

PD-AAU- ~~970~~
4700 970

TRIP REPORT

USAID COOPERATIVE AGREEMENT

Kenneth L. Simpson
Food Science and Nutrition
University of Rhode Island

May 9 - May 26, 1986

Thailand
Philippines

2

1. Countries Visited:

Thailand - May 11 to May 19
Philippines - May 19 to May 24

2. Objectives:

Thailand:

A) discuss with Dean Wit the direction of the Mariculture part of the cooperative agreement and the MOU which had been signed.

B) interview Asst. Prof. Mayuree Chaiyawat on her coming to RI for graduate studies.

C) visit Thai Artemia salt farms and collect samples.

D) to interact with AID mission and FAO.

Philippines:

A) meet with new chief of SEAFDEC to discuss past projects and formulate MOU.

B) process manuscripts of work done in the past.

C) visit integrated Artemia farm at Dumaguete, Negros, collect samples of Artemia cysts.

D) meet with SEAFDEC chief and URI Assoc. Dir. Dr. McCreight on the MOU.

E) interact with USAID in Manila.

3. Visit to Thailand

During the past four years, the Food Science and Nutrition laboratory at the University of Rhode Island has been working with Kasetsart University Faculty of Fisheries on the development of a cooperative project between the two laboratories. Basically, the objective of this project has been to provide an understanding for the poor quality which is experienced from some pond raised brine shrimp. Thailand is an excellent country to work in under this project since the salt farms and Artemia production is already in place. Also, we have a model system in that the cysts from Thailand have traditionally been deficient in certain critical fatty acids. Our approach has been to have a faculty member who

has permanent status at Kasetsart University to come to the University of Rhode Island to get academic and research experience and return to Thailand to do practical and theoretical pond research. We experienced some problems in knowing where this was going to fit in to the overall program for the School of Fisheries since the Belgium group had also made arrangements to work with this University. In traveling to Thailand, we were able to discuss this matter with Dean Wit to interview Mayuree Chaiyawat and the researcher from Ghent University, Belgium, and work out the details of how URI under the cooperative agreement would pursue this project. During this period of time, the details of a comprehensive project was finalized and a white paper was submitted entitled, "The Quality of Artemia Cultured in Thailand Salt Farms". This has been submitted to Kasetsart University. It is allowed under the Memorandum of Understanding that we had previously signed and it is under the terms of the cooperative agreement. This document is enclosed with this trip report.

In addition a visit was made to a Thai Artemia salt farm. This farm shows that a salt manufacturing facility can diversify into a more integrated farm system. Thus, the initial farm was reengineered to convert the depth of the ponds from 10 cm to 30 cm. The ph was changed from a pH 7.9 to a pH 8.8 over a period of time and the temperture was lowered by virtue of the fact that the depth of the ponds were increased. This has allowed them to go into production

of salt and in addition to produce biomass for the Hong Kong market. While I was there I was able to witness the harvest of 1.5 kilograms of biomass shipped in 10 liters of salt water together with bags of ice and a head of oxygen gas. These were packed in polystyrene boxes and were sealed and shipped in 20 box loads by air to Hong Kong. For this they received about \$4 per kilogram which allowed them to make a profit on the shipment. They also were able to harvest some 50 kilograms per day of Artemia to feed local sea bass production. This particular salt farm named Poed was about 75 miles from Bangkok and consisted of 20 ponds in approximately 5 hectares of pond system. The pond was not intensively fertilized, however, when they did they used chicken manure mainly during the rainy season. The farm was minimal in integration since their products were salt and biomass Artemia. Because of the low salt concentration, cysts were not produced, although some samples were collected from this farm. This is perhaps the most successful farm in Thailand.

The visit was made to USAID both at the initial part of the visit to Thailand as well as in leaving Thailand. I met with John Fote who is director of the AID mission - science and technology and with Joe Salvo who will take over the position when Mr. Fote leaves to take up assignment in Egypt. I also met with Dr. Lin who is working in pond dynamics and there were many joint interests that were experienced in talking with Dr. Lin. Some of our reprints were sent to him.

A seminar was given at Kasetsart University and also time was spent meeting with an American, Jack Gershon, who is in the AVRDC garden project and this again integrates some of the thoughts that we have on projects at the University of Rhode Island with science and technology, nutrition section of AID. Time was also spent with Imre Csavas, the FAO fishery aquaculture officer. This gave me an overall view of FAO's program in regard to southeast Asia. I had first met Mr. Csavas in Hungary at an aquaculture facility. Time was also spent at Mahidol University where alot of the basic research is done in this area and in other areas. Subsequent to this visit, Mrs. Chaiyawat has come to the University of Rhode Island and has begun her graduate studies under the cooperative agreement.

4. Visit to the Philippines

The purpose of the visit to the Philippines was to renew contacts with SEAFDEC after the latest change in the chief of the aquaculture dept. of SEAFDEC. It was important considering the fact that we had had past projects with SEAFDEC and presently have a SEAFDEC researcher finishing a Ph.D. study at the University of Rhode Island. A number of publications were in various stages of completion and these needed work. It is very important that we make contact again with SEAFDEC.

During the second day in the country, the trip was made from Manilla to Iliolo where I immediately met with the chief

of SEAFDEC. We discussed the construction of a memorandum of understanding and this was worked on and typed according to the specifications and needs of the University of Rhode Island and Southeast Asia Fisheries Development Center. Time was spent working with the researchers that we had had past experiences with and joint manuscripts were discussed and processed for publication. The following day, May 21, the flight was made from Iliolo to Cebu City where time was spent in discussing Artemia research with the group that was going to Negros Oriental to the Sycip farm. It was impossible to go directly to Negros from Iliolo, however, this is possible from Cebu City. Three days were spent at the Sycip farm in Negros. This is the best example of an integrated farm that I have ever been privileged to view. Initially, the farm was a plantation for sugar cane. Sugar cane provides employment for workers six months out of the year and the result has been a tremendous amount of unrest in the sugar cane growing areas because of the employment problems. This farm has gone from a sole producer of sugar cane to a producer of salt at the one extreme and shellfish and finfish along the salt gradient. Thus, pigs, cows, and poultry are raised for their eggs, meat, and milk. Manure is collected, used in the ponds to raise lab lab and this is used in the culture of milk fish, seabass, and prawn for the Philippine as well as the export market. Thus, the farm has provided 12 month employment for the sugar cane workers and as a result the situation is very stable socially. The farm does not have to

employ an army of workers to protect the farm because it is run as a cooperative. In addition, the director of the farm provides medical facilities through his wife who is a medical doctor. Overall, I was very impressed with the farm and it is often visited by people in the area as demonstration of what can be done in a farm system. A number of farms in the area have shifted over to an integrated system on a model of the Sycip farm. On returning to Manila I met with USAID people in the mission to explain what had been accomplished and to get their advice on what could be done in the future.

Finally, Dr. McCreight of ICMRD and I met with the SEAFDEC chief to finalize the language for the memorandum of understanding which was submitted.

5. Conclusion

Artemia culture in Southeast Asia is very difficult because of the rain situation. Cyst production is not favored but biomass production is. The situation with the rains is such that the ponds are diluted with fresh water and predators are able to attack the Artemia. However, in Southeast Asia it has also been demonstrated that a weir system could be developed in which the rain water can layer on top of the ponds and be drained off. Thus, production has been maintained during the rainy season, whereas otherwise it would not be possible. The two ponds that were visited represented an intensive and an extensive culture of Artemia. The results of the chemical analysis have not been completed at this point, but they should provide us with information as

to what the fatty acid composition will be under these conditions. The basic research study that is going to be conducted at the University of Rhode Island and Kasetsart University will provide us with information as to the pond conditions resulting in the best algae for Artemia grazing. Mrs. Chaiyawat is an ideal person for this since her Master's thesis was on algae and she is a faculty member in the School of Fisheries of Kasetsart University. We are optimistic that we will be able to use the information that was gained in this trip and the research that is done under the cooperative agreement to understand much more completely the pond dynamics resulting in a good Artemia. Our intent is to train the incountry people so that they can continue the work.