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# **ABSTRACTS**



**(Peer Submissions)**

# Agricultural Insurance, Farmer Security and Food Security

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College of Business Administration, University of Nebraska-Lincoln, Lincoln, Nebraska, USA  
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*According to the 1996 World Food Summit definition: “food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” This uncompromising definition of food security requires the physical availability of adequate supplies of food at affordable prices. Agriculture is one of the most important economic sectors in most developing countries. Yet the agricultural sector is, perhaps, the most vulnerable. Farmers everywhere are exposed to extreme events such as drought, excessive rains and floods, early rains, late rains, hurricanes, and pests and diseases, to name a few. Even when such events are absent, farmers have to face uncertain commodity prices at the time of harvest.*

*In developed countries, however, farmers have access to government subsidized agricultural insurance that makes their income somewhat predictable. In contrast, farmers in developing countries seldom have access or can afford agricultural insurance. The main argument of this paper is that food security is predicated on farmer security, i.e., a necessary condition for food security is farmer security. Our concomitant argument is that agricultural insurance can provide security and protection against losses from many of the extreme events described above and can cover many different types of crops and/or livestock. As a result, agricultural insurance can stabilize a farmer’s income as well as make the insured farmer more credit worthy. A credit worthy farmer can borrow to invest in plants, animals, fertilizer, and machinery to make the farming enterprise more efficient and more productive thus contributing to the stable supply of food.*

**Keywords:** *Agricultural Insurance, Extreme Weather Risk*

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# Local Food Systems: An Economic Development Option to Obtain Food Security, Nutrition Education and Economic Viability

Cary Junior

*SouthEast Michigan Producers Association, Inc (SEMPA)*

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*Agriculture through small farms is supposed to be the backbone of the Caribbean economies. However, small farms face challenges due to economic conditions which include market monopolies, lack of access to resources, consciousness of the local economy, consciousness of nutritional value and natural occurrences. With the potential of small farm collaboration, nutrition education and economic understanding, these farmers can have a major impact on the local economy and community health.*

*The presentation discusses developing a local food system, its challenges but also its overall long term benefits to the Caribbean countries. The system includes production collaboration, food hub development, branding and target local marketing and exporting. A successful local food system along with nutrition education will result in a favorable economic climate, as well as a greater sense of food security. This presentation references the proposed local food system being implemented in the Detroit, MI area.*

**Keywords:** *Food Systems, Cooperatives, Food Hub, Markets, Sustainability*



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# **Bahamian Agriculturalist Approaches towards Obtaining Food Security**

**Erecia Hepburn**

*The University of The Bahamas*

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*The Bahamas is a relatively thriving country in terms of its per capita GDP and human development indicators; however The Bahamas requires considerable assistance in the agricultural sector because of its dependence on foreign foodstuffs. The country's singular reliance on one industry has led to structural deficiencies in several sectors and food insecurity in the agricultural sector, is a major issue. This research is qualitative and based on interviews with persons in the agricultural sector. Previous research has indicated that agri-tourism is one way to reduce dependence on foreign imports. This research determined that agri-tourism, agri-education and bio-fuel production has the potential to assist with food security. While agri-tourism, agri-education and bio-fuel production were touted as a benefit for agriculture production and food security, respondents indicated that without additional funding, increased technology and government support there would only be limited success. Overall the research indicates a direct correlation between the potential to increase food security and the aforementioned approaches.*

**Keywords:** *The Bahamas, Food Security, Agri-Tourism, Bio-Fuels, Agri-Education*

## **Food as Medicine: Providing Sustainable Access to Minimally Processed Foods as a Means to Ameliorate Diseased States in the Caribbean.**

**Marsha Fridie**

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*Food security is in part defined as access of all people at all times to enough food for an active and healthy life. As more and more people are diagnosed with various forms of cancer, gastrointestinal maladies, hormonal imbalances, fibromyalgia and sometimes unexplained autoimmune diseases, a movement toward food as medicine and a shift away from big pharmaceuticals has been naturally occurring. Therefore, access of healthful foods which have been minimally processed and have health benefits that may alter the course of their diseased states, has become very important for people with medical conditions. Green markets, farmers market, organic farming and organic food supermarkets, have been slowly making headway in some CARICOM countries. As the demand for safe, pesticide reduced or pesticide free production for minimally processed food increases, the sustainable agricultural development and sale of such products will become of utmost importance. This paper examines the scope of sustainable development of 'minimally processed food' in the Caribbean which in combination will lend toward the improved health of the citizens of the Caribbean community. An analysis of available data of unit costs for production for organic whole foods and minimally processed food items in Trinidad, will aid in the attempt to delineate issues related to production of foods that promote wellness. A review of case studies in nutritional interventions for patients, as an alternative or supplement to pharmaceutical use, provides information about access to information about utilizing food as a curative lifestyle measure, as well as prevailing attitudes. As a result the study will propose a model for providing plentiful and cost effective access of 'minimally processed food' for people for whom it is essential to consume these foods for health purposes.*

**Keywords:** Disease, Minimally Processed, Nutrition, Medicine, Food Security



# Assessing Food and Nutrition Security through Value Chain Analysis: The Case of the Saint Lucia Broiler Industry

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*Power Team Business Development Services*

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*This study was conducted to gather relevant information for use in the development of plausible recommendations for industry enhancement and the documentation of strategies and initiatives employed by stakeholders to promote increased food and nutrition security through the local broiler industry in Saint Lucia. The study utilized Value Chain Analysis for examination of the industry. Specifically, an investigation of the input-output structure, governance, chain operations, and the policy environment in which the industry operates. In addition, a succinct analysis of the local industry's competitiveness was conducted using a Competitor Strength Grid and Michael Porter's Diamond model.*

*The study found that the industry's value chain was adversely affected by institutional / administrative, technical / technological and financial constraints, with lack of trust and cooperation among value chain actors and stakeholders being the most significant constraints identified. Major issues such as trade regulations, industry policy / legislative environment and standards and fraudulent trading activity have not been adequately addressed.*

*Saint Lucia's broiler industry products and business activities are not highly competitive and at present, a strategy for industry enhancement is not clearly defined. However, the industry contributes significantly to local economic activity through employment and revenue generation. The industry also plays an important role in other aspects of economic development that cannot be accounted for in traditional GDP estimates including food security, protection of rural livelihoods and social cohesion. Most importantly, the linkage with other industries such as transportation and the services sector expands its contribution to the national economy. Furthermore, it should be highlighted that despite challenges, actors have invested significant capital resources in production and processing infrastructure, and have expressed willingness to continue to invest in the industry. Importantly, successive governments have identified the industry as a pillar for food and nutrition security despite the lapse in timely implementation of proposed industry development policies particularly the increase of the highly controversial **Market Share Arrangement (MSA) from 20% to 40% of national poultry meat consumption.***

**Keywords:** *Value Chain Analysis, Food Security, Saint Lucia, Competitiveness*

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# The Caribbean Governments Response to Food Security by 2030

Dwane John

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*The 17 sustainable development goals (SDGs) were established out of the millennium development goals where the SDGs were presented in 2016 at a summit at UN Headquarters in New York. These goals is to provide a to do list for success for the world in different aspects, such as to eradicate poverty and hunger. What is remarkable about these goals is that they are connected to each other, where achieving one goal helps achieve another. Goal number 2 speaks about achieving food security where it intends to end hunger, improved nutrition and promote sustainable agriculture.*

*The approaches of the governments of the Caribbean to achieve food security by 2030 has been met with different responses. The Government of Guyana has put out a call for investors to invest in their land so that they can provide rice and vegetables to the Caribbean. This is just an idea but what are the food security development plans for the Caribbean governments? This paper will look at the approaches of the governments of the Caribbean to achieve food security through development planning. This will be assessed by analysing the governments' food security development plans and how they intend to implement these plans.*

**Keywords:** *Caribbean Governments, Food Security, Development Plan*

# Root Yield of Drip Irrigated Sugar Beets, an Alternative Fodder Crop

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*The dairy and beef cattle industries of California consistently rank in the top four of the state's most valued commodities. It takes a tremendous amount of water to grow the alfalfa, corn, and various forage crops which fuel these thriving industries. Given the uncertainty of the state's water supply, alternative feed crops are currently being tested with the hopes of developing a more sustainable fodder crop rotation. In this research project, sugar beets, or in this case feed beets, were evaluated for both water use efficiency and nitrogen use efficiency when grown under different irrigation and nitrogen regimes. The experimental design was a split-plot with three replications of irrigation as the main treatment (100% ET surface-drip, 70% ET surfacedrip, and 100% ET furrow) and nitrogen rate as the sub-treatment (0, 100, 150, 200 lb N/ac).*

*The feed beets were grown in the Central Valley of California in a sandy loam soil located on the campus farm at California State University, Fresno. Data from the first growing season was analyzed to determine which treatments had an effect on root weight. Preliminary results showed that irrigation did influence the average root weight per acre ( $P < 0.05$ ). The 100% ET drip had a significant increase in root yield compared to both the 70% ET drip and the 100% ET flood method. Nitrogen rates did not have an effect on root weight, but an interaction between irrigation and nitrogen rate was detected ( $P = 0.053$ ). The interaction occurred only with the 100% ET drip coupled with the fertilizer control rate of 0 lb N/ac, resulting in slightly diminished root weight averages.*

**Keywords:** Dairy; Fodder; Drip Irrigation; Furrow Irrigation; Sugarbeet

# Dormancy Requirements, and Effect of Moisture and Salt Stress on the Germination of Hairy Fleabane (*Conyza Bonariensis*) Seeds

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*Hairy fleabane (Conyza bonariensis L. Cronq.) is a problematic weed in agricultural and non-agricultural regions of warmer areas of Europe, Africa, Asia, the Caribbean and Central America. Very limited information is available on this species' germination biology. Therefore, studies were conducted to determine the dormancy requirement of hairy fleabane seeds and the effect of moisture and salt stress on seed germination. Seeds were collected from local populations of hairy fleabane and they were tested for germination on the day they were harvested, one week, two weeks, and three weeks after they were harvested. Experiments were conducted in a laboratory set at 21° C. Twenty five seeds were put in petri dishes containing filter paper, and 10 ml of deionized water was added. Germination was monitored for three weeks. More than 54% of the seeds germinated on the day they were harvested. However, the germination percentage was significantly lower than the other treatments.*

*Total germination in the other treatments ranged from 68 to 72%. In a second experiment, the level of tolerance to moisture stress during germination was assessed by using polyethylene glycol to create solutions of water potentials ranging from 0 to -5.56 MPa. Similar protocols were used as described for the dormancy study. Up to 71% of the seeds germinated at – 0.149 MPa and germination declined at lower water potentials. Non-linear regression estimated that the water potential to reduce germination by 50% was approximately -0.28 MPa. Similarly, seed germination tests were also conducted to assess the tolerance of salt stress on seed germination by creating salt solutions of electrical conductivity (EC) ranging from 0 to 25 dS m<sup>-1</sup>. Non-linear regression estimated that the EC to reduce germination by 50% was approximately 14.5 dS m<sup>-1</sup>. In conclusion, hairy fleabane seeds could germinate the day they fall off from the mother plants provided they had adequate moisture. This species is not very drought-tolerant but moderately-tolerant to salt stress in terms of seed germination.*

**Keywords:** *Hairy fleabane; Germination; Conyza bonariensis; Dormancy*

## Presence of a Glyphosate-Resistant Palmer Amaranth (*Amaranthus Palmeri*) Population in California

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*Palmer amaranth (*Amaranthus Palmeri*) is a serious weed in agricultural systems globally. The Weed Science Society of America recently ranked this species as the most troublesome weed in the U.S. because of glyphosate-resistant (GR) populations. Globally, GR Palmer amaranth has also been reported from Argentina and Brazil. In the US, GR populations of this species has been reported in 28 states but it had not been reported in California (CA). However, widespread glyphosate-escapes of Palmer amaranth were reported in various cropping systems in 2012 in CA. In 2015, Palmer amaranth plants were collected from a RR corn field in the Central Valley of CA and grown to maturity in a greenhouse and seeds produced from these plants were collected.*

*The seeds were then planted in 2016 and plants were grown and tested for glyphosate resistance by comparing to a known GR population from Tennessee (TN) and a glyphosate-susceptible (GS) population from Fresno, CA. Plants at the 4- to 6-leaf stage were sprayed with glyphosate rates of 0, 0.42, 0.84, 1.68, 3.36, 6.72 kg ae ha<sup>-1</sup> at a spray volume of 187 l ha<sup>-1</sup>. Plants were evaluated for mortality at 28 days after treatment and then they were clipped at the soil surface and the aboveground biomass was weighed after drying in a forced-air oven at 60 C for 72 hours. Treatments were replicated six times and the experiment was repeated. About 60% of both the GR population from TN and the suspected GR population from CA survived up to the 6.72 kg ae ha<sup>-1</sup> treatment; whereas none of the GS plants survived any of the treatments greater than 0.42 kg ae ha<sup>-1</sup>. Therefore, based on mortality the suspected-resistant plants from CA showed about 8-fold resistance to glyphosate. This is the first confirmed case of GR Palmer amaranth in California.*

**Keywords:** *Herbicides; Gr; Glyphosate Resistant, Palmer Amaranth, Weed Germination*

# Product Innovation: A Sustainability Strategy for Small and Medium Enterprises in St Vincent and the Grenadines

Sharin McDowall-Emefiele

*University of Bolton*

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*Innovation is increasingly recognised as having an important contribution to make to organisational success, performance and sustainability. This study therefore examines how product innovation, as a strategy, enriches the sustainability of small and medium enterprises (SMEs) in St Vincent and the Grenadines (SVG). Product innovative and dynamic capability innovative theories were employed to assess firstly, the relationship between product innovation and the survival of SMEs; secondly, the changes in tastes and preferences of consumers necessitating product innovation; thirdly the role of product innovation in ensuring food security and finally the impact of product innovation on the performance of SMEs. The theoretical model was used to develop four hypotheses that were tested empirically on data collected via questionnaires. The results show that there is a significant relationship between product innovation and the sustainability of SMEs. The findings from this paper emphasize the need for SMEs to conduct research on product innovation in order to meet and satisfy the demand and expectations of all consumers especially in these dynamic markets.*

**Keywords:** *Product Innovation, Sustainability Strategy, Food Security, SME, SVG*

# Evaluation of a Community-Based Nutritional and Agricultural Intervention in Guatemala

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*Purpose: Early nutritional intervention, especially during the first two years of life, is necessary in order to prevent irreversible consequences of chronic malnutrition. In Guatemala, about 50% of children under the age of five suffer from malnutrition and stunted growth. An integrated nutrition and agricultural intervention was introduced into two communities in rural Guatemala in order to improve education, food hygiene, and health outcomes of children two years of age and younger.*

*Method: Participants included in the study lived in one of two communities, Santo Tomás Union and Chocolá, in the South West Region of Guatemala. Both communities received agricultural and nutrition education, and resources to create and sustain a vegetable garden. In addition, the Chocolá community received livestock for consumption, breeding, and trading. Families included in the study had an infant under the age of two or a pregnant woman in her last trimester or who was currently breastfeeding. Anthropometric values including weight and height, and hemoglobin values of 101 children from Santo Tomás Union and 104 from Chocolá were collected at baseline and at a 2-year follow-up time point. The weight-for-age, height-for-age, and weight-for-height z-scores were calculated for each child at each time point using standardized z-score calculators. Paired-sample t-tests were conducted to compare z-scores from baseline to follow up.*

*Results: We found a significant decrease in malnutrition, stunted growth, and wasting from baseline to follow-up among children who received the intervention that included livestock. Furthermore, clinical data measuring hemoglobin levels to assess anemia status show significant improvement among the children who received the livestock intervention. Children from the community who did not receive the livestock intervention also showed a positive trend in nutritional status, but this was not statistically significant.*

*Conclusions: These results suggest that children in both communities significantly improved dietary intake of vitamins and folate which are necessary in the production of red blood cells and decrease in anemia. This study shows that interventions that provide higher access to food may positively affect diet and decrease child malnutrition, stunted growth, and wasting.*

**Keywords:** Nutritional and Agricultural Intervention; Community-Based; Malnutrition; Children; Guatemala



# Consumers' Attitudes and Practices to Buying Locally Grown Foods in Trinidad

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and Laura Roberts-Hall<sup>1</sup>

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*This study investigated consumers' attitudes and practices towards buying locally grown foods and determined if a relationship existed between consumers' attitudes and their buying practices. A convenience sample was undertaken to recruit participants shopping at central and local markets, farmer's markets, roadside fruits and vegetable stalls and stands, supermarkets in Trinidad. Participants had to be over eighteen and shop from within their community. The study was conducted between February and April, 2016. The structured interviews seek to answer the customer's attitude and buying practices of locally grown foods in Trinidad. All data were coded and analysed for frequencies, percentages, associations between variables (chi-square) and correlation using SPSS v 21. Four hundred and forty nine (n=449) consumers participated in the study (52.5% males; 47.5% females).*

*The majority were between the ages of 40-59 years, married, of East Indian decent, with a tertiary education. The majority of participants (91.7%) reported they purchased locally grown food or produce. The majority (57.5%) purchased locally grown foods from roadside stands, (52.1%) from central/local markets followed by (49.9%) local supermarkets and fewer (25.4%) at farmer's markets. Vegetables and provisions were the most abundantly purchased items. The determinant factors for purchasing local foods were freshness, price and healthfulness. There was no association between consumers' attitudes and the frequency of purchase.*

*However, positive attitudes towards purchasing locally grown items was significantly associated with a lower frequency of buying these items among consumers ( $r = -0.40$ ;  $p < 0.001$ ). The current findings suggest participants prefers to buy locally grown foods if the price is reasonable. Future research is needed to fully describe participants' response to locally grown items when price, freshness and healthfulness are controlled.*

**Keywords:** *Buying Locally Grown Foods, Consumer Attitudes and Practices, Trinidad*

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# Understanding Local Food Systems

**Lisa Ramrattan**

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*This study examines students' motivations to study abroad, the value they place on the experience and expected future influences on personal, academic, and career choices. This study focuses on trip expectations, as well as challenges that are faced by students from developing countries when exploring whether to study abroad. The questions covered California agriculture knowledge, travel experience, and trip issues. The study also examines their attitudes/beliefs about North American culture and agriculture, intercultural student tourist activities in a foreign country, influence on career goals, and interpersonal authenticity among students' pre- and post-trip perceptions, and confirm positive elements that experiential education offers.*

**Keywords:** *Study Abroad, Perceptions, Qualitative Analysis, Scale of Agriculture*

## Supply Response Implications of Trade Liberalization (EU-ACP EPA): The Case of Rice in Guyana

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*The primary objective of this study was to assess and analyse the supply response implications of trade liberalization between the European Union (EU) and the African, Caribbean and Pacific Group of States (ACP), specifically the rice market of a CARICOM partner, Guyana. CARICOM sells rice to the EU under the Cotonou rice quota arrangement. Rice is also sold by other global producers and re-exporters through other trade agreements, namely the Everything but Arms Initiative (EBA) which is part of the EU's Generalized System of Preferences (GSP). With the EU adopting Agenda 2000, they are implementing more compatible World Trade Organization (WTO) programmes. Under these, there are efforts to change what is considered as "market-distorting rice regimes" through both bilateral and multilateral channels.*

*In this study, an adapted form of the Nerlovian model was used to determine the significance of impact variables with a view to identifying the rough rice supply response function of Guyana. It was found however, that price was not a statistically significant determinant of output. The data reflected that Guyanese rice exporters took advantage of the preferential routes available to them while ignoring the need to become efficient enough to compete in 'free' world markets as evidenced by inelastic short run and long run price elasticities of supply of +0.096 and +0.663 respectively.*

**Keywords:** EU-ACP EPA, Adapted Nerlovian Model, Agricultural Supply Response, Guyana, Rice.

