Legal aspects and governmental actions for the development of mollusc farming in Brazil

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RESUMEN

En 2006 la producción acuícola de moluscos bivalvos en Brasil ascendio a unas 17 000 toneladas con el mejillón de roca sudamericano, *Perna perna*, en la parte superior de la lista (13 000 toneladas), seguida del ostión japonés, *Crassostrea gigas* (3 500 toneladas). El cultivo de vieiras (*Nodipetcen nodosus*) es una actividad bastante reciente. Las principales limitaciones de la industria son la dificultad para acceder a los recursos naturales, la falta de controles sanitarios, las técnicas de cultivo, los escasos servicios de extensión y un conocimiento limitado de especies nativas con potencial acuícola. En la actualidad 77 municipios de 11 comarcas están estudiando planes locales de desarrollo para el cultivo sostenible de los bivalvos. En 2005 el gobierno federal creó el Comité Nacional sobre el Control Sanitario de los Moluscos Bivalvos para mejorar el consumo de bivalvos y su exportación.

ABSTRACT

In 2006 mollusc aquaculture production in Brazil amounted to about 17 000 tonnes with the brown mussel, *Perna perna*, on top of the list (13 000 tonnes) followed by the Japanese oyster, *Crassostrea gigas* (3 500 tonnes). Scallop farming (*Nodipetcen nodosus*) is a fairly recent activity. The main constrains of the industry include the difficulty to access natural resources, lack of sanitary controls, old farming technologies, poor extension services and limited knowledge of native species with farming potential. At present 77 municipalities in 11 states are developing local mariculture development plans to address sustainable development of bivalve culture. In 2005 the federal government created the National Committee on Bivalve Molluscs Sanitary Control to enhance local bivalve consumption and export.

INTRODUCTION

Mollusc aquaculture was introduced in Brazil in the 60´s however only after 1989 did this activity develop as an important economic alternative to small-scale fishermen.

TABLE 1
Production estimates from bivalve aquaculture in Brazil

Common name	Scientific name	Volume (tonnes)
Mussel	*Perna perna*	13 000
Native oyster	*Crassostrea brasiliana* or *C. rhizophorae*	200
Pacific oyster	*Crassostrea gigas*	3 500
Scallop	*Nodipecten nodosus*	23

At present, there are no large companies in this sector and bivalve farming is usually conducted by artisanal farmers organized in associations and cooperatives. The State of Santa Catarina in southern Brazil is responsible for 93 percent of Brazilian bivalve mollusc production (Table 1). Other areas with limited mussel production are located on the Southeast coast.

Mollusc aquaculture in Brazil is mainly represented by brown mussels (*Perna perna*), followed by Japanese oysters (*Crassostrea gigas*), produced in the South region, and the native oysters (*Crassostrea brasiliana* and *Crassostrea rhizophorae*) produced in small quantities in almost all maritime state of the country. Scallop farming (*Nodipecten nodosus*) is a fairly recent activity restricted to Rio de Janeiro and Santa Catarina.

The main constrains of the industry include: difficult access to natural resources, lack of sanitary control of growing waters and farm products, labour intensive farming technologies, lack of proper farming equipment and supplies in the market, no insurance services, poor statistics services, poor extension services, and limited knowledge of native species with farming potential.

The Brazilian bivalve aquaculture sector is undergoing a strategic planning process in Brazil, which covers integrated coastal management, surveillance and control of farming areas and products, modernization and consolidation of existing productive chains, adoption of new technologies, and demonstration of farming activities in traditional costal communities in the northeast region.

ACCESS TO NATURAL RESOURCES

Although there are approximately 1 200 bivalve producers along the Brazilian coast, none of them have succeeded in obtaining a lease permit for marine farming. Between 1999 and 2005, the federal government published five successive normative instructions for lease permits in public waters in an attempt to overcome the difficulties brought about by conflicts between previous land tenure and environmental license regulations and the mandate of the multiple institutions involved in the permit process.

In 2005, the federal government published Normative Instruction N° 17 which established the Local Mariculture Development Plans (*Planos Locais de Desenvolvimento da Maricultura – PLDM*). The PLDM's were based on guidelines of the Food and Agriculture Organization of the United Nations (FAO) for the planning and management of sustainable coastal aquaculture. Their objective is to address cumulative and additive impacts of bivalve mariculture, facilitate all administrative processes to small-scale farmers, and guarantee their social inclusion and permanence of traditional communities in their original land.

The PLDM includes a comprehensive survey of local regulations which may affect mariculture development, identification of protected areas, and others users of the coastal resources such as tourism, navigation and fishing activities. This information is then slotted into thematic charts using Geographic Information Systems (GIS), ranking parameters which allow the identification of suitable areas for mariculture. Once prepared, draft versions of the PLDMs are discussed with the relevant government authorities and local communities in public hearings. The PLDM final version contains any modifications based on recommendations and agreements made during these meetings. The PLDM is now under development in 51 municipalities in six states; 14

municipalities in the state of Santa Catarina are already in the consultation phase while additional plans will shortly be initiated in the northeast region.

One remarkable advance on this planning approach is that the government assumes the responsibilities and costs associated with the studies normally requested by the national environmental agencies, changing a pattern that was hindering small-scale farmer's access to public waters due to their limited instruction and impossibility to cover the costs of the studies required.

SANITARY CONTROL

One of the major constraints of the development of bivalve aquaculture in Brazil is the lack of control of harvesting areas and the lack of traceability of the products. There are thousands of people in coastal communities who depend on clam and oyster pickings. The product is cooked and handled in unsuitable conditions, generally leading to severe risks for consumers. Notwithstanding such they are transported and sold in the capital cities and found in seafood restaurants.

To enhance food security of bivalve consumption in Brazil, improve consumer confidence and enable access to international markets, the federal government created, in 2005, the National Committee of Bivalve Molluscs Sanitary Control. The Committee brings together the authorities responsible for quality control of bivalves from the harvesting areas, processing/depuration plants, and throughout the distribution chain. The Committee has conducted national workshops with representations from state government agencies in order to elaborate the National Shellfish Sanitation Programme (NSSP).

A government-supported traceability software is also under development and will be eventually accessible through the Web. The traceability system is considered as vital for proper management of the NSSP. Not only will it allow the tracking of mollusc batches but will serve as a communication channel between consumers and the authorities in order to guide epidemiology services and risk control measures. The programme will also allow the zoning of areas with occurrence of bivalve diseases and the control of mollusc transport between different zones and water bodies.

The Brazilian NSSP will take both the United States of America and the European Union requirements into consideration to set the minimum quality standards for both seawater and bivalve meat. Whilst the programme is being finalized, negotiations between the federal government and state authorities are underway to guarantee the required resources.

SEED SUPPLY

In the past mussel seeds were mainly obtained from natural beds and their limited recovery capacity was a major developmental constraint to the industry. The dependence on natural banks has reduced dramatically the production of this species in the main producing region, i.e. Santa Catarina. However, after extensive research projects, the seasons and best sites to collect wild seeds using artificial collectors have been identified. Currently the majority of mussel seed are obtained from such collectors.

There are only two bivalve hatcheries in the country. The main one is the Laboratório de Moluscos Marinhos (LMM) based at the Universidade Federal de Santa Catarina (UFSC), located at Florianópolis (Santa Catarina). This facility currently is the only one that provides Pacific oyster (*Crassostrea gigas*) seeds in Brazil and its annual production capacity is 30 million seeds, which are mainly supplied to farmers in the state of Santa Catarina although some smaller quantities are sold to other states. Besides the Pacific oyster, the LMM also produces larvae and seed of the South American rock mussel (*Perna perna*), two native oysters (*Crassostrea brasiliana* and *Crassostrea rhizophorae*), the *Nodipetcen nodosus* scallop, the winged oyster (*Pteria hirundo*) and the angel wing (*Cyrtopleura costata*) on an experimental scale.

The second hatchery is the Instituto de Ecodesenvolvimento da Baía de Ilha Grande (IED-BIG), located in Angra dos Reis, Rio de Janeiro. The IED-BIG produces mainly scallop (*Nodipetcen nodosus*) seed. Their current annual production capacity is 12 million seeds which are mainly sold to the local farmers.

A third hatchery is about to start production of the native oysters (*Crassostrea brasiliana* and *Crassostrea rhizophorae*) in the state of Rio Grande do Norte. This regional supply is anxiously awaited by a number of farmers who depend on the collection of natural spats in mangrove areas. The transport of native oyster produced in the LMM hatchery to the northeast region has been criticized by shrimp farmers who fear that the oyster seeds may act as carriers of the white spot virus currently present in numerous shrimp farms in the state of Santa Catarina.

NEW FARMING TECHNOLOGIES

A series of international bilateral cooperation schemes are currently underway to promote the transfer of new farming technologies into Brazil. Following a trade mission to New Zealand in 2004, an intense exchange programme for students, farmers, companies and technicians commenced between the two countries. As a result mussel farming equipment was imported and two mussel demonstration farms installed to train farmers and students in the continuous mussel farming system used in New Zealand.

Another bilateral cooperation programme with Canada is about to commence in order to transfer clam farming technology in the northeast region of the country. Although there are thousands of people who live from clam picking in many states, none of the species in this bivalve group are currently farmed in Brazil. This cooperation will be supported by the Canadian International Development Agency (CIDA) and it expected to have a strong synergy with the ongoing FAO/Unilateral Trust Fund on coastal communities' development. The total sum of these two projects is USD 8 million, although the UTF also encompasses seaweed farming and co-management of coastal resources.

RESEARCH

The most important ongoing research on bivalves in Brazil is the work carried out by a network of ten institutions to: 1) plot the natural occurrence of native oysters (*C. brasiliana* and *C. rhizophorae*); 2) conduct selective breeding of *C. brasiliana*; and 3) study the growth performances of selected families in different regions of the country. This research will hopefully assist farmers in the near future to distinguish between the two oyster species particularly as *C. brasiliana* seems to growth much faster than the mangrove cupped oyster (*C. rhizophorae*). This research programme is expected to deliver selected oyster broodstock to the existing hatcheries located in different regions of Brazil.