Blue Box training

Hand-out

The Blue Box tools

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Capabilities of the blue box

Sampling

The process of Quality Determination begins with the sampling.

AS presented in the handout xxxx, sampling is the 1st step and is essential for a right assessment of the quality level of a commodity.

Indeed, remember that it is useless to analyze a sample which is not representative f the lot as the result will not give indication on the lot.

Analysis of a sample which is not representative is useless.

The "Blue Box" is equipped with the sampling equipment required to conduct sampling in accordance with International Standards (GAFTA/ISO) from both Bulk and Bagged Commodities

The blue box is a box containing a set of equipments for field quality testing and screening, with visual and written instructions for the users.

The tools included in the box allow performing **grading of cereal grains** (including wheat and rice), **grading of pulses** (such as lentils, peas, chickpeas, beans) and **moisture determination of various type of commodities**.

The box includes as well necessary tools to conduct **sampling exercises** in accordance with International Standards (GAFTA/ISO): regular sampling exercise or sampling for microbiological testing i.e. in sterile conditions.

Capabilities of the Blue Box

- **Maize Grading**
- **Bean Grading**
- **Grain moisture content determination**
- **Grain temperature measurement**
- **Sampling**

Overview of the Blue Box equipment

Equipment – sampling and preparation		
1	Sample scoop	X1
2	Sample spear	X1
3	Surgical gloves	X100
4	Cotton wool balls	X100
5	Sample bucket (10Kg)	X1
6	Multiple slot divider	X1
7	Sterile sample bags	X1000
8	Spray bottle with ethanol	X1
9	Sample labels	X100
Equipment – Grading		
10	Set of sieves	X1
11	Dickey John moisture meter	X1
12	Probe thermometer (50cm)	X1
13	Electronic scale	X1
14	Scales' calibration weight (200g)	X1
Equipment – Miscellaneous		
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17	International plug adaptor	X1
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20	Forceps	X1
21	White cloth	X1
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23	Torch	X1

Description of equipment and tools composing the Blue Box

Sampling

Sampling is one of the most important parts of the grading exercise.

If the sampling is wrong, the following analysis is not relevant.

It is of major importance to make sure that the sample is REPRESENTATIVE of the lot.

Sampling tables have been developed as to describe the size and number of samples to withdraw according to the size of the lot.

Note that the Blue Box includes equipment for the sterilisation of the sampling tools: sterile sampling protocol have to be followed for any microbiological analysis.

Equipment – sampling and preparation

Grain sampling scoop (x1)

The sampling scoop is to be used for the collection of samples from bulk commodities.

The scoop is made of pewter/ tin.

Before using the scoop make sure it is dry and clean.

The procedure gives instructions on:

- Sampling plan to be followed according to the size of the lot
- Size of the sample to be collected
- Methodology on how to use the scoop
- Where to withdraw the samples
- Labelling of the samples

Grain sampling spear (x1)

The grain sampling spear is to be used for the collection of samples from bagged commodities.

Before using the spear, make sure it is clean, dry and free of objectionable matters (e.g.: old grains

Sampling procedure hand-out is included in the Blue Box materials.

The procedure gives instructions on:

- Sampling plan to be followed according to the size of the lot
- Size of the sample to be collected
- Methodology on how to use the scoop
- Where to withdraw the samples
- Labelling of the samples

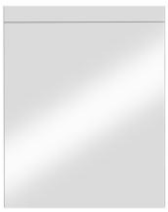
Surgical gloves (x100)

In the purpose of sampling for microbiological tests, the person responsible for taking the sample has to wear gloves in order not to contaminate the samples (with its own microflora)

Cotton wool balls (x100)

In the context of sampling for microbiological purpose, the tools for the collection of the sample have to be sterilised using the cotton wool balls.

Sterile sample bags (x1000)



The sample has to be collected into sterile sample bags.

Spray bottle with ethanol (x1)

The ethanol is to be used for the sterilisation of the tools when collecting samples for microbiological purpose.

In the case of microbiological sampling, i.e. sampling for the testing of microbial contamination of the sample, the collection of the sample has to be performed under sterile conditions. No external contamination shall interfere with the sampling exercise.

The sterilizing agents aim at sterilizing

- Hands of the person who collects the sample
- Scoop and/or spear

Sampling for microbiological testing

The purpose of sampling for microbiological testing is to actually analyse the microflora which potentially contaminates the sample.

Consequently it is very important that the collection of the sample is performed in a sterile manner as to not contaminate the sample with external contaminants.

External contaminants come from:

- Hands of the person
- Atmospheric atmosphere

When sampling for microbiological purpose make sure that:

- The person responsible for the collection of the samples wear gloves (and if possible a mask).
- The spear and the scoop are clean and neat.
- Tools are properly sterilised with ethanol before the use and in-between of each increment.
- Samples are collected into sterile bags which have to be hermetically sealed and properly labelled.

For sampling for microbiological purpose please refer to *BB_ho4_Sampling.*

Sample bucket -10 kg (x1)

All increments withdrawn from the lot have to be gathered. They are collected into the bucket.

Make sure that the bucket is clean, sound, and neat and does not contain objectionable matter (e.g.: older grains from previous sampling exercise).

Multiple slot divider (riffle divider)(x1)

A sample has to be the most representative as possible of the whole lot. During the sampling protocol, aggregate samples have to be reduced into smaller samples.

The reduction of the sample size shall not imply grain segregation (according to grain size, gravity, foreign matters content…), all subsamples have to present the same characteristics.

Equipment - Grading

Grading sieves (minimum 1 set: 1 sieve + 1 pan)

The set of sieves includes one sieve and a pan, of the suitable characteristics and size to determine the grading parameters as in the commodity specification standards e.g.:

- Grain size.
- Foreign matters
- Broken grains etc.

Refer to grading guidelines hand-out included in the Blue Box package.

Digital moisture meter

The moisture meter is an easy and practical tool for the determination of the moisture content in grains and pulses.

This moisture meter is intended to maize, maize high moisture (> 50% m.c.), wheat, , soya beans, sorghum, hard red winter wheat, soft red winter wheat, oats, bali , durum, sunflower oil seeds, millet, rape seed, rye, safflower.

The moisture meter provides the percentage of moisture contained into the analysed sample. Moisture content of the sample is expressed as a percentage of the total weigh of the sample.

The moisture meter needs to be calibrated regarding to the commodity that is being tested.

The moisture meter shall be used following the instructions provided in the moisture meter manual included in the Blue Box package.

The moisture meter is provided into its protection case and should be handled with care.

Electronic scale

The electronic scale allows weighing samples with a precision of 0.1g

The scale is to be used for the determination of the grain or pulses grade
It is important that the scale is calibrated regularly, recommended 1 per year. A 200g calibration weight will be provided with the Blue Box equipment.

Probe thermometer

- Probe length: 50 cm
- Temperature range: -20°C to +60°C
- Accuracy: +/- 1°C
- Battery operated (AA size, 1.5V battery)

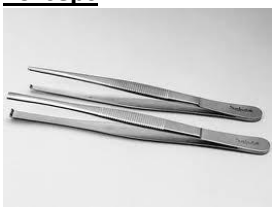
Equipment - Miscellaneous

Power invertor

Calculator

Magnifying glass

Forceps



Safety goggles

Torch

Summary table

PARAMETER	TOOL	HAND-OUT
Moisture content	Moisture meter	Moisture meter manual
Broken kernel and defective grains	Set of sieves Electric scale Calculator	Grading guidelines
Foreign matters	Set of sieves Electrical scale Calculator	Grading guidelines
Grade size	Set of sieves Electric scale Calculator	Grading guidelines