Great Lakes Hop and Barley Conference
Grand Rapids, MI

Hops Sampling and Inspection

Randall R. (Randy) Deike

USDA/GIPSA/FGIS

Federal Manager – Olympia, WA

http://www.gipsa.usda.gov/

“Hops Inspection 101”

“Hops Inspection 101”

- Agricultural Marketing Act
- Lot Identification and Sampling
- Compositing and Processing
- Leaf and Stem Analysis
- Seed analysis
- Certification
- Questions

Agricultural Marketing Act Of 1946

and Part 68 Regulations thereunder (as amended)

- Provides the basis for inspection of commodities like rice, edible beans, lentils, dry peas, **HOPS**, and processed commodities.

- Services under the AMA are "permissive" – there is no requirement for USDA inspection.

- Some states, at the urging of local industry, have instituted a "must be inspected" protocol for the marketing of hops.

AMA continued:

- When requested, the inspection will be conducted by:
  - Personnel employed by a USDA agent or cooperator (generally an official agency)
  - Personnel with no financial or direct/indirect interest in the merchandizing, handling, storing, or processing of the hops to be inspected
  - Personnel trained, tested, and licensed by USDA/GIPSA/FGIS to provide the service

Hop Inspection Handbook

http://www.gipsa.usda.gov/fgis/handbook/hop_inspec.aspx

- Chapter 1 General Information
- Chapter 2 Sampling
- Chapter 3 Inspection
- Chapter 4 Certification

SAMPLING

"The process of drawing a representative sample from a lot of hops."

- Obtaining a representative sample is an essential part of the inspection process. To be deemed "representative" the sample must be:
  - Obtained by official personnel in accordance with procedures
  - Obtained using FGIS approved equipment
  - Be of the prescribed size
  - Be handled securely and protected from manipulation, substitution, and careless handling

Note: Hops may also be inspected on a "submitted sample" basis. In these cases the applicant obtains and provides the sample.

Hop bales are approximately 200 pounds each, wrapped in either burlap or plastic

Lot Identification- Hop Sampling

Lot Accessibility:

- **The lot presented for sampling must be completely and safely accessible.**

Lot Identification:

- **A grower number assigned by the Hop Growers of America appears on each bale. The grower number consists of 3 or more alphanumeric characters.**
- **A unique grower lot number of at least 3 characters must be stamped or inked in characters 2 inches high on the bales of the lot.**
- **The lot identification information must be verified by the sampler throughout the lot and recorded on the work record. Physical verification of the information on each bale is required.**

Sampling: Determining Sample Size

- Lot sampling rules:
  - Sample all the bales in a lot of 5 bales or less.
  - Obtain multiple sample cores from a bale if the lot is very small or additional sample is needed for other tests.
  - Obtain samples from 6 bales for lots between 6 and 60 bales.
  - Obtain samples from at least 10 percent of the bales in lots over 60 bales (i.e. a 65 bale lot requires a minimum of 7 sample cores).
  - A representative sample is critical to the inspection process.

After the lot is presented for sampling, a bale count is determined and the appropriate number of bales to be sampled are selected in a random pattern from the lot.

Samples are obtained using a core sampler: a steel tube approx.10 inches long and 3 inches around, with a sharp cutting edge, handles, and an expeller. The core obtained during sampling is approx. 6 inches in length.

Sample “cores” are taken from the sides of a representative number of randomly selected bales. Once the bale is “cored”, the sample site is closed. Plastic bales are closed by taping at the sampling site.

Sampling burlap bales requires a cut across the burlap so the core sampler can be inserted. After the core is taken, the bales is sewn shut at the sampling point.

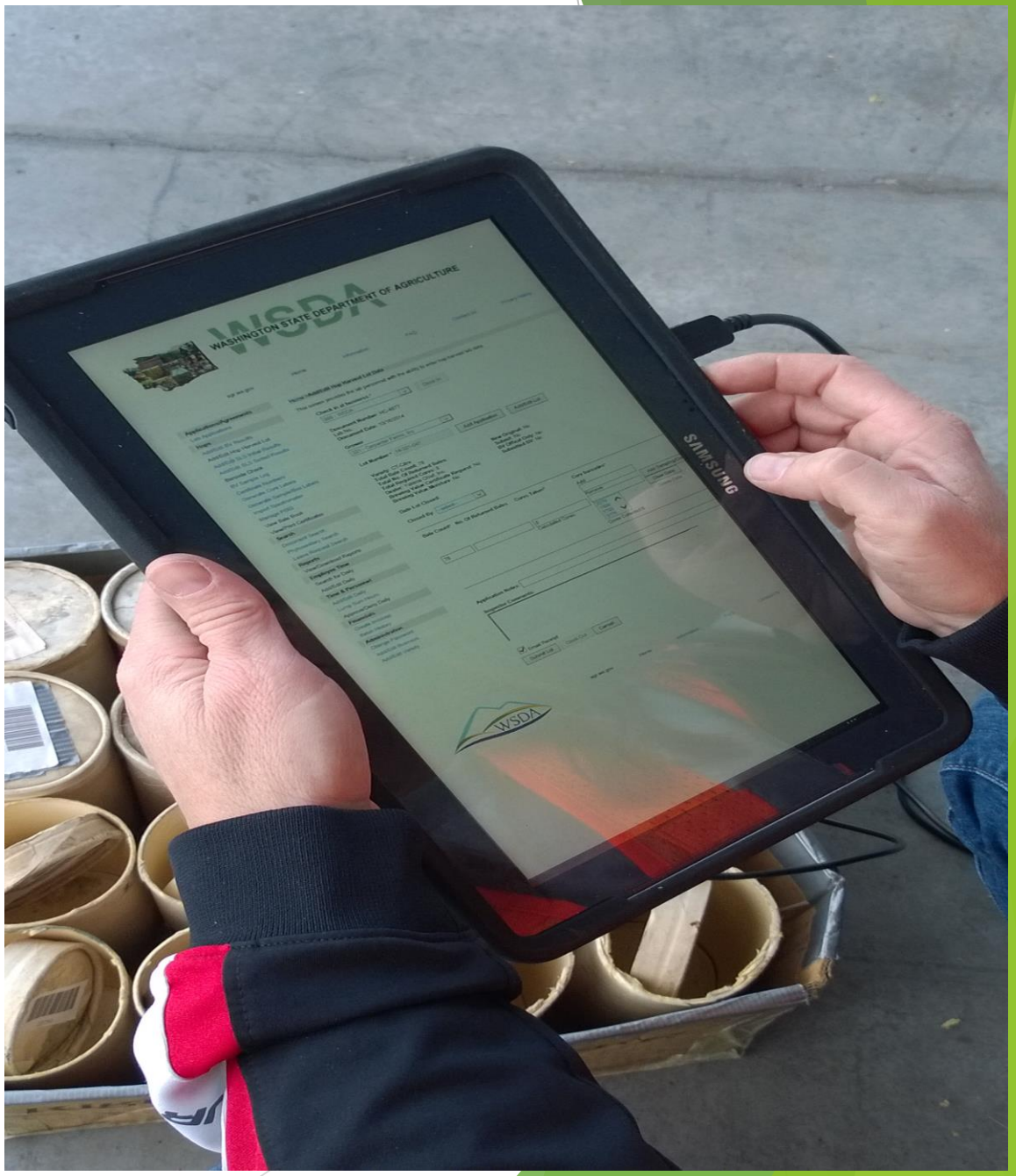
-Each core sample is placed in a sample container.
-Lots may be open for several days and a sampler may have several lots “open” at the same time.
-Care is required to assure that the samples are maintained in a representative manner and that no mixing of lots occurs.

A manual (paper) documentation process that includes lot and sample information written on the sample containers by the links the sample to the lot inspection application assuring that the samples are tracked to the correct lot.

-WSDA has developed a tablet/scanner system to help manage sample core IDs and lot ID identification in lieu of the handwritten process.

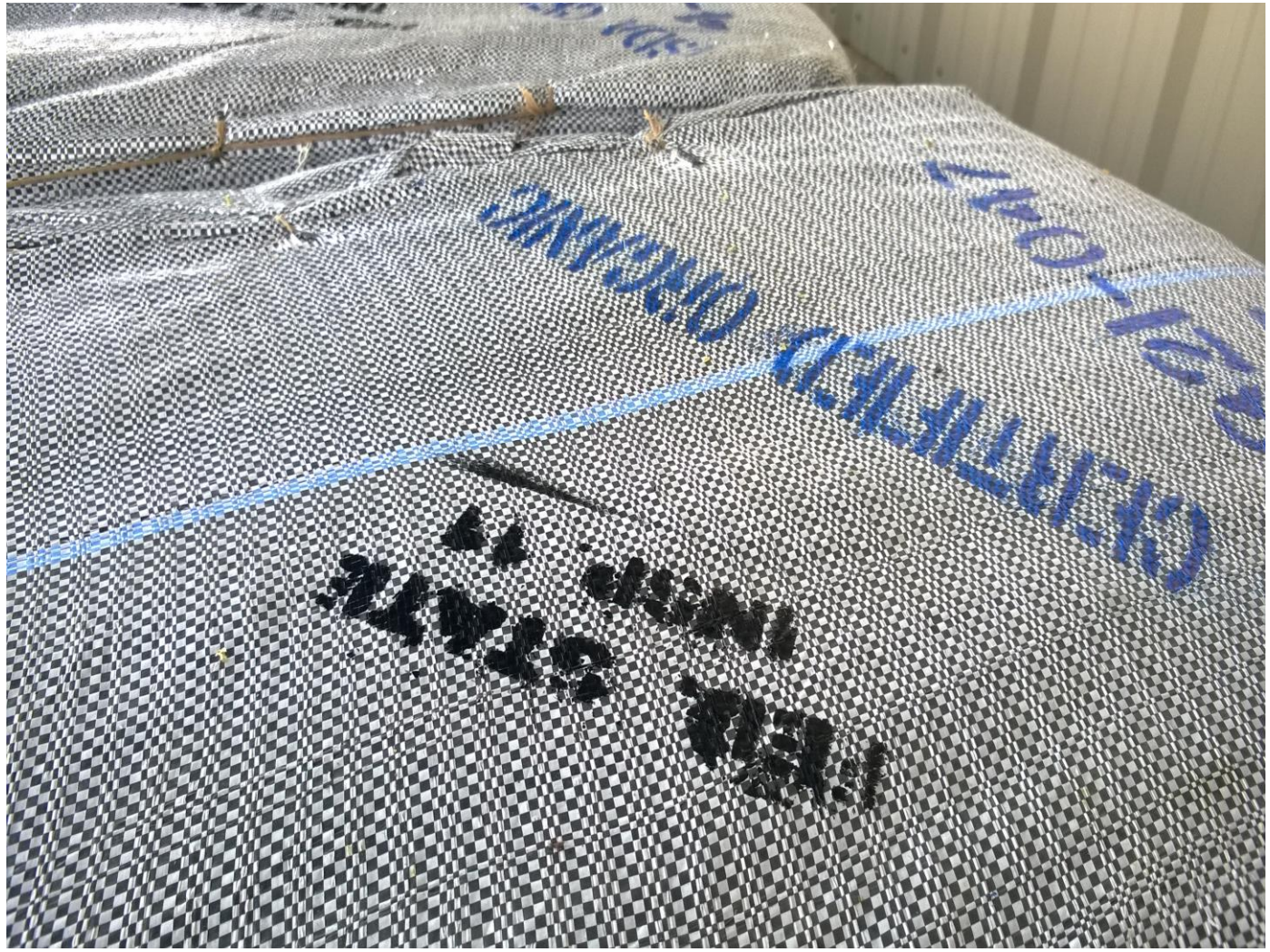
The scanned sample information is added to the grower data entered into the system by the applicant and the samplers. The scanned information is uploaded to a database used for sample tracking in the lab, and for certification and billing.

Idaho and Oregon hops inspection programs still utilize the manual process for tracking samples, lot information, and inspection results.



Stenciling on the top of each bale in the lot is required after sampling to indicate the lot was officially inspected. The stencil shows the inspector number assigned to the individual responsible for the lot sampling.

The stencil must be placed on the “head” end of the bale – which will be the top of the bale as it was presented for sampling. “Food grade” ink is utilized for stenciling.



A completed stencil indicates sampling has been completed and the inspection process can begin. Again, a representative sample is <u>critical</u> to an accurate inspection process.

Compositing:

- when the lot is closed and all sampling is complete, the individual core samples are composited into a representative lot sample

-the individual cores are removed from the sample containers and any unusual conditions are noted (i.e. heavy vines, objectionable material)

-the cores are broken apart to create “loose” hops.

-any stems over 1 inch long are cut or broken into ½ inch pieces and mixed into the sample.

-at this point, the sample is now ready to be divided into sample portions.

Dividing the sample:

-WSDA utilizes a specialized hops divider that produces the leaf and stem sample, the seed sample, and the file sample in a single process.

-a smaller single “riffle divider” is utilized in Oregon and Idaho and results in a somewhat slower process.

Sample portions sizes:

- leaf and stem analysis requires approx. 90 grams

- seed analysis requires approx. 45 grams

- a file sample of approx. 200 grams is retained for retests or appeals

-any excess sample is discarded

-to divide the sample, pour it slowly and evenly into the top of the divider

-this allows the sample to be distributed evenly across the “riffles” without clogging the unit and maintains uniformity throughout the sample portions

-after each use, the divider is thoroughly cleaned to eliminate the chance for cross-contamination of lots

- next step: sieving

Sieving

-place approx. 1/3 of the 90 gram leaf and stem sample in each of three “nested” 1/8 inch wire mesh screens and place on the automated sieve apparatus

-the sample is sieved until material is “sufficiently” separated by particle size – do not over sieve as this can degrade the sample making analysis more difficult

-after sieving, the material in the bottom pan is discarded

-the material that remains on top of each of the 3 wire sieves is placed in a sample container

-the sieving process may be done by hand using a single sieve or nested sieves, but consistency may suffer and it’s tiresome and tedious

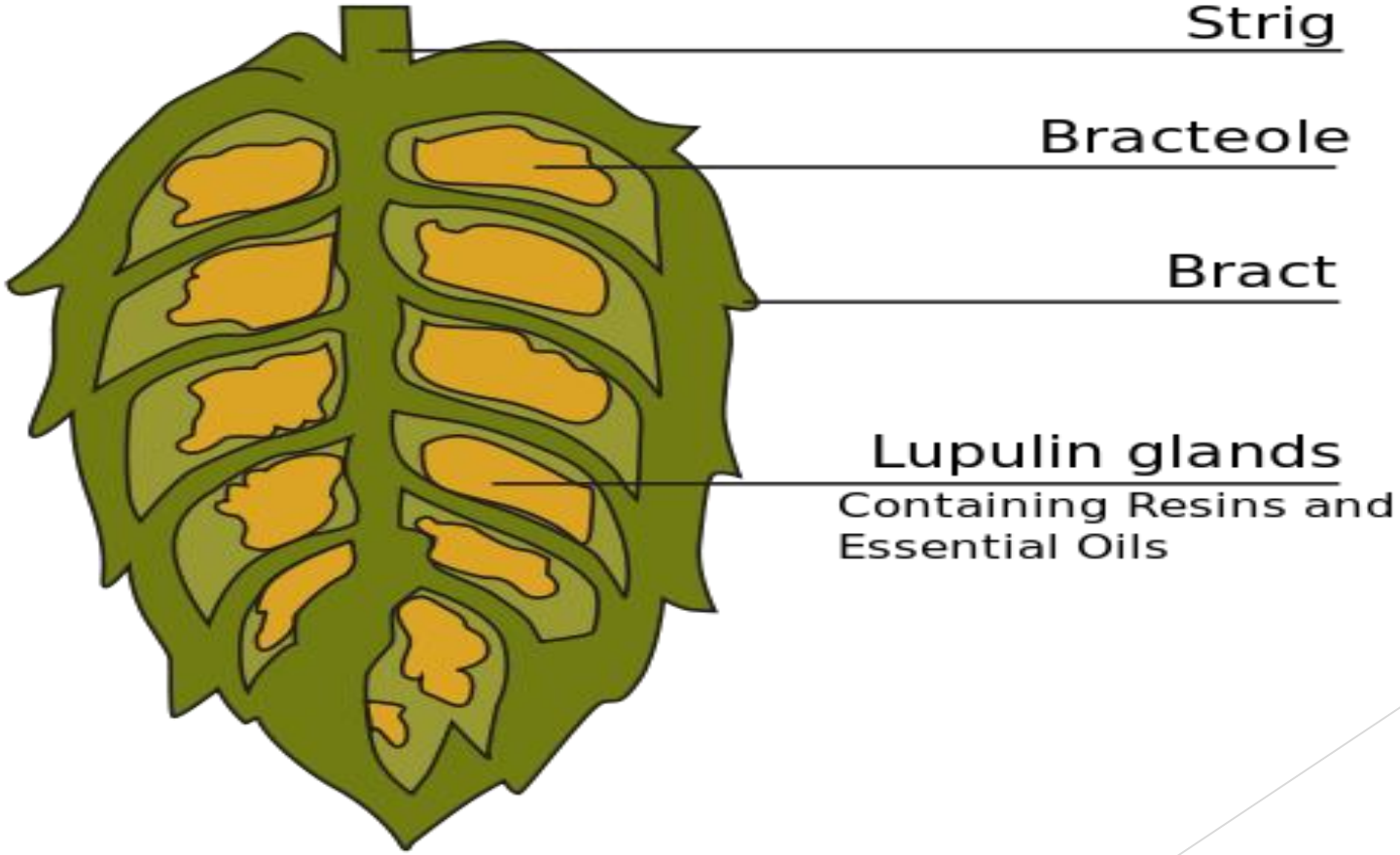
-next step: leaf and stem analysis

Leaf and Seem analysis

-WSDA employs an inclined, porcelain inspection work surfaces. This assist in the flow of the hops during inspection and allows for easy clean-up with alcohol of the sticky residue hops leaves on surfaces

-the inspector sorts any leaf material, leaf stems, vine material, and hop cone stems greater than 1 inch from the hop material.

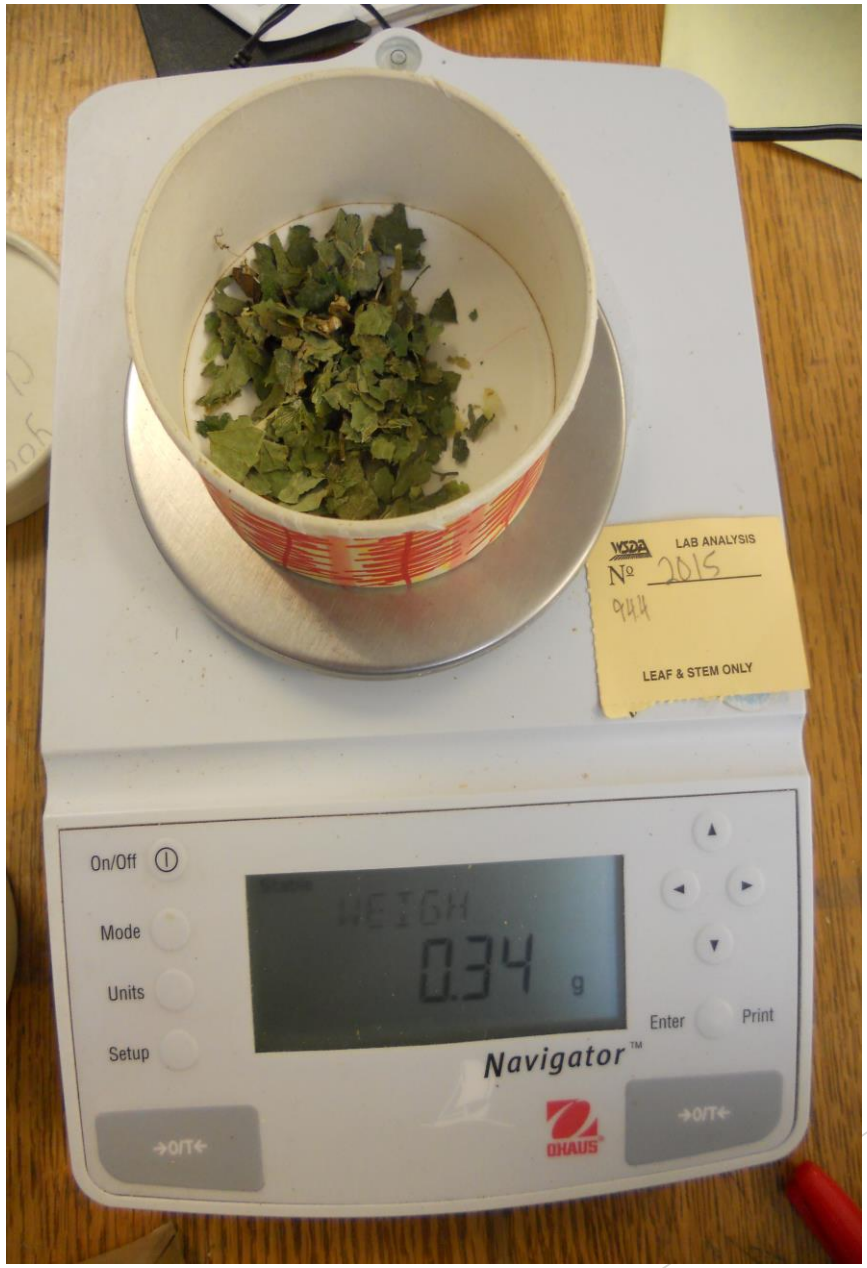
Any strigs (the middle of the hop cone), seeds, short cone stems, and lupulin (pollen-like resins) are considered to be hops and are left with the hops during leaf and stem analysis.



-the separated leaf and stem is weighed and the percentage is recorded on the lab ticket to tenths of a percent.

-example: 0.34 grams of leaf and stem material separated from the 90 gram sample results in 0.38% leaf and stem, rounded to 0.4% on the lab ticket.

- next step: Seed Analysis



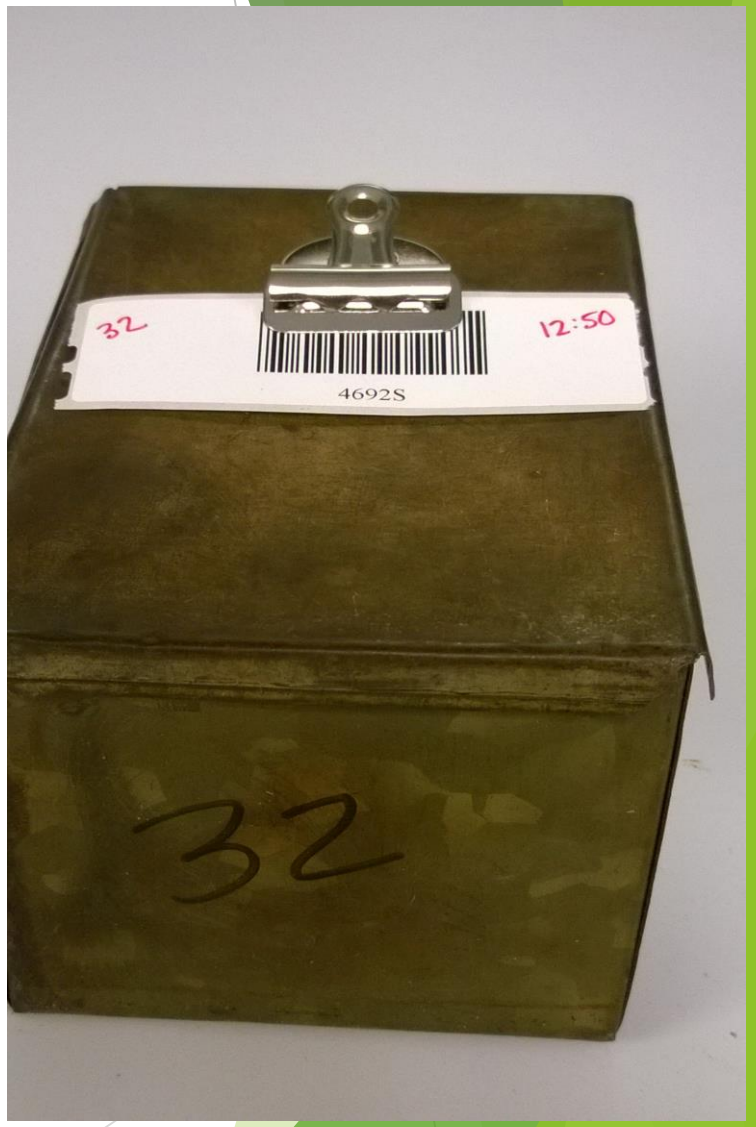
Seed Analysis

-hop seed is defined as “whole germination capable seeds and excludes broken hulls, husks, and pieces of seed”

- place approx. 45 grams of sample in a metal box and attach lot ID information

-heat the sample in a 118 degree centigrade oven for 2 hours to drive off the sticky resinous hops material

-remove and cool the sample



-the dried sample is then placed in a coarse cotton cloth and rubbed vigorously to thresh the seeds from the hop cones.

-the threshed seed sample is then placed on a 4*20 mesh screen which aids in separating the seeds from the hop material.

-if necessary, the seed sample may be placed in the cloth and threshed a second time and then re-sieved

- after sieving, non-seed material remaining on top of the sieve is removed by hand-picking

- a small mechanical “thresher” to aid the seed analysis process can be used in addition to the hand-threshing.

The seed separation is weighed and a percentage is determined and recorded on the lab ticket in tenths.

-final step: certification

Certification:

-“Leaf and Stem” results and “Seed” results are certified as whole percentages with amounts of 0.1% through 0.9% disregarded

-standard rounding rules apply except for results of 0.95-0.99, which are rounded down to 0.9% on the work record

-a 2% result on a certificate may represent an actual sample content between 2.01% to 2.99% before rounding

FORM FGIS-993
JAN 07

UNITED STATES DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE
AGRICULTURAL MARKETING ACT OF 1946

Approved OMB No. 0580-0013

CORRECTED

ORIGINAL

COMMODITY INSPECTION CERTIFICATE

OFFICIAL WHITE CERTIFICATE

EXAMPLE ONLY – NOT FOR OFFICIAL USE

LEVEL OF INSPECTION: Original

ISSUED AT: PORTLAND, OR

DATE OF SERVICE: March 18, 2015

IDENTIFICATION: 15-XXX-XXXX

LOCATION: Yakima Hops Warehouse
Yakima, WA

QUANTITY: (this is NOT a weight certificate) 125 Bales

TYPE OF MOVEMENT: Local

DATE SAMPLED: March 16, 2015

METHOD OF SAMPLING: Other

COMMODITY: Hops

RESULTS:
Leaf and Stem 2 %
Seed 2 %

REMARKS:
This certificate is corrected as to LOCATION and supersedes certificate number US-POFO-1-73645, dated 3-18-15.
EXAMPLE CERTIFICATE
END OF REMARKS

I CERTIFY THAT THE SERVICES SPECIFIED ABOVE WERE PERFORMED WITH THE RESULTS STATED.

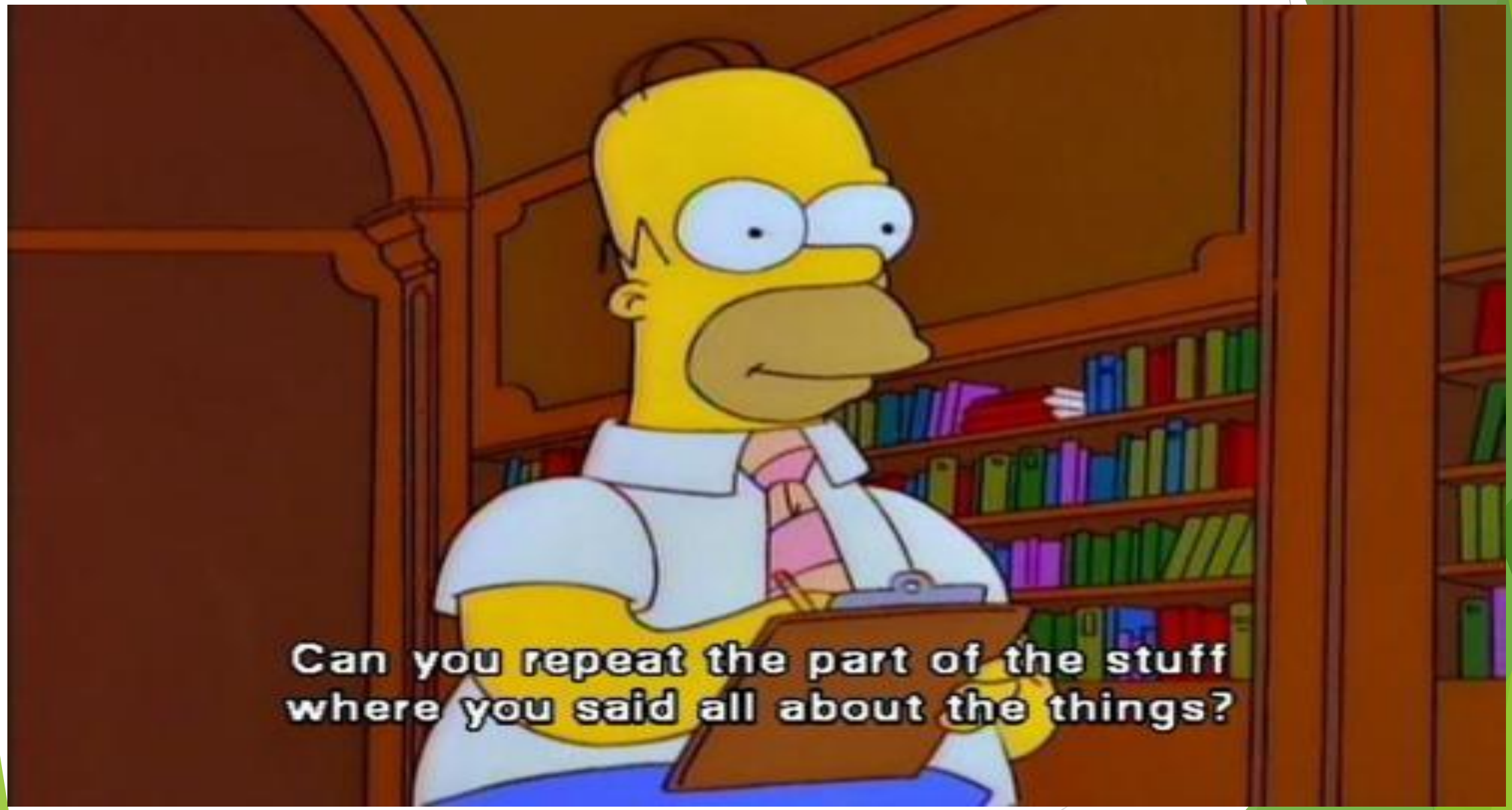
APPLICANT NAME: Hop Farm Number 3

NAME OR SIGNATURE:

ISSUING OFFICE: FGIS - Portland Field Office

EXAMPLE ONLY – NOT FOR OFFICIAL USE

Questions???


Can you repeat the part of the stuff
where you said all about the things?