Form 15: Proposal to Amend NIST Handbooks

General Information (See Instructions)			
1. Date:	**2. Regional Association(s):** X Central (CWMA) X Northeastern (NEWMA) X Southern (SWMA) X Western (WWMA)		**3. Standing Committee:** X L&R ___ S&T ___ PDC
4. Submitter Name: Mulch & Soil Council & NIST Office of Weights & Measures (Jointly)			
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Proposal Information (See Instructions)

13. Purpose: Clarifying mulch and soil test procedures promoting uniform practices

14. Handbook to be Amended:

___ *NIST Handbook 44* ___ *NIST Handbook 130* X *NIST Handbook 133*

Section: Chapter 1 & Chapter 3

Paragraph: 1.2.1 and 1.3.1 & 3.10.1 and 3.10.2

15. Proposal:

Chapter 1- General Information

1.2. Package Requirements

1.2.1. Inspection Lot

An "inspection lot" (called a "lot" in this handbook) is defined as a collection of identically labeled (except for quantity or identity in the case of random packages) packages available for inspection at one time. The collection of packages will pass or fail as a whole based on the results of tests on **a statistically valid, randomly drawn** sample ~~**drawn from**~~ **of** the lot. This handbook describes procedures to determine if the packages in an "inspection lot" contain the declared net quantity of contents and if the individual packages' variations are within acceptable limits.

1.3. Sampling Plans

This handbook contains two sampling plans used to inspect packages: "Category A" and "Category B." Use the "Category B" Sampling Plans to test meat and poultry products at point-of-pack locations that are subject to U.S. Department of Agriculture Food Safety and Inspection Service (FSIS) requirements. When testing all other packages, use the "Category A" Sampling Plan.

Inspections by weights and measures officials must provide the public with the greatest benefit at the lowest possible cost. Sampling reduces the time to inspect a lot of packages, so a greater number of items can be inspected. Net content inspection, using sampling plans for marketplace surveillance, protects consumers who cannot verify the net quantity of contents. This ensures fair trade practices and maintains a competitive marketplace. It also encourages manufacturers, distributors, and retailers to follow good manufacturing and distribution practices.

Testing a "sample" of packages from a lot instead of every package is efficient, but the test results have a "sampling variability" that must be corrected before determining if the lot passes or fails. The "Category A" sampling plans give acceptable lots a 97.5 % probability of passing. An "acceptable" lot is defined as one in which the "average" net quantity of contents of the packages equals or exceeds the labeled quantity. The "Category B" sampling plans give acceptable lots at least a 50 % probability of passing. The sampling plans used in this handbook are statistically valid. That means the test acceptance criteria are statistically adjusted, so they are both valid and legally defensible. This handbook does not discuss the statistical basis, risk factors, or provide the operating characteristic curves for the sampling plans. For information on these subjects, see explanations on "acceptance sampling" in statistical reference books.

A randomly selected sample is necessary to ensure statistical validity and reliable data. This is accomplished by using random

numbers to determine which packages are chosen for inspection. Improper collection of sample packages can lead to bias and unreliable results.

1.3.1. Audit Tests

Audits may be used to speed the process of detecting possible net content violations. These audit procedures may include:

• using smaller sample sizes;

• using tare lists provided by manufacturers to spot check; or

• selecting samples without collecting a random sample.

These audit procedures allow spot checking of more products than is possible with the more structured techniques, but do not take the place of "Category A" or "Category B" testing.

Do not take enforcement action using audit test results. If, after an audit test, there is suspicion that the package lot is not in compliance, use the appropriate "Category A" or "Category B" sampling plan to determine if the lot complies with the package requirements.

Chapter 3 – Test Procedures – For Packages Labeled by Volume

3.10. Mulch and Soils Labeled by Volume

Mulch is defined as "any product or material except peat or peat moss that is advertised, offered for sale, or sold for primary use as a horticultural, above-ground dressing, for decoration, moisture control, weed control, erosion control, temperature control, or other similar purposes."

Soil is defined as "any product or material, except peat or peat moss that is advertised or offered for sale, or sold for primary use as a horticultural growing media, soil amendment, and/or soil replacement."

3.10.1. Test Equipment:

- A test measure appropriate for the package size that meets the specifications for test measures in Table 3-4. "Specifications for Test Measures for Mulch and Soils"
- Drop cloth/polyethylene sheeting for catching overflow of material
- Level (at least 15 cm [6 in] in length)

Table 3-4 Specifications for Test Measures for Mulch and Soils

Nominal Capacity of Test Measure[4]	Actual Volume of the Measure	Interior Length[1]	Interior Width[1]	Interior Height[2]	Marked Intervals on Interior Wall[3]	Volume Equivalent of Marked Intervals

30.2 L (1.07 cu ft) for testing packages that contain less than 28.3L (1 cu ft or 25.7 dry qt)	31.9 L (1.13 cu ft)	213.4 mm (8.4 in)	203.2 mm (8.0 in)	736.6 mm (29 in)	12.7 mm ($^1/_2$ in)	550.6 mL (33.6 cu in)
28.3 L (1 cu ft)	~~**28.3 L (1 cu ft)**~~ **33.04 L (1.16 cu ft)**	304.8 mm (12 in)	304.8 mm (12 in)	~~**304.8 mm (12 in)**~~ **355.6 mm (14 in)**		1179.8 mL (72 cu in)
56.6 L (2 cu ft)	~~**63.7 L (2.25 cu ft)**~~ **61.3 L (2.16 cu ft)**	304.8 mm (12 in)	304.8 mm (12 in)	~~**685.8 mm (27 in)**~~ **660.4 mm (26 in)**		
		406.4 mm (16 in)	228.6 mm (9 in)	~~**685.8 mm (27 in)**~~ **660.4 mm (26 in)**		
84.9 L (3 cu ft)	~~**92 L (3.25 cu ft)**~~ **89.4 L (3.16 cu ft)**	304.8 mm (12 in)	304.8 mm (12 in)	~~**990.6 mm (39 in)**~~ **965.2 mm (38 in)**		
		406.4 mm (16 in)	228.6 mm (9 in)	~~**990.6 mm (39 in)**~~ **965.2 mm (38 in)**		

Measures are typically constructed of 1.27 cm ($^1/_2$ in) marine plywood. **The measure must accommodate the entire contents of the package being tested, and** a transparent sidewall is useful for determining the level of fill, but must be reinforced if it is not thick enough to resist distortion. If the measure has a clear front, place the level gage at the back (inside) of the measure so that the markings are read over the top of the mulch.

Notes

[1.] Other interior dimensions are acceptable if the test measure approximates the configuration of the package under test, **can accommodate the entire contents of the package at one time** and does not exceed a base configuration of the package cross-section.

[2.] The height of the test measure **shall be 355.6 mm (14 in) for a 1 cubic foot package, 660.4 mm (26 in) for a 1.5**

- 2 cubic foot package or 965.2 mm (38 in) for a 3 cubic foot package. ~~**may be reduced, but this will limit the volume of the package that can be tested.**~~

[3.] When lines are marked in boxes, they should extend to all four sides of the measure if possible to improve readability. It is recommended that a line indicating the MAV level also be marked to reduce the possibility of reading errors when the level of the mulch is at or near the MAV.

[4.] The Nominal Capacity is given to identity the size of packages that can be tested in a single measurement using the dry measure with the listed dimensions. It is based on the most common package sizes of mulch in the marketplace. If the measures are built to the dimensions shown above the actual volume will be larger than the nominal volume so that plus errors (overfill) can be measured accurately.

(Amended 2010 **and 20XX**)

3.10.2. Test Procedure

1. Follow the Section 2.3.1. "Define the Inspection Lot." Use a "Category A" sampling plan in the inspection, and select a random sample.

~~**2. Open each package in turn. Empty the contents of the package into a test measure and level the contents by hand. Do not rock, shake, drop, rotate, or tamp the test measure. Read the horizontal marks to determine package net volume.**~~

2. ~~**Note**~~ Some types of mulch are susceptible to clumping and compacting. ~~**Take steps**~~ **T**o ensure that the material is loose and free flowing when placed into the test measure**, g**ently **massage the package while** roll**ing** the bag **on the ground (or flat surface)at least four full rotations (but no more than eight full rotations), without lifting or dropping the package,** before opening to reduce the clumping and compaction of the material.

Note: Mulch products stored exposed to the elements may become saturated with moisture. Excessive moisture adds weight to mulch particles and distorts the volume test results. Test samples with flowing or collected moisture in the package shall be excluded from the test procedure.

~~**3. Exercise care in leveling the surface of the mulch/soil and determine the volume reading from a position that minimizes errors caused by parallax.**~~

3. Placing contents into the test measure.

- ☐ **Open the bag, gather the bag opening to ensure that no product is lost. Place the gathered bag opening as far into the top of the measure as possible without touching or leaning against the measure.**

- ☐ **Release the bag opening and quickly dump the contents of the package into a test measure in a continuous flow**

  Note: Do not touch the product or test measure at any time during this procedure. Do not disturb the test measure by rocking, shaking, dropping or tamping it during the test procedure.

- ☐ **Massage the outside of the bag to maintain a continuous flow of the product but not for the purpose of de-clumping the product.**

- ☐ **Using your hand, gently level the contents, being careful not to affect the compaction of the product.**

4. Read the horizontal marks at a position level with the product and round the readings between two marked intervals up to the nearest 38.1 mm (½ in) increment to determine the package net volume.

5. ~~**4.**~~ Determine package errors by subtracting the labeled volume from the package net volume in the measure. Record each package error.

Package Error = Package Net Volume – Labeled Volume

3.10.3. Evaluation of Results

Follow the procedures in Section 2.3.7. "Evaluate for Compliance" to determine lot conformance.

Note: In accordance with Appendix A, Table 2-10. Exceptions to the Maximum Allowable Variations for Textiles, Polyethylene Sheeting and Film, Mulch and Soil Labeled by Volume, Packaged Firewood, and Packages Labeled by Count with 50 Items or Fewer, and Specific Agricultural Seeds Labeled by Count, apply an MAV of 5 % of the declared quantity to mulch and soil sold by volume. When testing mulch and soil with a net quantity in terms of volume, one package out of every 12 in the sample may exceed the 5 % MAV (e.g., one in a sample of 12 packages; two in a sample of 24 packages; four in a sample of 48 packages). However, the sample must meet the average requirement of the "Category A" Sampling Plan.

16. Justification: Recent observations of test activities being conducted by industry and states indicate there are areas in the current test procedures that are not sufficiently defined to assure uniform testing practices by all parties. Council testing conducted by Dr. William Fonteno at the Horticultural Substraits Lab at North Carolina State University indicates some reported and observed variations in testing procedures that are not completely defined in HB133 can have an adverse impact on testing results due to the highly variable particle size distribution that is the very nature of the products.

17. Other Contacts: These recommended changes to NIST Handbook 133 were developed, reviewed and endorsed by:

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18. Other Reasons For: To provide uniform procedures and coordinate training of inspectors by NIST and manufacturers by the Mulch & Soil Council.

19. Other Reasons Against:

20. Evidence: This request for changes to Handbook 133 is not in conflict with any NIST publications or other Federal laws.

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21. Additional Considerations: There should be no major costs resulting from this proposal. Some manufacturers and inspectors may need updated test measures suitable for the package size being tested. All stakeholders will benefit from coordinated training by NIST and industry and test procedures uniformly applied in interstate commerce.

22. Suggested Action:
_X_ Recommend NCWM Adoption ___ Developing Item ___ Informational Item ___ Other (Please Describe):

23. List of Attachments:
Data Presentation PPT

For Regional Use Only

Comments: