

## **AOSA-SCST Consolidation Taskforce Report**

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A joint AOSA-SCST taskforce was established late in 2006 to review whether the Association of Official Seed Analysts (AOSA) and the Society of Commercial Seed Technologists (SCST) should consolidate into a single organization, and, if so, to propose an organizational structure for consideration and discussion by the joint membership. To obtain a perspective of changes in the broader seed industry and how these changes relate to the relevance of AOSA and SCST, a timeline and demographic data were compiled.

### **Historical and Demographic Review: Justification for Consolidation**

Appendix 1 titled "Important Events over the past 130 years relating to Seed Analysis" shows a timeline of selected important events that have shaped the seed industry and seed testing both domestically and globally. There are a number of trends reflected in the timeline, but the most prominent trends are 1) the maturation and globalization of the seed industry; 2) the increasing use of technology in cultivar development and the corresponding resources necessary for analysis of GMO seed; and 3) the establishment of Official AOSA laboratories and government regulatory programs and the shift late in the 20<sup>th</sup> century toward the decline in government seed testing facilities and expanded numbers of commercial/private seed laboratories and resources among private laboratories. The seed industry flourished in North America early in the 20<sup>th</sup> century as shown by the need for regulation and uniform seed testing rules. AOSA was founded in 1908 and proceeded to establish seed testing rules and recommend legislation for uniform state seed laws. The Federal Seed Act (FSA) was passed in 1926 to regulate and enforce the interstate shipment of seed through cooperation with state seed laboratories. With the expansion of crop production early in the 20<sup>th</sup> century and the subsequent development of new cultivars, there was increased need for seed certification and testing by the industry, which resulted in the founding of the Association of Official Seed Certifying Agencies (AOSCA) in 1919, the formation of SCST in 1922, the founding of the Commercial Seed Analyst's Association of Canada (CSAAC) in 1945, the first UPOV (International Union for the Protection of New Varieties of Plants) Convention in 1961, and the passage of the American Plant Variety Protection Act (PVPA) in 1970. Following World War II, with the increased activities among the seed trade and the need for uniformity in seed labeling and regulation of seed quality, the Association of American Seed Control Officials (AASCO) was formed in 1949 and they subsequently developed the Recommended Uniform State Seed Law (RUSSEL) to endorse uniform seed regulation and labeling between states to prevent trade barriers. Furthermore, the AASCO recognized the importance of representative seed sampling as the first step in seed testing when they published their AASCO Handbook on Seed Sampling in 1982 and updated it with a revised and expanded edition in 2006.

While these developments were occurring in North America, parallel expansion in development of seed testing rules was taking place internationally. The International Seed Testing Association (ISTA) was founded in 1924 with an initial participation of 26 countries. Four years later in 1928, ISTA drafted their first International Seed Testing Rules. In 1953, ISTA adopted

AOSA methods of purity analysis and pure seed definitions. In the middle of the 1990s, ISTA opened non-voting membership categories for private seed laboratories and seed companies, as well as established a laboratory accreditation program. ISTA assumed more central control in 2004 by moving the power to issue orange certificates from designated authorities to the ISTA executive. ISTA expanded further in 2006 by creating a person/individual non-voting category. During the latter part of the 20<sup>th</sup> century, AOSA worked with ISTA to harmonize seed testing rules, but this initiative was only partially successful. Also during this period, ISTA independently published several handbooks. ISTA portrays themselves as *The International Seed Testing Association* and considers the AOSA as only a regional organization despite 60-70% of global seed trade originating from the United States (Appendix II). Other important international developments that recognized North American seed testing during the last decade are the ratification of the 1991 UPOV Act by the USA in 1999; the recognition of the AOSA Certified Seed Analyst and the SCST Registered Seed Technologist accreditation programs by the Organization for Economic Cooperation and Development (OECD) in 2000 and the adoption of Trade Rules recognizing AOSA laboratories and AOSA Rules by the International Seed Federation (ISF) in 2005.

As the seed trade matured in the last half of the 20<sup>th</sup> century, intellectual property rights became an important issue as biotechnology was implemented in the development of new cultivars. Protection of the intellectual property rights of plant breeders was passed in 1970 by the American Plant Variety Protection Act. In 1983, PCR (polymerase chain reaction) was developed which provided a means to use molecular marker systems for incorporating biotechnological traits in crop cultivars. In 1992, the USDA/FDA approved Calgene's FLAVR SAVR tomato and, in 1996, the first herbicide tolerant crops were commercially available. In 1999, further recognition of the evolving role of biotechnology in foods was made by the Codex Alimentarius Commission, which was an intergovernmental taskforce to consider health and nutritional implications. The International Biosafety Protocol, an agreement on labeling genetically engineered crops, was approved by 130 countries in Montreal, Canada in 2000. In recognition of the developing need to test crops containing biotechnology traits, the SCST created the Genetic Technologist membership category with voting rights in their organization. Hence, it is clear that biotechnology will continue to become more prominent for seed crops and must be tested for breeding purposes, seed quality control and eventually for regulation.

Coinciding with the expansion and technological development within the domestic and international seed trade, official government laboratories in North America were reduced in numbers and funding resulting in lost resources. In 1982, the regional Federal Seed Laboratories were consolidated in the headquarters laboratory in Beltsville, MD and later moved to Gastonia, NC in 2003. Furthermore, in the late 1990s, AOSA experienced the loss of a number of member Official seed laboratories as well as the retirement of many senior certified seed analysts and researchers, which in many cases were not later replaced. The ability of AOSA to update its handbooks published during the 1980s and 1990s was diminishing due to these reductions. AOSA and SCST increasingly shared resources and collaborated on a number of projects as the industry gained greater diversity and technical expertise.

The AOSA-SCST Collaboration Committee was established in 1995 to study areas in which the two associations could establish stronger bonds and share resources. The committee recognized a long history of joint meetings dating from 1922 and cooperation with joint committee membership. They also recognized the trends of reduction in government, maturation of the industry and advances in technology and globalization. The committee recommended that their report should be a starting point for discussions between AOSA and SCST to determine the most relevant, efficient and useful ways to respond to changes in the

market place. To further illustrate the changes in North American seed testing laboratories over the past 26 years, a comparison of laboratory type and number is shown by region in Table 1. From 1981 to 2007, these data show an 18% loss in state seed laboratories, a 39% reduction in federal (USA and Canada) testing laboratories and a 26% increase in commercial seed testing laboratories. Figure 1 shows a similar trend of increasing SCST laboratories and decreasing AOSA laboratories for 1981, 1995 and 2007. The comparisons from 1981 and 1995 were taken from the Collaboration Committee Report and data for 2007 was added to make the comparison current.

**Table 1. A comparison of seed laboratory demographics in North America for 1981, 1995 and 2007.**

	1981	1995	2007
<b>Northwest Region I</b>			
State labs	8	6	6
Federal labs	0	0	0
Certification labs	0	0	0
University labs	0	0	0
Commercial labs	9	18	28
<b>Midwest Region II</b>			
State labs	13	13	10
Federal labs	1	1	2
Certification labs	1	1	1
University labs	-	-	1
Commercial labs	40	39	40
<b>Northeast Region III</b>			
State labs	11	7	7
Federal labs	3	2	1
Certification labs	0	0	0
University labs	0	0	0
Commercial labs	3	2	1
<b>Southwest IV</b>			
State labs	12	8	8
Federal labs	2	1	1
Certification labs	0	0	0
University labs	0	0	0
Commercial labs	16	24	21
<b>Southern V</b>			
State labs	12	11	9
Federal labs	3	2	2
Certification labs	0	0	0
University labs	0	0	0
Commercial labs	16	15	13
<b>Canada Region VI</b>			
Federal labs	9	4	2
Commercial labs	4	4	8

Table 1 (continued)

<b>Totals</b>			
State labs	51	45	42
Federal labs	18	10	7
Certification labs	1	1	1
University labs	-	-	1
Commercial labs	88	102	111

Figure 1. Total AOSA and SCST laboratory membership for 1981, 1995, 2007.

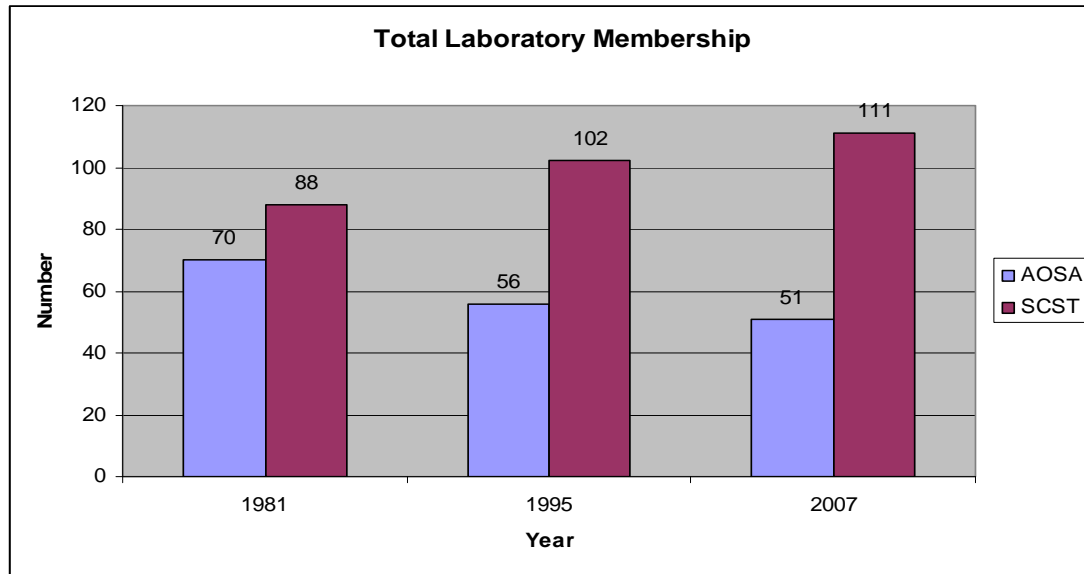
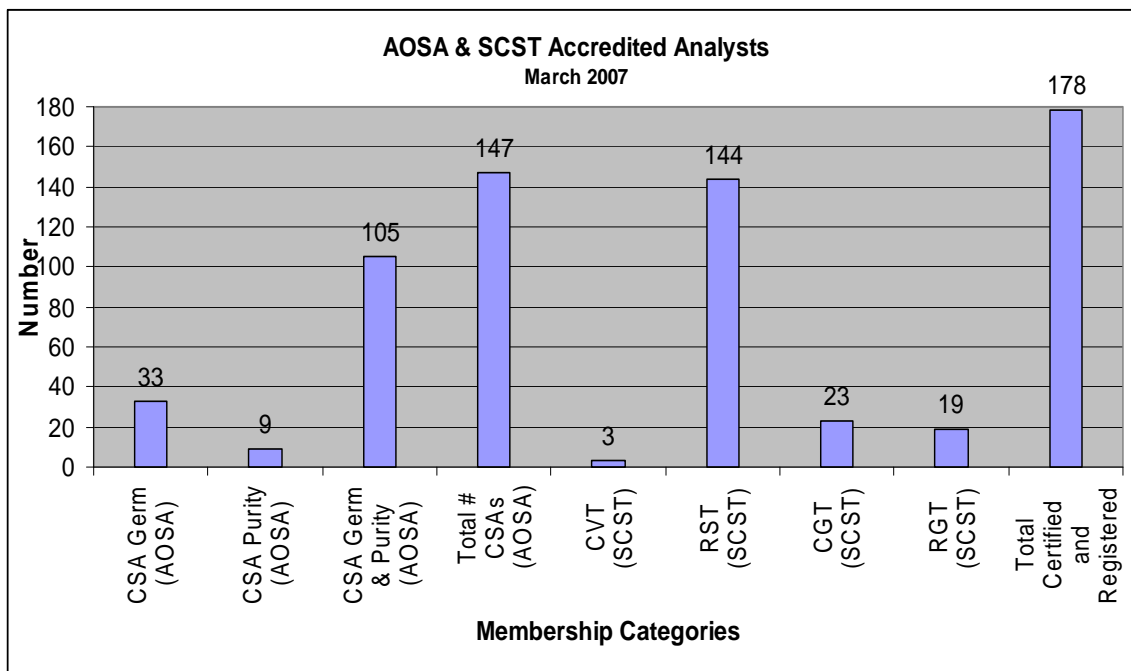


Figure 2 shows that the SCST has a larger number of accredited seed analysts and greater diversity and development in areas of new technology.

Figure 2. Comparison of AOSA and SCST accredited analysts for 2007



Key acronyms:  
 CSA: Certified Seed Analyst (AOSA); RST: Registered Seed Technologist (SCST); CVT: Certified Viability Technologist (SCST); CGT: Certified Genetic Technologist (SCST); RGT: Registered Genetic Technologist (SCST)

**Conclusion:** Based on this review of the historical and demographic changes in seed testing, the AOSA-SCST Consolidation Taskforce agreed that it is in the interest of the North American seed industry and seed testing to proceed with recommendations for consolidation. This recommendation is consistent with a speech given in 1940 by Dr. Porter, AOSA President, suggesting that someday there would be an organization of both commercial and official analysts with a separation between official analysts and official control officials.

### **Comparison of Strategic Planning Objectives and By-Laws for AOSA and SCST**

The taskforce reviewed the strategic planning objectives (Appendix III) of each organization and found them to be compatible with each other. AOSA and SCST goals are slightly different because of their respective histories of regulatory and commercial testing backgrounds, but they are essentially similar in their planning objectives. Themes consisted of consolidating committees, outreach projects to understand the needs of the industry to develop new and uniform testing methods and develop necessary publications; development of new membership categories to form a strong technologically qualified base; explore revenue expansion; promote education and standardization of protocols; and develop a continuing education system.

The taskforce also studied the differences between the by-laws (Appendix IV) governing each organization to determine what areas would require the most adjustment for a consolidated association. The taskforce members felt that a merged organization should have expanded membership categories to include certified individual members as well as laboratory, research, academic, retired and associate members; an effective authority over the professional conduct of its members with a code of ethics; the present voting scheme with a 2/3 majority would be maintained; a balanced Executive Board would be established with no single entity in a majority, and continuing education would be required to maintain membership. All areas considered appeared relatively easy to achieve, except the resolution of how to manage a membership composed of both individuals and laboratory members.

### **A case study: AOAC International**

To benefit from the experience and successful solutions developed by a counterpart laboratory organization composed of government laboratories and individual members including industry, the taskforce reviewed the history and development of the AOAC International. Their membership structure is of interest to illustrate how they resolved the conundrum of member government laboratories and individual members. Appendix V shows a timeline of the growth and development of the AOAC International. This is the recognized rule-making organization that is both domestically and internationally accepted for regulatory testing and quality control testing of feed, fertilizer, and dairy and food products. They were founded by the USDA as the Association of Official Agricultural Chemists in 1884 to adopt uniform methods of analysis for fertilizers. In 1885, they became an independent organization and expanded their coverage in 1887 to include fertilizers, feeds and dairy products and further expanded to include foods in 1889. During the 1950s, AOAC developed many new methods and techniques for regulatory work and state government laboratories were greatly expanded. Their name was changed in 1965 to the Association of Official Analytical Chemists and they expanded their membership to include scientists outside the USA in the 1970s and further expanded internationally in 1989 with the founding of their European section. In 1887, the AOAC extended full voting membership to industry scientists. In 1991, the AOAC changed their name to AOAC International to recognize international laboratory accreditation, industry membership and

expansion from strictly regulatory methods to inclusion of quality control methods. Today, over 60% of AOAC International members are from industry laboratories.

The membership structure of the AOAC International is of particular interest to illustrate a means to join laboratory and individual members in a single organization. They have three types of membership in their association: Individual Members; Sustaining Member Organizations; and Organizational Affiliates. The Individual Members are divided into four categories as follows: Members, Retired Members, Student Members and Honorary Members. Members are government, university and industry individuals and they must show qualifications such as academic training and accreditation. Retired members are those that have previously served the association as a member for 10 years. Members and retired members have full voting privileges. Student members are full time graduate or undergraduate students engaged in a field related to the association and they receive reduced dues and registration, but do not vote on association matters. Member Organizations are from government agencies, universities or industry and they are represented by an appointed Individual Member that meets the requirements for that category. Each Member Organization is allowed a certain number of Individual Members to be covered under their organizational dues.

While the AOAC International did not originate from the consolidation of two organizations from the government and industry sectors, they did expand their organization from strictly government agency members to include industry members and also expanded internationally. Furthermore, they continue to be the accepted laboratory methods organization used in the administration of state and federal regulation of feed, fertilizer, food and dairy products. Therefore, their example is very relevant to our current discussions on consolidation.

### **Proposed Structure of a Consolidated Organization**

Based on the forgoing study of our organizations and the example of AOAC International, the Consolidation Taskforce has assembled a proposed structure for a merged organization as outlined in Appendix VI – Proposed Bylaws of a Consolidated Organization. These proposed bylaws are only intended as a basis for discussion and development. They are limited to those basic aspects necessary to define what a merged organization might look like. Hence, the elements that are covered only include the name of the organization, purpose and authority, membership, officers and executive board and voting on the AOSA Rules for Testing Seeds. Other supporting elements, such as, committees, ethics, dues, analyst certification and proficiency, and budgetary matters would be developed after this initial stage is completed.

A commentary and justification of each article in the proposed by-laws (Appendix VI) is presented as follows.

**Article I – Name.** Following the example of AOAC International, the proposed by-laws show the name of the merged organization as AOSA International. The taskforce strongly recommends that the title of the rules, AOSA Rules for Testing Seeds, be maintained. This would support the many state and federal statues and regulations that reference that publication. The acronym, AOSA, has global recognition, which supports the identity of both the organization and the rules as well as links one with the other. Having one without the other would result in confusion and loss of identity. However, once merged, the title Association of Official Seed Analysts would no longer exist and only the acronym would be used. By adding the word 'International' to the title, it shows the intention to support the seed trade globally with uniform testing rules rather than be restricted to North America. It is important to emphasize that SCST would not be morphed into AOSA by use of this acronym because the "Association of

Official Seed Analysts” would no longer exist and the merged organization would consist of a balanced membership of government and industry with equal rights. Elements of SCST, such as the RST, would remain as an essential part of the new organization. The strengths of both AOSA and SCST would be retained in the consolidation.

**Article II – Purpose and Authority.** The purpose of the consolidated organization would be to develop and implement standardized, scientifically based seed testing methods to meet the needs for industry management of seed quality and regulatory enforcement of labeling requirements. The purpose would be obtained by 1) Promoting uniform laboratory methods and practices through seed research; 2) Fostering scientifically grounded, uniform seed control legislation and regulation; 3) Maintaining analyst proficiency through training programs, certification of analysts, proficiency testing and publication of literature on seed technology and research; 4) Furthering the exchange of ideas among laboratories and among individual workers; and 5) Improving seed testing in all its branches and to make it more useful to agriculture and society.

**Article III – Membership.** Two types of membership are proposed: Individual Members and Organizational Members. Individual Members would be divided into four categories: 1) Members; 2) Associate Member; 3) Student Member and 4) Honorary Member.

The Member category would include seed analyst members, research members and retired members. Only Members (seed analyst, research and retired) and Organizational Members would have voting privileges. Seed analyst Members would be required to have accreditation in one or more accreditation categories offered by the association. Research Members would be individuals actively engaged in teaching, research and outreach in the field of seed science and technology. Retired Members would be retired accredited seed analysts and seed researchers that were active members prior to retirement. Members would be eligible to serve as officers and appointment as committee chairs. Members serving as the designated representative of an Organizational Member would also be eligible to one vote on behalf of the Organizational Member.

The other types of Individual Member, Associate, Student and Honorary, would not have voting privileges. Associate Members would be non-accredited persons affiliated with seed analysis. They would be eligible for appointment to committees and committee chairs and may enter motions at meetings. They would not be eligible for election as an officer or to vote in association elections. Student Members would be full-time students working toward an undergraduate or graduate degree in the various areas of botany or plant science, agriculture or related scientific disciplines. They would receive reduced registration and special rates on publications, but could not hold office or vote in the business of the association. Honorary Members would be those recognized by the association for their substantial contribution toward the achievement of the objectives of the association. They may participate on committees, but may not vote or hold office. Honorary members would be exempt from dues or meeting registration fees.

Organizational Members would be federal and state seed laboratories, crop improvement association seed laboratories and university laboratories actively engaged in seed research, seed quality testing and/or seed regulatory testing. The designated representative of an Organizational Member would be a Member in good standing and meeting all Member requirements. Each Organizational Member would be allotted up to 12 individual Members covered under their membership dues and all such Members affiliated with an Organizational Member must satisfy the requirements for individual membership.

**Article IV – Officers and Executive Board.** The elected officers of the association would be individual Members and designated Member representatives of Organizational Members. The Executive Board would consist of a President, Vice President, five Directors and a non-voting Executive Director. The Executive Board membership would require a balance of Members from the government (3), industry (3) and university or crop improvement (1) sectors, with no single entity in a majority.

**Article V – AOSA Rules for Testing Seeds.** The adoption and voting on rule amendments would not be substantially changed from the current procedure where individual members and government laboratory representatives vote separately and tallies are computed on an equal basis with a 2/3 majority required to pass.

## Appendix I – Important Events over the past 130 years relating to Seed Analysis

AASCO	Association of American Seed Control Officials
AOSA	Association of Official Seed Analysts
AOSCA	Association of Official Seed Certifying Associations
ASTA	American Seed Trade Association
CFIA	Canadian Food Inspection Agency
CSAAC	Commercial Seed Analyst Association of Canada
FSA	Federal Seed Act
ISF	International Seed Federation
ISTA	International Seed Testing Association
OECD	Organization for Economic Cooperation and Development
SCST	Society of Commercial Seed Technologist
USDA	United State Department of Agriculture

Year	Event
2006	AOSA and SCST establish committee to develop a single analyst exam.
2006	AASCO publishes updated and revised Handbook on Seed Sampling
2006	ISTA creates personal/individual membership category (non-voting)
2006	USDA Process Verified Program in 2006 announces the USA Accredited Seed Sampling Program (ASSP) and USA Accredited Field Inspection Program (AFIP)
2005	CFIA recognized the US ASL Program as equivalent to the Seed Laboratory Accreditation Protocol (SLAAP)
2005	USA Accredited Seed Laboratory (ASL) Program developed by an industry task force with representatives from: AOSA, SCST, AASCO, AOSCA, ASTA and USDA-AMS.
2005	AOSA votes to change C&B to require that rules be approved by both the SCST and AOSA memberships.
2005	ISF adopts Trade Rules that recognize AOSA laboratories and AOSA Rules
2004	SCST members vote to add membership categories in Purity and Germination certification
2004	ISTA removes power to issue orange certificates from designated authorities to the ISTA executive
2004	FIS and ASSISNAL combine to form the International Seed Federation (ISF)
2003	USDA AMS Seed Regulatory and Testing Branch moves to Gastonia, NC
2003	Codex Alimentarius Committee (CAC) publishes Foods Derived from Biotechnology booklet.

<b>2001</b>	SCST publishes updated Seed Technologist Training Manual
<b>2001</b>	SCST creates Registered and Certified Genetic Technologist membership categories (voting)
<b>2000</b>	International Biosafety Protocol is approved by 130 countries at the Convention on Biological Diversity in Montréal, Canada. The protocol agrees upon labeling of genetically engineered crops, but still needs to be ratified by 50 nations before it goes into effect.
<b>2000</b>	OECD recognizes the AOSA Certified Seed Analyst and SCST Registered Seed Technologist accreditation programs
<b>1999</b>	USA ratifies 1991 UPOV Act (International Union for the Protection of New Varieties of Plants)
<b>1999</b>	The Codex Alimentarius Commission (CAC), established the ad hoc Intergovernmental Task Force on Foods Derived from Biotechnology to consider the health and nutritional implications of such foods. In particular, the Task Force would develop standards, guidelines or recommendations, as appropriate, for foods derived from biotechnology or traits introduced into foods by biotechnology.
<b>1998</b>	SCST creates Research Member category (voting)
<b>1997</b>	SCST, CSAAC form the International Society of Seed Technologists (ISST)
<b>1997</b>	AOSA and SCST jointly publish the journal, Seed Technology
<b>1996</b>	ISTA establishes laboratory accreditation program
<b>1996</b>	AOSA/SCST Collaboration Committee report
<b>1996</b>	First herbicide tolerant crops are commercially available
<b>1995</b>	ISTA opens membership to private laboratories and private seed companies (non voting).
<b>1995</b>	AOSA and SCST Establish the collaboration committee
<b>1992</b>	USDA/FDA approves Calgene's FLAVR SAVR tomato
<b>1992</b>	AOSA Published Seed Analysts Training Manual
<b>1985</b>	AOSA begins accrediting seed analysts in germination and purity testing
<b>1983</b>	PCR Technology developed
<b>1982</b>	AASCO publishes the Handbook on Seed Sampling

<b>1982</b>	NSTSL and Seed Branch consolidated to Beltsville, MD location and becomes the Seed Regulatory and Testing Branch
<b>1976</b>	National Seed Testing Standardization Laboratory (NSTSL) established
<b>1970</b>	American Plant Variety Protection Act passed (protects the intellectual property rights of plant breeders)
<b>1969</b>	AOSA Liaison Committee activated
<b>1965</b>	Chair of the ASTA Seed Technology Committee proposes that industry fund an independent reference laboratory.
<b>1963</b>	SCST establishes Open Forum to informally discuss research and seed testing issues.
<b>1963</b>	Handbook of Tolerances By Miles published with AOSA and ISTA contributing
<b>1962</b>	AOSA board passes resolution requesting that USDA establish a National Seed Testing Standardization Laboratory. SCST passes a supporting resolution and adds the request that the laboratory be adequately funded and staffed to research and develop new standardized testing methods.
<b>1961</b>	First UPOV (International Union for the Protection of New Varieties of Plants) Convention ratified by ratified by the United Kingdom, the Netherlands and Germany
<b>1953</b>	ISTA adopts AOSA methods of purity analysis and pure seed definitions
<b>1949</b>	AASCO created
<b>1946</b>	ACSC changes name to Society of Commercial Seed Technologists (SCST)
<b>1945</b>	Commercial Seed Analysts' Association of Canada (CSAAC) formed.
<b>1944</b>	First four Canadian analysts join SCST as RSTs
<b>1994</b>	SCST member asked to serve on AOSA Research Committee
<b>1943</b>	AOSA organizes Committee for the Standardization of Tests to coordinate various groups engaged in testing and enforcement. SCST members are appointed to committee.
<b>1942</b>	Federal Seed Schools attended by commercial analysts for the first time.
<b>1941</b>	ASTA and Iowa State University Seed Laboratory to act as a referee laboratory in cases of dispute.

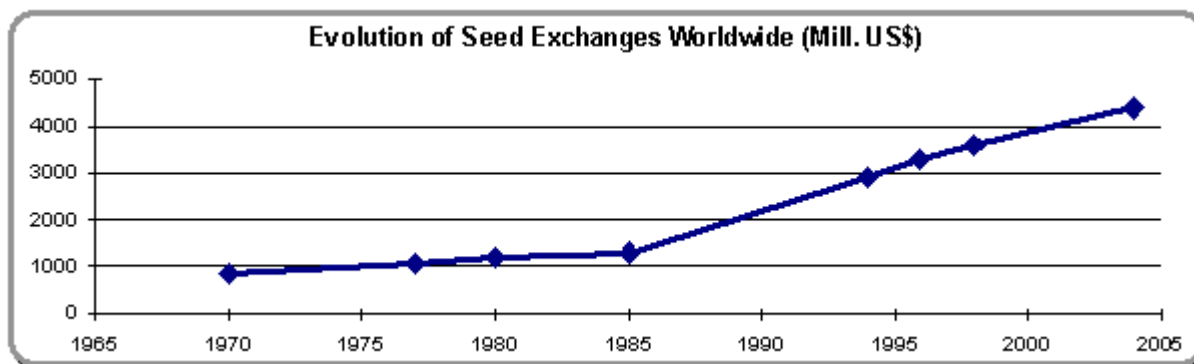
<b>1940</b>	AOSA President Dr. Porter gives a speech suggesting that someday there would be an organization of both commercial and official analysts; he also suggested a separation between official analysts and official control associations.
<b>1939</b>	Federal Seed Act amended
<b>1937</b>	AOSA Rules and Regulations published separately from the Proceedings
<b>1928</b>	ISTA drafts first International Seed Testing Rules- AOSA recommends adoption with the addition of pure seed definitions.
<b>1927</b>	AOSA published first Newsletter
<b>1926</b>	Federal Seed Act passed
<b>1924</b>	International Seed Testing Association founded (ISTA), 26 countries participated in the meeting held in Cambridge, England
<b>1923</b>	SCST members participate on AOSA referee projects.
<b>1922</b>	Association of Commercial Seed Analysts (SCST) formed to give commercial analysts a voice in their line of work, increase uniformity, serve as a connection between AOSA and ASTA, promote and maintain high membership standards
<b>1922</b>	AOSA suggested uniform vegetable seed law formulated
<b>1919</b>	AOSA proposes interstate seed law
<b>1919</b>	Michigan, Minnesota, North Dakota, South Dakota and Wisconsin meet with representatives from Canada and organized to form the International Crop Improvement Association (AOSCA)
<b>1917</b>	AOSA Suggested Uniform seed bill for field seeds adopted
<b>1915</b>	AOSA Uniform seed bill for field seeds proposed
<b>1914</b>	AOSA published first Proceedings, includes Legislative report (uniform seed law model)
<b>1912</b>	USA Seed Importation Act passed to stop importation of low-grade seed (precursor to FSA)
<b>1910</b>	AOSA Adopts first constitution- purpose is 1) to secure uniformity and accuracy in methods, results, and reports, and to 2) to afford opportunity for discussions between seed analysts. Qualifications for membership also set- official analysts, one vote per lab. Referee system established.

<b>1909</b>	AOSA Purity, Germination and Model Seed Law Committee give reports. The model seed law was developed with input from ASTA.
<b>1908</b>	AOSA Founded- a meeting of experiment station and agricultural college workers interested in seed testing is called by the USDA in Washington, DC. Sixteen states USDA and Canadian Department of Agriculture participate. Objective was to perfect and promulgate uniform seed testing methods. A committee was established to develop a uniform model seed law.
<b>1883</b>	ASTA founded
<b>1876</b>	Friedrich Nobbe publishes Handbook of Seed Science

## Appendix II. Seed Statistics

The following information was gathered from the International Seed Federation (ISF) website:  
<http://www.worldseed.org/statistics.htm>

**FIGURE 1 - Evolution in international seed trade, 1970 - 2004**



**TABLE 1 – Top 20 Countries with the largest estimated size of domestic market for seed**  
 (in USD million) (updated in March 2007)

Country	Size of domestic market
USA	7,000
China	4,500
Japan	2,500
France	1,930
Brazil	1,500
India	1,300
Germany	1,000
Argentina	930
Italy	780
Canada	550
Russian Federation	500
Korea	400
Australia	400
Mexico	350
Taiwan	300
Spain	300
Poland	260
United Kingdom	257
Turkey	250
South Africa	250

**TABLE 2 - Seed Exports (FOB) of Top 20 Countries, 2005 (in USD million)**

Country	Agricultural Seeds	Horticultural Seeds	Total
USA	618	304	922
France	510	178	688
Germany	313	27	340
Canada	186	29	215
Denmark	141	37	178
Chile	128	43	171
Netherlands	127	557	784
Belgium	119	4	123
Italy	115	56	171
Mexico	100	9	109
Hungary	100	6	106
Australia	62	11	73
Austria	57	2	59
Spain	53	25	78
Argentina	45	11	56
Brazil	44	8	52
Poland	39	3	42
South Africa	35	4	39
China	32	29	61
United Kingdom	30	19	49

**TABLE 3 - Seed Imports (FOB) of Selected Countries, 2005 (in USD million)**

Country	Agricultural Seeds	Horticultural Seeds	Total
USA	339	167	506
Mexico	247	125	372
France	257	75	332
Netherlands	156	173	329
Spain	179	126	305
Germany	257	44	301
Italy	170	101	271
Canada	158	52	210
United Kingdom	97	37	134
Belgium	106	23	129
Japan	72	55	127
Poland	86	24	110
Russian Federation	69	40	109
Greece	69	18	87
China	43	38	81
Hungary	63	14	77
Austria	52	7	59
Ukraine	43	11	54
Turkey	20	34	54
Switzerland	42	10	52

## Appendix III – Comparison of AOSA and SCST Strategic Planning Objectives (2006)

### I. SCST

Combine committees and increase collaboration with AOSA to provide a positive, strong and united resource on seed technology for the seed industry

#### AOSA

Consolidate AOSA/SCST committees as appropriate

Reason: Too much redundancy in committee work equals lost time, missed opportunities and increasing costs. Combine people from both organizations with similar organizational projects and interests.

### II. SCST

Understand the needs of the seed industry and SCST members to better serve these groups.

#### AOSA

Collaborate with SCST and other organizations in the areas of education and publications both by pooling money and human resources

Reason: Out reach projects are necessary to determine seed industry requirements to better align the organization with uniform testing programs, proposing new seed testing rules, teaching and training issues and developing educational publications.

### III. SCST

Explore and develop potential new membership categories.

#### AOSA

Explore revenue expansion

Reason: Adding new membership categories that might include persons with expertise in seed pathology, seed physiology and other laboratory skills would be beneficial to the organizations. This would help give a merged seed analyst organization a full complement of expertise to support teaching and training activities, research and a full range of educational seed related publications.

One organization can be created to form a power base of technically skilled persons that is recognized by all entities of seed industry as **the** source of seed testing expertise and information.

### IV. SCST

Strive to achieve standardization of protocols and higher uniformity of test results.

#### AOSA

Promote education and “Rules” development by promoting referees and Proficiency Testing

Reason: Both organizations have expertise in teaching, training and examining seed analyst’s qualifications. Proficiency testing is a recognized way to determine uniformity and develop standardized procedures among laboratories. Certification of analysts and laboratories creates confidence in the industry and general public on the accuracy of seed testing information.

V. **SCST**

Expand funding to support prioritized SCST goals and objectives.

**AOSA**

Explore revenue expansion

Reason: The organizations need to build the membership to be self sustaining and to work on projects that are relevant to the seed industry's needs. This all takes time, expertise and money. Being able to offer support to graduate students with seed research funding is one objective to promote innovative seed testing methodologies and keep up with emerging technologies.

VI. **AOSA**

A. Develop a continuing education point system

B. Encourage and support joint workshops designed for continuing education and meeting the needs of new seed analysts.

**SCST**

SCST already has a continuing point system in place (By-Laws - Article I, Section 6, Maintenance of Membership – Continuing Education lines 51-82).

Reason: A continuing point program provides an incentive to keep analysts active in developing their technical skills and enhancing their knowledge of seed testing.

AOSA and SCST goals are slightly different because of our past histories of regulatory and commercial testing backgrounds, but we essentially have the same planning objectives.

## Appendix IV – AOSA-SCST By-Laws Comparison

Category	AOSA	SCST	Merged Organization
Power/Authority	No authority over professional conduct of members	Has authority over professional conduct of members	Maintains effective authority over professional conduct of members
Membership	Laboratory	Individual	Individual with certification; Laboratory; Research; Student; Retired; and Associate
Exam/Certification	No fee	Fee based	Fee based
Ethics/Membership	Member in good standing if dues paid	Based on SCST Code of Ethics	Based on compliance with Code of Ethics and dues payment
Voting	Each laboratory has 1 vote	Each individual has one vote	Equal voting scheme for all voting members with 2/3 majority
Leadership	10 person BOD	8 person BOD	BOD with Exec. Director (non-voting); no affiliation in majority
Committees	30 committees	19 committees	Merge committees with same function; reduce and consolidate for increased effectiveness
Continuing Education	No continuing education required	Continuing education required	Continuing education required to maintain membership and certification

## **Appendix V – Timeline of growth and development of AOAC International**

2007 – Over 60% of AOAC International members are from industry laboratories today

1991 – AOAC changes name to AOAC International to recognize international laboratory accreditation, industry membership and expansion from strictly regulatory methods to the inclusion of quality control methods

1989 – AOAC expands internationally with the founding of their Europe Section

1987 – AOAC extends full voting membership to industry scientists

1979 – AOAC becomes an independent organization with funding from federal, state and industry sources

1970s – AOAC expands membership to scientists outside the USA

1965 – AOAC's name is changed to the Association of Official Analytical Chemists

1950s – AOAC developed many new methods and techniques during the '50s for regulatory work and state government laboratories were greatly expanded during this decade

1927 – Sponsorship of AOAC Methods is passed from the USDA to the FDA for regulatory enforcement

1906 – AOAC is instrumental in the passage of the Federal Pure Food and Drug Act

1889 – AOAC Methods of Analysis is expanded to include foods

1887 – AOAC Methods of Analysis is expanded to include fertilizers, feeds and dairy products

1885 – AOAC publishes the AOAC Methods of Analysis (for fertilizers) and their membership votes to become an independent organization

1884 – Association of Official Agricultural Chemists (AOAC) is founded under the USDA to adopt uniform methods of analysis for fertilizers

## **Appendix VI – Proposed Bylaws of a Consolidated Organization**

### **ARTICLE I – NAME**

The name of this organization shall be AOSA International, hereafter referred to as the Association, a nonprofit corporation under the laws of the state of \_\_\_\_\_.

### **ARTICLE II – PURPOSE AND AUTHORITY**

The purpose of this Association shall be to develop and implement standardized, scientifically based seed testing methods to meet the needs for industry management of seed quality and regulatory enforcement of labeling requirements. The purpose shall be obtained through cooperative effort of its members by:

1. Promoting uniform laboratory methods and practices through seed research;
2. Conducting referee tests among seed analysts of the Association for the purpose of developing uniform techniques;
3. Maintaining analyst and laboratory proficiency through training programs, certification of analysts, proficiency testing and publication of literature on seed technology and research;
3. Furthering the exchange of ideas among laboratories and among individual workers;
4. Fostering scientifically grounded, uniform seed control legislation and regulation; and
5. Improving seed testing in all its branches and to make it more useful to agriculture and society.

### **ARTICLE III – MEMBERSHIP**

#### Section 1. Types of Membership

There shall be two (2) types of membership in the Association: Individual Members and Organizational Members

##### A. Individual Members

There shall be four (4) categories of Individual Members in the Association: Members, Associate Member, Student and Honorary Member. Members consist of seed analysts accredited by the Association, researchers actively engaged in seed research and retired accredited seed analysts and seed researchers.

##### B. Organizational Member

There shall be one (1) category of Organizational Member in the Association

#### Section 2. Qualifications for Membership

##### A. Members

Qualifications for seed analyst Members shall be accreditation in one or more accreditation categories offered by the Association; research Members shall be individuals actively involved in teaching, research and outreach in the field of seed science and technology; and

retired Members shall be retired accredited seed analysts and seed researchers which were active Members prior to retirement. Members shall be entitled to one vote in the election of officers and other business of the Association. Members shall be eligible to serve as officers and appointment as committee chairs. Members serving as designated representatives of an Organizational Member shall also be eligible to one vote on behalf of the Organizational Member.

#### B. Associate Members

Qualifications for Associate Members shall be non-accredited persons affiliated with seed analysis. Associate Members shall be eligible for appointment to committees and committee chairs and may enter motions in meetings of the Association, but shall not be eligible for election as an officer or member of the Executive Board of the Association or entitled to vote in Association elections or other business of the Association.

#### C. Student Members

Any full-time student working toward an undergraduate or graduate degree in the various areas of botany or plant science, agriculture or related scientific disciplines shall be eligible for Student Membership in the Association. Student members shall receive reduced registration for meetings and special rates on subscriptions and purchase of individual publications of the Association. Student members may not hold office or vote in any business of the Association.

#### D. Honorary Members

Honorary Members shall be recognized for their substantial contribution toward the achievement of the objectives of the Association. They may participate as a member on committees, but may not vote or hold office. Honorary Members of the Association shall be exempt from payment of dues and annual meeting registration fees.

#### E. Organizational Member

Qualifications for Organizational Members shall be state and federal seed laboratories, crop improvement seed laboratories and university laboratories actively engaged in seed research, seed quality testing and/or seed regulatory testing. The designated representative shall maintain any proficiency and accreditation that may be required by the Association and shall be entitled to one vote in the election of officers and the business of the association. The designated representative for an Organizational Member shall be a Member in good standing. Each Organizational Member is allotted up to 12 individual Members as part of their membership dues and all such Members affiliated with an Organizational Member shall meet requirements for individual membership.

### Section 3. Application for Membership

Applications or requests for membership shall be submitted to the Association's headquarters office. Membership shall become effective upon approval that the applicant meets all requirements, payment of any required membership dues, and assignment of a member number.

## Section 4. Expulsion

The Board of Directors, at any duly called meeting of the Board, by a two-thirds vote of those holding office, may terminate the membership of any member who in its judgment has violated the Bylaws or has been guilty of conduct detrimental to the best interests of the Association. Any member convicted of a felony is subject to immediate expulsion from the Association. Expulsion of a member by the Board of Directors shall be final and shall cancel all rights, interest, or privileges of such member in the services or resources of the Association. Any member, for whom expulsion is proposed, for reasons other than conviction of a felony, shall be entitled to not less than 60 days advance notice of the charges, the date upon which a hearing will be scheduled, and the right to present evidence in defense. The date and place of any such hearing, if held other than at the headquarters or annual meeting site of the Association, must be reasonable with respect to the location of any individual so charged.

## Section 5. Membership Dues

Annual dues for membership in the Association shall be fixed by the Board of Directors, subject to approval by two-thirds vote of the joint voting membership. The membership year and the delinquency date shall be determined by the Board of Directors.

# **ARTICLE IV – OFFICERS AND EXECUTIVE BOARD**

## Section 1. Elected Officers

The elected officers of the Association shall be Members and designate Member representatives of Organizational Members and shall comprise an Executive Board consisting of a President, Vice President, five (5) Directors and an Executive Director. Elected officers shall serve without compensation, except for reimbursement of personal expenses in service to the Association as may be authorized by a majority vote of the Executive Board.

### A. President

The President shall be the principal elected officer of the Association, shall preside at meetings of the Association and of the Board of Directors and of the Executive Committee, and shall be a member ex-officio, with right to vote, on all committees except the Nominating Committee. He or she shall also, at the annual meeting of the Association and at such other times as he or she shall deem proper, communicate to the Association or the Board of Directors such matters and make such suggestions as may in his or her opinion tend to promote the welfare and further the purpose of the Association and shall perform such other duties as are necessarily incident to the office of President or as may be prescribed by the Board of Directors. The President shall serve a two (2) year term of office.

### B. Vice President

In the absence of the President, or in the event of the President's inability to serve, the Vice President shall perform the duties of the President, and, when so acting, shall have all the powers of and be subject to all the restrictions upon the President. The Vice President shall

perform such other duties as from time to time may be assigned to him or her by the President or by the Board of Directors. The Vice President shall serve a two (2) year term of office and shall succeed the President

#### C. Directors

Directors shall be elected from the Members and serve a three (3) year term of office.

#### D. Executive Board

The Executive Board shall have the following general responsibilities:

- (a) Conduct the business of the Association when the Association is not in session;
- (b) Consider matters of policy and make recommendations to the Association concerning such matters; and
- (c) Act upon matters referred to it for decision or recommendation by the Association membership at an annual meeting.

#### E. Nominations and Election of Officers

The initial nomination of Directors shall be for two 3-year terms and two for 2-year terms to provide for staggered rotation. The Nomination Committee shall solicit the membership no later than February 15 for nomination of Members to fill the positions of officers completing their term at the end of the annual meeting for that year. Nominees receiving the majority of votes shall be considered elected to office. Voting shall follow the procedure specified in Article V for voting on amendments to the AOSA Rules for Testing Seeds with equal weighting of individual Member and Organizational Member votes and a 2/3 majority to elect a nominee. New officers shall be announced at the end of the annual meeting. The seven member Executive Board shall maintain a balance of government (3), industry (3) and university or crop improvement (1) members, with no single entity in a majority.

The Executive Board shall have full responsibility at all times for the following specific duties.

- (a) Make financial arrangements for the publication and distribution of the journal, newsletter, AOSA Handbook on Seed Testing, and other publications of the Association;
- (b) Set the time and place of annual meeting;
- (c) Approve special meetings of the Association or the Executive Board when the need for such has been determined to exist;
- (d) Decide elections in case of tie votes;
- (e) Approve tentative rules for testing seeds;
- (f) Approve minutes of annual meeting prior to publication;
- (g) Provide for the bonding of the Executive Director;
- (h) Approve disbursements from Association funds; and
- (i) Report all actions to the Association membership at each annual meeting.

#### E. Executive Director

The Executive Director is a non-voting position, selected by a search committee appointed by the elected officers, whose duties and compensation are determined by a majority of the elected officers of the Association. The Executive Director shall maintain the duties of Secretary-Treasurer to the Association.

## **ARTICLE V – RULES FOR TESTING SEEDS**

1. All proposed changes and additions to the Rules must be sponsored or cosponsored by a Member, Organizational Member, committee or subcommittee. Proposed changes and additions to the rules shall be presented to the Rules Committee and must be accompanied by a summary of data or citation sufficiently adequate for proposed changes. Final determination of the adequacy of data shall be the responsibility of the Rules Committee.
2. Proposed changes and additions shall be reviewed by the Rules Committee for sufficient supporting evidence and proper format and published in the newsletter or otherwise submitted to the membership of the Association at least 90 days prior to an annual meeting at which such rules shall be adopted or rejected. Rules are voted on by voting Members and designated representatives of Organizational Members. Votes in favor and those opposed are converted to percentages based on the total number of votes cast within each respective membership type. The percentage designation is then dropped and the tally from each membership type is added together for a cumulative total based on 200 total combined points would be required. A two-thirds majority of the cumulative tally is required to adopt a Rule proposal. To pass with a two-thirds majority vote, a cumulative tally of 134 in favor out of 200 total combined points would be required. Those individuals representing Organizational Members may vote as Members as well as voting on behalf of their Organizational Member. Rule(s) changes or additions approved by the membership at the annual meeting shall have an effective date of October 1 in the year they are adopted, unless otherwise specified. The Rules Committee is responsible for preparing the final version of the approved rule(s) changes for publication.
3. Tentative Rules are accepted for publication as an addendum to the Rules for Testing Seeds upon review by the Rules Committee and the approval by a majority of the Executive Board, but shall have no official status. The Rules Committee will recommend to the Executive Board the acceptance or rejection of a tentative rule. This committee will provide a written rationale for their recommendation. The final decision for accepting or rejecting a tentative rule rests with the Executive Board. The purpose of a tentative rule shall be to give the membership of the Association an opportunity to apply and evaluate a new method of testing seed before the method is submitted as a proposed rule. For a tentative rule to become a part of the Rules for Testing Seeds of the Association, it must be submitted as a rule proposal to the Rules Committee, along with supporting evidence, and be adopted by the Association in accordance with Section 1 and 2 above.