GUYANA MILK QUALITY
Dr. Richard Otto Wiegand
Farmer-To-Farmer Program
Partners of The Americas
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Summary

Three training sessions with farmers, students and Ministry of Agriculture staff were held to discuss milk quality. Agriculture students were present at two of the locations that were at secondary schools. Total attendees at the meetings included approximately 15 farmers, 40-50 students and 12 staff. Field visits were made to approximately 20 dairy farms, two citrus producers, the NARI Intermediate Savannah Research Station (beef, sheep and goats, citrus and field crops), the Moogoodies Food Company milk plant and the St. Stanislaus College Farm. Other types of agriculture observed from a distance included beef, bananas, large rice and sugarcane holdings, and rice, sugar and flour milling. A wrap-up meeting was held at The International Institute for Cooperation in Agriculture (IICA).

According to officials interviewed, at least 95% of dairy products consumed in Guyana are imported, amounting to US$40 million in 2004. Moogoodies is the only dairy processing plant in the country and it only handles about 70 gallons of milk per day. The remainder of milk produced in Guyana is delivered as raw milk. A number of previous dairy cooperative and processing ventures, both government and private, have come and gone. The dairy industry in Guyana has never been strong, but is now probably at a low point.

Milk quality was discussed largely in the abstract because quality is measured only minimally. Milk collected by Moogoodies is tested for added water and bacteria before processing. Raw milk sold directly by farmers to consumers is usually boiled before used, although some consumers preferred it raw. There are no measurements for somatic cells, components or antibiotics and no premiums paid to farmers. Most dairy herds are under 10 cows. Many herds are kept within urban areas. Virtually all milking is done by hand. Average production per cow does not exceed a gallon or two per day. The price for raw milk in urban areas is much higher than that paid by Moogoodies, so there is little incentive to sell to the plant.

A considerable amount of time on the project was spent discussing the dairy industry as a whole. Most farmers don't own their land, but lease it from government. Previous processing ventures resulted in some poor quality milk being marketed, so consumers have little faith in the local product. Younger consumers have gotten used to drinking imported powdered milk. Guyana has signed the World Trade Organization (WTO) agreement. Beef farmers will opportunistically milk their cows (crossbreds) if there is a market for milk. Forages for dairy cows are largely antelope grass on the coast and brachiaria in the interior. Virtually no legumes are grown for cows. There is no stored

feed like hay or silage. Feed by-products are fed to dairy cows to some extent, but there is no formal ration. Both artificial insemination (AI) and bulls are used. Guyana not longer imports livestock, so genetic improvement is made largely through AI. Agricultural and consumer market data don't exist or are hard to find. Many agricultural extension positions are unfilled and the extension service is not well supported.

A number of recommendations were made at the wrap-up. Farmers should be given title to land so they have more incentive to invest and can move cattle out of urban areas. A homestead program similar to that used in Brasil may be used to settle open and unpopulated areas. Infrastructure including roads and communications is lacking in many parts of the country and should be a priority. Government may have to accept that in order to have a significant dairy industry it may have to invest at a loss for the long term. WTO does allow for some protection of the industry, so tariffs could be imposed on imports with those revenues used to build the industry. Farmer cooperatives could be formed around milk collection centers like they are in several other countries. An agricultural census and a market survey are needed. The extension services need to be improved. Extension may be the subject of upcoming FTF volunteer projects.

Project Specifications

ASSIGNMENT PURPOSE

To expose farmers to the techniques of producing raw milk of higher quality in order to enable the processing of a final stable product of equivalent high quality.

To achieve the purpose, the Volunteer would:

1. Discuss issues with management of the Guyana Dairy Development Project (GDDP) and Moogoodies Food Company (MFC), the only functioning dairy plant.
2. Hold discussions with major collaborators to the GDDP such as Inter-American Institute for Cooperation on Development (IICA), National Dairy Development Project (NDDP), St. Stanislaus College Farm (SSCF) as well as with District Cattle Farmers Associations, Ministry of Health (Food and Drug Department) and National Agricultural Research Institute (NARI).
3. Visit a sample of dairy farms and hold discussions with farmers individually and collectively.
4. Hold four Regional level seminars.

EXPECTED RESULTS OF THE ASSIGNMENT·

1. Milk producers exposed to / trained in good milking techniques and hygiene.
2. At least 60 dairy farmers in Regions 2, 3, 4, 5, 6 and 10 exposed to calf management, feeding and nutrition basic health care, heat detection and breeding.
3. Identification of profiles for future Farmer to Farmer volunteers.

Conversion: G$200 = US$1

Dairy Situation

The dairy industry in Guyana is suffering from a number of challenges. Most dairy farms lie within the narrow coastal strip of black clay soil that is only 10-25 miles wide. The strip is about six feet below sea level and survives only because a 260-mile long sea wall originally built by the Dutch keeps the ocean out. Dairy competes for space within the strip with sugarcane and rice, Guyana's two largest agricultural exports. Dairy also competes within the strip with urbanization. Approximately 90% of the country's population lives along the coast that includes the capital Georgetown, New Amsterdam and Rose Hall, three of Guyana's four largest cities. About 99% of the milk produced in Guyana is produced within the strip. Most of that milk is produced in backyard herds within urban areas. A government news report on Nov. 27, 2006 stated that cows would be eventually removed from urban areas because they posed accident and health risks. Current law discriminates against cows in the city. Owners of cows involved in auto accidents must pay all damages. Unattended cows are impounded by the police at a cost of G$1500 per animal.

The dairy industry further suffers from a damaged reputation among both dairy producers and consumers as a result of previous failed cooperative and processing ventures. The Mahaica/Mahaicony dairy cooperative and milk plant at Dantzig failed after only two years as reported by Partners/FTF volunteer Daniel Baker in 2004. The government-established Lidco project at Moblissa, featuring a milk plant and milking parlor, went out of business in 1995 after 20 years of operation. The NARI Intermediate Savannah Field Station visted at Enini produced milk for 90 employees and the National Youth Service camp nearby for several years until the Youth Service was disbanded. At least two processing plants terminated operations after the disastrous 2005 flood in Georgetown casued by heavy rains and breaches in the sea wall. The Moogoodies Food Company is the only milk processor left in the country. It processes 70 gallons of milk per day and is currently a month or more behind on payments to its farmers. The combined farm cooperative and milk processing failures have caused producers to lose money and faith in dairy industry institutions. Consumers were turned away by inferior products and an inconsistent and inadequate supply.

Since free trade (WTO), the Guyana dairy industry has had to compete with low-price dairy imports from the Caribbean region, the US, New Zealand and elsewhere. Older Guyanese do not like the taste of milk powder, but a younger generation is already accustomed to it. Guyana imports more than 95% of its dairy products. Those imports cost Guyana US$40 million in 2004. Except for Moogoodies, all milk that is produced in Guyana reaches the market as raw milk. Dairy products were seen on grocery and quick stop shelves from New Zealand Trinidad, US, Canada, Costa Rica, Holland and France.

The Government has given agricultural priority to sugar cane and rice, sometimes straining relations with dairy farmers. Government owns much of the agricultural land. Rural farmers do not own the land they graze, so they are hesitant to invest in it. The Ministry of Agriculture (MOA) Extension Service personnel who could encourage and educate dairy farmers are underpaid, have poor operating budgets, often lose their best people to the private sector and suffer from low morale. Over 50% of extension positions are currently open. A separate Ministry institution designed to support the dairy farmers, the National Dairy Development Programme (NDDP), is smaller than the regular extension service and its members are paid less. Sugar cane and rice similarly have their own extension services.

Guyana has a low population for its size, only 750,000 people living in 83,000 square miles (area slightly smaller than Minnesota). Large parts of the interior, which begins at the edge of the coastal strip, are unsettled. The population density in the interior is only about one person per square mile. It's not that the interior is impossible to live in. But roads are few, the soil is sandy and acidic, and there aren't enough people interested to live or invest there. Most interior land is owned by government and leased to farmers for about G$25 (US 12.5 cents) per acre per year. Few foreign investors are attracted to come, or they come, look and leave. Guyana also suffers from a brain drain. Many of the native-born entrepreneurs needed to make things happen in Guyana find better jobs in the US and elsewhere. The population of Guyana has not grown in the last 20-30 years.

The hot and humid climate puts stress on dairy animals. Dairy cows are mostly Holstein-Brahman crosses with some Jersey, Brown Swiss, Guernsey and Shorthorn mixed in. Guyana fortunately does not suffer from hurricanes or earthquakes. The rainy season is bimodal with heavier rainfall from April-July and lighter rainfall from September-December. Approximately 90+ inches fall per year. The country is green and pastures grow year-round, but animals may lack forage and water in some situations.

Milk Quality

Five training sessions on milk quality and other subjects were scheduled and three were held. Unfortunately, only a few farmers attended. Two sessions were held at secondary schools, so about 40-50 secondary agriculture students attended. No projectors were available until the last meeting, so previously-prepared Power Points were not initially used. A blackboard was available for one session. Milk–quality subjects covered during the sessions included somatic cell counts, bacteria counts, types of mastitis pathogens, clinical and sub-clinical mastitis, milking technique, sanitation, milk handling, cheese yield, impacts of mastitis on udder physiology and cow longevity, milk components, antibiotics, lactose intolerance, milk replacers for calves, collostrum, milk substitutes, added water in milk, the impact of cow nutrition on production and quality, and imported milk products. Students were concerned about

cow's milk as a food for humans, including fat, protein and hormones in milk. Discussions on cattle nutrition, health care and rotational grazing were included.

The Moogoodies truck was met collecting milk at three farms in Region 5. There are no quality or component tests except for added water and bacteria. Milk is sampled every other day. As such, the training sessions on milk quality actually covered potential future quality issues. Until the processing industry, government and market require other types of tests, they won't happen.

Milking technique on the farm was generally consistent and basic. Water was used to wash the teats if cows were dirty. Calves were allowed to suck to stimulate the cow and sometimes allowed to suck out the cow after milking. Milking was done by hand sometimes using Vasoline to lubricate and protect the teats. No teat dipping was done. Cows did often get mastitis in the hot, wet conditions. The most common types were Staphs, Streps and Coliforms. Antibiotic tubes were used for treatment. Veterinarians or NDDP vet assistants were generally available. Urban farmers may have phones, rural ones generally do not.

Many of the discussions at meetings with professionals centered around policy issues. No one was sure that Guyana was actually ready for a substantive milk processing industry. Almost all dairy farmers encountered were older and closer to retirement. The dairy industry appeared to be going in the wrong direction, yet declining markets for sugar and rice as well as bauxite may be an opportunity for dairy to step up. Milk is delivered raw to the consumer without much difficulty. It is presumed that most consumers do boil the milk before using it. If they don't, health problems related to raw milk are rare or not reported. Market shortages in Guyana are made up with imported product. Opportunistic beef farmers sometimes milk their cows and sell small amounts of raw milk if price and need justify the effort. Farmer can and do respond to the right incentives.

It is possible that Guyana should not even try to process milk, but rather concentrate on improving other industries that it can do better. On the other hand, Guyana spends considerable foreign currency to import dairy products (US$40 million in 2004). Guyana has huge tracts of unutilized land in the intermediate and far interior. Much of that land has white and brown sandy soils unsuitable for many field crops, but suitable for certain types of grasses such as Brachiaria. Citrus grows well in the interior. With proper mineral supplementation, beef cattle can do well in the interior. Unfortunately, roads to many of these areas do not exist or are difficult to travel on. The Brasilians are building a bridge on the border and requesting to have a road to Georgetown in order to use the port to market their agricultural and timber products to the Caribbean. Guyana may get a road and some revenues, but may also be losing market share to Brasil in a region that Guyana should be doing a better job of supplying. The interior of the country, a source of two major exports in bauxite and timber, has been of little interest to Guyanese or foreign investors for agricultural purposes. A number of previous milk and beef ventures in the interior have gotten out of the cattle business.

Milk Economics

With no processing left to serve Georgetown after the floods, Moogoodies left its original location in New Amsterdam and took over the small plant and the Good Morning label at the St. Stanislaus College Farm. Ferry-crossing delays from New Amsterdam and transport costs were contributing factors for the move.

Moogoodies pays its 10 or so client farmers G$200 per gallon (about US$1.00) at the farm. Retail stores purchase the milk from Moogoodies for G$400 and sell it for roughly $430 per 1.8 litres (half-gallon). Even with the markup, Moogoodies is having trouble paying its farmers on time with delays often exceeding a month.

Milk peddlers in the rural areas pay the farmer G$180 per gallon, cash on the spot, and sell the raw milk door-to-door for G$40-50 per pint (G$320-400 per gallon). Farmers in the Georgetown area sell raw milk directly to consumers who come to the farm or deliver to neighbors for between G$60-70 per pint. That price equals about G$480-560 per gallon, equivalent to US$2.40-2.80 per gallon. Guyanese consumers in Georgetown are apparently willing to pay for raw milk what American consumers pay for processed milk. Some Georgetown consumers prefer raw milk for cultural reasons or taste, irregardless of the risk.

All farmers interviewed for this assignment complained that the milk price they received was too low. G$200 per gallon translates to US$11.50 per hundred pounds, equal to or slightly less than the average price for American, Dutch, Costa Rican and Honduran dairy farmers, if memory serves me right. There are huge differences in these countries, of course, in level of capitalization, production, efficiency and standard of living. However, the similarity in milk price across countries probably reflects influences of the world market. Urban Guyanese farmers who are able to sell their milk directly for G$500 per gallon receive the equivalent of US$28.75 per hundred pounds. Four of the Georgetown urban dairy farmers interviewed admitted that they were able to afford their houses because they were dairying. They milked only 6-8 cows. One had worked as an accountant for government for nine years, struggling financially during that time. He stated that he would double or triple his herd if he could find the grazing land to do it.

Farm Practices

Analyses of annual production and cost figures were collected for two Georgetown dairy farms. Both obtained about 1-2 gallons per cow per day with two milkings. Both were able and willing to provide their milking cows with rice bran, wheat middlings, copra meal (coconut), brewers grains, molasses and mineral (block) in addition to the roadside grazing in the city. Farmers can buy a maize-soy mix. Operating costs without labor comprised 60-70% of income from milk and animal sales. Urban farmers appeared to be doing relatively well in part because of their higher milk prices and in part because of better management.

Their rural counterparts measured their production in pints and got ½-1 gallon while milking once per day. Rural farmers provided middlings and mineral in addition to the grazing. Rural grazing was usually done on leased pastures that may include former rice fields. Rural cows appeared to not get adequate levels of forage, much less purchased feed. Rural dairy farmers appeared to be less well-off.

Wheat middlings are produced at a milling plant in Georgetown from wheat imported from the US. The plant has been offered a higher price for the middlings in Trinidad, but is forced by government to sell a portion to local farmers at a lower price. The following are details on the feeds. Nutrient contents are book values or estimates:

Ingredient	Cost per bag/unit	Protein	Net Energy - Mcal/kg DM
Wheat middlings	G$900 per 80 lbs	18%	1.57
Rice bran	G$800 per 70 lbs	15%?	
Copra meal	G$1200 per 70 lbs		
Maize/soy mix		25%?	1.95
Brewers grains		25%	1.50
Cane molasses	G$9000 per 45 gal.	5-10%	1.60
Mineral	G$4000 per block		
Fresh grass		10-15%	1.20-1.60

The right combination of feeds above in a ration would allow a farmer to get enough nutrients for reasonable production. Although the climate is hot and humid and fresh grass grows year round, the inaccessibility of good grazing and poor grazing practices limit milk production. Lack of protein, mineral and drinking water throughout the day are also constraints. The College Farm is getting about 25 lbs. of milk (3 gallons) per cow per day. The time and effort of hand milking probably becomes a limiting factor once milk production gets too high. The College uses a milking machine. All other farmers interviewed milked by hand and all of them did the milking themselves. There is a feed company in Guyana that produces pelleted feed. There is one private nutritionist for livestock in the country.

The St. Stanislaus College Farm is using a formal system of intensive rotational grazing introduced by Hector Munoz, a consultant from the Central American Institute of Tropical Agricultural Research (CATIE) in Costa Rica. There are 24 cattle (animal units) grazing on 12 acres divided into 28 paddocks. Rotation is daily. The principal forage species is antelope grass. The 12 milking cows produce 3 gallons each per day. Cows are supplemented with middlings, rice bran, molasses, maize & soy pellets, and mineral. A portable two-unit milking machine is used. A few of the rural dairy farmers used more than one grazing area, but no formal rotation was seen. The Farm grew a few Gliricidia legume trees as cut-and-carry forage for the cows. Leucaena was seen at the Savannah Station, around some rice fields, and along many farm and plantation roads in neighboring Suriname.

The St. Stanislaus College Farm produces earthworm compost from manure that is used for vegetables or bagged for sale. There are two large buildings containing

10,000? broiler chickens, a fish pond (tilapia), a duck pond, and various hydroponic vegetables using different mediums.

Guyana does not export or import livestock, so the nation is essentially a closed herd. There is concern about cattle movements and foot & mouth disease across the Brasilian border. There is no Johnes or mycoplasma in the country. Cattle diseases of particular concern in Guyana include TB, rabies, brucelosis and coliform mastitis.

Land Ownership

One issue that keeps coming up in discussions with farmers relates to land tenure. Farmers in the city own only the residential lot with their house. They graze around the neighborhood on roadsides or empty lots. Farmers in the rural areas also own a residential lot, but also graze their cows on land they do not own. Rural farmers often have communal leases to graze former rice fields. Because the government can decide to develop the land for other uses at anytime in spite of the lease agreement, dairy farmers are not secure. Furthermore, grazing areas in common are often abused. Some members do not control weeds and brush on their land shares and graze other shares in secret at night. Farmers who do not have title will be less inclined to establish forages, fertilize, build fences or make other improvements.

Among suggestions offered during discussions on land tenure was that a homesteading idea that has been used in the US in the past and in Brasil more recently should be enacted to enable farmers to obtain title to land, especially in lesser-populated parts of the country such as the intermediate savannah.

There is a website called Agri-Net Guyana that give statistics for agriculture, mostly for sugarcane, rice, fish and shrimp. The was little posted for livestock and nothing for dairy.

Extension Services

The Ministry of Agriculture has plans to revamp the Extension Service. It is considering bringing in a delegation of experts from the outside. The Ministry has studied models for extension used in other countries and considers the system employed in Trinidad & Tobago as a possible model. In recent years, Extension has been decentralized to better serve the Regions, but some original authority over Extension has been returned to Georgetown. The current philosophy is that Extension should be local and bottom-up rather than top-down. The connection between Extension and possible support and information from the National Agricultural Research Institute has been weak. In general, Extension has not been working well, and as mentioned above, half of current positions are open.

Extension agents may or may not be paid adequately in terms of salary, but definitely have inadequate operating budgets, especially to travel. It was stated that fuel was available for one day of travel per month. Some Extension territories are so remote that it takes hours or even days to reach them. Some areas may not even be safe.

The National Dairy Development Programme is a form of extension service that works specifically with dairy farmers. It also includes the artificial insemination services. At initial glance it appears to be reaching dairy farmers with information and services. It was the NDDP that organized dairy farm visits for my project. No general Extension Agents were seen.

The impact of Extension on milk quality, farmer organization and marketing could be strong. The Milk Money Program in Wisconsin, mentioned in talks for this project, is largely promoted and carried out by Extension field staff. The Program uses worksheets and formulas to calculate impact. There are funds for diagnostic testing of milk for pathogens, but largely it is the farmer who determines how to proceed. The important aspect of this program is the use of teams to diagnose problems and make suggestions. The Extension Agent will lead a team including the veterinarian, milk plant representative, nutritionist and farm owners and employees at four consecutive monthly meetings.

Among differences between Guyana Extension and extension services elsewhere is that in Guyana there is no tenure process for agents. Tenure raises the bar so that agents who cannot prove their worth within five years are weeded out. Tenure also gives a good agent job security within the service. Guyana agents are not paid by local or regional government, hence they may have less need to worry about accountability at a local level. Guyana extension agents are not paid well enough to keep them from jumping to the private sector and are probably not educated well enough to handle the multiple complexities of job or to explain new research ideas to farmers. Personality profiles used in other extension services indicate that most agents are people-oriented, good listeners, and good team workers, rather than sales-types or bookish academics. Guyana agents are employed by government (MOA) while extension services in the US are under the university. Extension in Wisconsin has separate agents for agriculture, youth (4-H), conservation and natural resources, and family living. There are also agents to deal with specific river watersheds, business and community development and Native American affairs. University public radio and TV are under Extension.

Recommendations

1. Milk quality and processing - The government should be willing to invest, regulate, enforce, export and operate a dairy processing industry, perhaps at a loss. The fact that farmers get a far higher price for raw milk delivered directly to the consumer is hard for a milk plant to overcome. Farmers and private investors should have the information and the legal ability they need to make decisions about their role in the industry. Under WTO, Guyana is allowed to impose some protection on its dairy industry and could use tariffs collected on imports to build a better industry. Guyana should not hesitate to hire competent, outside managers to initially run its dairy processing and distribution system. Dairy farmer cooperatives could be formed around collection centers with the processing left in the hands of government or private managers.

2. Land use and tenure – Dairy farmers need to own land now and will need to find land outside of urban areas in the not so distant future. Cows will eventually be banned from cities. A homestead arrangement similar to what was done in recent years in Brasil may open up new areas to farming. Increase availability of unused rice and sugar acreage to dairy farmers.

3. Agricultural census – One does not find much data on dairy. It is difficult to make decisions without information on what is out there. Even a survey filled out by extension and other agents working in the field can tell a lot about what is happening. Obviously, a survey of the farms themselves would be best.

4. Consumer and retail market census – There is a picture, but not a clear one, of what retailers and consumers want and how much they are willing to pay. Information on the amounts and types of dairy imports is also lacking.

5. Extension services – Extension agents need to be better supported. Standards need to be improved. More local input is needed into determining what Extension does. Agents need training. More information and training needs to get to farmers via Extension. Extension may be organized under the University rather than the Ministry.

6. Infrastructure – Roads, communications and support services are lacking in many areas.

Contacts and Agencies

Kelvin Craig – Coordinator, Farmer-to-Farmer (FTF) Program
Shaun Francis – Field Officer, FTF Program
Samantha Ramsarup – Finance Admin. Assistant, St. Stanislaus College Farm (SSCF)
Mr. Rohan – Manager, SSCF
Mohadeo Mansaram – Manager, SSCF
Dr. Nicolas Waldron – Program Director, National Dairy Development Program (NDDP)
Dr. Maxine Parris – Animal Health Specialist, IICA
Nigel Cumberbatch – Assist. Field Dir. National Agricultural Research Institute (NARI)
Smokey Floyd Benjamin – Manager, NARI Station, Ibini, Region 10
Timothy McIntosh – Managing Director, Moogoodies Food Company (MFC)
P. Reghunath – CDO/NDDP, Region 5
Mohamed Yakob – CDA/NDDP, Region 5
Cromwell Crawford – Representative, Inter-Amer. Inst. for Cooperation on Agric. (IICA)
N.O. Bersaud – CDO?/NDDP, Region 3
Aubrey Crawford - Treasurer, Guyana Partners of The Americas
Joseph Eastman – Executive Director, Guyana Partners of The Americas
Linden Stanley – CDO?/NDDP, Georgetown
Jerry LaGra – Owner/Manager, Rainforest B&B, Agricultural Consultant
Syeda Manbodh – Owner/Manager, Rainforest B&B, animal rights advocate
Nicole Fitzsimmons – Animal rights advocate
Dr. James Garner – FTF Volunteer from Arkansas in horticulture
Dr. Durward Smith – FTF Volunteer from Nebraska in food science
Dr. Bruce Means – University of Florida Ecologist in species identification
James Geenen – Country Director, US Peace Corps Guyana
Stacey Cunningham – Technical Training Officer, US Peace Corps Guyana
Malcolm @ Margaret Chan-A-Sue – Eco-Tour Operators

Timetable of Work

Sat. Nov. 18 – Arrival
Sun, Nov. 19 PM – brief tour of Georgetown with Shaun Francis
Mon. Nov. 20
- AM – Orientation at Farmer-to-Farmer office at St. Stanislaus College with Kelvin Craig, Shaun Francis
- AM – Meetings with Nigel Cumberbatch, Timothy McIntosh
- Lunch – Meeting with Dr. Nicolas Waldron
- PM – Observed milking at St. Stanislaus College Farm with Mr. Rohan
- PM – Office, Work at B&B on training seminar

Tues, Nov. 21 – AM Office
- PM – Visit with 6 farmers in Region 3 with P. Reghunath and Mohamed Yakob

Weds. Nov. 22
- AM - Visit milking and milk pickup in Region 5 at 8 farms with Shaun Francis and Linden Stanley

AM – Meeting with Cromwell Crawford at IICA
PM – Training session at Demerara West Bank Secondary School with 35 ag. students, 1 farmer, 2 staff with P. Reghunath and Mohamed Yakob

Thurs. Nov. 23
AM – Office and Lunch Meeting with 2 Partners officials
PM – Training session at Demerara East Bank School with 14 ag. students, 3 farmers, 2 staff

Fri. Nov. 24
AM – Visit to 2 dairy farmers in Georgetown with L. Stanley
PM – Office, Work on Guyana report

Sat. Nov. 25
AM – Visit at B&B with Jerry LaGra on Guyana agriculture, peanut project
PM – Work on Guyana report, Extension review

Sun. Nov. 26 PM – Lunch with Shaun Francis, work on Guyana report

Mon. Nov. 27
AM – Office, work on Guyana report
PM – Lunch with James Garner, FTF Volunteer
PM – Office, work on Guyana report
PM – Dinner with Kelvin Craig, FTF

Tues. Nov. 28
AM – Visit to 2 dairy farmers in Georgetown with L. Stanley
PM – Visit with James Greenen, Director, and Stacey Cunningham, Technical Trainer, US Peace Corps

Weds. Nov. 29
AM – Travel to Linden and Enini, Regions 6 & 10
AM – Visit to one large citrus farm in Region 10 with Nigel Cumberbatch
PM – Visit to NARI Intermediate Savannah Field Station and Enini Livestock Development Company property, Enini, Region 10

Thurs. Nov. 30
AM – Visit to NARI Intermediate Savannah Field Station, Enini, Region 10
AM – Visit to former National Youth Service camp now citrus farm, Enini
PM – Work on Guyana Report at Station

Fri. Dec. 1
AM – Road meeting with Mr. Jinks and sons, Berbice River Agro-Forestry Company, Enini, Region 10
PM – Return to Linden and Georgetown

Sat. Dec. 2 PM – Work on Guyana Report

Sun. Dec. 3 – Tour to Kaieteur Falls

Mon. Dec. 4 – Visit to 4 farmers in Moblissa, Region 10, and 2 farmers in Region 5

Tues. Dec. 5
AM – Wrap-up meeting, IICA, Georgetown (5 participants)
PM – Farmer meeting, Region 5 (12 farmers, 8 staff)

Weds-Fri. Dec. 6-8 – Travel to Suriname

Sat. Dec. 9 PM – Work on Guyana Report

Sun. Dec. 10 – Travel to US