5.GREEN COFFEE

5.1 Coffee production

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STAGES

1. Planting
2. Flowering and ripening
3. Harvesting
4. Depulpation
5. Fermentation
6. Drying
7. Packaging

THE INFLUENCE OF TERROIR

Terroir affects not only the taste, but also the density and chemical composition of the bean. Important factors are:

ALTITUDE

- The higher the coffee grows, the slower it ripens. This increases the density of the bean and the richness of the flavors. Due to the difference in day and night temperatures, the berry ripens longer.

CLIMATE CONDITIONS

- The number of sunny days, the seasonality of precipitation - all of these affects the development of the coffee tree. Wetter and rainier regions produce coffee with a greater set of acids. You can also find out the average annual amount of precipitation, it is different for different latitudes.

SOIL TYPE

- The soil should be well-drained, rich in minerals such as magnesium and potassium. To work with the yield, different agricultural technologies are used - soil preparation, drainage, mulching, soil cultivation, pH monitoring, crop rotation, use of vermicompost.

TYPES OF PACKAGING

Temperature graph angle from the start of the first crack:

PACKAGE	MAINTAINING QUALITY	COST/LABOR
Jute	Low (Season 1)	Normal
"Grainpro"	Medium/long (from 1 season)	Above average
Vacuum	Long (ages instantly after opening)	High

5.GREEN COFFEE

5.2 Coffee processing

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EFFECT OF PROCESSING ON ROASTING

PROCESSING	SUGAR ON THE SURFACE	MODULATION INTENSITY	FEATURES	DEVELOPMENT	INCREASE AFTER 1 CRACK
Washed	Average	Intensive	Sugars are washed out	Long	High
Natural	Many	Average	Sugar on/close to the surface	Average	Average
Fermentation	Little	Low	Microbial trace on grain	Short	Short

5.GREEN COFFEE

5.3 Coffee Density

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DENSITY OF COFFEE

— is the ratio of the mass of beans to their volume.

It is measured in kilograms per cubic meter (g/l). This indicator can affect the taste and aroma of coffee, as it is associated with the concentration of flavor and aroma substances in the beans.

DENSITY OF COFFEE

HIGH DENSITY

↘ High profile modulation + Airflow

AVERAGE DENSITY

↘ Average modulation, charge temperature

LOW DENSITY

↘ Low modulation

5.GREEN COFFEE

5.4 Coffee moisture

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for beans

WITH HIGH MOISTURE

green stage longer/airflow higher/normal modulation

for beans

WITH LOW MOISTURE

green stage shorter/normal modulation or +5-10% if the beans are of high density

MOISTURE CALCULATION

taking into account the density

Density

800 G/L

Moisture

10%

= 80 ml

Density

900 G/L

Moisture

10%

= 90 ml

Different amounts of water need different amounts of time to evaporate = higher density requires a longer green stage

FREE MOISTURE

in green coffee

- is water that is not bound to other components and is easily removed during drying or roasting.

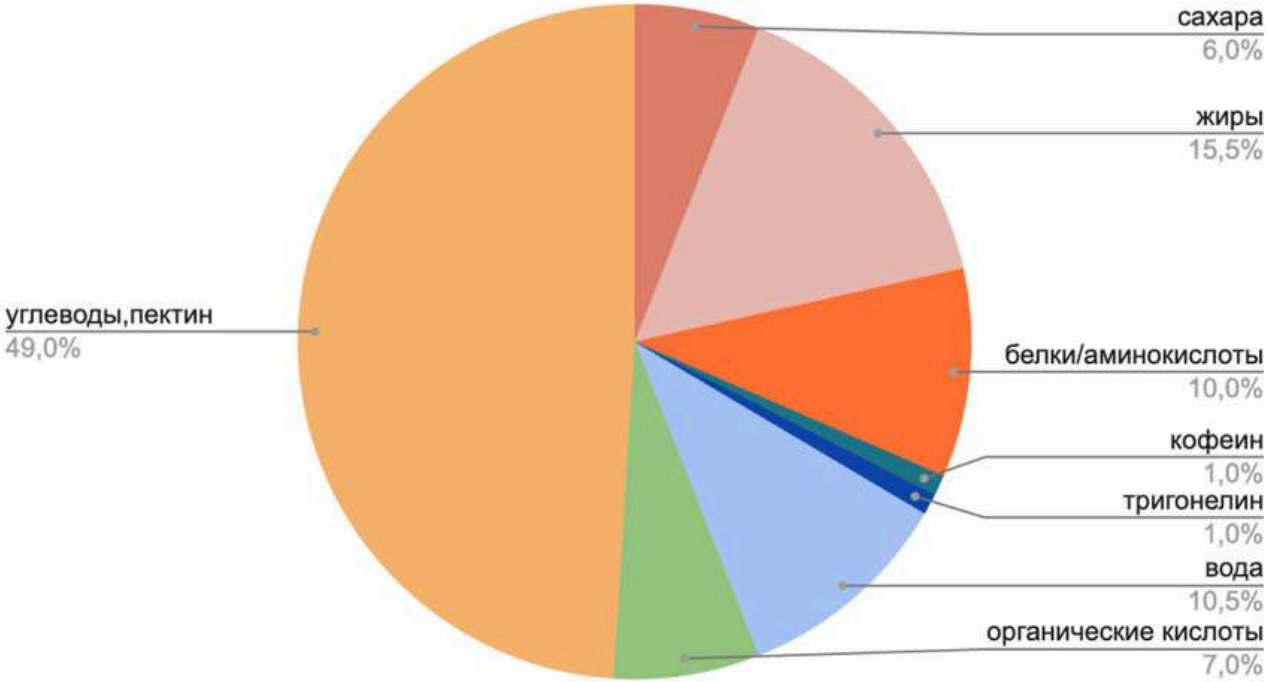
BOUND MOISTURE

or connected

in green coffee, it is held by molecular forces within the bean structure and is not removed as easily as free moisture. It affects the texture, aroma and bouquet of coffee. It takes part in the reaction of: caramelization/Maillard reaction

Bound moisture can also influence the speed and intensity of these reactions, as it is involved in heat transfer and can slow down or speed up chemical processes during roasting.

MOISTURE CALCULATION



1. Sugars: 6%
2. Fats: 15.5
3. Proteins and free amino acids: 10%
4. Alkaloids: caffeine 1%

4. Alkaloids: trigonelline 1%
5. Water: 10.5%
6. Organic acids: 7%
7. Carbohydrates, pectin: 49%

5.GREEN COFFEE

5.5 Coffee Chemistry

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SUGAR CONTENT

SUGARS	QUANTITY	CARAMELIZATION TEMPERATURE
Sucrose	6,3-9,6%	160
Glucose	0,005-0,044%	150
Fructose	0,008-0,165%	130

TYPES OF ACIDS

Chlorogenic 3.5-7.5%
Citric 0.75-1.34%
Tartaric 0.0-0.1%
Apple 0.26-0.445%
Quinine 0.19-0.34%
Lactic 0.08-0.12%
Acetic 0.93-1.5%
Orthophosphoric 0.81-1.3%

Citric, apple and quinic acids are non-volatile. The tastes and smells of apple and malic acids correspond to their names - they are of the highest quality and most valuable for roasters when choosing beans. Quinic acid is bitter. These acids affect the acidity of coffee.

EFFECT OF PROCESSING ON ROASTING

ACID	TASTE	HIGH CONCENTRATION	LOW CONCENTRATION
Apple	Apple, pear, stone fruits (plum, peach)	Intensive	Sugars are washed out
Citric	Lemon, orange, grapefruit	Average	Sugar on/close to the surface
Orthophosphoric (inorganic)	Creaks on the teeth like coke, sweet combined with citrus = grapefruit, mango	Low	Microbial trace on bean
Wine		Acid, enzyme	Grapes, wine, champagne
Vinegar		Vinegar	Light spiciness

TYPES OF ACIDS

↘ Quinic acid

formed by the breakdown of other acids. It is found in large quantities in dark roasted coffee, stale coffee, and coffee that was brewed a few hours ago but kept warm on a hot stove. Although quinic acid gives coffee a clean taste, it is also the main acid that causes heartburn.

↘ Chlorogenic acids (CHA)

are largely responsible for the perceived acidity of coffee. They are quickly destroyed during roasting, which is why light roasts are often called "bright" and "acidic" than dark roasts.

CHLOROGENIC ACID

- is an ester of the caffeic acid residue with quinic acid.

The melting point of chlorogenic acids is 207-209°C.

When coffee is roasted, they are partially destroyed.

Chlorogenic acids form the astringent, tart and sweet notes of coffee flavor.

The content of this acid in the composition is relevant for "Scandinavian" roasting styles.

Often, roasters, in pursuit of bright acidity, left too much chlorogenic acids in the beans, which negatively affects the taste.

THE INFLUENCE OF CHEMISTRY

on coffee taste

SWEETNESS

- Carbohydrates such as glucose and fructose. The slower the roasting process, the more sugars have time to caramelize. But the end result is bitterness.

ACIDITY

- Acids give coffee its brightness. If roasting is done too quickly, the acids may not have time to transform, resulting in a harsh, low-quality acidity.

BITTERNESS

- Caffeine and other alkaloids give coffee its natural bitterness.

5.GREEN COFFEE

5.6 Choosing Green Coffee

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PARAMETERS

green coffee

- Processing
- Q-grade
- Moisture
- Quality classification
- Density
- Defects
- Screen

HOW TO CHOOSE GREEN BEANS?

When choosing, it is important to consider several factors:

REGION OF ORIGIN

- Knowing the characteristics of the region, you can predict the flavor profile of the bean in advance.

TYPE OF COFFEE

- Different varieties, such as Arabica varieties: Caturra, Typica, Pacamara, Geisha, have their own unique characteristics.

PROCESSING METHOD

- Processing affects the flavor and texture of the bean.

CUPPING SHEET

- When choosing beans, you need to do an organoleptic analysis, evaluate the coffee on the SCA scale, determine the rating and then make a purchase decision.

CALENDAR

of harvesting

	январь	февраль	март	апрель	май	июнь	июль	август	сентябрь	октябрь	ноябрь	декабрь
Brazil												
Colombia												
Costa Rica												
El Salvador												
Ethiopia												
Guatemala												
Hawaii												
India												
Jamaica												
Java												
Kenya												
Mexico												
Nicaragua												
Panama												
Peru												
PNG												
Sulawesi												
Rwanda												
Sumatra												
Tanzania												
Timor												
Yemen												
Zimbabwe												

TYPES OF DEFECTS

First category

1. Completely black
2. Completely sour
3. Dried berries/skin
4. Damaged by fungus
5. Foreign impurities
6. Severe insect damage

TYPES OF DEFECTS

Second category

1. Partially black
2. Partially sour
3. Parchment
4. Floater
5. Immature
6. Wrinkled
7. Shells
8. Broken
9. Peel/husk
10. Minor insect damage