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The Relationship Information Tracking System (RITS): Building Simple Applications to Improve Coffee Traceability, Transparency and Quality

End of Project Report
June 15th, 2012



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Executive Summary

In 2009, Sustainable Harvest at Origin/Africa was awarded a grant of \$468,550 through USAID/COMPETE to pilot the Relationship Information Tracking System (RITS) with the Association of Kilimanjaro Specialty Coffee Growers (Kilicafe) in Tanzania. RITS is a cloud-based system designed to track key production, financial, and quality data throughout the coffee value chain, from farmer to consumer. By training farmer business groups to use current technology to track individual farmer data, RITS improves the efficiency, traceability and transparency of the coffee supply chain, and improves the association's capacity to isolate and bulk its higher quality coffees for higher premium sales. This results in higher farm gate prices, greater community income, and increased food security.

The Relationship Information Tracking System (RITS): Building simple applications to improve coffee traceability, transparency and quality (also known as the RITS Pilot Program) was intended to run from January 2010 through December 2012. In October 2012, COMPETE/USAID awarded a five month no-cost extension to complete project activities and increase the number of beneficiaries through May 2012.

The following report describes all activities completed under the RITS Pilot Program, including a comprehensive overview of the outcomes, challenges faced and lessons learnt. In summary, the data available indicates that RITS is an invaluable tool for farmer associations who have a vision of improving the efficiency of their operations and increasing their competitive advantage in higher-premium markets. However, lack of infrastructure, particularly reliable electricity and internet connectivity, remains a significant imposing challenge. Long-term partnerships with telecommunication companies and other supply chain stakeholders are essential to realizing the true potential of RITS. If these partnerships can be established, RITS is capable of transforming coffee farmers into stronger business roles in the specialty coffee supply chain.

Background: Sustainable Harvest

Sustainable Harvest Coffee Importers is a for-profit social-enterprise headquartered in Portland, Oregon, USA. A highly ranked B-Corporation, Sustainable Harvest is internationally recognized for its underlying mission to improve the livelihoods of coffee farmers worldwide through transparent relationship and importer-driven training and capacity building. Unlike a traditional coffee importer, Sustainable Harvest's Relationship Coffee business model is based on a firm belief that a transparent supply chain and greater flow of information benefits all stakeholders. In 2011, Sustainable Harvest invested nearly one-third of its annual earnings in training programs and services for its suppliers. These reinvestments included opening five offices at origin devoted to farmer development programs in Mexico, Peru, Colombia, and Tanzania.

Sustainable Harvest at Origin/Africa began operations in 2007 in Kigoma, western Tanzania, supporting the Kanyovu coffee cooperative. Since opening this first office, Sustainable Harvest has received over \$2.3M in grant funds for development work with Tanzanian coffee farmers. In 2010, a second office was opened in Moshi, northern Tanzania to enable collaboration with Kilicafe under the RITS Pilot Program.

Background: The Need

In 2007, Sustainable Harvest at Origin/Africa received a grant to implement a three-year Gombe Coffee Improvement program in Kigoma region, west Tanzania. Through intense training and capacity building, over 3,000 farmers received direct training in pre and post-harvest best practices and quality improvement. On average the price fetched for their coffee rose by 300% from \$0.80 per kg to \$1.60 per kg between 2007 and 2008. Three years of working intensively with these farmers enabled Sustainable Harvest to identify the following specific needs of Tanzanian small-holder coffee producers in their local context:

- 1) Tanzanian coffee farmer associations lack efficient record keeping systems. Traditional record keeping involves hand-written values in numerous books. Not only is stationary

expensive and hand-written transactions timely, errors are also commonplace and theft is difficult to determine. Producers needed a trustworthy and transparent record keeping system that increased efficiency both in terms of time and financially, ultimately translating in higher farmer payments.

- 2) Tanzanian small-holder coffee producers are in desperate need of education in agricultural best practices and coffee quality improvement. Producer marketing and trade departments need improved quality control management systems to isolate and bulk high quality coffee for higher-premium sales on an international market.
 - 3) Consumer expectations are changing globally, and coffee buyers are demanding increasingly traceable beans. With food and trade policies tightening, this is likely to be the trend into the future. Tanzanian small-holder coffee farmer associations presently lack the expertise and technology needed to accurately gather this depth of data. Without this level of traceability, they lose their competitive advantage on the international market.
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Fulfilling the Need: Project Objectives

In 2010, the RITS Pilot Program was developed to meet these key needs. Designed as an integrated multi-tier response, planned activities included technology training for washing station managers, as well as traditional hands-on field training in quality improvement. The overall objective was to increase Kilicafe's competitiveness in the global specialty coffee market by allowing them to bulk their highest quality coffee together for premium sale at a differential above Arabica C market prices. This was to be achieved through collective completion of the following specific objectives:

- 1) An increase in the level of organized, efficient data collection
- 2) An increase in coffee quality through training and improved processing
- 3) An increased level of transparency between the producers and the washing station, the washing station and Kilicafe headquarters and Kilicafe and potential coffee buyers

Our experience is that success in all of these areas should lead to increased farmer payments and, in turn, improved social circumstances.

Project Implementation: Main Activities

1) Kilicafe Farmer Business Group Selection

In 2010, the RITS pilot was confined to Northern Chapter Kilicafe groups, based in Kilimanjaro and Arumeru regions of Tanzania. Eight groups in total were visited and analyzed based on a number of criteria including accessibility, infrastructure, production stability, membership data, leadership, financial transparency, and group structure (inclusion of a board, evidence of annual general meetings occurrence). In year one of the project, it was important that each group had access to electricity to power the equipment they would receive. Sustainable Harvest's final selection of primary societies, based on these criteria, rendered Amkeni, Mesengarony, Ngyani and Sing'isi as the four primary societies chosen to participate.

Kilicafe consists of three chapters with the large number of farmers and the largest volume of coffee produced being in the Southern Chapter of Mbinga. With the intention of increasing the number of beneficiaries, Sustainable Harvest at Origin/Africa in collaboration with Kilicafe agreed to expand the RITS program to three groups in Mbinga in the second year of the pilot. Group selection criteria was the same as the previous year, however less importance was placed on access to a power output. Since very few groups in the south have electricity at the washing station level, and for want of not including potential beneficiaries solely on this basis, Sustainable Harvest was able to raise funds to purchase solar kits for five groups. Ten groups were visited in the North with Kishisha, Mlimani Ngarashi and Pendo making final selection, and six groups in the South, the chosen groups being Kihuka, Mahenge and Umoja Ilela.

Based on remaining funds and capacity for outreach, all groups chosen for participation in the no-cost extension period of five months were from the Northern Chapter. Kingori, Kyeeri, Mrimbouwo, Roo and Tumaini Farm were chosen using the same selection process as the previous years, and with significant input from Kilicafe leadership. Umoja Ilela was dropped from the pilot in 2012 due to non-compliance with Kilicafe bi-laws and another group, Makunguru, were chosen to replace them.

2) Development of Technology and Training Materials

The cloud-based RITS, translated into Kiswahili and adapted to the local context, was ready for roll-out by March 2010. This system included the Farmer information page, and the ability to track daily coffee collections through reception, processing and drying and storage stages. The separate daily batches could then be grouped into larger ‘lots’ of coffee to be transported to the dry mill for hulling. Primary society quality control departments were also able to cup individual lots and upload feedback into RITS for the washing station managers to read.



Prior to the trainings beginning in March, a schedule for basic computer training and the RITS Users manual were developed, printed, and distributed.

Based on lessons learnt and feedback received through the 2010 RITS user survey and growers survey, some additions were made to the system in 2012. RITS was expanded to include tracking farmer advanced payments, making multiple payments and printing receipts of both delivery and payment. QR code technology was also added to attach to lots, allowing coffee to be tracked at the dry mill level. Though it was too complex and

costly to include tracking all washing station expenses in RITS, Sustainable Harvest created a GoogleDocs spreadsheet for the groups to use to track these expenses. Also in 2011, Sustainable Harvest's US-based IT team put significant efforts into developing an offline app for RITS on the iPad, that would allow groups to track their data easily without an internet connection, and then sync to 'the cloud' at a later date for safe storage. All additions were included in a newly edited version of the RITS user manual. A detailed agronomy best practices manual in Kiswahili was developed for use in quality control trainings.



Thorough monitoring and evaluation of the RITS pilot led to a spreadsheet version of RITS created in Excel at the end of 2011 (reasons behind this decision are explored in the Challenges and No-cost Extension sections of this report). RITS in Excel consists of six different sheets for farmer data, tracking coffee through the stages of processing, tracking farmer advanced, second and final payments, printing receipts for delivery and payments and tracking operational expenses at the washing station level. The spreadsheet is shared with Kilicafe leadership either via email, DropBox or flash disk when no internet is available. A manual for RITS in Excel was developed and translated into Kiswahili for distribution.

3) Technology Dissemination and Technology Trainings

Washing Station Management Training

Through 2010-2012, 40 washing station managers across sixteen Kilicafe groups were trained in basic computer skills, RITS and Excel. Basic computer trainings lasted 3-4 days depending on uptake and included lessons in the different sections of the computer, creating files and folders, basic typing, using the internet and navigating email accounts. RITS training were continuous throughout the course of the pilot with each addition made to the system, as is evident in Table 1 below.

Table 1: Summary of Washing Station Management Technology Trainings

Date	Duration of training (days)	Topic covered	Attendance (female)	Attendance (male)
25th March 2010	2	Basic Computer Skills	2	14
19th April 2010	1	Basic Computer Skills	2	2
19th April 2010	1	Basic Computer Skills	2	2
20th April 2010	1	Basic Computer Skills	0	4
21st April 2010	1	Basic Computer Skills	0	4
27th April 2010	1	RITS	0	4
28th April 2010	1	RITS	0	4
29th April 2010	1	RITS	0	4
30th April 2010	1	RITS	2	2
8th May 2010	1	Basic Computer Skills	0	4
10th May 2010	1	Basic Computer Skills	2	14
13th May 2010	1	RITS	2	14
17th May 2010	1	RITS	0	4
26th May 2010	1	RITS	0	4
27th May 2010	1	RITS	0	4
31st May 2010	1	RITS	2	2
3rd June 2010	1	RITS	2	12
12th August 2010	1	RITS	1	10
25th Nov 2010	1	RITS surveying	1	6
21st March 2011	3	Basic Computer Skills	6	2
13th April 2011	3	RITS	6	2
18th April 2011	3	Basic Computer Skills	0	9
6th May 2011	3	RITS	0	6
10th May 2011	1	RITS/ Printer	0	6
18th May 2011	2	RITS	2	4

Date	Duration of training (days)	Topic covered	Attendance (female)	Attendance (male)
26th May 2011	2	RITS/ RITS Ed	6	1
14th Sept 2011	1	RITS/ QR codes	2	9
28th Nov 2011	1	RITS M&E	4	7
8th Dec 2011	1	GoogleDocs/ CPU expenses	3	7
13th Feb 2012	1	GoogleDocs/ CPU expenses	2	8
6th March 2012	1	RITS/ Excel	3	8
27th March 2012	2	GoogleDocs/ CPU expenses/ iPad surveying	0	4
27th March 2012	3	Basic Computer Skills	0	2
4th April 2012	1	RITS/ Excel/ iPad surveying	2	10
17th April 2012	4	Basic Computer Skills	5	10
7th May 2012	5	RITS/ Excel	6	21
31st May 2012	1	RITS/ Excel	5	13

Kilicafe Leadership Training

In total eleven members of Kilicafe leadership, representing 100% of the Northern Chapter staff and 50% of the Southern Chapter staff, were trained in RITS. In 2010, extra training was provided for quality control manager Eliaringa Macha to enter cupping data into the RITS system, ensuring producers receive feedback in a timely fashion allowing them to make necessary changes for improvement. In 2011 Lazarus Haonga, Kilicafe's Marketing and Sales director, was trained to use his iPad to scan QR codes attached to lots of coffee at the dry mill. The QR codes linked directly back to the RITS page where he could add or view cupping data, and bulk lots based on quality standards, isolating quality coffee for higher premium sales. Lazarus was also trained in how to create a pre-sample cupping score for a bulk of coffee representing a container of coffee for a buyer

and to send the associated QR code to the buyer for approval. Across 2011 and 2012, all Kilicafe staff within the Accounting Department in both the Northern and Southern chapters received training in how washing station managers use GoogleDocs and Excel to track washing station expenses and how to subsequently provide electronic feedback on the data provided.

Table 2: Summary of trainings attended by Kilicafe leadership

Date	Duration of training (day)	Topic covered	Attendance (female)	Attendance (male)
4th March 2010	1	RITS	0	6
1st Dec 2010	1	RITS	0	2
25th March 2011	1	RITS	0	3
30th Sept 2011	1	RITS/ QR codes	0	1
14th Oct 2011	1	GoogleDocs / CPU Expenses	0	1
21st March 2012	1	GoogleDocs / CPU Expenses	1	1
27th March 2012	1	GoogleDocs / CPU Expenses	0	1

4) Quality Control Training

In 2011, Sustainable Harvest’s agronomists, Boss Farijallah and Andre Almeida, conducted a number of agronomy best practices and quality improvement trainings for producers delivering coffee to RITS washing stations. In total, between April and September of 2011, 429 producers were directly trained, and 450 best practices manuals distributed. Modules included correct picking and sorting practices, drying and storage for washing station leadership, and how to identify and prevent coffee defects. To demonstrate



the impact these best practices have on the quality of the coffee and therefore the price it fetches on the market, each producer was asked to taste a sample of low quality and a sample of high quality coffee and to identify the better. Reasons behind the differences were discussed as a group. The correlation between picking ripe cherries and the number of cherries needed to produce a kilogram was also demonstrated to sensitize producers to the relationship between quality and payments. Members of Kilicafe's production team regularly attended these trainings with Sustainable Harvest staff, both in the North and Souther chapters.

Table 3: Summary of Washing Station Management Quality Control Trainings

Date	Duration of training	Topic covered	Attendance (female)	Attendance (male)
17th May 2010	1	Quality Control	0	4
20th April 2011	1	Quality Control	5	28
6th July 2011	1	Quality Control	14	25
8th July 2011	1	Quality Control	11	25
14th July 2011	1	Quality Control	8	22
18th July 2011	1	Quality Control	12	33
19th July 2011	1	Quality Control	3	19
23rd July 2011	1	Quality Control	3	13
24th July 2011	1	Quality Control	8	21
25th July 2011	1	Quality Control	3	15
17th August 2011	1	Quality Control	16	34
29th Sept 2011	1	Quality Control	11	29
21st Jan 2012	1	Composting	6	26
23rd Jan 2012	1	Composting	3	47

5) Tracking

May - December of each year marks the harvesting season for Kilicafe groups. During this period, technology training sessions were lessened due to management need at the washing station. Sustainable Harvest at Origin/Africa staff instead traveled to the field to provide follow-up and troubleshooting.

Table 4 below highlights the key farmer, production and payment metrics gathered over the course of the grant. At the termination of the RITS pilot, no data was available for 2012 due to the harvest yet to begin.

Table 4: Key RITS Pilot Program Metrics

Metric	2010	2011	2012
Washing stations	4	10	15
Registered Farmers in RITS	1700	3369	-
Number of daily batches recorded in RITS	7063	22542	-
Volume of coffee tracked through reception, processing, drying and storage (Kg of cherry)	53104	131485	-
Total value of advanced farmer payments tracked (\$)	0	170472	-
Percentage of total Kilicafe production tracked in RITS (%)	3.4	18.2	-

Table 5 below shows production data for the 2011 harvest broken down per group, as received by Kilicafe at the dry mill compared to production data tracked in RITS. Reasons for low levels of tracking for Pendo is explored in the Challenges section of this report and over-reporting at Ngyani are explained in Annex 1.

Table 5: Percentage of 2011 harvest tracked in RITS per group

	RITS Parchment Tracked (kg)	CPU at station (kg)	RITS Tracking effectiveness:
Ngyani	9443.02	4338	218%
Sing'isi	6780.54	6650	102%
Amkeni	6372	6191	103%
Mesengarony	4217.2	4013	105%
Pendo	11774.2	33618	35%

Kishisha	10744.4	10136	106%
Ngarashi	37777.6	27813	136%
Total	87108.96	92759	94%

6) Linking to Coffee Buyers To Increase Speciality Sales

Without access to higher-premium markets, improving coffee quality is not beneficial to coffee farmers, since producing higher quality increases operational expenses. Quality must be recognized and compensated for through high premium sales.

During this project, Sustainable Harvest was able to link Kilicafe to four new speciality coffee buyers, all of which buy directly from the cooperative and not via the auction system, ensuring increased trickle down to the producers. Kilicafe leadership met with Green Mountain Coffee Roasters and Allegro Coffee Company/Whole Foods Markets at Sustainable Harvest's annual Let's Talk Coffee (LTC) event, held in 2011 in Moshi, Tanzania. This was the first regional LTC to occur in Africa. During the event, Kilicafe secured sales for 3 containers of coffee--all of which were approved on delivery. In 2012, Allegro continued to buy Kilicafe coffee and GMCR had every intention to do so as well, if not for their own overstocking. Both of these relationships are very likely to be maintained into the future. Dillanos Coffee Roasters and Mars Drinks from the UK also signed contracts with Kilicafe in 2012 through Sustainable Harvest, and all were pleased with the delivered product.

At LTC Africa 2012, Kilicafe staff attended cupping calibration and price risk management trainings, all which will ensure there competitive advantage with high-premium buyers.

7) Market/Roaster Assessment

In October 2011, Sustainable Harvest at Origin/Africa staff asked coffee buyer Allegro Coffee Company/Whole Foods Markets, to review RITS and provide an assessment of the technology, its perceived challenges, and its potential to revolutionize the coffee

supply chain.

Christy Thorns, Allegro's Director of Coffee, purchased Kilicafe coffee in 2010 and again in 2011 through Sustainable Harvest. With the addition of the QR codes to RITS in 2011, extending transparency from farmer to roaster, Christy was able to access data on individual farmers contributing to coffee she approved for purchase. Kilicafe's quality control, marketing, and sales departments pulled together high quality lots of coffee from across washing stations to produce a container of coffee to Allegro's desired profile. These lots, bulked together in RITS, were then cupped collectively, and the details entered into the system. A pre-shipment sample of the coffee was prepared to send to Allegro for approval and the printed QR code representing the bulk in RITS was attached. When Christy received the pre-shipment sample, she was able to scan the code with her smart phone device and log in to the roaster page on RITS. There, she could view the pre-shipment score from origin, from Sustainable Harvest Headquarters and a graph showing calibration between the two. The volume of coffee represented and individual producer data for each contributing farmer was also presented. Christy was thrilled with the technology, and discussed with us what it might mean for the future of the coffee supply chain. Her feedback can be read in full in Annex 2.



8) Project Visits

Throughout the duration of the project, RITS pilot groups were visited by COMPETE and the broader USAID staff. In 2010, Winnie Gechaga visited Moshi to train Sara Morrocchi in USAID accounting criteria. In 2011, Diana and Steve Walls and Susan McGee visited in February after the annual EAFCA event at the same time as two visitors from Mars Drinks to learn more about the projects. On two separate occasions in 2011 broader USAID staff, both from Nairobi and the US, came to Kilimanjaro to visit the projects and talk to the farmers about the impact of RITS.

9) Monitoring and Evaluating

The RITS pilot was monitored extensively in line with USAID standards. Reports were submitted every quarter and as of March 2011, monthly reports were presented on request of COMPETE. At the end of year one, RITS users surveys and Kilicafe grower surveys were completed to gather feedback on the system from both the leadership and producer



perspective. An end of year report was also submitted. At the end of year two, these surveys were repeated for comparison.

In November 2011, Sustainable Harvest's Web and Mobile Developer, Ezra Spier, spent two weeks in Moshi to conduct in-depth discussions and focus groups sessions with Kilicafe leadership and RITS users, gathering important qualitative data to compliment the largely quantitative data gathered in the surveys. This trip was invaluable to deciphering the way forward for RITS with Kilicafe and their internal capacity for project expansion.

Through May 2012, Sustainable Harvest consulted Matt Innes, a Monitoring & Evaluation specialist, to analyze all the data collected throughout the RITS pilot and to compile key findings. There are discussed in the Outcomes section of this report.

10) Activities Not Achieved in Line with the Original Grant

The only activity not completed was the procurement of hermetic cocoons--a state-of-the-art storage system that maintains coffee moisture for prolonged periods of time, ensuring lasting quality. During the initial year of group selection, Sustainable Harvest at Origin/Africa staff discovered that it was association policy to store no more than two tons of coffee at the washing station. Once this capacity is reached, all coffee is be transported to the dry mill for storage instead. Since the hermetic cocoons are designed for high volume, prolonged storage, this technology did not appear appropriate for Kilicafe's internal practices.

Outcomes

Outcomes were determined through analysis of all data collected through-out the duration of the RITS Pilot Program, as described in the Monitoring and Evaluation section for this report. A detailed, statistical analysis of this data is included in Annex 1. The evidence supports the conclusion that RITS has a significant impact across the grant target indicators; coffee traceability, transparency and quality, both in real terms and as perceived by the small-holder producers:

1) Efficiency and Tracking

Station transaction times decreased to less than 15 minutes for 88% of 2010 user respondents and 100% of 2011 user respondents; this drop was so dramatic that smaller units of measurement would have captured a reduction within the 15 minute range. In addition, RITS provided an accurate and reliable system of coffee tracking across communities.

2) Quality

This was an area of significant and sustained impact. Despite market pressure, Kilicafe prices rose consistently. At lot level, a differential above C market prices was achieved and maintained throughout the duration of the grant period. Supporting indicators, such as community selection and specialty designation, remained strong despite the introduction of resource-constrained communities in the 2012 survey sample. Sustainable Harvest staff and farmers referred repeatedly to the impact of transparency, ease of follow-up communication, and training, in maximizing the impact of RITS.

3) Perceptions and Transparency

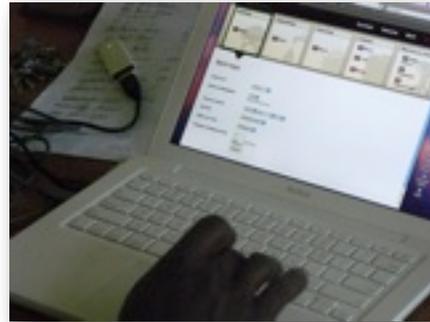
RITS was universally regarded by users and growers as ensuring transparent, secure transactions at washing stations, improving record keeping at community level, and improving the quality and consistency of coffee output. Community and grower support for RITS was striking.

At the community level, a key frustration remained power and internet stability. The introduction in 2011 of solar power had a significant impact on power security and reduced stationery budgets. It is clear that reliable access to resources such as these is central to the sustainability of the RITS technology. In terms of the impact assessment of

the program, the importance of securing utility supply only underlines the transformative effect of RITS on coffee production.

Challenges

One of the most significant challenges faced throughout the RITS Pilot program has been power connectivity. According to data recovered from the 2011 RITS user survey, all ten groups were at times unable to enter and track data in ‘real-time,’ and the only two groups able to use their printers constantly were those with solar power installed. This has impact on the efficiency of the system. However 100% of RITS users said they would rather use RITS than resort back to pen and paper because the producers hold more trust in the security of their data on the system.



Another challenge is internet connectivity. Whereas over 80% of users were able to find an alternative source of electricity if none was available at the washing station, without an internet connection, groups were left unable to track their data using the online system. Pendo was one group that faced significant issues with relation to internet connectivity, and Table 5 accurately reflects the impact this had on their ability to track data; whilst most groups were able to track 100% of the 2011 harvest, Pendo tracked just 35% in RITS. They also saved the smallest percentage--4%--on stationary costs compared to the previous years (See Annex 1). Recognizing the need for an offline version of RITS, Sustainable Harvest began building the RITS iPad App that was able to track data offline and then be synced to the online system as and when connectivity was available. Unfortunately the complexity and cost of building this App was not able to be realized within the scope of this grant.

In an effort to improve internet connectivity at the rural level, Sustainable Harvest embarked in a rigorous campaign to capture the interest of telecommunication companies in RITS. With over 70% of Tanzania's GDP achieved through agricultural exports improving the efficiency of the sector would have substantial positive outcomes.

Sustainable Harvest traveled to the washing stations with a Vodacom engineer to determine whether a change in the orientation of the existing antenna would improve connectivity. Sustainable Harvest also made three visits to Vodacom headquarters in Dar es Salaam, and submitted a proposal to the Vodacom Foundation to increase internet access in the project communities. However, no positive outcome was realized to change the state of the internet access.

No-cost Extension: Project Sustainability

The no-cost extension, awarded until May 31, 2012 , was utilized to overcome the key challenges of RITS, and to ensure the sustainability of the project for the groups involved. After extensively reviewing the various sources of data gathered (2010 and 2011 RITS user surveys, 2010 growers survey, discussions with Kilicafe leadership and the focus group discussion completed as part of the Monitoring and Evaluation trip in November 2011) Sustainable Harvest decided to put together two options for business models moving forward for Kilicafe. The first was to maintain RITS as it currently existed online and to pass over all maintenance of the system to Kilicafe staff. The second option was to lift RITS into an offline based system on Excel, which would lose a certain level of transparency but would allow the groups to track their data without an internet connection and would be easy for Kilicafe to maintain within the current staff. After thoroughly presenting the advantages and disadvantages of both options to Geoffrey Mwa Ngulumbi, Kilicafe's Managing Director, it was decided that given the current resources available, switching to an Excel based tracking system for the time being would be more beneficial for transition at project end.

In the following months, Sustainable Harvest staff worked closely with the existing ten RITS groups, and the 5 new groups added to the program, to build an offline system that worked for them. Users were brought into the office several times to review progress before the final spreadsheet was decided upon. RITS in Excel is also able to track second and final farmer payments automatically at the click of a button, and will continue to drastically reduce time spent in the office for group accountants.

From May 7-11, 2012, all RITS users were invited to Moshi to attend a three day training

in how to use Excel and the RITS spreadsheet. Groups with internet access will continue to share their data with Kilicafe headquarters via DropBox, however groups without connectivity have the option of sharing data via flash disk. Since most group accountants travel to Kilicafe headquarters once a week during the harvest period, a very reasonable level of data transparency will be maintained.

Lessons Learnt

The RITS Pilot Program has taught Sustainable Harvest a great deal in terms of implementing technology-based programs for coffee farmers, in Tanzania and throughout our supply chain. The potential impact of technology on the efficiency and transparency of value supply chains is evident from the data collected and discussed in Annex 1. However true sustainability relies on working in collaboration with local telecommunication companies when internet connectivity is concerned. Sustainable Harvest did visit each group prior to including them in the RITS program, however having phone or internet signal on the day of a visit does not translate into constant connectivity. The same applies for electricity, though renewable energy options are an achievable alternative with the added advantage of creating new income generating activities (see Success Stories section below).

Sustainable Harvest will continue to fundraise to build the RITS offline app for the iPad, which would ensure project sustainability and scalability. In the meantime, we continue to develop new and relevant technologies that are efficient within the environment in which we work, including RITS Ed and RITS Metrics. Both of these technologies have been inspired by RITS and neither require constant internet access.

Mkulima #	3
Kilicafe	
Mesengarony	
RISITI YA MALIPO YA MWISHO	
Imechapishwa	04/06/2012
Jina la mkulima	Tiraeli M Kihunrwa
Tarehe ya malipo	
Kahawa mbivu	
Mavuno	0.00 kg
Malipo/Kilo	TZS 1,000
Malipo	TZS 0
Kahawa kavu	
Mavuno	0.00 kg
Malipo/Kilo	TZS 5,000
Malipo	TZS 0
Mjumuhisho wa malipo	TZS 0
Kiwango cha Mkopo	TZS 0
Jumla ya malipo	TZS 0
Aina ya malipo	
Sahihi ya mkulima	
Sahihi ya kiongozi wa ushirika	

They also both function off the iPad, which has proven to have better internet connectivity in rural Tanzania (based on a larger antenna than the Vodacom internet modems provide), longer battery life, greater mobility, and significant outreach at the individual farmer level.

Success Stories

The following success story was shared on the Sustainable Harvest blog and received numerous positive comments

In June 2011, Sustainable Harvest was able to bring renewable energy to five washing stations belonging to the Kilicafe cooperative, directly benefitting 1,408 coffee producing families. The primary goal of bringing power to these rural communities was to allow the washing stations to run RITS Producer, which manages coffee from washing station collection through to export, tracking deliveries and advance payments back to the individual farmer. Using a computer, a receipt printer, and an internet modem, Kilicafe



producers are revolutionizing coffee traceability and transparency in Tanzania. RITS is not only playing a key role in increasing coffee quality and efficiency at the washing station, it is also helping the washing stations to reduce their stationary and other costs, thus increasing how much farmers are actually paid.

When Sustainable Harvest interviewed leadership at Kishisha washing station in Kilimanjaro region--one of the Kilicafe groups that have benefitted from the newly installed solar kits this year--the chairman told us they have seen a more significant increase in farmer membership this year as compared to years previous. He believes this is because of the solar power and the RITS program. He told us, "farmers hear about RITS and they see RITS and they are much more certain that their data is being stored safely compared to the paper-based recording system we used before."

The benefits of installing solar power at these washing stations have extended far beyond their initial intentions. Joanice Kileo, Kishisha's secretary, describes how having power 24 hours a day encouraged them to install two lights at the washing station, one in the office and one by the processing machine. Now they can process coffee after dark, whereas before they had to leave coffee to soak overnight because it was difficult to analyze the quality of the cherries. Having solar power is helping Kishisha maintain and improve their quality standards, and increase their processing rate. "We also don't have to give our night guard a torch anymore", claims Joanice, a fact which is saving them nearly \$30 a year in batteries-- money going back into the pockets of the individual farmers.

Perhaps the most interesting development is that the washing station has started to provide free phone-charging facilities for all 213 of their members. Lameck Kileo, Kishisha's accountant, described how previously, their producers would have to travel into the village and pay 200 Tanzanian Shillings (approximately 10 cents) every time they wanted to charge their phones. News spread fast that the washing station is now providing this service for free. Lameck has seen new faces at the washing station this year, and believes this free service will boost

membership in the future. "If we were given an option to attach to the main grid now, we would still use the solar power because it is much more reliable. Plus, there is no monthly bill, that if paid, would have to be deducted from the farmers' final payments."

It's not just Kishisha witnessing these benefits: according to a survey Sustainable Harvest conducted last month, all 5 washing stations are providing free phone charging services to their communities and have also purchased lights. At Mbinga, in southern Tanzania, this is particularly important since coffee reception and processing is nearly always done after dark and that's negatively impacted on coffee quality in the past. Staff at Kihuka washing station in Mbinga described how having solar power is saving them significant sums of money on purchasing kerosene for the lanterns traditionally used to provide light during processing hours. When asked what they would be willing to pay for the solar kit had they taken on loan, Umoja Ilela washing station in the south told us, 4,000,000 Tsh (Approximately \$2500). This is actually higher than the monetary value of the panels they were given and shows just how important electricity access is for these rural communities.



The following success story was shared with UK coffee buyer Mars Drinks in 2011, to relay the successes of the USAID/Compete program and to encourage the buyer to continue to support our efforts in the south of Tanzania. In 2012 Sustainable Harvest have been successful in receiving funding from Mars Drinks to extend the RITS Ed and organic composting training program.

Sustainable Harvest has been working closely with Mahenge group in Mbinga, South Tanzania, since February 2011 through our technology and agronomy training programs funded by USAID/COMPETE. Mahenge has 50 registered members, but over 200 farmers deliver coffee to their washing station. The group are recognized for their honesty and in 2010 received second place for achieving low operating costs competing against 170 Kilicafe groups. This translates into more money falling directly back into the pockets of the small-holder farmers themselves. During the 2011 harvest the group



processed 238,081 kg of parchment, every kilogram of which has been tracked in RITS Producer.

Makarius Ndunguru, Mahenge's treasurer and one of two group members to receive training in RITS, claims that the system has helped to improve washing station efficiency. *"The farmers like the system because they can quickly and easily access their payment and delivery data for the season, whereas previously they had to wait for me to find their*

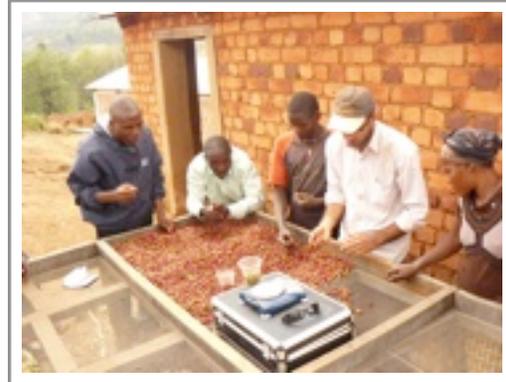
individual farmer record from within my pile of papers." The farmers also hold more trust in the electronic receipts printed through RITS as they see these are more reliable than the handwritten receipts where payments are not automatically calculated and the margin for error is greater. Eliud Doto, Kilicafe's Mbinga Chapter Office Manager, also uses the system to follow the group production trends. *"If the group makes a cash requests because they are low on funds at the washing station, I use RITS to check if the money they claim to have spent on farmer advance payments matches that in the system before I make an approval."*

Sustainable Harvest recognizes that quality improvement and increased productivity cannot be achieved through technology training alone. Mahenge leadership and members participated in a number of agronomy trainings throughout 2011 funded by USAID/COMPETE. Makarius claims it is difficult to gain the farmers' understanding in the importance of quality to the final price they receive for their coffee. If he tells them they have to remove the under-ripe and overripe cherries for the washing station to accept their coffee, they will just go away and sell it to a different buyer. One particular training

conducted by Sustainable Harvest agronomists Boss Farijallah and Andre Almeida has already began to help with this problem. *“They taught the farmers that red ripe cherries weigh more and therefore that the farmers can deliver fewer of them but still get a better price than if they were delivering unsorted cherries. The farmers understand the importance of money and they have started bringing more red cherries and less green ones so I don’t have to complain as much.”*

A number of members have also received organic composting training - an important technology that will improve the health and productivity of their crop whilst reducing dependency on expensive artificial fertilizers.

One of the biggest worries to small-holder farmers is how to sustain their livelihoods during the off-season which also coincides with paying school fees for their children. Makarius believes it is important for more of their farmers to learn about the benefits of organic composting, because if they learn to trust this free technology and improve the productivity of their coffee trees they can put more money back into their pockets to save for when they have no income, which could have significant positive social implications.



The following is a success story that was shared with Apple Computers. Since submitting this story, Sustainable Harvest was given the privilege of presenting RITS at an Apple event open to the public in Portland, Oregon.

Over a two week period, Ezra Spier and Carly Griggs completed field visits and surveys with both Kilicafe leadership and washing stations managers trained to use MacBooks and iPads to improve their operations. Through this, Sustainable Harvest finalized our monitoring and evaluation program with a focus group discussion and brainstorming day at the Sustainable Harvest at Origin/Africa office in Moshi.

Twelve RITS users were present and the attendees split off into two groups of six to brainstorm around three key topics; the computer and RITS training sessions, RITS features and ‘technology and the future’. Our goals were to receive open, transparent feedback that we can use to improve our training sessions into 2012 and continue to fine-tune RITS and provide access to other features that will improve washing station efficiency and farmer access to technology. The day was extremely successful and enjoyable and we received an array of interesting answers to the brainstorming questions asked.

***Q: List everything you learnt in your computer trainings that you still use
Orothesha vitu ulivyojifunza katika mafunzo ya komputa bado unavyotumia***

The two groups between them came up with 41 different tasks they still use the computer to compete, including functions in RITS, using emails to contact Sustainable Harvest and Kilicafe, creating files and storing them in folders, typing meeting minutes, printing receipts, using the internet to search for information and read daily online newspapers, create bookmarks, using the zooming function and even taking screenshots of issues faced with RITS to email to us!

Q: What more would you like to learn to use on the computer/internet?



Ni kipi ungependa kujifunza kwa matumizi ya komputa au internet?

- 'To receive information from other farmers'
- 'To find out more information about different coffee regions across the world'
- 'To access coffee market prices'
- 'To print other documents apart from receipts such as meeting notes'
- 'To learn about FaceBook'
- 'We should visit other washing station to see how

they are using it'

Q: If you were in charge of RITS/MacBook trainings what benefits would you expect in return?

Kama wewe ni meneja wa RITS/mafunzo ya komputa, ni kipi ungependa uone kama matunda ya mafunzo hayo?

'To see that those I taught have understood well'

- 'To see that those who are being trained are happy'
- 'To see my students working efficiently on the computer'



Q: What can you do with RITS that you can't do with pen and paper?

Ni kazi ipi katika RITS ambayo huwezi kufanya kwa kutumia karatasi na kalamu?

- 'To send emails'
- 'To print receipts'

'To find all the information for an individual farmer in one place when he/she needs it'

Q: Are you comfortable with RITS completely replacing pen and paper as a record keeping system?

Umeridhika na RITS kama mbadala wa karatasi na kalamu?

‘Yes, 100%!’

‘Now I have lower stationary costs’

‘RITS reduces the costs of transporting data’

‘RITS reduces the number of files I have to keep’

‘Now data is more accurate’



Q: How would you feel if all the cooperatives in Tanzania had access to RITS and computers?

Utajisikiaje pindi RITS ikitumika na vyama vyote vya usharika?

‘It would reduce operating costs for other groups’

‘There would be greater transparency’

‘The quality of Tanzanian coffee would increase’

‘Tanzanian coffee production would increase’

Q: How do you feel about technology now compared to before?

Unajisikiaje kwa vitendea ukilinganisha na zamani?

‘I feel it is easier to do my work’

‘It has reduced the time it takes me to complete my work’

‘I’m up-to-date and modern!’

‘We feel good - technology is great!’



How would you feel if we took RITS and the MacBook away tomorrow?

Utajisikiaje pindi RITS iondolewe kesho? ‘

‘We would feel bad’

‘We would have a lot of work again’

‘Stationary costs would increase’

‘Farmer prices would decrease’

‘Information would be lost easily’

‘Farmers would not trust us’

The feedback Sustainable Harvest received was extremely positive in favor of using technology at the washing station. It is clear from these answers that the farmers conceptualize the benefits of using RITS and that they want others across Tanzania to benefit from the same tools they have access to. Our trainees are absorbing a large array of information about computer use and are eager to train other member of Kilicafe; we plan to include them in our training sessions into 2012. When the trainees become the teachers - it's technology dissemination at its best!

Financial summary

Grant Number: SHC-STA-009-010

Table 6: Financial Summary of USAID/COMPETE and Sustainable Harvest expenditure January 2010 - May 2012

	USAID/COMPETE grant expenditure	Sustainable Harvest Contribution
Personal and Operations (a)	379,844.96	126,698.59
Travel (b)	14,811.76	9,859.56
Capacity Building (c)	32,695.46	-
Training Materials (d)	20,809.04	16,872.62
Surveys & Capacity Building (e)	20,388.78	11,282.65
TOTAL	468,550.00	164,713.42

Table 7: Financial Summary for the Fiscal Year 2010

	Approved Budget 2010	Q1	Q2	Q3	Q4	Total Expended 2010	Balance Remaining 2010
a	391,600.00	38,792.13	33,001.01	42,285.41	53,136.68	167,215.23	224,384.77
b	5,600.00	0.00	0.00	0.00	2,053.63	2,053.63	3,546.37
c	35,250.00	5,570.00	759.00	798.41	949.05	8,076.46	27,173.54
d	21,100.00	0.00	0.00	0.00	0.00	0.00	21,100.00
e	15,000.00	652.68	1,838.14	1,589.32	966.96	5,047.10	9,952.90
	Total	45,014.81	35,598.15	44,673.14	57,106.32	182,392.42	286,157.58

Table 8: Financial Summary for the Fiscal Year 2011

	Approved Budget 2011	Q1	Q2	Q3	Q4	Total Expended 2011	Balance Remaining 2011
a	224,384.77	42,930.23	42,137.93	50,314.57	49,634.58	185,017.31	39,367.46
b	3,546.37	0.00	2,005.50	0.00	4,489.97	6,495.47	-2,949.10
c	27,173.54	4,685.88	6,812.53	2,836.89	49.95	14,385.25	12,788.29
d	21,100.00	789.30	1,160.87	6,617.66	7,513.65	16,081.48	5,018.52
e	9,952.90	2,254.49	7,850.62	342.53	0	10,447.64	-494.74
	Total	50,659.90	59,967.45	60,111.65	61,688.15	232,427.15	53,730.43

Table 9: Financial Summary for the Fiscal Year 2012

	Approved Budget 2012	Q1	Q2	Total Expended 2012	Balance Remaining 2012
a	27,612.45	16,153.43	11,459.02	27,612.42	0.00
b	6,262.66	6,262.66	0.00	6,262.66	0.00
c	10,233.72	9,851.71	382.01	10,233.72	0.00
d	4,727.56	696.96	4,030.60	4,727.56	0.00
e	4,894.04	0.00	4,894.04	4,894.04	0.00
	Total	32,964.76	20,765.67	53,730.43	0.00

Annex 1

Sustainable Harvest: Compete RITS Report (2010-2012 grower and user data)

1. Overview of data and methodology
2. Population description
3. Grant-specific indicators:
 - a. Efficiency contributed by RITS to station operations
 - b. Quality of coffee: price and acceptance / designation
 - c. Transparency of payment and transactions generally
 - d. RITS usage generally
 - e. Community needs and perceptions; training

Matt Innes

May 2012

1. Overview of Data

Farmer data: RITS Growers Survey 2010 (n: 154); RITS Growers Survey 2012 (n: 474)

Community officer data: RITS User Survey 2010 (n: 16); RITS User Survey 2011 (n: 10)

Overall quality of data was strong. The selection of Growers data in 2012 was attempted through random selection, which, in conjunction with the diversity of community sources, contributed to the strength of the information provided by the data.

Strengths:

This data was gathered with good faith efforts at objective measure of outcomes of the project. This included moves toward randomization, the size of the 2012 sample, and serious consideration of baseline strategies. This gives the data weight as part of a time series sample and as part of an effort to establish baseline measurement across the region. The structure of the surveys, and the recognition of external indicator frameworks (IRIS and COSA, for example), give clarity and weight to the findings. User survey data: a clear majority of respondents completed secondary education and held relatively senior management positions within the community (chairperson, secretary, accountant, or board member). This goes some way towards compensating for the small sample size; it is assumed that responses are likely representative of community experiences.

Potential weaknesses:

User survey 'n' was low; randomly sampling a variety of managers / users might strengthen this data. However, the majority of User responses were at supervisory level. A more even gender distribution of growers would strengthen the data. Unit standardization and accuracy are consistent obstacles to collecting yield and income data and applied across the Grower surveys; it's always worth trying to keep data collection consistent, but much easier said than done in practice. Finally, and significantly in the context of the results, the wider sample size in Growers 2012 included poorer communities with limited resources, specifically power and internet access. This increases the strength of the data, but lowers some indicators; overall, it strengthens the conclusion that the impact of RITS was significant and clear.

Color Coding:

2010 Survey Data	
2012 Survey Data	
2010 Communities:	
Amkeni	
Ngyani	
Mesengarony	
Singisi	
2012 Communities:	
Kishisha	
Kihuka	
Mahenge	
Pendo	

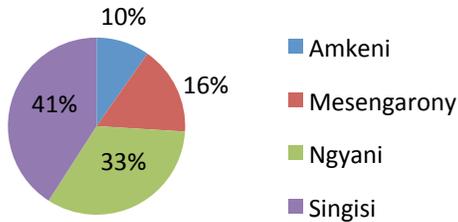
Author's Note:

Field constraints meant that the Growers and Users surveys were taken at different times.

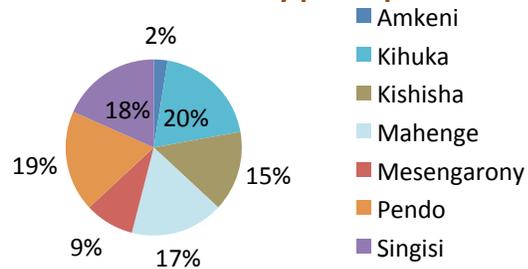
2012 Growers Survey and 2011 Users Survey reflect farmer experiences of the 2011 harvest; 2010 surveys reflect experiences of the 2010 harvest.

2. Population and Sample Description

**Compete RITS Growers Survey
2010: Community participation**



**Compete RITS Growers Survey
2012: Community participation**

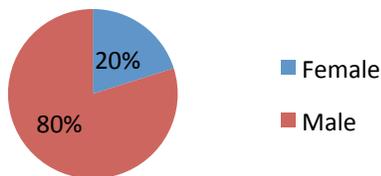


(Color of community segment consistent where appropriate)

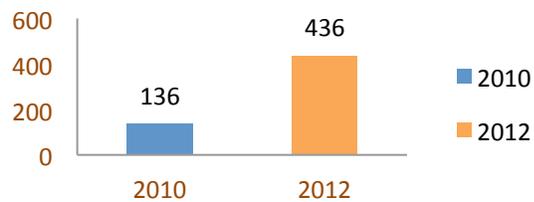
The greater number of responses, the greater diversity of communities from which they come, and the attempt to randomize responder selection, are each significant. They increase the likelihood that this data is representative of the wider community. However, we do not have a formal baseline, nor a control group, so the statistical conclusions we can reach are qualified. This does not prevent us from identifying observations, associations, suggested relationships or other comparisons.

As part of its current review of metrics / analytics strategy, Sustainable Harvest has started including applicable COSA & IRIS indicator questions in surveys. The following results are selected because they give context to the impact of RITS on the Kilicafe community.

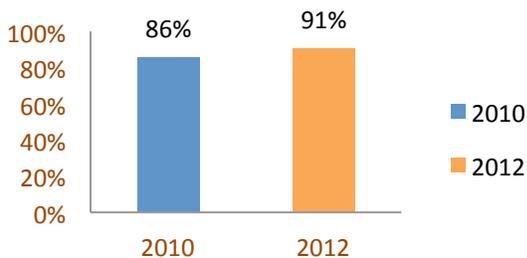
2012 Gender



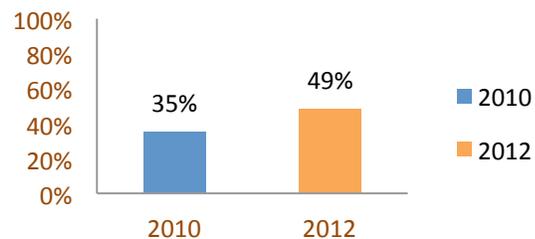
What was your gross income from coffee?(US\$)

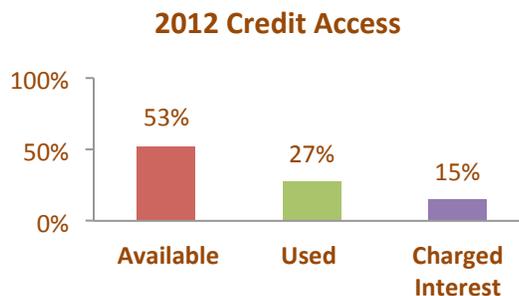
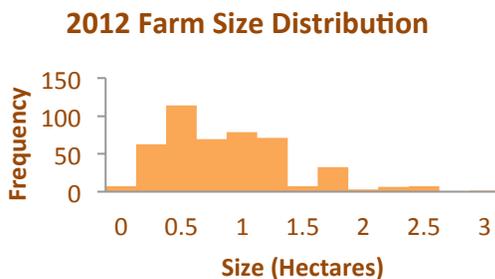


School - Age Children Attending School



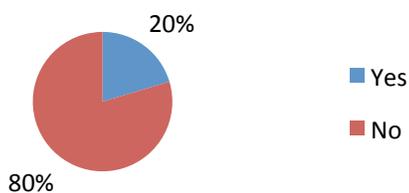
"My income increased last year"



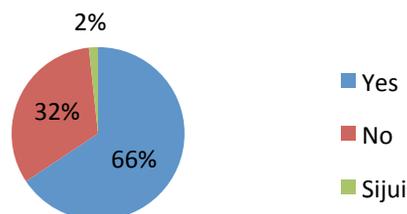


Community Perceptions (2012)

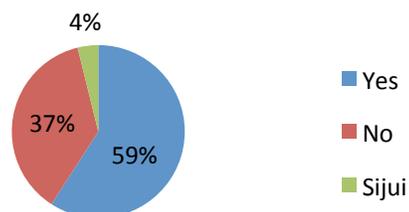
Do you participate in your community?



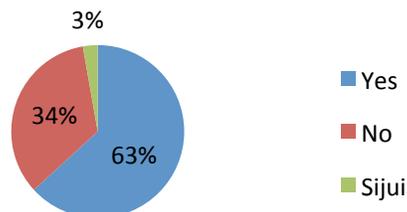
Has your community improved?



Is your quality of life good?



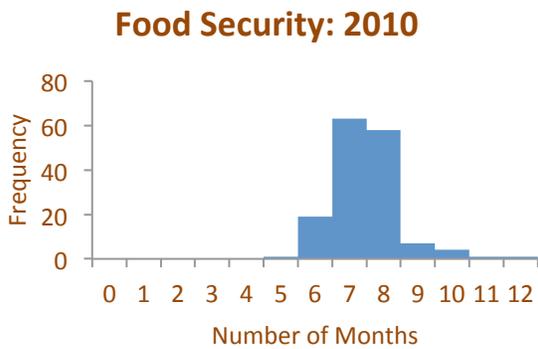
Has quality of life improved?



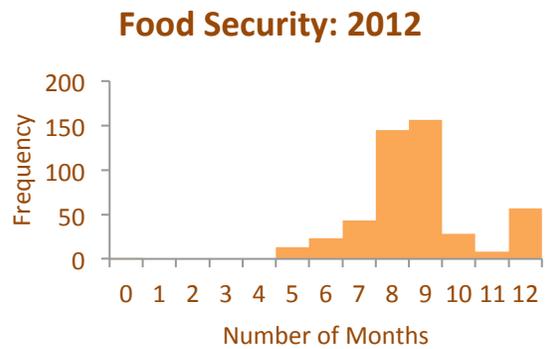
These perceptions were drawn from COSA indicators included in the 2012 survey questions. They do not provide a comparison with 2010, but they give a useful framework for understanding the 2012 responses. A clear majority perceive their life as having improved (and it is fair to presume that this covers some proportion of the previous year), but only a minority conclude that the community is currently doing well.

Food Security

There is some ambiguity here: the periods recorded for 'unable to find food' and 'unable to buy food' seem to refer to concurrent months, but the extent to which they overlap is unclear. In order to capture in full the period for which families are without food, I have taken the higher of the two numbers. It will be simple to incorporate a more sophisticated approach if it will add insight, but in the context of other field surveys, this basis produces credible distributions:



Average: 7 ½ Months
 Full food security: 1%



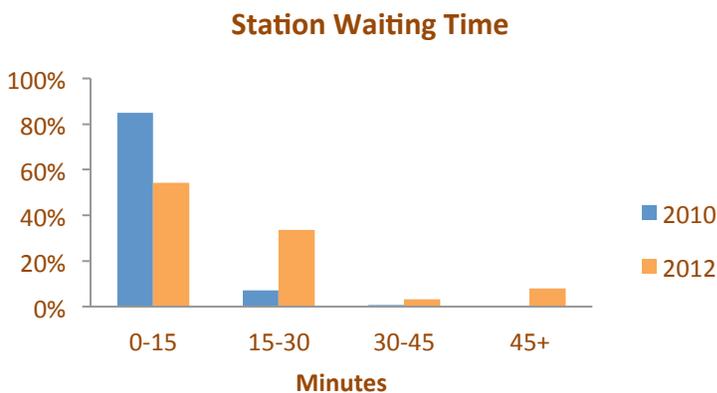
Average: 8 ½ Months
 Full food security: 12%

The shape of the distribution is more significant than the values on the frequency axis, which are different because of sample size, so these histograms are not to equal scale. These distributions are normal. In simple terms, there is more food security amongst the 2012 sample than amongst the 2010 sample. This is reflected in the averages and the proportion of responses indicating full food security (i.e. no months of food insecurity).

This analysis is descriptive at this stage. We cannot assume that this is a change which occurred during, or caused by, the program. However, we can reasonably conclude that these populations are different in this respect. I will return to this later in the report.

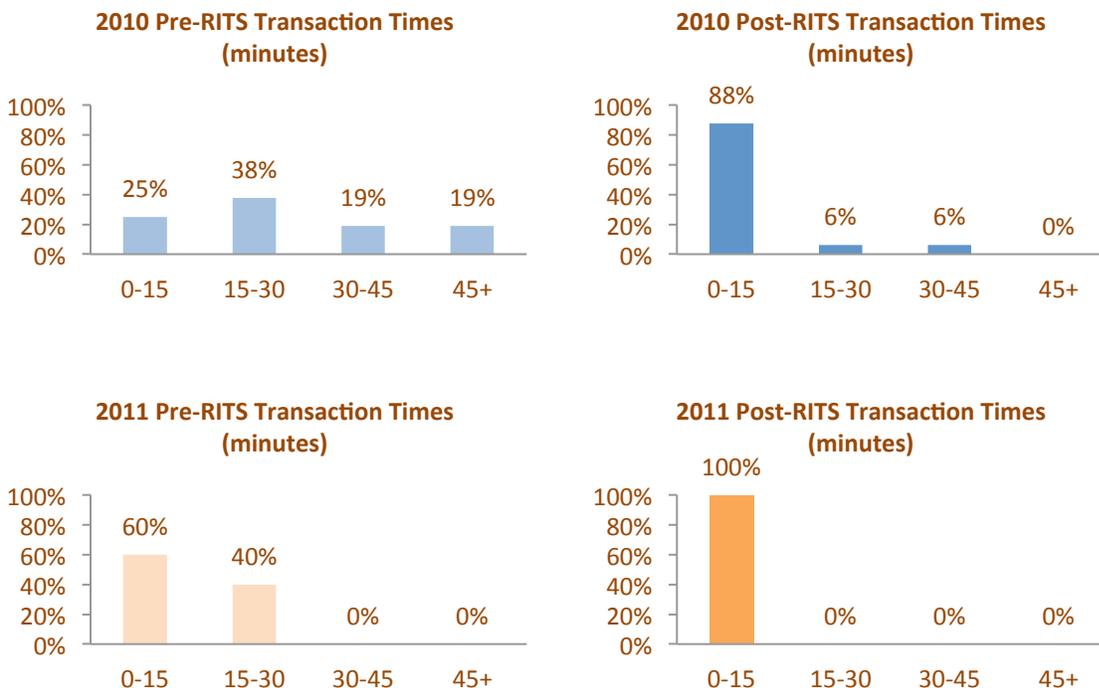
3. Grant-specific indicators:

a. Efficiency contributed by RITS to station operations



At first blush, the distribution suggests that wait time has increased overall. However, the great increase in sample size and diversity in 2012 may simply mean that more accurate data is being captured than was in 2010.

In fact, a specific question addressed whether time had decreased, and the response was authoritative: **98% of growers reported that times were shorter than in 2011.** In addition, **all user responses indicated that station transaction time had decreased:**



In fact, anecdotal comments by users indicated that the fifteen minute increments used were too broad: the reduction in times was sufficiently dramatic to mean that five-minute increments should be used for future data collection. In other words, **even within the 0-15 minute range, waiting times were often reduced from 7-8 minutes to 3-4 minutes.**

Tracking impact at community level:

	RITS Parchment Tracked (kg)	CPU at station (kg)	RITS Tracking effectiveness:
Ngyani	9443.02	4338	218%
Sing'isi	6780.54	6650	102%
Amkeni	6372	6191	103%
Mesengarony	4217.2	4013	105%
Pendo	11774.2	33618	35%
Kishisha	10744.4	10136	106%
Ngarashi	37777.6	27813	136%
Total	87108.96	92759	94%

Overall, **tracking rates were extremely high**, with some distortion caused by Ngyani result, which was created by unauthorized sales to third party buyers, and moisture variation affecting the accuracy of cherry/parchment conversion ratios. In addition, the Ngarashi community mills for third parties, which

explains their result. The low rate of success in the Pendo community was a result of the consistent problems with internet access as communicated in monthly reports.

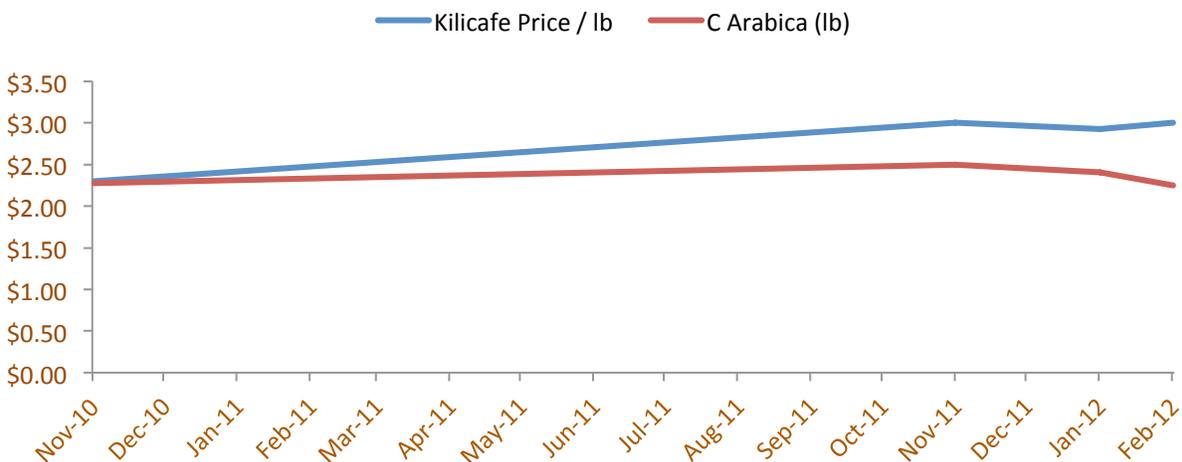
b. Quality of coffee

Quality of output improved substantially over the period of RITS implementation. This is confirmed by a variety of data sources: price, cupping scores, and cooperative selectivity.

Price

Price is the single most significant indicator of coffee quality across the specialty coffee sector; Kilicafe's prices rose substantially throughout the grant period to maintain a C+ .60 differential. Sustainable Harvest trading staff report that despite the considerable pressure put on specialty coffee differentials by market conditions, the **tracking and quality management enabled by RITS allowed SH to introduce and sustain differential prices over the grant period, with an increase in differential in 2012 in very difficult market conditions:**

Kilicafe Bulk Prices and C Market Movement, 11/2010 to 2/2012



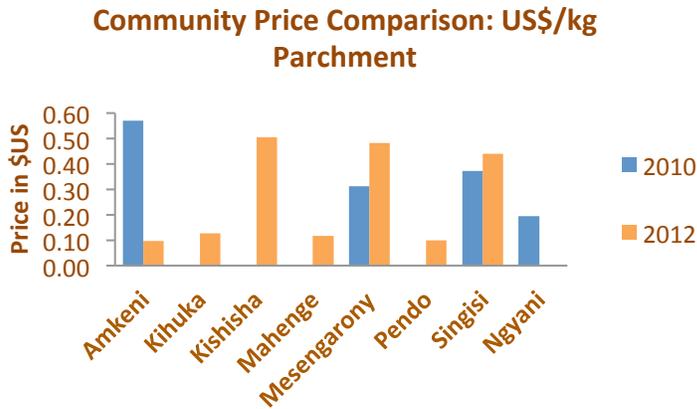
Further, **current contracts (through 2013) currently sustain a .50 - .60 differential above Arabic C market prices, and it is hoped that this will increase to .70;** in the current climate this is a very significant position for the farmers of the Kilicafe cooperative to hold.

The key factors in this improvement in quality were identified on the purchase contract side as:

- **Significantly improved quality as measured by cupping scores and consistency;**
- Timely deliveries and responsive communications;
- Effective agronomy training allowing quality tracking, such as late 2011 purchases from the south of Tanzania and effective blending of high-scoring yields;
- Specific **price management / differential pricing training at Let's Talk Coffee East Africa, provided in the first week of September 2011 during the Arabica C market spike,** and:

- Overall, a transparent, controllable and flexible process, allowing Kilicafe to manage risk and guarantee customer quality.

In the 2011 User Survey, all 2010 communities reported an increase in prices since RITS implementation from 2010. However, this data covers a period of significant price fluctuation, and in the 2012 Grower Survey price varied significantly between communities. The following chart compares available prices between the two surveys.

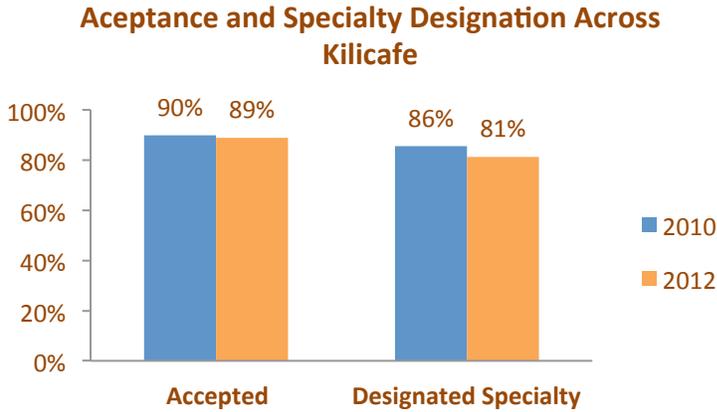


Prices are given in US\$/kg/parchment, using a 5:1 cherry:parchment multiple, a 2010 TZS:US\$ value of 1515:1, and a 2012 TZS:US\$ value of 1583:1.

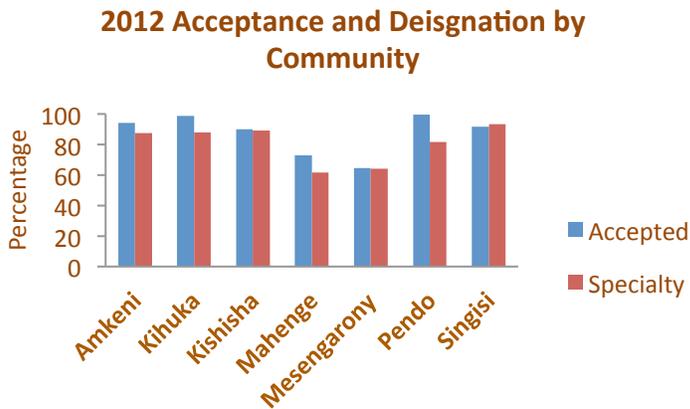
It is unclear whether the spike in coffee prices in 2011 interferes with this data. The 2010 data likely captured a great part of the Apr2009-June2010 trough. The 2012 data was collected between April and May 2012; the average price over the preceding year would capture an average of the peak (Apr-Oct 2011) and the subsequent settlement (Oct2011-Apr2012). The average C-market coffee price increase between the two surveys was +43%. Also, as noted in the introduction, the wider sample captured communities without access to power, which in itself had significant impact on the implementation of RITS.

As a result of this increased sample, weighted averages for 2010 (\$.324) and 2012 (\$.265) indicate a drop in price over the two-year period. However, the groupings of prices mean that these averages are distorted by the collapse in Amkeni’s prices (itself caused by extreme weather conditions in their region); if that community is taken out, the **only communities for which we have time-series data, Mesengarony (+54%) and Singisi (+18%), show significant increases closer to the C-market movement.**

Acceptance and specialty designation by Kilicafe:



Although at first sight these figures indicate a decline in quality, **for practical purposes they are stable.** Any variation could be explained by sample variance; it may be that the 2010 sample groups were already producing a higher quality of coffee than those included in the 2012 survey. Further, when broken down by community, the individual averages reveal two relative outliers, one included in 2010 (Mesengarony) and one 2012 addition (Mahenge). This interference preserves the likelihood of the conclusions outlined above:

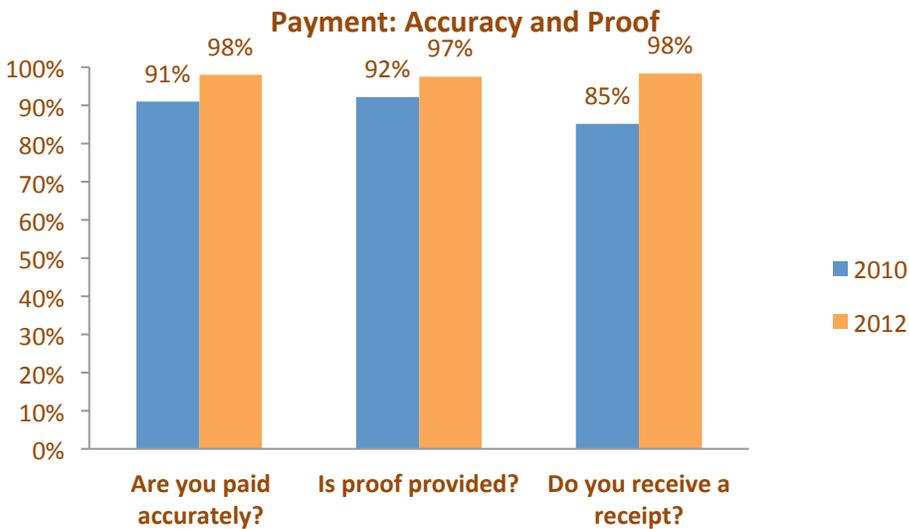


(Color coding suspended for clarity)

c. Transparency of payment and transactions generally

Respondents were asked three questions on perceived transparency:

- i. When you are paid, are you paid accurately?
- ii. Does the cooperative provide proof of this?
- iii. Do you receive a receipt?



This improvement in perceived accuracy has statistical significance; it strongly suggests that perceived transparency and transactions has increased over the time period. A confirmation question enquired about receipt provision in the previous year; the Mahenge and Kihuka community answers indicated that provision had started in 2012.

d. 2011 User Survey: RITS usage generally

The 2011 User survey contained specific questions on post-implementation RITS use. Prior to its introduction, the majority of respondents had no experience of computer use.¹ This exposure improved most respondents’ work outside of RITS.² Most stations now have sufficient hardware to use RITS, a significant improvement over 2010.³ A high proportion of respondents use mobile phones to text, and 60% also use phones to send money.

100% of users felt that payment recording and electronic receipt generation have helped operations..

Even though internet and electricity interruption prevented electronic receipt generation and real-time entry of data into RITS for almost all cooperatives in 2011, 100% of users reported that the data storage capacity of RITS remained useful even when real-time entry was lost, and any absence of documentation has not affected grower perception.

Internet Stability

For the majority of users, internet connection is lost twice a day or more. This figure was slightly better for 2012, in that there was a greater concentration of daily dropouts than in 2010, but this corresponded to a rise in the number of twice daily dropouts. Responses primarily involved waiting for the connection to return; perhaps this is an area for future needs assessment, particularly as anger and frustration with dropouts is expressed clearly in 2012.

¹ 90% had never used a computer in 2010; 75% in 2012.

² 56% in 2010; 70% in 2012. Primary use was for email; newspaper and market data access were also reported.

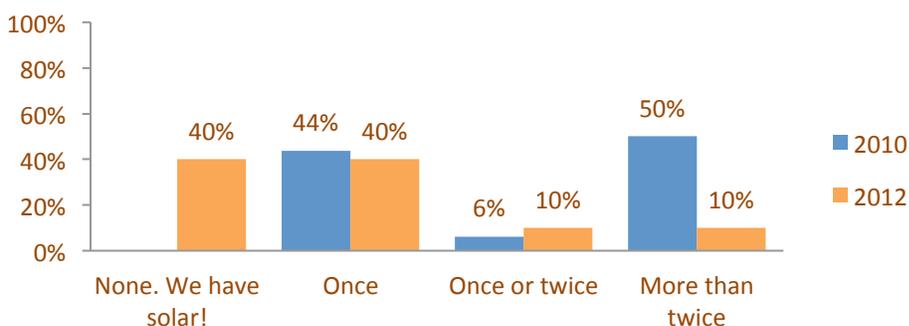
³ 80%, up from 56%.

Electricity Stability

This seems to have improved significantly between surveys, primarily because of increased solar power use and resources / solar power supply targeted by Sustainable Harvest field staff. Responses to interruptions include waiting and switching to the ipad/generator until power returns.

However, significant problems remain with power and internet supply, and, where they take effect, these factors have constrained coffee quality improvement.

Daily electricity interruption



Users calculated stationery cost benefit as follows:

Stationery Budgets and RITS Savings (US\$)				
Community	Pre-RITS	Post-RITS	Cost- Saving	% Saving
Amkeni	39	32	7	18%
Kihuka	226	25	201	89%
Kishisha	32	20	12	37%
Mahenge	97	54	43	45%
Mesengarony	35	2	33	95%
Ngarashi	111	48	63	57%
Ngyani	161	95	66	41%
Pendo	33	32	1	4%
Singisi	179	63	116	65%
Umoja Ilela	3	1	3	80%
Averages:	92	37	55	53%

e. Community needs and perceptions

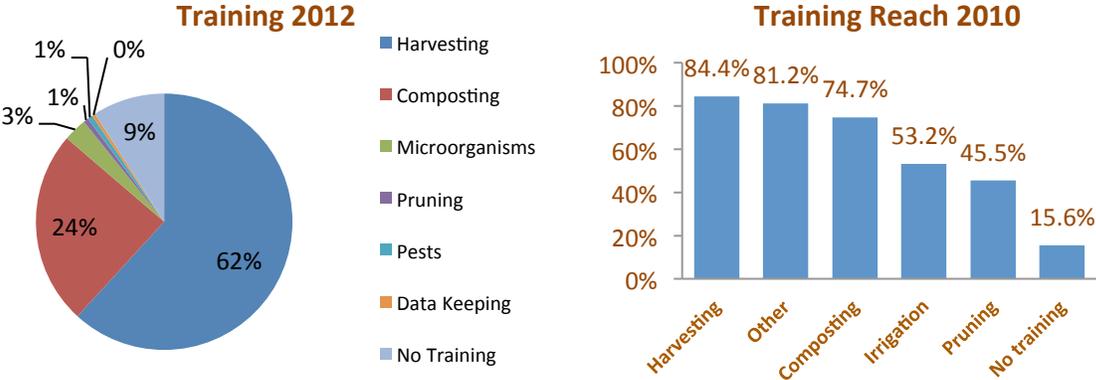
Agreement that:	2010	2011
RITS will improve coffee quality	100%	100%
RITS will improve coffee consistency	100%	100%

RITS has improved washing station security	100%	100%
RITS has reduced errors in record keeping	100%	100%

The 2011 users were asked whether RITS had improved coffee quality: 80% agreed. The remainder had either not received cupping scores or had experienced environmental interference (such as water access problems) which had affected quality prior to RITS engagement.

Of the 80% who had seen improvement, the **reasons given for RITS success focused overwhelmingly on training provided by Sustainable Harvest and Kilicafe and ongoing communication and feedback.**

The data suggests that this training was central to the impact of RITS. There was variation in the collection of data between surveys; in 2010 respondents could indicate a variety of trainings received, while in 2012, for reasons of space (and in order to accommodate a wider spread of COSA and IRIS indicators), respondents could only indicate one. However, the variety of training taken up is consistent:



The data above corresponds to the demand for specific skills, notably management of coffee quality and effective harvest. All groups reported an increase in the level of training received, although the expansion of the survey in 2012 resulted in a lower level of overall participation in agronomy and cooperative training. Data on the perceived impact of training from both surveys, directed at agronomy training (2010, 98%) and cooperative training (2012, 94% positive impact). The RITS Users data confirms the overwhelming value of Sustainable Harvest’s training support.

Annex 2

RITS Program **Roaster Satisfaction Assessment** *December 2011*

Christy Thorns, Allegro Coffee Company Director of Sourcing
"We insist on transparency throughout the supply chain, and partner with suppliers who share our values of equitable and traceable sourcing."¹

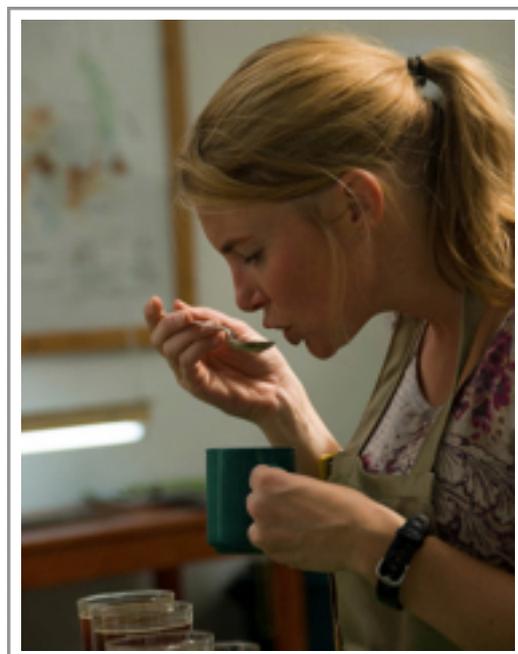
What are your overall impressions of RITS Producer's Roaster Page?

You guys have done great work with this system. Very impressive. I am honestly not sure we are ready for all this information! I mean our desire is to have traceability down to the farm level and RITS is going even farther than that, which is great. You are just so far ahead of your competitors.

It seems that we are becoming increasingly alerted to consumer/governmental concerns around supply chain transparency in terms of GMO's and slavery issues and at some point in the near future I feel that we are going to have to verify that our coffees (and teas and spices) are not sourced from suppliers with these potential issues (despite that fact that they are not really issues yet in our industry). So any system that allows us to trace our products down to daily lots from individual farmers is going to be a great tool even if the system isn't addressing exactly these two concerns.

How could this kind of information affect purchasing relationships and decisions?

Having this type of information available to us is definitely going to give a farm/co-op an advantage over others in terms of our consideration of them as a supplier. I think quality should and always will be consideration #1, but if we have an established relationship with a co-op or farm and they are providing this info., it is more likely that we will work with them in off-quality years instead of going to another supplier.



¹ Taken from the Allegro Coffee Company homepage, <http://www.allegrocoffee.com/about/media-kit/people>

How could this kind of information could be shared with consumers?

This is a tough one. I am sure at some point we will launch a scanner system in-store and having the technology and information already set down to farm level with your coffees would be great. If of course, at that time it is agreed upon for us to be able to tap into your system at some level. At this point, just having access to more of the general information and profiles on the farmers is useful for us when we promote coffees or write marketing and educational pieces.

What other info you might want to see in an ideal system (for instance we talked about farmer earnings and photos)?

Yeah, farmer profiles would be awesome (elevation, tree variety, soil, HA's, etc...). I think we also talked about the ability at some point to share our (ACC) cupping scores as well for comparison sake and access for the co-op.