

Week 4. Selection of Sites for Aquaculture

Success or failure of any aquaculture venture largely depends on the right selection of the site for it. In choosing a site several factors other than the physical aspect of the site are to be considered. These factors along with the various types of culture sites and systems. The factors to be considered cut through various disciplines and range from socio-economic aspects of aquaculture to all the physico-chemical and biological conditions of the environment; this consideration should be with reference to the specific culture system and species chosen (see “Species selection for aquaculture” in this manual series) as viewed from the objective of the venture. The objectives of aquaculture could be to produce whole-some nutritious food for local consumption. Through small scale rural farms or large vertically-integrated commercial systems. Alternately the objective could be for the production of high-cost fish or shrimps for exports and earning foreign exchange for the countries concerned. Those are elaborated elsewhere in this manual series.

As it would be obvious, no venture can sustain unless it is profitable. Site selection is the process by which various factors indicated are considered to enable one to decide on the right site for a specific culture system or alternately, to decide on a culture system suiting the site available.

Under the present subject of Site Selection, we shall be looking at the sites suited for aquaculture, different culture types, very briefly to begin with and then deal with the various technical and non-technical aspects of site selection in some detail.

In selecting a site for a specific system of culture both technical and non-technical aspects need prime consideration. As already indicated a site could be suited ideally for farm fish production from a technical point of view alone, but on a review of socio-economic, political or legal aspect the project can be rejected. The selection of a site and success of a project is much dependent on considerations which are non-technical - such as acceptability of the fish produced (consumer preference), marketing facilities, labour available etc, or certain political or legal considerations.

The broad headings under which the technical and non-technical considerations for site selection are discussed, are as shown under:-

- i. Socio-economic, political and legal factors
- ii. Climatic factors
- iii. Main environmental factors.

The environmental factors can be further subdivided, for discussion:

Main environmental factors:

- a. Topography and ground elevations
- b. Soil
- c. Water supply, quantity and dynamics
- d. Physical and chemical features of Water
- e. Productivity
- f. Fouling/availability of spat (for mollusc culture)
- g. Type and density of vegetation

Socio-economic considerations

As already pointed out these will be discussed in detail under “Socio-economic aspects of aquaculture” a separate subject in this course. We shall, however, refer to certain relevant points which should be considered for the selection of site.

They are socio-economic aspects such as social and religious customs'; consumer preference ; nature of manpower (labour) - quality and quantity - available; transportation and communication facilities; i.e. infrastructure facilities; accessibility and nearness to market; and also costs and availability of construction materials.

At this point it must be made out that the objectives of producing fish in a culture system should be clearly spelt out (see “Introduction to aquaculture” and separate discussion on “Criteria for selection of species for aquaculture”.) While the acceptance or preference of the local community would be of prime interest in producing fish for local consumption, the acceptability of the target group to whom the fish are supplied, in some cases, even by export, is of major interest. But consideration of other socio-economic aspects such as infrastructure facilities for post-harvest treatment of product including marketing, manpower quality and quantity, could be same, if the fish produced is for local (same province/country) consumption or export outside the country. Similarly relative merits or demerits of the specific site, with

reference to availability and cost of materials and equipment for farm construction and subsequent needs for renewals in the farm structures and also for the maintenance of the farm, e.g. supplies of feed stuffs and fertilizers, should also be considered.

Political and legal considerations

The aquaculture project execution should be a part of the overall planning for the specific area under the national plan for development, so that the project can fit into the country's or provincial plan for development of industry and agriculture. This is specially needed when aquaculture is a part of rural development programme, as indeed most such projects are. This should specially help in sharing infrastructural facilities of transportation (road), power supply and communications and also in judicious sharing of imports and recycling outputs. The advantages of their consideration in siting a project are obvious. We shall look into these aspects of macro-economic planning subsequently when "socio-economic aspects" and "aquaculture planning" are discussed in detail. Legal aspects, such as security of tenure, maritime laws controlling coastal waters (in cases where sites are coastal), legal size limits with reference to the ponds/culture area, as well as the species under culture, and closed seasons, should also to be considered. Several countries already have certain regulations concerning these legal aspects, some of which are in force, much before aquaculture was thought of as an industry.

In many cases these legal clauses cannot be easily modified, eventhough some attempt in this direction would be necessary, especially with reference to size-limits of fish and closed seasons. The latter regulations have been included to protect the species' survival under intensive capture systems of wild stock. While this protection may be necessary for such a case, here in aquaculture, capture from the wild fish of certain size, when the season for capture is closed legally, is only for protection of the fish by way of transferring the fish to culture ponds - either as brood fish or as fry or fingerlings in grow-out ponds. In some cases maritime areas through which navigational routes and certain other country priorities exist. These aspects should be considered in choosing the site for the aquaculture ventures planned.

Climatic and other main environmental factors

The sub-topics, climate, topography and ground elevation, soil, water supply, physical and chemical features of water, productivity, vegetation - aquatic weeds etc, will be discussed separately in detail, under the subject of site selection for aquaculture.

It will be realized that much of these discussions involve several basic aspects of ecology and we have attempted to provide information of value in selection of site, at this level.

“Topography and ground elevation”, would lead to the construction of pond farms (a subject covered in detail, separately in the present course) and several aspects of environment discussed, have corresponding sections in “Selection of Species for Aquaculture” (also forming separate subject in the present course), for an environmental factor can be discussed only with reference to the effects it can have on the species. As we already pointed out, site environmental requirements for a culture system are the requirements of the species to be cultured.
