

USDA CSREES Trip Report

Outline

**USDA Cooperative States Research Extension Education Service
(CSREES)
Higher Education Challenge Grant Program**

**New Paradigm for Discovery-Based Learning: Facilitating Bottom-
up Development by Listening to Farmers' Needs While Engaging
them in
Participatory, Holistic Thinking**

**Visited September 25 – 29, 2007
For Launching of the Mali Agribusiness Network**

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1.1. Executive Summary

The University of St. Thomas has been a partner for 3 years with Montana State University and other universities in an USDA/USAID project to help Mali with several projects.

Our undergraduate students, under the leadership of Dr. Camille George in the School of Engineering, have participated in several projects including a prototype mixer for a shea butter project, a prototype evaporative space cooler, thermal analysis of a community education center building and training in SolidWorks computer aided design (CAD) software. All of these projects are in support of projects to launch the Mali Agri-Business Network entrepreneurial incubator.

The School of Engineering at the University of St. Thomas has collaborated in these projects because of the excellent fit of their objectives with the Mission, Vision and Values of the School, allowing us to bring engineering expertise to these projects.

In addition to participating in the Kickoff of the Mali Agri-Business Network and showing our support for this Network, our goal was to engage in discussions with academic institutions in Mali and the Network leadership to identify their needs as these projects and others mature, and to explore the potential for further collaboration. In particular, we wanted to determine whether our engineering graduate students might contribute, particularly in manufacturing and supply chain planning.

The meetings, discussion and tours of facilities did indeed address these issues, and identified other areas of potential collaboration in use of distance learning for further training and for collaboration with business, marketing and communications faculty and students at St. Thomas.

1.2. Objectives of Visit

The objectives of this visit were as follows.

- The primary objective was to represent the School of Engineering at the University of St. Thomas in the Mali Agri-Business Network Kickoff event.
- Additional objectives were to
 - Meet with shea butter coop leaders and the shea butter processing.
 - Meet with academic leaders in IPR (Institute Polytechnique Rural) and ENI (Ecole Nationale D'Ingenieurs) to discuss how UST might partner with them.
 - Met with Mali Agri-Business Network leaders to discuss their challenges in making the Entrepreneurial Incubator successful.

1.3. Accomplishments of Objectives (By objectives what was accomplished)

All objectives were accomplished.

- I participated in the Kickoff, providing support with posters of our projects, prepared by Dr. Camille George, for viewing by attendees. I attended all Kickoff events and met the attendees. The Kickoff was well attended by many stakeholders including government agencies such as USAID Mali, Malian farmers, educators and media (TV coverage.)
- I participated with a group that traveled to the shea butter cooperative in Zantiebouyou, observed each step of their shea butter processing and discussed the challenges in production, quality and marketing.
- I met with the academic leaders of IPR and ENI, as well as ECICA (Ecole Centrale pour L'Industrie le, Commerce et L'Aministration), the secondary level technical school. Tours of their labs and shops were provided at each site, and we discussed the interests of each in future collaboration.
- WE had many discussions, formal and informal, with the Network leaders about the key issues for a successful incubator.

1.4. Journal (a daily log of what was done, visits, meetings, cultural experiences, other things related to visit objectives or helpful information for the faculty and students who will follow you here to Mali.)

Tuesday September 25, 2007

- **Discussion with she butter cooperative association women in Zantiebouyou**

Led by Dr. Florence Dunkel, we drove to Zantiebouyou to meet with the shea butter cooperative members and talked about the structure of the coop. The visiting team consisted of Florence, Ada Giusti, Nancy Beckage, Assa Kante, Bob Diggs, Keriba Coulibaly and Ron Bennett. We met with Mariam Ouatarra, Djeneba Sangare, Drissa Sow and other members of the coop.

We saw each step of shea butter processing in detail, converting the shea nuts into shea butter. The process is quite labor intensive, but the coop leaders feel this is needed to get the highest quality. We discussed alternative processing methods, such as cold pressing to extract the oil. One coop member noted that the Agri=Business Network (they use the term Center rather than Network) creates a **structure**, not just a project, upon which the business can be built.

Key areas of discussion were

- Quality of the product
- Markets, and marketing, for the product
- Diversification into product line extensions

Several points came out during the discussion. The coops do exchange visits with other coops. They expressed a need for training and equipment on which to train. I was impressed with the initiative of the leaders of this coop, the holistic thinking (e.g. the health of the Karite trees), the entrepreneurial spirit and interest in continuous improvement, and their interest in collaborating with the Network.

Some of the issues the coop will need to address to improve quality, increase production and expand marketing will be:

- Establishing standards for quality
- Analyze production and determine how time is currently spent in order to determine how best to increase production
- Identify what the market is for shea butter and associated products, and what the key advantages are of their particular product to position in the market
- Establishing the infrastructure for distribution
- Overall, to develop a comprehensive business plan and determine what resources are needed to implement the plan.

Wednesday September 26, 2007

- **Meeting at IPR (Institute Polytechnique Rural)**

Sidy Ba and I drove to IPR. There we met with Director Fafre Samake, Associate Director Mamoudou Seydou Traore, Belco Tamboura and many others. (Sidy, do you have a list of names, titles, email addresses? Some of the others are: Mamadou Sangare, head of the dept. of water resources and forest (GREF); Lassine Soumano, prof in the dept. of GREF; N'Thio Sanogo, head of the dept. of Agronomy; Adama Berthe, network leader;)

Director Samake gave us a history of the school. It was founded in 1897 and became a "classical" school in 1952. It followed the French model of education before Malian Independence in 1960. In 1962, it was restructured more on the USSR model, and focused on agriculture. In 1995 it changed to a comprehensive rural development school with a mission of research, training students and outreach.

There are four departments: 1) agronomy, 2) water resources, forests and rural development, 3) animal science and 4) social and economic science. IPR provides three levels of training: 1) a 2 year post secondary education (like a community college); 2) a 4 year undergraduate degree and 3) a 5 year engineering program in partnership with ENI in Bamako.

Reduced from approximately 3,000 students in 1995, the school now has 500 students and 125 faculty. Graduates were not working in their specialty, but rather in law, medicine, etc., so they underwent a Structural Adjustment Program (SAP) with World Bank involvement.

IPR has 380 hectares (hectare = 10,000 square meters or about 2.5 acres/hectare) under cultivation for agricultural research. They also have a center for short courses in continuing education.

IPR has or has had, partnerships with many other institutions, including: University of Turin, Italy; a school in Dijon France; a Russian school; Michigan State University; an agricultural school in the Netherlands – Lareschstein (sp?); Montana State University; and several NGOs.

We toured the campus and saw the labs/workshops in food processing (juice, drying, canning), machine shop (welding primarily) and a wood shop (sawmill, plane, etc). The labs had minimal equipment. Students were not there since classes begin in October.

We also toured the agricultural areas of crops (corn, maize, sorghum), fruit trees (lemon, lime, mango) and animals (cows, pigs and chickens).

The people at IPR were very hospitable and seemed to enjoy our visit. They thanked us for our help, especially CAD program SolidWorks. They seem to want to work with us in the future.

- **Meeting at IER (Institute Economique Rural)**

Sidy Ba and I then drove to IER on the other side (west) of Bamako. The person who was supposed to meet us had left earlier. Most everything was closed up. However, Keffe Traore, and IER employee, did show us around.

Again, there was little equipment and no activity. We asked about the lack of activity and were told that the site has been inactive while they go through “reorganization”. They are waiting on a government policy on agricultural mechanization. We asked how long this had been going on, and was told 15 years. The few people still at the site are involved in some training for the cotton industry.

Thursday September 27, 2007

- **Mali=Agribusiness Network Kickoff Event at ENI**

I went early to ENI to put up posters and help Dr. Florence Dunkel with setting up for the event. The event went well in my opinion, with a broad range of stakeholders participating, from Network people to farmers, government people and media. (Florence has the complete

attendance list.) The Network leaders were there: Belco Tamboura, Aissata Thera, Assa Kante, Keriba Coulibaly, Abdoulaye Camara, Adama Berthe and Sidy Ba.

Highlights of the Kickoff, again from my perspective, were:

- The opening of the Kickoff, with greetings from leaders of ENI, IPR and IER. They expressed thanks for the Americans being there, saying it showed that we care about Mali.
- Belco Tamboura discussed the Mission of the Network (they prefer to call it a “Center”). He listed the elements of the Mission
 - Improved quality of life for small-scale Malian farmers
 - Sustainable, scalable, replicable
 - Holistic
 - Participatory
 - Farmer knowledge valued
 - Fee-for-services/No foreign aid
 - Of Malians, for Malians, by Malians
- Belco mentioned a couple of projects: disease resistant potatoes and shea butter
- No details on how the Network would work were given
- The new “Center” would find markets and link to micro-financing, etc. Five products were mentioned: rice, mangos, shallots, tomatoes and potatoes
- Each member of the Network gave brief presentations of their training at Montana State University, University of St. Thomas, etc.
- Several farmers attended and were introduced by Florence. One woman farmer talked about her interests in the cooler and shea mixer, raising shea quality and mixing shea with other ingredients to raise value
- Sidy Ba mentioned that UST would be working on manufacturing capability and supply chain for the cooler. It was also mentioned that research will be done on quality of hand vs. mechanical mixing. At a farmer request, MSU is developing a quality test kit.
- Offers of support by attending organizations were made.
- The Keynote speaker, Dr. George Ayittey, was a highlight as well. Dr. Ayittey, a native of Ghana, is the author of “Africa Unchained”. His basic thesis is that Africa has the ability to be economically successful, but that a more entrepreneurial approach is needed, led by innovative Africans he calls “Cheetahs”. Several points from his speech were:
 - Agriculture is important to Africa, but it has been neglected. At one time Africa exported agricultural products, but now is a net importer.
 - 70% of Africa’s farmers are women.
 - There is a shortage of labor for harvesting.
 - Transportation is a weak link.
 - Storage is a problem.
 - He talked about the notion of a chain: production-harvesting-storage-transportation-market. Breaks in the chain represent problems, but more importantly, opportunities.
 - Dr. Ayittey discussed his projects in Ghana. Cheetah Huts for better marketing of products and a palm oil cooperative. No government is involved in either.

- He suggested Malians take the same approach with shea butter; fix breaks in the chain.
- There is wealth in the agricultural sector that can be tapped by young entrepreneurs: Real Wealth Creation.
- He noted the richest people in Africa are in government: what did they create?
- He noted that Cheetah's are young, dynamic African entrepreneurs, and that we are launching a Cheetah group this morning.
- He admonished the Network to create a success story early.
- He closed by saying that the keys to success in Africa are agriculture and education, and that not enough attention has been paid to either, noting specifically vocational education.

Friday September 28, 2007

- **Meeting with a group from EPR, ENI and IER**

Sidy Ba and I met with a group of 15 individuals from the above organizations, including their leaders.

I began with a PowerPoint presentation prepared by Dr. Camille George titled "Capacity Building in Mali" that described the School of Engineering Mission, reasons for collaboration, what we have done to date and ideas for future collaboration. We asked what they needed and wanted, that we have a strong interest in helping, but our ability to deliver is tempered by the facts that we are a small school with limited resources with part-time working adult graduate students.

The group was very well prepared for responding to an earlier communication from St. Thomas. They began by giving feedback on the four projects on which we have worked, saying:

- SolidWorks CAD software. They would like an online course to train them (particularly a point person) in its use. They have need of computer equipment and a network that will allow them to take advantage of its capabilities.
- Evaporative Cooler. They are very interested in getting the assistance of our Master degree students in manufacturing and supply chain issues.
- Shea butter mixer. They want help in improving the prototype.
- Internships. They would like to see exchange opportunities.

They also had a list of future projects they would like to work on with us.

- Improved grinders and alternative energy sources: solar, biodiesel, manpower.
- Processing of dried grasses to make it grain-like for animal feed.
- Automated method of de-husking corn. Design smaller machine than is now commercially available.

- Setting up an extraction metallurgy lab related to mining (gold, iron, uranium, phosphates, bauxite, etc).
- Pharmaceutical pill encapsulation of traditional medicines extracted from plants.

They also asked us if we could arrange to send the solar pasteurizer designed by our Senior Design Clinic to ENI, or provide the parts and instructions to build another one.

I thanked them for the excellent input, and said I would take the following actions:

- Write a report and circulate to all at UST, including the team involving the College of Business who will be working on the Mali projects.
- Contact our graduate students with these opportunities.
- Contact the team coming to Mali early next year and share this knowledge.
- Communicate responses to them through Sidy Ba.

The entire group was then offered a tour of their labs.

- Motor/generator lab
- Electrical controls lab
- Mechanical testing lab
- Machine shop

- **Visit to ECICA**

In the afternoon, Professor Kante arranged a meeting and tour at the Ecole Centrale d'Industrie de Commerce et d'Administration (ECICA), a vocational secondary school near ENI. There I met with their Directeur General, Famolo Traore, who gave a briefing on ECICA.

ECICA was founded in 1969 to provide vocational education for grades 10-12 in masonry, construction, hydraulics, electronics, pneumatics, electrical maintenance, geology, chemistry, topography, accounting and office administration. They have some international students from Nigeria, Togo and other countries as well as Malians. They serve 3,500 students with 242 faculty.

Mr. Traore said their greatest challenge was fitting their programs to jobs. I asked if they had an Industry Advisory Board. They don't, nor do they do follow-up on how students are employed. I suggested that they consider some kind of Industry Advisory Board to help them identify objectives to fit their curriculum to the needs of the employers.

We then toured the labs: metal bending, welding, pneumatics, hydraulics, masonry, etc. I was particularly interested in their capacity to help train students to build the evaporative cooler. I believe they could support this activity.

1.5. List of Persons Met (complete name with correct spelling, their title, organization, e-mail)

Tuesday September 25, 2007

- **Discussion with she butter cooperative association women in Zantiebouyou**

Dr. Florence Dunkel	Professor of Entomology, MSU	ueyfd@montana.edu
Dr. Ada Giusti	Associate Professor of French, MSU	umlag@montana.edu
Dr. Nancy Beckage	Professor, Cal State U, Riverside	
Bob Diggs	Professor of Management, MSU	diggs@montana.edu
Assa Kante	Network leader	assa_diarra_kante@hotmail.com
Keriba Coulibaly	Network leader	keribacoulibaly2005@yahoo.fr
Ronald Bennett	Dean, UST School of Engineering	rjbennett@stthomas.edu
Mariam Ouatarra	Coop leader	
Djeneba Sangare	Coop member	
Drissa Sow	Coop member	

Wednesday September 26, 2007

- **Meeting at IPR (Institute Polytechnique Rural)**

Sidy Ba	TA hydraulics	IPR	sidyhba@yahoo.fr
Fafre Samake	Director	IPR	samfafre@yahoo.fr
Mamoudou Seydou	Traore Assoc. Director	IPR	mamoudoutraose@yahoo.fr
Belco Tamboura	Network leader	IPR	btamboura@caramail.com
Ron Bennett	Dean	UST	rjbennett@stthomas.edu
Mamadou Sangare	Head of GREF	IPR	
N'Thio Sanogo,	head of the dept. of Agronomy		
Lassine Soumano	prof.	IPR	lsno2002@yahoo.fr
Adama Berthe	Network leader	IPR	adamabert2003@yahoo.fr

Sidy, can you fill in the others??

- **Meeting at IER (Institute Economique Rural)**

Ron Bennett	
Sidy Ba	
Keffe Traore	No details

Thursday September 27, 2007

- **Mali Agribusiness Network Kickoff Event at ENI**

See list from Dr. Florence Dunkel

Friday September 28, 2007

Meeting with a group from EPR, ENI and IER

Ron Bennett

Sidy Ba

Fafre Samake

Lassine Diarra

Moussa Kante

Mamadou Sangare

Lassine Soumano

Daouda Coulibaly

Famouke Traore

Ousmane Soumaoro

Souleymane Diallo

Kalilou Sidibe

Moussa Magara Traore

Alhassane Boncana

Mamoudou Seydou Traore

Adama Berthe

Arona Coulibaly

Dean, IPR

IER

Director General, ENI

IPR

IPR/IFRA

ENI-ABT

ENI-ABT

ENI-ABET

IPR-IFRA

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As required, a draft was completed before leaving the country. The electronic version was given to Dr. Kadiatou Gamby and the US project director (Dunkel) and UST's P.I. (Camille George). A hard copy of the Executive Summary was given to USAID-Mali Accelerated Economic Growth Group (AEG).