PISCICULTURE IN RECLAIMED SWAMPS AND ITS ROLE IN RURAL ECONOMY IN ORISSA

by

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ABSTRACT

A considerable number of small and large swamps ranging between 4 and 1,000 acres in Orissa are totally unproductive and contribute to insanitation and malaria. Owing to heavy reclamation costs and uncertain income, swamps had not been reclaimed either for agriculture or for pisciculture. Experiments were conducted to reclaim a large number of swamps and to work out their economics. A new technique to reclaim deeply silted swamps at low cost had been evolved by subsoil pumping and a silt berm which raises itself by pressure from below. The bunds can be completed without the use of protective piles. Small swamps yield between 400 and 800 lb. per acre while large swamps where stocking has to be done at random yield only 100 lb, but they are economical on account of low establishment costs. Details of expenditure on and income from a few swamps are given. Biological conditions and the effects of manuring of swamps have also been studied particularly with reference to growth of plankton and yields of fish and a few typical cases are described. It is concluded that the increased production from swamps reclaimed according to the new technique would add considerably to the rural income and provide employment to a number of persons.

INTRODUCTION

The State of Orissa (India) has an area of 60,000 square miles with 60,000 villages. The rural population, 95% of the total, depend mainly on cultivation of paddy, home industries and pisciculture, the production from which determines the economic condition of the villages. Pressure on land is heavy, averaging 244 persons per square mile. Paddy being the main crop and rainfall varying between 50 to 65 inches in a year, almost every village has a swamp ranging between 4 and 1,000 acres. These areas are generally unproductive of either paddy or fish and contribute considerably to the incidence of malaria. Rendering these swamps productive would, therefore, play a significant part in the rural economy.

Swamps by virtue of their origin and period of neglect require different treatment but generally, the reclamation costs are heavy and have to be kept down within the limits commensurate with possible returns in terms of production. "Most ponds are too big, scientists find...and the expenses and labour involved in the proper management of a large pond are too great for the average individual". The same holds good for swamps also, but in the case of large swamps, dykes dividing the swamps into workable units have to be made with silt alone to avoid the shifting of soil over long distances, suitable earth not being available nearby. Planning the conversion of swamps into fish farms with various types of tanks requires considerable experience and care. Such planning has to be based on the amount of silt, weeds, the nature of water and the type of operation required e.g. deweeding, desilting, construction of cross embankments etc. The technique of construction of cross dykes in deeply silted swamps at a low cost is new and requires a good deal of experience for successful application. The problems have been the lack of (i) initial (ii) enterprise (iii) technical advice and (iv) data on the economics of fish farms made out of reclaimed swamps.

THE EXPERIMENT

Swamps were taken up at random all over the State of Orissa for reclamation on an experimental basis and the technique of reclamation including planning was evolved

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as work progressed, there being a number of errors in the location of different types of tanks, nature of sluices and other constructional details in the beginning. In fact, the most economical method of constructing silt dykes was evolved only in 1956. Table I shows the yields from selected swamps of different soil conditions converted into fish farms. Usually it took two seasons (January—June) for the completion of a project and fish was marketed thereafter annually, due to needs for quick returns, although the fish had not reached the best marketable size. This no doubt contributed to somewhat lower yields.

Table I. Showing the cost of Reclamation per acre in different swamps.

Sl. No. Name of Swamps	Gross Income up to March	Initial condition	Capital Investment in rupees	Water area in acres	Cost per acre (Rs.)	Year of starting
1. Satabandha Project, Sonepur	Rs. 18,385	Deeply silted..	31,237	17.57	1,785	1950
2. Rajamunda Project, Boudh Raj	Rs. 6,752	Small irrigation project.	29.514	14.79	2,001	1951
3. Kusumbi Project, Jaypur	Rs. 8,639	Deeply silted	85,612	22.54	3,805	1954
4. Nuapara Project, Kujang	Rs. 3,100	-do-	19,927	3.40	5,695	1950
5. Baidyanath Sagar & Narayan Sagar Project, Angul	Rs. 5,295	Laterite bottom.	67,557	18.80	3,603	1954
6. Chatra Sagar & Khajurkota Project, Sambalpur	Rs. 18,187	Low land without silt	38,640	14.00	2,760	1952
7. Kausalyaganga Project, Puri	Rs. 57,224	Deeply silted.	378,080	131.07	2,885	1952
8. Mahabhoi Project, Kendrapara	Rs. 6,394	-do-	7,467	3.75	1,991	1951
9. Jamalpur Project	Rs. 2,755	-do-	4,289	2.05	2,092	1952

General observations on swamps may be summarised as below.

1. Swamps are generally acid and contain very little fish, contrary to public expectations.
2. Deeply silted swamps although more expensive to reclaim are productive in both fish and vegetables, the acid areas developing productivity after one or two years.
3. Small irrigation projects being a water source for crops suffer severely for 2 seasons due to drought.
4. Irrigation projects with laterite bottom are poor in production.
5. Small village swamps are the most productive especially on account of food supplied to the fish in various forms resulting from the use of the tank by the villagers.
6. Incidence of malaria is noticeably less where swamps beside villages have been cleared.

The scheme was worked out on the basis that it would cost Rs. 2,500 to reclaim an area of one acre and the yield would be Rs. 200 per acre nett so that the capital cost would be recouped within a period of 15 years without interest on capital. The first two years would be regarded as unproductive. The success of the scheme naturally depended on the low initial capital cost by economical reclamation work and continuity of production for at least 12 to 15 years, further major capital expenditure being unnecessary. It is obvious that to assess results the scheme has to be worked for a long time but some indications of results can be seen from Table I. The Satbandh Project with an initial cost of Rs. 31,000 has given a gross income of Rs. 18,000 in four years (excluding the first two years). The expenditure is within 15% of the income and as such the scheme has been economical. Similarly, Series Nos. 3, 4, 5, 6, 7 and 8 are also economical and all of them are deeply silted swamps. In case of Rajamunda (Serial No. 2) which is a minor irrigation project, the yield was low on account of the fact that drought in one year affected fish production for the next two years and the tank had to be cut to allow water for irrigation in the year of drought. In case of Serial No. 5 the yield was the lowest as it has a laterite bottom and production was poor.

Generally, however, with the technique now improved, deeply silted swamps of almost any size can be reclaimed with capital on a long term basis, free of interest (this is necessary because some of the swamps have been neglected for hundreds of years e.g. Serial No. 6 had not been reclaimed for 600 years and naturally the silt deposits were very heavy). There is therefore considerable scope for swamps to play a useful role in rural economy and it is necessary to organise enterprise and to provide capital along with improved technical knowledge.

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