

Quality Control Report - Guatemala

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Objectives for my Visit to Guatemala over a 3 day period

To have discussions with the Co-operative members regarding methods of improving quality production and review processing systems being used in the wet mills.

Review quality control systems in the Dry Mill as well as storage, milling systems and blending of coffee for the high quality market.

Review the control systems in the cupping laboratories. Taste samples to ascertain the quality of coffee that would be available for making up specialised blends for the markets in Europe and United States. Conduct discussions in connection with developing systems for classification and quality control.

Day one of visit

Fedecocagua - Dry Mill - Palin

On our first day we were taken to the Fedecocagua Dry Mill situated on the outskirts of the City. Where we were introduced to the Mill Management team and given a tour of the entire complex.

Dry Mill Processing Equipment

The processing equipment is situated in a large shed and consists of:

a) Pre-cleaner. There is one machine, which is designed to remove string, sticks and leaves but this particular model is not designed to remove heavy objects such as sand, stones and metal.

As this Mill is receiving deliveries from a large number of Co-operatives it is imperative to have a pre-cleaner that can remove all types of extraneous matter. The machines I have used allows the parchment coffee to fall on to a screen that captures all the string and sticks and then onto vibrating perforated table where the coffee is kept in suspension from air turbines under the table. Any extraneous matter that is heavier than the parchment coffee works its way to the back of the machine where it is removed. By using this type of machine it would significantly reduce the wear and tear on the huller and other equipment.

b) Friction Huller: The huller being used is high throughput friction huller that can cause the coffee to become over heated if not set correctly. I checked on the hulled coffee coming out of the machine and found that it was at an acceptable temperature. It is very important that the coffee passing through the machine is monitored on a regular basis for temperature, as once the coffee gets over heated it will deteriorate in colour and cup quality.

c) Catadors: There are three of these machines, which are basic winnowing machines and are being used to remove parchment husk that comes from the huller together with the hulled coffee.

d) Gravity Separators: The Mill has three of these machines. Two of the separators handle the bulk of the coffee removing any lighter density reject coffee. The rejects from these two machines are then passed over the third machine to be discarded.

e) Flat Bed Grader: The flat bed grader being used at the Mill has removable screens and is very accurate, producing excellent results as long as it is not over loaded. These machines require screens that are 1.00 mm in thickness for them to grade accurately. Due to the coffee being abrasive the screens tend to wear out and must be checked at the end of each season in case they need to be replaced. There is an oily substance that comes from the silver skin that is on the coffee, this tends to build up in layers on the screens making the grading inaccurate and must be removed periodically by steam cleaning the screens, they must not be scrapped down as this distorts and damages the screens, nor must they be cleaned with any spirit or detergents as this will impart a taint to the coffee.

f) Electronic Colour Sorters: The Mill is using three Xletron machines that are manufactured in Costa Rica. At the time of my visit the machines were not in operation as the coffee going through the Mill was free of any defects. I have worked with the same machines in Nicaragua and found them most satisfactory; also the manufacturers appear to give a very good backup service for the machines.

g) Hand -sorting table: The hand-sorting table being used is a moving belt at which eight women sit and remove any defective coffee that has not been removed by electronic sorters.

General Comment on the Dry Mill

I was impressed with the lay out of the Mill and its operation, which is very straightforward using a minimum amount of equipment for the throughput required. The only suggestion I would like to make is that the pre-cleaner be up graded to one that also acts as de-stoner. The machines I have worked with were manufactured in Brazil and have recently purchased equipment from Pedro Alcantara in Brazil - e-mail address alcantara@allcoffee.com.br may I suggest you contact him and any other contacts you have for quotes for a suitable machine giving them the throughput that is required for the huller. The other piece of equipment that I feel is essential for this Mill to have is a blending unit in order that all coffee being exported is uniform in both colour and cup quality.

The most satisfactory Blending Unit I have used consisted of the following:
(Please note our bags hold 60 kilos coffee)

- a) A hopper that can hold up to 6 bags of coffee at a time.
- b) An air blower or bucket elevator that transports the coffee to a silo.
- c) A silo that holds up to 60 bags and can also be used for filling the bags.
- d) On top of the silo we have a metal cone that coffee falls onto as it leaves the elevator this acts as a spreader.

Intake and storage:

The General Manager Ulrich Gurtner and the staff at the Mill explained in detail the way the intake and sampling procedures were handled, as well as the method that was used for stacking the coffee into identifiable lots. The procedures are very similar to those that are used in other Mills I work in.

Storage:

It would appear that the Mill is situated in an area that has an ideal climate for the storage of coffee, as the two main storage sheds have no insulation in the roof and at mid-day the sheds remained cool.

New Gourmet Mill

A 1000 square metre shed is being built where a new Mill similar to the present one will be installed for the handling of selective coffees. The Management at the Mill should be made aware that they may well have to allow space for a larger number of smaller stacks than they are used to handling, as the coffee will be stacked according to a classification system rather than coffees being placed into bulk stacks from each co-operative. The blending unit at this Mill will be an essential piece of equipment, in order to make up specific blends for markets in the United States and Europe.

Day two of visit

FEDECOCAGUA Head Office Guatemala City

On the second day I was taken to Fedecocagua Head Office and shown around the various offices handling the exports, documentation and accounts as well as the cupping laboratory by the Export Manager Geraldo de Leon.

Samples drawn at the Dry Mill in Palin are sent though daily to the laboratory where a very basic quality assessment is carried out to determine if each sample is clean or unclean.

Together with Krystell Guzman I tasted a number of samples from different Co-operatives that deliver to the Dry Mill and attach my findings. One aspect that I found rather perturbing was the number of cups that were unclean and fermented, it was explained to me that one of the importers was looking for this type of coffee, I do not find this acceptable and consider samples with fermented flavours to be reject and must be stacked separately from any clean coffee. These unclean cups would indicate that advice is required at the different Co-operatives where they are having problems with fermentation. The normal method used in Central America to ascertain if the fermentation process is completed is by using a wooden pole that is pushed into the heap of coffee, if the hole remains open the fermentation process is considered to have been completed. A far more accurate method to check if fermentation has been completed is to take samples by hand from the top and the bottom of the heap of coffee, wash the coffee in a bucket water to remove the loose mucilage and rub the beans between the hands to see if it has a rough texture to it and that no mucilage is adhering to the beans. If mucilage remains on the beans the fermentation process has not been completed.

I found the flavours from the different samples I tasted to be most interesting and feel that there is considerable scope for making up a variety of blends from the coffees being delivered. At present all deliveries are classed as clean or unclean without any form of classification being down to indicate if the sample is of a better quality due to acidity, body or flavour. Krystell Guzman showed me a classification form that she wanted to introduce for next seasons crop so that coffees can be classified according to flavours and acidity and stacked separately for making up "Specialised Blends".

I noticed that the roasts on the samples we tasted varied considerable in colour. I would suggest a fluorescent strip light be installed in the smoke extractor hood over the roasters so that the person doing the roasting has better light to see the samples. I would also like to suggest that a couple more spittoons be obtained for the liquoring table.

Day three of visit

Visit to Cooperatives in the Chimaltenango District

On the third day we travelled out to the Chimaltenango District, through some very interesting and most attractive landscape.

Acatenango Wet Mill

The senior representatives of the Co-operative gave us a tour of the Mill explaining the way they handled the intake and processing of the cherry to fully dried parchment ready for delivery to Fedecocagua Dry Mill. During our tour of the Mill I noticed that the general hygiene of the Pulper area and machinery as well as the fermentation tanks was of a very high standard.

At a general discussion with the Manager of the Mill and other senior representatives of the Co-operative I found it most encouraging the enthusiasm and knowledge the people had on the handling of their crop and the awareness of some of their problems, which they were eager to seek advice on especially regarding new equipment for processing coffee and reducing the amount of water being used by the Mill.

El Pensativa Wet Mill

The next Mill we visited belonged to a commercial estate that had not been used for a number of years. A co-operative in the area was considering buying the Mill; unfortunately none of the members came to the meeting. I would have reservations as to the viability of revamping this Mill.

Why had the commercial farmer abandoned this Mill? I think it would be imperative to find this out and what prices are they wanting to sell at, as there are other options the co-operative could consider, which I will give later.

The average wet Mill requires between 12 and 14 cubic metres of water for processing cherry from pulping to final wash. There was hardly any water in the stream running along side the Mill, although I was told there was another source of water. It would be important to find out the amount of cherry the co-

operative intended to process and how many cubic metres per second of water was available for this Mill.

The buildings at the Mill were sound in structure although rather dilapidated in appearance. The roof structure was in bad condition and would have to be replaced.

There was very limited patio area for the drying of coffee. I did not see any suitable covered storage area for coffee once it had been dried. The disposal of effluent water would be a major problem as the Mill is at the base of a valley with the river running alongside it and the only option was to dump the effluent water into the river.

There were two large pulpers that were functional with new copper pulping screens. The bearings on one of the pulpers was very rough and needed replacing. All the electric motors had been removed as well as the electrical generator set.

With the current low world prices of coffee due to over production in Brazil and Vietnam all indications are that it could be considerable time before we see any improvement in price for the ordinary "fair average" coffees. I think this co-operative should be looking at a different option. The standard wet mills that are in production use large amounts of water in the pulping machines, fermentation tanks and washing channels, I feel these Mills will soon become obsolete due to new technology that is being used in Brazil, Colombia and Costa Rica. The new pulping machines work with a small amount of water, the pulped coffee does not go into a fermentation tank but passes to a de-mucilage machine which removes the mucilage through friction. The coffee then passes to a tank where it soaks in water for 4 to 6 hours and then out for drying. The saving in construction, water and time are considerable. The other added advantage is that there is an improvement of up to 2% in weight and from the samples I have tasted processed by this method I have found they generally have improved flavours and acidity. It has been found that the longer coffee stays in water there is leaching effect on it causing it to loose weight and cup quality. I would also suggest that instead of building very expensive concrete patios that the co-operative use industrial black plastic sheeting to dry the coffee on. This method is used extensively in Central and Southern Africa as well as in Nicaragua where they have achieved good results.

Yepocapa Wet Mill

The last wet Mill we visited was old but in very good condition the hygiene at this Mill was impeccable. The most fascinating thing for me was the entire operation was driven by water wheels. They were having problems with the blades on the waterwheels deteriorating and I would suggest that the blades be rubbed down and painted with an epoxy pitch, which will give them a longer life. We use this type of paint in the fermentation tanks in Zimbabwe to stop the acid from the mucilage destroying the plaster in the tanks.

The co-operative had a problem with inconsistent drying in the drum dryers which was due to them using air at far too high a temperature of 70 degrees centigrade, whereas it should not be more than 45 degrees. In order to obtain this high temperature the air tubes in the heat exchangers were burning out far quicker than they should have been.

At a general discussion after our tour the Co-operative members explained the operation of the Mill and the problems they were facing. It would appear that the fermentation is taking a lot longer than is normal and this could be due to the water being used being too cold, I would suggest that once the coffee has been pulped the heap of coffee in the fermentation tanks be covered with polypropylene or hessian sacks to try and retain the heat. The sacks must be thoroughly washed before being used on the next lot of coffee. Another method we use in Zimbabwe and Zambia to enhance the fermentation; we draw 2 X 20 litre drums of liquid from the first washing water coming from coffee that has completed the fermentation process. This milky coloured liquid is kept for stirring into coffee that has been pulped and acts as a starter. The heap of coffee is then covered with sacks; by using this method the fermentation time will be reduced considerably.

General Comment

I thoroughly enjoyed the visit to the co-operatives and found it most encouraging that they were fully aware of what was required to produce quality coffee and the improvements that need to be carried out at the Mills. I feel that the basis for obtaining suitable coffees for the more discerning markets is already in place and it only needs some corrections carried out to obtain this type of coffee.

The Dry Mill run by Fedecogagua is well organised and with the new Processing Plant that is to be put in place to handle the better quality coffees, the opportunity will then exist for making up specialised blends. I had suggested that a cupping laboratory be set up at the Mill in order for the Plant Manager to cup taste blends as they were made up to insure that they were consistent. This may not be necessary if a system can be put in place whereby samples are drawn from each bag as they are weighed off and sent to the laboratory at the Head Office for checking.

The main area that needs to be developed is in the Laboratory at Head Office where a proper classification system must be put in place and those coffees that can be used in the special blends be selected for stacking separately at the Mill. Please note that this does not necessarily mean that only the higher grown coffees will be selected for these blends, there will be certain coffees from the lower areas that will be used as well.

I would like to thank Chemonics for inviting me to Guatemala and for organising the tour and to the staff at Fedecocagua for sparing time to show both Konrad and myself around. I feel that there are excellent prospects for developing the specialised blends and look forward to working with you in the future.

<u>Ref.</u>	<u>Co-op name</u>	<u>Roast</u>	<u>Aroma</u>	<u>Cup</u>
1	Drano	Fair to bright	Clean and neutral	Has good body with slight acidity and fair flavour
2	Chammioguor	Mixed	Good	Fair to good body acidity is fair to good pleasant flavour
3	Trufeni	Mixed	Go but grassy	Fair to good body sharp acidity and has good flavour
4	Renaumento	Fair	Good	Fair to good body with fair acidity and good flavour
5	Acatenango	Mixed	Slight unclean	Good body with slight acidity and has pleasant flavour
6	Penagaimivo	Bright	Fermented	Cup is under fermented
7	Tapumulo	Bright	Sweet	Cup is unclean fermented (over fermented)
8	Coban Pengnemos	Fair to mottled	Harsh -toasted	Grassy unclean
9	Coban	Fair	Clean	Grassy and unclean flavour
10	Gredf	Fair	Pleasant fruity	Fair body lacking acidity and has no flavour
11	Organic	Fair	Unclean neutral	Lacks body has some acidity and flavour
12	Fleur de le Montonito	Mixed	Rich and clean	Fair body with good acidity and lovely flavour and after taste
13	Alola	Bright	Unclean fermented	Cup is fermented
14	Cafetales	Bright	clean chocolate	Fair body and acidity with harsh flavour
15	Celopeo	Bright	Fair to good	Fair good body with thin acidity and is harsh
16	San Pedro Niecta	Bright to mixed	Slight fermented	Fair thin body with fair acidity but has a ferment in the cup
17	Nuestro future	Bright	Fair to good	Fair body, thin acidity and has a harsh nutty flavour
18	Stock Lot	Mixed	Unclean	Unclean fermented
19	EPK	Dull	Slightly unclean	Fair body slight acidity and harsh unclean flavour
20	HB-EP	Fair	Rich	Fair body, fair to good acidity and pleasant flavour
21	SHB	Mixed	Fair to rich	Fair body, fair to fair good acidity a slight harsh woody flavour
22	Antigua	Bright	Fair slight unclean	Fair good body, fair to good acidity well defined flavour

Classification descriptions

Class 1	<u>Green</u>	Even blue green colour with no defects
	<u>Roast</u>	Even to grainy in appearance with clean bright centre cut
	<u>Aroma</u>	Ritch well defined aroma
	<u>Cup</u>	Well defined body with pronounced acidity and pleasant flavour
Class 2	<u>Green</u>	Even to well dried coffee
	<u>Roast</u>	Fair to even
	<u>Aroma</u>	Clean
	<u>Cup</u>	Clean and must be well balanced with both acidity and body

Class 3	<u>Green</u>	Even to slight mixed colour with a few defects
	<u>Roast</u>	Fair to dull with the odd pale
	<u>Aroma</u>	Clean
	<u>Cup</u>	Clean with some acidity and body and slightly harsh

Class 4	<u>Green</u>	Mixed to uneven colour with some defects
	<u>Roast</u>	Dull with pales
	<u>Aroma</u>	Flat
	<u>Cup</u>	Thin to slightly fermented cups

<u>Stock Lot</u>	One	
	<u>Cup:</u>	Harsh unclean nutty cups and sour ferment

<u>Stock Lot</u>	Two	
	<u>Cup:</u>	Earth and rank fermented cups