## L&R Committee 2011 Interim Agenda Appendix H - HB 133, Seed Count for Agriculture Seed

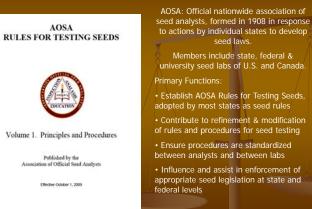
# NIST HANDBOOK 133 New Procedure for Testing Seed Count

A Call for Repeal of Action Taken at 95<sup>th</sup> Annual Meeting of National Conference on Weights & Measures Re: Testing Procedures for Seed Count

> Presented By Kurt Floren Director of Weights & Measures County of Los Angeles, California



# Association of Official Seed Analysts "Rules for Testing Seeds"



# Procedure does <u>NOT</u> start with simple count of 10 groups of 100

#### SECTION 1: SAMPLING

Said torting lagtes with the sampling process. No matter how accurately an analysis is made, it can dow only the quality of the sample submitted, therefore, it is the responsibility of the used sampler to same the the sample a representative of the used lot. 11 General procedure

- To secure a opposentative sample, equal partians shall be taken from eventy distribut parts of the quantity of seed to be sampled. Access shall be available to all parts of th quantity.
- b. For free-flowing seed in containers or bulk, a probe or third long enough to sample al portions of the container shall be used. The time should be able to resorve as equavolume of used from each part of the container through which for twice mode Partnamed times should be used when sampling vertically in the containers. Non perticated times must be used used as unchainers should be proceedings or incommiting and perticated times must be used used as a similar should be proceeding as an exception of the containers should be used used as a similar should be provided as a perticated time and the used as the containers should be provided as a perticated time and the used and the containers should be provided as a should be provided as a similar should be provided as a similar should be approximated as a similar should be used to be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be provided as a similar should be provided as a should be
- c. Non-line-forwing seed, such as chaffy graves, nucleased send, large flagile seed, accounting, and seed with a low nuclear context, the are difficult to angle with a probe or frare can be sampled by the land sampling method. When a sample is the by hand, must fixe hand and with the days respective. Non-the flags may any set of the same sample should be stime fraw ratiosant low context. And Multimelly, control way, and sumple should be stime fraw ratiosant low context. And Multimelly, control way, and sumple should be stime fraw ratiosant low context. Sum Additionally, control way, and sum of these context. Additionally, control way, and sum of these context.
- 4. Each probe, twice, or handhaf of used yamened from the lot is considered a primary sample. Each primary sample simple studied by standing checked for studienum. When the primary samples appear to be stations, they shall be combonid to from the composite sample prior to industriation for testing. If some studenting is observed in the primary samples, the samples student either disconteness sampling and ablive samagement of the fadings or containse sampling barries parts to record the observations of zon-stationse and the primary studentse samples parts to record the observations of zon-stationary studentses.
- 1.2 Sampling equipment
- The samples and decreases the most appropriate sampling tool and behaviour for the particular samples instrume. Means beinging two the odd or the track of partners of the container and have openage at least two and one half fainer for maximum datasets of the same and province containers the Socie and the weaks fained by the same samples and the same and province samples and the same same same same same the same samples are samples and the same same same same same same samples.

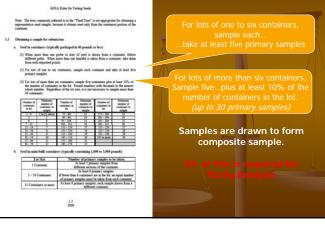
1.1

## To secure a representative sample, equal portions shall be taken from evenly distributed parts.... ...a probe or trier...shall be used... able to remove an equal volume... from each part of the container... ach probe, trier, or handful... is considered

rimary sample. Each should be visuall checked for uniformity.

...determine the most appropriate tool and technique...Manual sampling tools should be able to reach all portions of the container and have openings at least 2½ times the maximum diameter of... seed and possible contaminants...

# Procedure does **NOT** start with simple count of 10 groups of 100



# Procedure Requires Lab Analysis

#### AOSA Rules for Testing Seeds

- 10 True and shruh seed isamples (as categorized by AOSA Rades for Testing Seeds Vol. 3. Undersa Chandratan of Wired and Corp Soudo) dadl. consist of at both 000 order for example for generations programs (1,200) seeds for goard with 1. If a sample thall provide at least the minimum sequence is constant. See the sample with first provide set for the minimum sequence is constant.
- (7) Control, encruted, or pelleted used infimitted for testing shall consist of at least. 7,500 need units for a putity analysis, 30,000 need units for a noninsus need used enanumation, or 1,000 need units for a permission only test. Refer to sections 1.0
- Individual container samples being tested for unifor

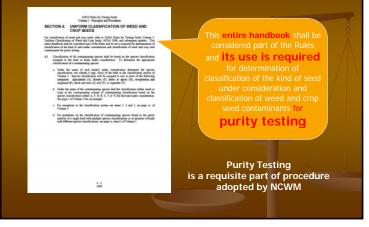
The size of any individual continue sample to determine uniformly in a need for shall be not less than the quantities individual in the column "Maximum weight for more one of a bit Amazimuto" for the structure shall be also be limit an Table 2A. If the sample down in larger than request, it shall be thoroughly maxed before it in dividual to be detended into.

- Forwarding of seed complex to faboratory
- a. After the appropriate number of primary samples for the size of the sould inter a diverse and combined on the comparison sample, for entire composite sample is submitted for Monsteiny. If the comparison samples is too large, or if the comparison samples in the split start depicture samples for adminutes or the starts are or different distortions for some or different distortions for comparison samples in the submitted of them split by an appropriate large to an administed method on the some submitted or method submitted.
- b. The persons who samples the need shall moure that the need sample container is appropriately closed and needs, if required, is identified in such a manner as to correctlen with the sampling documentation, and its matical and after. Turned new manples shandl be packaged in morporous containers and he identified with the same of the spikel and business.
- Samples solumited for mointure testing or mechanical used counts shall be packed in ministure proof continues.
- Control, enzymetrol, or pelleted used shall be forwarded in firmly pecked cruth-proof, maintage proof continues.
- Seek or long organism that on softe damage is track. Theorem purchls, nor should be also to minimize damage during transit to the laboratory 1.4 2009

the composite sample, the entire sample is submitted to the laboratory

As you will see, the procedure adopted into Hdbk 133 requires Purity Analysis testing by a seed analysis laboratory

# Why be concerned with portions not adopted into Hdbk 133?



# Seed Count Testing Procedure References AOSA "Rules" § 2.2

#### AOSA Raies for Testing Seeds Volume 1. Principles and Procedures

SECTION 2: PREPARATION OF WORKING SAMPLES The denies analyzes for lise indexcasts, blicking, and ground indexnession so well quarks, or accurators of investment and analyzes, and only a preving pressure and prevention of the section of the section of the section of any prevention of the section of the section of the section of the prevention of the section of the section of the section of the prevention of the section of the section of the section of the prevention of the section of the section of the section of the prevention of the section of the sectio

- 13 Definition
- Kind: (of seed) one or more related species or subspecies that singly or collectively is saready knows by one common same.
- Seed sain the structure usually regarded as a seed in planting practices and a commercial channels. Earlier to section 3.2 a for pure used and decorptions.
   Working complex:

blik examination working sample: the mb-sample takes from the solenized sample on which a bulk examination is performed. Refer to sections 2.3 b and 3.3.

- (2) Paragal endophyte working complex the sol-sample of endophyte working toos the obtained sample on which the fingule endophyte test is performed. Endo to section 3.3 d and 10.
  (3) Germinations working complex the solt-sample taken entire from the pure well pertons of the purely analysis or fitworky from the soluzionid samples as shall the
- premate the transformed. Easter to section 2.3 c and 4.1. (4) Parity working sample: the sub-sample taken from the submitted sample which the parity market up sections 2.1 b and 3.
- (7) Nextons werd used examination working sample: the nds sample taken from the submitted sample on which the sections werd used examination is performed. Refer to sections 2.5 b and 3.1.
- (6) Seed mainteer determination working sample: the sub-sample taken from the submitted sample on which the seed mainteer determination as performed. See sections 2.3 e and 13.

2.1

4. Seed formation

#### The laboratory analysis for

should determine the followin (1) the **purity composition** 

(3) the percentage germination...

#### By making reference to Section 2.2

all of Section 2 must be followed to ensure that seed count verification testing is defensible under legal challenge (i.e., defense in prosecution)

# Seed Count Testing Procedure References AOSA "Rules" § 2.2

The working sample... shall be taken

submitted sample

A suitable type of mechanical divider

should be used

Mechanical dividers are costly, sensitive pieces of equipment

that Weights & Measures agencies

do not possess

Submitted sample" means

that submitted to the

seed laboratory

(recall Section 1.5)

#### AOSA Rales for Testing Seeds

(1) cannot ser secrement sevel, used dark has been conversel by a layer(s) of material that obscars the single of haspe and says of the sevel resulting at a solutation weight incoment. The additions of basic-point, periodics, identifying colorestor of eyer, and or other arters suggestions individually polymers can be uncluded in the process. Earlier to exercise 3.8 and 6.51.

- trav seel with a minimal weight gain. The film closing may contan poly perticides, buildingcolic, identifying columnts or dyes, and other additions, containg deadd routs in a more or loss confinance covering that eliminat minimums product dust-off.
- Essentiated used: used that has received a conting of a commercial performance in microbial product, e.g. Detablisher sp.
   Felfeted used: used that has been covered by a layer(s) of materials in

and improved plantidity or simplificits. The addition of biological posted identifying conversion or dyer, unlive other active signalents including polyse can be included as the process. Robit to exclude 3.1 and 4.1. (1) Kew used: seed that is five of any applied materials

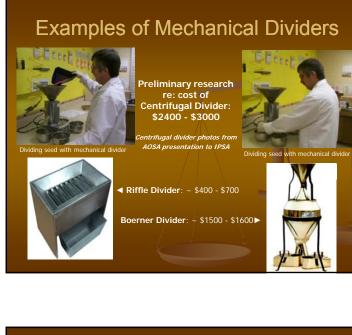
(6) Treated used with a minimal covering of various materials whose prin objective is to reduce or control orthan discours regimment, assoch or other attacking for seed or seedings growing therefores and that contains ideal colorants or dyes.

The working sample on which the actual analysis is performed shall be taken from admitted anaple in each a manner that it will be representation. A similar types mechanical docket (screent), camping), effort, etc.) bound for small. The result dama when dividing large-needed (rep lands such as beam, pees, etc., present the south 5 (blang years documents outs have actives. When document campion and solid relations).

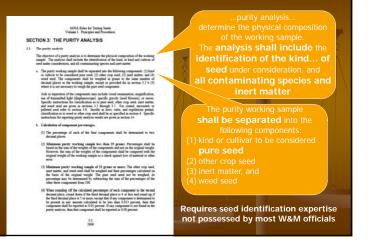
Ge upplied naturesh. For used another determination, sub-samples must be drawn quickly to evoid e the media to the ambient mit. Mechanical dividers are not appropriate for this p

a. Mechanical dividers. - This method is muthle for most kinds of seeds, appendix divider a sample anto new approximately equal parts. The solutionspile is mixed by passing it through the divider, recombining the two parts.

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## Purity Analysis: Only The Basics



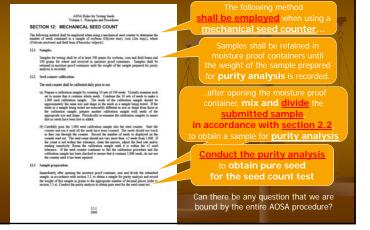
#### Pure Seed Sample: **Required for Count Testing** Volume 1. Principles and Procedure The pure seed shall include hereaft by weight Cauch villeys Oder unp und hert name Evel and all seed units of each kind HLU 197 425 or each kind and cultivar under Wangle Pursue by angle Pursue of angle 121 by angle of angle 1240 4520 - 629721 of angle 1271 10.06 - 629721 of angle 1290 620 - 629721 of angle 1291 1290 - 629721 of angle Identification / determination of a PURE SEED sample 444 444 833 139 is critical to the procedure and to demonstration of other to section 11. Table 1988 compliance with the ing the rate of occurrence of any nonious weed species that are searance to the kind or culture under consideration, wher to section Hdbk 133 procedure...

3.3

Are W&M field officials trained, qualified, certified?

#### Can't we just count 1,000 seeds? RECALL: AOSA Exies for Testing Seeds Volume 1 Principles and Procedures This entire handbook shall be SECTION 4: UNIFORM CLASSIFICATION OF WEED AND CROP SEEDS of weed and corp needs, refer to AOSA Rules its use is required fostion of all communiting up-el to the kind or kindo under inter the same of each kind(s) under o for purity testing Coale for name et un composing column of contaminating classific species classification (softer A, F, H, R, S, T or V) for the kind-For exceptions to the classification system are stens 2, 3 and 5, on page 16, of The procedure adopted by NCWM specifically requires calibration of n on the classification of continuinating species frond in the parity single kind with multiple species classifications or in mixtures of kinds species classifications, see page 11, item 6, of Volume 3. mechanical seed counter using seed from a Pure Seed sample...... 4-1 2009

## Section 12 of "Rules for Testing Seeds" Directly Adopted in NCWM Action



## Examples of "Pure Seed" Criteria

## For Field Bean and Soybean:

- Seed with at least a portion of the seed coat attached
- Broken seed larger than one-half the original size with at least a portion of the seed coat attached
- For Fabaceae (includes Field Bean & Soybean): Cotyledons that are broken apart but held together by the seed coat shall be classified as pure seed. Cotyledons that have separated and are not held together by the seed coat are regarded as inert matter irrespective of whether or not the radicle-plumule axis and/or more than half of the seed coat may be attached.
- Wing, when present, is removed and considered inert matter.
- Chalcid-damaged seeds in Fabaceae that are puffy, soft, or dry and crumbly are considered inert matter.

Weights & Measures officials should have no trout

# Examples of "Pure Seed" Criteria

## For Corn:

- Multiple floret, with or without awn, provided a caryopsis with some degree of endosperm development can be detected (either by slight pressure or by examination over light).
- Caryopsis or piece of broken caryopsis larger than one-half of the original size
- Special Consideration:
  - \* A fertile floret attached to another fertile floret shall be separated
  - \* Attached glumes and empty florets shall be removed and classified as inert matter.

Again, the average W&M official can do this.

# Purity Analysis: Seed Identification

#### AOSA Rairs for Testing Seeds Volume 1. Principles and Procedures SECTION 14: REPORT OF ANALYSIS following shall be reported Laboratory reports of analysis that indicate laboratory testing was performed to necessible to the AOSA Rules for Testing Seeds are required to include, but not be lamited to, the following a. Name and address of issuing inheratory h. Name of responsible individual from the inning labc. Unique laboratory text or sample manifer ann d. Date report of analysis is inner Appleant's information, such as kind of a manlee, treatment, etc., as stated by the ap name, or both, of all other crop When the mismitted sample is treated seed, associated excrupted seed, or self-red seed, this shall be subcated seed or weed seed found.. g. Kind of need by scientific name, or common name, or both b. When a parity analysis is combacted the following infer Parity Analysis: Weight of putity working sample. Percentage by weight of page seed Seed Analysts typically work 4-5 years in ending sample, gives to two decimal places. common name, or both, of all other crop seed or weed seed sorking sample. If some are found, this shall be indicated. a seed laboratory to gain expertise to independently conduct seed analyses... j When a germination test is conducted the following infle Germination Test What percentage of Weights & Measures officials are qualified? (1) Percentage of accend seedings as a whole sampler (refer to section 6.7). (2) Percentage of hard need, if applicable, as a whole number (refer to section 6.7). ANY?

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# Other Concerns: Repeatability?

A05A Bales for Testing Seels Values 1. Principles and Procedures SECTION 12: MECHANICAL SEED COUNT

The following method shall be employed when using a mechanical need country to determine mashes of each continued in a sample of software (Opyrum mec), costs (Zee mept), wh (Zentrum anothrow) and field beau (Phanoshu volgorus)

1 Samples.

Samples for twing that be of at least 300 grans for weybean, core and field beam and 100 grans for whest and second in moisture proof containers. Samples shall be retunned in monitore proof containers until the weight of the sample prepared for party analysis is recorded.

12.2 Seed counter calibration.

a) Propuse a calibration sample by counting [1] text at [10] such. Visually examine each or to more flat if contains which work. Candrate first 10 out of each to make 100 out of the calibration sample. The same of the calibration sample doubl H opportunity for same tax and dapa at the same in a sample based propulse. The calibration sample, propulse moder (1) defined at the calibration sample, propulse moder (2) defined at the calibration sample, propulse moder (2) defined at the calibration sample, propulse moder (2) defined at the calibration sample based propulse moder (2) defined at the calibration sample based propulse moder (2) defined at the calibration sample based propulses at the

(b) Cardibly part for 1.000 and caldration sample into the next smarts. Start the number of a large and if a new hist new normal. The sets who and and to the moment work and the sets of the number of resents in the set of the 1.000  ${\rm M}^{-1}$  model and the set of the number of the set of the

Sample perparation

Immediately after opening the mointure proof container, mix and divide the submitted rample, in accordance wells notices 2.3, to obtain a cample for party analysis and record the weight of this sample in grants to the appropriate monitor of derimal planes (right more seed for the section 2.3 s). Conduct the purity analysis to obtain pars are dire for the seed count test.

12-1 2009

calibration sample. ...pour...into the seed counter. ...run it until all seeds...counted. The seed count should not vary more than ±2 seeds from 1,000. If...not within this tolerance, clean...mirrors, adjust...feed rate and/or reading sensitivity. Rerun it until it is within the ±2 seed count tolerance. Calibration procedure mandates no show to worlfy comparability. Out-Of-Tolerance runs could be unlimited.

Results may result in enforcement action: Defensible?



of subject to transportation on front seat of a pickup transportation of the subject to transportation of the subject to transport the subject to transport to the subject to t

# Example of 100-Seed Sampling

(from AOSA presentation to IPSA)



Does this look like a field activity?

# Other Concerns: Equipment Access? Portability?



# Call for Repeal of NCWM Adoption

#### Acknowledge:

- 1st: We <u>do need</u> an accurate, reliable, consistent procedure for testing seed count.
  - Seed count is an important factor in farming to manage input costs & to meet needs of modern planting equipment
  - Packers/Manufacturers are increasingly placing supplemental count statements on seed packages due to customer demand
  - A procedure is needed by W&M to regulate labeled count accuracy
- 2nd: AOSA standards are well developed and are in wide use by seed labs.
- BUT: Procedure was prematurely adopted by NCWM. - Procedure provides little assurance of counter accuracy. - We have adopted a test procedure that few, if any, can actually perform!

# Call for Repeal of NCWM Adoption

NOT suggesting that procedure is not needed....

#### But,

### New NIST Hdbk 133 sections 4.2 and 4.11

- Require expertise not held by W&M inspectors
- Require equipment not suitable for field use
- Require equipment that is cost restrictive
- Require steps that, if not precisely followed, subject W&M agencies to legal challenges and, potentially, litigation exposure for taking off-sale action.

# Recommendation

### WWMA should call on NCWM to:

Recognize that:

- State & local W&M agencies do not have required equipment
- State & local W&M agencies do not have required seed analysis expertise (licensing/certification)
- State & local W&M agencies are highly unlikely to have time (years for certification as seed analysts) or resources (\$\$) to meet requirements
- Adopted procedures do not facilitate field tests of seed count
- Adopted procedures <u>will not result in enhanced enforcement</u> due to all of above.

# Recommendation

### WWMA should call on NCWM to:

Take the following actions:

- Rescind action taken to adopt amendments to Hdbk 133 Section 4.2 and to add Section 4.11 et seq
- Direct NCWM Laws & Regulations (L&R) Committee to establish a working group to conduct appropriate studies, field trials, laboratory testing, and other measures to establish procedures for verification of repeatability of Mechanical Seed Counter devices (at a minimum)
- Direct NCWM L&R Committee to establish a working group to research, develop, and recommend alternative seed count testing procedures that are practical and reliable for field applications (preferred)