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BRIEF REPORT OF THE PROJECT 1994/96 ACTIVITIES

FAO SOUTH PACIFIC AQUACULTURE DEVELOPMENT PROJECT (PHASE II)

by
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1. INTRODUCTION

This report was originally prepared for the second Technical Coordination Meeting of the South Pacific Aquaculture Development Project-Phase II (SPADP) held on 1 and 2 August 1996 at Nadi. The report briefly outlines the project activities carried out by the SPADP during the period from May 1994 through June 1996.

2. PROJECT OUTLINE

2.1 Project Period

From May 1994 to May 1999

2.2 Project Objectives

The Development Objective of the project is to assist the 15 island countries in the South Pacific in their efforts to establish and develop economically and socially viable aquaculture industries.

The Immediate Objectives of the project are:

I. Refinement of technical packages tested or selected in the first phase of the project to conclude the verification of their technical aspects, with provision of specialized advice from the region and other countries with substantial experience on the subject

II. Verification of market opportunities and economic analysis for selected commercially important commodities screened for potential interest under local rearing conditions by the first phase of the project

III. Advice and assistance provided in the preparation of plans and strategies and/or evaluation of technical assistance and production project proposals to be transmitted to donors and local financing institutions for funding and implementation

IV. Improvement of manpower capabilities at national and regional level

V. Increased availability of information on cultivable organisms of interest to the region
VI. Support to regional activities in the area of selected reef species stock enhancement research and management in collaboration with regional and international entities present in the region
VII. A Mechanism to follow-up the main activities at the end of the present phase of the project will be proposed with involvement of the existing regional organizations.

3. MAJOR INPUTS

3.1 Project Technical Staff

Chief Technical Adviser:	H.Tanaka (May 1994 to present)
Regional Aquaculture Associate:	G.Billings (Nov. 1995 to Oct. 1996)
Consultants:	T.Pickering (Seaweed survey, Feb. 1995)
	R.Croft (Sponge survey, Sep.-Oct. 1995)
	E.Dela Cruz (Milkfish farming, Apr. 1995 to Feb. 1996)
	R.Guerrero (Tilapia farming, Oct. 1995)
Resource Persons:	A.Tacon (Fish feed and feeding, Feb. 1995)
	J.Isa (Stock enhancement, Jun. 1995)
	S.Kakuma (Stock enhancement, Jun. 1995)
	P.Phillipson (Fisheries marketing, Nov. 1995)
	T.Yanagisawa (Sea-cucumber, Nov. 1995)
	H.Nakano (Black-lip pearl hatchery, Nov. 1995)

3.2 Project Activities

Objective I:

A. Subsistence aquaculture development

- Shipment of chilled Nile tilapia samples to W.Samoa (Nov. 1994 and Oct.1995) and Tonga (Feb.1996) for assessing food value of new tilapia strain
- Liaison service for finding a UNV aquaculturist for W.Samoa (1994)
- Supply of fish fry
    * Nile tilapia fry stocked in Lake Ano, Tonga (500 fry, Feb.1996) and in Lake Sato'alepai, W.Samoa (1,000 fry, Apr.1996) for improving food value of the existing tilapia (Mossambican)
    * milkfish fry to Nauru (10,000) from Kiribati for demonstration farming (Jun.1995)
- Introduction of a new extensive farming technique with bamboo supports ("Acadja" method) for tilapia and mullet farming in Fiji and Tonga
- On-the-spot expert consultations on tilapia farming in Fiji (Oct.1995)
- Construction of a milkfish demonstration pond (1,600m^2) with village people in Vaitupu Island in Tuvalu (Feb.1996)

B. Commercial/domestic-oriented aquaculture development

- Expert consultation on fish feed development to Fiji (Feb.1995)
- On-the-spot expert consultation on health diagnosis of Japanese Kuruma shrimp and guidance on economic viability of Japanese shrimp farming for two Fiji shrimp farmers (Mar.1996)

C. Commercial/Export-oriented aquaculture development
- Liaison service for supplying pearl nuclei for Tonga (Sep.1994)
- Commercial seaweed surveys in Fiji (Feb.1995)
- Commercial sponge survey in Kiribati (Sep.1995)
- On-the-spot expert consultation on Mabe farming in Tonga (Nov.1995)
- Surveys of sea-grape seaweed in Fiji (1995/96)
- Preliminary survey on edible brown algae in Tonga (Feb.1996)

D. Aquacultural resource enhancement
- Species identification of pearl oyster spats collected in Tonga (Dec.1994)
- Liaison service for obtaining Serotonin from NZ Fisheries Research Centre for giant clam seed production in Cook Islands (Jan.1995)
- Liaison service to JICA for a bilateral project on the proposed programme on trochus and green snail stock enhancement in Vanuatu (Jan.1995)

Objective II:
- Test shipment of giant clam from Tonga for assessing food value in Japan (Oct.1994)
  * Arrangement of CITES clearance for giant clam import to Japan
- Commercial assessment in Japan of edible seaweed samples collected in the region
- Negotiation on air freight for seaweed shipment to Japan (Oct.1995)
- Collection of trochus import data in Japan (Jan.1996)
- Test shipment of sea-grape to Japan from Fiji (Feb.1996)
- Test of giant clam sale at a Japanese tourist-oriented restaurant in Fiji (Mar.1996)
- Collection of marketing information of cultured shrimp and shrimp marketing situation in Australia for PNG
- Liaison service for finding buyers for:
  * eel from FSM
  * pearl shell from Marshall Islands and Cook Islands

Objective III:
The project has provided advice and/or assistance in preparation of the following items:
* proposal of giant clam marketing development programme for Solomon Islands/ ICLARM
* proposal of pathogen free carp egg introduction to PNG
* proposals for sea-bass and shrimp farming to the PNG Investment Promotion Authority
* follow-up programmes of the Tonga/JICA aquaculture project
* plan of PNG/JICA fish farming development project in the highland
* plan of large-scaled commercial tilapia farming by converting unused rice field in Fiji
* programme of the Tonga/JICA regional aquaculture symposium
* proposal of red-claw farming in W.Samoa
* tilapia farming development in Fiji and W.Samoa
* proposal of giant clam marketing survey in Saipan for FSM
* proposal of pearl farming development to the Fiji Trade and Investment Board
* proposal of trochus and green snail stock enhancement project in Vanuatu
* plan of brown algae farming development in Tonga
* plan of joint research for assessing farming potential of newly found commercial seaweed from Fiji (USP/Fiji Fish.Dep./SPADP)

- Liaison service for:
    * obtaining an fisheries/aquaculture development adviser from JICA for Palau (Jan.1996)
    * joint research on marine bio-technology in Fiji (USP/Japan Marine Bio-technology Institute) (1995/96)
    * finding funding sources to set up a carp hatchery for a NGO in PNG (May 1996)

Objective IV:

- The project recruited a Regional Aquaculture Associate (11 months contract) from Fiji (Nov.1995).
- The project sponsored:
    * one-month tilapia farming training at the SEAFDEC, Philippines for two Fiji Extension Officers (Apr.1995)
    * participation of PNG Aquaculture Officer in FAO Consultation on Aquaculture Fish Health Management, held in Malaysia (May 1995)
    * a study tour and short training course on sponge farming in Pohnpei, FSM, for a Kiribati Fisheries Officer (Nov.1995)
    * attendance of Palau Marine Resources Officer to Tonga/JICA Aquaculture Seminar (Nov.1995)
- The project organized:
    * one-day study tour on tilapia farming in Fiji for participants of the 1st Technical Coordination Meeting (Nov.1994)
    * two-week regional tilapia farming training course in Fiji (Oct.1995)
    * workshops on milkfish farming and fry collection in Nauru (Oct.1995) and Tuvalu (Feb.1996)
- Liaison with the aforesaid USP/MBI joint research on marine organisms was made in order to both foster regional expertise on coral reef organisms and promote discovery of new resource organisms for creating possible export commodities.

Objective V:

- The project supplied the following information and items to the relevant countries/institutions:

    <u>Information</u>
    * farming of Nile tilapia or "Super tilapia", seaweed, shrimp, sea-bass, tropic scallop, crawfish, Java carp, etc.
    * fish feed and feeding
    * milkfish as bait
    * giant clam buyer
    * suppliers of triploid oyster
    * live-rock market
    * trochus shell import to Japan
    * radioelements amounts particularly of Uranium in water permissible for fish farming

    <u>Manuals and books</u>
    * quarantine control method
    * codes of practice on the introduction and transfers of marine organisms
    * over 150 copies of FAO handbook on small-scale freshwater fish farming
    * books of "Aquaculture in Tropical Areas"
    * reports on aquaculture development plan and policy
- Technical Coordination Meeting was organized in 1994 for discussion of project activities as well as information exchange.

- The project provided the following up-dated information on aquaculture and coastal resource management development as well as marketing of reef resources, by sending invited resource persons to the regional workshop and seminar:
    * Background of Japanese marine ranching development (CTA, presented at SPC/FFA Management of South Pacific Inshore Fisheries)
    * Aquaculture development as a means of coastal fisheries resource management (J.Isa, presented at SPC/FFA Workshop on Management of South Pacific Inshore Fisheries)
    * Stock enhancement programmes in Okinawa (S.Kakuma, presented at SPC/FFA Workshop on Management of South Pacific Inshore Fisheries)
    * Trend of aquaculture development in the Caribbean islands (CTA, presented at Tonga/JICA Regional Aquaculture Seminar)
    * Hatchery technology of black-lip pearl oyster (H.Nakano, presented at Tonga/JICA Regional Aquaculture Seminar)
    * Sea-cucumber stock enhancement development in Japan (T.Yanagisawa, presented at Tonga/JICA Regional Aquaculture Seminar)
    * Trend of marketing of Pacific reef resources (P.Phillipson, presented at Tonga/JICA Regional Aquaculture Seminar)
- The project introduced a liaison service for promoting information exchange on:
    * seaweed research (USP/Tokyo Univ.of Fisheries) (Mar.1996)

Objective VI:

- The project has been studying the following items:
    * biodiversity and genetics of aquatic organisms
    * traditional reef stocking enhancement practice "Barachois" in Mauritius
- The project encouraged a regional research on stock enhancement programmes by supplying basic equipment and/or sending a resource person for:
    * sea-cucumber hatchery in the Solomon Islands
    * trochus grow-out in Vanuatu

Objective VII:

- SPC was identified as the appropriate regional organization that could take over the project function at the end of the project period. Submission of a proposal for the regional set-up of aquaculture self-supporting facility at the SPC 26th Regional Technical Meeting of Fisheries in August 1996 was accepted.

3.3 Equipment and Supplies

- For Office Use
    * a photocopier
    * an IBM computer set with a laser printer
    * an office facsimile
- For field use
    * rubber lining sheet for giant clam race-way tanks for Cook Islands (Apr.1995)
    * water quality testing equipment for milkfish farming programme in Nauru (May 1995) and for tilapia stocking programme in W.Samoa (May 1995)
    * submersible pump for tilapia hatchery in W.Samoa (May 1995)
    * electric meat chopper for milkfish pellet making in Nauru (May 1995)
    * Rotenone for tilapia control in Nauru (Jun.1995)
    * hole-drill for Mabe programme in Tonga (Sep.1995)
    * tilapia sex reversal hormone and larvae hand nets for Fiji (Oct.1995)
    * seacucumber hatchery equipment [refrigerator and fluorescent lights (Oct.1995), air-conditioner (Feb.1996) and polycarbonate bags and air-purifying cabinet (Apr.1996)] for Solomon Islands/ICLARM

* milkfish harvest nets and fry collection nets for Nauru (Oct.1995) and Tuvalu (Jan.1996)
* plastic crates for giant clam farming in Cook Islands (May 1996)
* trochus grow-out baskets for Vanuatu (May 1996)
* sample shrimp harvest nets for Fiji shrimp farmer (May 1996)
* seaweed farming nets for Tonga (Jun.1996)
* electronic balance for W.Samoa and FSM (Jun.1996)
* spare-parts for DO meter (Jun.1996)

4. REPORTS PREPARED DURING THE PROJECT PERIOD

- Fisheries Resources Management Development by Stock Enhancement in Okinawa (Jun.1995)
- Sedentary Resource Management in Onna Village, Okinawa (Jun.1995)
- "Marine Ranching Programme" as a Gear of the Coastal Fisheries Development in Japan and Meaningful Lessons to South Pacific Islands (Jun.1995)
- Survey on Commercial Seaweed Available in the Adjacencies of Rewa Delta: A preliminary study on farming potential of new seaweed in Fiji (Jul.1995)
- Kiribati Commercial Sponge Survey (Nov.1995)
- Role of Aquaculture in the Pacific Island Nations' Development (Nov.1995)
- Sea-cucumber Ranching in Japan and Some Suggestions for the South Pacific (Nov.1995)
- Hatchery Production Techniques for the Black-lip Pearl Oyster (Nov.1995)
- The Marketing of Trochus, Beche-de-mer and Other Marine Products (Nov.1995)
- Final Report of Milkfish Demonstration Pond Project at Vaitupu, Tuvalu (Feb.1996)
- Final Report of Milkfish Culture Programme of the Republic of Nauru (Feb.1996)

5. CONSTRAINTS ENCOUNTERED AND ACTIONS TAKEN

Objective 1.

- When the second phase project resumed after a two-year break (1992-94), the project had phased with several setbacks in the region. These were:
  * The seaweed export dropped to 300 mt from 1,000 mt in Kiribati because of policy change of government.
  * The FSM government was planning to close down the National Giant Clam Hatchery in Kosrae because of less significant inputs.
  * A giant clam farmer gave up to continue its production due to the repeated cyclones damage in Western Samoa.
  * Mass spats collection of winged pearl oyster was not successful in Tonga due to mis-judgment of collectors deployment time and/or un-usual cold water.
  * The trochus reseeding programme was stagnant in Vanuatu owing to administrative disorder in the Fisheries Department.

- Although the project activities were discussed and endorsed by the 1st Technical Coordination Meeting held in 1994, their implementation of the activities became difficult in several countries mainly due to administrative disorder in several countries. These were:
  * Cook Islands;
    - government financial crisis (shortage of aquaculture staff)
  * Kiribati;
    - unfulfillment of establishment of the proposed joint fishing company
  * Palau;
    - change of management by new government policy

* PNG;
  - refusal upon introduction of new fish species/strain by a live-stock quarantine officer
  - government financial crisis and re-structure of the Department organization, and
  - lack of understanding to benefit from aquaculture development (shortage of aquaculture staff)
* Vanuatu;
  - continuation of government disorder by political change
* W.Samoa;
  - lack of understanding upon fish stocking by the dam authority

Objective 2.

- Activities were very much delayed in this category. Main reason was staff shortage in the project office. The proposed APO Marketing Economist has not been assigned yet owing to difficulty in recruitment. In order to overcome the situation, an ad hoc regional Technical Cooperation Programme (TCP) of giant clam marketing development was prepared, but it was not accepted by HQ. Assignment of UNV giant clam marketing staff in the Solomon Islands is under-consideration. Marketing studies on giant clam in Asia and Australia is under-way.

- The project tapped the potential of several edible seaweed marketing in Japan. Test shipments of fresh sea-grape seaweed were repeated in cooperation with Japanese seaweed companies. However, to keep the freshness during the transporting period is still a major constrain. A joint research with USP has been arranged to tackle with this concern.

- The CITES regulation seemed to be troublesome in giant clam trading to Japan from the region. Aquarium market of South Pacific cultured giant clam is already established in USA without any constraint. However, CITES control system of Japanese authority is different to US's system. Import from Tonga was approved at last, but not for other countries. Country-to-country approach is required to tackle with CITES issue.

- It seems difficult to develop food market of small sized giant clam for targeting tourists in the region even in the tourism oriented islands because of unpopularity of food and high production cost. In addition, giant clam trade as food is restricted in the United States of America due to the requirement of the US Food and Drug Administration. Asia seems the sole potential market for giant clam as food. However, a shortage of project staff is crucial at present.

Objective 3.

No specific constraints encountered yet in this category.

Objective 4.

- Implementation of the proposed activities discussed at the first Technical Coordination Meeting in 1994, became difficult in Cook Islands, Papua New Guinea, Palau and Vanuatu due to political and/or financial changes in these countries. Drastic re-structure of the organization by a political change, and/or mass lay-off of technical staff due to political and economic crisis weakened the capability of government services in sustainable development. Hence, it would be necessary to provide manpower training both for government and private sectors in the region.

- Smallness of manpower and funding availability in each country is generally affecting growth and speed of aquaculture development in the country. There is the fact even in the Pacific islands that the more staff in the aquaculture section in the government, the more development of aquaculture in the country. To strengthen the aquaculture section, it is recommended to induce a long-term international support to the government. It is also necessary to involve the private sectors in the long-term programme to supplement the government's weakness in order to boost sustainable development. At least ten years will be required to strengthen and establish the government's responsibility.

Objective 5.

- More systematic approach on information dissemination such as publication of a newsletter and the organization of periodical meetings/workshops on aquaculture aspects is required for the project. However, their implementation is limited at present due to the shortage of the project staff. It would be improved after the assignment of the first APO, scheduled in September 1996.

Objective 6.

- Debating is increasing against restocking and introduction of marine organisms within the region from genetic resources' conservation point of view. It should be, however, noted that aquaculture was basically practiced with the introduced species in the Pacific region. Besides, many economic agriculture products are also of introduced species in most of the Pacific islands such as coffee, vanilla, cacao, rice, pine tree and many kinds of vegetables etc. Such advantages of introduction and transfer are commonly not being discussed. Strengthening of the regional research capability on this issue is of urgent need.

- There is a high expectation to benefits from reef stock enhancement practices in the region. Various trials on important reef resources are being undertaken in each country. Research and development in this field, however, is very much delayed. This can be caused by a lack of regional research institutes in the South Pacific. The renovation of USP's marine studies facility scheduled to commence in 1996 would bring great benefits to the region not only to improve the present situation but also to support in the development of research and human resource.

- The project activities in this category will have to be strengthened after an assignment of APO Reef Fisheries Biologist. However, since the assignment of an APO is difficult at present the project is required to find an alternative approach.

Objective 7.

No specific constraint encountered yet in this category.