Learning Objectives:

- Familiarity with Grading & Certification
- Understanding Hawaii Coffee Standards
- Basic I.D. of defects; causes & remedies
- Using best practices to improve cup quality
What is grading?
What is grading?

Grading:
A device for controlling the quality of an agricultural commodity so that the buyer & seller can do business without personally examining every lot sold.

Kenneth Davids
Examples of graded products

Beef: USDA Prime, USDA Choice, etc.
Eggs: USDA AA, USDA A, USDA B
FFV: U.S. XF, U.S. Fancy, U.S. No.1, etc.
Coffee:

    Kenya AA
    Colombia Supremo, Excelso
    Hawaii Extra Fancy …. HI No. 3
    SCAA Specialty Grade, Premium Grade
Hawaii Coffee Grades

- Grade statement is based on Hawaii coffee standards which are based on:
  - Size (High grades)
  - Moisture (9.0 to 12.2%)
  - Defects
  - Roast/Cup (for defects only, not character)
# Hawaii Coffee Standards

**Hawaii Coffee Standards**

## Table 1

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>HAWAII EXTRA FANCY</th>
<th>HAWAII FANCY</th>
<th>HAWAII NO. 1</th>
<th>HAWAII SELECT</th>
<th>HAWAII PRIME</th>
<th>HAWAII NO. 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEANLINESS</td>
<td>Class</td>
<td>Class</td>
<td>Class</td>
<td>Class</td>
<td>Class</td>
<td>Class</td>
</tr>
<tr>
<td>COLOR</td>
<td>Uniformly good green</td>
<td>Uniformly good green</td>
<td>Uniformly good green</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ROASTING QUALITY</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>AROMA AND FLAVOR WHEN BREWED</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>No undesirable aroma or flavor when brewed.</td>
<td>No undesirable aroma or flavor when brewed.</td>
<td>No undesirable aroma or flavor when brewed.</td>
</tr>
<tr>
<td>ALLOWANCE FOR DEFECTS</td>
<td>8 (full imperfections per 500 grams)</td>
<td>12 (full imperfections per 500 grams)</td>
<td>18 (full imperfections per 500 grams)</td>
<td>5 % (defective beans incl. note &gt;2% full sour,涩味, black, or moldy)</td>
<td>15 % (defective beans incl. note &gt;2% full sour,涩味, black, or moldy)</td>
<td>35 % (defective beans incl. note &gt;2% full sour,涩味, black, or moldy)</td>
</tr>
</tbody>
</table>

**Size Minimum**

<table>
<thead>
<tr>
<th>Type I - Size 19</th>
<th>Type I - Size 18</th>
<th>Type I - Size 16</th>
<th>Type I - Size 12</th>
<th>Type II - Size 19</th>
<th>Optional (May be specified)</th>
<th>Optional (May be specified)</th>
</tr>
</thead>
</table>

**Moisture (%)**

<table>
<thead>
<tr>
<th>Type I other Type Beans</th>
<th>Type I other Type Beans</th>
<th>Type I other Type Beans</th>
<th>Type I other Type Beans</th>
<th>Type II other Type Beans</th>
</tr>
</thead>
</table>

**TABLE Notes**

- Off Grade = quality lower than Hawaii No. 3. Use of the term "Hawaii" in conjunction with the term Off Grade is prohibited.
- Use of the term "Hualalai", "Kau", "Kona", "Maui", "Molokai", or "Chai" in conjunction with the term "No. 3" or "Off Grade" is prohibited.
- Defects are scored as either full imperfections or less than full imperfections.
- Less than full imperfections are scored as one-fifth of a full imperfection.
Type I vs. Type II

- Type I is flat bean
- Type II is Peaberry
- Peaberry IS NOT A GRADE
PEABERRY (Not a defect)

- Occurs when one of the ovules does not develop; the other one occupies the whole berry, forming a round bean
- Not more than 3% by weight allowed in higher grades
- Classified as a type of bean (Type II)
- No.1 is most common grade (PB size 10)
Green bean is a combination of:

- Fats
- Proteins
- Fiber
- Miscellaneous chemicals
Coffee Essence, Coffee Oil, Coffeol

- Makes up only 1/200\textsuperscript{th} of bean weight
- Dissolves in water
- Evaporates easily
- Readily absorbs other (less desirable) flavors
- Is as fragile as it is tasty

- Without it, there is no coffee…. Only sour brown water and caffeine
FACTORS AFFECTING QUALITY

- Site - rainfall, soil, elevation, shade/sun
- Variety
- Nutrition
- Pests and Disease
- Harvest
- Processing
SITE

- **Rainfall**- ideal in Hawaii is 60-85” a year, well distributed as relates to growth phase: vegetative, flower, fruit
- **Soil**- good drainage, fertile
- **Elevation**- as relates to temperature
- **Shade/sun**- temperature, production higher in sun but more stress on tree
VARIETY

Guatemalan or Kona typica is best for Kona conditions
NUTRITION

- UH CTAHR recommends 1,600-2,000 lb/year of fertilizer such as 15-5-25 based on research done in Kona

- Soil and leaf analysis should be done to make recommendations specific to individual farms
PESTS AND DISEASE

Green Scale
PESTS AND DISEASE

Coffee Twig Borer
PESTS AND DISEASE

Kona Coffee Rootknot Nematode

Infected roots
Healthy roots
A healthy root system has many fine, white feeder roots.
PESTS AND DISEASE
HARVEST

- Harvest only ripe cherries, not under- or over-ripe
PROCESSING

- Pulp within 24 hours of picking
- Make sure equipment is adjusted properly
- Ferment correctly
- Dry parchment properly
BASIC CATEGORIES OF DEFECTS

- Botanical/Environmental
- Harvesting/Processing
BOTANICAL/ENVIRONMENTAL

- Quaker
- Mother
- Shell
- Insect
QUAKER/FLOATER - underdeveloped
PREVENTING QUAKERS/ FLOATERS

- Provide adequate water and nutrition
- Water is critical in the 6 to 16 weeks after flowering when bean size is determined
- Adequate nutrition and water are critical in bean density especially during 20-30 weeks following flowering
MOTHER/ELEPHANT - two beans develop in one ovule (botanic deviation)
SHELL - one half of a mother bean
INSECT-holes and mines
Insect- CBB damage
PREVENTING INSECT DAMAGE

- Insects are more attracted to stressed trees
- Keep trees as healthy as possible by providing adequate water and nutrients
- Follow best management practices for CBB
- Store parchment or green in a protected area
HARVESTING/PROCESSING

- Black
- Mold
- Sour/Stinker
- Broken, Cut, Nicks, Chips
- Aged/Discolored
PREVENTING BLACK

- Do not process raisins
- Do not pick raisins
MOLD
PREVENTING MOLD

- Dry parchment to 11.5-12.5% moisture, so the green is approximately 10-11%
- If sun drying use proper thickness and turn frequently during the day
- Moderate temperature and moisture storage environment
- Provide adequate ventilation
POSSIBLE CAUSE OF MOLD - Cercospora berry blotch

Control fungal diseases with cultural practices
SOUR/STINKER - fermented odor or flavor
PREVENTING SOUR/STINKER

- Don’t pick over-ripe cherries
- Pulp within 24 hours of picking
- Don’t over-ferment; ferment only until bean has lost slippery feeling
- Avoid storing near strong odors
BROKEN, CUT, NICKS, CHIPS
PREVENTING BROKEN, CUT, NICKS, CHIPS

- Have pulper properly adjusted
- Have huller properly adjusted
- Don’t over-dry coffee (to prevent brittleness)
AGED/DISCOLORED
PREVENTING AGED/DISCOLORED

- Moderate temperature and moisture storage environment
- Prevent uneven drying of coffee by turning frequently
- Store at proper percent moisture of coffee
- Store as parchment if possible
- Don’t store for too long a period
KONA EXTRA FANCY
KONA NO. 1
KONA NO. 1 (PB)
KONA SELECT
KONA PRIME
HAWAII NO. 3
OFFGRADE
Certification:

- Confirmation that some fact or statement is true through the use of documentary evidence.
Hawaii Dept. of Agriculture

- Will issue a certificate based on the actual grade determined by sampling and grading.
- For lots of 10 bags or less, 100% sampled
- For lots > 10 bags, 30% minimum sampled
Buying Certified Coffee

- Copy of certificate (from seller)
- Stamped bag tags
- Compare certificate with tag (Lot # and grade)
Hawaii Coffee Standards

- Created in the 1960’s
- Revised slightly in 1981 and 2001
- In 2001 added SELECT grade to fill gap between NO. 1 and PRIME
Coffee Grading Worksheet

<table>
<thead>
<tr>
<th>GRADE</th>
<th>PERCENTAGE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Remarks:

Grade of Lot: [Grade]
Certificate No.: [Certificate No.]
On farm grading program

- Moisture meter
- Scale (grams)
- Table / desk with good lighting
- Tools: needle nose pliers, pocket knife
- Sizing screens
- Access to roasting and cupping
Benefits of grading your coffee:

- Clues to health of trees
- Identify bean quality issues and take corrective actions
- Improved cup quality
- Provide buyers with expectation of quality
- Increase sales???
Resources for graders

- SCAA Green Defect Handbook and posters
- SCAA web site has SOP’s and specs
- Trade publications and texts
- CTAHR Extension
- HCA
- Local coffee associations
- HDOA branch offices (by appt.)
FULL BLACK/PARTIAL BLACK

Defect Name: Full Black
Other Names: Black or partial black
Spanish Name: Grano Negro / parcial negro
SCAA Classification: Full Black is a Primary defect. 1 predominantly black bean = 1 full defect
Partial Black is a Secondary defect. Less than - black, 3 beans = 1 full defect
Effect on Cup Quality: Varies. Ferment or stinker taste, dirty, moldy, sour, phenolic taste.
Other Issues: Ochratoxin risk
Cause(s): Agricultural; Blackening. results from over fermented pigment associated with micro-organisms.
Remedies:
1) AGRICULTURAL. Black beans are prevented by picking only ripe fruit from the trees, and avoid over-fermentation conditions during farm processing.
2) PROCESSING. Black beans become apparent when the parchment (pergaminio) is removed. They are usually slightly smaller and less dense and some of them can be removed by screening and by density sorting. The most effective way to remove them is manually (hand sorting) or mechanically using a color sorting machine.

Physical Description: Black beans are distinguished by their opaque color.
QUALITY

Once coffee is harvested nothing can be done to *improve* its quality, but many things can be done to *harm* the quality.