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Ministry Paper /2015

Aquaculture Development Initiatives

1.0 Purpose

The matter for Tabling is an update on Aquaculture Development Initiatives being undertaken in the Ministry of Agriculture and Fisheries.

2.0 Background

2.1 Jamaica has one of the highest levels of fish consumption per capita in the Americas (14.8 kilograms per year). The country is, however, highly dependent on imports. In 2012 total fish and fishery product imports was valued at US$ 109,849,367.00 which accounted for 11.58% of the total food import bill in 2012. Fish is the second most important contributor to animal-origin protein intake in Jamaica. It is only second to poultry meat.

2.2 This demand situation contrasts significantly with local fishery production. Local fishery production amounted to an average of some 12 000 tonnes in recent years with wild catches currently accounting for 93.8% of landings. The remaining 6.2% is accounted for by aquaculture production.

2.3 With increasing prices for food commodities, high levels of international indebtedness, and high food imports, food security risks are increasing in the country, and therefore, there is a very good opportunity for a much higher contribution of aquaculture to alleviate imports, augment food availability, while creating employment.

2.4 Aquaculture will be used as a strategy to increase future fish availability in Jamaica.

3.0 Current Situation

3.1 Aquaculture activities primarily occur on the southern plains of Jamaica with the parishes of St. Catherine and Clarendon accounting for the highest concentration and acreage of farms. In total, it is estimated that there are approximately 2,456 acres of ponds of which 1,061 acres or 43% are in active production. In 2013, overall aquaculture production stood at 790 Mt. However, when tracked over a three year period (2010-2013) production was down 79% (from 3900Mt in 2010).

3.2 This down turn in production can be attributed to change in production practices with several of the large farms changing from intensive culture systems, in which aerators were used, to predominantly semi-intensive and extensive culture systems. This change in production practices is a direct consequence of the high costs associated with energy, the absence of suitable feed inputs and the inability of the local market to absorb the volume of fish produced. In addition, rather than producing two crops per year, some farmers have resorted to producing a single crop per year based on market demand.

4.0 Challenges to the Aquaculture Sector

There are multiple challenges to the aquaculture industry on a whole, and Tilapia production in particular for Jamaica. The most pressing for the industry include: the availability of appropriate fish feed, energy costs, marketing, inadequate seed stock, poor genetics, inadequate and insufficient water supply, agricultural theft and competition from imported fish.

Agricultural Theft

4.1 Agricultural theft has been one of the major factors that has discouraged fish farmers from continuing with tilapia production. The impact has been so significant in some instances that it has led to the closure of farms. Several aquaculture communities are currently impacted by the scourge of agricultural theft and these include: Bushy Park, Hillrun and Hartlands in St. Catherine and Rhymesbury in Clarendon. These communities, among others, have been heavily targeted by thieves.

Competition from Imported Fish

4.2 The high costs involved with production relate to feed, energy, etc. These factors all combine to make Tilapia a high cost final product. The market is quite elastic, allowing for various substitutes. Furthermore, the preferential size purchased by the householder is ½ lb to ¾ lb, which is not an optimal size for a good return on investment. The high costs of production also make it too costly for local processors to produce fillet or other value added product. This makes imported fish even more attractive to segments of the market that used to be supplied by local Tilapia.

Water Quality and Supply

4.3 Good water quality is essential to the growth and survival of fish. Highly productive areas such as Hillrun are impacted by inadequate water supply. This has lead to the seasonal production of fish (only in the rainy months) as farmers are only able to produce one crop per year.

Energy Cost

4.4 The cost of energy has escalated over the years. Farmers have moved from semi-intensive and intensive operations to extensive which requires lower energy usage in a bid to reduce costs. The cost to operate a forty-five (45) acre facility which uses 1 HP paddle wheels and electrical deep well pump is now approximately JA$800,000.00 per month or US$0.42/KWH. This cost when compared to regional aquaculture producer results in the cost of production being too high and hence uncompetitive.

5.0 Initiatives Undertaken By the Ministry Of Agriculture and Fisheries to Revitalize the Aquaculture Sector

5.1 Changes in Duty Regime on Imported Raw Material for Aquaculture

Material and supplies required for aquaculture production are oftentimes imported. These duties range from 5% to 20% for goods related to their daily commercial activities. In the past some farmers have benefited from the availability of discretionary waivers to import necessary items. Farmers have complained that the time it takes for the waivers to be granted conflicts with their production cycle, which leads to them incurring greater costs. In some instances farmers end up having to pay the duty upfront, and then attempt to reclaim the costs.

Productive entities will now have direct access to Customs clearance once a valid Tax Compliance Certificate (TCC) and Taxpayer Registration Number (TRN) are produced. The productive entity must, however, be first certified by the Ministry of Agriculture and Fisheries, through RADA. The adoption of this new mechanism will eliminate the long and sometimes uncertain processing period that these entities would have to wait.

5.2 Duty regime on fish feed

Tilapia farmers cannot locally source the appropriate floating fish feed that is needed for effective growth rates. The Ministry of Agriculture and Fisheries intends to lobby our partners in the region at the next COTED meeting in April 2015 to have the Common External Tariff removed from fish feeds that cannot be supplied by the region. The Ministry of Agriculture and Fisheries has been in discussion with the National Flour Mills in Trinidad and Tobago, who have indicated that they are able to supply fish feed for the grow-out stages of tilapia. The application to COTED will address all fish feeds including ornamental fish feeds.

This will allow the industry to have access to higher quality and more cost effective fish feed, thereby enabling faster growth rates and thus enhancing pond productivity.

5.3 Agro Parks

Hillrun and Meylersfield Agro-Parks have been identified to focus on the rehabilitation of abandoned fish ponds in order to boost aquaculture production. The Hillrun Agro Park will seek to improve infrastructure such as access to water and roads that will be beneficial to fish production. Production is already under way at Hill Run.**(See Ministry Paper on Agro Parks)**

5.4 Fisheries Management and Development Fund (FMDF) Project

The Fisheries Management and Development Fund approved a JA$36 million project to improve/ rehabilitate the Aquaculture Branch of the Fisheries Division, Ministry of Agriculture and Fisheries. This project comes on the heels of a thrust by the Ministry of Agriculture and

Fisheries to implement strategies identified in the Aquaculture Land and Water use Development Plan and the Aquaculture Development Plan in a major thrust to increase local production in the Aquaculture subsector. The project will seek to increase the ability of the Aquaculture Branch to produce an increased, consistent supply of good quality seed stock for sale to fish farmers. Fish farmers have indicated that an inadequate supply of seed stock impacts negatively on their ability to produce marketable tilapia.

The scope of work of the project will address the following areas:

I. Procurement of Brood-stock

In a bid to improve the genetic material, the project will import broodstock. This will ensure farmers are provided with the best quality juveniles to enable faster growth rates, better feed conversion and higher pond productivity. The following strains will be targeted: Taiwanese Red, Jamaica Red and HD 56 super male fish. Additionally, *Pangasius*spp (Basa) will be also be imported to assist with the diversification of the industry.

II. Renovation of Ponds

Twelve (12) ponds representing 3.4 acres will be renovated including 2 ponds located in phase 1 along with 10 ponds from Phase 2. The scope of work needed for the rehabilitation of the ponds include:

- Desilting
- Resealing of ponds
- Installation of inlet and drain pipes
- Construction of a reservoir

III. Rehabilitation of the hatchery

Modification and rehabilitation to the hatchery would significantly improve fish health management ensuring that the fish can be held, and bred indoor, especially during the colder months of December and January. Anticipated works include:

- Installation of an additional holding tank to increase the facility's capacity of holding 600,000 fry
- The enclosing of the existing infrastructure to improve insulation for fry during the cooler months
- Improving fresh water supply
- Rehabilitation of the electrical wiring system
- Painting
- Procurement of production material such as hauling tanks to enable the Branch to transport larger number of juvenile fish.

IV Expected Benefit of the Project

The Aquaculture Branch will have the capacity to produce 600,000 fry and 100,000 fingerlings per month satisfying 7,200,000 fry annually. This represents approximately 80% of orders received by the Aquaculture Branch. It is to be noted that :

- With this improved capacity continuous harvest and supply of swim-up fry is guaranteed year round.
- The Aquaculture Branch will also be in a better position to provide the necessary technical support to the farmers, especially as it relates to diversified seed stock.
- It is expected that the Branch will have enough pond space to enable it to conduct much needed growth studies, to guide the industry.

5.5 Aquaculture Development Plan

Cognizant of the need to revitalize and guide the development of the aquaculture industry, the Ministry of Agriculture and Fisheries (MOAF) approached the Food and Agriculture Organization (FAO) for assistance in formulating an Aquaculture Development Plan. Assistance came in the form of TCP/JAM/3301 in 2010, which had the following expected outputs:

- Definition of the extent and scope of aquaculture in Jamaica with special focus on food security and poverty alleviation;
- A comprehensive evaluation of aquaculture production systems used in Jamaica with recommendations for improvement where applicable;
- Comprehensive analysis of the market and marketing opportunities and distribution systems being mindful of external competition, with recommendations for improvement;
- Analysis of the risks to aquaculture development (economic, environmental and social) at the national, regional and international level, with recommendations to reduce these risks;
- Assessment of the institutional and technical capacity in both the private and public sectors to facilitate the development, expansion and diversification of aquaculture;
- An assessment of the institutional and regulatory framework for aquaculture development in Jamaica, with recommendations for integration, where applicable; and
- Recommend suitable investment and support program for aquaculture development.

This plan has been prepared and submitted to the Government of Jamaica and forms the basis of some of the works being initiated by the Ministry of Agriculture and Fisheries.

5.6 Aquaculture Land and Water Use Development Plan and Aquaculture Medium Term Priority Programme / Action Plan

This plan was funded by the European Union under the ACP Fish 11 Project. It was a following-on from the Aquaculture Development Plan and presented broad Medium Term Priority Programme (MTTP)/Action Plan to revitalise the aquaculture sector. Its output was as follows:

- Identification and description of the Jamaican aquaculture governance and regulatory environment, including the legislative framework
- Indication of the potential and constraints to the development of Jamaican aquaculture based on a participatory approach
- Development of a map showing the best suited areas for aquaculture
- Development of a MTTP/Action Plan Roadmap that indicates the timeline for the prioritised activities with guidelines for refining and implementing them
- Development of a roadmap and guidelines on the methodology for accessing funding from international donors and timelines and responsibilities for achieving the objectives defined in the plan

This plan was completed in December 2012 and is now used as one of the tools to guide the industry.

5.7 Establishment of an Aquaculture Industry Development Committee (AIDC)

The Aquaculture Sub-Committee was established in June 2013 by the Hon. Roger Clarke, the then Minister of Agriculture and Fisheries. The purpose of the committee was to provide broad guidance for industry development and to make recommendations to the Minister of Agriculture and Fisheries and the wider sector. The committee comprised of a mixture of government agency, academia, private sector player includwas dissolved in May 2014.

5.8 Species Diversification

Members from the private and public sector took part in a five (5) day study tour to Vietnam in September 2013. This trip was funded by the Fisheries Management Development Fund (FMDF). The main purpose of the tour was to assess and make recommendations regarding Jamaica's potential of a *Pangasuis spp of a fish known as Basa* production. Additionally, the tour sought to ascertain the requirements and more importantly form linkages with Vietnamese technical counter parts with respect to the propagation of *Pangasius spp (Basa)* in Jamaica.

Following-on from that visit, the Aquaculture Branch is undertaking a pilot project in which it will condition and artificially reproduce Basa. It is hoped that Basa, with its high fillet content and fast growth rates would reduce the amount of fillet imported into the country and thereby save foreign exchange.

5.9 Ornamental Fish Industry

Ornamental fish production has also a lengthy history in Jamaica, starting in the 1970's. However, over the last decade the production and export of ornamental fish has declined to a point where only limited quantities are being exported to the United Sates of America.

Recognizing this fact and the huge potential the ornamental industry holds, the Ministry of Agriculture and Fisheries, through the Aquaculture Branch has embarked on a three (3) pronged approach to revitalize the industry.

I. Training
II. Partnerships
III. Market Diversification

Training
During the Financial year April 1, 2014 to March 31, 2015 one hundred and ten (110) persons were successfully trained in various aspects of ornamental fish production by the Aquaculture Branch. The course places emphasis on Good Aquaculture Practices in light of the fact that Jamaica intends to ramp up ornamental fish production in 2016 for the export market.

Market Diversification
Jamaica is extremely well located in relation to the vibrant US market, the largest single producer and importer of ornamental fish in the world, with annual purchases abroad of the order of U$64 million in 2008, U$ 56 million in 2009 and U$ 54 million in 2010. This active destination currently imports over 80% of its foreign needs from Asia, a distant supplier. Additionally, Canada has been reported to have as many as 1.2 million household keeping aquarium fish. To this end, the Veterinary Services Division of the Ministry of Agriculture and Fisheries has worked to ensure that fish from Jamaica can now be exported directly to Canada. This change now opens additionally market opportunities for the Jamaican ornamental producer.

Partnerships
Recognizing the need to accelerate the development of the industry the Aquaculture Branch has entered into working partnership with The Competiveness Company (TCC) and large private farms and other interested parties who are involved with export. It is anticipated that the partnership with TCC will provide a market for small producers and thereby encourage more of these individuals to have an opportunity to earn and eventually export fish to available international markets.

6.0 Mariculture

6.1 Administrative and Governance Arrangements for Mariculture

In Jamaica mariculture falls under the purview of the Fisheries Division and is governed by different pieces of legislation including the Fishing Industry Act, Natural Resources Conservation Act, the Aquaculture, Inland and Marine Products and By-products Act and the Beach Control Act. These Acts provide for the inspection, licensing and location of mariculture facilities.

6.2 Challenges Facing Mariculture

In spite of the existing legislation, there are a few factors that could impact negatively on the growth and development of mariculture in Jamaica. These include:

Integrity of Coastal Waters

Mariculture activities require good water quality, and may occur in coastal or offshore waters. Due to the impact of coastal development, coastal waters may be impacted negatively, by sewage contamination which can have a negative influence on mariculture operations. There is potential for the development of mariculture in offshore waters.

Exclusive Access to the Foreshore, seafloor and water column

The mariculture operator requires access to the foreshore, seafloor and water column. The existing regulations do not permit exclusive rights to these areas. Access to the foreshore is governed by the beach control act, access to the seafloor and water column by NRCA. Access to these areas require licences. Exclusive access to a mariculture facility will enable the mariculture operator to be better able to protect his production from theft. This makes the mariculture operation vulnerable as other users of the water way may be permitted rights of passage through the mariculture facility. Legislation and/or lease arrangements would need to be developed to ensure that the mariculture operator has exclusive rights to his facility.

6.3 Species with Potential for culture

Several options exist for the development of mariculture in Jamaica. These include the oyster culture (Crassostrearhizophorae), saltwater shrimp (Penaeusvannamei), irish moss culture (Gracilariaterete), seawater culture of tilapia as well as the culture of marine fish species e.g. mullets, snappers and groupers. Currently, the only mariculture activity that exists in Jamaica is the culture of the mangrove oyster which occurs in Bowden, St. Thomas.

6.4 Strategic Direction for Mariculture Development in Jamaica

i. Identification and securing of locations for mariculture - An FAO study in 1993 identified coastal sites with potential for mariculture.
ii. Development of feasibility studies for species with potential for mariculture
iii. Development of legislation that permits the mariculture operator exclusive rights to his operations.
iv. Enactment of the Fisheries Bill will also strengthen the rights of mariculture operators
v. Capacity building within the Fisheries Division for technology transfer and research in the culture of various species of organism with potential for mariculture.
vi. Development of hatchery facilities for the culture of marine organisms including oysters.

The Fisheries Division continues to promote coastal mariculture of oysters and is currently implementing a project in Westmoreland and Trelawny. Private interests including Non Government Organizations have expressed interest in looking at other crustaceans, e.g. crabs and shrimp.

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