

Revitalizing Farming on Eleuthera:

A discussion of the difficulties and recommendations to improve the current situation

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Abstract:

Due to several critical obstacles and limitations, current agriculture on Eleuthera is not environmentally or economically sustainable. This report is a compilation of the major challenges facing farmers on Eleuthera and recommendations to address them. This discussion of problems and recommendations is based on over 20 in-depth interviews with local farmers, business owners, government officials, and community organizers.

Background

The number of farmers in Eleuthera declined from 4,242 in 1978 to 1,780 in 1994. Many of Eleuthera's youth are currently unemployed. Today the Bahamas imports the vast majority of its food: \$107 million a year, 98% from the US. The expense of this food is a hardship when the poverty rate hangs at 9.3% over the country -and higher in the family islands. The Bahamian diet is unhealthy, high in fat, and includes little fresh produce. A robust agricultural economy on Eleuthera could help to solve many of these problems.

That is not to say farming in Eleuthera is easy. The land is rocky, the soils are thin, and there is little rain. Some produce rots on the vine, some gets stolen, and the island's wild dogs routinely kill goats. Nevertheless, through hard work (and often with the aid of chemical fertilizers), farmers have coaxed the land to produce a variety of vegetable and fruit crops. Most farmers, however, are making little or no profit due to many factors. The farms on Eleuthera are small to mid-size, and most of the labor is done by hand without mechanical aid. Most farmers grow the same traditional crops (tomatoes, sweet peppers, onions, pumpkins etc.) which they harvest simultaneously; the resulting surpluses reduce the demand and price of these vegetables. Also, many farmers on Eleuthera sell their produce to government packing houses, which pay low prices. Farmers can reap higher prices by selling directly to buyers on island or in Nassau, but many do not even have the ability to establish connections with off-island buyers. Further, all but the largest agricultural operations cannot consistently produce enough to supply large buyers. The cost of packing and shipping the produce, including the license to ship, is prohibitively expensive for many small farmers. Farmers in central and north Eleuthera have slightly better marketing opportunities because there are more restaurants and hotels in that part of the island that could buy their products. But South Eleuthera has almost no tourism and therefore no restaurants or markets that will pay a decent price for produce.

So why farm on Eleuthera? All the farmers interviewed enjoy farming, even if they do not make a profit. In the words of one "I believe I am on earth to till the soil. It's what I was created for... The thing that keeps us farming, it's in your blood." (D. Nixon, personal communication, January 12, 2011). There is a definite farming culture among those we interviewed, but unfortunately it does not seem sustainable. The average age of farmer on Eleuthera is 60, and few young people seem interested in taking on such difficult work for such little financial gain. However, as Revered Carl Nixon points out, "There's no money in farming, but what are you gonna do? There are no resorts anymore and no jobs, so you may as well farm. I can't afford to fish" (personal communication, January 12, 2011). And even though some farmers operate at a loss, Bishop Daniel Nixon can't imagine stopping: "We farm this land and work ourselves to death to keep it going; haven't made any money at it in a few years. We're just farming to keep ourselves alive. You might lose for five or six years, but one good season makes you smile" (personal communication, January 11, 2011). The produce goes not only to packing houses and other markets, but to friends and those who need it. Tomatoes are canned in backyards, goats are slaughtered and sold whole, and a bit of produce ends up in local markets.

The Ministry of Agriculture has not been very successful in trying to get people back to the land: there are simply too many discouragements to farmers. Eleuthera, once the breadbasket of the Bahamas, has become a place where farming is nearly impossible, so making farming viable will require much work. In this report we will detail challenges and solutions to some of these many

problems.

Methodology

The goal of this project is to present a set of recommendations to the BAIC and Ministry of Agriculture to help improve the viability and sustainability of farming on the island of Eleuthera. The qualitative data for this study was gathered by conducting in-depth interviews with 12 farmers from all areas of the island of Eleuthera. Most of the interviews were done on the individuals' farms and involved a tour of the agricultural operations. Before each interview, the subjects were informed of the goals of our project and asked for their permission to be filmed. In addition to interviewing farmers, the team conducted interviews with packing house officials, grocery store owners, a representative from the BAIC, a community organizer, a school principal, and various other community members and government officials (see the reference section on p. 27 for a complete list of interviews).

Health Profile

Bahamians suffer from a high incidence of non-communicable diseases, such as heart disease, cancer, hypertension, and diabetes. Coronary heart disease, hypertension and type II diabetes, account for 30% of all deaths globally, but such chronic non-communicable diseases account for 60% of deaths in the Bahamas (Major Campaign 2011). A growing body of evidence suggests that the prevalence of these diseases may be linked to poor diet and unhealthy lifestyle choices. The National Chronic Non-communicable Disease Survey of 1,424 persons in New Providence, Grand Bahamas and Long Island in 2006 found the following:

- 70% were overweight
- 21% had been diagnosed with high blood pressure
- 7% had been diagnosed with diabetes
- 64.5% described themselves as sedentary in leisure time
- 51% ate *less* than 1 serving of vegetables per day
- 47% ate *less* than 1 serving of fruit per day
- 33% had “fast food” 2 or more times per week
- 8.8% were current smokers

(Healthy Lifestyle Initiative 2006)

In 2010 the Government launched a program to combat obesity under the National Chronic Disease Prescription Drug Plan. This program, administered by the National Insurance Board, includes greater access to primary health care facilities for Bahamians and widespread promotion of preventative medicine ahead of curative medicine (Major Campaign).

In addition to measures to increase access to health care and medication, we recommend that reform of the Bahamian agricultural system become a top-priority strategy for stemming obesity and the prevalence of chronic non-communicable diseases in the Bahamas. For example, Eleuthera imports the majority of its food supply, and we have found that access to fresh produce on the island is generally limited by high prices and low variety. We also found that fried food is a staple in locally owned restaurants and school lunches (which are often provided by local restaurants). Increasing the viability of local agriculture should increase the accessibility of healthy food choices. On an archipelago with 12-month growing potential, every citizen should have inexpensive access to daily fruit and vegetables. The fact the 51 percent of persons on the

surveyed islands do not meet the minimum recommended vegetable intake indicates an agricultural system in desperate need of reform.

Cancer rates in the Bahamas have increased significantly over the past few decades. The World Health Organization predicts a rise in the incidence of cancers by 50 percent by the year 2020 due largely to changing lifestyles (Ride for Hope). While an unhealthy diet and lifestyle are both strong risk factors for numerous types of cancer, there is also a growing body of evidence linking higher incidences of cancer with widespread industrial chemical use (Alavanja et al). (See section “Agricultural Chemicals” on p. 6 for further discussion of the health risks associated with the chemicals commonly used in Bahamian agriculture).

Problems and Recommendations

The Problem: Agricultural Chemicals

One of the occupational hazards of farming is greater exposure such harsh chemicals due to the fact they are used heavily in insecticides, fertilizers, and weed killers. Many of the interviewed farmers used chemicals -particularly permethrin, malathion, carbaryl, and gramaxone- that are acutely toxic, neurotoxic, carcinogenic, mutagenic, and endocrine disruptive for humans (“Paraquat”, “Permethrin”, “Carbaryl”, “Malathion”). A 2002 study on the use of agricultural chemicals and risk of prostate cancer found a correlation between exposure to the insecticide permethrin and incidence of prostate cancer in individuals with a family history of the cancer (Alavanja et al). Unfortunately, few of the farmers we interviewed were aware of the possible negative health effects of the chemicals they were using in their fields. Farmer Lady Diana took some protective measures for herself but noted that many farmers do not know the proper way to apply chemicals. “I always light and let the breeze take the smoke away from me. Some people, they go home and they sweat in their clothes and they leave them on and they don’t bathe in time for bed. And when they sweat their pores open and when it absorbs, they get all this rash” (D. Thompson, personal communication, January 14, 2011).

Many pesticides also affect other economically important species like fish and bees. Most of these chemicals are used widely around the world but the limited knowledge among Eleutheran farmers on the proper usage, handling, application, and health risks of these chemicals put them, their customers, and the land in greater danger than elsewhere. Many interviewed farmers believed that the chemicals they used posed no threat to them or to the environment because “the rain comes and washes them away. I don’t think I’ll ever be able to use the amount of chemicals to get inside (F. Neely, personal communication, January 13, 2011). The permeability of the bedrock and the close proximity of the aquifers to the soil means that chemicals are likely to contaminate groundwater resources (Roebuck et al., 23). There does not appear to be any groundwater testing for pesticides, herbicides, or their chemical residues to ensure that the agricultural application of these chemicals does not contaminate the groundwater supply. (See Water Supply p. 10). Continued, uncontrolled, and unguided use of these chemicals poses a threat to the health of farmers, Bahamians and the environment.

There is little knowledge or discussion of alternative methods to address pests, such as planting to avoid peak pest populations, crop rotation, polyculture, and organic pesticides like neem oil. There is also a limited understanding of the term organic. Many of the interviewed farmers considered their farms to be organic and took pride in producing a healthier alternative to produce from the states, but then freely admitted to using pesticides and herbicides. However, organic farming is viable and alive on Eleuthera. Clyde Bethel of Island Farm in Palmetto Point farms organically using no pesticides or herbicides because “that stuff just isn’t healthy and I don’t want my kids breathing it” (C. Bethel, personal communication, January 14, 2011). He farms throughout the growing season and reports no problems with insects because “they don’t come until it gets hot and that is usually the end of our season anyway.”

Recommendations:

- **Implement regular groundwater testing**
- **Place limitations on pesticide use**
- **Provide education about the health effects of chemical herbicides and pesticides**
- **Officially define the terms “organic” and “pesticide free”**

Expanded Recommendations:

- **Implement regular groundwater testing:** Regular sampling of groundwater aquifers, drinking water supplies, and agricultural runoff for pesticides, herbicides and their chemical residues to determine current levels of contamination. This data would help assess current health risks and inform future responses (see “Water Supply” section p. 10 for more details).
- **Place limitations on pesticide use:** Limitations on the amount of or areas in which certain pesticides with environmental effects that could be used.
- **Provide Education:** The Department of Agriculture should offer workshops and sessions on the human and environmental health effects of the widely used chemical pesticides and herbicides. Training in the appropriate usage, handling techniques, and application of chemicals as well as information on alternative methods of pest management like crop rotation, polyculture, neem oil would be incredibly beneficial for farmers. Such training and information could also be made available in the form of a brochure for farmers.
- **Officially define the terms “organic” and “pesticide free:”** MAMR and the DOA should clearly define the terms “organic” and “pesticide free” in order to better monitor chemical use for the safety of consumers and growers. Eventually, a system of organic certification and labeling could be implemented.

The Problem: Chemical Fertilizer

The soil on Eleuthera, especially in the South, is poor in terms of nutrient availability and water holding capacity, so most farmers interviewed rely on heavy inputs of chemical fertilizer and often stated that it would be impossible to grow marketable produce without it because “it’s the food for the plants” (M. Miller, personal communication, January 11, 2011). Most of the farmers use 8-18-8 (eight parts Nitrogen, eight parts Potassium, 18 parts Phosphorus) fertilizer to compensate for the lack of available phosphorous, due to the alkalinity of the primarily limestone soil. Reliance on fossil fuel-based synthetic fertilizers is not financially or environmentally sustainable. Imported from the United States, this fertilizer very costly to the farmer: a 50lb bag costs between \$28-32 or \$18 if farmers are part of one of the cooperatives (M. Miller, personal communication, January 11, 2011). Ten of the twelve farmers interviewed were using chemical fertilizer (but not necessarily for all crops) and indicated that all the farmers and most home gardeners they knew also used it.

The high use of fertilizer can have detrimental impacts on the environment. Water is scarce throughout the Bahamas; on Eleuthera, the fresh water lenses not far below the surface can easily be contaminated because of the porous nature of the bedrock (Roebuck). Contamination of the aquifer would further limit water for drinking as well as for irrigation (For more information see Water Supply, p.10). The runoff of these fertilizers can also damage the coastal waters, reefs, and wetlands that play crucial roles in erosion prevention, waste treatment, and more. The excess available nutrients from the fertilizer can lead to algal blooms and eventually hypoxic or anoxic areas and dead zones. The Department of Agriculture recognizes in their Agriculture Sectoral Report for the Bahamas that the high use of inorganic fertilizers (and pesticides) pose hazards to ground water supply, but while they discuss water conservation measures and land evaluation, there is no direct discussion of alternatives to chemical fertilizers (“Agriculture Sectoral Plan,” 2009). The DOA does plan to train farmers in “Good Agricultural Practices” (GAP) as defined by the Food and Agriculture Organization of the UN. GAP includes techniques to improve the organic matter content of soil, minimize erosion, maintain soil coverage, and minimize fertilizer and chemical inputs (“Good Agricultural”).

However, to date, it appears there has been no such training, despite widespread use of these chemicals. Consequently, farmers often do not apply the fertilizer as recommended: for example, one farmer, instead of dispersing the fertilizer over an acre, “What he did? He made the hole in the ground through the paper and he took a cup, you know an eight ounce plastic cup and poured that fertilizer down in there ... and the fertilizer killed all the new ones” (D. Thompson, personal communication, January 14, 2011). Information about organic alternatives is not available, so farmers reported having no other options to using these chemicals. When asked about composting or mulching with organic matter, many of the farmers showed little or no knowledge of this practice. A few said compost makes sense for home gardens, but that there is not enough available for farms (H. Stubbs, personal communication, January 17, 2011). Others said that manure would make good fertilizer if they had it- “If we had big chicken farms like in those places we could use the chicken manure, that’s the best thing... or cow manure” (D. Thompson, personal communication, January 14, 2011).

Recommendations:

- **Compost**
- **Leave fallen leaves and pulled up weeds** on the soil to break down and help build up more soil. (E. Joseph, personal communication, January 17, 2011).
- **Collect livestock manure for fertilizer**
- **Mulch**
- **Rotate crops**

- **Plant nitrogen fixing crops**
- **Plant polycultures**
- **Plant crops that do not require added fertilizer**

Expanded Recommendations

- **Compost:** Composting is the most all-inclusive way of adding nutrients, improving soil structure, and feeding microorganisms. Clyde Ingraham's Island Farm in Hatchet Bay serves as a perfect example of how this could be done; Ingraham has composted and built his soil for six years, and can make a profit of \$250,000 in a six-month season. A settlement-wide composting system could also help farmers gather enough organic material. A compost-collection program could be a profitable small business for an enterprising individual who had a truck, perhaps with assistance from the BAIC, part of whose mission is to support small business start-up.
- **Collecting livestock manure:** Manure, especially from goats, can be a successful way for farmers to improve their soil with additional fertilization. As one farmer says, "The manure is strictly healthy- if it was possible you could even eat the manure because all you would be eating is what they eat" (D. Nixon, personal communication, January 12, 2011). The fact that goat manure is dry, pelleted, and nearly odorless makes it easier to work with than other manures, and additionally it does not burn the plant roots if directly applied (Phipps). Poultry or other livestock manure can be added to compost and then applied to fields. Also, "Fish Poop Fertilizer," distributed by the Island School at farmers' markets is high in nitrogen, phosphorus, and other nutrients. It can be easily collected from aquaculture tanks, diluted, and applied to fields. Alternatively, as one farmer said, "the old people would go to the caves and get bat manure because the bat manure is good, is hot" (D. Nixon, personal communications, January 12, 2011) and another referenced "cave dirt" as another cheaper, natural method of fertilizer (C. Strachan, personal communication, January 17, 2011).
- **Mulching:** Mulching around plants can also help retain moisture, prevent weeds, and protect the soil. Some options include reusable plastic mulch or fabric sheeting; One farmer in North Eleuthera swears by reusable plastic for growing pineapples, tomatoes, and other crops- "It's the best thing that ever happened to me... it knocks off one third your expense" (D. Thompson, personal communication, January 14, 2011). However, this plastic will end up in the dump or being burned eventually and there are alternatives which would simply break down, including corn-based BioTelo biodegradable plastic mulch film, sold by Dubois Agrinovation in Canada ("Compostable"), Eco-One biodegradable plastic mulch (Marvel), and Ken-Bar's Planters Paper Mulch which functions like black plastic cover but will also degrade ("Ken-Bar's"). Another mulch option is seaweed, which is readily available and easy to collect from beaches -after it rains so the salt gets washed off. It also contains many essential micronutrients which can become available to the plant as the seaweed breaks down.
- **Crop rotation:** Many of the farmers we spoke to already rotate their crops each season, but for those that do not, this is an important way to prevent depletion of the same nutrients each season and avoid pest problems.
- **Plant nitrogen fixing crops:** Leguminous crops such as pigeon peas and beans have symbiotic relations with nitrogen-fixing bacteria in nodules in their roots, so planting these crops increases the amount of available nitrogen for other plants.
- **Plant polycultures:** In the words of one farmer, growers should "do a mixin' so you can get more out of your grounds" (F. Neely, personal communication, January 13, 2011). Having a diverse group of crops together can help buffer against climate unpredictability

and pests, provide crops with shading that need it, prevent weeds, and promote healthier, more aerated soil structure because of root variety.

- **Plant crops that do not require added fertilizer:** Examples include beans, sweet potatoes, bananas, and guinea corn (E. Joseph, personal communication, January 17, 2011).

Problem: Water Supply and Quality

Eleuthera receives an average monthly rainfall of slightly over four inches, with many months during the dry season receiving less than two inches. The unaided growth of crops becomes very difficult and many farmers are required to supplement the rainfall through irrigation. While a few interviewed farmers collected rainwater, most instead rely on subsurface freshwater lenses that sit in the limestone aquifer. Many farmers see these aquifers as an inexhaustible resource and think that after they drain the water from a well, “because it is a spring, there is plenty of water” (D. Carey, personal communication, January 11, 2011). Because the freshwater floats above the saltwater, these lenses along with reverse osmosis plants for municipal water are the only reliable sources of water on the island and are necessary for all agricultural and household use.

The freshwater supply is extremely vulnerable and is facing many threats. For example, over-abstraction from these lenses leads to saltwater intrusions that can contaminate the freshwater supply and lead to an increase in salinity. Because of the geological nature of the reserves, any contamination that enters the aquifers is extremely difficult and expensive to remove. Another factor leading to contamination is the fact that the water table is on average only one to two meters below the surface, allowing contaminants to easily enter the water supply.

Currently the Environmental Monitoring and Risk Assessment Department (EMRAD) of the Department of Environmental Health Services and the Waste and Sewage Corporation (W&SC) test municipal water supplies from the Reverse Osmosis plants as well as stored water from Andros according to the World Health Organization (WHO)’s standards for mineral content, pH, and bacterial count. However, they do not test for any chemical contamination including pesticide and herbicide runoff because the lab lacks the necessary equipment, a gas chromatograph. This is of great concern because Andros has a thriving agricultural sector and provides the drinking water for the over 300,000 residents of Nassau. Neither the EMRAD, W&SC, or the Department of Agriculture perform regular testing of the aquifers of Eleuthera. EMRAD and W&SC both offer testing of the groundwater for a fee. However, if an outbreak of disease occurs, testing will be performed free of charge. However at present, the aquifers are neither being tested for supply nor contamination.

Recommendations

- **Teaching Good Agricultural Practices (GAP)**
- **Regular water supply testing**

Expanded Recommendations

- **Teaching Good Agricultural Practices:** GAP training will alleviate farmers' contributions to groundwater contamination. For example, farmers can collect and store rainwater for later use so that water does not have to be drawn from wells and also can use organic alternatives to chemical fertilizers and pesticides which will increase the water retention capacity of the soil. The collection of rainwater will help prevent problems of over-abstraction leading to increased salinity as well as reliance upon the wells that could possibly be affected by natural disasters in the future.
- **Regular water supply testing:** Regular water testing is imperative in order to ascertain if Eleuthera's water supply is threatened. These tasks fall under the jurisdiction of EMRAD, so perhaps the department could be expanded to perform more extensive testing. The regular testing of municipal water and wells could be supplemented by the periodic testing of the water for chemical contaminants including permethrin, malathion, carbaryl, and gramoxone (See Pesticides section, p for more information). Although the WHO suggests that these are not normally problem contaminants, it is worth testing to ensure that there are not dangerous levels ("Chemical").

Problem: Lack of Agricultural Technical Assistance

Many farmers noted that when they have diseases or technical questions, there is no one who is qualified to answer them. One farmer expressed great frustration with diseases in his citrus trees, repeating "who can I call?" (E. Carey, personal communication, January 11, 2011). Another South Eleutheran farmer who had diseased cassava plants told us he tried to fix the problem with Sevin dust and another pesticide labelled "kill treatment" (most likely Gramoxone). Neither worked, and in frustration all he can do is watch the leaves fall off his plants (D. Nixon, personal communication, January 11, 2011). Currently the managers of the packing houses are supposed to serve as technical assistants for farmers, providing agronomic as well as processing help ("Agriculture Sectoral Report," 2009, p 47). However, as one manager said, "I'm not an extension officer, but I'm acting as one because we don't have one on the island" (S. Stubbs, personal communication, January 17, 2011). In South Eleuthera we heard complaints about availability and usefulness of these services while in the North reports were more positive. The BAIC employs one extension officer, but he serves the entire country (R. Dean, personal communication, January 17, 2011), but it is difficult to imagine that one person can adequately reach all the farmers in the archipelago. The extension sections of the Department of Agriculture are located in Nassau and on Andros, Abaco, and Grand Bahama. The New Providence staff provides support to the Family Islands "as required" ("Agriculture Sectoral Plan," 2009, p 55). They propose in the future to use the internet to improve these services. Additionally in their five-year plan, the DOA intends to train farmers in Good Agricultural Practices (GAP), as defined by the FAO and invest \$13,000 in this area each year.

According to Ricardo Dean, the Bahamas Agricultural and Industrial Corporation hosted many seminars on Eleuthera last year, and the average attendance was around twenty, but the farmers we interviewed did not mention them (R. Dean, personal communication, January 20, 2011). Previously the Department of Agriculture (DOA) has worked with other countries to improve extension services. In 1991, the Centre for International Agricultural Cooperation of Israel held a three week seminar on extension work for the DOA in order to train young professionals to

better assist farmers (Eneas, 116). Similarly the government of Taiwan worked with the DOA to improve technical assistance (until 1997). The US Department of Agriculture also provides resources and training to improve agriculture in developing countries, but since 1995, the Animal and Plant Health Inspection Service (APHIS) only hosted one workshop on pest identification in the Bahamas (“Technical”). Brickell Pinder, Chief economist for the MAMR, cites the lack of an extension service as one of the major obstacles for agriculture in the Bahamas (B. Pinder, personal communication, January 17, 2011).

Recommendations:

- **Expanded packing house technical assistance**
- **Creation of a dedicated extension service on Eleuthera**
- **Renewed focus on the Family Islands by the Department of Agriculture**
- **Greater resource and information sharing among farmers on the island and on other islands**

Expanded Recommendations:

- **Expanded packing house assistance:** Packing house managers must take on a greater role in technical assistance by visiting farms, reaching out to local farmers and putting farmers in touch with extension officers in Nassau. Further training of packing house employees in plant and soil science, especially to be able to recognize plant diseases and pests, would allow them to offer suggestions for remedies other than pesticides. Having computers at the packing houses available to farmers would improve technical assistance as well. Packing house managers could additionally connect farmers to different specialists or resources (on or off the island), such as the Educational Concerns for Hunger Organization (ECHO- www.echonet.org) or the University of Florida Extension Service (<http://edis.ifas.ufl.edu/topics/agriculture/index.html>). The packing house could also host workshops on diseases, alternative organic pest control and fertilizer methods, research techniques, and soil testing, and other skills especially for new farmers.
- **Creation of a dedicated extension service on Eleuthera and renewed focus on the Family Islands:** Although the packing house can aid farmers with some of their problems, there is a great need for a dedicated extension officer provided by the DOA. In order to help extension services reach all islands and connect farmers with buyers and other farmers, the DOA intends to design Information Communication Technology (ICT) systems and has allocated \$140,000 over the next three years for this project (“Agriculture Sectoral Plan,” 2009). However, in the meantime, it is crucial to have trained employees on Eleuthera who are a phone call or drive away as these are the modes of communication and technology more frequently employed by the farmers. Finally the DOA should educate farmers about new venues to purchase seeds and other supplies. According to the 5-year plan, in Andros and Abaco use of the internet for purchasing seeds and researching information is increasing, especially with younger farmers, and some farmers have also made contacts at the University of Florida and University of Alabama.

Problem: Packing Houses

The Ministry of Agriculture runs three Packing Houses on Eleuthera for farmers to sell their produce to the government. The Greencastle Packing House works with 150 registered farmers and Hatchet Bay Packing House has 120. The purchased crops are then sent to Nassau to the Produce Exchange, a government run market for wholesale buyers. Farmers must register through the packing houses in order to sell to them and also to import agricultural equipment and products duty-free. Originally created to provide an outlet for surplus crops and to “alleviate the problems facing the small farmers on the Out islands” (Eneas), the packing houses are now seen as a discouragement by many farmers. In the words of one farmer, “The packing houses, in my view, are a complete failure” (E. Carey, personal communication, January 11, 2011) and according to a packing house employee, “the prices are discouraging” (L. Pinder, personal communication, January 13, 2011).

Prices are set in Nassau and are often lower than the cost to the farmer to produce the crop, usually because of the glut of produce at primary harvest times (see “Glut” section, p. 16). Packing house prices are also lower than those of other markets on the island or markets farmers could directly access in Nassau. To try to get the best prices, farmers rely on added chemicals to force early harvests or continue growing later in the summer. Additionally, the strict grading system based on size and appearance turns away large amounts of viable produce that farmers either give or throw away. Farmers are limited to a \$9000/year quota. Even if they do use packing houses only for their surplus, larger farmers can fill their quota in one trip then cannot use the packing house for another year. Consequently often farmers convince relatives or friends to register for permits as well so they can increase the overall quota available to the farm (S. Ingraham, personal communication, January 6, 2011). While many of the farmers on the island sell the bulk of their produce to the packing houses, the most successful farmers we interviewed are avoiding the packing houses all together and finding markets elsewhere.

Recommendations:

- **Increase assistance in finding markets on Eleuthera and other islands**
- **Add new grades**
- **Raise \$9000 Annual Quota**

Expanded Recommendations:

- **Increase assistance in finding markets on Eleuthera and other islands:** One of the farmers we interviewed noted that the packing house manager already helped her find her own markets (D. Thompson, personal communication, January 14, 2011), but she was one of the few farmers who have the patience and persistence to deal with them as well as the volume to attract buyers in Nassau. If the managers were in greater communication with restaurants, grocery stores, and resorts on Eleuthera, they could help farmers get higher prices for their produce instead of selling primarily to packing houses, flooding the Nassau market, and paying the government to act as the middle man.

- **Add new grades:** A grading system based on quality and produce use, not exclusively size and appearance, could help farmers sell the produce that is often turned down now at the packing houses. For example, having “sauce” grades and “display” grades could help reduce the amount of wasted produce. Grades suitable for processing could be directly taken to the proposed value-added processing facility (see p. 22) for canning, juicing, or drying instead of being thrown away or taken back by the farmers.
- **Raise \$9000 Annual Quota:** We hope that with the implementation of our other recommendations, especially the availability of a processing facility and greater marketing assistance for farmers will decrease the reliance on the discouraging packing house system, but in the mean time raising the quota would enable farmers to have a better chance of making a profit.

Problem: Finding Markets for Agricultural Products

When asked about the biggest challenge they faced, the majority of farmers we interviewed answered “marketing”. Farmers on Eleuthera experience hardships in trying to find buyers for their produce both on and beyond their island because of misdirected supply and insufficient demand. Carl Nixon (personal communication, January 12, 2011) described his struggles saying the “government wants farms to do their own marketing... [but] this is nearly impossible.”

Eleutheran farmers must compete with the subsidized low prices of large-scale foreign producers and the aesthetic appeal of produce imported from the US. The Bahamian population maintains aesthetic standards for their produce, craving standardized packaging and uniform appearance to their food. Most “shop with their eyes, not with their tastebuds” (D. Nixon, personal communication, January 11, 2011). Protective tariffs are not at present a viable buffer against the flood of imports, because, as farmer Perry Forbes puts it, “...now, we’d all starve.” Additionally, resorts and hotels often resist purchasing local produce because they cannot depend on the small farmers for consistent products or predictable timing (K. Cosgriff, personal communication, January 11, 2011). The farmers in South Eleuthera especially have difficulties finding on-island markets, since fewer restaurants and hotels exist in the area.

While there is a high demand for local meat, especially mutton, marketing meat also presents problems. Meat products cannot be taken in by the packing houses or local stores, since the Department of Health requires inspection of their slaughter and there is not a slaughterhouse on Eleuthera. Therefore, despite local preference for the mutton and chicken grown on the island, all that is legally available is sourced from abroad. Even so, some store owners admitted that they regularly sold meat butchered by local farmers.

Many farmers never achieve direct connections to off-island buyers, primarily because they lack the technological experience and the additional time necessary to connect to restaurants and hotels beyond their shores. Financial impediments such as tariffs on freight discourage some farmers from sending their produce themselves. Farmer Dennis Carey (personal communication, January 11, 2011) voices sentiments shared by many small-scale farmers, in that they do not produce enough quantity to justify shipping to places like Harbour Island.

Recommendations:

- **Diversify and grow for new markets**
- **Tap into tourist market**
- **Seasonal protective tariffs (see Glut section, p. 16)**
- **Build an Environmental Health-certified slaughterhouse**
- **Increase communication between farmers, packing house managers and BAIC (see p. 18)**

Expanded Recommendations:

- **Diversify and grow for new markets:** Farmers could increase their profits by growing vegetables beyond the traditional staples of the Bahamian diet, such as those in the Brassica family which thrive during the winter climate. Also as many of the farmers we interviewed already were doing, Eleuthera can expand into the organic market for the health of its land and the people. Farmers could also enter niche markets that have risen in popularity in the United States. Although coconuts are an abundant crop on the island, no one has attempted to produce the newly popular water whose health benefits attract Americans. Another example is the juice of the noni, or starvation, fruit: the plant grows widely across the island and is unpopular for eating. Inhabitants are surprised to hear that the plant is a new “superfood” for health enthusiasts. The BAIC and packing houses could both assist farmers with this type of new marketing (see “Packing House” and “BAIC” recommendation sections p. 13 and 19).
- **Tap into tourist market:** Another possible market for farmers’ produce would be restaurants and resorts on and beyond the bounds of Eleuthera. “The tourism and agricultural sectors can be strengthened by integrating their activities so that each reinforces the other and at the same time conserve the fragile environment,” claims the FAO (“Agriculture Sectoral Plan”, 2009). Successful growers have already eliminated the packing house as a go-between to buyers beyond the island. Diana Thompson (Personal communication, January 14, 2011) earned \$80,000-\$90,000 in sales from her pineapple crops. "I went to Atlantis to see if they would buy my pineapples and she said, 'I can get a Hawaiian one for only \$2. So next time, I brought some of my pineapples and she tasted them. They are so sweet you can eat the core. And she's going to call for my pines next time," she says. She also suggested a consolidation of off-island sales. Either the farmer’s cooperatives or the government could match growers with markets beyond the island.
- **Build an Environmental Health certified slaughterhouse:** Slaughterhouses in each of the three regions of the island could supply the population with local meat and encourage farmers to diversify by raising livestock as well as fruits and vegetables. Goats especially can provide a profitable new market, as we heard from farmers already raising them (D. Nixon, personal communication, January 11, 2011). They eat the native bush and the largest cost involved is for fencing material. Surplus meat could be dried into jerky, gelatin and rendered fat could be among the profitable byproducts, and there could eventually be leather processing. Through the coordinated handling of livestock, Eleuthera could also feed the animals from on-island food sources. (See “Value-added facility” on p. 17 for strategies to manage this facility, such as a farmer’s co-op. Also, see “Grant for value-added facility” on p. 20 for financing strategies).

Problem: Seasonal Overabundance (“Glut”)

Farmers in Eleuthera generally plant the same crops at the same time, causing seasonal surpluses of produce such as tomatoes, watermelon, avocados and mangoes. "I had so many mangoes rotting on the ground last year--I couldn't get rid of them" said one Eleutheran farmer (E. Carey, personal communication, January 6, 2011). With vegetable crops, this is due in part to the traditional belief that planting according to the lunar cycle generates the best crops. Farmers consult Dr. MacDonald's Farmers Almanac, which is in its 114th year of publication, and have passed down this knowledge from one generation to the next. When the farmers then all try to sell to the packing houses, prices become further reduced (see "Packing House" section, p. 13). In other cases, the farmers just throw out or do not harvest all of their extra produce. Either way, valuable food is constantly going to waste. Even when there is a local surplus of fresh produce, grocery stores continue to stock their shelves with imported produce because customers prefer the packaging. Additionally, there are currently limited ways of preserving extra produce, or produce rejected by the packing houses, on a large scale. A successful canning facility used to operate in Rock Sound seven days a week until it closed in in the 70s because of political complications (S. Ingraham, personal communication, January 6, 2011). However many farmers do preserve produce on a small scale in their homes, for example by bottling tomatoes, making jams and hot sauce, or freezing lime juice.

Recommendations:

- **Successional planting**
- **Coordination of planting schedule**
- **Seasonal Protective Tariffs**
- **Construction of value-added processing facility**

Expanded Recommendations:

- **Successional Planting:** Denis Carey and other farmers we interviewed already staggered their plantings of tomatoes in order to extend the season during which they could sell the crop, and if more farmers adopted this approach it could minimize the glut.
- **Coordinated planting schedule:** In the words of one farmer, the best thing the government or cooperative associations could do would be to assign farmers specific crops to plant and when: "you do the onion, you do the tomato so you'll have no glut. I'll plant in January, you plant in May or June" (C. Strachan, personal communication, January 15, 2011). There are already farmer's cooperative associations in place such as the Southern, Central and Northern Eleutheran Farmer's Co-ops, all of which only contain a small fraction of the farmers in each region. Unfortunately, these are not very effective at helping the farmers yet due to their lack of organization and communication, but in the future could provide a setting in which farmers could communicate more easily about planting schedules. Packing houses could also help facilitate this planning (see "Grant for Value-added Processing Facility" on pg. 20 and "Farmer's Insurance Through Small Cooperatives" on pg. 23 for more on co-ops).

- **Seasonal Protective Tariffs:** In 1999, the Agreement on Agriculture set parameters for the tariffs of countries involved with the World Trade Organization. The FAO noted how exceptional conditions reveal shortcomings to the Agreement. “Special safeguard provisions were also included for tariffed products that will allow additional duties to be applied in cases where shipments priced in domestic currencies fall below a certain trigger or in the case of import surges” (“Agriculture Sectoral Plan”, 2009, p. 6). Eleuthera’s annual glut might qualify for these special safeguard provisions; the government could apply higher tariffs to major imported crops during their growing seasons on the island, especially tomatoes, peppers, and onions. Having this security of the island market could help encourage new farmers to grow these crops as well, eventually eliminating the need for importing them.
- **Value-Added Processing Facilities:** A multi-purpose processing facility would increase the viability of farming by using the entirety of the island’s farm products, and by allowing farmers to turn their fresh produce into valued-added products. Such a facility was frequently mentioned in interviews as an additional way in which the government could assist farmers. Based on our interviews we would recommend, if possible, a facility equipped for drying, freezing, canning, pickling, and juicing as well as for making jams, jellies, chutneys, sauces and salsa. The facility could also improve the marketability of local produce by development of brands for individual farms or cooperatives. The President of the Eleuthera Cooperative mentioned plans for the island’s farmers to market their produce as a collective under one label (D. Thompson, personal communication, January 14, 2011). According to Ricardo Dean of the BAIC (see BAIC section, p. 17), the canning facility in Hatchet Bay is expected to be completed in late 2011 or 2012, depending on funding. As was done with this facility, it would be convenient to locate the processing facilities near packing houses as farmers would then only have to bring their surplus produce to one location. The Department of Agriculture and BAIC would need to fund and operate the facilities initially, but in the future farmers we interviewed hoped the farmers associations would be able to take control (see “Grant for Value-added Facility on p. 21 for discussion of financing this facility and Appendix for export driven financing options).

Problem: BAIC

The Bahamas Agricultural and Industrial Corporation Act of 1981, which created the BAIC, stated one of the organization’s functions, “to stimulate, facilitate and encourage the development of agriculture in the Bahamas.” However, we found in the interviews with farmers that the BAIC has not helped many farmers and has been slow to respond to complaints. According to one farmer, the government acts as a “discouragement” to farming. Another farmer said, "The government doesn't support us. Nobody supports us. I've been calling BAIC for a year about cooking thyme. They never call me back" (C. Nixon, personal communication, January 12, 2011). On the other hand, Lady Dia, a pineapple farmer in central Eleuthera, and a couple others said that the BAIC had helped them find markets. Of course this work is easier in some cases than others, and pineapples are a crop in great demand. Further, the BAIC seems more responsive to large scale operations and to people who cannot be discouraged.

In order to promote agriculture, the BAIC states that it works “to process the produce of agriculture in The Bahamas; process being defined as milling, canning, packaging, and preparing agricultural produce for market; to market the produce of agriculture within or outside The Bahamas. To carry out operate and participate in any agricultural projects as the Minister may approve” (“About Us”). In practice, the organization does few of these things on Eleuthera. Processing seems to be entirely absent, and Ricardo Dean, a BAIC agricultural representative on Eleuthera, suggested that the community build the processing plant on its own saying, “We tell the farmers, you create the cannery, because the government has been dragging its feet” (R. Dean, personal communication, January 10, 2011). The Ministry of Agriculture failed to allocate funds in its budget and would not be able to rectify this problem until summer 2011. Though he said that the BAIC was created to sidestep the bureaucracy of the government, the organization seems to have stagnated and been unable to act in a decisive and proactive manner. The BAIC does provide some helpful services; the corporation already holds workshops on processing, record keeping, and other relevant topics. Unfortunately they hold only a couple meetings per year, and according to Ricardo Dean only twenty or fewer farmers attend. In terms of the creation of new agricultural enterprises, the BAIC can help farmers draw up business plans and draft loan applications, but it does not have any funding to offer, nor is there a place where non-collateralized loans can be found. (See “Lack of Financial Assistance” p. 19 for more information).

In short, the BAIC has been unable to promote agriculture to a sufficient degree to make an island-wide difference. Perhaps, as a United Nations report states, “the handicraft initiatives of the BAIC cover more of the Family Islands than the agri-business initiatives” (“Agriculture Sectoral Plan”, 2009, p 24), or perhaps it is due to a lack of manpower and funding. Because the BAIC’s ties with the Ministry of Agricultural and Marine Resources (MAMR) have been recently strengthened, there is great potential for the BAIC to play an important role in helping revitalize agriculture on the family islands and to effectively carry out its mission in regards to farming. In theory, the BAIC should be able to deploy its resources more efficiently and “make decisions on the spot” because it is less beholden to the bureaucracy of the MAMR (R. Dean, personal communication, January 10, 2011). If it is to carry out its mission, the BAIC must reevaluate its current strategy.

Recommendations

- **Greater outreach to farmers, more workshops, and a more proactive approach to communication**
- **A more aggressive approach to marketing**
- **A greater role in processing, and leadership and responsibility for the creation of a slaughterhouse and processing plant**

Expanded Recommendations

- **Greater outreach to farmers, more workshops, and a more proactive approach to communication:** The BAIC should put greater effort into planning workshops, encouraging farmers to take advantage of these opportunities, and then working with farmers after the workshops to help them follow through on their training. For instance, the BAIC ran a seminar on drying fruits; in order to help farmers then sell their dried fruits the BAIC must find a market and provide farmers with this information. A certain segment of farmers are able to use the BAIC's many helpful services because of their savvy. In order to reach the rest of the farmers, the BAIC should work to interact with all the farmers, via the farmers associations and via visits throughout the island.
- **A more aggressive approach to marketing:** Instead of waiting for farmers to call, the organization should reach out to farmers across Eleuthera and work aggressively with the packing houses and cooperatives to communicate with all farmers, including the smaller ones. During the past summer the BAIC successfully used this strategy to reach pineapple farmers in the Hatchet Bay area and to connect them to markets in Nassau. If the organization could follow this proactive strategy more widely, they might be able to relieve some of the problems of glut. The BAIC could also help connect farmers to markets in Harbour Island that might provide options for smaller farmers. In order to overcome transportation costs that challenge farmers, the BAIC might coordinate deliveries with farmers so that small loads could travel together, or create a business to buy local crops from farmers to be sold collectively in Nassau. Additionally, the BAIC could work with individual farmers or farmers associations to create a brand. The "Buy Fresh Buy Bahamian" campaign begun by the BAIC is a good start to creating local demand. Another ways in which the BAIC could help support the local competition with the international would be by studying the feasibility of seasonal tariffs on crops such as mangoes or tomatoes (see Glut and Marketing sections p 15 and 16).
- **A greater role in processing, and leadership and responsibility for the creation of a slaughterhouse and processing plant:** The BAIC should take on a greater role in advancing the creation of a cannery and slaughter house. The farmers we interviewed do not have the money or means to begin the process, nor are loans available. And while involving the community on such a project will be important to its success, the BAIC needs to initially take the lead for it to happen. Although the organization does not have sufficient funds to take on either of these projects alone, they can use their influence in the MAMR to speed the construction of the processing plant in Hatchet Bay and to initiate a proposal for the construction of a slaughter house. If the government bureaucracy moves too slowly to begin construction soon, the BAIC should urge them to take advantage of this opportunity to revitalize agriculture on Eleuthera, and to respond to the needs of the farmers.

Problem: Lack of Financial Assistance for Eleutheran Farmers

A majority of farmers on Eleuthera describe a lack of access to financial assistance, such as loans and insurance. Most farmers use crown land or generational property to which they have no traditional deed. One farmer stated that she did not even know who owned the land that she has

been growing her crops on for decades. Ambiguous land rights prevent farmers from using their most valuable asset, their land, as collateral for loans, and uncollateralized loans are all but impossible to obtain. When asked about the possibility of getting a loan from a government or private entity, one farmer responded with an emphatic, “Oh god! Help us, Jesus. You need your kingdom whole before they give you a loan” (H. Strachan, personal communication, January 15, 2011). He described the possibility of securing credit as “very impossible” and added, “only the righteous [can secure a loan].” High interest rates are a primary obstacle for young entrepreneurs wishing to enter the sector and for current farmers wishing to expand or improve their operations.

Most farmers that we interviewed described incidents of drought, disease, and severe weather events, such as hurricanes, destroying their crops. After severe hurricanes, the government has a budget item to provide relief to farmers based on an assessment of the damage and size of the farm (B. Pinder, personal communication, January 17, 2011). Although many farmers seemed grateful for the relief, they reported that the compensation was much less than the value of the damaged crops. Other than this hurricane relief, the government has no formal programs to provide insurance to farmers. BAIC development officer Ricardo Dean cited hurricanes and the resulting crop damage as a significant factor in discouraging farming on Eleuthera (R. Dean, personal communication, January 10, 2011). Access to insurance would reduce some of the uncertainty and hardship associated with farming on Eleuthera, which would encourage new farmers to enter the sector. Currently, farmers on Eleuthera report that private sector insurance is too expensive. One farmer described all insurance as “a big rip off” (M. Miller, personal communication, January 11, 2011). This skepticism is the result of the high premiums offered by brokers in Nassau. Brickell Pinder points out that while insurance may be too expensive for the small farmers on Eleuthera, large farmers on other islands do purchase insurance policies. Pinder says that the government is currently exploring strategies to expand insurance opportunities to smaller farmers. Our interviews indicate that there is a great need for affordable farm and crop insurance.

Implementing and improving strategies to increase farmers’ access to credit and insurance would make agriculture on Eleuthera more competitive, more profitable, and more sustainable. Insurance would dampen the effects of the island’s severe weather events, while access to credit would enable farmers to expand their operations or upgrade to newer, more efficient, and more environmentally sustainable technologies.

Recommendations:

Strategies to Increase Access to Credit:

- **Provide Information about Credit and Insurance Programs and Assist in Application Process**
- **Create Security of Tenure Program**
- **Increase Agricultural Priority of Bahamas Development Bank**
- **Loan Guarantee Program: Expand and Improve Accessibility**
- **Provide a Grant for Agro-processing Facility**
- **Stores on Credit Program: Improve Efficiency and Accessibility**

Strategies to Increase Access to Insurance:

- **Use Small Cooperatives to Access Insurance**
- **Utilize Foreign Sources of Insurance**

Expanded Recommendations:

- **Information Services and Application Assistance:** Most Eleutheran farmers have been so discouraged with the inaccessibility of credit and insurance that they no longer pursue these financial services. If services do become available, the Ministry of Agriculture and Marine Resources (MAMR) would have to actively inform farmers about the new loan and insurance opportunities. MAMR should also provide assistance with the application process, as most farmers will not access the applications on the Internet or be familiar with the necessary procedures. Perhaps extension officers could fulfill these duties (see recommendations about an extension service in the “Technical Assistance” section on p. 13).
- **Security of Tenure Program:** Chief Economist for the Ministry of Agriculture Brickell Pinder cites the farmers’ relationship to the land as a primary challenge for farmers on Eleuthera (B. Pinder, personal communication, January 17, 2011). She states that the problem is deeper than farmers’ inability to use land as collateral. She describes a disconnect between farmers and land they do not own. The combination of these factors have farmers less likely to invest in improvements. For example, one of the farmers interviewed had his entire farm hidden on land that is slated for development by the resort that owns it. Brickell Pinder’s recommendation is that the government establish a security of tenure program that gives farmers legal recognition for the land they farm. We recommend that this system be established such that farmers can obtain loans from the private sector with their farmland as collateral. The United Nation’s Food and Agriculture Organization (FAO) makes a similar recommendation in their 2009 “Agriculture Sectoral Plan for the Bahamas.”
- **Increase Agricultural Priority of Bahamas Development Bank:** One potential avenue of credit for Eleutheran farmers is the Bahamas Development Bank (BDB). In 2008 there were \$14.984 million dollars in agricultural credit from formal sources in the Bahamas, which is 0.21 percent of total bank credit (“Agriculture Sectoral Plan,” 2009). For comparison, tourism accounted for slightly over 3% of total bank credit in 2008 (“Agriculture Sectoral Plan”, 2009). The Bahamas Development Bank, which accounts for less than one percent of total outstanding bank credit in the Bahamas, lends to small and medium enterprises throughout the archipelago. The Government’s development priorities can be assessed by looking at Bahamas Development Bank (BDB) lending. In 2008, 3.4 percent of BDB outstanding credit was in agriculture, while 18.75 percent was in tourism (“Agriculture Sectoral Plan”, 2009). The FAO cites 5 percent as the target for BDB agricultural lending (“Agriculture Sectoral Plan”, 2009). If this recommendation is followed, some of the increased credit could be directed to small, Eleutheran farmers at a reasonable interest rate.

- Loan Guarantee Program: Expand and Improve Accessibility:** The Ministry of Finance could increase the availability of credit from private sector sources through its existing Loan Guarantee program. Through the Loan Guarantee program, the government decreases lenders' risks associated with farm loans by guaranteeing a percentage of the loan in the case of default. This program should incentivize private lenders to make more farm loans. However, the interviewed farmers did not recognize this program as an accessible option. One requirement of the program is that borrowers have life insurance, which rules out many of the poorer farmers (Guarantee of Loans (Small Businesses) Act 1998). If this program were made more accessible, it has the potential to reduce lender risk and borrower cost so as to increase availability of credit to farmers in Eleuthera and throughout the Bahamas.
- Grant for Value-added Processing Facility:** In the value added subsector, the FAO deems credit to be mostly unavailable for start-up operations because they are considered to be high-risk ventures ("Agriculture Sectoral Plan", 2009). A government guarantee would encourage lenders to provide loans for these operations. Otherwise, only an off-island firm could acquire the capital for such an endeavor on Eleuthera. Alternatively, MAMR could provide a grant for the construction of this facility with a timetable for eventually selling the facility to private investors or turning operations over to a farmer's cooperation (see "Farmer's Insurance through Small Cooperatives" in the "Technical Assistance" section on pg. 23 and "Coordinated Planting Schedule" in the "Glut" section on p. 16 for more on farmer's coops). We recommend this approach, which may be less risky than guaranteeing loans for inexperienced Eleutheran entrepreneurs with unproven track records in agro-processing. (See discussion of need for value-added facility in the packing house/glut section on page ?? and ??).
- Stores on Credit Program: Improve Efficiency and Accessibility:** Financial assistance could also be made available in the form of subsidized or tax-exempt agricultural materials for farmers. MAMR already has a Stores on Credit program, which provides registered farmers with up to \$600 per acre in credit up to \$15,000 for materials from the Fish and Farm Store (Stores on Credit 2010). Farmers must make a down payment of 25 percent of the loan, repay the loan within six months, and have a guarantor, who is not a spouse. While the program is a start in the right direction, farmers report that delivery of goods is slow. Brickell Pinder says that turnaround time for Eleutherans is often two weeks. As a result, the number of Eleutheran farmers participating in the program is limited (B. Pinder, personal communication, January 17, 2011). While several of the interviewed farmers have taken advantage of the program, many expressed disappointment with the quality and speed of service. For example, one farmer angrily described his experience, "I tried to order hog wire, and it took over a month to get here" (P. Forbes, personal communication, January 8, 2011). Improving the efficiency of this program, increasing farmer's awareness of the program, and expanding the program to a wider range of materials would significantly increase the program's effectiveness. Also, the program could provide incentives for healthier, more environmentally friendly farming practices by providing less toxic fertilizers and pesticides that are less expensive. The FAO report recommends that the program be expanded so that supply store outlets be located at packinghouses on the Family Islands ("Agriculture Sectoral Plan," 2009).
- Farmer's Insurance Through Small Cooperatives:** Farmer's insurance might be made available through farmers' cooperatives. Currently, farmers report that attempts to create

such organizations in south and central Eleuthera are floundering. However, the North Eleuthera Farmer's Cooperative is having more success, and a farmer's cooperative on Abaco currently provides insurance to its members through the Bahamas Cooperative League Limited (BCLL). BCLL is a nonprofit, nongovernmental apex organization for credit unions and producer/supplier cooperatives (Producer/Supplier Co-operatives 2006). While Brickell Pinder sees farmers' cooperatives as a possible strategy for Eleuthera, she recommends that the cooperatives remain small (i.e. ten to twelve members). Pinder explains that large cooperatives tend to fail as they struggle to represent too many competing interests (B. Pinder, personal communication, January 17, 2011). (See "Coordinated Planting Schedule" on p. 16 and "Grant for Value-added Processing Facility" p. 22 for more on co-ops).

- **Farmer's Insurance Through Foreign Sources:** Another strategy suggested by the FAO is that MAMR connects farmers to working agricultural insurance programs outside of the Bahamas ("Agriculture Sectoral Plan" 2009). This strategy may be more practical than adapting financial institutions in Nassau, which are not experienced in this type of agricultural insurance.

Problem: Culture of Farming

While Eleuthera was once known as "the breadbasket of the Bahamas," farming on the island has declined in the past 50 years as farmers have aged and fewer young people have shown an interest in farming. One farmer stated, "We can't even grow enough to feed 1,000 or 2,000 people... in the last 30 years, everyone just stopped farming" (P. Forbes, personal communication, January 8, 2011) while Bishop Daniel Nixon remembered, "When I was growing up, everyone was farming" (personal communication, January 11, 2011). Department of Statistics data shows that in 2007, only about 2% of workers in The Bahamas reported their occupation as "skilled agricultural and fishery workers," indicating that farming as an occupation is in decline not only on Eleuthera but in the country as a whole ("Key Statistics").

The dearth of young Bahamian farmers is complicated by the presence of Haitian immigrants who often work as farm laborers. Of the 3,475 "skilled agricultural and fishery workers" recorded in 2007, approximately one-third were non-Bahamian citizens ("Key Statistics"). Of the eleven farmers interviewed on Eleuthera, only one reported employing Bahamians as workers on his farm, while multiple farmers stated that they employed Haitians because they worked harder than young Bahamians. Another islander reported that Haitians will work for less money than young Bahamians: "Haitians work for \$40 a day. Haitian labor is a godsend" (R. Dean, personal communication, January 10, 2011). However, this cultural norm is not consistent throughout the Bahamas; Long Island reputedly has no Haitian immigrants, so all farm work there is done by Bahamians (B. Rolle, personal communication, January 7, 2011). While the full impacts of Haitian immigration on farming on Eleuthera are outside the scope of this report, it is clear from our research that the role of Haitian farm laborers has an impact on Bahamian cultural attitudes towards farming which in turn affect the willingness of young people to become farmers.

Farmers and other island residents interviewed identified a variety of factors, from cultural norms to perceptions regarding the profitability of farming, which may be causing this

demographic shift. Many people are more interested in office jobs than in farming. Clyde Bethel of Island Farm observed that “There are not a lot of people interested in farming” and that “everyone seems to want that white collar job” (Personal communication, January 14, 2011). Some farmers report that along with other service jobs, farmers are seen as “dirty,” while an Island School staff member commented that Bahamians have been seeking to distance themselves from pre-independence servitude since former Prime Minister Pindling urged them to pursue other careers (K. Cosgriff, personal communication, January 11, 2011). Farmers also often observed that young people simply do not want to work hard, and since they consider farming to be hard work, they are not interested in becoming farmers. One store owner commented that “Young people aren’t getting their hands dirty” (K. Hall, personal communication, January 10, 2011).

A related problem is the common perception is that farming is rarely profitable, or that it takes too long to make any money from farming. Louise Pinder, a worker at the Hatchet Bay Packing House, observed that “Young people want fast money,” (personal communication, January 13, 2011) while Lady Di similarly expressed the common sentiment as “If I can’t get that big check tomorrow, then there’s no point” (personal communication, January 14, 2011). As it is next to impossible to get a loan for farming, we learned that young farmers may have trouble starting up a large-scale farm. Finally, some people told us that parents either encourage their children to go to college (R. Dean, personal communication, January 10, 2011) to study more traditionally academic subjects than farming, or that “they don’t want their children to go through the hardship that they experienced,” and therefore do not expose them to farming (L. Ingraham, personal communication, January 13, 2011).

Recommendations:

- **School Garden Programs**
- **Farm Visits**
- **Backyard Gardening**
- **Incentive Programs for New Farmers**

Expanded Recommendations:

- **School Garden Programs:** School garden programs have the potential to introduce children to farming at a young age, teaching them both useful skills and a valuable appreciation for growing their own food. In addition, incorporating gardening into school curricula can teach students the academic aspects of farming (such as soil science, plant biology, marketing, and accounting) which may help change their conception of farming as “dirty” or “lower class” work. School gardens could also incorporate composting and rainwater collection and irrigation as a means of both sustaining the gardening and educating students about more sustainable methods of farming. The Ministry of Agriculture has included school garden programs in their five year “Sectoral Plan for The Bahamas”, so hopefully funding for these programs will become more available. See Appendix for current examples of school garden programs.
- **Farm Visits:** Farm visit programs, run through schools or community groups, can further expose children and young people to farming and provide positive examples and role

models. Such programs could be extremely flexible, with visits involving anything from tours to opportunities for visitors to experience some aspects of farm work. Visiting a variety of farms would expose young people to different methods of farming and provide opportunities for inspiration and open dialogue about the difficulties and benefits of different techniques. In this way, farm visits could complement educational and technical assistance programs for established farmers by equipping future farmers with an understanding of the variety of farming methods available (such as organic pest and weed control, rainwater collection, etc.) Some farmers we spoke to either already hosted, or were enthusiastic about hosting farm visits. Clyde Bethel of Island Farm hosts numerous farm visits, and reported that students are very happy with the visits: “The kids come here and I explain things and their eyes light up” (personal communication, January 14, 2011).

Another farmer suggested farm visits as a way for successful farms to inspire young people: “Then you can invite them to the farm, hands on experience... and you show them, this is how you plant, this is how you seed... and you get them encouraged and they see okay, if [I] can do it they can do it too” (D. Thompson, personal communication, January 14, 2011).

- **Backyard Gardening:** Promoting backyard gardening can improve attitudes towards farming, further expose children to farming from a young age, and help families save money and improve their diets by growing their own food. In 2010, the Ministry of Agriculture began a program on New Providence and Grand Bahama “to enlighten Bahamian residents... regarding the need to grow some of their food in their backyards; and to offer technical assistance to Bahamians interested in pursuing this initiative” (“Backyard Gardening”). A similar program could be initiated on Eleuthera to offer basic training on how to start a backyard garden and how to cultivate different crops. Backyard garden programs could also encourage sustainable techniques such as rainwater collection, composting, and organic pest and weed control. Snakes are a deterrent to backyard gardening for several women we interviewed; as one woman told us, “I had a small area, some hot peppers, but now... you see those... snakes? That’s what’s keeping me from [working] there” (L. Pinder, personal communication, January 13, 2011). Although none of the snakes on Eleuthera are poisonous, spreading information (in local markets or hardware stores, or by word of mouth) about potentially snake-repelling plants like marigolds and lemongrass may make backyard gardening more appealing to those who fear snakes.
- **Incentive Program for New Farmers:** An incentive program which removes many of the barriers that young people face in starting a farm should promote farming as a viable and appealing career, and provide young farmers with access to the resources and support that they need. Training programs and resources for farmers (see Technical Assistance recommendations p 7) should be made particularly available to young farmers so that they have the support necessary to begin farming. While all the farmers we interviewed learned to farm from their parents or other family members, familial support should not be a prerequisite for a career in farming; as students are encouraged in school to see farming as a viable career, it is crucial that they not be dissuaded by technical or educational barriers. Loan programs (see “Financial Assistance” recommendations p. 12) as well as land and necessary equipment should also be made more available to young farmers.

Conclusion:

The problems facing the farmers of Eleuthera plague farmers around the world. The system is set against them, the marketing infrastructure favors large scale industrial corporations, and the government prioritizes other industries and plans often at the expense of the men and women who feed their country. All of the challenges described in this report could be improved through greater communication between the government and the farmers. However, while Internet and more reliable phone correspondence will be critical, the committed personal contact between farmers, store owners, and government officials has the potential to motivate current and future farmers. Though we did not work on the farms we visited, simple face-to-face conversations with the farmers and tours their farms left us with a much more complete understanding of the obstacles than interviews over the phone. Because current farmers are quickly aging and retiring, effort to combat the current stigma against farming must begin as soon as possible so that Eleutheran agriculture will continue.

As the MAMR and BAIC work to improve farming and the lives of farmers in The Bahamas, visions for the future as well as definitions of progress should be sustainable for both the people and the planet. Organizations should tailor goals for the unique economic, ecological, and social situation of the archipelago -and not simply emulate industrial models used by other countries, especially the US, which are detrimental in the long run. Many farmers we interviewed were enthusiastic about increasing the availability of bulldozers and other technology, and a few mentioned wanting to grow sweet corn “like you all in the United States” (D. Thompson, personal communication, January 14, 2011). Older traditional techniques of using manure as fertilizer and planting in potholes are being replaced by chemicals and larger scale operations.

At the same time, most interviewees took great pride in the quality of their Bahamian produce and meat because they did not use as many chemicals as US growers. Certain techniques like crop rotation and polyculture planting remain fairly widespread, and hopefully also will be complimented in the future by soil building practices. Farmers in the US are increasingly shifting toward these and other organic techniques in order to decrease reliance on fossil fuel-driven, pesticide-rich, unsustainable industrial agriculture. A greater emphasis on balancing tradition and innovation, as well as on deciding what crops, methods, and scale for growing suit available resources will help farmers prosper. We hope that some of these recommendations will help revitalize agriculture on Eleuthera in order protect the health of the people and the land. Above all, we want to restore profit and respect to the career of farming.

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APPENDIX

I. From “Glut”

Imports and Exports for Processing Facility: Importing the equipment and materials for this facility would be costly, and though the priority of the processing facility would most likely be to sell products on the island, the Export Manufacturing Industries Encouragement Act would allow for duty-free imports of raw material, equipment and building supplies and duty-free export of products as long as the manufacturer intends to annually export 95% of their products. Allowing funding for a group of people to start up facilities to preserve ripe fruits and vegetables would enable them to import products such as pectin to dry and preserve fruits as well as packaging materials duty-free.

II. From Culture of Farming Recommendations:

Examples of current school programs:

- Levada Ingraham, the principal at P.A. Gibson Primary School in Hatchet Bay, has run a gardening program at her school for two years. She said that it is important for students to have experience with farming “because it can help them to plan for their futures... because everybody won't be able to excel academically...it saves money for other things, we can teach them to value the soil and see that as important.” A teacher at Deep Creek Middle School commented that although many students learn the practical skills of farming at home through family farms or backyard gardens, “it would be exciting to have it here, as part of the science or life skills curriculum.”
- Windermere High School has had a garden program for the past 3 years, which Principal Rosetta Gibson says teaches the students practical skills for farming as well as providing food for the boarding school’s cafeteria. Observing that “where they come from, they don’t have farms,” she said that she expects some of the students to go on to become farmers after their experience with the school’s garden. The garden is sometimes used in the science curriculum, and Principal Gibson stated that “I think all schools should go into it [garden programs].”
- The Ministry of Agriculture has included school garden programs in their five year “Sectoral Plan for The Bahamas,” stating that they have “taken the lead in improving food security as well as nutrition but integrating ‘garden based learning’ in the curriculum of primary schools. The project objectives, which include “a participatory strategic planning process to outline a shared vision of what a school garden should comprise and how it will be implemented through a plan of action,” integrating “garden based learning” into the school curriculum, developing a handbook “for teachers to facilitate the integration of food security and food and nutrition education into the current curriculum,” and promoting the production of “a wide variety of fruits and vegetables at school, at home, and in the community” outline a strong foundation for school gardening programs, which could be applied on Eleuthera in secondary as well as primary schools.
- As Principal Ingraham noted that there was no room in the budget for her school’s gardening program this year, the Ministry project’s objectives should be complemented by sufficient grant funding to help schools with program costs.

III. Our interview instrument

Introductory Statement: We are interested in farming on Eleuthera and we're talking to farmers to learn about how it's changed over time, what the difficulties are, and what could be changed to make farming more profitable and to encourage some young people to get into farming. We will write a report and make a short film that we will share with the Ministry of Agriculture and BAIC.

Farm History

Can you tell us about the history of your farm?
How long have you been farming?
Why did you start farming?
How did you learn to farm?
How has farming on Eleuthera changed over time?

Farm Facts

Do you own the land?
How did you acquire it?
 How much land do you farm?
 What do you grow and how? (veggies, fruit, animals)
 How do you maintain the soil?
 Irrigation?

Changes over time

What have you grown in the past?
 -why have things changed?
Will you grow different crops in future?
What is the future of your farm? When you retire?
What challenges/problems do you face as a farmer on Eleuthera?

Marketing

Where do you sell your vegetables?
What percent is sold to packing house, stores on island, or consumed at home?
Where would you like to sell?
Is there much demand for fresh produce in Eleuthera?
How does your produce compare with foreign produce?

Viability of Farming

Is taking care of the farm your only job?
Do others work here? If so, how many? Is finding labor a problem?
Does your farm make a profit? Enough to make a living?
Do you like being a farmer?
Do people steal from your farm?

Community Relationships

What is your relationship with other farmers?
 Do you get together and meet with other farmers in a coop or any organized group?
 Will you go to the farmers market on the 15th?
What is your relationship with the government/ and agricultural ministry?
Are there services you wish the government provided to farmers?
Would you want more protection via government tariffs?

Concluding Thoughts

In your opinion, what is the ideal way to farm on Eleuthera?

If you were the minister of agriculture, what policies would you change or enact to help farmers and to promote farming?

Do you think more people would like to become farmers? If not, why? If so, why don't they?

What about the environmental impacts from farming—is that a problem? If so, are you concerned?

Anything else you want to tell us?

Test out Recommendations: processing facility, expanded services at packing house, remove packing house quota, etc.