Quality measurement of cashew nuts (KOR)

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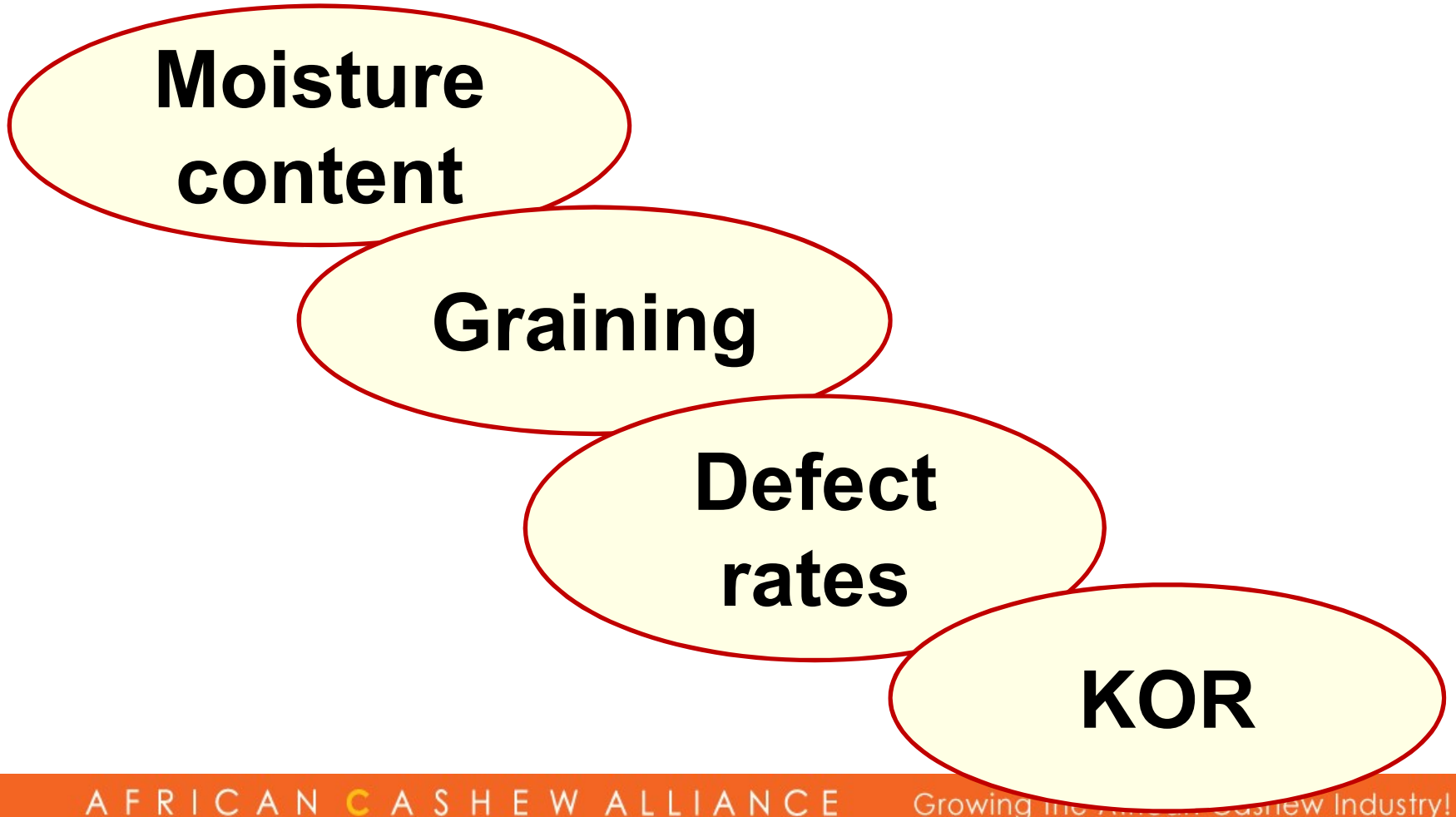
Importance of quality assessment

- ❑Important factor in marketing
- ❑Good management/mastery = Ability to better negotiate prices
- ❑Good quality = good price
- ❑Producers: ensure the quality of the nuts they sell; correct certain production, collection and conservation practices
- ❑Aggregators, Traders: buy the best lots of nuts to deliver to processors and exporters with good price negotiations
- ❑Processors: ensure the quality of the nuts they buy in order to have good kernels
- ❑The processing industry is becoming more profitable and therefore more competitive.

Yield as a function of KOR

RCN Outturn Lbs	Ker output de-shelling %	Ker output after Oven 5%	Ker output After Peeling 10%	Ker output After Grading 2%	Ker output in Packing
36.00	20.43%	19.41%	17.56%	17.30%	17.30%
36.50	20.71%	19.68%	17.81%	17.54%	17.54%
37.00	21.00%	19.95%	18.05%	17.78%	17.78%
37.50	21.28%	20.22%	18.30%	18.02%	18.02%
38.00	21.57%	20.49%	18.54%	18.26%	18.26%
38.50	21.85%	20.76%	18.78%	18.50%	18.50%
39.00	22.13%	21.03%	19.03%	18.74%	18.74%
39.50	22.42%	21.30%	19.27%	18.98%	18.98%
40.00	22.70%	21.57%	19.52%	19.22%	19.22%
40.50	22.98%	21.83%	19.76%	19.46%	19.46%
41.00	23.27%	22.10%	20.00%	19.70%	19.70%
41.50	23.55%	22.37%	20.25%	19.94%	19.94%
42.00	23.84%	22.64%	20.49%	20.18%	20.18%
42.50	24.12%	22.91%	20.74%	20.43%	20.43%
43.00	24.40%	23.18%	20.98%	20.67%	20.67%
43.50	24.69%	23.45%	21.22%	20.91%	20.91%
44.00	24.97%	23.72%	21.47%	21.15%	21.15%
44.50	25.25%	23.99%	21.71%	21.39%	21.39%
45.00	25.54%	24.26%	21.96%	21.63%	21.63%
45.50	25.82%	24.53%	22.20%	21.87%	21.87%
46.00	26.11%	24.80%	22.44%	22.11%	22.11%
46.50	26.39%	25.07%	22.69%	22.35%	22.35%
47.00	26.67%	25.34%	22.93%	22.59%	22.59%
47.50	26.96%	25.61%	23.18%	22.83%	22.83%
48.00	27.24%	25.88%	23.42%	23.07%	23.07%
48.50	27.52%	26.15%	23.66%	23.31%	23.31%
49.00	27.81%	26.42%	23.91%	23.55%	23.55%
49.50	28.09%	26.69%	24.15%	23.79%	23.79%
50.00	28.38%	26.96%	24.40%	24.03%	24.03%

Quality criteria



Necessary utensils


probe


cutter


needle


bucket


bowls

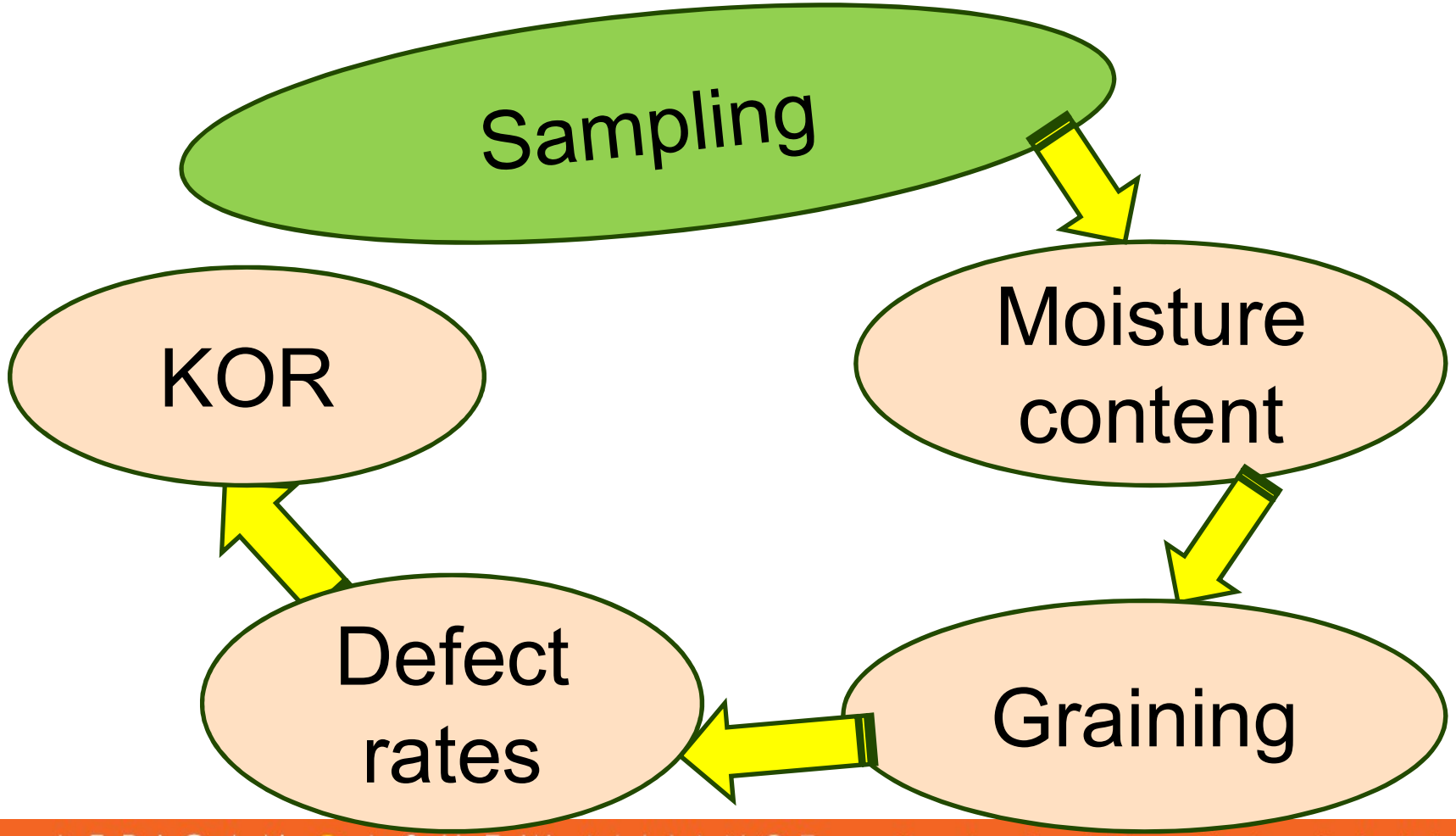

scale


knife


calculator


gloves

What are the different steps?



1. Sampling (1/3)

⇨ Taking the “mother” sample

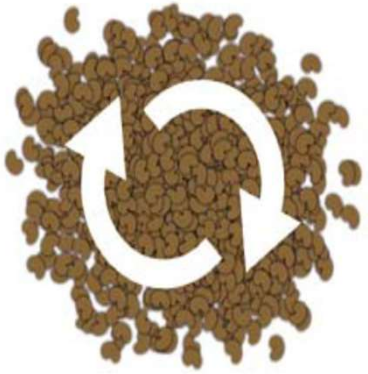
Collect nuts from all bags

Put collected nuts in a pile on a flat surface

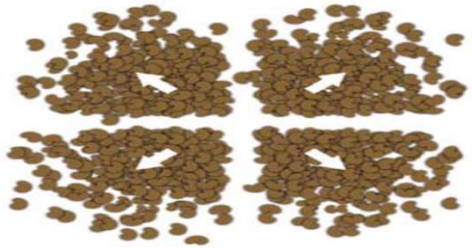
1. Sampling (2/3)

⇨ **Taking a sample of the collected nuts**

Mix the "mother sample"



Separate into quarters



1. Sampling (3/3)

Assemble the samples to be analysed

Take one kilogram of nuts from the first of the two samples constituted

Let P1 be its weight. It can vary from 998g to 1002g.

2. Moisture content

A humidity level must be maintained between 7 and 10% after drying.

Moisture content > 10%: nuts are exposed to mould.

Moisture content < 6%: the nuts are too dry and are also too fragile during processing.

3. Graining calculation (1/2)

- **Group** the nuts in small piles of ten.
- **Count** the number of piles of ten and the extra nuts.
- **Remove**, weigh and compensate the foreign matter by weight with other nuts before counting.

Let N be the number of nu

3. Graining calculation (2/2)

P1: the weight of the sample

N: the number of nuts counted in the sample

Number of nuts per kg	Quality assessment
Lower than 180	Excellent
[180-190 [	Very good
[190-200 [	Good
[200-210 [	Average
[210-220 [	Very average
[220- 230]	Just acceptable
Beyond 230	Poor

4. Opening the nuts

All nuts in the sample are cut **lengthwise** using the cutter to obtain two halves with or without defects.

5. Control of kernels and classification into three categories

NOIX DE BONNE QUALITÉ

Amande blanche, saine

100%, de la catégorie acceptée

NOIX IMMATURES

Coque fripée, amande fripée
récolte trop précoce

50%, de la catégorie éliminée, minimum

NOIX PIQUÉES

Tâches noires ou points noirs
piqûres d'insectes

50%, de la catégorie éliminée, minimum

NOIX BEURRÉES

Aspect jaune huileux
noix restée trop longtemps à terre

100% de la catégorie éliminée

NOIX MITÉES

Traces de poudre jaune
présence d'insecte, mauvais stockage

100% de la catégorie éliminée

NOIX RABOUGRIES

Noix de petite taille en forme d'arachide
manque d'eau

100% de la catégorie éliminée

NOIX MOISIES

Marques blanches
mauvais séchage, stockage humide

100% de la catégorie éliminée

NOIX VIDES

Absence d'amande
manque d'eau

100% de la catégorie éliminée

6. Weighing (1/3)

Healthy kernels are 100% accepted

- **Extract** the kernels from the shells

- Put the **kernels** + their **skins** in the green bowl

- Weigh the ***kernels***; Let **P2** be the weight of healthy kernels.

6. Weighing (2/3)

Kernels accepted (or rejected) at 50%.

- Weigh the ***kernels + shells*** ; Let **P3** be the weight of the nuts (kernels + shells)
- Extract the kernels from the shells
- **Place** in the blue bowl
- Weigh only the kernels (immature and pricked); Let **P4** be the weight of the kernels

6. Weighing (3/3)

Kernels rejected at 100%.

- Put the **mouldy, buttered, moth-eaten, stunted and empty kernels and nuts** with their shells in the **red** bowl.

- Weigh the ***kernels + shells;*** Let **P5** be the weight of the kernels + shells.

7. Defect Rate Calculation (1/2)

The defect rate is relevant for:

- both the **nuts + shells**

  rejected catergories at **50%** and at **100%.**

7. Defect Rate Calculation (2/2)

- **P1** total weight of the nut sample;
- **P3** total weight of rejected nuts at 50%;
- **P5** total weight of rejected nuts at 100%;

Defect rate = (P3 + P5)/P1 X 100

In general, a stock of product with a defect rate greater than 24% is rejected.

8. KOR Calculation

- **P1** total weight of the nut sample;
- **P2** total weight obtained from the kernels + skins of the healthy nuts;
- **P4** total weight obtained from the kernels + skins of nuts rejected at 50%;

AU (useful kernels) = P2 + (P4 / 2)

Ra (kernel yield) = (P2+P4 / 2)/P1 X 100

KOR (Out Turn) = AU X 80/454

- **Thank you for your kind attention**