**Activity 6: Effect of grinding, extraction and drying process on coffee flavour and Instantization [Preliminary experiment]**

# **Objective**

* To investigate the effect of different grind size and grinding methods for coffee flavor and Instantization
* To optimize the grinding process on the coffee flavor and Instantization

**Treatments**

1. Freeze and spray dryers
2. Grinding size- two grinding size will be used
3. Grinding type- Wet vs dry grinding types will be considered
4. Extraction methods (filtering, boiling in water, use coffee maker)
5. Extraction Time (5, 10, 15 minutes )
6. Extraction water-hot and cold water(@ room temperature)
7. Coffee: water ratio (we will make it constant based on golden coffee to water ratio) i.e., 22 grams of coffee to 352 grams of water (1:16 ratio)

– Key factors in Coffee Brewing or Extraction:

• Particle size

• Particle uniformity

Uniform vs. Non Uniform Coffee Grind - Coffee Grind Ideal, Uniform Coffee Grind

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Since some of the coffee particles are smaller and larger than ideal, the surface areas are greater and lesser and the extraction rates will be excessive or insufficient

* The time that the hot water will be exposed to the coffee particle must be directly proportional to the exposed surface area, or particle size, of the ground coffee.
* If particle size particle size, uniformity uniformity and brewing time brewing time are matched correctly, with all other factors being equal, matched correctly, with all other factors being equal, a 20% extraction rate can be achieved. 20% extraction rate can be achieved. The Key Principals of Coffee Extraction The Key Principals of Coffee Extraction

# **Expected out put**

* The effect of different grind size and grinding methods for coffee flavor and Instantization will be investigated
* The grinding process on the coffee flavor and Instantization will be optimized

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**Location**: Head office

**Duration: 2014-2015 E.C**

Treatment combination table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Comb | Drying type | Grinding size | Grinding type | Extraction method | Extraction time | Extraction water |
| 1 | Freeze drying | Fine | Dry grinding | Filtering | - | Hot |
| 2 | Freeze drying | Fine | Dry grinding | Boiling for 10 min | 10 min | Hot |
| 3 | Freeze drying | Fine | Dry grinding | Boiling for 20 min | 20 min | Hot |
| 4 | Freeze drying | Fine | Dry grinding | Boiling for 30 min | 30 min | Hot |
| 5 | Freeze drying | Fine | Dry grinding | Use of coffee maker | - | Hot |
|  |  |  |  |  |  |  |
| 6 | Freeze drying | Coarse | Dry grinding | Filtering | - | Hot |
| 7 | Freeze drying | Coarse | Dry grinding | Boiling for 10 min | 10 min | Hot |
| 8 | Freeze drying | Coarse | Dry grinding | Boiling for 20 min | 20 min | Hot |
| 9 | Freeze drying | Coarse | Dry grinding | Boiling for 30 min | 30 min | Hot |
| 10 | Freeze drying | Coarse | Dry grinding | Use of coffee maker | - | Hot |
|  |  |  |  |  |  |  |
| 11 | Freeze drying | Fine | Wet grinding | Filtering | - | Hot |
| 12 | Freeze drying | Fine | Wet grinding | Boiling for 10 min | 10 min | Hot |
| 13 | Freeze drying | Fine | Wet grinding | Boiling for 20 min | 20 min | Hot |
| 14 | Freeze drying | Fine | Wet grinding | Boiling for 30 min | 30 min | Hot |
| 15 | Freeze drying | Fine | Wet grinding | Use of coffee maker | - | Hot |