

## General Remarks on Primary Industry in East Java\*

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### 1. General Features of Rural Life in East Java

During the colonial period, East Java developed multicultivation of cash crops such as coffee, sugar and tobacco. However, crop rotation was developed before the second world war and land ownership was allocated to small-scale land owners.

Agricultural productivity for the improvement of industrial crops was emphasized and hence, a large-scale irrigation program utilizing rivers and canals was launched, however, most traditional production systems remain to be effective.

In the case of fishing *PAYANG*, a small sail trawl net, is still popular in much of the eastern side of Java especially in the Banyuwangi district which is the center of the fishing operations. In Muncar, during the fishing season over 1,000 small fishing vessels gathered. Furthermore, East Java has also been the center for production of *PINDANG*, a traditional method of salting and boiling of fish. *TAMBAK*, a brackish water fish pond system, was developed in this area particularly at the northern side of Java Sea.

In the early 1970s the author had an opportunity to observe the primary industrial areas, and comparing the situation ten years ago with the present there are indications of both progress and underdevelopment. One obvious change observed was the improvement of farm embankments. New species of crops and vegetables have been introduced, including soybeans which are a good source of nitrogen, and has improved the fertility of the soil. Crop rotation and mixed farming have also been adopted. After harvesting tobacco, sugarcane, coffee, or cash crops like vegetables were planted.

Synthetic fishing nets have been introduced along the coastal areas. Small fishing boats have increased considerably ( but the efficiency of the outboard engines is still below standard, compared with other Asian countries ).

The living patterns in rural areas have obviously changed during the past decade. Through the government's extension service programs, changes such as storage of

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crops, expansion of paddy rice, utilization of small ponds for rearing tilapia *Sarotherodon mossambicus* have been adopted.

On the other hand, there are aspects in rural life that have remained virtually unchanged. As a basic rule of society, *GOTONG ROJONG*, which are traditional mutual aid systems, have exerted great influence on community work both in public and farming. High consumption of tapioca, copra, and other less - protein rich food items is still a part of the diet as a result of tradition. In dry fields where water is limited farmers resort to digging wells to serve as water sources for cultivation of plants. No modern technology is available in small unit farming in East Java. As a basic structure, land ownership has not changed during the past ten years. In the case of fishing, as a result of surplus labour, fisheries development has been obstructed, *i. e.*, although catch rate increased, due to increased fishing effort, cash per unit effort decreased. Onshore fishing resources have been exhausted and a reduction in yield has been observed.

## 2. Evaluation of Present and Traditional Methods of Farming and Fishing in East Java

In the areas covered by our survey, swamp areas have been converted into paddy rice and others into fish ponds and salt lakes.

Two methods of pond culture, namely *TAMBAK* were observed. One technique, the trapping method, involves the entry of different species of fish and other animals through pond gates during high tide. The other method involves the use of fertilizers, insecticides, and other improved methods of pond management.

Although, the trapping method seems to be primitive and less productive, it is ecologically viable. Primary and secondary productivity of the ponds are characteristically high and, therefore, serve as sources of natural foods for the trapped fishes and shrimps without the need of using artificial methods such as pond fertilizer and supplemental feeding. Moreover, there is no method being adopted to utilize larvae and juveniles from brackish swamps at present.

From an economic view point, however, the traditional methods should be replaced with improved ones. The efforts of the government to support such a program has somehow been successful. The research efforts of the Brackish Water Aquaculture Development Center at Jepara geared on the development of high culture techniques might support this objective.

In many areas, introduction of new fishing gear will most probably replace the old traditional ones. Gear which have been designed at present still prove to be of inferior quality. With the introduction of purse seine, the use of *RUMPON* a highly developed method to allure large pelagic fishes migrating offshore, become less popular.

However, *RUMPON* can be applied in gill net and line fishing.

Based on fisheries statistics, the number of coastal fishermen is increasing annually and little more income is being generated for individual fishermen, but because of the seasonality of different times of the year. The development and improvement of the fish processing industry might make significant contributions to constant supply of fish protein to consumers.

While the production of vegetables and fruits in East Java, Madura and Bali Islands is at its primary stage of development, marketing and transportation are still limited and it can be said that the products have been extensively utilized and has largely contributed to inhabitant's health. As a result of economic development, however, modernized life in rural areas, will raise new demands such as better quality and larger quantity of food, etc. This tendency can already be seen in cabbage, Chinese cabbage, cucumber, watermelon, tomato, carrot, apple, and several kinds of citrus fruits.

A continuous promotion of fundamental research and subsequent education for farmers are effective means to meet the consumers' new demands mentioned above. The government's efforts in recent years have been fruitful and are praiseworthy.

In view of alternations found in the main crops, it can be said that some plants *i. e.*, rice, tobacco and most of pulses, are increasing in their cultivation area and yield year by year. It is sure that demands of governors and efforts of government officers have made important contribution to these increases. On the other hand, some plants, *i. e.*, sorghum and cotton, are decreasing in their cultivation area and production. Changes in meal pattern and preference are attributable to these tendencies. In the former case the varietal variations in one respective plant species are frequently found in everywhere, and technical developments, including irrigation systems and fertilizer usage, are also clearly recognized.

In several regions, the cropping systems, which are constituted by several kinds of crops at the same time and in the same area, have been devised showing many specified patterns. In these cases, holding of products and soil conservations may constantly be secured and requested for long terms.