

Draft version: Last updated February 18, 2008

2007-2010 U.S. Department of Agriculture Cooperative States Research,  
Education, and Extensions Service

Higher Education Challenge Grant

***USDA CSREES - Higher Education Challenge Grants Program -  
New Paradigm for Application of Discovery-Based Learning:  
Implementing Bottom-up Development***

Site visited: Mali, West Africa

Trip Report: January 5-16, 2008

Investigators:

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## 1.0 Executive Summary

The University of St. Thomas has previously partnered with Montana State University on development projects in Mali. Work done with the current grant furthers the previous projects by adding new dimensions and involves faculty from academic disciplines not previously represented: business (project management and accounting), and sociology. (French had been a component in 2005). Two of the four participating faculty members had never been to Mali before.

The main purpose of the trip was to work with the Agri-Business Entrepreneurial Incubator Network (“the Network”) in order to develop a plan for its goals and to lay the foundation for subsequent student trips planned for January 2009 and 2010. Based on our initial discussions Belco Tamboura, the primary Network coordinator, four main goals for the Network were identified: achieving self-sufficiency in 3 years; institutionalizing the network’s initiatives; heeding local imperatives; and producing tangible deliverables at the local level.

Based on these goals it was determined that the Network needed to develop a business plan for itself. Furthermore, potential entrepreneurial endeavors for the network were identified. These involved the marketing of Shea butter, the evaporative cooler and seed potatoes.

In light of these goals we followed-up with meetings with key figures and site visits to learn more about each of these areas. While on-site the team worked on developing a minimum needs assessment to be presented by the Network to Jean Harman at USAID. Upon return to the U.S, Ernest Owens will work on a preliminary business plan and send it to the network who will give feedback. The teams will work in tandem to develop a successful business plan.

## 2.0 Objectives of the visit:

- To acquaint new faculty with Mali in preparation for subsequent trips with students in January 2009 and 2010 and to make useful contacts.
- To plan for the lodging and transport needs as well as cultural site visits for subsequent student trips.
- To familiarize UST faculty with the Network and its members.
- To help the Network more clearly identify its goals and develop a business plan.
- To learn more about potential incubator projects for the Network.
- To investigate potential student collaborations with Malian institutes of higher learning.

## 3.0 Goals accomplished

- Through our interactions, readings, observations and in-country travel each member of the UST team learned about Mali. See Appendix A: Contacts.

- The Niarella neighborhood was identified as a good area for the lodging needs of the students. We had a good experience with Toguna Adventure Tours and will use this travel agency for our transport and lodging needs.
- We were able to meet with all the network members except Keriba Coulibaly and Assa Kanté. (Keriba was ill and there was no response from Assa.)
- See Appendix B: Network Business Plan.
- We met with key players in each of the three areas of interest for incubator projects (Shea butter, seed potato, and evaporative cooler.)
  - Shea butter meetings: two cooperatives (Siby and Zantieboucou), Peace Corps, USAID, Karité Mali, Institut d'Économie Rurale (IER). See Appendix C: Shea Butter Supply Chain.
  - Seed potato meetings: Institut Polytechnique Rurale (IPR), IIG (Jean-François Gay)
  - Evaporative cooler meetings: École Nationale d'Ingénieurs (ENI)
- We met with the faculty at the Institut Universitaire de Gestion (IUG) in order to investigate academic collaborations. We discussed potential course matches between their students and ours and had a preliminary discussion of timelines and constraints.

#### 4.0 Trip Journal

##### **Meeting with Belco – Sunday, January 06, 2008**

We met to discuss our trip mission. Belco wanted to know what our mission for this trip was and what the plan for the future trips is.

Ernie started by saying that his expertise was in project management and wondered what the network might need in that area. He asked what the overall strategy for the network was. Belco mentioned that all projects in Mali are now nursing CSCRIP – Cadre Stratégique de Croissance et de Réduction de la Pauvreté.

He mentioned that he has organized a meeting with Karite Mali (director is Mme Binte Bocom Konte). There was a large group of various Shea Butter Coops and the group identified a need to increase quality of their product and find external markets. This translates into an export study. We see that as a good project for business students.

Belco also identified 3 current areas in which the Network wishes to be involved:

- 1) Shea Butter
- 2) Evaporative Cooler
- 3) Seed potatoes

He personally wants to talk with Ernie about teaching Strategic Management.

Belco wants concrete results for the local farmers – something they can understand and agree is helpful.

We agreed that we have 2 levels of deliverables – for farmers and for the Network. Belco wants congruence between the two levels – network and local.

For the Network:

- 1) Business plan
- 2) Marketing plan
- 3) Operating plan
- 4) Help in applying to USAID for funding

Belco has talked with Jean Harman at USAID about cash funding. She wants to know his minimal needs and he didn't know exactly what that meant. We thought that we could help the Network develop a proposal for USAID.

Belco's concrete goal/wish for our current trip is for us to assist the Network in how to ask for money through development of a business plan. And how to determine minimum needs through prioritization.

We discussed meeting with several people:

- Mme Konte at Karite Mali
- Visit 2 villages – Zantiebougou and Siby
- IUG – Mohamadoun Toure
- IIG (new group from Mali Finance)
- Peace Corps (Seydou Coulibaly)
- World Bank (PCDA)
- IER, IPR, ENI

Belco listed his 4 primary goals for the Network

- 1) Self-sufficiency in 3 years
- 2) Creating an institution that will continue past the 3 years. Getting out of the project mentality in which all things come to an end.
- 3) Local imperative – identifying the local needs
- 4) Create tangible deliverables at the local level

We also asked specifically whether CLICs should be part of the scope of our project. Belco felt that the CLICs are not related to current Network activities and should not be a component at this time.

## Monday, January 7, 2008.

We met with Belco and Aissata Thera and discussed their needs. Ernie had prepared an outline of our discussion from Sunday as a starting point. We first identified the Network members:

- Belco Tamboura [btamboura@caramail.com](mailto:btamboura@caramail.com) – Business Communications, Coordinator of Network, IPR – Katibougou.
- Adama Berthe [adamabert2003@yahoo.fr](mailto:adamabert2003@yahoo.fr) – Biotech, Seed Potato, IPR, Katibougou
- Sidy Ba [sidyhba@yahoo.fr](mailto:sidyhba@yahoo.fr) – Engineering, Evaporative Cooler, ENI, Bamako
- Aissata Thera [aissathe@yahoo.fr](mailto:aissathe@yahoo.fr) – Biotech, Seed Potato, IER, Bamako (Sotuba)
- Assa Kante [assa\\_diarra\\_kante@hotmail.com](mailto:assa_diarra_kante@hotmail.com) – Biotech (Adult Education), Shea Butter
- Keriba Coulibaly [Keribacoulibaly2005@yahoo.fr](mailto:Keribacoulibaly2005@yahoo.fr) – Biotech, Seed Potato, IER, Sikasso
- Abdoulaye Camara [Camarablo@yahoo.fr](mailto:Camarablo@yahoo.fr) – Microbiologist, Seed Potato (soil quality), no official institutional affiliation

We got some further clarity on the key initiatives. Moved to a discussion of the critical needs for the Network. Discussed the need/core strategy for self-sufficiency. We talked about 3 individual projects and the key issues driving their immediate needs:

- 1) Shea
  - a. quality is biggest issue
  - b. also they want marketing export information
  - c. discussed capacity issues
  - d. We shared the different Shea butter samples brought from US.
  - e. Need for a national level cooperation among Shea coop producers.
  - f. Need for in-field observation and subsequent training
  - g. Need to develop a grading system for Shea butter (uneven quality, color, consistency). Does Karite Mali know of a grading system? Or is there someone at IER who has developed this? Mme Umo Cisse knows the quality of Shea.
- 2) Seed Potato
  - a. Currently, all seed potatoes are imported from Europe or elsewhere at a current cost of approximately 7 billion CFA per year. There are problems with timing, variety, and disease as well as the cost. So the Network is developing seed potatoes without disease for use in Mali and they plan to sell the seed potatoes to farmers in all points of the development chain. The fourth generation can be used for table potatoes and the 8<sup>th</sup> generation is best.
  - b. They are still looking for the best area to test the seed potato.
  - c. Aissata is head of program. Keriba is responsible for the seed council, coordinating and managing seed production, Abdoulaye is responsible for soil quality, testing and assessing microbiological issues. Adama

coordinates and manages production of seed potatoes, assesses farmers' needs.

- d. The potatoes need to be stored at 5 degrees C to prevent the 20% loss with disease and deterioration from traditional storage methods.
- 3) Evaporative Cooler (we didn't discuss this because Sidy Ba was not present).

We talked about ways they could generate revenue in each of the three areas.

- Revenue for training in quality techniques, Coop management
- Revenue from selling seed potatoes to farmers
- Profit from manufacturing evaporative coolers
- If the network has an excess, they will put the funds towards providing services to communities that can't pay.

Possible concrete results for Shea might be developing a grading scheme/system. Deciding what quality is best for butter, soap, etc.

Next, we talked about what they thought their immediate needs are for 2008. Both Aissata and Belco felt that they needed an office to establish a permanent presence and to separate the Network from their salaried work. To make the Network autonomous. This was a key issue for eventual self-sufficiency. Jane will make an excel file with the items determined.

Belco and Ernie plan to create a project plan for the strategic management, operations management and business plan which they will bring back to the group for discussion. Part of this discussion revolved around creating an exit plan – a plan to move from a project mode into a strategic mode.

We also discussed involving Malian students with the UST students in the implementation of the projects. This will help ensure the transfer of knowledge.

List of organizations of interest to the Network

- ACOD
- AMPJF
- CECI
- USAID
- IC- Sahel – Swiss
- SUCO
- ULM
- UFAE

### **Meeting with Jean Harman at USAID:**

After introductions, Jean began by expressing concern that the incubators move toward self-sufficiency and that the Network really needed a business plan. She also wanted them to have an exit strategy showing how they would move from funded to self-sustainable. She explained that AEG was focused on agriculture and economic growth

and that their funding was cut in half three years ago and that 2008 will be the lowest funding year to date. However, she also indicated encouragement for the Network project if they can demonstrate how they will become self-sustaining.

It was important to Jean that the Network be able to articulate the plan and take ownership of it. She was not looking for a specific format – rather the understanding that comes from the development of the plan. It needs to be a business plan.

She also talked about being able to identify what will drive them forward and what will hold them back. Then, she mentioned that the Network needs to setup an office and she thought that should be centrally located in Bamako. She proposed asking if the government would provide space. She also proposed that they approach government organizations to match funds raised elsewhere. Pursue new connections.

We talked about getting cast-off furniture and computers and she mentioned that IIG (Jeanne-Francois) has some that the Network may be able to use. He should have computers immediately available.

She also mentioned Mali Watch, a Minnesota organization that organizes an annual science fair. Mali Symposium on Applied Sciences in August. The leader is Haruna Maiga, professor at UMN Crookston.

We discussed Shea butter and she expressed concern about quality not marketing. Suggested we meet with Kris Hoffer at Peace Corp (Assoc. Director for Natural Resource Management) 675 – 9923. We should also contact Seydou Coulibaly.

Jean also mentioned that accounting is a serious problem. There needs to be more transparency.

#### **Meeting with Dennis Bilodeau at USAID:**

We asked for ideas about how to help the Network. He talked about the extensive Radio Station Network (about 230 separate stations). The cost is about 1000-2000 CFA for 15 minutes and can all be contracted centrally through the Radio Station Network. He thought that was a very good way to get information to a large number of people – in particular women. Inexpensive, powerful communication tool.

Then, he talked about community telecenters (similar and includes CLICS). There are a total of 77 with 13 being original CLICS. He said that only 1 is currently closed (Bougoulou). These can be used to give longer, more detailed information such as videos about the production and quality. USAID no longer runs the centers; instead they fund Afrik Links who provide technical support, training, and put material on DVDs and CDROMS for the centers. The funding for Afrik Links finishes in 2008. When USAID ran the centers, their OH was 30%. With Afrik Links, the OH is 10%.

The centers cover all their operating costs but currently do not pay Afrik Links for their services. Centers are owned by the community and run by Community Management Committee (sometimes the Mayor's office). They charge for internet use but not for DVD viewing. Their internet costs are still considerably higher than in Bamako and they have split the bandwidth (and cost) with partners – typically NGOs, private schools, even some Mayor's offices. Bamako pays 30,000 CFA per month (with Sikasso and Segou soon at the same rate). Smaller communities pay 154,000 CFA per month.

He estimated that 18% of center users are women (was 5-6%). Among students, there are approximately equal numbers of male and female users. And about 20% of the use is non-internet (DVD or CDROM viewing). They have used a variety of techniques to encourage use. E.g. Pregnant women were offered free bed nets for viewing a video. They gave teachers vouchers to hand to deserving students.

He mentioned that transparent accounting was an overall problem for businesses in Mali in general.

## **Tuesday, January 08, 2008**

We met Belco and Aissata at 8:00 and rented a taxi. Belco drove one car and the rest went in a taxi to IER in Sotuba. Belco had arranged for the cab to take us to Katibougou. Instead however, with Mme. Gamby's permission we were able to hire the car from IER. Abdoulaye Camara was our driver.

Abdoulaye Camara was waiting for us when we arrived. After meeting several people, we were able to meet with Mme. Gamby who was very interested in what we were going to do. We explained our UST objective and Belco described our schedule. Mme. Gamby gave him a contact number in Siby and told us we could borrow the car. We asked what she thought the strategic initiatives might be for the Network. Her response was don't interrupt the research being conducted in Mali and that an important goal for the Network was self-sufficiency. When pressed about strategic initiatives, she said that the government priorities are Shea and seed potatoes. She wanted to know how we could help. We talked about helping design a business plan.

We next met with Mme. Cissé Traore, head of the lab specializing in fruit and vegetables. And with Sally Coulibaly, Engineering Technician Specialist working with cereals, vegetables, and legumes (cowpeas). We asked what assistance they might like. They mentioned documentation and equipment for the lab. We then asked them to describe the Shea butter process and the quality control issues.

- 1) First, they need to collect nuts after they fall naturally and within 24 hours of falling. The collection period is May through September.
- 2) They need to clean, boil and dry the nuts as soon as possible. They shake the nuts to determine if they are dry. This was the critical phase.
  - a. The traditional method includes holding the untreated nuts in a hole in the ground. During this time, nuts can germinate or otherwise deteriorate and the butter will be lower quality.
  - b. The traditional method of drying is to smoke the nuts. This also introduces unpleasant odors and reduces yield and quality due to loss of the oil.
  - c. To dry in the sun requires continuous sunshine or the nuts have to be moved when it rains and this is the rainy season. It takes a total of 7 days in the sun. Solar dryers also take 7 days but do not require the added labor of moving the nuts as they are covered. So the solar dryers will solve the drying problem but are expensive.
- 3) If they use well-dried mature nuts, then the butter will be good quality.

They came to this realization about critical quality issues after testing and statistical analysis.

We asked about how to grade the quality in the field. The consensus was the field uses color and smell to determine quality. The lab can also perform a chemical analysis. The highest grade has a creamy, light yellow or white color. The white color occurs when the foam is washed for a longer period. When pressed, Mme Cissé said the yellow had more

anti-oxidants. The yellow butter with higher anti-oxidants might be preferred in the US market. However, she didn't see any difference in quality.

After processing, the quality can be determined with a chemical analysis:

- Fat content
- Acidity
- Color
- Smell

She mentioned the conference for West Africa in which they discussed the culmination of a 3-year project in which a network of Shea producers conducted training in

- Quality improvement
- Certification of participants
- Market studies.

The president of this Network for Mali is a man from Zantiebouyou.

Ernie asked about the yields and distribution chains. They would like to have our students participate in such studies.

Next, we went to IPR and met Adama Berthe who is growing 17 varieties of seed potato in the lab. We saw the lab and had to wear white coats and slippers. He showed us the vented filter tables where they conduct grafting. Then, we saw the growing rooms with 11 European and 6 Peruvian varieties. The rooms had Heap filtration systems that suck out any impurities in the air. There were 3 growing rooms with 3 different stages of seed development. They have to transition the seedling from the lab to the ground. The seedlings spend about 1 month in the lab, 1 month in the tunnel (which was a kind of greenhouse) before being ready to plant.

Jane also met Muktar Coulibaly who had studied at Tulane University. He specializes in nutrition so Jane told him about the Minnesota group who has developed a peanut-based nutrition supplement.

We visited Belco's home and saw parts of the campus. Then we returned to Bamako where we had a meal at La Gamelle, a Malian restaurant. We spent 8000 CFA for 7 people.

**Wednesday, January 09, 2008**

**ENI**

We went to ENI for 8:00 to meet with people before their 9:30 all-faculty meeting. We first met with Haruna Coulibaly and Daouda (SP Dacouda?) Coulibaly to observe the evaporative cooler and to give them the transformer. We asked about their plans for the cooler. Haruna told us that they had done a study looking at production, selling, buyers and research. Producers have some quality issues and most sellers are importing the coolers.

Ernie asked if they preferred job shop producers or large-scale manufacturing. They indicated the larger scale would be preferred so that you had better control over quality.

They indicated that customer acceptance has been mixed. Several customers thought these were just like air conditioners and kept their windows and doors closed. This led to a build-up of humidity and health issues and poor acceptance of the product. This implies that marketing needs to also educate the user about how to use the product.

A new government agency has been formed that has jurisdiction over this product. They prefer to support imported products over Malian made refreshers (evaporative coolers). The imports come from Europe, US, Saudi Arabia and other countries. This may have been due to the perceived low quality of Malian products. However, a Senegalese engineering student purchased a Malian refresher and is studying it for his thesis. Now the Agency is trying to figure out how to improve the quality of Malian refreshers.

They thought business students might be helpful doing marketing studies – ENI are all technicians. Their survey was only about # sold, where imported from, and a little about who they were sold to. They didn't do any analysis about customer wants or satisfaction.

UST cooler has not been tested yet – they needed the transformer. They have had good feedback on the look of it. A Malian producer has come to see it and would like to copy the look. They are testing other models and various materials for the pads. One model they were testing had pads on the exterior and found they got dirty very quickly. They would prefer to have such pads on the interior. They are testing “fou” as one of the materials. The Malian producer has sold 215 since 2000 with 117 of those in 2005 alone.

Current buyers are NGOs, new projects and some individuals. Haruna thought Government buildings should be buying due to the energy savings. Refreshers are currently selling for 90,000 – 250,000 CFA depending on capacity.

We next met with the director of ENI, Dean Moussa Kanté. Ashley asked about the extra charge of \$900 for the delivery of cooler. The concern was over this extra charge since the delivery had been pre-paid through Camille George. (This discussion was a follow-up to an email exchange between the Dean and Camille). He said he decided to pay it and the matter is settled in his mind.

Ernie asked what part of the chain they wish to be involved with. He responded that they are interested in the whole chain. He recognizes that you have to be aware of the whole chain in order to build a good product. He used road-building as an example and said you have to consider the sociological effects of the road.

He also mentioned how grateful he is that UST provided SolidWorks software and training. And that he had met Ron Bennett who said he would help where he could.

## **IUG**

We had not been able to get Mahamadoun Toure's phone number so Belco said we should just go and see if we can get into see the director. We had to wait about 5 minutes and then the director took us into his office. He remembered meeting Jane last year. IUG members had sat down and worked on a proposal but, with many student strikes this year, other priorities intervened and they were not able to complete anything. He knew Belco and seemed genuinely happy to see us. In fact, he asked us to return on Friday afternoon to meet with his whole staff. We will return at 3:30. This was all we could hope for.

In the afternoon, Belco and Mme. Tamboura took us to find fabric and to the Artisans market. They helped us shop, bargain and decide on items.

We went to Jean Harman's for dinner. We met Alex and Betsy Newton (Alex is mission head at USAID – Jean's boss). Jay Angerer (Texas A&M) and John (Syracuse) were also there. It was a delightful time. Alex hoped that we would stop and visit with him and Jean before we leave.

### **Thursday, January 10, 2008**

#### Visit to Zantiebouyou

When Belco called to arrange a meeting, the person wanted us to pay 50,000 CFA to visit. Belco was very upset about this and through other contacts in Siby; he was able to get that waived. Their success appears to mean they have many requests for visits and these visits interfere with their work. However, they were very gracious and showed us how their process works.

The Coop buys dried nuts from their own members and from others. The nuts are already washed, dried and shelled before the Coop receives them. The members know the proper method to dry the nuts. They may be confident in this because there is training available in the proper methods. They keep the bags in storage up to a year. They also use about 4-5 bags every week. Storage needs airflow and preferably cooling.

The Coop has 259 members with 3 of whom being men. 1 man takes care of the store, 1 takes care of the grinding machine, and 1 is unassigned at this time.

See appendix for a diagram of the work flow.

They are currently getting 30% yield (30 kg of Shea butter from 100 kg. of nuts). With 4 people working, they can produce 32-40 kg per day. With 8 people they can produce 64-80 kg per day. The Coop produces about 20 tons per year and think that they could provide 10 tons for export.

The dirty water from washing the Shea is poured into holes and the resulting mud is used to make bricks. The shells may be used for compost but we didn't get any data. Apparently, such bricks repel termites.

They sell their product in their own store and in 12 stores in Bamako as well as 2 stores in Montreal. They buy their packaging (jars) from Senegal and from Mali. See attachment for pricing. They also sell honey from bees who feed on Karite flowers.

The butter was a rich yellow color as Mme Cissé had indicated was best. They sell pure Shea and Pomade with honey. We all made some purchases. The leader gave us a gift of honey, 2 jars of pomade and 1 packet of Shea. We gave them a calculator, a small expandable file folder and 6 pens.

We showed them the US products and they were especially interested in the lip balm. They said they have the technology for making this but not the packaging.

**Friday, January 11, 2007**

**Peace Corp – Seydou Coulibaly and Kris Hoffer**

Introductions, Belco explained Agri-business Center.

Kris's volunteers are training women to boil not roast/smoke the nuts to dry them. Smoke introduces carcinogens into the butter. Clarified ProKarite project that ended in August. Reseau Nationale was formed after ProKarite was finished. This is a producers' network that had their first meeting in December (26 & 27). The women's main concerns were:

- 1) Controlling prices for the nuts. Buyers from other countries have come into the villages during hungry season and offered low prices for all the nuts. And the villagers take the money and then have to give all their nuts at low prices.
- 2) There are also unethical buying practices. Foreign buyers will buy all the nuts, separate the good ones and place them in bags labeled Burkina Faso, Ivory Coast, etc. and put the bad ones in bags labeled Mali. This is giving Mali nuts a bad reputation.
- 3) Lacks of local organization – farmers have to act as independent agents and they don't have all the relevant information.

She gave us various materials to read. This includes several papers about research already conducted and OIC farmer – to – farmer initiative.

Peace Corps volunteers did a good job helping to increase the price of nuts. They also did a good job training the women to increase the quality of the nuts.

Some nut buyers have used some unethical practices by trying to give cash to volunteers without records and by going behind coops and trying to buy directly from farmers at a different price.

The villagers are selling all their nuts to nut buyers and don't have any left for butter production. This happens when buyers offer money in advance of collection when villagers need money the most. And because the nut market is more developed than the butter market. Nuts can be easily exported. Nuts are going into ice cream, chocolate and cosmetics.

Kita nuts have been examined/tested by Jeanne Askar (Sodima) and found to be of high quality. Sodima is a flour producer who is also in the nut buying business.

Peter Lovett, (very knowledgeable in Shea) of West Africa Trade Hub has done a lot of research. Kris gave us several papers by him

Soearou Diabate ([s.diabate@CGIAR.org](mailto:s.diabate@CGIAR.org) or [ampjf@yahoo.fr](mailto:ampjf@yahoo.fr)) She is the current head of the Reseau Nationale and is very knowledgeable in Shea.

SNV – Dutch govt. org similar to USAID are working on certification issues. Contact Susan Kantella 343-0071.

Contamination issues:

- 1) pesticides can be introduced by used bags, cotton production (many trees are in cotton fields and pesticides are widely used in cotton production.
- 2) Pesticides could be in ground water used to wash the butter
- 3) Could be in the transport – i.e. anywhere in the supply chain.
- 4) Containers can also introduce contamination – they use used tomato soup cans. The plastic containers they use come from Ivory Coast and some from Mali.

The Shea butter producers and others have no central organization. There are many groups working of the issues independently. Burkina Faso is much more organized so people go there for certification. This would be something with which the Network could assist.

Export rules? Mohssein Keita from Bakotie on Rte. De Sotuba 624-0238 or 673-2899.

Kris's focus is on improving Natural Resource Management in Mali. Shea trees reach peak potential by age 50 and produce up to age 200. Most of the trees in Mali are 150 years old. ICRAF is doing research on grafting so that new trees could start producing in 3-5 years.

Peace Corps Volunteers are also encouraging farmers to “intercrop”. These crops improve soil humidity which helps increase nut production.

Seydou talked about the issue of selling all the nuts and losing production jobs in the country. Exporting nuts is like exporting jobs when the country has high unemployment.

There is also a gender issue intertwined with “nutter” versus “butter”. Men and women could collect the nuts but only women can make the butter. Selling nuts reduces employment for women.

Communications strategy used by AED (Association for Educational Development) is called SCALE. This is a method to gain large scale acceptance of change. The traditional method is to start at grassroots, make changes and then introduce to other areas. This new method is designed to speed up the adoption process. Bring all possible stakeholders together at beginning (whole system in the room at the same time). From that meeting, determine goals and strategies. This might be a good strategy for Reseau. Kris gave us sources for these documents. (“Achieving Scale in Agriculture: Past Efforts Present Promise – USAID, Randy Chester, Economic Growth, Agriculture, & Trade Bureau, 2005) (“Technology Transfer in Agriculture”, 1992 Academy for Education Development, Washington, D.C.) (“Going to Scale”, 2004, Academy for Educational Development, [greencom@aed.org](mailto:greencom@aed.org), [www.greencom.org](http://www.greencom.org), [www.aed.org](http://www.aed.org).) SCALE is System-wide Collaborative Action for Livelihoods and the Environment.

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Seydou suggested getting whole chain together and try to define the goals. Come up with a strategic plan.

Accounting issues

- 1) getting used to recording information/transaction. OIC tried to train volunteers and farmers at the same time but left after 1 week because it was too difficult.
- 2) People who record transactions need to be able to explain what they have done.

Kris has 27 volunteers working with Shea farmers – 15 first year and 12 second year volunteers.

Testing – Volunteers collect samples from the village and send them for testing. Suadou analyzes them and gives the villagers information about how to improve their quality. They test again in a year and again right before volunteer leaves. There is a great need to educate the women about the value of quality and how to achieve it. Only 5% of women producing Shea butter are in cooperatives.

We need a way to reach the other women. They need: Training in how to determine quality of nut and butter so the buyers can't take advantage of them. This is undermined when nut buyers will pay the same price for both good and bad nuts.

There are 4 Coops that are held out as successful – Siby, Zantiebouyou, Diolla, and Kita. She also mentioned Kojola.

Kris ended with the new Reseau really needs help with funding. They need some understanding of how the export market works. She thought a communications strategy would be a good project for students.

We went to the Musee for lunch. We saw some Shea Butter from Zantiebouyou on sale in the Musee shop for 3000 CFA (for 800 gram tub).

## **IUG**

Belco, Sidy, and the four of us went to IUG for a meeting with faculty. There were 7 IUG faculties in attendance. The director was not able to meet as he had another meeting. The Deputy Director ran the meeting.

Komakan KONATE –deputy Director (Directeur Général Adjoint)

Mahamadoun Toure – accounting

Lansina Sidibe – external affairs

Mahamadoun Ba – marketing

Aboubacar Dembale – Arabic and assistant to Director

Fabou Traore – Library and Documentation

Zana Sanogo – Math

Introductions – Belco described Network, conversation started about what we talked about last year. They explained the 8 areas represented and asked if we could help with

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simulations, training, etc. Sidy got the conversation to talk about our current project and what we could do. We discussed having students from both institutions working on projects either together or in parallel. They expressed enthusiasm for the idea and we agreed to keep talking. The most interested appeared to be Ba (marketing). It was good for Belco to make this connection and start the possible collaboration.

We went to San Toro for dinner – it was excellent and would be a good place to bring students for one meal. Total cost was 25,000 CFA for 4 people.

## **Saturday, January 12, 2008**

We left for Siby at 8:30 and arrived at 9:45. We stopped at the Mayor's office to say hello and ask for directions. The Coop welcomed us and showed us their setup. They had a solar dryer with a cover for the rainy season. They had several new buildings for production, storage, packaging, and sales. They also had some new machines that had not yet been tested. They had a crusher, grinder, and mixer. They had the generator in a separate room to keep diesel fumes from the butter. The Coop is supported by ACOD and CECI. A member of ACOD acted as our translator, Souliman (Solo) Traore.

The women pay to use the machines and the coop only buys premium butter. So the women get the full payment for production. The coop acts as the marketing agent for the butter. They have a buying committee that weighs and determines quality. We saw the purchase of 3 batches (balls) of butter while we were there.

The guide mentioned that the coop is also involved in planting and fostering new Shea trees. They knew that their trees were getting old and they need new trees for the next generation. They are also doing grafting to speed up production from new trees.

We then met with many women, the man who did the tour (Adama Moutard Sengare), a marketing agent and the ACOD representative who was a former student of Belco. Made introductions, then asked the women what our students might be able to help them with.

- 1) help with drying. This appears to be a constraint in the process. Most nuts are collected during the rainy season and it is important to boil them within 3 days of collecting. The next step is the dry them and this requires sunlight for at least 3 days. It would be helpful if they could get a solar heater to speed up the drying process.
- 2) Help with transportation. They only collect a very small proportion of the nuts that fall because it is very trying to carry the nuts home. Some trees are 4 kilometers from their home.
- 3) Help with water. Their water table is very low and they have to buy water for the processing at the coop.

Susan asked if they preferred the traditional method. They said the traditional method of mixing to separate butter from the paste appears to yield a higher quantity and quality of butter compared to current machines. (the pressing machines) This was based on information from other coops who tried the pressing machines.

They believed that using mechanization throughout the process introduces containments.

They also talked about "white" butter versus "yellow" butter. They felt the yellow was a premier quality and that white had lost some of the natural qualities of the butter in the extra washing needed to get the white color. The marketing agent mentioned that some sellers add animal fat to the butter to make it creamy and still call it pure.

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Burkina Faso has set the standard for the “white” butter being the premier quality. Ecocert performs organic certifications in Burkina Faso but there is no organization in Mali. Part of a Fair Trade Organization.

The coop’s name is Maison de Karite and they produce about 10 tons per year. Their demand is more than their supply. They are trying to increase production to 20 tons per year. They have 1000 members in 21 villages in the Commune of Siby. They would like to add 500 more members. There are 6 more Communes with 20 villages each would like to be involved. Other villages would like to join but there is no room. They would like to help them and are trying to put solar dryers in many villages.

Solo also mentioned that there is a total potential for 200,000 tons of nuts in the Commune of Siby. They currently harvest less than 30 % and less than 1/3 is good nuts. The problem was that women couldn’t handle the collection and carrying of all the nuts.

We showed them the products we brought from the States. They were happy to get some of the cream and many put some of it on paper to keep for later.

Belco then asked if the women would like to give Ernie and Susan Malian names. They were delighted and clapped. Solo sent out for cocoa nuts and the ceremony began. Susan was named after the Treasurer – Hawa Camera. Ernie was named after the president’s husband – Fabou Coulibaly. They were hugged and pictures taken. The women then started to clap and dance.

We went to Amandine for an early dinner. It was tasty and cost 25,000 CFA for 4.

### **Sunday, January 13**

We went to Belco’s for dinner. Two of his students joined us for dinner. Momadou Cherif Coulibaly and Paul Bernard Diarra. Mme. made real Malian food. We had cooked vegetables for hors d’oeuvres. Then, chicken and tomato sauce. Later she served us Toh and la bouillie (made with corn). It was all delicious.

We visited a woman with a peanut grinder to see how it worked. It made very thick peanut butter and the butter stuck to the mixer and didn’t flow out of the grinder. This made it difficult to work with and difficult to measure.

On our way out, we observed a traditional method of smoking the nuts to dry them. This is the method we have been told that introduces carcinogens into the butter as well as poor color.

**Monday, January 14, 2008.**

We went to market without any Malian help. We were able to make purchases, find places, make mistakes. It worked out well.

Belco was waiting for us when we returned.

**IIG**

We met with Jean-Francois Gay and his staff. This group is the follow on program from Prodepam, Trade Mali and Mali Finance.

They are interested in 5 commodities:

1. rice
2. Mango
3. Potatoes
4. Tomato
5. shallots

They are using a value chain approach – implementation, production, marketing and finance. Next, they mentioned they are very interested in the seed potato work. They wanted to know how far along the group is with this product. They believe that seed potatoes are a real challenge to Mali. It is not a primary commodity for Mali. Success with seed potatoes could lead to a lot of value added for Mali. They have offices in Sikasso, Mopti, Gao, Timbuktu. They are especially interested in the North.

They want to know if seed potatoes can be replicated and how to finance they implementation. One issue they mentioned was how to increase the volume of butter production. France and Italy tried to produce seed potatoes but they failed and now Netherlands is the only source of seed potatoes.

They may be interested in Shea but there are many others working in this area. They set up a revolving loan of 10,000 CFA for nut collection. The women collected more nuts and were able to make enough profit from butter to repay the loan (no interest was charged). The loan acted as an incentive and much more nuts were collected.

They mentioned that we should talk to Sue Kantella at SNV as she is knowledgeable about Shea. In addition, there is a large Canadian project that will focus on Shea and shallots. They have done some preliminary feasibility studies that may be of interest to us.

We ate at Petite Asia, visited Karen Krebs to drop off pictures for Diarra (our driver last year).

**Karite Mali– Mme. Konte Binta Bocum**

Mme was ill and so we met with Bouazza Mache, a CECI volunteer who has helped develop some marketing for the project. The project is working with Diolla coop and sells two lines of Shea (Kaloje + is made under their supervision and Kaloje using their methods but without supervision. The + sells for more.) He's developed advertising, helped to define a brand name and establish a brand marketing strategy. They participated in the large trade show in December and that there were many Shea producers there. He believed there is a large market in Mali and West Africa that doesn't need certification. They have placed products in supermarkets and pharmacies.

He mentioned that Mali Shea has a poor reputation for quality and there is a need for educating the buyers about the change in quality and the value of quality. Diolla alone produces 30 – 35 tons of premier quality. In Diolla, the women get money to buy nuts, store the nuts for up to 3 months, the women process the nuts and sell the Shea to the Coop. Diolla has industrial dryers to dry the nuts during the rainy season.

We discussed the issue of certification. He questioned the value of it because it is so costly to the women and there are untapped markets in Mali and West Africa. He mentioned one model in which the importer paid for the certification. Ghana and Togo export Shea to the US.

Some market research has been done by CECI and Leger Marketing (Canadian marketing firm).

The Project doesn't receive any revenues – they only provide funds to coops. There are 2 years left on the project.

Mme Konte was able to join us for the last few minutes. She asked if we could help one of the Coop groups to do a business plan. We talked about how our students might do a business plan and she seemed quite happy with that.

She mentioned that she found that it would cost 3,000,000 CFA to ship 1 ton of Shea butter to Marseilles (the nearest port).

**Tuesday January 15, 2008.**

## **CECI**

We met with Charge de programme – Soulymane Traore. He helped organize the trips to Zantiebougou and Siby. He talked about the lack of communication and coordination between various stakeholders. He was glad to see that we were willing to share the information about what we had done and what we had learned. He thought the Network might provide a focal point for information as a source of competency, training, and research.

He does strategic planning. CECI has been in Mali for 20 years. The management is all Malian with a Canadian who oversees the whole of West Africa from Dakar. CECI is working in

- Health & nutrition
- Agriculture & rural development. A primary focus is to promote a number of commodities
  - Rice
  - Shea
  - Potatoes
  - Cereal – Sorghum, millet,

He says they work on irrigation, transformation (processing), conservation, and marketing. Shea butter requires extensive processing.

He recently attended a meeting of various governments, NGOS, and civil societies to discuss Food Security and Quantity of food needed. Food security is defined as ensuring enough food that is not contaminated and of high nutrition. It includes stability of food sources. He mentioned that the North doesn't produce enough food for the people. About 75-80% of Malians derive their income from agriculture. Productivity is flat – more land is used to produce enough for the greater demand. So there is more extensive agriculture and they need to be more intensive in their farming.

We talked about the large Canadian project PAFA – \$14 Million but it may be increased to \$18 Million. It is a 7 year project and Soulymane was able to give Ernie the 40 pages summary of the plan.

The project is focused on technical assistance and he would like to see more implementation. There seems to be a gap between funding for research and for implementation. This may be a role for the Network. The Network might be able to work with smaller donors in the US for something like a “adopt a village” in which funds are provided for solar dryers or something.

Al Assane Sanago, Director of CECI Mali then joined us. To his mind, the two major problems with Shea butter are conservation and quality. CECI were trying to develop a standardized list of quality requirements for testing and export. The volunteer had to

leave before finishing. Shea used to sell for 125 CFA for a Kilo, now is 600 CFA for 100 grams. And people pay \$40 for small jar in Canada. The director would like to get more of that export value to the Malian producers.

We visited IER, met with Madame Gamby and paid the mileage for the car. The total was 196,500 CFA for 3 days of travel. This is less than renting a car and driver from Karen at Toguna Tours. Her cost is 67,000 CFA per day plus gas and usually a tip for the driver. In addition, we were able to take Aissata and Abdoulaye with us to Zantiebouyou because Abdoulaye was our driver. Madame Gamby wished us well in our mission and urged Belco and the Network to keep up the momentum they have gained from this visit.

We had lunch at La Gamelle with Belco, Aissata and Sidy.

We met the Director of IPR at the annex in Bamako. He wished us well and wanted us to be careful and to think about unintended consequences.

### **Debriefing with Belco, Aissata and Sidy**

We each took turns talking about what we see for the network.

Ernie started explaining that he saw two levels of our work. He thought the UST faculty could work with the Network as faculty-faculty to write-up the plan and use that for publication. He might be able to get his graduate students working on this during the upcoming Spring term. He also thought that Shea looks like the project we should focus on for students for next year.

Belco wants to submit something to USAID soon. He explained to Aissata and Sidy what Jean Harman had said about wanting to know the Network's immediate needs. We talked about our meeting with Jean and how encouraging she had been. She had told us to talk with Jean-Francois Gay at IIG about used office equipment. She also would like to see a business plan that addresses the issue of obtaining self-sufficiency.

His immediate needs are to write-up a list of items needed and send that list to Jean-Francois Gay at IIG.

He would like our help in writing up something for Jean Harman. He would also like to get started on the business plan.

Jane mentioned her upcoming sabbatical and that she didn't have immediate ideas for involving accounting students. Their involvement might be a natural follow-up in 2010.

Susan has thought about how sociology students might be involved. One idea might be in helping the Network implement some of the ideas others have developed for improving the quality of Shea butter. For example, students might help organize US communities to "adopt a village" to build a solar dryer for the nuts.

Aissata wants to have something concrete to accomplish in the first year. The farmers need a method to determine the quality of Shea butter in the village without sending samples to a lab.

She sees all three projects as important and interrelated. The Shea producers and the Seed potato farmers need cooling for their products. The evaporative cooler might be useful for Shea as is but the Seed potatoes need to be cooled to 5 degrees Celsius.

Mali needs a national coordinator for Shea butter and the Seed Potato projects needs to get a lot of education to farmers. She would also like a socioeconomic study about introducing seed potato production in a village.

Ashley thinks the network needs to figure out who they are before they can determine what to do. This led to a discussion of the type of organization they can be without jeopardizing their employment at IER and IPR.

Sidy agreed that the Network needs to determine the type of institution it will be. He also felt the need to take some action. He has met with the Coulibaly professors at ENI who work with the cooler. They said they can produce the coolers at ENI with local materials except for the motor and the fan. Haruna Coulibaly is leaving for Dakar for 10 days. After he returns, Sidy will be able to determine more precisely the needs for this project.

We ended the meeting and learned the work Yafama – this means forgive me if I have offended you in any way. Malian say this often to ensure any tensions can be resolved. So we all said Yafama to each other. Hopefully, this will help us to continue to work together and move the project forward.

## APPENDIX A CONTACTS

### Network Members (and their areas of specialization)

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- Abdoulaye Camara [Camarablo@yahoo.fr](mailto:Camarablo@yahoo.fr) – Microbiologist, Seed Potato (soil quality), non-tenured scientist at IER with Mme Gamby.

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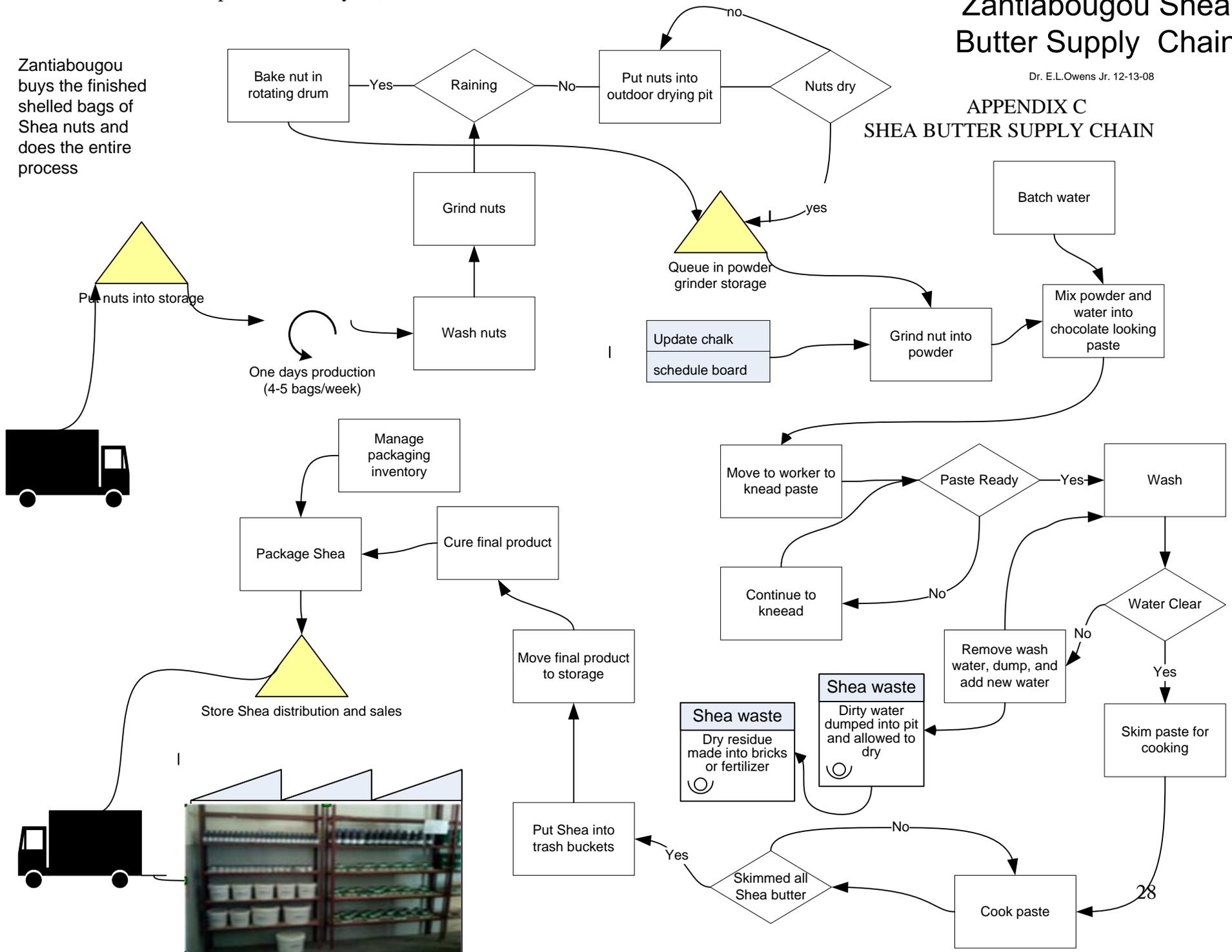
APPENDIX B  
NETWORK BUSINESS PLAN  
(To be added)

# Zantiabougou Shea Butter Supply Chain

Dr. E.L.Owens Jr. 12-13-08

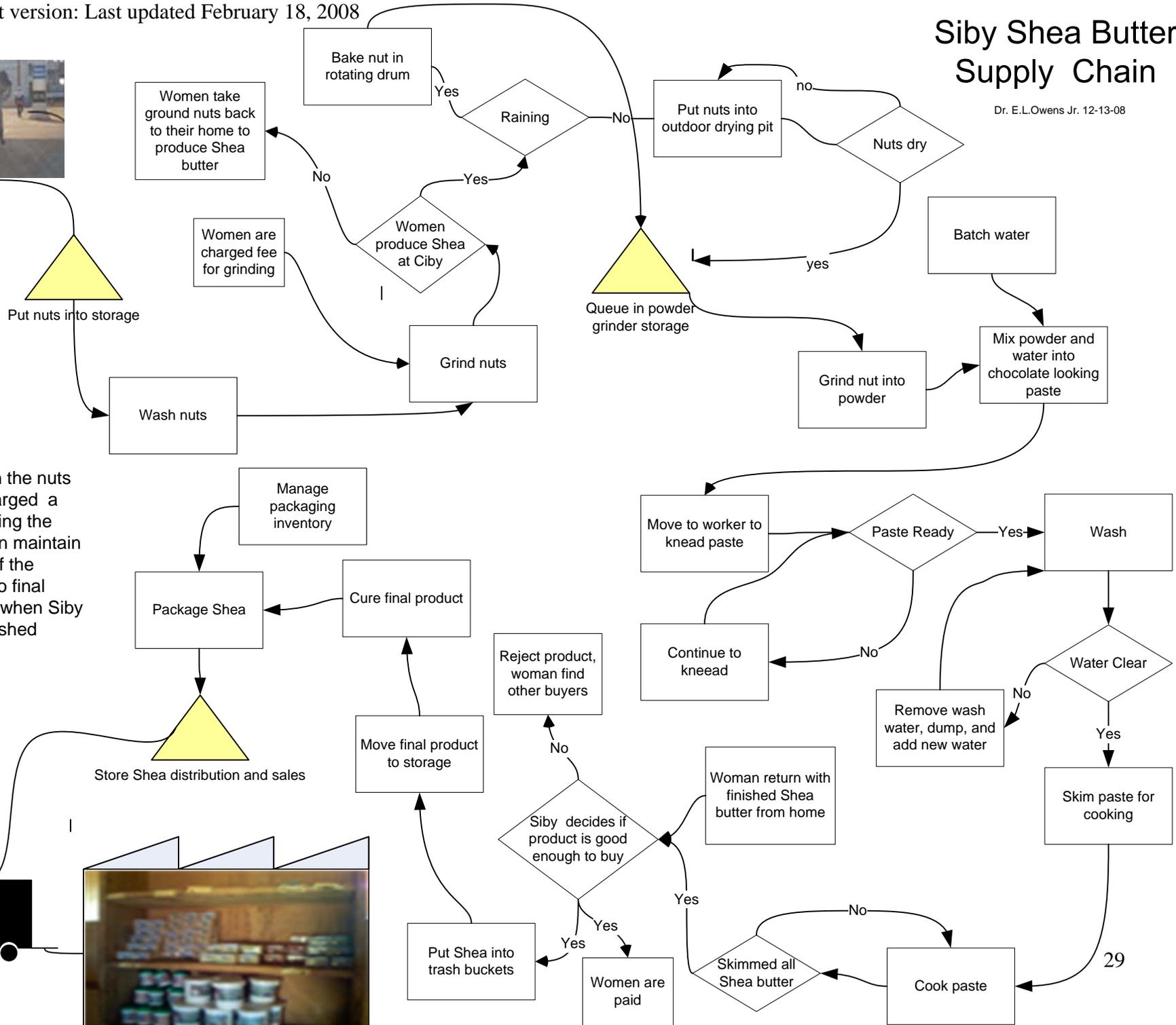
## APPENDIX C SHEA BUTTER SUPPLY CHAIN

Zantiabougou buys the finished shelled bags of Shea nuts and does the entire process

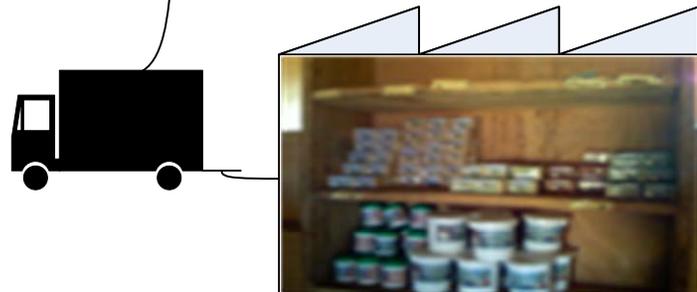


# Siby Shea Butter Supply Chain

Dr. E.L.Owens Jr. 12-13-08



Women own the nuts and are charged a fee for grinding the nuts. Women maintain ownership of the product up to final Shea butter when Siby buys the finished product.



# Nut Gathering Process

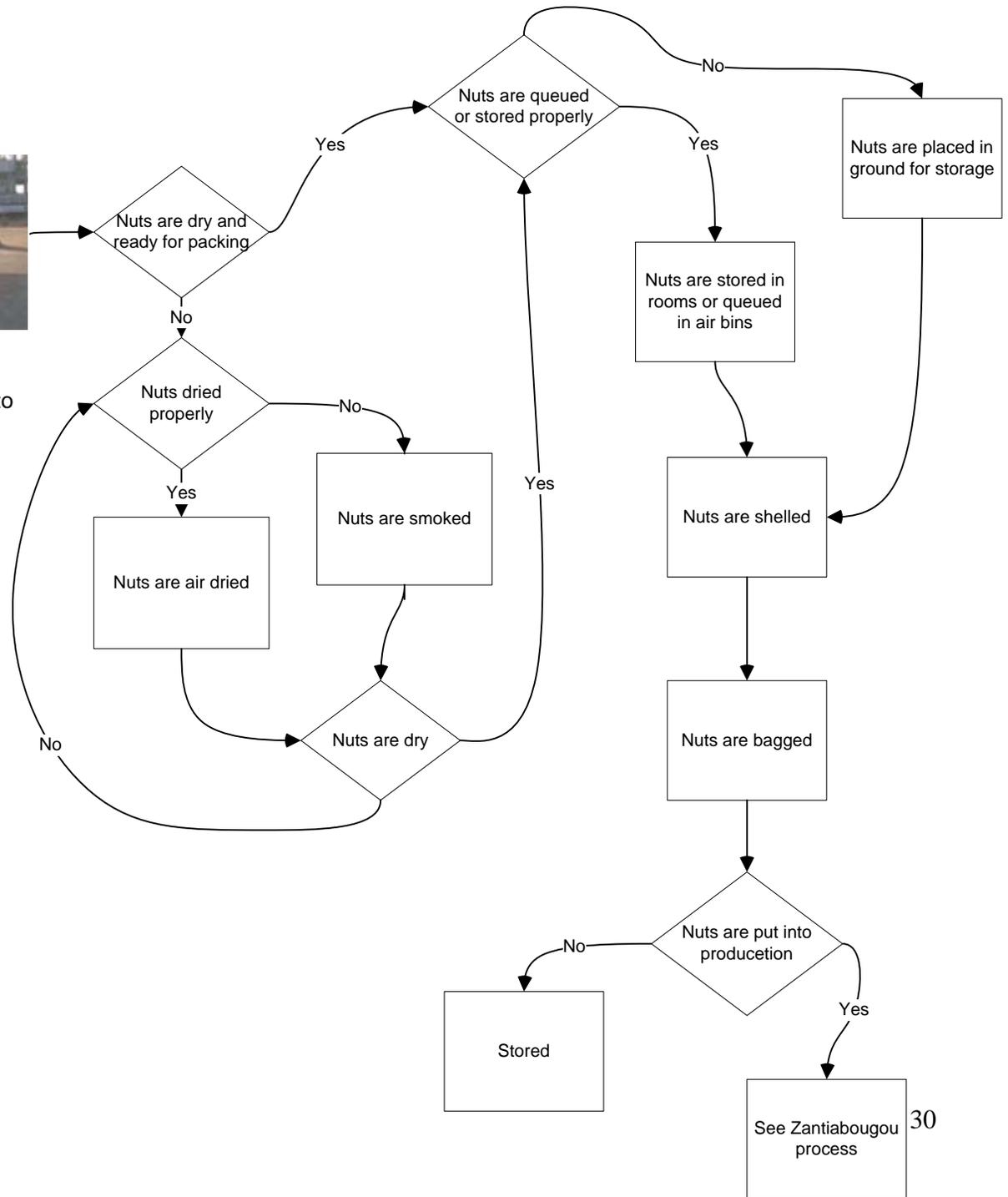


Nuts must drop from tree naturally



Nuts are hand picked and carried to commune

Dr. E.L.Owens Jr. 12-13-08



Comparative Assessment

Topic \ Location	Zantiebougou	Siby	Diolla
Cost structure	Communes buys nuts and owns process completely. Revenue from, Shea is reinvested back into communes and women draw income and profits from entire process.	Communes does not take ownership of nuts, rather they charge women to use their grinder. Women do not have to pay to produce Shea on sight at Siby. Siby buys the finished product from women either after production at Siby or their home location. Sales are reinvested into commune.	We did not go to Diolla but Bouazza Mache from CECI shared with us that women are given money by the commune to purchase nuts. Women then process the Shea or deliver the nuts to Diolla's more automated process. Once women finish producing the Shea Diolla buys the finished product giving the women their profit. Final profits from sales-to-market are invested back into Diolla. Peace core and NGO's who help in the process draw no revenue.
Quality Issues	Smoking nuts are not as much of a problem since Zantiebougou buys and store packaged nuts.	Local commune members who collect nuts may store them in ground or smoke the nuts and the poor quality nuts may be detected only through inspection of final product. If the local vendor of nut bring the nuts to process at Siby , the commune process owners can inspect the nuts before grinding and catch defectives nuts.	Since women buy their nuts for the commune, there may be a good chance that smoked nuts could enter the supply chain. We did not see this process.  The Shea we saw seemed to be of similar quality to Zantiebougou and Siby based on our visual inspection so they most likely are using quality nuts.

			Diolla has a preferred processing method that all producers use. If they produce under Diolla supervision, the product is Kajole+ and commands a higher price.
Governance	Commune seems to be self sufficient with total control of supply chain	Siby has a mixed governance process of supply chain. Local women are given preferred vendor status over what they supply to Siby based on their training and past performance. Final inspection of Shea is control by a buying committee.	Women are paid by Diolla money to purchase and control nuts. Therefore they act as agents for Diolla and control the quality of the nuts. We assume this allows more people to produce Shea and if the output is not good they may not get more money to procure nuts. Diolla does not take ownership of the raw materials until final production where they pay the women and they own all assets.
Supply Chain	Zantieboucou only buys seed which have been shelled in large sacks. They own the entire process and profits.	Women gather nuts and this is a weakness in their systems since women can only gather small quantities from the field. Siby is looking for more efficient ways to increase quantities from the field.	We did not see this process so this may also be a mixed model distribution process.

Next Steps:

The network agreed to work this semester with Ernie to produce a series of project assessments on the Shea initiative. Ernie will use his masters in project management course to create four or five teams to look at the operations, distributions, marketing, quality, and governance issues with Shea. Student teams will complete an in depth projects assessment which will be reviewed about 2/3 way through the semester by Ashley, Jane, Sue, and the Mali team for feedback. Final assessments will be rolled by the complete UST

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Mali Network team May – June. Learning from this process will be used to conduct another similar assessment of the seed potato initiative fall 2008 before the UST team returns to Mali. We are aware that this is a quick response to the Shea process and is not fully flushed out but all agreed this would be a great opportunity that should be exploited.

Ernie will pull together a master project plan in MS Project to keep all stakeholders up to date.