10'940.00	7'400.00	5'500.00
	156'576.00	143'124.00	3'324'941.98
	6'767'791.71	7'245'786.41	7'175'242.49
LIABILITIES + EQUITY			
<i>Short-term liabilities</i>			
Trade creditors (Account 2000,2001,2002,2005,2006,2007)	-82'233.22	-24'353.77	-57'700.72
Other accounts payable (Accounts 2200,2220,2250,2260,2270,2280,2321)	-16'674.95	-42'575.45	-20'613.25
Advance payments (Accounts 2100,2101,2102,2103,2104,2106,2107,2108,2109,2110,2112)	-1'224'517.55	-1'400'233.96	-1'423'873.53
Accrued expenses (Accounts 2120,2121,2122,2123,2124,2125,2126,2127,2128,2129,2300,2310,2350,2355,2360,2366,2367,2370,2371)	-144'237.56	-140'691.46	-177'789.83
	-1'467'663.28	-1'607'854.64	-1'679'977.33
<i>Long-term liabilities</i>			
Provisions (Account 2910)	-4'439'000.00	-4'760'000.00	-4'610'000.00
	-4'439'000.00	-4'760'000.00	-4'610'000.00
<i>Equity</i>			
Equity (Account 2800)	-853'086.79	-861'128.43	-877'931.77
Profit/Loss (Account 2998)	-8'041.64	-16'803.34	-7'333.39
	-861'128.43	-877'931.77	-885'265.16
	-6'767'791.71	-7'245'786.41	-7'175'242.49



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**Report of the statutory auditor on the limited statutory examination
to the Ordinary General Meeting of**

ISTA International Seed Testing Association, Bassersdorf

As statutory auditor, we have examined the financial statements (balance sheet, income statement and notes) of ISTA International Seed Testing Association for the financial year ended December 31, 2018.

These financial statements are the responsibility of the executive committee. Our responsibility is to perform a limited statutory examination on these financial statements. We confirm that we meet the licensing and independence requirements as stipulated by Swiss law.

We conducted our examination in accordance with the Swiss Standard on the Limited Statutory Examination. This standard requires that we plan and perform a limited statutory examination to identify material misstatements in the financial statements. A limited statutory examination consists primarily of inquiries of company personnel and analytical procedures as well as detailed tests of company documents as considered necessary in the circumstances. However, the testing of operational processes and the internal control system, as well as inquiries and further testing procedures to detect fraud or other legal violations, are not within the scope of this examination.

Based on our limited statutory examination, nothing has come to our attention that causes us to believe that the accompanying financial statements do not comply with Swiss law and the articles of association.

Zurich, 4 February 2019

BDO Ltd

ppa. David Schraner
Auditor in Charge
Licensed Audit Expert

ppa. Marion Gruber
Licensed Auditor

Enclosures
Financial statements

BDO Ltd, with its statutory seat in Zurich, is the legal representative of the member firms of its international BDO network.

C. Reports of the Technical Committees

You will find on the following pages the reports of the Technical Committees for the calendar year 2019. These reports give an indication of progress towards achievement of the working programmes approved by the TCOM.

Activity Working Programmes arranged in alphabetical order of Committee:

ATC	Advanced Technologies Committee
BSC	Bulking and Sampling Committee
FSC	Flower Seed Committee
FTS	Forest Tree and Shrub Seed Committee
GER	Germination Committee
GMO	GMO Committee
MOI	Moisture Committee
NOM	Nomenclature Committee
PUR	Purity Committee
SHC	Seed Health Committee
STA	Statistics Committee
STO	Storage Committee
TEZ	Tetrazolium Committee
VAR	Variety Committee
VIG	Vigour Committee

1. ATC Advanced Technologies Committee

A. COMMITTEE MEMBERSHIP LIST			
			change comments
1	CHAIR: Bert van Duijn	Netherlands	
2	VICE-CHAIR: Francisco G. Gomes Jr.	Brazil	Vice chair since 2019
3	Birte Boelt	Denmark	
4	Kent Bradford	United States	
5	Mailén Ariela Martínez	Argentina	
6	Henry Bruggink	Netherlands	
7	Aurélie Charrier	France	
8	Devaraja Achar	India	
10	Zhujun Zhu	China	
11	Brigitte Hamman	South Africa	Stepped down from vice chair in 2019
12	Mieczyslaw Grzesik	Poland	
13	Tomoko Sakata	Japan	
14	Sebastian Bobber	Germany	
15	Giovanny Lopez	Netherlands	Joined 2019
	ECOM liaison officer: Craig R. McGill	New Zealand	
B. PUBLICATIONS			
<u>B1. Publications to accompany the Rules</u>			
<u>B3. Scientific information publications</u>			
			remarks
	Publication title	proposed	collaboration
		finalisation	update
			progress
1	ATC Web-pages		Content to be added continuously
2	Report on the ISTA ATC Workshop on Seed Image Analysis. Piracicaba, Brazil.	2019	Seed Testing International (2019) 157; 60-61
3	Overview of all image forming technologies and their application to seeds	Continues	Presented (partly) at different meetings. In prep for web publication.
4	Info paper on nanotechnology	December 2020	Working group established. Progress slow
5	Inventory of mathematical models in seed (testing)	December 2020	Inventory of (scientific) literature completed
6	Special feature issues of X-ray in seeds	June 2020	
7	Chapter X-ray imaging in "Handbook of Tree and Shrub seed testing"	June 2020	Tree and Shrub Seed Committee
C. WORKSHOPS AND SEMINARS			

C1. Training and education workshops				
				remarks
	workshop subject	proposed	collaboration	update
	location	finalisation		progress
1	Workshop on Imaging technologies for seed evaluation	November 26-30 2018	Sao Paulo University.	Successful workshop was organized November 2018. Piracicaba, Brazil.
2	Workshop on advanced seed technologies	2021		Planned for St. Petersburg, Russia.
3	Workshop on Imaging technologies for seed evaluation	June 8-11, 2020		Planned in connection with the ISTA congress in 2020 in Verona. Will be in Bologna
C2 Seminars				
				remarks
	Seminar subject	proposed	collaboration	update
	location	finalisation		progress
1	Seminars on advanced seed technologies	2020/2021		China
D. Proficiency Tests				
	Proficiency Test Subject	proposed	collaboration	remarks update
		finalisation		progress
E. QUESTIONS TO THE COMMITTEE				
	subject of question			from
F. SPECIAL PROJECTS				
	project title / subject			remarks
	collaborating committees	proposed	collaboration	update
		finalisation		progress
1	Overview of image forming technologies and their application to seeds	Continuous		For new ISTA web pages
2	X-ray seed imaging literature data-base for ISTA web pages	June 2020		For new ISTA web pages
3	Nanotechnology for seeds; a first exploration	December 2002		Working group established
4	Mathematical modelling in seed testing	December 2020		Working group established
5	Finding new technologies	continuous		
6	Imaging in Tree and Shrub seed testing"	2020	Tree and Shrub Seed Committee	
7	New Technologies for Other Seeds Determination	2021	PUR	ISTA sponsored special project
8	Assessment on available technologies of imaging and image analysis for other seeds determination (OSD), purity analysis and germination.	2021	PUR, GER	ISTA sponsored special project

2. BSC Bulking and Sampling Committee

COMMITTEE MEMBERSHIP LIST			
			change comments
1	CHAIR: Eddie Goldschagg	South Africa	
2	VICE-CHAIR: Leena Pietilä	Finland	
3	Ignacio Aranciaga	Argentina	
4	Lotta Claesson	Sweden	
	Marie Duter	New Zealand	Resigned 2019
5	Corinne Guimier	France	Joined 2019
6	Gerry Hall	United Kingdom	
7	David Johnston	United States	
	Steve Jones	Canada	Resigned 2019
8	Birte Krogh	Denmark	Joined 2019
9	Michael Kruse	Germany	
11	Cza Realubit	The Philippines	Joined 2019
10	José Mauricio Pereira	Brazil	
	Mable Simwanza	Zambia	Resigned 2019
	Jean-Claude Stephan	France	Resigned 2019
12	Evans Tembo	Zambia	Joined 2019
13	Ad Toussaint	Netherlands	
	Kevin Zaychuk	Canada	Joined 2019, Resigned 2019
	Dot Vittrup Pedersen	Denmark	Resigned 2019
	ECOM Liaison Officer: Steve Jones	Canada	
A. RULES DEVELOPMENT			
A1. Introduction of New Methods			
			remarks
	Method name	proposed	collaboration
	subject	finalisation	update
			progress
2	Validation of the tube trier	2021	Working group established
3	Sampling of <i>Orobanche</i> & <i>Striga</i>	2021	Reinitiate working group
4	Sampling of Seed Mixtures	2020	Approved at 2018 Annual Meeting
A2. Introduction of New Species			
			remarks
	Species and test	proposed	collaboration
		finalisation	update
			progress
1	<i>Salvia hispanica</i>	2019	PUR & GER Approved at 2019 Annual Meeting
A3. Introduction of Rules Changes			
			remarks
	Subject	proposed	collaboration
		finalisation	update
			progress
1	Several editorial, corrections to cross-references	2019	Rule change approved at 2019 Annual Meeting
2	Revision of 2.5.1.5 Obtaining the submitted sample – grouping and combining procedures of obtaining sample for moisture testing.	2019	Rule change approved at 2019 Annual Meeting
3	Revision of 2.5.1.6 Dispatch of the submitted sample – sealing clarification	2019	Rule change approved at 2019 Annual Meeting
4	Revision of 2.5.2.2 Sample reduction methods – remove	2019	Rule change approved at 2019 Annual Meeting

	procedure for obtaining moisture working sample, duplication.			
5	Revision of 2.5.2.2 Sample reduction methods - mixing before dividing	2019		Rule change approved at 2019 Annual Meeting
6	Revision of Protocol on the Approval of Automatic Samplers	2019	Accreditation Department	Rule change approved by BSC, WITHDRAWN at 2019 Annual Meeting
7	Number of Sub-Lot Certificates	2021	ISF Veg WG, STA	Waiting for recommendation from ISTA/ISF Veg WG
8	Size of submitted and Working Samples for Vegetable Seed	2021	ISF Veg WG, STA	Waiting for recommendation from ISTA/ISF Veg WG
9	Check sampling for automatic samplers	2021	STA, Accreditation	Under discussion
10	Seeds retained for ID after testing	2021	PUR	Under discussion
11	Soil & Boerner divider minimum channels	2021		Start work in 2020
B. PUBLICATIONS				
B1. Publications to accompany the Rules				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
1	ISTA Handbook on Seed Sampling	2020	ISTA Accreditation Department	Submitted to ISTA for distribution as electronic copy
B2. Training publications on specific seed testing topics				
				Remarks
	Publication title	proposed	collaboration	Update
		finalisation		Progress
1	Supporting material for 'Train the trainers'	2020		Discussion will start after finalisation of Handbook
2	Supporting material for 'Train the trainers' – video clips	2022		In process, 3 additional video clips completed, now 7 videos posted for public use on ISTA YouTube
3	Develop new video clips for sampling and sample division	2022		Create new videos on sampling for moisture testing
B3. Scientific information publications				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
C. WORKSHOPS AND SEMINARS				
C1. Training and education workshops				
				remarks
	workshop subject	proposed	collaboration	update
	location	finalisation		progress
1	Joint Workshop on Sampling, Purity, Germination and Moisture, Hyderabad, India	2019	Telangana State Certification Authority, India	Successfully concluded, 23 participants
2	Workshop on OECD Certification (including 2 days ISTA Sampling), Arusha, Tanzania	2019	OECD, TASTA, TOSCI Tanzania	Successfully concluded, 33 participants
3	ISTA Workshop on Seed Sampling and Quality Assurance in Sampling	2021	DFL Seeds A/S, Denmark	In planning

D. Proficiency Tests			
Proficiency Test Subject	proposed	collaboration	remarks update
	finalisation		progress
1.			
E. SPECIAL PROJECTS			
project title / subject			remarks
collaborating committees	proposed	collaboration	update
	finalisation		progress
1 Supporting material for 'Train the trainers' – further development of video clips	2022	ECOM, MOI	3 additional video clips completed, now 7 videos posted for public use on ISTA YouTube. Several new videos planned
2 Q & A Webpage	2022	SEC	In progress, waiting for Secretariat
3 Development of Mobile Application for Seed Sampling Calculations (1st phase)	2019		1 st Phase completed, available to public through ISTA Website
4 Enhancement/additional functionalities of Mobile Application for Seed Sampling Calculations (2 nd phase)	2020		considering making it available in more languages, add additional functions
F. QUESTIONS TO THE COMMITTEE			
subject of question			from
			country
1 Sampling of seed lot is bulk, before being mixed, large seed lots.			ISTA Accreditation Department
2 Sampling intensity for above.			ISTA Accreditation Department
3 Encrusted seed seed lot weight, without covering			Canada
4 ISTA Accreditation status when accredited lab splits up in two entities, one for sampling			Lithuania
5 Validation of dividers, analysts - can be done at the same time as checking for dividing in equal halves? - Yes			France
6 Automatic Sampling devices/models approved by USA, OASA, will ISTA accept Certificates of approval? No, each individual sampler has to be validated after installation			Turkey
7 Opinion of Nobbe trier with block in point			Israel
8 Using riffle dividers for grass mixtures			ISTA Accreditation Department
9 Same lot numbers for BICs			India
10 Definition of expensive seeds, Medicago sativa?			ISTA Accreditation Department
11 Frequency for riffle dividers in the warehouse			ISTA Accreditation Department
12 Sampling of small containers			Belgium
13 Pelican Sampler			Belgium
14 Issuing OIC on seedlot already sampled and analysed (OIC) by another lab			Italy
15 Retesting of stored sample, putting back fractions			ISTA Accreditation Department
16 OICs for 2nd part of lot exported			ISTA Accreditation Department
17 Seed on outside of stick trier			ISTA Accreditation Department
18 Homogeneity checking during automatic sampling			ISTA Accreditation Department
19 OIC for mixtures of varieties of the same species			ISTA Accreditation Department
20 Taking moisture sample from one half (pan) of the divider			ISTA Accreditation Department
21 Possible duplication of ID Numbers seed lots where the ISTA lab does not allocate it			ISTA Accreditation Department

3. FSC Flower Seed Committee

COMMITTEE MEMBERSHIP LIST				
		Country	change comments	
1	Rita Zecchinelli (Chair)	Italy		
2	Sarah Dammen (Vice Chair)	USA		
3	Rachael Davies	United Kingdom		
4	Meriam Dekalo Karen	Israel		
5	Alice Di Sacco	United Kingdom		
6	Sylvie Ducournau	France		
7	Erik van Egmond	Netherlands		
8	Stefanie Kramer	Germany		
9	Maria Marin	Croatia		
10	Lucele Pretorius	South Africa		
11	Zita Ripka	Hungary		
12	Soo-Young KIM	South Korea		
13	Shizka Takeuchi	Japan		
	ECOM Liaison Officer: Rita Zecchinelli	Italy		
A. RULES DEVELOPMENT				
<u>A1. Introduction of New Methods</u>				
Method name		proposed	collaboration	remarks update
subject		finalisation		progress
1	<i>Eustoma exaltatum</i> : new germination method	2020	GER	Samples distributed, results to be collected
<u>A2. Introduction of New Species</u>				
Species and test		proposed	collaboration	remarks update
		finalisation		progress
1	<i>Passiflora edulis</i>	2021	GER	To be started
<u>A3. Introduction of Rules Changes</u>				
Subject		proposed	collaboration	remarks update
		finalisation		progress
1	Sample size for flower species (Table 2A part 3)	2021	BSC	Data collection in progress. Not easy.
2	Clarification about OSD for species listed in Table 2A, part 3	2020	BSC	To be started
B. PUBLICATIONS				
<u>B1. Publications to accompany the Rules</u>				
Publication title		proposed	collaboration	remarks update
		finalisation		progress
1	ISTA Handbook on Flower Seed Testing: new sheets			In progress

<u>B2. Training publications on specific seed testing topics</u>				
Publication title		proposed	collaboration	remarks update
		finalisation		progress
1	Collaboration in the project of the website TSWS (Testing Seeds of Wild Species): wild flower species		WS	In progress
<u>B3. Scientific information publications</u>				
Publication title		proposed	collaboration	remarks update
		finalisation		progress
		-	-	
C. WORKSHOPS AND SEMINARS				
<u>C1. Training and education workshops</u>				
workshop subject		proposed	collaboration	remarks update
location		finalisation		progress
1	ISTA Workshop on Tetrazolium Testing and Equilibrium relative humidity (ERH) determination for Wild Species and Flowers	2020	TEZ, MOI	NEW! Announced.
<u>C2. Seminars</u>				
Seminar subject		proposed	collaboration	remarks update
location		finalisation		progress
D. Proficiency Tests				
Proficiency Test Subject		proposed	collaboration	remarks update
		finalisation		progress
1	ISTA PT 20-3 <i>Felicia heterophylla</i>	2020	PTC	In progress
F. SPECIAL PROJECTS				
project title / subject		proposed	collaboration	remarks update
collaborating committees		finalisation		progress
1	Participation in the preparation of the exercise on seed mixture (distribute with PT samples)	2019-22	PUR -PTC	Ongoing
2	Collaboration with AOSA: comparison of species listed in AOSA and ISTA Rules	2021	AOSA	To be started
3	Collection of information about Flower seed Testing by ISTA laboratories	2022		To be started
4	Inventory of TZ methods used by the laboratory for flower species	2022	TEZ	To be started
E. QUESTIONS TO THE COMMITTEE				
subject of question				from
				Country
1	GER methods for succulents			South Africa
2	Accreditation for automatic sampling of flower seed lots			ISTA Secretariat
3	Germination of Juncus			Chile
	New project			
	New proposed finalisation date			

4. FTS Forest Tree and Shrub Seed Committee

No report was submitted to the ISTA Secretariat by March 2020.

5. GER Germination Committee

COMMITTEE MEMBERSHIP LIST			
			change comments
1	CHAIR: Gillian Musgrove	United Kingdom	
2	VICE-CHAIR: David Johnston	United States of America	
3	Pernilla Andersson	Sweden	
4	Ignacio Aranciaga	Argentina	
5	Sarah Dammen	United States of America	
6	Lucile Daron	France	
7	Meriam Dekalo Keren	Israel	
8	Sylvie Ducourneau	France	
9	Hortense Faucher	France	
10	Lesly Gonzalez Galaz	Chile	
11	Aidin Hamidi	Iran	
12	Andrea Jonitz	Germany	
13	Augusto Martinelli	Argentina	
14	Rita Zecchinelli	Italy	
15	Dot Vittrup Pedersen	Denmark	Approved by ECOM Dec 2019
16	Jane Bartel	Canada	Approved by ECOM Dec 2019
17	Erik van Egmond	The Netherlands	Approved by ECOM Dec 2019
	ECOM Liaison Officer: Sylvie Ducourneau	France	
A. RULES DEVELOPMENT			
A1. Introduction of New Methods			
			remarks
	Method name	proposed	collaboration
	subject	finalisation	update
			progress
1	Introduction of agar substrate for <i>Pinus</i>	2020	FTS
			The study was on standby in 2017 due to financial concern for samples supplying. A laboratory has been founded, which can provide samples for the validation study. The test plan has been prepared and validated.
2	Addition of 20°C for <i>Anethum graveolens</i> germination	2020	
			The work is not yet started. It is planned to be carried out by Valerie Blouin (GEVES-SNES, France).
3	Temperature for <i>Brassica napus</i> germination	2019	
			The work is carried out by Ruoqing Wang (CFIA Canada). This method validation has been submitted as Rules Proposal The proposal is to remove 20<=>30 and add 15<=>25.
4	Using BP instead of TP for the germination of <i>Spartium junceum</i> .	2020	FTS
			The work is carried out by David Johnston. The objective is to propose the BP substrate for the germination of <i>Spartium junceum</i> , instead of TP.

5	Addition of CCP for <i>Glycine max</i>	2020		The work is carried out by Sarah Dammen and David Johnston. The objective is to propose CCP as a method for testing <i>Glycine max</i> .
6	Addition of 20°C for <i>Eustoma exaltum</i> germination	2020	FSC	This work is ongoing within the FSC.
7	Addition of 20°C for <i>Papaver somniferum</i> .	2020	FSC	The test plan is being reviewed. The work is organised by Vladislava Gregorová, CZ.
8	Addition of dormancy breaking methods for <i>Cannabis sativa</i> (hemp)	2021	AOSA/SCST and CFIA	This work is at an early stage and will be taken forward by Ruoqing Wang.
A2. Introduction of New Species				
				remarks
	Species and test	proposed	collaboration	update
		Finalisation		progress
1	Introduction of a germination method for <i>Chenopodium quinoa</i>	2020	STA, BSC, PUR	A new validation study has been completed and is currently undergoing statistical analysis
2	Introduction of a germination method for <i>Jatropha curcas</i>	2020	FTS	The study will be carried out by Elisa Vieira, Brazil from FTS committee.
3	Introduction of a germination method for <i>Cleome gynandra</i>	TBC	STA, BSC, PUR	The working group leaders are Lea Mazor and Meriam Dekalo-Keren. No work has started on the study. There is a germination method already for <i>Cleome hassleriana</i> so it may be possible to have a peer validation study performed.
4	Introduction of a germination method for Dwarf Saltwort (<i>Salicornia bigelovii</i> Torr. and <i>Salicornia persicum</i>)	2020	STA, BSC, PUR	The study is carried out by Aidin Hamidi. A preliminary study has been set up to find the best germination conditions for 3 Dwarf Saltwort species (<i>Salicornia bigelovii</i> Torr., <i>S. persicum</i> and <i>Salicornia perspolitana</i>). The germination tests were conducted by planting seeds as TP and BP during 7, 14 and 28 days, at 20, 25, 30 and 35 °C constant temps. and 20-30 and 20-35 °C alternative temperatures. The light requirement has also been tested. The best methods have to be selected for the validation study.
5	Introduction of a germination method for <i>Azadirachta indica</i>	TBD	FTS	The study is carried out by FTS.
6	Introduction of a germination method for Saatar (<i>Zataria multiflora</i> Boiss.) and Camelthorn (<i>Alhagi camelorum</i> F.).	2020		This study is carried out by Aidin Hamidi

A3. Introduction of Rules Changes				
				remarks
	Subject	proposed	collaboration	update
		Finalisation		progress
1	AOSA / ISTA harmonisation: "leaf extending less than halfway up into the coleoptile"	2020	RUL STA	Hortense Faucher is taking this work forward.
2	Precision of light for germination tests	2020	RUL	This proposal was withdrawn by the Germination Committee at the 2019 meeting. Rules proposal added for 2020: The light should be between 3000K (neutral white) to 4000K (cool white) using lamp or LED equipment. Whatever the type of light, the spectrum visible for seed germination and seedling growth should be between 400 and 700 nm.
3	Pre-washing of <i>Beta</i> seeds	2020	RUL	This proposal was withdrawn by the Germination Committee at the 2019 meeting. Further evidence is required to show that either method is comparable. Sarah Dammen may have data that can be used. A validation study will be led by Lesly Gonzalez Galaz, Chile.
B2. Training publications on specific seed testing topics				
				remarks
	Publication title	proposed	collaboration	update
		Finalisation		progress
C. WORKSHOPS AND SEMINARS				
C1. Training and education workshops				
				remarks
	workshop subject	proposed	collaboration	update
	location	finalisation		progress
1	ISTA Workshop Purity & Germination - Ukraine	March 2020	PUR	The lecturers are appointed and programme in place
2	ISTA Workshop on Germination, Tetrazolium & Vigour – Izmer, Turkey	March 2020	TZ VIG	The lecturers are appointed and programme in place
3	ISTA Workshop on Germination & Tetrazolium - New Zealand	November 2020	TZ	No further update
4	ISTA Workshop Purity & Germination – Ankara, Turkey	May 2021	PUR	No further update
D. PROFICIENCY TESTS				
	Proficiency test subject	proposed	collaboration	update
	location	finalisation		progress
1	19-1 <i>Galega orientalis</i> (completed)	2019	PTC	Completed
2	19-2 <i>Brassica napus</i>	2019	PTC	Completed
3	19-3 <i>Hordeum vulgare</i>	2020	PTC	Delayed until mid-January 2020

E. SPECIAL PROJECTS			
project title / subject			remarks
collaborating committees	proposed	collaboration	update
	finalisation		progress
1	Maize root system evaluation – Study of the definition of the minimum number of secondary roots necessary to compensate a defective primary root	2020	<p>This study is carried out by Aidin Hamidi.</p> <p>The objective is to evaluate the influence of the secondary roots (number and development) on the normal Maize seedling evaluation</p> <p>The proposed experiment is:</p> <ul style="list-style-type: none"> - The selection of seed samples from various varieties - The germination of the seeds in laboratory and, at the end of the test, the selection of seedlings with 1) well developed primary root, 2) defective primary root with different number and development of secondary roots - The transplanting of the developed seedlings into the field to evaluate the plant growth in crop conditions
2	<i>Helianthus annuus</i> root system evaluation – Change from A2111 to A2112	2020	<p>The work is carried out by Takayuki Okuda from Japan.</p> <p>The objective is to change the Seedling Evaluation Criteria of <i>Helianthus</i> root system.</p> <p>– at least three secondary roots, each of which is greater than or equal to half the length of the hypocotyl, when the primary root is defective.</p> <p>This method validation has been submitted as Rules Proposal.</p>
3	Assessment on available technologies of imaging and image analysis for other seeds determination (OSD), purity analysis and germination.	2021	ATC PUR
4	Radicle emergence and conductivity tests as potential methods to predict normal germination in five vegetable Brassic species.	2021	VIG
6	Comparison of the temperature regimes for the germination of <i>Beta vulgaris</i> (pelleted and non-pelleted).		
			This work is carried out by Sylvie Ducournau.
F. QUESTIONS TO THE COMMITTEE			
subject of question			from
			Country
1	Termination of the Germination Test	Jan 2019	New Zealand
2	Dormancy & TTZ	Feb 2019	Germany
3	pH in substrate	Feb 2019	Norway
4	Method for Chenopodium quinoa	Feb 2019	The Netherlands

5	Sampling protocol for vegetables seed	Mar 2019		Switzerland
6	Images of seedlings	Mar 2019		Canada
7	Fungicide for treating beet	Apr 2019		UK
8	Addition of chemicals to substrate	May 2019		Sweden
9	Germination length for Spinach	May 2019		The Netherlands
10	25% rule for Phaseolus	June 2019		UK
11	Dormancy breaking procedures	June 2019		New Zealand
12	Types of abnormal seedlings (including loops & spirals)	Aug 2019		Indonesia
13	Use of substrates	Aug 2019		Indonesia
14	Adding a new method (BP) to an existing method	Sept 2019		Australia
15	Use of OIC	Sept 2019		Mexico
16	Pre-treatment temperature of equipment	Sept 2019		Switzerland
17	New species in the rules (<i>Diplotaxis tenuifolia</i> & <i>Boraga officinalis</i>)	Sept 2019		The Netherlands
18	Seed bed level temperature	Oct 2019		Switzerland
19	Reporting of PT results	Oct 2019		Switzerland
20	New species in the rules (<i>Sesamum radiatum</i>)	Oct 2019		USA
21	Request regarding germination paper manufacture	Oct 2019		India
22	Temperature Profiling in equipment	Oct 2019		Switzerland
23	Temperature & Substrate use in Zea mays	Oct 2019		Zambia
24	Media Batch checks	Oct 2019		Switzerland
25	Termination of Germination tests	Oct 2019		Switzerland
26	Counting number of seedlings and seeds of each category	Nov 2019		New Zealand
	New project			
	New proposed finalisation date			

6. GMO Committee

COMMITTEE MEMBERSHIP LIST			
		Country	
1	CHAIR: Enrico Noli	Italy	
2	VICE-CHAIR: René Mathis	France	
3	Elizabeth Bates	Belgium	
4	Sofia Ben Tahar	France	
5	Tajinder Grewal	Canada	
6	Lutz Grohmann	Germany	
7	Andrea Jonitz	Germany	
8	Jean-Louis Laffont	France	
9	Dwarkesh Parihar	India	
10	Elena Perri	Italy	
11	Kirk Remund	United States	
12	Marco Mazzara	Italy	
13	Ana Laura Vicario	Argentina	
14	Bruno Zaccomer	France	
15	Dabing Zhang	China	
16	Ray Shillito	United States	
	ECOM Liaison Officer: Berta Killermann	Germany	
A. RULES DEVELOPMENT			
<u>A1. Introduction of New Methods</u>			
<u>A2. Introduction of New Species</u>			
<u>A3. Introduction of Rules Changes</u>			
	Subject	proposed	collaboration
		finalisation	
	<i>NO Rules development or changes this year</i>		
B. PUBLICATIONS			
<u>B1. Publications to accompany the Rules</u>			
	Publication title	proposed	collaboration
		finalisation	
	<i>GMO Testing Handbook (R. Mathis and E. Noli WG Leads)</i> <i>December 2019: Further progress has been made in 2019. Meeting of the WG 28th-31st January 2019 in Bologna and production of an advanced draft. Several chapters at this stage. In particular, significant progress on the statistical part. Further work carried out during the annual meeting in Hyderabad and during several teleconferences in November and December.</i>	2020	STA, VAR, Audit team at Secretariat

<u>B3. Scientific information publications</u>			
	Publication title	proposed	collaboration
		finalisation	
	Publish articles on activity of the committee (B. Zaccomer WG Lead) <i>Report on the ISTA Biotechnology Detection Workshop held 28-31 August 2018 in Moscow.</i>	Ongoing	
C. WORKSHOPS AND SEMINARS			
<u>C1. Training and education workshops</u>			
	workshop subject	proposed	collaboration
	Location	finalisation	
	<i>No training workshops this year</i>		
D. Proficiency Tests -			
	Proficiency Test Subject	proposed	collaboration
		finalisation	
	<i>December 2019</i> PT22 – Canola <i>This Proficiency test included an obligatory part and a voluntary (extra) part. Both have been finalised with the distribution of final results and ratings. Running of this PT was delayed by difficulties experienced in sample delivery, particularly due to changes in phytosanitary regulations and import permits in several countries. Several adjustments at the existing procedures for GMO PT organisation turned out necessary. In collaboration with the Seed Provider, the whole process was scrutinised, the weak points were identified and changes were made to the relevant SOPs. The new scheme will be adopted starting from PT23.</i> PT23 – Soybean: <i>In early stages of preparation.</i>	2019	STA, Secretariat
E. Questions to the Committee - Since date of last report			
	Question subject	Date	From
			(Country)
	<i>No questions to the Committee</i>		
F. SPECIAL PROJECTS			
	project title / subject	proposed	collaboration
	collaborating committees	finalisation	
3	ISTA GMO Website: (E. Bates, WG Lead) <i>No updates</i>	Ongoing	Secretariat

4	<p>ATC Contact: (A. L. Vicario)</p> <p>No updates</p>	Ongoing	Advanced Technology Com.
5	<p>Statistical tools for GMO Testing: (J.-L. Laffont, WG Lead)</p> <p><i>In October 2019 ISTA was established as a type A liaison within ISO TC 34. Three ISTA members have been added to the members of SC 16/WG 9 "Horizontal methods for molecular biomarker analysis" in order to collaborate on "Seed and grain subsampling".</i></p>	Ongoing	STA
6	<p>WG on Standardized Terms (E Noli, WG Lead)</p> <p><i>WG has further reviewed the list of standard terms used in GMO testing with special emphasis on the description of the Scope of accreditation of laboratories. This will be associated with adjustments in the GMO database at the ISTA Secretariat which allows the management of laboratory accreditation and auditing, and their participation to the Proficiency Test Program.</i></p> <p><i>The work is proceeding in tight connection with the preparation of the GMO Testing Handbook and will improve the description of the accreditation process.</i></p>	Ongoing 2020	Audit Team and TCom Manager at Secretariat

7. MOI Seed Moisture Committee

COMMITTEE MEMBERSHIP LIST				
			change comments	
1	CHAIR: Laura Bowden	United Kingdom		
2	VICE-CHAIR: Axel Goeritz	Germany		
3	Gerarda de Boer-Raatgever	Netherlands		
4	Sergio Pasquini	Italy		
5	Susan Alvarez	United States		
6	Baymolo Goma	Zambia		
7	Wen-Ju Yang	Separate Customs Territory of Taiwan		
8	Celine Herbert	France		
9	Fiona Hay	Denmark		
10	Tanja Petrovic	Serbia		
11	Selma Kurt	Turkey	Joined December 2019	
	ECOM Liaison Officer: Craig R. McGill	New Zealand		
A. RULES DEVELOPMENT				
A1. Introduction of New Methods				
			remarks	
Method name	proposed	collaboration	update	
subject	finalisation		progress	
1	Use of equilibrium Relative Humidity (eRH) as an alternative method for the determination of seed moisture status 2022	FTS, STA	Questionnaires sent out to ISTA laboratories to gather information on how much use of this method is already made and on current methods used (53 responses) Majority of respondents were in favour of adding eRH to the rules. Comparative testing with various species planned for 2020. The use of eRH for testing of coated seeds to be investigated.	
A2. Introduction of New Species				
			remarks	
Species and test	proposed	collaboration	update	
	finalisation		progress	
1	<i>xFestulolium</i>	2020	STA	Data re-analysed and Method Validation Report revised. Rules change proposal prepared for 2020.
2	<i>Carica papaya</i>	2020		Method Validation Report produced. Rules change proposal prepared for 2020.
3	<i>Helianthus annuus</i>	2021		Adina Tirziu from the Central Laboratory for Quality of Seeds and Planting Material in Romania will lead this work. Proposal for a comparative test currently being prepared.

A3. Introduction of Rules Changes				
				remarks
	Subject	proposed	collaboration	update
		finalisation		progress
1	Checking the need for grinding of small species with hard seeds - <i>Medicago sativa</i> , <i>Lotus pedunculatus</i> , <i>Lotus corniculatus</i> , <i>Trifolium pratense</i> , <i>Trifolium repens</i> ,	2021	STA	This work has not yet started due to staffing issues but is planned to progress in 2020.
B. PUBLICATIONS				
B1. Publications to accompany the Rules				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
1	Review and update Handbook on Moisture Determination	2022	Secretariat	Work on this has not yet commenced.
B3. Scientific information publications				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
1	Excel tool for calculation of moisture test results	2020		Tool has been tested. Needs to be looked at to determine whether it is ready to be published on the website.
C. WORKSHOPS AND SEMINARS				
C1. Training and education workshops				
				remarks
	workshop subject	proposed	collaboration	update
	location	finalisation		progress
1	Workshop on Moisture Testing	March 2020		Two day workshop with a focus on the oven method for seed moisture testing. Lecturer – Axel Goeritz.
2	Workshop on tetrazolium testing and equilibrium relative humidity determination for wild and flower species	May 2020		Fiona Hay will give the lectures/practical demonstrations on eRH as part of this workshop.
D. PROFICIENCY TESTS				
	Proficiency test subject	proposed	collaboration	update
	location	finalisation		progress
1				
E. QUESTIONS TO THE COMMITTEE				
	subject of question	Month		from
				country
1	Checking ventilation and capacity of ovens – how to interpret the Rules	January		France
2	Reporting of moisture content results for species not currently in the Rules	January		United States
3	Reporting of moisture results on an OIC	January		ISTA Secretariat
4	Reason for differences in pre-drying requirements for different species	February		ISTA Secretariat
5	How to compare results from different analysts	March		Argentina

6	How to gain accreditation for using cutting as a method for moisture testing	March		Turkey
7	Lack of clarity regarding Rules 9.2.5.2	March		Serbia
8	Effect of external temperature and moisture on the result of a moisture content test.	August		Iraq
9	Questions regarding the calibration and quality checks of ovens used for moisture testing	October		ISTA Secretariat
10	How to do a moisture content determination on coated seeds	November		Zambia
11	Moisture testing in sunflower seeds – can a shorter test be added to the Rules	November		Romania
	New project			
	New proposed finalisation date			

8. NOM Nomenclature Committee

COMMITTEE MEMBERSHIP LIST			
			change comments
1	CHAIR: Melanie Schori	United States	
2	VICE-CHAIR: Ernest Allen	United States	
3	Susan Alvarez	United States	
4	Bernard Baum	Canada	
5	Michel Chauvet	France	
6	Axel Diederichsen	Canada	
7	Kees van Ettehoven	Netherlands	Resigned from NOM in Dec 2018
8	Karl Hammer	Germany	Contact email address no longer valid in Sep 2019, did not confirm continued membership for triennium or vote on committee ballots in 2018
10	Marco Hoffman	Netherlands	
11	Klaus Pistrick	Germany	Resigned from NOM in Apr 2019
12	John Wiersema	United States	
13	Tamara Smekalova	Russia	
Two members resigned in 2019 and another has retired and does not appear to have a valid email address, leaving the Committee with 10 effective members. Doris Groth expressed interest in rejoining the Committee at the ISTA Congress, but she has not replied to an email encouraging her to submit a membership application. John Wiersema Committee stepped down as chair and was replaced by Melanie Schori.			
F. SPECIAL PROJECTS			
	project title / subject		remarks
	collaborating committees	proposed collaboration	update
		finalisation	progress
1	ISTA List of Stabilized Plant Names, ed. 7	Dec 2019	Rules; ISTA Publications A list of proposed changes to ed. of the <i>Stabilized List</i> was approved by the ISTA membership at the June 2019 Congress. Members requested that UPOV codes be added to the <i>List</i> , and the 7 th edition, which was released on 20 December, includes the codes and embedded links to the GENIE database.
E. QUESTIONS TO THE COMMITTEE			
	subject of question	date	from country
1	Date of new <i>ISTA List of Stabilized Plant Names</i>	February	India
2	Source of <i>ISTA List of Stabilized Plant Names</i> entries	July	France
3	Name for <i>Fragaria</i> hybrid	July	Switzerland
4	Date of new <i>ISTA List of Stabilized Plant Names</i>	July	Switzerland
5	Weed seed identification assistance	July	Thailand
6	Request for Excel version of <i>ISTA List of Stabilized Plant Names</i>	August	Japan

7	Name changes in <i>ISTA List of Stabilized Plant Names</i>	August		Germany
8	Name changes in <i>ISTA List of Stabilized Plant Names</i>	September		Switzerland
9	Proper name for <i>Acacia/Senegalia/Vachellia</i> in germination test	September		Scotland
10	<i>Chamaecyparis thyoides</i> on illustration in Table 6	September		Switzerland
11	<i>Hordeum vulgare</i> name change	September		Belgium
12	Name changes affecting the Rules	September		Switzerland
13	<i>Hordeum vulgare</i> name change	December		Ireland
14	<i>Sorghum</i> and <i>Triticum</i> name changes	December		France
15	Synonyms in <i>ISTA List of Stabilized Plant Names</i>	December		Serbia

New project
 New proposed finalisation date

9. PUR Purity Committee

COMMITTEE MEMBERSHIP LIST				
			change comments	
1	CHAIR: Gerarda de Boer - Raatgever	Netherlands	Stepped down as chair and member in June 2019	
2	VICE-CHAIR: Ruoqing Wang	Canada	Chair 2019-2021 since June 2019	
3	Maria Duter	New Zealand	Member 2019-2021	
4	Charan Jeet Mehta	India	Member 2019-2021	
5	Andrea Jonitz	Germany	Vice-Chair 2019-2021 since June 2019	
6	Selma Kurt	Turkey	Member 2019-2021	
7	Carrie Lewis	United States	Member 2019-2021	
8	Augusto Martinelli	Argentina	Member 2019-2021	
9	Deborah Meyer	United States	Member 2019-2021	
10	Kepha Oganda	Kenya	Member 2019-2021	
11	Dot Vittrup Pedersen	Denmark	Member 2019-2021	
12	Zita Ripka	Hungary	Stepped down as member in June 2019	
13	Axel Goeritz	Germany	Member 2019-2021	
14	Aurelie Charrier	France	Member 2019-2021	
15	Sue Cousins	New-Zealand	Member 2019-2021	
16	Erik van Egmond	Netherlands	Member 2019-2021 since Dec 2019	
17	Mary Reid	U.K	Member 2019-2021 since Dec 2019	
	ECOM Liaison Officer: Craig R. McGill	New Zealand		
A. RULES DEVELOPMENT				
A1. Introduction of New Methods				
			remarks	
	Method name	proposed	collaboration	update
	subject	finalisation		progress
	No new methods			
A2. Introduction of New Species				
			remarks	
	Species and test	proposed	collaboration	update
		finalisation		progress
1	<i>Cleome gynandra</i>	Carry forward to 2016-2019	GER MOI	Purity committee have confirmed PSD should be PSD10, non-chaffy. Purity committee needs seed or data to confirm the 1000 seed weight and establish the working sample weights. Nomenclature needs to be confirmed. GRIN, <i>Cleome gynandra</i> L. is a synonym for <i>Gynandropsis gynandra</i> (L.) Briq. (Cleomaceae); therefore, rather than appearing in Table 3B under <i>Cleome</i> (PSD 10) a new table entry will need to be made. No further progress, waiting for work on this species with other committees to begin.

2	<i>Bupleurum rotundifolium</i>	Carry forward to 2016-2019	GER MOI	<p>Purity committee have confirmed PSD should be PSD15 non-chaffy.</p> <p>Purity committee needs seed or data to confirm the 1000 seed weight and establish the working sample weights.</p> <p>Purity committee needs either the data to be able to validate the working sample weights.</p> <p>No further progress waiting for work on this species with other committees to begin.</p>
3	<i>Passiflora edulis</i>	Carry forward to 2016-2019	GER MOI	<p>Purity committee have confirmed PSD should be PSD10 non-chaffy. Table 3B entries will need to be made for <i>Passiflora edulis</i> Sims (Passifloraceae). Purity committee needs seed or data to confirm the 1000 seed weight and establish the working sample weights.</p> <p>No further progress, waiting for work on this species with other committees to begin.</p>
4	<i>Salvia hispanica</i>	Rules proposal 2017	GER, BSC	<p>The data from the GER validation study is used to establish the working sample weight and there is already a PSD available for this specie (PSD 18)</p> <p>The Purity proposals are completed and are submitted as a rules proposal for 2017</p> <p>Rules proposal has not been forwarded by the rules committee in 2017</p>
5	<i>Chenopodium quinoa</i>	Rules proposal 2017	GER, BSC	<p>Two sets of data have been validated & finalised. Working sample weights = 10g purity and 100g other seed determination. The PSD proposed is PSD 2 & Non-chaffy.</p> <p>The Purity proposals are completed and are submitted as a rules proposal for 2017, but not brought up for voting in 2017</p>
6	<i>Brassica carinata</i>	Rules proposal 2017	GER,BSC	<p>Data has been collected in cooperation with the GER validation study</p> <p>The Purity proposals are completed and are submitted as a rules proposal for 2017 and was voted into rules 2018.</p>

A3. Introduction of Rules Changes

				remarks
	Subject	proposed finalisation	collaboration	update progress
1	Revision on 4.2.2 Complete test	2020		Proposal submitted in 2019
2	Revision on 4.2.4 Reduced test	2020-2021	BSC	Proposal submitted in 2019
3	Review proposal for adding new varieties of <i>Poa pratensis</i> with 1000 seed weight <0.35 g to the list in the ISTA rules.	2020	WG: blower & other interested persons	Proposal for deleting several varieties have been approved by PUC and is be ready for Rules proposal 2020.

2	Revision of chapter 14: The X-ray test, possible to use other machines to do this test	2019-2021		There are other apparatus available at the moment that could replace X-ray or and other features to the tests Geves (Aurelie) has offered to review the chapter for the 2020 meeting to be voted on
3	Revision of chapter 11 on Coated seeds: Look at new ways to do the verification of species, on how to remove coating	2019-2021		No further progress yet, we did have some nice information from the coating industry to work with A working group should be established and start the work
4	Revise rule 3.5.2.7 impurities with undue effect on result	carried		Purity Committee will start an inquiry among members and other laboratories about the use of this rule No further progress
5	<i>Coriandrum sativum</i> , query TSW and working sample weights 200 gr for OSD instead of 400	carried		The current working sample weight seems to be too large for the specie No further progress, not sure if this is still a demand from the industry
6	Sorghum sample weights adjusted. It seems that they are too large for certain species	carried		Requested by Italy

B. PUBLICATIONS

B1. Publications to accompany the Rules

				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
1	TCOM-SOP-15 How to prepare mix for OSD	2018	ISTA Secretariat	Completed
2	PSD Handbook	carried	PUR further discussion	The hand book has been reviewed in 2014 by a purity committee member and a list of amendments is available. Implementation to be discussed further within the purity committee and the ISTA secretariat. No further progress
3	Handbook on Purity	carried	PUR further discussion	No progress item was discussed at the Purity committee meeting June 2012 and June 2013. The Purity Handbook and format was discussed but no format or list of topics was agreed, one suggestion was that in the interim we could develop the use of the Purity area on the ISTA website with explanations on 'How to do it' topics? No further progress

B2. Training publications on specific seed testing topics				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
1	Handbook on tropical species: seed identification and seed Technology	Carry forward to 2019-2021	Proposed WG leader: Myriam Alvisi; Collaborators: Kepha Oganda, more members needed	Work in progress between Myriam Alvisi and Professor Dr. Angela Tillman in Brazil. Some image examples have been presented at ISTA meetings. The seed descriptions and pictures are available for upload on the new ISTA website
B3. Scientific information publications				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
C. WORKSHOPS AND SEMINARS				
C1. Training and education workshops				
				remarks
	workshop subject	proposed	collaboration	update
	location	finalisation		progress
	Workshop on Purity in Hyderabad, India	June 2019		3 day Workshop on Seed Morphology and Seed Identification for Purity- and OSD- Test, in Hyderabad, India
1	Joint workshop on Purity, Sampling, Moisture and Germination in Hyderabad, India	July 2019		6 day workshop in Hyderabad India. 2 days sampling, 1½ day of purity and 1½ day of germination and 1 day on moisture
D. PROFICIENCY TESTS				
	Proficiency test subject	proposed	collaboration	update
	location	finalisation		progress
1	The purity committee was asked to deliver seed mixture samples for PT tests	2017	PTC	The PTC is no longer capable of organising this special test within the PT rounds and since this is a Seed ID training the purity committee is asked to take up this task.
2	Seed Mixture Round 7	2018	PTC	Canada (R.Wang) delivered
3	Seed Mixture Round 8	2019	FSC/PTC	Netherland (: Gerarda de Boer – Raatgever) delivered
F. SPECIAL PROJECTS				
	Project title /subject			remarks
	collaborating committees	proposed	collaboration	update
		finalisation		progress
	Assessment on available technologies of imaging and image analysis	2019-2021	ATC, GRM, other organisations	Officially started on November 2019
	Develop statistical toolkits for purity calculation and rounding	2019-2021	STAT	Together with the new chapter 10 the STAT committee will be asked to provide a calculation tool for purity and 1000 seed weight. The question has been asked and discussed, but no tool is available yet

Collaboration with AOSA on project how to determine "caryopsis containing any endosperm"	2019-2021	AOSA	No further progress
Look into other ways of training people in doing seed identification and practical work (e.g., web-seminars, instruction video, seed id websites)	2019-2021		Identification tools and resources are being developed by other Institutes outside the committee.
Publish FAQ on website for people/members to look into to learn from each other	2019-2021		No further progress
New Technologies in purity testing	2019-2021	ATC/GRM	Together with ATC and other interested persons we will look into the possibilities of new equipment being implemented in seed testing. There should be some protocol drawn up on how to validate these machines into routine seed testing. Ruoqing has received funding to go to the workshop in Brazil organized by ATC on image analysis

E. QUESTIONS TO THE COMMITTEE

	subject of question	date	country
1	Question relates to a weight of 1000 seeds	22/Jul/19	Serbia
2	Question from ISTA Rules: Regarding the last sentence of item 4.5.3.1 Background, "This test is not suitable for use on treated, coated or pelleted seed." We are unsure whether the phrase refers only to the dry sieving method, or to the two methods, sieving method and dry method. And if the answer is both, then there are no methods for detecting Striga in treated, coated or pelleted seeds?	7/Aug/19	Brazil
3	Seed ID inquiry	5/Aug/19	Thailand
4	Seed ID inquiry	18/Aug/19	Philippines
5	Species name in ISTA reporting	29/08/2019	Moldova
6	1. do any of you test for <i>Cuscuta</i> in bigger amount than stated in the ISTA rules, as a request by the applicant? – and 2. if YES what is the weight of the working samples?	13/09/2019	Denmark
7	Reporting number of other seeds in when a lab decided to conduct a reduced test for one species.	18/Sep/19	Uruguay
8	It is about receiving and analyzing samples for purity that are smaller than the weight prescribed in table 2A In other words, is it allowed to examine smaller amounts of purity sample? (we decided it is in this case) How small can the purity sample be? In the case of this laboratory it was only on third of the sample weight indicated in table 2A for purity	, October 1, 2019	ISTA auditor
9	the 1000-seed weight determination is carried out always on the Pure Seed fraction, irrespective of the number of germlings present in the "seed". Does this mean that for <i>Daucaceae</i> species, for example, where both schizocarps and mericarps are included in the PSD, both are counted in the same way in the 8 100-seeds replicates?	9/Oct/19	Italy

10	We have some doubts about the concept of reduced test for determination of other seeds. Namely, ISTA rules are claiming that reduced test refers to examination on the working sample which is smaller than prescribed.	28/Oct/19	ISTA auditor
11	About broken seeds, these seeds were not slightly satisfied with the definition of pure seed. So I was able to identify their species.	31/Oct/19	Japan
12	There we found other seeds and reported percentage. But I am not sure, whether we have to report also a number of other seeds found.	31/Oct/19	Serbia
13	I have some questions about the purity analysis that we discussed during internal audit in our country. We are unclear about the types of balances used for purity analysis and the number of decimal places of the inert matter or other seed.	9/Nov/19	THAILAND
14	Thousand-seed weight determination of Brassica oleracea (for Broccoli) was reported with 3 decimal places. The reason for that was probably, because in that case the purity test was performed on 8.855 g. (about 2,500 seeds). In my opinion, the correct report is with 2 decimal places, because according to Table 10A: If the minimum working weight for purity analysis for the species being analysed according to Table 2A is 10 g. then the reported results will be with 2 decimal places (not more).	19/Nov/19	ISRAEL
15	<i>Seed ID inquiry</i>	21/Nov/19	Thailand
16	We have some doubts about the concept of reduced test for determination of other seeds. Namely, ISTA rules are claiming that reduced test refers to examination on the working sample which is smaller than prescribed.	17/Oct/19	Serbia
17	The testing method of noxious or quarantine seeds for phyto-sanitary certification.	22/Nov/19	Canada
	New project		
	New proposed finalisation date		

10. SHC Seed Health Committee

COMMITTEE MEMBERSHIP LIST				
			change comments	
1	CHAIR: Valerie Grimault	France	Chair	
2	VICE-CHAIR: Terry Aveling	South Africa	Vice chair	
3	Ilaria Alberti	Italy		
4	Rouke Bakker	New Zealand		
5	Mark Buimer	Netherlands		
6	Gary Munkvold	United States		
7	Rosa Piña González	Chile	Since June 2016	
8	Dorota Szopinska	Poland		
9	Xiulan Xu	China	Since June 2017	
10	Wen-Hsin Chung	Taiwan	Since June 2018	
11	Stephan Brière	Canada	Since June 2018	
12	Isabelle Serandat	France	Since June 2019	
13	Marian Mc Ewan	United Kingdom	Since June 2019	
14	Kohei Osaki	Japan	Since June 2019	
15	Ruud Barnhoorn	Netherland	Since June 2019	
	ECOM Liaison Officer: Valerie Cockerell	United Kingdom		
A. RULES DEVELOPMENT				
A1. Introduction of New Methods				
			remarks	
Method name	proposed	collaboration	update	
subject	finalisation		progress	
1	<i>Fusarium graminearum</i> , <i>F. langsethiae</i> , <i>F. culmorum</i> , <i>F. poae</i> ... – Cereals new method	2013-2021	Nibio Norway	Test plan prepared, primers for PCR identification chosen, collection of isolates performed
2	<i>Fusarium oxysporum</i> on tomato – new method	2013-2021	Naktuinbouw, GEVES, Microlab	New test plan under progress, new organizer, dilution plating, PCR for identification and pathogenicity test confirmation
3	SHC.64: Detection of <i>X. oryzae</i> pathovars on rice seeds	2013-2021	IRRI	CT performed, reviewed with major modification, answers to reviewers expected. No news.
4	<i>Ascochyta rabeii</i> chickpea	2013-2021	Icarda at the beginning, new project GEVES	Test plan reviewed, under revision, will be part of a research project at GEVES
5	<i>Tilletia</i> species/wheat	2018-2021	GEVES, other to identify	Project to compare existing methods in order to select one to validate, questionnaire sent and information from laboratories received
6	<i>Pseudomonas syringae</i> pv. <i>Glycinea</i>	2018-2021	USDA	Project to compare existing methods in order to select one to validate
7	<i>Botrytis cinerea</i> on hemp seeds	2019-2021	CREA, GEVES	New method development, test plan under progress

7	Nematodes on onion seeds	-		Project, Naktuinbouw contacted to share information/participate to a validation. Answer expected. No news.
8	<i>Fusarium</i> spp./ <i>Zea mays</i>	-		At project stage
9	Living <i>Neotyphodium</i> , grass seed	-		At project stage
9				
<u>A3. Introduction of Rules Changes</u>				
				<u>remarks</u>
	Subject	Proposed finalisation	collaboration	Update progress
1	SHC XX: <i>U. nuda/Hordeum vulgare</i> , staining	2016-2021	SASA	Ct performed in parallel to PT organized by SASA, report received
2	PCR detection of <i>L. maculans</i>	2019-2021	Canadian Food Inspection Agency	Project phase
3	Five year Method reviews	2018-2019	Univ Pretoria	Questionnaire 2019 and 2020 will be grouped
4	<i>Ascochyta</i> pea comparing NUV/dark	2016-2021		Infected seeds to be found
5	Modification method 7-025 <i>Aphelenchoides</i>	2018	Gerrit Karssen and Corinne Sarniguet (NPPO NL and FR)	Review and performed, submitted to rules proposals and voted June 2019
	Editorial modifications for harmonisation hypochlorite	2019-2020	Dorota Szopinska	Proposed for rules proposals to be voted May 2020
	Harmonisation wording for sample and subsample size	2019-2020	Rosa Pina, Dorota Szopinska	Proposed for rules proposals to be voted May 2020
	Ethidium Bromide/Gel red/or equivalent	2019-2020	Rosa Pina	Proposed for rules proposals to be voted May 2020
<u>B2. Training publications on specific seed testing topics</u>				
				<u>remarks</u>
	Publication title	proposed	collaboration	update
1	Seed Health Handbook	2013-2021	Terry Aveling	12 chapters under review
2	Available reference material	2018-2019		Not possible to publish on website reference material (seeds, isolates...) available as a fee is associated
C. WORKSHOPS AND SEMINARS				
<u>C1. Training and education workshops</u>				
				<u>remarks</u>
	Workshop subject	proposed	collaboration	update
	location	finalisation		progress
1	Seed Health Workshop Pretoria South Africa, Seed health methods using PCR, ELISA,	2020	University Pretoria, Starke Ayres	Second announcement circulated, registrations open

	dilution plating and indexing methods			
C2. Seminars				
				<u>remarks</u>
	Seminar subject	proposed	collaboration	update
	location	finalisation		progress
	ISTA Plant Health Seminar for International Year of Plan Health	2020	CREA	1 day seminar 25 th May 2020, program under progress
	International Seed Industry Workshop	2019	TSTA (Taiwan Seed Trade Association), TSIPS (Taiwan Seed Improvement and Propagation Station)	Visits of industry and government seed laboratories and 1 day seminar. V Grimault Lecturer. November 2019.
	qPCR <i>Leptosphaeria maculans</i> + SH symposium	2021	Canadian Food Inspection Agency	Seed Health seminar and workshop, August 2021 Ottawa, Canada
D. PROFICIENCY TESTS				
	Proficiency test subject	proposed	collaboration	update
	location	finalisation		progress
1	7-025 <i>Aphelenchoides besseyi</i> rice	2016-2018	ANSES, Indonesian ISTA lab GEVES	Completed, report sent
2	7-007 Three pathogens <i>Linum</i>	2016-2018	GEVES	Completed, report under progress
3	7-014, <i>Parastagonospora nodorum</i>	2019-2022	CREA	
4	7-022, <i>Microdochium nivale</i>	2019-2022	SASA	
5	7-028 Tobamoviruses	2020	GEVES	
6	7-029, <i>Pseudomonas syringae</i> pv. pisi	2021	Naktuinbouw	
7	7-031, <i>Ditylenchus dipsaci</i>	2020-2021	GEVES	
F. SPECIAL PROJECTS				
	Project title / subject			remarks
	collaborating committees	proposed	collaboration	update
		finalisation		Progress

Annotated List crop updates: seed as a pathway to be checked based on scientific analysis of literature obtained and expert advice	2018	GEVES	ISTA Reference Pest List: 10 crops published, New project on 34 crops under progress. Update of literature and taxonomy for 10 first crops under progress with information of pests which are regulated or not.
Story for International Year of Plant Health	2019	GEVES, SASA, Rosa Pina, ISTA secretariat	Story on ISTA Reference Pest List completed with interviews of NPPOs
Statistic tool	2019-2021	Statcom	Set up a tool on the model of the germination tool
New project			
New proposed finalisation date			

11. STA Statistics Committee

COMMITTEE MEMBERSHIP LIST				
				change comments
1	CHAIR: Jean-Louis Laffont	France		
2	VICE-CHAIR: Kirk Remund	United States		
3	Gabriel Carré	France		
4	Mustapha El Yakhlifi	France		
5	Zhou Fang	United States		
6	Bonnie Hong	United States		
7	Winfried Jackisch	Germany		
8	Zivan Karaman	France		
9	Bo-Jein Kuo	Separate Custom Territory of Taiwan, Penghu, Kinmen and Matsu		
10	Ray Shillito	United States		
	ECOM Liaison Officer: Sylvie Ducournau	France		
A. RULES DEVELOPMENT				
A1. Introduction of New Methods/New Species				
				remarks
	Method name	proposed	collaboration	update
	subject	finalisation		progress
1	Statistical reviews of Test Plans and Validation Reports	On-going	Any TCOM	A total (introduction of new methods and introduction of new species) of 1 Test Plan and 2 Validation Reports reviewed.
2	Contribution to the analysis of some Validation Studies	On-going	Any TCOM	Support provided to many members on the use of the R Shiny package <i>ISTAgermMV</i> ; analysis of 1 Method Validation study.
3	Contribution to the work of the ISTA WG Vegetable Seed Industry	On-going	BSC ECOM	Designed an experiment to quantify the levels of heterogeneity in vegetable seed lots across relevant species, representative companies and seed lots.
C. WORKSHOPS AND SEMINARS				
C1. Training and education workshops				
				Remarks
	Seminar subject	proposed	collaboration	Update
	location	finalisation		Progress
1	Seminar: Statistical aspects of GMO detection September 13, 2019 – Paris, France	2019	GMO	Seminar given to “Union Française des Semenciers (UFS)” during a technical day on testing for adventitious presence of GMOs in conventional seed lots: 17 participants, 1 lecturer from the Statistics Committee and 1 lecturer from the GMO Committee.
F. SPECIAL PROJECTS				
	project title / subject			Remarks
	collaborating committees	proposed	collaboration	Update
		finalisation		Progress
1	GMO Proficiency Tests	On-going	GMO	Rating of PT 22 quantitative results, including the extra part.

2	GMO Testing Handbook	2019	GMO	Finalized the writing of Chapter 5 of the Handbook: Designing GMO testing plans and analyzing associated results.
3	Contributions to the work of the ISO TC 34/SC 16, WG 9 on Group testing for Adventitious Presence testing	2020	GMO	Revisited the properties (bias, variance, Mean Square Error) of the classical group testing estimator; compared these properties assuming same group size and different group sizes.
4	ISTA heterogeneity tests	On-going		Continued to review the mathematical properties of the ISTA heterogeneity tests.

E. QUESTIONS TO THE COMMITTEE

	subject of question		Date	From
1	Mixed model fitting with R		April	France
2	Seedcalc		May	New Zealand
3	Germination tolerances		May	Belgium
4	Outliers in Method Validation studies		May	Canada

12. STO Storage Committee

No report was submitted to the ISTA Secretariat by March 2020.

13. TEZ Tetrazolium Committee

TEZ Tetrazolium Committee			
COMMITTEE MEMBERSHIP LIST			
1	CHAIR: Steffi Krämer	Germany	
2	VICE-CHAIR: Sergio Pasquini	Italy	
3	Ignacio Aranciaga	Argentina	
4	Maria Aranguren	Argentina	
5	Alessandra Arioli	Italy	
6	Sunita, BH	India	
7	Valerie Blouin	France	
8	Gary Duffy	Ireland	
9	Soo-Yuong Kim	Korea	
10	Linda Maile	United Kingdom	
11	Augusto Martinelli	Argentina	
12	Jose Franca-Neto	Brazil	
13	Eunhee Soh	Korea	
14	Parvez, Tauhid	Canada	
15	Sharon Davidson	United States	Retired 2019
	ECOM liaison officer: Ignacio Aranciaga	Argentina	
A. RULES DEVELOPMENT			
<u>A2. Introduction of New Species</u>			
	Species and test	proposed	collaboration
		finalisation	
1	Tetrazolium test on Larix	unknown	FTS
2	Tetrazolium test on Picea	unknown	FTS
3	Tetrazolium test on Glycine max	unknown	
4	Tetrazolium test on Pennisetum	unknown	
5	Tetrazolium test on Ulmus sp.	2020	
<u>A3. Introduction of Rules Changes</u>			
	Subject	proposed	collaboration
		finalisation	
B. PUBLICATIONS			
<u>B2. Training publications on specific seed testing topics</u>			
	Publication title	proposed	collaboration
		finalisation	
1	Reorganise Handbook Tetrazolium	unknown	
2	Revision of the TEZ working sheets	January 2020	
3	Continue TEZ Working sheets	ongoing	

C. Workshop			
	ISTA Workshop on Tetrazolium Testing and Equilibrium relative humidity (ERH) determination for Wild Species and Flowers Workshop in Verona	May 2020	FTS, MOI
	TEZ, GER, VIG in Turkey	March 2020	GER, VIG
	TEZ Workshop in Canada	open	
D. PROFICIENCY TESTS			
	Proficiency test subject	proposed	collaboration
	location	finalisation	
1	Allium poroum (PT 20-3)	2020	PTC
2	Medicago melilotus (PT 21-2)	2021	PTC
3	Lolium perenne (PT 22-1)	2022	
F. SPECIAL PROJECTS			
	project title / subject		
	collaborating committees	proposed	collaboration
		finalisation	
1	none		
E. QUESTIONS TO THE COMMITTEE			

14. VAR Variety Committee

COMMITTEE MEMBERSHIP LIST			
			change comments
1	Chair: Ana Laura Vicario	Argentina	Member since 2007
2	Vice-Chair: Daniel Perry	Canada	Member since 2013
3	Anne Bernole	France	Member since 2016
4	Berta Killermann	Germany	Member since 2007
5	Chiara Delogu	Italy	Member since 2007
6	Elisa Vieira	Brazil	Member since 2007
7	HedwichTeunissen	Netherlands	Member since 2007
8	Kae-Kang Hwu	Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu	Member since 2007
9	KsenijaMarkovic	Serbia	Member since 2013
10	KsenijaTaski-Ajdukovic	Serbia	Member since 2010
11	KeshavuluKunusoth	India	Member since 2010
12	VerenaPeterseil	Austria	Member since 2016
13	Marie José Côté	Canada	Member since 2016
	ECOM Liaison Officer: Keshavulu Kunusoth	India	
A. RULES DEVELOPMENT			
A1. Introduction of New Methods			
			remarks
	Method name	proposed	collaboration
	subject	finalisation	update
			progress
1	DNA based methods for soybean, oats and peas.	2021	SEC, STA, Leader: MJ Côté from Canada. CT1 completed. Results were presented during the ISTA Congress 2019. CT2 has been initiated for Pea and oats. For soybean there was insufficient interest for SSR methods. So no more CT on soy will be run for that technique.
2	DNA based methods for barley	2021	SEC, STA, Leader: Verena Peterseil from Austria. CT1 completed. Results were presented during the ISTA Congress 2019. CT2 has been initiated.

3	ISTA/AOSA preliminary investigation project for annual ryegrass in perennial ryegrass	2021	SEC, STA, AOSA, ISF	<p>Leaders: Harry Nijenstein from the Netherlands (ISTA) retired and has left the group. Giovanni Lopez from the Netherlands (ISTA) has taken on the role as co-lead with Dan Curry from the USA (AOSA).</p> <p>Results of preliminary trials and GOTS were presented at the BMT Seminar in India, prior ISTA Congress 2019. The results suggest incomplete association of the molecular marker and the annual/perennial growth habit and that estimates of annual content may vary considerably depending upon the variety composition of the calibrator. Seed samples have been sent to three labs in the Netherlands, Italy and USA for follow-up testing to verify these observations.</p>
A2. Introduction of New Species				
				remarks
	Species and test	proposed	collaboration	update
		finalisation		progress
	None			
A3. Introduction of Rules Changes				
				remarks
	Subject	proposed	collaboration	update
		finalisation		progress
1	Editorial changes in chapter 8	2019	Rules Committee	Correction of cross references to performance approved methods (8.3.3) in 8.5 Procedures. Completed.
B. PUBLICATIONS				
B1. Publications to accompany the Rules				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
1	Handbook on Variety Testing - Electrophoresis Methods	2017	STA, SEC, Editorial	No progress since last report
2	Handbook - DNA based methods	2019	SEC, STA, GMO, Editorial	No progress since last report.
B3. Scientific information publications				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
	None			
C. WORKSHOPS AND SEMINARS				
C1. Training and education workshops				
				remarks
	workshop subject	proposed	collaboration	update
	location	finalisation		progress
1	India - Species and Variety testing - DNA based methods, electrophoresis, statistics, conventional methods	2019	SEC	Leader: Kunusoth Keshavulu, India. Organization started. Planned for June, 2019 but postponed due to insufficient registration. Rescheduled to September / October, 2020.

C2. Seminars				
				remarks
	Seminar subject	proposed	collaboration	update
	location	finalisation		progress
1	Participation in the OECD meeting held on January 2019 in Argentina	2019	SEC	Completed. Ana Laura Vicario participated as an expert in the BMT adhoc and WG meetings
2	BMT Seminar in India, prior ISTA Congress 2019	2019	SEC	Completed. VARCOM activities involving DNA-based markers were described in two presentations, one on the preliminary investigation for annual ryegrass in perennial ryegrass test (presented by Giovanni Lopez) and the other on current VARCOM CTs and the preparation of the PT for wheat (presented by Ksenija Markovic).
3	Participation in the OECD meeting held in June 2019 in Austria	2019	SEC	Completed. Verena Peterseil participated as an expert in the BMT adhoc and WG meetings
D. PROFICIENCY TESTS				
	Proficiency test subject	proposed	collaboration	update
	location	finalisation		progress
1	DNA based methods (SSR) - wheat	2019	STA, SEC, Accreditation Department	Planning and preparation in progress. SOP under preparation. Reference seed was received from AAFC under an MTA. Genotyping is underway at the laboratory of the PT leader to develop the reference matrix against which the participant results will be compared
E. SPECIAL PROJECTS				
	project title / subject			remarks
	collaborating committees	proposed	collaboration	update
		finalisation		progress
1	Collaboration with the accreditation department for system and technical auditor's training for DNA-based tests.	2019	Accreditation department, SEC	A check list was prepared for lab accreditation. As planned, VARCOM representatives assisted with presentation of a workshop for system and technical auditors in Bologna, Italy in March 2019.
F. QUESTIONS TO THE COMMITTEE				
	subject of question			from
				country
	None			
G: Further Comments - Responsibilities leader of working groups				
1	PT leader for wheat			Daniel Perry (CA)
2	CT leader for soybean, pea and oat			Marie José Côté (CA)
3	CT leader for barley			Verena Peterseil (AT)
4	Lolium leader			Giovanni López (NL)

<u>contact persons</u>			
ECOM			Berta Killermann (DE) Keshavulu Kunusoth(IN)
UPOV			Ana Laura VICARIO (AR)
Website			None (at present)
Workshops			To be determined
Permanent guest from UPOV			Leontino TAVEIRA (leontino.taveira@upov.int)
Permanent guest from OECD			Gerry HALL (gerry.hall@sasa.gsi.gov.uk)
New project			
New proposed finalisation date			

15. VIG Seed Vigour Committee

COMMITTEE MEMBERSHIP LIST			
			change comments
1	CHAIR: Alison Powell	United Kingdom	
2	VICE-CHAIR: Hulya Ilbi	Turkey	
3	I-Chen Cheng	Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu	New member from August 2019
4	Ibrahim Demir	Turkey	
5	Carina Gallo	Argentina	
6	Simon Goertz	Germany	
7	G.V. Jagadish	India	
8	Mohammad Khajeh Hosseini	Iran	
9	Tim Loeffler	United States	
10	Stan Matthews	United Kingdom	
11	Carey Matthiessen	Canada	
12	Gillian McLaren	United Kingdom	
13	Takashi Shinohara	Japan	New member from June 2019
14	Marie-Hélène Wagner	France	
15	Yan Rong Wang	China	
	ECOM Liaison Officer: Steve Jones	Canada	
A. RULES DEVELOPMENT			
A1. Introduction of New Methods			
			remarks
	Method name	proposed	collaboration
	subject	finalisation	update
			progress
1			
A2. Introduction of New Species			
			remarks
	Species and test	proposed	collaboration
		finalisation	update
			progress
1	Radicle emergence test: <i>Elymus nutans</i>	2020	Comparative test preparation in progress
2	Radicle emergence test: <i>Avena sativa</i> .	2020	Seed lots selected for comparative test and despatched to participants.
3	Radicle emergence test: <i>Allium cepa</i>	2020	Seed lots selected for comparative test for imminent despatch to participants.
4	Radicle emergence test: <i>Glycine max</i>	2020	Radicle emergence has been assessed at three temperatures and two times during germination for 10 seed lots with acceptable germination. A suitable time for assessment of vigour differences has been identified at both 20 and 25°C, for comparison with other vigour assessments.
5	Radicle emergence test: <i>Capsicum annuum</i>	2020	Germination curves produced for 10 seed lots and glasshouse emergence tested.
6	Radicle emergence test: <i>Solanum lycopersicum</i>	2020	Field and glasshouse emergence (3 sites) completed. Analysis of emergence and radicle emergence data in progress
7	Radicle emergence and conductivity tests as potential vigour tests for five vegetable Brassic species. (ISTA special project)	2021	Germination committee From September 2019: Emergence tests completed in field and glasshouse; range of germination and vigour assessments completed on 5 species (57 seed lots). Data analysed and future work planned

8	Radicle emergence and conductivity test for cabbage and cauliflower	2021	Sakata (India)	Two laboratories have applied both tests to cababge (6 lots) and cauliflower (9 lots). This data will provide additional information to the ISTA special project (point 7)
A3. Introduction of Rules Changes				
				remarks
	Subject	proposed	collaboration	update
		finalisation		progress
1	Radicle emergence test for <i>Triticum aestivum</i>	2019		Rules proposal accepted
B. PUBLICATIONS 2019				
B3. Scientific information publications				
				remarks
	Publication title	proposed	collaboration	update
		finalisation		progress
1	Evaluation of seed vigour in white coat French bean (<i>Phaseolus vulgaris</i> L.) seed lots under waterlogged or Field capacity conditions.	2019	E. Ozden, S. Ermis and I Demir	<i>Journal of the Institute of Science and Technology</i> , 9 ,1860-1865
2	Seed vigour tests to estimate seedling emergence in cress (<i>Lepidium sativum</i> L.) seed lots	2019	I. Demir, B.B. Kenanoglu and E Ozden	<i>Notulae Botanicae Horti Agrobotanici Cluj-Napoca</i> , 47 ,881-886
3	Potential of a single radicle emergence count in predicting field emergence of Desi chickpea seed lots as an alternative vigour test,	2019	M. Akbarpour, M. Khajeh-Hosseini, and A. Seifi	<i>Seed Science and Technology</i> , 47 , 3, 319- 324 (2019).
5	Relative rate of germination and metabolic repair explains length of the lag period of germination in seed lots of alfalfa (<i>Medicago sativa</i> L.)	2020	M. Cheshmi and M. Khajeh-Hosseini	Submitted to <i>Seed Science and Technology</i> December 2019
6	Proposal for the addition of wheat (<i>Triticum aestivum</i>) as a species to which the radicle emergence test for seed vigour can be applied.	2019	M. Khajeh-Hosseini, C. Gallo, M.-H. Wagner and G. McLaren	<i>Seed Testing International</i> , 157 , 40-41
7	Seed Quality Tests. Chapter 9. in book on seed and seed technology. 1665-1696 (in Turkish).	2019	B. Eser and H. Ilbi	
8	Relationship between electrical conductivity test results and field emergence in garden peas (<i>Pisum sativum</i>): a demonstration research using different field conditions in Japan.	2019	T. Shinohara, K. Mabuchi and D. Igarashi	<i>Journal of the Japanese Society of Agricultural Technology Management</i> 26 , 29-30
9	Revision of Vigour Test Handbook	2022	Vigour Committee	Drafts of 4 chapters completed; the remainder in progress
C. WORKSHOPS AND SEMINARS				
C1. Training and education workshops				
				remarks
	workshop subject	proposed	collaboration	update
	location	finalisation		progress
1	Advances in seed vigour testing technology research. China National Herbage Seed Testing Workshop. Lanzhou, China	March 2019		Presented by Yanrong Wang

2	The seed coat semipermeable layer affects electro-conductivity seed vigour measurement in grass species. Annual China Grassland Science Conference. Xian, China	November 2019		Presented by Yanrong Wang
3	Seed technology: Seed vigour and related aspects. Bogor University, Indonesia.	22 November 2019		Presented by Ibrahim Demir
4	Seed quality: Uncomprising component of successful vegetable production. XII Turkish Vegetable Cultivation Symposium. Erciyes University Kayseri, Turkey	10 September 2019		Presented by Ibrahim Demir
5	Vigour test for sweet corn: single count radicle emergence. International Symposium on Seed Science and Archaeobotanical Research in Anatolia. Ege University, İzmir, Turkey	23-26, September, 2019.	O. Alan, H., Ilbi, A. Gokcol and E. Kavut	Presented by H. Ilbi
6	Assesment of seed vigour of nano-primed tomato seeds by green synthesized metal nanoparticles. International Symposium on Seed Science and Archaeobotanical Research in Anatolia. Ege University, İzmir, Turkey.	23-26, September, 2019	L. Yildiz Aktas, Y. Kucukcobanoglu, M. Ayisigi, S. Haseki, H. Ilbi	Presented by H. Ilbi
7	Genetic diversity in sunflower and seed vigour testing: no relationship established between vigour tests and field emergence. Poster presentation, ISTA Seed Symposium, Hyderabad, India	June 2019	M.-H. Wagner, C. Angerand and S. Ducournau	Presented by M.-H. Wagner
8	Image recognition technology on assisting paddy (<i>Oryza sativa</i>) seed germination testing. Oral presentation at ISTA Seed Symposium, Hyderabad, India	June 2019	I-C Cheng, T-L Chang, S-J Luo, A-Q Xu and K-y Huang	Presented by I-C Cheng. This approach has potential for radicle emergence evaluation.
D. PROFICIENCY TESTS				
	Proficiency test subject	proposed	collaboration	update
	location	finalisation		progress
	Conductivity test <i>Phaseolus vulgaris</i>	2020	PT	Seed lots being sourced
F. SPECIAL PROJECTS				
	project title / subject			remarks
	collaborating committees	proposed	collaboration	update
		finalisation		progress
1	Research on brassica seed vigour to predict plug performance under high temperature.		T, Shinohara, Takii (seed company)	Range of tests used to assess quality. Research completed and in preparation for publication
2	Protein and DNA damage and their repairs controlling vigour and longevity of Desi chickpea seeds		M. Khajeh Hosseini	Practical work completed
3	Radicle emergence and seed longevity in cucurbits (<i>Cucurbita pepo</i>)		I Demir	In progress
3	Relationship between radicle emergence counts and final germination: pepper, onion, carrot		I Demir	In progress
5	Influence of environmental conditions and farm management on the quality of wheat seeds produced in the North east of Iran		M. Khajeh Hosseini	Seed samples collected from 100 farms; purity, 1000 seed weight and seed moisture content assessed.

6	Field emergence in barley: comparisons to relate to radicle emergence test	2021	S. Goertz	Planned
E. QUESTIONS TO THE COMMITTEE				
	subject of question			from country
1	Vigour test for cotton	January 2019		South Africa
2	Vigour tests for onion and tomato	January 2019		South Africa
3	Vigour tests for cotton	February 2019		South Africa
4	Controlled deterioration test for grass species with and without dormancy	May 2019		USA
5	Evaluation of radicle emergence in wheat	May 2019		Argentina
6	Significance of vigour testing; radicle emergence for <i>Brassica napus</i>	May 2019		South Africa
7	Vigour test for sunflower	June 2019		South Africa
8	Evaluation of radicle emergence in wheat	July 2019		Finland
9	Does VIG plan to develop vigour test for sorghum?	September 2019		Argentina
10	Importance of seed moisture content in the conductivity test	September 2019		Sweden
11	Origin of the data for conductivity tolerances	October 2019		The Netherlands
12	Vigour test for corn	November 2019		Brazil
13	Conditions for the cold test for maize	December 2019		New Zealand
14	Is there an ISTA germination energy test?	December 2019		Denmark
	New project			
	New proposed finalisation date			