Setting AOSCA Standards

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Topics

- AOSCA's history
- AOSCA in 2004
- Advisory Committee
- Historical basis for certification
- Establishing certification standards
- Verifying compliance with standards
- Miscellaneous considerations
- Policy on trait testing for certification

AOSCA's history

- International Crop Improvement Assoc. – Dec 1919 (5 states + Canada)
- Prompted by quick loss of new varieties
- Standards came rapidly –
  - Forages & cereals (1921)
  - Soybean (1922)
  - OP corn (1923)
  - OP sorghum & cotton (1926)
  - Virtually all other crops by 1969 – 57 total now

AOSCA's history (cont'd)

- Fundamental concepts of certification
  - Certification based on varietal lineage
  - Recognize grower integrity
  - Qualified people inspect fields
  - Establish varietal ID in field trials
  - Keep adequate records
  - Establish crop and seed purity standards
  - Protect grower & purchaser by sealing containers
  - Define noxious weed species
  - Examine graded samples of seed

AOSCA's history (cont'd)

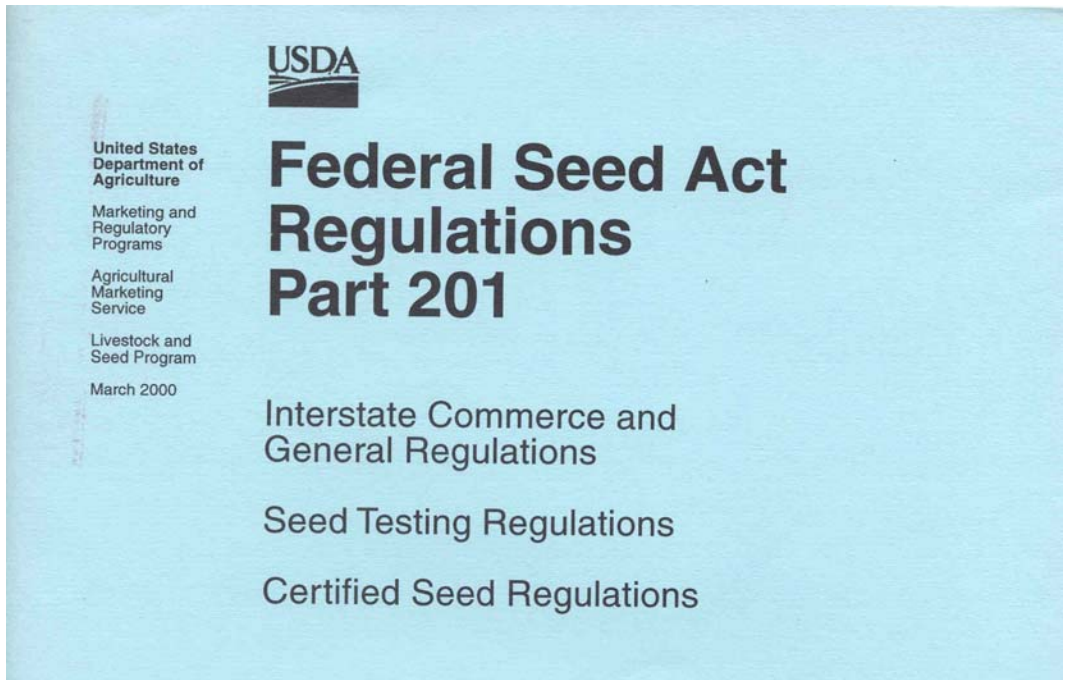
- U.S. Federal Seed Act of 1939 - initial recognition of certification and official certifying agencies
- Survey of 34 members in 1943-1945
- Publication No. 16 in June 1946
- International recognition/use of standards and procedures followed, e.g., OECD Seed Schemes

AOSCA's history (cont'd)

- ICIA incorporated in Illinois as a non-profit in 1951
- Leaders sought to establish minimum standards for interstate commerce
- ICIA became AOSCA in 1968 to satisfy U.S government policy on use of "international" in federal regulations

U.S. Federal Seed Act Regulations, Part 201

- Incorporated AOSCA standards in 1969 – for land history, field isolation and varietal purity in field and seed



201.76 Minimum Land, Isolation, Field and Seed Standards

APPENDIX II
SPECIFIC REQUIREMENTS FOR THE CERTIFICATION OF PLANT MATERIALS UNDER THE AOSCA SYSTEM

A. Minimum Land, Isolation, Field and Seed Standards.

Crop Kind	FOUNDATION				REGISTERED				CERTIFIED			
	* Land	** Isolation	*** Field	**** Seed	* Land	** Isolation	*** Field	**** Seed	* Land	** Isolation	*** Field	**** Seed
Alfalfa	4[1]	600[44,48]	1000	0.1	3[1]	300[3,44,48]	400	0.25	1[1,2]	165[44,49]	100	1.0
Hybrid	4[1]	1320[43]	1000[42]	0.1	---	---	---	---	1[1,2]	165[3,43,44]	100[42]	1.0
Barley	1[7]	0[23]	3000	0.05	1[7]	0[23]	2000	0.1	1[7]	0[23]	1000	0.2
Hybrid	1[30]	660[21,32]	3000	0.05	1[30]	660[21,32]	2000	0.1	1[30]	330[21,32]	1000	0.2
Hybrid - Chemically Assisted	---	---	---	---	--	---	---	---	0[51]	330[52,53]	1000[54]	0.2
Birdsfoot Trefoil	5[1]	600[5,44]	1000	0.1	3[1]	300[5,44]	400	0.25	2[1]	165[6,44]	100	1.0
Clover (All Kinds)	5[1,9]	600[5,18,44]	1000	0.1	3[1,9]	300[5,18,44]	400	0.25	2[1,9]	165[18,44]	100	1.0
Corn Inbred Lines	0	660[10,11]	1000[13,46]	0.1[15]	---	---	---	---	---	---	---	---

* Number of years that must elapse between destruction of a stand of a kind and establishment of a stand of a specific class of a variety of the same crop kind. A certification agency may grant a variance in land cropping history in specific circumstances where cultural practices have been proven adequate to maintain varietal purity.

** Distance in feet from any contaminating sources.

*** Minimum number of plants or heads in which one plant or head of another variety or off-type is permitted.

**** Maximum percentage of seed of other varieties or off-types permitted.

AOSCA in 2004

- 44 U.S. members – inspect 3.75M acres annually
  - 45% Small grains – wheat, barley, oat, et al.
  - About 10% each – corn, cotton, grass, soybean
- Canada, Chile, New Zealand, Argentina and Australia (2)
- National Variety Review Boards assist variety eligibility process in the U.S.

AOSCA Advisory Committee

- Established 1970 - forum for stakeholders to comment on new and revised certification rules
- Meets twice annually to review and discuss certification and other issues
- Approves all new/revised standards
- Membership – AOSCA (6), USDA (4), ASTA (4), CFIA, CSI, CSTA, Experiment Stations (US & Canada), NCCPB, AASCO, AOSA, SCST, Foundation Seed Stocks

Historical basis for certification

- Early objective – preserve new varieties and minimize proliferation of names
- Early basis – physical appearance or morphology/phenotype as described
- Field inspection – primary QA method, then and now
- Functional “genetic” traits and reactions were problematical in this system due to variable environmental influence on expression

Historical basis (cont'd)

- Consolidation of farming and seed production has evolved to supply high quality seed
- Some U.S. regions (corn, soybean) use little certification as private varieties proliferate
- Other regions (small grains) still rely on certification
- Intellectual property rights protection(Title V)
- AOSCA does not require verification of varietal purity by non-phenotypic tests as a condition of final certification

Establishing certification standards

- Most standards in Part 201.76 originated 1921 – 1969
- No records exist (?) as to criteria used
- But, early workers were Land Grant ag scientists.....
  - Land history and isolation – data, observation and common sense?
  - Varietal purity – cosmetics, economics, equipment

Establishing certification standards (cont'd)

- Modern process of setting standards
  - AOSCA Commodity Committee initiates via input from any source
  - Committee investigates – literature, scientific and professional testimony, economics, production feasibility, grower attitudes
  - Committee proposes solution to the issue
  - AOSCA board adopts a solution
  - Advisory Committee debates and responds
  - AOSCA board adopts final version
  - AOSCA forwards information to USDA for inclusion in FSA Regulations

Compliance verification procedures

- Examination of records
  - Variety eligibility
  - Seed stock eligibility
  - Land history (Part 201.76)
- Field inspection
  - Isolation (Part 201.76)
  - Varietal purity(Part 201.76)
    - off-types, other varieties & crops
  - Sampling methods vary: sequential sampling
  - Pollen control in hybrids: shedding standards

Compliance verification procedures (cont'd)

- Seed inspection (Part 201.76)
  - Relatively limited utility - few good traits
  - Difficult to widely implement – labs differ
- Post harvest testing
  - AOSCA - hybrid canola, cotton, wheat only
  - Hybrid corn, sorghum, sunflower optional
  - Growouts - most common method
  - Other lab tests increasingly relevant

Compliance verification procedures (cont'd)

- Seed Conditioning (Part 201.73)
  - FSA Regulations define requirements
  - Facilities to prevent admixinig
  - Seed lot identity maintenance
  - Records of receipt & disposition
  - On site designated representative
  - Generally, agencies conduct annual inspections

Miscellaneous issues

- Varietal purity objectives
  - Economics vs. buyer/seller acceptance
  - Traditionally, phenotype = cosmetic
  - Off-types as “variants” are problems
  - Consequences vary
    - Cosmetic - flower color, height
    - Functional - kernel color, herbicide resistance
  - Tolerance for adventitious material
    - “Reasonable” vs. zero

Miscellaneous issues (cont'd)

- Size or scale of production units
  - Presumption that outcrosses are diluted
  - Field size affects isolation requirement
    - 5 acres - alfalfa
    - 20 acres - hybrid corn
  - 10 per cent "isolation zone" waiver
    - Alfalfa and grasses

Miscellaneous issues (cont'd)

- Establishment & verification of isolation distances
  - Historically, what seemed to work in the context of the times and the consequences
  - Presence of adventitious GM events in conventional seed has raised concern (!)
    - ASTA/AOSCA isolation study – hybrid corn
    - AOSCA review of small grains isolation
  - AOSCA has not (yet) addressed issue of isolation vs. consequences of outcrossing

AOSCA policy on trait testing as a condition of certification

- There is no requirement, yet(?)
- Ca. 1994: socio-political impact of GM traits was not foreseen, so source of traits not discriminated against
- Technology owners impose standards that do not coincide with AOSCA's
- Independent tests often used in export certification

Tasks differ

- AOSCA's challenge - limit the intrusion of adventitious -
  - pollen into a certified seed field
  - seed into a certified seed lot
- APHIS/BRS's challenge - prevent the escape of certain traits into the environment

Thank you