**Mitigating Food Insecurity and Poor Agricultural Staples Production in Grenada, W.I**.

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**Introduction:**

Grenada, W.I., a tri-island nation comprised of the main island Grenada, and islands Carriacou and Petite Martinique, is the most poverty-stricken nation in the Caribbean, with a 37% poverty rate (World Bank, 2021), and a 13% rate of extreme poverty. Grenada’s population is merely 113,000 inhabitants (“Grenada”, 2022), which makes its drastic poverty levels concerning. But what remains most alarming is the islands’ current inability to feed its citizens via local staples yields despite 24% of its arable land remaining fallow and available for production (Caribbean Agribusiness, 2020). This paper provides insight into Grenada’s food insecurity outlook, its impact on the agricultural livelihood sector, current public and private initiatives, and recommendations for increasing access for Grenada’s rural and agriculture sectors for obtaining the social, agricultural, and educational interventions necessary to combat food insecurity.

***Grenada’s Food Security and Agricultural Outlook***

Agriculture served as the primary sector of Grenada’s economy until the late 1980s and 1990s, however, a decline in agricultural output was initiated in prior decades. While the export-focused cash crop production and food imports market has existed since colonialism, only the most affluent inhabitants obtained access to both markets (Brierley, 1985). Subsidence farming remained the prevalent method of guaranteeing household food security for most Grenadians. But with cash crop prices increasing and conditional foreign aid that incentivize the opening of the import market, flooding the Caribbean with inexpensive processed foods (Barrientos, 2010), the import and export markets became accessible to typical Grenadian households. The export market provides a stabilized livelihood source compared to solely engaging in subsidence farming, and imported food is a convenience over labor-intensive subsidence farming.

Currently, Grenada is facing a food security crisis without precedence, exacerbated by supply chain and price fluctuation issues stemming from the Covid-19 pandemic and the Russian invasion of Ukraine. Moderate food insecurity amongst Grenada’s citizens nearly doubled from 22% to over 40% over the course of the pandemic years (World Food Programme, 2022 ). As of August 2022, 30% of Grenadian respondents acknowledged reduced food consumption as a food insecurity tactic, and 16% attest foodstuff availability continues to be an issue within their local markets (World Food Programme, 2022). 25% of respondents fear food insecurity will continue (World Food Programme, 2022).

**Discussion:**

***Grenada’s Current Food Security Policy***

Climate change has aggravated insecurities encountered by the islands’ agricultural sector. Hurricanes Ivan and Emily of the early 2000s damaged 90% of agricultural infrastructure and crops (Lewis, 2005) which still are not fully operational in this current age market (Jones et al., 2021), illustrating Grenada’s agricultural susceptibility to severe climatic events. However, no food security plan currently exists, with the previous 2013 Food Security and Nutrition Plan of Action expiring in 2018 (Government of Grenada, 2013). The former provided very little impactful intervention to enhance food security outcomes within the islands’ population, as demonstrated by no variability in the moderate insecurity rate of 2013-2018 (World Bank, 2022).

***Grenada’s Current Agriculture Policy***

 No nationalized crop insurance plan exists, despite multiple conferences in 2019 to discuss considerations (Government Information Service, 2019). Private parametric insurance catering to Grenadian farmers exists but is virtually unknown to smallholders of the islands. The Caribbean Development Policy Centre interviewed Grenadian smallholder farmers on their awareness and usage of parametric insurance. Only one produce farmer purchased private insurance, and 65% of respondents were unaware of the concept (Jones et al., 2021). Some subsidization for harvest inputs exists, however, subsidizations tend to favor the commercial cash crop market, as demonstrated by the National Agriculture Plan stipulating prioritization in incentives for cocoa, nutmeg, and other fruits, the top exports of Grenada (James, 2015).

The former Mitchell administration (not to be conflated with the new Prime Minster, who is also Mitchell) allotted approximately 3.8% of budget expenditure to the agricultural sector, with a great portion dedicated to the subsidization of fertilizer and heavy machinery employed in pre-planting preparation (Wilson, 2022). The 2023 agriculture budget has significantly increased to 5.3% and includes a food security enhancement initiative, to deliver “support in the form of land clearing, plowing, planting materials, fertilizers, farm labor, training, and technical services.” (Mitchell, pg. 25, 2022). While the budgetary increase is welcomed to Grenada’s agriculture budget outlook, merely subsidizing inputs and employment costs are an unlikely adequate motivation for smallholder farmers to again engage in focused local production, without additional investment in output subsidies and crop price stabilization.

***Grenada’s Current Social Welfare Policy***

 Grenada’s government offers several short-term social welfare programs; however, participation is limited for those whose livelihoods operate outside of the formal economy (Lewis, 2010 ). The National Insurance Scheme, Grenada’s primary unemployment social safety net, compels contributors to pay 9% of their income monthly into the scheme if self-employed or a member of the informal economy, or engage a 4/5 compulsory split with employers (Lewis, 2010). This burdens the rural and agriculture populations who may not have qualified records as a means to verify income, and the lack of compulsion to participate in the scheme by those residents who participate in the informal economy hinders access when gaps in income due to livelihood failure. The asset discrepancy of the rural population often prioritization of survival needs over financing their social safety net.

During the Covid-19 pandemic, some economic interventions were released to alleviate some of the initial food insecurity shocks, however, these measures reached only a few of the rural and disadvantaged populations of the islands. According to the Ministry of Finance, 720 individuals were assisted through cash transfers throughout the first two years of the pandemic (Wilson, 2022), and 123 families provided food vouchers equating to $75 ECD per person monthly for the same duration (Loop Caribbean News, 2022). When aligning these statistics with the severe poverty rate within Grenada’s total population, less than 5% of those suffering the most received cash transfers, and less than 1% food vouchers. This assumption is justified by the World Food Programme’s Food Security in the Caribbean survey, where less than 2% of respondents mentioned they received cash transfers during the pandemic (World Food Programme, 2022).

The government’s justification for such limited social intervention coverage despite vast unemployment, underemployment, and spiking food insecurity rates, was that targeted populations should be current or former members of the formal economy or registered with the Ministry of Social Development (Wilson, 2022). However, there is a strong informal economy in Grenada, mainly driven by rural populations (ILO, 2022). The demographic most in need of food security assistance unfortunately are hindered from receiving assistance by non-participation in an economic sector where no employment opportunities exist.

**Recommendations:**

***Government Consilience and the Role of International Organizations***

 The Ministry of Agriculture, The Ministry of Economic Development, The Ministry of Finance, and The Ministry of Social Development must align and work collaboratively to address Grenada’s food security and agricultural production problems, rather than pursue singular objectives for each respective ministry. All social welfare policies, whether agricultural, educational, or social insurance related must involve The Ministry of Social Development directly, which best can serve as a hub for ensuring rural and agriculture sector Grenadians can receive holistic interventions in one stop, rather than applying for assistance from multiple agencies and government sectors.

 While several internationally funded climate-smart agriculture programs exist within Grenada, (Halliday, 2014), the global interest in the Caribbean appears to be focused on exploiting the “blue economy” (Hassanali, 2022). However, the blue economy may not serve as the best mechanism for combatting food insecurity. Moreso, the current Climate Smart Agriculture initiatives initiated through the World Bank, United Nations, and several collaborative partners are pedantic in nature and do not provide enough resources to tackle farmer’s greatest barriers to increased local production: risk, credit, and technological knowledge transfer (Jones et al., 2021). To better align with the direct needs of smallholder farmers, International Organizations must look for successfully implemented technologies already in use in other developing states, such as portable greenhouses, hydroponics, and such technologies, which will be discussed in greater detail in upcoming sections of this brief.

***Rural Social Insurance Protection Integration***

 The minimal social protections provided by Grenada’s governance need restructuring to integrate the informal economy into its agenda. As more individuals pay into the system than receive assistance (Lewis, 2010) and the current inability of the informal economy or the unemployed to gain fair access to the insurance scheme, a compulsory flat rate or annual tax would ensure more Grenadians can obtain assistance during monetary and food insecurity as any decrease to the well-being of Grenada’s human capital will hinder its trajectorial climb from middle income to high-income status. Costa Rica, a middle-income Caribbean nation as well, has provided evidence that a functional social protection system can operate outside of a high-income context, with approximately 72% of its population participating in its insurance scheme (ILO, n.d.). Even vast usage during the pandemic did not completely bankrupt the program (ILO, n.d.) due to the high participatory inflow in the years preceding 2020.

 Increasing the qualifications for receiving food vouchers, especially for rural families with children, may serve as the best initial policy for mitigating immediate food insecurity, as Grenda already prioritizes universal free lunches for all primary and secondary students (Lewis, 2010). Such an initiative should face little pushback legislatively. While food vouchers tend to serve as a temporary intervention in combatting food insecurity, they are excellent assistants in ensuring malnutrition rates in the rural population stagnate or decrease, as the effects of malnutrition have long-lasting well-being and human capital impacts (Huffman et al., 2007).

***Rural Agricultural and Education Investment***

 Smallholder farmers must be shielded from climate-driven financial shock. Creating a nationalized parametric crop insurance plan or subsidizing monthly contributions to a private insurance plan is the initial step in diminishing the pitfalls of unsatisfactory harvests or harvest damage which pushes farmers to partake in the less risky investment in fruit tree production in place of staple crops for local consumption. Convincing farmers to plant both staple crops and export crops becomes much easier with an insurance guarantee. If a nationalized plan is not viable for Grenada, alternative options such as catastrophe bonds which are in use in Zimbabwe may be an option to delve into (Nyagadza & Nyauswa, 2019).

 Targeted investments in climate-resilient technologies specifically for smallholders may support increased production without requiring additional labor or pre-harvest input costs such as fertilizer and insecticides. Interventions should include farmers obtaining adequate subsidization of their purchases of hydroponics systems and controlled environment enclosures. Transportable greenhouses with coverage of one acre are already being employed in India to mitigate the effects of severe climate events on crops (Cantieri, 2018) for approximately $2500 USD. Hydroponic units, a technology with the potential to decrease crop water consumption by 70-90% (Asseng, 2022), have the ability to provide an acre of coverage starting at the modest sum of $100 USD (Green Age Farms, 2021).

For aggregate food security, Grenada must establish either a government-owned or commercially subsidized indoor vertical farm, an intervention already employed in Trinidad, Aruba, Barbados, and Jamaica (Di Pastena, 2022). While Grenada already has an automated greenhouse in conjunction with the People’s Republic of China’s government (Government Informational Services, 2021), a vertical greenhouse fully utilizes all vertical space, which can increase yield production exponentially. Vertical farming currently is not profitable due to heavy startup and operation costs (Ehmke & Zuckerberg, 2022); decreasing Grenada’s foreign market dependency should become a primary government objective, especially for cereal grains (Asseng et al., 2020), and crop varieties not native to the islands. If international intervention partners truly value bolstering food security in Caribbean states, the $100 million startup costs (Ehmke & Zuckerberg, 2022) for vertical farming, is a small collaborative price to pay; as it is equivalent to approximately one-third of Grenada’s current food import budget (World Food Programme, 2022).

Providing smallholder farmers with productivity-enhancing technology deprived of adequate education on utilizing these technologies will diminish the productivity expectations hydroponics, indoor vertical farming, and greenhouses may deliver. Maintenance technicians for these technologies must be hired for assistance in rural upskilling as well as ensuring proper usage. Fortunately, with many surrounding islands utilizing these technologies, and INGO support, identifying technicians will not be a huge undertaking.

Creating and implementing an agricultural science course in Grenada’s secondary education curriculum in conjunction with technologies such as a hydroponics unit for tangible crop production should be another intervention considered by public educators. Demonstrating to students that farming does not automatically equate to a labor-intensive, low-skilled profession, especially in the secondary schools located in rural areas, may incentivize more of Grenada’s youth to consider employment within the agriculture sector.

Building on the budding agricultural interests of youth has an additional benefit, as there will be a demand for skilled biologists, agricultural scientists, and mechanical engineers if vertical farming becomes an established industry. To fulfill these upcoming positions, the incentivization to obtain these degrees must not end at an exploratory course at the secondary level. Lastly to be considered, a conditional scholarship, much like the United States Department of State graduate school fellowship, with a mandatory five-year employment commitment (USAID, n.d.), holds the potential to expand the skilled labor pool on the islands internally.

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