THE EFFECT OF SCIENCE IN COCOA PRODUCTION

FARMER’S POINT OF VIEW
• I can speak to you as a farmer that is producing sustainable cocoa and as a shipper that buys sustainable cocoa directly from the farms.

• Science applied to cocoa breeding will lead to sustainable agriculture.

• If we were to apply science to cocoa breeding as farmers we would look for a cocoa plant that allows us the best possible return per hectare planted in comparison to alternative crops that can be planted on a hectare of land.
Ideally this plant will carry following characteristics:

• Potential yield of 2.500 kg per hectare or more
• Resistant against witches broom disease
• Resistant against Black Pod disease
• A tree with V-Shape growing structure
• Cocoa production with good flavor characteristics
• Whereas the flavor characteristics of the cocoa planted are important, the absolute priority from a farmer’s point of view is yield.

• We have learned that through good process and through good fermentation techniques that flavor is less of an issue than previously thought. We have developed fermentation processes that have allowed us to sell CCN51 or National Trinitarian Hybrid as I prefer to call it at very attractive prices.

• There is no price compensation high enough to compensate for lack of yield. Therefore if science is going to offer me a plant with better tasting characteristics it better come accompanied by excellent yield and disease resistance.
• Note following equation:

Production x price equals farmer income

• The farmer has no control over price. The only part of the equation over which he has influence is production. Therefore the farmer will plant such crop as that will give him the best total return per hectare planted versus cost of planting. It’s not a question of whether he plants one genetic cocoa plant versus another but what crop yields the best income for his family.
• Ecuador is a dollarized economy and local agriculture needs to be efficient otherwise it will not survive.
• Note average daily wage based on 22 work days works out to US$ 21 per day.
• Therefore we cannot afford to make mistakes.
• Today Ecuadorean agriculture has become capital intensive with as little labor as possible.
• Our biggest competition for land today comes from palm plantations and corn plantations.
Palm uses one person for every nine hectares.
• Corn has had an interesting development of its own.
Ten years ago the average yield per hectare was around two tons per hectare. This was based on availability of third rate seed. Ecuador was a substantial importer of corn which was primarily imported from the U.S. Ever since development of ethanol technology third world countries now are receiving first rate seed. Result is that today the small farms are getting 4 to 6 tons and large farms have invested in state of the art technology obtaining ten tons, to 12 tons per hectare and with irrigation 2.5 crops per year. Ecuador now has become a net exporter of corn.
• Naturally cocoa if it was to survive as a viable agricultural commodity it had to evolve. Think about this just in the last seven years since we have been involved with cocoa farms we have had following strategic developments:
• Cocoa plants that used to be planted with plantain for shade today are planted without shade.
• Irrigation which was based on section irrigation with no drainage today has switched to full coverage irrigation with a six millimeter per day drainage system.
• Plants that were planted, when they were two months old today are planted between six and eighteen month with structure developed at plant level before going to field.
Sophistication has reached the point where fungicides, micro-nutrition elements and insecticides are applied by air.
• These are just four basic changes that have contributed in converting CCN51 into the first sustainable cocoa in the world.

• The other potentially sustainable cocoa is the SACHA variety that is being tested in the Ecuadorean jungle areas with good success.

• One further technological development in the works is software as a tool for farmers to improve internal controls and for export companies and industrial buyers to control traceability.
• As an exporter I have the opportunity to deal with farmers on a daily basis and currently one third of our annual exports come directly from farms without intervention of middlemen. This relationship has allowed me to observe the technological improvements of private farming in Ecuador and the positive influence they have had on the unprecedented growth on Ecuadorean cocoa production. Now let’s have some fun. Think about the following:
The world has been concentrating its efforts towards sustainability by trying to increase using better techniques average output of 400 kg to 600 kg. As if 600 kg per hectare were sustainable. Personally I believe 600 kg is no more sustainable than the current 400 kg and sooner or later farmers will find that alternative crops yield a higher income to feed their families.
Now in Ecuador we have had curious phenomena. We all know that ever since production of CCN51 started to appear most European industries have started a campaign against its development. This campaign was directed at local government authorities to try to influence them into making sure that they only promote ARRIBA cocoa and if possible they should even initiate an eradication campaign of CCN51. In the last ten years every government has encouraged planting of ARRIBA trees and discouraged planting of CCN51. Actually the current government is the first to accept CCN as a viable cocoa. Now let’s look at reality.
• 2005 Ecuador produced 100,000 tons of which 80,000 were Arriba and 20,000 were CCN51. Of the 20,000 tons of CCN roughly one half 10,000 tons were private farmers and 10,000 were small farmers.

• 2013 Ecuador will produce 200,000 tons of which in my opinion independent of what export statistics may show 100,000 tons will be CCN51
• This means that all the efforts of promotion of better technical skills and new planting has increased ARRIBA production by 20,000 tons.

• This also means that despite everybody possible working against it CCN51 production increased by 80,000 tons.

• The interesting aspect of this growth is that private farmers went from 10,000 to 30,000 tons and small farmers went from 10,000 to 70,000 tons.
• This bears a logical question WHY?
• As high tech farms develop all the small farmers in the area can see with their own eyes the spectacular crops they always dreamt about. Since each high tech farm has a nursery to make plants for their own development sooner or later the small farmers ask them to sell them plants.
• This has had an incredible MULTIPLYING effect which has seen Ecuador doubling its production in 8 years. As technology develops on the larger farms it is immediately translated down to the small farmer. If the large farm changes its fermentation technique the small farmers do the same.
• This leads me to an interesting conclusion:

• THE PATH TO SUSTAINABILITY MAY ACTUALLY LEAD THROUGH TECHNOLOGY DEVELOPMENTS ON INVESTMENT FARMERS GRAVITATING DOWN TO THE SMALL FARMER