Aquaculture contributes substantially to human food basket besides providing livelihood, economic viability and overall sustainability to coastal and inland communities. The increasing awareness on traceability, food safety / security demands focus on product quality charcterized by efficient farm management practices in relation to surrounding environment and social issues. Certification is seen as a tool of communication between producers and international consumers in this direction.

Certification is a formal recognition of produce conforming to the standard specified by the Certification Programme. For small scale aqua farmers the concept and methodology of certification may appear complex, inaccessible and costly.

This guideline provides step by step approach on the subject enabling effective understanding leading to pilot tesing of the same in their respective aqua societies thus preparing them to seek certfication from the Certification programmes of their choice.

In order to share the Certification costs among the small scale farmers, Group Certfication has been suggested by grouping the farmers of a given locality sharing common Natural resources in to an Aqua Society (legalized entity). The process involved in the formation of Aqua Society with affiliation to NaCSA is also described.

After reading this guideline, aqua farmers would realize that Certification is not a barrier of trade but an enabling mechanism.

SUSTAINABLE AQUACULTURE THROUGH BETTER MANAGEMENT PRACTICES

MPEDA / NACSA - NACA AQUACULTURE SOCIETY CERTIFICATION PROJECT

GUIDELINES ON THE AQUACULTURE SOCIETY CERTIFICATION

SUSTAINABLE AQUACULTURE THROUGH BETTER MANAGEMENT PRACTICES

Produced by NACA in collaboration with MPEDA / NaCSA

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This "Guidelines on Aquaculture Society Certification", is the key output of the MPEDA/NaCSA-NACA collaborative project on certification of aqua society.

Draft guidelines developed by the project partners were discussed at the inception meeting on aquaculture society certification held at Kakinada during 1st and 2nd September 2009. The meeting was attended by leaders of the aqua societies, representatives of certifying bodies and Central organizations / Institutions besides representatives of MPEDA, NaCSA and NACA.

As per the recommendations of the inception meeting, pilot testing of group certification was carried out during January to September 2010 in three Aqua Societies and the draft Guidelines was revised in October 2010 considering the lessons learnt from the pilot testing.

The guideline developed is independent of commodities and certification standards. The guidelines would prepare and enable aqua societies to seek group certification from independent third party certification programmes.

Abbreviations

ADF:	Assistant Director of Fisheries
BMP:	Better Management Practices
CAA:	Coastal Aquaculture Authority
DD:	Deputy Director
DO:	Dissolved Oxygen
DOC:	Days of Culture
EIA:	Environment Impact Assessment
ELISA:	Enzyme Linked Immunosorbant Assay
FCR:	Food Conversion Ratio
Ha:	Hectares
ICS:	Internal Control System
MPEDA:	Marine Products Exports Development Authority
MRO:	Mandal Revenue Officer
NACA:	Network of Aquaculture Centers in Asia Pacific
NaCSA:	National Centre for Sustainable Aquaculture
PCR:	Polymerase Chain Reaction
PL:	Post Larvae
SOP:	Standard Operating Procedures
SWOT:	Strengths, Weakness, Opportunities and Threats

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1. Background

1.1. Aquaculture

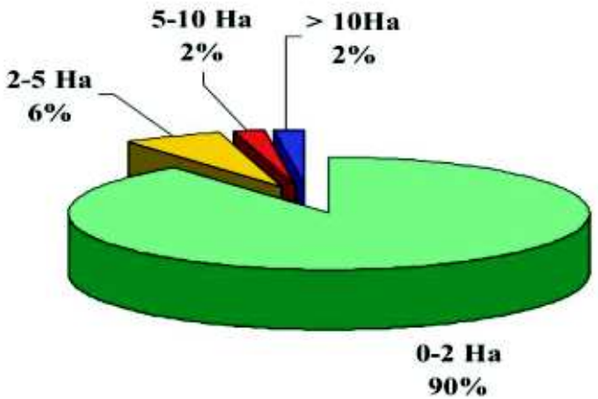
Aquaculture refers to rising of aquatic species of economic value under controlled conditions. Aquaculture is a source of livelihood, food security, poverty reduction through income generation (increasing returns on resource use) and employment. The **production process** and **marketing the produce** are the two sides of the aquaculture activity that defines / determines the yield of the commodity and the corresponding sales realization (through efficient marketing) respectively.

Aquaculture production akin to agriculture is considerably influenced by the vagaries of Nature. Aquaculture is also loosely termed as underwater agriculture; which demands effort even just to see the standing crop towards assessment and monitoring. Understanding the site characteristics', biology of the cultured species, providing near natural habitat conditions to the candidate species are issues enabling successful culture operation.

Aquaculture is highly diverse activity consists of many species, systems, practices, people, environments and operations. The marketing of the aquaculture produce is characterized by product quality, governed by market demand and is influenced by price fluctuation. Being small scale farmers, the produce is mostly routed through middlemen and not directly to the exporter, thus depriving of the commensurate price to the primary producers.

1.2. Characteristics of Small scale Aquaculture

Aquaculture is an enterprise of small and marginal farmers as the land holding of 90% of the farmers are less than 2 Ha.



Composition of Aquaculture Farmers in India (based on land holdings)

The small scale farmers - resilient, adaptive and innovative as per the situation contribute over 70% of the total aquaculture production; potential resource for improving household food security and supplementing family income of the rural poor. Further aquaculture is also acceptable to women members of farm families owing to less strenuous and shorter daily labor requirement, close proximity to the homestead and a source of high quality food for the family.

1.3. Challenges faced by small scale farmers

The hubs of aquaculture activities are in the remote villages scattered in the coastal belt of maritime states and challenges faced by small farmers are many that can be summarized as follows:

- Poverty (= Limited economic resources); Poverty is multifaceted with attributes such as low purchasing power, illiteracy, meager coverage of information & communication, low levels of production, and lack of social organization leading to exploitation by middlemen and money lenders
- Inadequate literacy (the level of illiteracy is as high as 56 percent), limited technical and business knowledge
- Small (cum uneconomical) land holdings and inadequate farm infrastructure (approach road, electricity and communication facilities)
- Lack of appropriate technical guidance at the right time
- Limited or inequitable access to financial services to fund change
- By and large un-organized (lack of co-ordination among themselves on crop planning, choice of candidate species, stocking density, culture methodology, harvest, discharge of pond water in to creek etc.,)
- Lack of confidence in seed quality, seasonal availability of seed
- Lack of Insurance
- Alienation by the large traders & buyers (risk management strategies of larger traders and buyers are driving against small-scale farmers; in other words… easier for big buyers to deal with big farms with larger volume output)
- Fear of failure owing to risky venture with multiple potential vulnerabilities
- Changes in costs & business structures in Aquaculture (variation in cost of inputs feed, energy etc., & fluctuation in market price)

Keeping in the view of the above, aspects like participatory techniques, group mobilization, participatory resources management etc., assume importance towards promotion of successful / sustainable aquaculture.

1.4. MPEDA/NACA Technical Cooperation

Aquaculture in India is being practiced from time memorial and the traditional aquaculture is characterized by extensive type with by low stocking density (< 3 / m^2) of seeds mainly collected from natural water bodies. The increase in

exports demand led to the spurt both in intensification and expansion of aquaculture activities. On the other hand, the flurry of activities resulted in concern for animal health resulting in disease outbreak calling for the regulation for revival and sustainability of the aquaculture activity.

Since the year 2000, NACA has been extending technical assistance and cooperation to MPEDA for implementing "Better Management Practices" (BMP) in shrimp aquaculture. Village demonstration programme on Shrimp Disease Control in India was taken up jointly by NACA / MPEDA during the years 2002 to 2006 by organizing small scale farmers into self-help groups known as "Aqua-clubs" for adoption of "Better Management Practices" (BMP) - emphasizing on pond bottom, water quality, screening of seeds, judicious feeding, low stocking density besides coordination of farm activities by group formation. The programme contributed significantly towards reduction in disease related losses and cost of production besides improvement of yield and shrimp quality (free of antibiotic, traceability). Encouraged by the results, many small scale farmers in several maritime states of India have come forward towards formation of many aqua clubs and adopt BMPs for mutual benefit.

1.4.1. Formation of National Centre for Sustainable Aquaculture (NaCSA)

MPEDA has re-named the Aqua-clubs as Aqua Societies, conferred legal status through Registration formalities besides formulating scheme at the primary producers' level by extending assistance to follow and adopt BMPs. Keeping in view of farms and farmers functioning in a wide and extensive geographical location across Indian sub continent, realizing farmers' growing demands and considering the need to meet the requirement sufficiently, effectively and in a timely manner MPEDA has constituted NaCSA, an outreach organization, to cater to the scientific extension needs, primarily based on Better Management Practices (BMPs).

1.4.2. NaCSA and its role in Aquaculture

NaCSA was officially inaugurated by the Minister of State for Commerce on 3rd March 2007, with its headquarters in Kakinada, Andhra Pradesh. The primary purpose of NaCSA is to continue the MPEDA/NACA project activities and to build on it by covering more areas, farmers and other aquaculture commodities (e.g. scampi, marine fin fish), as well as improvements to BMPs that would evolve over time. NaCSA functions being:

- Promoting better management practices to improve aquaculture productivity and profits
- Capacity-building and empowerment of primary producers through formation of aquaculture societies
- Facilitating improved service provision
- Connecting farmers to markets to receive a better price for quality product
- Technology transfer and diversification to other commercially important species
- Supporting improved food security and sustainable livelihoods in aquaculture communities

NaCSA will facilitate development of an enabling policy environment that will increase the competitiveness of the Indian Aquaculture sector in regional and world markets through its links with MPEDA and Government.

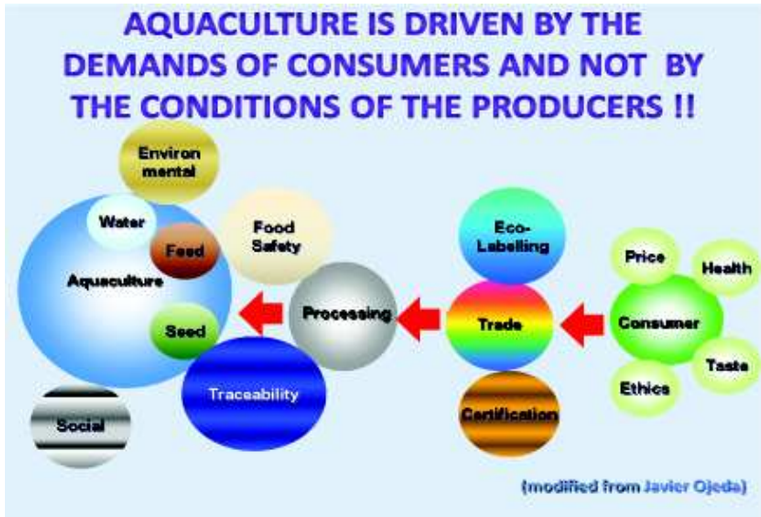
1.5. Aquaculture driven by demands of consumers than by conditions of Producers

The adoption of BMPs brings considerable relief to small scale farmers on shrimp culture production. Formation of Aqua Societies has by and large provided a louder and unified voice to the small scale farmers in facing the challenges on production related issues. The next issue was to ponder on wider opportunities for marketing that would fetch commensurate price for the produce.

Aquaculture produces perishable products with a short shelf life; therefore distribution skills and production planning have to be honed to meet market demands. Aquaculture product expansion has placed increased requirements on quality and food safety by consumers and regulators. The long-term viability of aquaculture development will be market driven, accounting for consumer demand and the capacity to adapt to the structure and legislative demands of the target markets.

- The consumers' increasing demand for confidence in safe and sustainable food,
- The aquaculture's need to produce affordable food in a sustainable way and
- The retailers – the direct link to the consumers in the food chain – need for a dependable tool for their suppliers represent a basic motivation for certification.

Sharing the food production guidelines with growers, food producers and retailers – specifying how food is grown and what has been used to produce it – is an important contribution to the harmonization needed to achieve clear and transparent processes. Certification is seen as an enabling mechanism endorsing the quality for the produce besides offering wider access to market aimed at enhanced realization enabling economic freedom with social responsibility for the primary producers.



1.5.1. NACA – MPEDA/NaCSA MoU on Aqua Society Certification:

Having realized the importance of Certification as means of higher realization for the produce through better market accessibility and enhanced product quality (for the small scale farmers), MPEDA / NaCSA and NACA have signed a Memorandum of Understanding (MoU) towards popularizing the same among the small scale farmers of India for adoption with an objective to develop a practical system for quality assurance and certification of small-scale farmers' aqua societies. NACA has hired a Project Manager and positioned in India to fulfill the terms of reference underlined in MoU and has drawn an ambitious programme to disseminate the same among the small scale farmers of India (aimed at answering the following questions that dangle in front of every farmer)

a) What is Aquaculture Certification? What are the long term economical benefits of Certification?
b) What is an aqua society? What is meant by group certification of aqua society?
c) How does Certification influence / help to improve / assist Aquaculture operation of a Society?
d) What are the steps involved in group certification?

1.6. Certification :

The Standard Operating Procedure (SOP) {based on the BMPs} of aqua society describes the methodology to be followed to make the culture operation successful, sustainable, eco friendly with social responsibility. The SOP prohibits the usage of the following on aquaculture operations:

i) Banned antibiotics and Chemicals
ii) Underground water (fresh , brackish and saline)
iii) Deployment of child labour

However, the CERTIFICATION is a formal recognition of product's conformance to an Industry standard specification; outlining the EXPECTATIONS based on consumer preference, affordability, marketing demand, food safety, Traceability supported by documentation and Social responsibility.

"Certification is a procedure by which a certification body gives written or equivalent assurance that a product, process or service conforms to specified requirements and is carried out by competent and accredited body''(Adopted from IFOAM)

Presently there are about dozens of CERTIFICATION PROGRAMME each with distinct and defined standards. It is imperative that the small scale farmers require Guidance in understanding and adoption of the same (considering site characteristics) and it is with this objective the GUIDELINES ON AQUA SOCIETY CERTIFICATION has been prepared to disseminate information in a simple fashion for effective understanding on the subject and efficient compliance of the same by the small scale farmers.

1.6.1. Rationale on Certification :

Aquaculture is highly diverse activity consists of many species, systems, practices, people, environments and operations and the landscape within which aquaculture is operating is changing considerably. With Food safety and Traceability being the

order of the day, sustainability, safety, quality and equity of products and production process are gaining importance. Further with increase in aquaculture output, concerns are equally emerging on the impact on i) Social ii) Environment iii) Food safety and iv) Animal health and welfare. National legislation coupled with adoption of BMPs is seen as means of mitigation to the above issues. Nevertheless an endorsement is necessary declaring compliance on the above. Certification is seen as tool of communication between producers and International consumers. Certification also facilitates economic incentives to producers and the Industry {through enhancing market access & marketability}.

1.6.2. Benefits of Certification:

STRENGTHS	WEAKNESS
• Compliance with food safety standards • Promote meaningful Corporate social responsibility • Increases the accountability for producer to other stakeholders • Brings social & environmental issues to the forefront of production issues • Ensures good conscience for consumption choices • Transparency / availability of information on production process and source of inputs for the same: chain of traceability • Enhances market access; provide niche market access • Offers scope on premium for producers • Promotes ingenuity within producers	• Credibility of certifying programme and Standards (too many Certifying Programme with varying standards; often local conditions are overlooked) • Lack of community engagement • Lack of enforcement and monitoring • Difficulty in implementing absolute Traceability owing to importers are not producers • Complacency of NGOs, consumers • Marginalization of poor (small / medium scale) farmers / producers • Relatively higher cost of Certification • Producer doesn't feel ownership over standards/criteria • Large potential for conflict of interest and corruption for certifiers

OPPORTUNITIES	THREATS
• A clearer yardstick to measure performance and identify violations. • Enhance better management practices and lead to more sustainable production Can mitigate conflict and foster cooperation between stakeholders	• Producers can't comply with many different standards • Consumers confused with different labels • Certification by industry alone results in false acceptance/ advertising and green washing • Acceptance of standards without really carrying about issues

1.6.3. Issues on certification of small farmers :

Issues faced by individual small farmers on Certification are given below in several heads:

Physical
- Small size and large numbers of farmers
- Small volumes and value of product from individual

Legal
- Farms may not be formally registered

Operations / Procedural
- Efficiency in adopting BMPs (especially Biosecurity)
- Traceability
- Food safety
- Recording keeping

Financial
- Cost of certification: being small , farms may not cover the costs of certification
- Low or no market incentives

Marketing

- Complex marketing channels make traceability difficult
- Middlemen or direct to a local market
- Trader credit relations

Certification Programme

- No certification Programme targeted for small scale farmers
- No Trade Fair schemes till date

The above necessitates formation of groups (societies) among the aquaculture farmers enabling them to be covered by the certification and to explore group certification as possibility for the same.

1.7. Group Certification: A way forward

The individual small farmers are interwoven between limited finance & infrastructure and limited trade betterment which are the main reason for poverty. Thus small farmers are trapped in a vicious circle, which denies them economic freedom and progress.

Keeping in view of the fact that nearly 90% of the Aqua farmers are small scale operators, it is relevant that the certification system need to be innovative and cost effective to address the local conditions beside to extend coverage to all the small scale farmers. The certification for individual farmers is not only prohibitively expensive but also impractical; thus grouping small farmers with common Natural resources towards optimum utilization becomes imperative.

The three requirements of group certification may be represented schematically as the three sides of a triangle in an attempt to emphasize that each one is an essential part of the whole.

Group Certification refers to ''Certification of the Group comprising of small scale farmers of a given locality sharing the common resources and employ common technology to promote sustainable aquaculture under an entity (Aqua Society) that manages and documents a clear and transparent Internal Quality Assurance System''.

Group certification is intended for group of (small scale) farmers affiliated and operated under a legalized entity (Aqua Society) and the certificate issued will be in the name of aqua society. Compliance to the set standards both by i) every individual member and ii) collectively (Aqua Society) is mandatory for Group Certification. Non-compliance by any one of the farmers leads to exclusion of that farmer from certification programme and in extreme cases, denial of certification to the Aqua Society itself. Responsibility (both individual & collective level), unity & compatibility of members are the essence of group certification which calls for an efficient co-ordination among the farmers.

Thus group certification allows a group of aquaculture farmers to join together towards effective management and functioning besides sharing certification costs among the Group members.

1.7.1. Characteristics of Group certification

Group certification is intended for a group of farmers normally considered for small-scale aquaculture farmers, for whom individual certification is cost prohibitive and who have key characteristics in common, for example;

- Homogeneity of members in terms of
  - ❖ location,
  - ❖ Production system,
  - ❖ Products
  - ❖ Size of holding
- Common marketing of the produce as a group
- An Internal Control System to ensure compliance with the Certification standards by all members of the group

As the above mentioned characteristics are common to farmers within an Aqua Society (and unique to each and every Aqua Society), Group Certification is the appropriate choice and hence is recommended.

Group certification is used (in the organic sector) as a way to allow small producers in developing countries (organized as co-operatives or farmers organizations) to certify products for export markets via an internal control system (ICS).

The Small scale aqua farmers societies to undertake the Certification Programme must have the legal status through registration with Government authorities. Registrations with the following bodies are statutory in India.

- Registrar, Societies (State Registration)
- CAA (Coastal Aquaculture Authority)
- MPEDA

1.8. Society and Cluster

SOCIETY is a group of people formed as a separate organization and which has a stated purpose in regards to the common interests of the members while CLUSTER refers to inter- dependent aquaculture ponds, often situated in a specified geographical locality and in close proximity to each other with the following characteristics:

- Share resources or infrastructure (e.g. water sources or effluent discharge system)
- Have the same production system
- Involve the same candidate species

The interdependent individual farmers of the (cluster) ponds with a participatory approach, common initiatives and shared interests through informal discussions agree united to practice aquaculture, constitute cluster members.

The united entity upon fulfilling the legal requisites becomes the AQUA SOCIETY and the members, aqua society members.

1.8.1. Characteristics expected of the Society members

Team work with a target oriented approach through optimum utilization of existing common natural resources is the key characteristics of the society members. The requisite characteristics expected of the society members could be outlined as follows:

Participatory approach

- Collective planning, decision making and implementation of crop activities by a group of farmers in a cluster

Common goal

- Addressing challenges based on shared interests and common initiatives towards increased productivity and growth with equity and prosperity

Democratic process

- Facilitating equal participation and Empowerment of each member of the society
- Freedom with Responsibility
- Empathetic and helpful in others problem
- Encourage rotation of leadership in order to provide leadership experience to all members.

Adoption of BMPs:

- Good pond preparation
- Good quality seed selection
- Water quality management
- Feed management
- Health monitoring/Bio security
- Pond bottom monitoring
- Disease management
- Addressing food safety concerns
- Better Harvest and post-harvest Practices
- Record maintenance/Traceability
- Environmental awareness

The activities of the aqua societies would be monitored by officials of Government Agencies (NaCSA / MPEDA in India) to ensure high degree of compliance in terms of democracy and transparency.

It can be said that, **Aquaculture Societies are by the Farmers… of the Farmers… and for the Farmers…**

2. Certification of Aqua Societies

Having understood the concept of Aqua culture Society and the importance of Certification, the next stage is to outline the key steps involved in obtaining the group certification. This topic is dealt in two phases;

Phase1: Formation and functioning of aqua societies (basic minimum requirements)

1. Survey and identification of aquaculture farms including mapping
2. Generating consent for formation of Aqua Society
3. Creation of functional entities
4. Formalizing Legal requisites (National registrations)
5. Development of SOP (Standard Operating Procedure)
6. Development of Traceability system
7. Operation of Aqua Society (implementation of SOP, BMP and Traceability system)

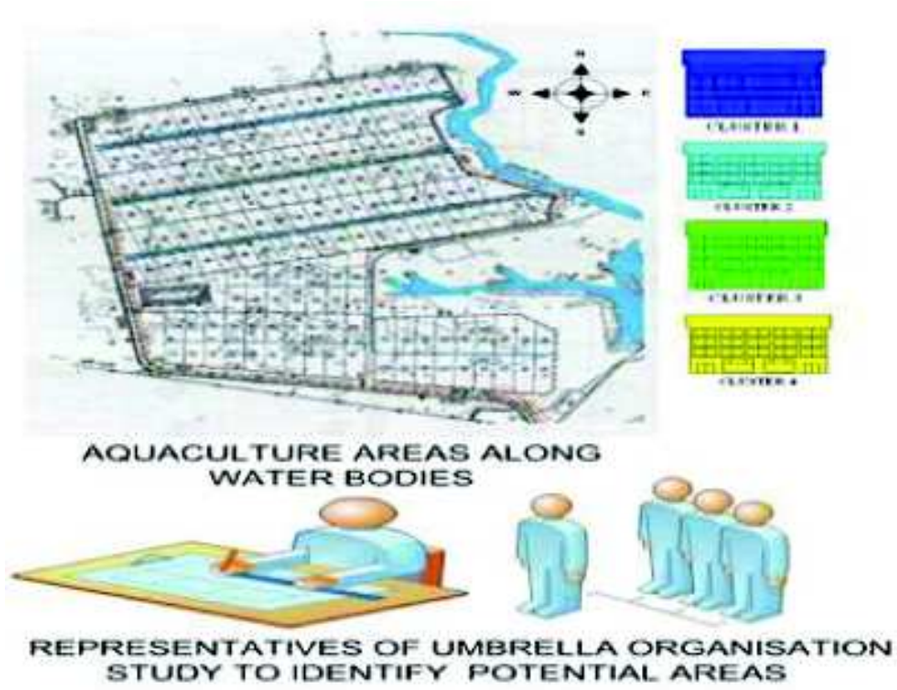
Phase 2: Procedures to be followed for attaining group certification (for societies interested in certification)

8. Awareness on society / group certification by society members
9. Identification of Certification Programme
10. Understanding Criteria, Indicators and Standards of the identified Certification Programme
11. Assessment of capacities of the society in relation to criteria, indicators and standards of certification programme
12. Review / modification of SOP in conformity with the chosen Certification Programme
13. Organization of the certification programme
14. Setting up of Internal Control System (ICS)
15. Internal Audit
16. External Audit
17. Outcome of Certification Programme (Issuance of Certificate)
18. Review of crop and the Certification Programme

Phase1: Formation and functioning of Aqua Societies

2.1. Survey and Identification of Aquaculture Farms (Step 1)

Every country is bestowed with aquatic resources and it is the human endeavor to make use of the same to the benefit of human kind with the development of requisite infrastructure. Representatives of umbrella organization (MPEDA & NaCSA in India) survey the potential areas (both coastal and inland) for Aquaculture society formation and prepare the maps outlining layout of ponds and the water movement (intake and discharge).



2.2. Generating Consent for the Formation of Aqua Society (Step 2)

Representatives of umbrella organization (MPEDA & NaCSA in India) identify the progressive aqua farmers of the prospective aqua farms and interact with the members through an informal meeting appraising the concept of aqua society (purpose, process, product and prospectus).In couple of sittings through the consensus, consent for the formation of aqua society is achieved.

2.3. Creation of Functional Entities (Step 3)

Subsequent to the consent (for the formation of aqua society) by the aqua farmers, representatives of the umbrella organization (MPEDA & NaCSA in India) convene a formal meeting inviting all the aqua farmers of the identified farm and facilitate constitution of a Executive committee (President, Vice President, Secretary, Joint Secretary and Treasurer) through election involving transparent and democratic process.

A name is agreed for the Society by consensus.

The contract is executed between the society and each member stating that

each member will abide by the rules and regulation of the society with regard to procedures to be adopted for culture operations.

List of farmers is prepared mentioning the name of the farmer(s), Father / Husband name, Pond Area (Ha) and Number of ponds.

Representatives of umbrella organization (MPEDA & NaCSA in India) facilitate the Executive committee to formulate bye-laws for the Aqua Society.

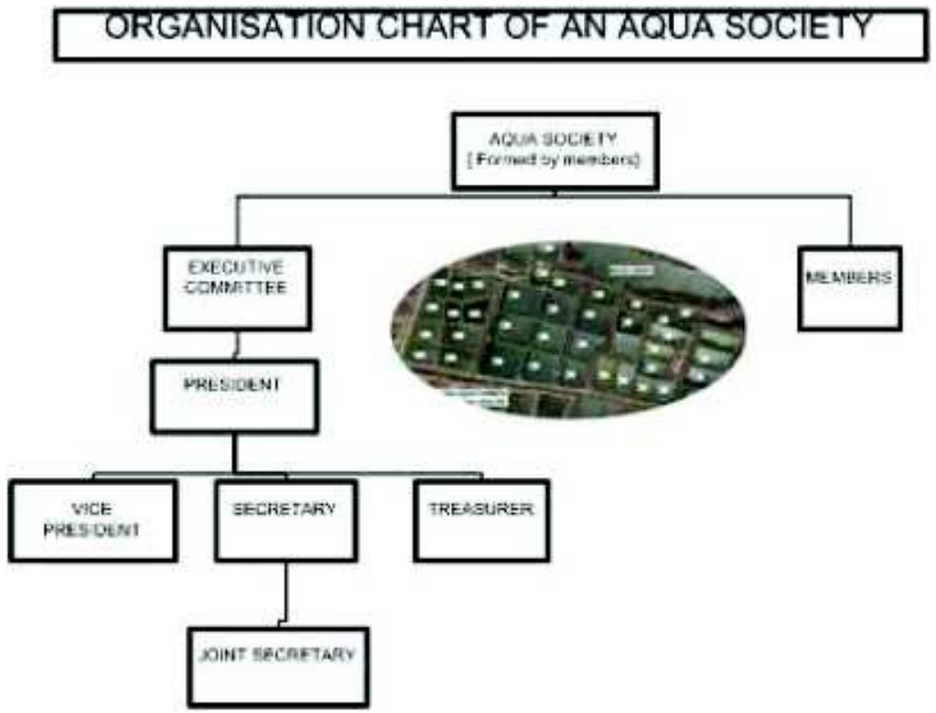
A bank account is opened in the name of the Society, to be operated jointly by any two among the President, Secretary and Treasurer in one of the nationalized banks. All financial transactions of the society are to be routed through bank to ensure transparency.

REPRESENTATIVES OF UMBRELLA ORGANISATIONS INITIATE INFORMAL DISCUSSIONS WITH AQUA FARMERS

FORMAL MEETING OF FARMERS (IN PRESENCE OF REPRESENTATIVES OF UMBRELLA ORGANISATIONS) TO UNITE AS A GROUP TO FORM SOCIETY & TO CONSTITUTE EXECUTIVE COMMITTEE

2.3.1. Organization chart of an Aqua Society

The typical organizational chart of the aqua society is represented below:



2.3.2. Society Structure and Functions

The Society structure and the functions of the Executive Committee are as follows:

SOCIETY STRUCTURE	
Aquaculture Society consists of Farmer members comprising of the following: 1) Executive Committee (Office bearers: President, Vice President, Secretary, Joint Secretary & Treasurer) 2) General body: With all the farmer members	
OFFICE BEARERS OF THE SOCIETY & THEIR DUTIES	
Designation	Duties & Responsibilities
President	• Head of the Aqua Society • He presides over all the meetings • Corresponds with general public, government depart ent, other institutions, on behalf of the society
Vice President	• He assists President in all his Functions • In the absence of President; he executes presidential duties.
Secretary	• He is the Executive office of the Society • Custodian of all records • Correspondent on behalf of the society • Drafts all the minutes of the meeting with the Permission from the President • Guides Treasurer towards preparation of budget
Joint Secretary	• He assists Secretary in all his Functions • In the absence of Secretary; he executes Secretarial duties as entrusted to him.
Treasurer	• He is responsible for all-financial transactions and funds of the society. • He maintains accounts properly along with the vouchers • He prepares the budget of the society jointly with the Secretary or President.
Note: All the above positions are rotated among the members of the Society once in 2 years	

2.3.3. Rules and Regulations of the Society

The Society being formulated with legal status by fulfilling National Registration will be governed by Rules and regulations as per the Society act considering the nature of operations.

The Society to have the Memorandum of Association mentioning i) Name, ii) Address iii) Area of operation iv) Nature of the Society v) Objectives vi) Governing body and vii) Rules and regulations

The Rules and Regulations to cover the following: i) Membership ii) Subscription iii) General body and the periodicity of the meeting , iv) Executive committee: tenure of office and the election process v) Duties and Responsibilities of office bearers vi) Accounts and Audit vii) Operation of Bank accounts

Both the above namely a) Memorandum of Association and b) Rules and Regulations have to be formulated as per the situation in consultation with all the members of the Society and has to be ratified by the Registrar, Societies of the State Government.''

2.3.4. List of documents to be maintained with the society

List of documents to be maintained by the aqua society is given below:

LIST OF DOCUMENTS TO BE MAINTAINED WITH THE SOCIETY	
LEGAL	• List of farmers with due signature (Name, Address, Area, Copies of ownership documents, number of ponds, pond identification number, date of entry etc.,) • Contract between member & the society • Farm map • Registration certificates (State, CAA & MPEDA in India) • Copy of the registered memorandum along with up-to-date bye-laws with amendments made from time to time • The minutes book for the meetings of i) Executive Committee, ii) Annual General Body iii) any other • Attendance register for the meetings

ACCOUNTS	• Accounts of all assets and liabilities of the society • Accounts of all sums of money received and expenditure by the society and their respective purposes • Ledger cum cash book • Passbook • Accounts of all purchases and sales of goods by the society • Copies of the audit reports and if any , and compliance reports thereon
TECHNICAL	• Crop planning details & data records • Seed (laboratory test reports, packing & transportation details, acclimatization & stocking details) • Pond data Register : Hydrographical data & pond inputs on daily basis • Growth monitoring (periodical sampling) details • Crop Harvest details (Date of harvest, ABW (g) at harvest, Harvested Quantity (Kg) – count wise • Movement Document Register i) on seed purchase from hatchery ii) Sale of harvested shrimp to processing plant • Capacity building (Training on ICS)
OTHERS	• Receipt Book • Voucher Book • Letter Pad of Society

2.4. Formalizing Legal Requisites (National Registrations) (Step 4)

The aqua society thus constituted is to have legal status, which is achieved by fulfilling requisite National registrations. In this regard, in India the farmers of the aqua society have to apply to the following authorities:

a) Registrar of Societies - State Registration
b) Costal Aquaculture Authority (CAA) – Registration / License
c) Marine Products Export Development Authority (MPEDA) – Registration

2.4.1. Registrar of Societies (State Registration)

Office of the Registrar of Societies is a regional body of the State Government that maintains the list of societies registered in the region.

The President of the aqua society along with Executive committee members meets the Registrar-Societies (by prior appointment) and submit the duly filled in Registration form together with the list of farmers with pass port size photo of each member along with the requisite fees.

2.4.2. Coastal Aquaculture Authority (CAA) Registration

CAA is the aquaculture authority of the Central Government established with an objective to regulate coastal aquaculture activities in maritime states to ensure sustainable development without causing damage to the coastal environment.

The CAA Application forms for registration (FORM I) is obtainable from the office of the authority or from the office of the Assistant Director of Fisheries or be downloaded from CAA website (www.caa.gov.in)

The President of the aqua society submits the duly filled in CAA Application form for registration together with list of farmers and prescribed fees to the Assistant Director of Fisheries (ADF)

ADF verifies the list of farmers and the area, subsequently forwards with recommendation to State Revenue Authorities {Mandal Revenue Officer (MRO)}

MRO on verification acknowledges his endorsement and returns to ADF.

ADF upon receipt of the same, forwards to the Member Secretary CAA for consideration. Certificate of Registration shall be granted by CAA in FORM II and shall be subject to the terms and conditions specified in the certificate.

With regard to aquaculture in inland waters (fresh water habitat), the registration has to be done with State Fisheries Department through office of the Deputy Director of Fisheries situated in each District (instead of CAA).

2.4.3. Registration with MPEDA

MPEDA is an organization that functions under Ministry of Commerce, Government of India. MPEDA evinces keen interest on aquaculture owing to its export potential. MPEDA has formulated numerous schemes for the promotion and development of aquaculture. The concept of aquaculture society is the brain child of MPEDA and subsidy is granted by MPEDA towards formation and operation of aqua societies.

Registration of aqua society with MPEDA is mandatory to avail financial and technical assistance.

The president of the Aqua Society applies for MPEDA registration by submitting the following to the office of the Deputy Director in the respective region.

- Prescribed form duly filled in
- List of the farmers with land details endorsed by Fisheries Development Officer (State Government) mentioning that the farm has applied for CAA Registration
- Copy of the Society registration Certificate issued by the Registrar of Societies
- Copy of the bye –law of the aqua society
- Copy of Standard Operating Procedure (SOP)
- An undertaking on adoption of SOP executed in bond paper
- Prescribed fees

Upon receipt of the application and further verification of the same, the DD MPEDA undertakes audit and based on the audit report, Director MPEDA confirms Registration.

2.5. Development of Standard Operating Procedure (SOP) (Step 5)

SOP is a Technical document that prescribes the methodology of culture operation to be carried out keeping in view of site conditions, biological characteristics of the candidate species through adoption of Better Management Practices (BMPs) towards responsible and sustainable aquaculture. The SOP will contain the following information:

- Water spread area (Ha) of the aqua society, total number of members and the ponds.
- Candidate species
- Cropping pattern (Calendar of months for various activities viz., pond preparation, stocking, Growing , harvesting and sun drying)
- Stocking density

- Adoption of BMPs (water, feed, soil and pond management, Usage of chemicals and therapeutics, bio security measures, harvesting & post harvest handling)
- Social and Environmental responsibility

Representatives of umbrella organization (MPEDA & NaCSA in India) facilitate the formulation of SOP in consultation with Executive committee of aquaculture society and keeping in view of the site characteristics (A typical SOP is in Annexure 1).

2.5.1. Better Management Practices (BMPs)

BMP refers to set of meaningful objectives (characterized by continual process) towards sustainable production besides overall reduction of farming and processing impacts. BMP focus the following issues:

- Technological issues towards sustainable production – improvement of product quality – reduction in inputs and production cost
- Reduction of waste, pollution and risk of failure; thus improvement of overall environmental performance
- Enhancement of market competitiveness – gains or maintains access to new markets
- Fulfillment / obtaining regulatory relief

BMP depends on the candidate species, technology adopted (scale of production), available resources {men (labor), material (land) and money} and overall management system.

2.6. Development of Traceability System (Step 6)

With the increase of awareness on food safety and food quality, everyone needs to know that the food is safe to eat and there is no risk of contamination or disease. In reality this is being addressed through common phrase “pond to plate”. This poses questions like where is the commodity produced and how? Traceability is the means to address such questions and to ensure the safety and reliability of the product.

"Traceability refers to the ability to follow the movement of a product of aquaculture or inputs such as seed and feed through specified stage(s) of production, processing and distribution" (Adapted from ISO; MAC HHT Standard; Bangkok workshop report).

In Aquaculture operations, traceability stands for the following:

- a) Origin of inputs (seed, feed)
- b) Origin of the commodity production
- c) Harvest and handing over harvested materials to Processing plant
- d) Documents and records in support of a), b) and c)

2.6.1. Origin of inputs

Seed:

Document has to be generated mentioning i) the hatchery that the seed has come from, ii) various tests that were conducted in several stages (from brood stock animals to seed) and the results of the same iii) batch number indicating which tanks it was reared iv) pond number that seed is stocked in the farm. These documents to be verified by the Secretary, subsequently stored properly in society office premises.

Feed:

For every purchase of feed consignment, the production batch number, manufacturing date has to be properly recorded. Report of the test results on i) feed proximate composition and ii) for the presence of antibiotics and banned substances should be maintained.

2.6.2. Origin of the commodity production

At the farm site, a sign post on the main access path to the farm should identify each pond. The sign board needs to exhibit the following information

- Pond identification number

- Area (Ha)
- Candidate species
- Number stocked & Stocking density
- Stocking date

2.6.3. Harvest and handing over harvested materials to Processing plant

The production harvested from each pond of the same farm has to be dealt separately both at farm level and at the processing plant. The product is sold directly to the processor without any mediator/ commission agent. Material movement document to this effect has to be generated and to be recorded accordingly ensuring chain of custody.

2.6.4. Documents and Records

Creation of documents and maintenance of records is a pre-requisite for traceability. The documents should be genuine, legible, accurate and to be verified by the Secretary.

- Movement document pertaining to i) seed purchase from the hatchery and subsequent stocking at the farm and ii) harvested produce from the farm to the processing plant.
- Specific records concerning pond wise production

2.7. Operation of Aqua Society (Step 7)

With the fulfillment of the above formalities / arrangements, the Society is in to operation phase. The operation phase starts with Crop planning meeting followed by flurry of field activities on pond preparation, seed stocking, grow out, harvesting and post - harvest and crop review.

2.7.1. Crop planning meeting

The Secretary convenes general body meeting comprising all farmer members to discuss / decide the following:

- To arrive a consensus on the time schedule for pond preparation

works (ploughing, liming etc.)

- To finalize the seed requirement (quantity and stocking dates). The Hatchery from where the seed will be bought is also identified (which adopts BMP and registered with MPEDA) and contract to be signed with hatchery management accordingly with the knowledge of representatives of umbrella organization (MPEDA & NaCSA in India) {Details of contract hatchery system is described in SOP}
- Further arrangement is also made with the local dealer towards supply of fresh quality shrimp feed (of reputed brand manufactured at reputed feed mill with ISO Certification) as per the feed forecast for the crop.
- All the deliberations are recorded in the minute book

2.7.2. Stocking

Stocking is the placement of seeds (received & transported from hatchery) in to the grow out ponds that has optimal water quality besides desired level of plankton.

On completion of activities of pond preparation, water is let in to the ponds through requisite filtration followed by water culture towards propagation of plankton (with fertilization)

Stocking as per agreed stocking density after acclimating seeds to pond water conditions.

2.7.3. Grow out

This refers to rearing of seeds to marketable size through proper management and maintenance as outlined in SOP on water quality, animal health, feed & feeding, periodical sampling for growth & survival assessment and judicious adminstration of all inputs.

All inputs of each pond to be documented in Pond data Register on a daily basis. Periodical meeting to be convened to discuss and analyze the culture status.

2.7.4. Harvest and Post Harvest

This forms the final phase of culture operations covering the activities associated with the safe removal of biomass from the pond and handing over the same in fresh condition to the Processing plant.

During grow out, all efforts are focused to get the marketable size as early as possible and as the growth attains the expected target, harvesting of the produce assumes importance.

MPEDA Lab is requested to collect the samples for ELISA test for and on obtaining the results, President initiates discussion with the processor mentioning expected quantity and count.

Harvest day is fixed based on the pond conditions and materials to be harvested accordingly.

It is customary that the processor sends insulated van with ice to the farm enabling the harvested material to be transported to the processing plant maintaining freshness and quality.

Receipt of the material at the processing plant to be acknowledged by goods receipt note mentioning date, quantity and count and pond identification number

Preferably in 2 weeks of time all the ponds of a society are harvested.

The major post harvest activity being the convening of crop review meeting attended by all members towards comparitative evaluation of the production verses the expectation and the reasons for the same. Lessons learnt and way forward are analyzed threadbare.

Phase: 2 Procedure to be followed for attaining Certification

2.8. Awareness on Society / Group certification by Society members (Step 8)

The prospectus of certification has been dealt in Section 1.6. However members of the Society need to be apprised on the process of certification for better understanding and to work united for achieving the same. In this regard, the Secretary convenes General body meeting and the Executive committee explains members the Purpose, Process, Prospectus and the benefits of certification. Representatives of umbrella organizations (MPEDA & NaCSA in India) facilitate

the meeting. Upon getting consensus of opinion of the members on certification, the discussion leads to identification of a suitable certification programme.

2.9. Identification of Certification Programme (Step 9)

The society President approaches the processor and umbrella organization (MPEDA & NaCSA in India) for guidance cum facilitation towards identification of certification programme.

Umbrella organization (MPEDA & NaCSA in India) facilitates meeting with the processor, representatives of certification programme and the Executive committee of the society.

Processor and the representatives of the certification programme outline the requirements and the expectations of the certification programme.

The Executive committee keeping in view of the site characteristics and the culture methodology followed and considering the market requirements, expectations of the certification programme identifies the certification programme and formalizes the agreement, facilitated by umbrella organizations (MPEDA & NaCSA in India).

2.10. Understanding Criteria, Indicators, Standards of the Certification Programme (Step 10)

Any use of natural resources has impacts. Environmental, social, food safety and animal health & welfare are the issues to be addressed by the (responsible) aquaculture practices. Every certification programme has evolved its own mechanism to address the same keeping in view of the site characteristics. It is imperative that the aqua society that seeks certification work closer with the certification programme by explaining in detail on the site characteristics besides the methodology of culture adopted enabling the certification programme to devise the standard accordingly.

In this connection the points to be considered in each of the above issues are presented below:

2.10.1. Environment

- Farm sitting; Environmental Impact Assessment (EIA); Zoning, (Farm) carrying capacity, protection of mangroves /wetland habitats
- Water quality (intake & discharge), parameters to be studied, frequency and duration of study
- Cumulative effects of farms; stocking density & yield /Ha: record keeping; (and corresponding nutrient load discharge)
- Waste management (used feed bag, plastic containers, etc.,)
- Storage of fuel (diesel)

2.10.2. Social

- Utilization of natural resources with Integration of local community; (for example access to agriculture /fishing activities: no blocking of common roads/ drinking water sources)
- Community welfare schemes (for example: medical checkups, encouragement in educational activities of school children, bore well for the village)
- Workers welfare and facilities: Employment contracts, equal treatments, wages in kind & payment, working hours; insurance; worker organization; child labor (in family managed ponds, provision of education to child)
- Gender equality

2.10.3. Food safety

- Pre harvest; post harvest; screening of banned antibiotic residues; traceability

2.10.4. Animal health & welfare

- Bio security, non lethal predator control
- Responsible chemical use; Feed & feeding

2.11. Assessment of capacities of the society in relation to the Certification Programme (Step 11)

Assessment of capacity (water source, farm and farmer) in relation to the standards of certification programme is an introspection that enables to understand the gap between reality and the standards (of the certification programme).This exercise is done in general body meeting and is facilitated by the representatives of umbrella organization (MPEDA & NaCSA in India), wherein the members openly debate on the following points:

1) Capacity of the water source:
   - Quantity : Water flow during every month of a calendar year, dimension of the creek / canal
   - Quality : Hydrographical parameters to be studied, frequency of sampling
   - Water movement: Water intake and water discharges
   - Water usage index: Related to number of ponds/farms in area and the annual load of nutrients discharged through drainage drain water

2) Capacity of the ponds / Farm (as known by farmer experience)
   - Carrying capacity - biomass kg /Ha crop, age of pond
   - Soil characteristics & productivity
   - Infrastructure facility (electricity, aerators etc.,)

3) Capacity of the individual farmer:
   - Financial
   - Technical
   - Time that farmer can afford to spend in the farm (for Aquaculture operations)
   - Local labor (from the village where the farm is located)

2.12. Review / Modification of SOP in conformity with the chosen Certification Programme (Step 12)

Based on the assessment the following are agreed upon on consensus and the SOP is modified accordingly.

1) Candidate species: *Penaeus monodon* / *Macrobrachium rosenbergii* / any other

2) Crop calendar: Mentioning the months for the following activities;
   - Water flow in the creek / canal
   - Pond preparation (sun drying, ploughing, liming)
   - Water pumping and plankton culture
   - Stocking
   - Duration of grow out phase / culture duration
   - Harvesting
   - Number of crops per year
   - Possibility of different candidate species in different season (summer / winter)

3) Stocking density (in relation to)
   - Average body weight at harvest,
   - Expected survival percentage
   - Targeted production (Kg / Ha / Crop)

4) iv) Common code on culture operation: To abide by the common programme on the following
   - Common stocking date
   - Water Quality Management
   - Feed & feeding management
   - Other inputs (fertilizers, probiotics etc.,)
   - No usage of antibiotics and banned chemicals

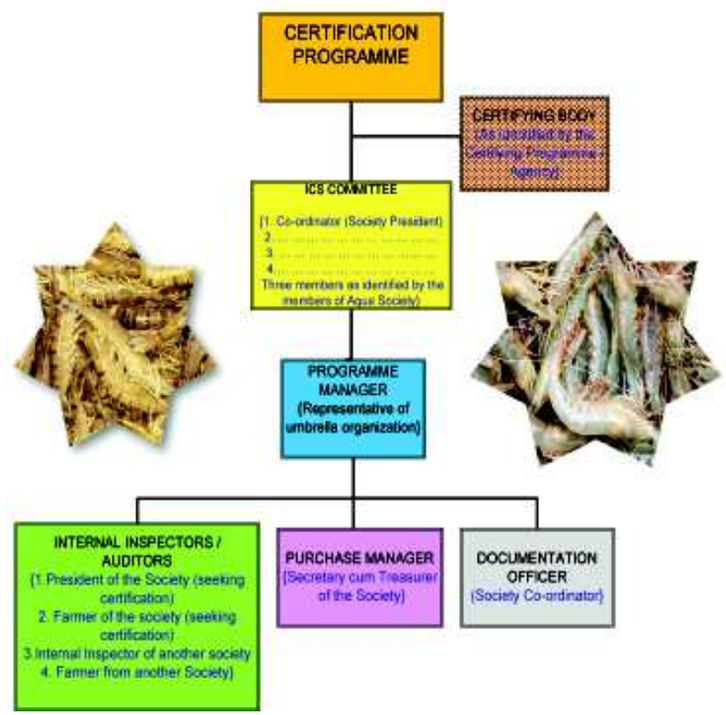
2.13. Organisation of Certification Programme (Step 13)

This consists of i) the preparation of an organizational chart for the implementation of certification programme (and assigning the duties and responsibilities to the individuals concerned) and ii) Constitution of Internal Control System Committee.

The ICS Committee will manage the procedures of certification based on which, the identified certification programme (programme owner) and certification body (the representative chosen by the Certification Programme) will approve / endorse the certification.

2.13.1. Organizational chart for Implementation of Certification Programme

The organizational chart is given below :



The organizational chart is to be exhibited in society's office and to contain the address for communication.

2.13.2. Internal Control System Committee

This is basically an internal arrangement constituted and approved by the Executive committee of the society towards surveillance exercised by aqua society members themselves in an organized fashion under the overall supervision of Programme Manager, representative of umbrella organization (MPEDA / NaCSA in India). The mechanism of Internal Control System (ICS) is described in detail in next section.

2.14. Internal Control system (ICS) (Step 14)

ICS is the (part of a) documented quality assurance and food safety system that guides the operation in a prescribed manner as agreed mutually by the society and the certification programme.

This means that the certification body only has to inspect the well-functioning of the system, as well as to perform a few spot-check inspections of individual smallholders as required by the certification programme.

The rationale of ICS for the group certification being to facilitate smallholder certification i.e. simplify certification and reduce its cost for smallholders through coordinated documentation and to implement and maintain a high quality assurance and food safety system in smallholder production maintaining traceability.

2.14.1. Constitution

The ICS team may be constituted as follows:

ICS Committee

- Headed by the ICS Coordinator, who is also the President of the society (seeking certification) and 2 society members as decided by the society

Programme Manager:

- Representative of Umbrella organization (MPEDA / NaCSA in India)

Internal inspectors:

- President of the Society (seeking certification)
- Farmer of the Society (seeking certification)
- Internal inspector of another society
- Farmer of another society

ICS Purchase Manager:

- Secretary of the Aqua Society

ICS Documentation officer:

- Society coordinator

2.14.2. Duties and responsibilities of ICS team

The duties and responsibilities of ICS TEAM are as follows:

DUTIES & RESPONSIBILITIES OF ICS TEAM		
Designation	**Person**	**Duties and Responsibilities**
INTERNAL CONTROL SYSTEM COMMITTEE	**President of the society as ICS Coordinator and 3 members chosen by society members**	• Overall responsibility of the Certification • Meets every month at a convenient location • Identification of requisite certifying programme / agency in consultation with President and members of aqua society • Internal auditing to verify the compliance of culture operation of the aqua society in relation to agreed norms / terms & conditions (standards) • Coordinates with Internal Inspectors / auditors on the culture operations and

		issues out sanction letters regarding anomalies as reported by Internal Auditors • Carry out certifying agency audit recommendations and report compliance within specified time. • Forwards certificate received to the respective aqua society • Meets at the end of end of every crop regarding crop review and recommends modification in the certification programme accordingly
ICS COORDI-NATOR	**President of the Society (seeking certification)**	President is the key personnel who exert control on the members of the Aqua Society to ensure the following: • The Culture operations are carried out as per the agreed norms and conditions as outlined by the SOP (pond preparation, seed selection, stocking density, bio security, cleanliness & hygiene etc.,) • All the inputs to respective ponds are duly documented on a daily basis • The Hydrographical parameters and effluent quality are monitored regularly and duly documented • The culture operation co exists with the village interests without brooding any social issues • Employers / labors are compensated adequately as per the prevailing norms and no deployment of child labor. Co-operation is maintained among and between the members of the aqua societies

PROGRAMME MANAGER	**Representative of umbrella organisation**	• Visit the society once in every month • Inspects ongoing culture operations • Verify the Pond Data Register to ensure all requisite data are recorded on a daily basis • Countersign as proof of verification The anomalies (as reported by Internal Inspectors / Auditors) are discussed and seek compliance of such recommended actions within specified time in records.
INTERNAL INSPECTORS / AUDITORS	**1. Society (seeking certification) President 2. Farmer of the Society (seeking certification)3. Internal inspector of another Society 4. Farmer from another society**	Verifies the following : • List of the farmer mentioning name, area(Ha) and number of ponds • Seed stocking details (source hatchery, test reports brood stock, nauplius, PL; number stocked & stocking density. • Monitoring of Hydrographical parameters (Salinity, Temperature, pH, Dissolved oxygen , Ammonia etc.,) and documentation of the same • Feed & feeding (ration, frequency, type) and documentation of the same • Inputs (Usage of chemicals, probiotics : Usage of any banned chemical need to be reported) and documentation of the same • Periodical sampling of the population - growth - survival and biomass estimation Assessment of the extent of compliance of culture operation to that of agreed standards and reports to ICS committee

	Secretary cum Treasurer	• Reports to the President • Coordinates all the receipts / purchases of inputs for the society and appraises President and ICS Committee accord ingly towards up keep of accounts. • Ensures that all the harvested material are handed over to the agreed processor and collects good receipt note from the processing plant
DOCUMEN-TATION OFFICER	**Society Coordinator**	• Reports to the President of the Aqua Society • Routine measurement of hydrographical parameters of pond water of all the ponds of the society and documenting the same on daily basis • Measurement of water quality of source and discharge water periodically as per requirement • Monitoring of all pond inputs (feed, fertilizer, probiotics etc.,) and documenting the same on daily basis • Documentation of all details pertaining to culture operation (hours of operation of pumping, aerators, usage of fuel etc.,) • Maintains SOP document, work instructions, data entry formats duly updated and copy of standards of certification programme • Maintains traceability records • Present all the documentation to ICS committee, Programme Manager, Inspection team and the External Auditing as per requirement. Minimum retention period of record is 3 years

The team members involved in the ICS need to have specific qualifications, competence and experience required to make technical judgments, carry out internal inspections and implement quality management policies. Every committee member is expected to keep abreast of developments, legislative changes and other issues relevant in the certification process through media and communication. Therefore training of i) Society members and ii) representatives of umbrella organization on ICS are imperative.

2.14.3. Training

Technical assistance and training of members of aqua society are indispensable services in order to minimize risks that may arise from ignorance, misunderstandings etc., and may result in having the group certificate suspended or cancelled. The training may be imparted either by third party agency identified by umbrella organization (MPEDA/NaCSA in India) as required.

The training to focus on the following:

- Imparting technical information on certification by the certifying agency and with the interactions of farmers on the site conditions / characteristics; and drafting of monitoring plan outlining the standards.
- Review of crop pattern and the society standard operating procedure in compliance with the standards outlined by the certification programme
- Monitoring the requisite data, inputs and documenting the same in prescribed format
- Towards continual improvement of every society farmer on certification programme
- To lay emphasis on self discipline / control referred to as INTERNAL CONTROL SYSTEM (ICS), to govern the culture operations, compliance to SOP / certification requirements

2.14.4. Records and documentation

The documentation relevant to ICS comprises of standard operating procedures (SOP), work instructions, data entry formats for various activities associated with culture operations, and certification programme standards.

The minimum retention period for the record is 3 years.

2.15. Internal Auditing (Step 15)

The main purpose of the audit is to find out i) the extent of compliance of the operations to that of standards of the certification programme and ii) whether the operating procedures have proven feasible and produce the expected results. After the audit inspection is done a summary / inspection report in compliance to standards is prepared and forwarded to ICS Committee.

2.15.1. Team

Internal Inspectors (as per ICS Certification organization chart)

2.15.2. Frequency

Twice during the duration of crop

2.15.3. Items to be checked

- List of the farmer mentioning name, area (Ha) and number of ponds
- Seed stocking details (source hatchery, test reports - brood stock, nauplius, PL; number stocked & stocking density)
- Monitoring of hydrographical parameters (Salinity, Temperature, p^H, Dissolved oxygen , Ammonia etc.,) of intake (water source), pond water and discharge; documentation of the same
- Feed & feeding (ration, frequency, type) and documentation of the same

- Inputs (usage of chemicals, probiotics: usage of any banned chemical need to be reported) and documentation of the same
- Periodical sampling of the population - growth - survival estimation (under SOPs)
- Compliance to the standards and verify documents

2.16. External Auditing (Step 16)

External auditing is one of the requisites of the certification programme, which basically tests the efficiency of ICS of the aqua society and to evaluate objectively to determine the extent of fulfillment of compliance as per guidelines outlined by the certifying programme / agency

2.16.1. Team

As identified by the certification programme / certifying body

2.16.2. Preferred frequency

As per the requirements of the certification programme

2.16.3. Items to be checked

As per certification programme requirements

- Inspects the ongoing culture operations, internal audit reports, and pond data registers etc., thus, evaluates the efficiency of ICS
- Following the inspection, the external auditor will issue the inspection report to certifying programme listing the findings.
- Draft recommendations regarding certification and/or conditions are submitted to the certifying programme. Certification body communicates to society. Society communicates to individual farmer.
- The society (ICS Committee) is given the chance to comment on the report.
- The external auditing is carried out in society's registered office.

2.16.4. Obligations of the Aqua Society for External Auditing

- ICS Co-ordinator / committee of the aqua society maintains communication with the certifying body on certification.
- The Aqua Society seeking certification must ensure that all records are up to date (at any given point of time), legible, genuine and accurate and readily accessible.
- The aqua society need to be prepared to have the external auditing announced/unannounced audits as per certification programme requirements
- All the requisite documents are placed before the external auditor during the auditing at the registered office of the society.

2.17. Outcome of Certification Programme (Issuance of Certificate) (Step 17)

The certifying agency based on the external auditing decides on the certification of the society after non conformity or suggestions of the audit carried out within specified period and accordingly issue the certificate with / without conditions as per the situation.

Certificate is normally valid for one year and annual renewal should be taken during 9th month to be in certification throughout the year.

2.18. Review of Crop and Certification Programme (Step 18)

The purpose of review is to assess the i) culture operation and to ii) evaluate the efficiency of the certifying programme (standards and modalities) in relation to the target envisaged for the crop.

The points to be reviewed are given below:

2.18.1. Crop (Culture Operations)

- Production (yield kg/ Ha/ crop)
- ABW(g) at harvest (count)
- Survival %

- Food Conversion Ratio (FCR)
- Quality of seed
- Quality of feed
- Hydrographical parameters of intake water
- Efficiency of bio security
- Economics
- Any other related issues

2.18.2. Certification Programme

- Efficiency of ICS (member qualifications, competence and experience required to make technical judgments, carry out internal inspections and implement quality management policies.)
- Training needs
- Standards and compliance of the certifying programme

2.19. Flow chart (of activities) on certification

CERTIFICATION PROCEDURE		
No	**Function**	**Action**
1.	Entry of aqua society to the certification programme	Members of the aqua society to submit the Entry Form with the following documents to ICS Committee a) Copy of CAA Registration certificates b) Technical criteria Format duly filled Subsequently the Secretary makes available the following : 1) Map of the society mentioning individual pond numbers of the society members 2) List of names of society members mentioning number of ponds, area (Ha) and revenue survey numbers

2.	Scrutiny / Confirmation of Admission	ICS Committee verify the documents and accord consent to individual members and assigns pond identification number
3.	Internal Auditing	a) Internal inspectors / auditors visit the farm facility every month to inspect the ongoing culture operations b) Verify all documents (as per technical criteria) and endorse the signature c) Anomalies if any will be reported to ICS Committee in writing specifying the issue
4.	Recommendations	With regard to anomalies as reported by the Internal Auditors, the CIA is empowered to impose sanctions
5.	Acknowledgement from the Selected Certifying Programme / Agency	Certifying Programme / Agency acknowledges the receipt and accords consent for the certification : assign a certifying body to carry out audit
6.	External Audit	a) Would be carried out as per the specifications by the selected certifying programme / agency b) Audit report will be forwarded to the selected certifying programme /agency
7.	Issue of Certification	Based on the external audit report, the certification programme will issue the certification with or without conditions specified in the certificate
8.	Crop review	ICS Committee together with Internal Auditors and the President of the Aqua Society will meet at the end of the every crop reviewing culture operation and for renewal of certification programme

Annex: 1

Registered Number …
AQUA FARMERS WELFARE SOCIETY
Standard Operating Procedures (SOP)

The following Standard Operating Procedures have been agreed by society farmers.

1. General Information of the Society:

- Total number of farmers
- Total area (Ha)
- Water spread area (Ha)
- Total number of ponds
- Agreed maximum stocking density (number/ m2)
  a) Summer crop:
  b) Monsoon crop:
- Crop stocking date
  c) Summer Crop:
  d) Monsoon crop:

2. Farm sitting:

- The society farms are not located in the legally prohibited areas, mangrove forest and forest land or other sensitive wetland habitats.
- The Society farm is registered with Coastal Aquaculture Authority (statutory)
- Our society farms do not depend exclusively on ground water for aquaculture.

3. Farm Design and Construction

- The society ponds to have separate intake and drainage system as biosecurity measure.
- All of society ponds to have proper slope towards drainage so that all the water can be drained completely during the harvest
- All of society ponds to have strong, compacted bunds. Wherever they are weak they would be strengthened.

- Minimum one meter water depth in the pond is maintained

4. Water use:

- No use of fresh ground water for salinity control.

5. Pond preparation:

- During the crop planning meeting pond drying date, stocking date, contract hatchery date and harvest dates would be agreed.
- All the society farmers to empty ponds at least one month before stocking to allow sun drying of ponds.
- Ponds would be dried for 15 to 30 days (till the bottom cracks) before starting pond preparation.
- Depending up on soil pH adequate quantities of lime is used during pond preparation.
- Ponds will be ploughed
- Water screened using at least 2 (60 mesh per inch) screens in the inlet to avoid entry of predators and pests.
- Crab fencing along creek side and neighboring non-society farms would be done to prevent entry of crabs and predators which are also carriers of disease.
- Fertilization is resorted (the type, dosage and frequency depending on the pond conditions) towards propagation of plankton.

6. Brood stock and seed:

- Seed requirement for the crop, total and farmer wise to be arrived during crop planning meeting.
- Wild / natural seed would not be used. Ponds would be stocked only with hatchery reared, disease free, healthy seeds after conducting necessary tests.
- Seed would be purchased only from MPEDA registered hatcheries

through contract hatchery system enabling supply of disease free, healthy seed by envisaging the following:

6.1. Contract Hatchery System:

- Contract Hatchery System is basically an understanding arrived between the aqua society and the hatchery towards supply of quality seed: the hatchery permitting the representatives of aqua society to monitor the seed production process to ensure transparency.
- A team led by 2 to 3 representatives of the aqua society camp in the identified hatchery towards monitoring the hatchery operation right from brood stock selection till packing of seeds.
- Society insists hatcheries to produce seed from disease free (screened) brood stock.
- Single spawner is preferred; in hatcheries where tank capacity is large (>10 tons) two broods per tank is acceptable provided both the broods are screened for WSSV by PCR in recognized lab after spawning.
- Copy of the PCR test reports on brood stock, nauplius, PL5 and PL15 will be collected by the society representatives camping in the hatchery.
- Besides, the team will monitor the daily feeding of larvae (ration & frequency) including that of Artemia.
- Usage of chemicals at the hatchery will be monitored.
- The hydrographical parameters of both LRT & PLRT will also be monitored.
- This is especially so in PLRT tanks to ensure that PLs are well acclimated to the pond salinity conditions prior to seed packing.
- All the observations are to be meticulously documented.

6.2. Seed stocking:

- Seeds packed in the hatchery will be transported to farm site in polythene bags with water besides filled with oxygen
- Number of seeds per bag would depend on the mode and duration of transport.
- Stocking is done either early morning (6-8 Hrs) or late in the evening (17-19 Hrs)
- Stocking would be done with the pond having adequate planktonic bloom (Secchi disc transparency 30 - 45 cm)
- Seeds would be stocked after acclimatization.
- Stocking density would be in accordance to what has been agreed upon. No farmer will stock more than agreed density.

7. Monitoring and maintenance of water quality parameters:

- The society will employ a co-coordinator, who will measure the hydrographical parameters and record the same in Pond Data Register
- The Society will establish basic water quality lab for water analysis.
- Water quality parameters would be maintained at optimum range (p^H 7.5-8.5, alkalinity 80-120, ammonia <O.1 ppm, dissolved oxygen >3 ppm, salinity around 30 -40 ppt) through regular monitoring.
- By and large, minimum water exchange is recommended during first 60 days (however water pumping in to the pond will be done for topping to maintain water level)
- After 60 days water exchange is suggested keeping in view of water quality of pond and source water.
- Good plankton bloom is maintained in all the ponds.

8. Feeds and Feeding :

8.1. Feed quality:

- Good quality feeds, fresh from factory ,manufactured from reputed feed mills with ISO certification will be used
- Feed without manufacturing date, proximate composition and ingredient details on bags would not be used.
- Feeds will be analyzed for a) banned antibiotic residues and b) proximate composition by reputed laboratories with the help of NaCSA.

8.2. Feed storage:

- Good feed storage practices will be followed (use of pallets, good ventilation, gap provided from walls, prevention of roof leaks, deployment of rat traps, avoiding direct sunlight, maintenance of hygiene conditions in feed stores etc.,)
- Feeds will be purchased as in when required, at periodical intervals so that it is not stocked at the farm for longer period.

8.3. Feeding:

- Feeding would be practiced from day one in grow out ponds
- Various grades of feeds (crumbles and pellets) will be administered as per shrimp size in accordance with the growth / days of culture
- The daily ration is distributed into 4-6 meals throughout the day and night and broadcasting of feed in the pond is ensured so as to achieve greater efficiency of supplemental feeding.
- Feed ration is adjusted according to crop biomass and feeding trays are used for monitoring feed consumption.
- Feed monitoring starts from 30 days onwards using at least two feed trays per pond.
- If there is size variation in shrimps to reduce size variations, feed size would be changed according to the actual size of the shrimp. A mix of two feed pellet sizes would be used for at least 7-10 days if there is any

size variation during the regular check-up and increase daily feeding frequency

- Good feed management practices such as using check trays, middle feeding and training of workers in better feed management are followed in our farms.
- Wet or fresh feeds like snail meat, clam meat, trash fish are not used.
- Data on Total Daily Feed (TDF) meal wise, check tray monitoring on extent of left over etc., would be documented regularly.

9. Animal health & welfare:

- Health management practices would be implemented to reduce stress (of the cultured species) and to focus disease prevention rather than treatment
- Biosecurity measures would be adopted to minimize the transmission between brood stocks, hatcheries and grow out systems.
- Efforts will be made to avoid spreading of shrimp diseases within and between the ponds.
- Animal health would be checked regularly with the help of check trays and cast netting with close examination for stress, disease etc.,
- Sick and dead animals would be removed immediately and disposed off properly
- Whenever any disease symptoms are noticed following procedure would be adopted.
- Any problem during the crop like animals coming to the side, mortality would be immediately reported to all farmers, farmers would be called to address the issue immediately.
- If the disease is found to be mild and non-infectious–corrective measures to improve general pond condition would be carried out.
- If any serious infectious disease is detected which has the potential to

spread widely the pond is isolated, animals harvested by adopting good sanitary practices and water disinfected prior to discharge.

- Dead and affected animals would be buried under soil.
- Necessary precautions would be taken to avoid transfer of animals or equipments/ implements used in the disease-affected pond to other ponds.
- Cooperation and communication with neighboring aqua farmers with regular meetings regarding disease problem would be practiced so as to minimize the spread of disease and to take pre cautionary measures well in time.

10. Pond bottom monitoring:

- Pond bottom soil would be checked regularly after 60 days... If the soil is black or with an offensive odor, corrective measures would be taken.
- Accumulated black soil at the pond corners would be taken out regularly.
- Whenever aerators are used, they would be positioned to assist in accumulation of pond sediments at the centre of the ponds.

11. Food safety:

- Quality Control Systems will be adopted to produce quality aquaculture farm products
- Application of chemical would be done according to the recommended practices. No product would be used whose composition is not known.
- No use of banned veterinary drugs and chemicals (Annexure: 2)
- Measures on sanitary harvest, handling and transport would be implemented (Refer 12. Harvest & Post harvest handling)
- Antibiotic analysis of seed or juveniles, feed, common chemicals used in our society would be done.
- Samples from each pond will be tested for antibiotic residues through ELISA test by MPEDA Laboratory prior to harvest.

12. Harvest and Post-harvest handling:

- Shrimp harvest and transportation would be planned in advance and would be coordinated with processing plant on date of harvesting, time, estimated material, estimated count, required ice quantity etc.,
- Harvesting will commence in night and animals would be collected through mesh bags at outlet drain (using additional pumps where water cannot be drained) and will be completed by latest by morning 08 00 Hrs : No harvesting is recommended during day time (08 00 Hrs to 20 00 Hrs)
- Collected live animals will be chill killed, washed with clean water and packed with adequate ice and transported to the processing plant at the earliest.
- The following records are prepared and well documented
- Quantity harvested,
- Average body weight (g),
- Count
- Movement document for the harvested materials from the farm to processing plant
- Goods receipt note from the processing plant acknowledging the receipt of harvested materials

13. Discharge of wastes and effluents:

- Effluents would be allowed to pass through a mangrove plantation. If there are no mangroves, efforts would be made for planting mangroves which will protect our ponds during natural calamities.
- Secondary aquaculture would be taken up in the effluent treatment ponds in order to utilize the system fully.

14. Bio security measures:

- Use of unhygienic crates for seed transportation would be avoided
- Crab fencing - by using empty feed bags or old fish nets
- Old cassette tapes for bird net or other scary devices
- Washing of cast nets, equipments, hands, legs thoroughly with disinfectants like liquid Potassium permanganate ($KMnO_4$)/ Chlorine / dettol etc., to be practiced as measure of disinfection.
- Cross contamination during water quality analysis would be prevented by rinsing with equipments and hands disinfectants.
- Entry of cattle and other animals in to farm premises will be avoided.
- Red flag to be hoisted in the pond / farm to inform farmers in case of disease outbreak
- Disinfection of disease harvested pond with chlorination (mandatory)
- These measures would be translated to local language besides with pictorial representation, printed in a flexi and displayed in front of society office where it is visible to all farmers.

15. Social Responsibility:

- Ensuring fair working conditions (Employment contracts, equal treatments, wages in kind & payment, working hours, gender equality, provision of safe & healthy working conditions) and welfare of farm workers (Insurance, worker organisation)
- Child labor avoided.
- Farm workers would be given training in all aspects of aquaculture operations especially on diseases, symptoms and means of prevention and treatment.
- Farm workers to be appraised on SOP and to be taught in varying levels of details in accordance to their education level in vernacular language and to ensure their understanding and practice.

16. Miscellaneous:

- Fuels and other products would be stored in a responsible manner to avoid accidental spills that could contaminate water and also may affect the animals adversely.
- Maintenance of hygienic conditions in the farm (cleanliness of materials in use, proper disposal of waste- feed bags, plastic containers etc.,)
- Regular meetings will be conducted to discuss on farm affairs and to focus issues as per the situation.

Annex: 2

List of antibiotics and other pharmacologically active substances banned for use in aquaculture

Sl. No	Name of the antibiotic/chemical
1	Chloramphenicol
2	Nitrofurans inlcuding : Furaltadone, Furazolidone, Furylfuramide, Nifuratel, Nifuroxime, Nifurprazine, Nitrofurantoin, Nitrofurazone
3	Neomycin
4	Nalidixic acid
5	Sulphamethoxazole
6	Aristolochia spp. and preparations thereof
7	Chloroform
8	Chlorpromaxine
9	Colchicine
10	Dapsone
11	Dimetridazole
12	Metronidazole

13	Ronidazole
14	Ipronidazole
15	Other nitroimidazoles
16	Clenbuterol
17	Diethylstilbesterol
18	Sulphonamide drugs (except approved Sulphadimethoxine, sulphabromomethazine and sulfaethoxypyridazine)
19	Fluoroquinolones
20	Glycopeptides

Marine Products Development Export Authority (MPEDA):

The Marine Products Export Development Authority is a nodal agency set up by the Govt. of India for the promotion of seafood exports from India coupled with promotion of aquaculture and acts as a coordinating agency with different Central and State Government establishments engaged in fishery production and allied activities. Rajiv Gandhi Centre for Aquaculture (RGCA) - Centre of excellence in aquaculture, is the Research & Development arm of the MPEDA dedicated to the development of the Indian aquaculture industry. National Centre for Sustainable Aquaculture (NaCSA) is an outreach organization of MPEDA to provide technical support to the primary aquaculture societies and build capacity among small farmers towards quality aquaculture production in a sustainable manner.

For more details visit www.mpeda.nic.in

Network of Aquaculture Centers in Asia- Pacific (NACA):

NACA is an intergovernmental organization that promotes rural development through sustainable aquaculture. NACA seeks to improve rural income, increase food production and foreign exchange earnings and to diversify farm production. The ultimate beneficiaries of NACA activities are farmers and rural communities. The core R&D activities of NACA are in the areas of aquatic animal health, coastal aquaculture, emerging global issues, food safety and quality, genetics and biodiversity, inland aquaculture, education and training and communications. NACA conducts development assistance projects throughout the region in partnership with governments, donor foundations, development agencies, universities and a range of non-government organizations and farmers. Current member governments are Australia, Bangladesh, Cambodia, China, Hong Kong SAR, India, Indonesia, I.R. Iran, Korea (DPR), Lao PDR, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam.

For more details visit www.enaca.org

National Centre for Sustainable Aquaculture (NaCSA)

NaCSA is an outreach organization of MPEDA constituted to cater to the scientific extension needs, primarily based on Better Management Practices (BMPs). The primary purpose of NaCSA is to continue the MPEDA/NACA project activities and to build on it by covering more areas, farmers and other aquaculture commodities (e.g. scampi, marine fin fish), as well as improvements to BMPs that would evolve over time. NaCSA has organized more than 500 small farmer societies as on date with membership of 25 to 50 registered farmers in each society in five coastal states of India.

For more details visit www.nacsa.org