Aqua-Internship Program

Asia Link project

Faculty of Fisheries

Bangladesh Agricultural University, Mymensingh

Report on

Environmental impacts of climate change in aquaculture in Bangladesh

Name of Intern : **Md. Tarikul Islam**

Name of MS Supervisor : **Prof. Dr Nesar Ahmed**

Name of field Supervisor : **Md. Abdul Kadir Tarafder**

Name of Aqua-Industry : **Sharnalata Agro Fisheries ltd., Radhakanai, Fulbaria, Mymensingh**

Report on

Environmental impacts of climate change in aquaculture in Bangladesh

Background:

Climate change is the partially or total changes of environmental parameters. A change in the normal conditions of parameters of environment may significantly affect in its surroundings. These changes can affect variously and the consequences for sustainability of aquatic environment, aquatic ecosystem, aquaculture and the people who are dependent on it. The build-up of carbon-dioxide and other greenhouse gases in the atmosphere change several features of the Earth's climate, oceans, coastal environment and freshwater ecosystems that affect fisheries aquaculture as well as sea surface temperature. Changes in environment also affect on rainfall, sea level, salinity of the oceans, wind action as well as the frequency and intensity of tropical cyclones. The impacts of climate changes are expected to seriously (and disproportionately) affect the livelihood, health and other opportunities living in poverty as well as their changes of survivals both locally in specific areas and globally in general.

Several inconsiderable losses of natural habitats and wildlife around the world are done due to natural phenomena which are the result of environmental degradation. Relationship between the biophysical impacts of climate change and the livelihood vulnerability of poor fishing community has seldom been investigated. Certain activities are causing serious impact on aquaculture practices including increase

temperature, waste disposal from industrial areas, household wastes, urbanization and exploration of carbon.

Bangladesh is very much vulnerable in the climate change point of view because of its geographical position. Since it is one of the largest Bays of the World and situated in the sub-tropical region, is frequently affected by several natural calamities. These natural adversities are the results of climate changes and severely affect our domestic as well as culture species.

However, most farmers are experienced but other than fisheries sector. For this reason good aquaculture practice is a concept is unknown to most of them. But careless farming has great impact on our environment and biodiversity including untreated water discharge, unwise use of feed and land and use of chemicals, hormones and unwise hybridization and inbreeding problem.

Again students passed from fisheries sector have no enough opportunities to gain practical farm knowledge. So it was very essential to combine these two sector i.e. framing sector and institution.

Aqua-internship program is going to link these two sectors for settlement of our aquaculture sector to proceed properly the aqua-production as well as the aqua-business.

Objectives:

I had worked respecting the following objectives in searching the outcome.

1. To observe the impacts of climate on total fish production.
2. To observe the impacts of climate change on breeding of fish.

3. To observe the impacts of climate change on breeding techniques.
4. To observe the response of breeding due to environmental changes.
5. To observe the fluctuation of hatchery production due to climate changes.
6. To observe the impacts of livelihood of the farmers related to fisheries.
7. Sharing knowledge about the bad impacts of environmental changes.
8. To observe change of total management techniques due to changes in climate change.


Fish rearing activities

Facilities of the farm:

1. Sharnalata Agro Fisheries Ltd. occupies 17 ponds, a tilapia unit, a hatching unit , a power and feed manufacturing unit.
2. 4 ponds for brood rearing of tilapia, 9 for carps, perches, catfishes, 3 for nursing tilapia fry.
3. Hatching area contains 19 jars, 3 circular tanks, 4 rectangular tanks.
4. Others: Alternative power supply system, shallow machine etc.

Methodology:

1. I visited to the selected fish farm and fish hatchery periodically to observe and collect all of the necessary information. Information is collected from fish farm owner and hatchery operators and technicians.
2. All of the information and data collection was done through monitoring in every step.
3. Operation of spawning, incubation and hatching was observed thoroughly and their associated activities.
4. Fluctuation of the performance of hatching, breeding due to temperature differences as well as heavy rainfall was observed.
5. Comparative study in the production of various carps, tilapia, and various native species was observed with the fluctuation of temperature and rainfall.


Preparation of inducing agents and rearing pond

Time frame:

Months	Activities	Duration (days)
First	Consultation with farm owner, observation total farm areas, analysis of previous history, data collection, behavior of tilapia carp and other native species against fluctuation of temperature.	04.07.10-30.0810
Second	Feeding techniques, Breeding technique of tilapia, breeding techniques of shing, observation of feeding behavior due to climate change, data collection.	02.08.10-05.09.10
Third	Observation of response of breeding due to variation in temperature, variation of breeding response against temperature changes observation of fluctuation in production and breeding response due to variation in rainfall, collection of data, analysis of data.	06.0910-10.10.10

Benefits:

For Myself:

1. Knowledge about the problems faced during climate change by the farms and hatchery and their mitigation measures.
2. Practical experience about various techniques of fish culture that are locally practices in farmer level.
3. Gathering knowledge about operational issues of a fish hatchery.
4. Informed about various management techniques consulting with fish farmers
5. Gathered knowledge about preparation of inducing agents used for induced breeding.
6. Gathered knowledge about feeding techniques of fish.
7. Consultation with the personnel involved in fish farm and fish hatchery.
8. Marketing of fry of various fishes.
9. Overall management practices of a fish farm.
10. Practical experiences about bagging of fry during transportation.


Inducing technique of Pangas

For Fish farmers and hatchery owner:

1. Consultation about various problems that had been faced at various seasons.

2. Gathering basic knowledge about various techniques of breeding and management strategies.
3. Capable of identifying the impacts of climate changes.
4. Improvement of personal skill of technicians.
5. Consultation about various diseases that had been faced in operating the farm.
6. Steps to be taken against fluctuation of production of fish due to climate change.
7. Somehow they are able to take steps scientifically when conditions are unfavorable.


Observation of diseased fish and Hapa of tilapia

Constraints:

1. Electricity(load shedding)
2. Reduction of spawning during temperature increase
3. No scope for soil quality testing in the farm
4. Water discharge
5. Rough handling during operation
6. Quality of hormone
7. Inlet and outlet of the farm
8. Good handling of brood
9. Lack of training facilities
10. Facilities for personnel
11. No alternative scopes of earning during lean period

12.Lacks of extension facilities

13.Lacks of facilities for research activities

14.Use of drugs


Inducing and development techniques

Recommendation:

1. New variety of fish species should be introduced so that it can cope with the fluctuation of climate changes.
2. Research should be implemented to develop alternative way to fish culture escaping climate changes.
3. Banned of all the environmental pollution.
4. Continuous supply of electricity should be ensured.
5. Continuous supply of save water should be ensured.
6. Generating alternative scope of income for the personnel who are involved in fish farming during lean period.
7. Should have soil quality testing facilities.
8. Training of the personnel should be facilitated.
9. Use of various prohibited drugs should be banned.
10. Sanitation and hygienic facilities should be ensured.

Signature of MS Supervisor	Signature of Field Supervisor	Signature of Intern
…….	……..	……...
Dr Nesar Ahmed **Professor** Dept. of Fisheries Management Faculty of Fisheries, Bangladesh Agricultural University, Mymensingh	**Md. Abdul Kadir Tarafder** Managing Director Sharnalata Agro Fisheries Ltd., Radhakanai, Fulbaria, Mymensingh	**Md. Tarikul Islam** MS in Fisheries Management Roll No: 10 Fish M JD-12M Reg. No: 32569 Session: 2005-06