



COFFEE INNOVATION

Bosgaurus Improved Flavor Spectrum for Catimor Arabica

Planned and Monitored Processing and Drying High Quality Coffee



CHALLENGE

Farmers generally strip-harvest their cherries so the cherries are picked at uneven ripeness. The next step of processing has a key influence on the flavor and quality but the large majority of Vietnamese arabica coffees are processed in ways not only negatively affecting the quality but also not reaping the potential of the processing process for quality enhancements.

INNOVATION

QUALITY AND CONSISTENCY

Improved wet processing using modified yeast assisted fermentation and remotely controlled solar dryer, to create high grade Catimor with optimal flavor precursors for specialty coffee.



COMPANY DESCRIPTION

Established in 2016, Bosgaurus is a coffee roaster and coffee shop chain with the mission to promote Vietnamese Arabica coffee. Bosgaurus also provides classes for roasters, baristas and tasters in order to allow people to experience the delightfully nuanced arrival and aftertaste of Vietnamese Arabica "sua da". Bosgaurus works with the coffee farm of Mr. Pham Manh Hung in Nui Xanh, Da Lat, to continuously improve the quality of its Catimor Arabica.

NUMBER OF STAFF

4 FULL-TIME STAFF



COST-BENEFIT ANALYSIS

COSTS

EQUIPMENT: - 25,500 EURO
(14,800 EURO FOR FERMENTATION SYSTEM AND
10,700 EURO FOR DRYING FACILITIES)

EFFECTS ON REVENUE

INCREASED TO 660,000,000VND FOR 3 TONS OF COFFEE

EFFECTS ON YIELD

NONE EXPECTED



PREPARATION

TIMELINE

1-2 MONTHS

STAFFING REQUIREMENTS

THE NUMBER OF LABORERS TO WORK
IN A 5-HECTARE FARMS, FULL-TIME
FOR 2 MONTHS, ARE AS FOLLOWS:

COFFEE PICKERS: 10

COFFEE PROCESSOR: 1

TECHNICAL STAFF TO MONITOR FIELD WORK: 2

MATERIALS & EQUIPMENT

- THE INSTALLATION OF PROCESSING SYSTEM: FERMENTATION TANK, CIRCULATOR PUMP, TRANSFER PUMP, PIPING SYSTEM, MICROBUBBLE AERATOR, PULPER AND SORTER MACHINE
- EQUIPMENT FOR MEASURING: CENTEK 355 IR THERMOMETER, KETT PM650 GRAIN MOISTURE METER, CENTER 315 HUMIDITY TEMPERATURE METER, ATAGO MASTER-53M HAND-HELD REFRACTOMETER
- YEAST FOR FERMENTATION PROCESS: LALCAFE ORO AND INTENSO YEAST
- EQUIPMENT FOR DRYING PHASE: VERTICAL AIRFLOW FANS, SHADE CLOTH, MATERIALS TO BUILD GREEN HOUSE, TABLE DRYING, HORIZONTAL AIRFLOW FANS, INTERNET-CAPABLE MONITORING SYSTEM FOR DRYING HOUSE
- EQUIPMENT FOR SOLAR POWER SYSTEM AS THE FARM IS LOCATED FAR AWAY FROM NATIONAL ELECTRICAL GRID: SOLAR PANELS, INVERTER, CONTROLLER, SERVICE BOX AND BATTERIES.



LESSONS LEARNED

CHALLENGES

The delivery of equipment was delayed and only arrived in late January 2020, when the main harvest at Mr. Hung's farm was over, leaving only a small amount of coffee to work with for our trial.

TAKEAWAYS

Currently, the price of coffee from Mr. Pham Manh Hung's farm is relatively high in the market (3-4 times higher than Vietnam's commodity arabica coffee). Although all coffee is bought by Bosgaurus, The Workshop and Building, the offtake is not a sustainable solution. Bosgaurus still seeks solution to maintain the quality, reduce the coffee price.

RESULTS

As a result of Bosgaurus's trial,



10%

HIGHER PRICES

Mr. Pham Manh Hung had received a slightly higher price for coffee he grew, from 200,000VND/kg to 220,000VND/kg



RESEARCH FOUNDATIONS FOR BOSGAURUS

Mr. Hung and Dalat University to research and develop a new yeast compatible with Dalat's weather conditions



IMPLEMENTATION

1

PICK RIPE CHERRIES



2

WASH THE CHERRIES



3

REMOVE PULP & PREPARE FOR
FERMENTATION



4

FERMENT THE COFFEE BEANS



5

SHADE DRYING



6


SOLAR DRYING



IMPLEMENTATION PART 1

| Phase | Step | Requirement |
|---|---|---|
| Harvest the ripe coffee cherries | Pick the coffee cherries from coffee trees | <ul style="list-style-type: none"> Collected ripe coffee cherries must not be left overnight The collected coffee cherries must be ripe 100% |
| | Gather the collected coffee cherries to the preliminary processing area | |
| Wash the fresh coffee cherries | Floating separation: <ul style="list-style-type: none"> Pour coffee cherries into water tank to pick out thin, dry coffee cherries, leaves, etc. Get all the floating objects on the water surface for disposal | |
| | Select the coffee beans for next steps: <ul style="list-style-type: none"> Throw the green and damaged, 50% and 90% ripe cherries | |
| Remove the pulp and prepare for the fermentation the coffee beans | Prepare the equipment | <ul style="list-style-type: none"> The equipment and tools must be cleaned before removing the coffee pulp The water used must be new and clean, no reuse the water |
| | Weigh the coffee cherries and record fully | |
| | Pour the ripe cherries into pulping machine to remove the pulp with a small amount of water for the effective operation of the machine and not damaging the silver skin. | <ul style="list-style-type: none"> Continuously pick out the green and damaged cherries in the pulping machine hopper (if any) Keep an eye on the water amount inside fermentation tank and adjust the amount of water in pulping machine |
| | Prepare for the fermentation | <ul style="list-style-type: none"> All tools and equipment must be cleaned Follow strictly the formula written on package |
| | Prepare the amount of dry yeast needed: | |

IMPLEMENTATION PART 2

| | | |
|--------------------------|--|---|
| | <ul style="list-style-type: none"> After the pulp is removed, 1kg of coffee beans = 1g of dry yeast. | |
| | Prepare the amount of water used for yeast:  <ul style="list-style-type: none"> The amount of water needed is 10 times as amount of yeast used. For example: 1kg of yeast = 10kg of water (equivalent to 10l of water) | |
| | Prepare the warm water calculated to dissolve the yeast | Depending on the kind of yeast used, we will adjust the temperature of the water (following the instruction on the yeast package) |
| | Pour slowly the yeast into the warm water tank, stir gently to dissolve all the yeast. Wait for 10 minutes, then continue stirring to dissolve all the yeast. After 20 minutes, the yeast is ready to use | Keep the yeast water in warm area to stabilize the temperature |
| Ferment the coffee beans | Pour the water into the fermentation tank | The amount of water should not exceed ½ of index finger |
| | Pour the yeast prepared into the fermentation tank. Use clean tools to stir the coffee inside the fermentation tank | |
| | Turn on oil-free compressor and circulator pump | |
| | Adjust the valve to create vacuum so the air can be pumped into the fermentation tank (when vacuum gauge displays -2bar, stop adjusting the valve) | |
| | Continuously measure the pH every 2 hour and record the data | |
| | Stop aeration after 12 hours of aeration | |
| | Always check the pH level and record the data. If pH level is below 4.2 and the fermentation time is not 36 hours yet, stop the fermentation process. When the fermentation time reaches 36 hours or pH level is below 4.2, stop the fermentation. Then use the circulator pump to remove the mucilage | |
| | After the mucilage is removed, transfer the coffee bean to shade drying area | |
| Shade drying | Open the drying dome completely to allow the wind flow to flow through the drying area | The roof must protect the coffee from the sunshine 100%) |

IMPLEMENTATION PART 3

| | | |
|--------------|--|--|
| | If the wind flow is too low, turn on the vertical airflow fans to increase the convection in the drying area | |
| | Continuously turn the coffee beans every 2 hour | The thickness of coffee beans on the drying cloth should not be more than 20mm |
| | Gather the coffee bean to brew in the afternoon and at night | |
| | In the next morning, spread the coffee for drying and continue turning the coffee beans every 2 hour | |
| | After the coffee beans have been dried for 5 days, move the coffee beans to solar drying area | |
| Solar drying | Open the drying dome completely to allow the wind flow to flow through the drying area | The thickness of coffee beans on the drying table should not be more than 40mm |
| | Continuously turn the coffee beans every 2 hour | |
| | In the middle of the day, gather and brew the coffee beans for 1-1,5 hours. Then continue solar drying and turn the coffee beans every 2 hour | |
| | In the afternoon, gather the coffee for brewing | |
| | Continuously doing same steps until the moisture level reaches 12%, put the coffee into bags for storage | |

For further information:

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Bosgaurus Coffee Roasters

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MISSION

The Fund's objective is to increase profitability of small-holder coffee farmers, and foster greater, more equitable value distribution in the supply chain through promoting innovative farming systems, transparent and inclusive business models, and access to new markets.
