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AQUACULTURE

Ornamental Aquaculture Technology Transfer

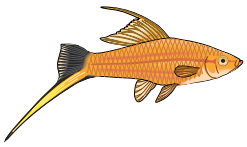
October 16, 1994, through June 15, 1995

Principal Accomplishments

Objective: Retain a tropical fish culture expert who has the expertise in farm-scale commercial production to support the development of an ornamental fish production industry in Hawaii.

Brian Cole, an expert with more than 10 years experience in all phases of ornamental fish culture, continues to support the development of an ornamental fish production industry. In addition to presenting a number of workshops, he visits farm sites throughout the state and provides farmers with practical advice on ornamental culture and marketing.

Objective: Provide seedstock and technical support to farmers.



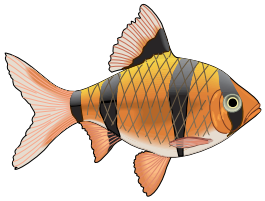
Investigators established a standardized production unit system for intensive culture of live-bearing ornamental fish. The production units comprise two 12-foot, circular tanks outfitted with breeding cages and a series of growout cages in ponds. A breeding cage in one tank is stocked with 1,000 females and 200 male broodstock swordtails, which produce 7,500 fry over 15 days. Then the caged broodstock are moved to the second tank for another 15-day spawning cycle.

At that point, the 15- to 30-day-old fry from the first cycle are stocked into growout cages in ponds. Each production unit has nine growout cages in the ponds, from which the older fish will be continually harvested and sorted for marketing. After an initial three-month period, each production unit should be able to attain a marketing target of up to 15,000 fish per month. Data on the cost, productivity and problems encountered with these production units will be compiled during the project's third year.

Objective: Establish the consistent production of five species of high health ornamental fish at commercial farm locations in Hawaii.

Production of several species of ornamental fish has been established at two cooperating commercial farms.

- One farm, Fong's Plantation, has produced neon swordtails, sunset swordtails, green swordtails, fancy goldfish, koi, rosy barbs and feeder guppies at levels far higher than expected and is selling them in local and mainland markets. Fong's is also growing broodstock tinfoil barbs, tiger barbs and rainbow sharks for future production. Current sales are estimated at $20,000 to $25,000 per year and are increasing.



- The second cooperator is Hanohano Farms. Project investigators have aided this farm in establishing commercial production of three varieties of swordtails, rosy and tiger barbs and two species that are discussed under the reverse osmosis objective.
  - » Additional funding from the Hawaii State Aquaculture Development Program provided fancy guppies, and project personnel are actively assisting in culture of that species.
- One additional farm on Oahu and one on Molokai will join the project as cooperating commercial producers during late summer 1995.
- In addition, the project is providing extension assistance in tropical fish culture to commercial farmers, various fish hobbyist clubs and corporations on five islands, including nine on Oahu, three on Hawaii, three on Molokai, three on Maui and four on Kauai.

Objective: Establish high health stock of additional species of ornamental fish for distribution to participating farmers.

The demonstration site at Windward Community College has several new species in various stages of quarantine and health clearance.

- Dr. James Brock is examining gold, blue and pink or kissing gouramis, all of which appear to have fair market potential and can be exported in large numbers without much risk of market saturation.
- In addition, two-year-old Pangassius catfish are being held at the college and several commercial farms; plans call for assessing the broodstock and possible spawning in August or September.

- During the first two years of work on this project, investigators have learned a great deal about Hawaii ornamental fish markets. Several species selected because of their popularity on the mainland, such as cichlids, proved to be unpopular in Hawaii. A range of other species and strains are being evaluated.

Objective: Continue assessment of markets and conduct a business feasibility analysis in conjunction with the Pacific Business Center.

The business feasibility analysis was completed. It consists of a set of linked spreadsheets that allow evaluation of the relative profit potential of various species as well as the best mainland locations for marketing from Hawaii.

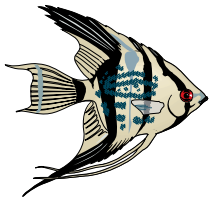
- Because the current format of the spreadsheets, which run under Microsoft Excel 5, is technical and complicated, trained Sea Grant extension personnel must assist farmers interested in using it. The spreadsheets will be developed into a stand-alone, user-friendly program under the third year of the project.

Brian Cole attended an international conference of ornamental fish professionals in Singapore and spent two weeks touring ornamental fish farms in Asia.

- He learned that Singapore exported $80 million worth of tropical fish to the United States last year. However, business costs are rising steadily as Singapore completes its transition from a developing nation to an established economic power. Tropical fish farmers reported that steep inflation over the past five years has sharply escalated land and labor costs, which make farming less profitable. This trend combined with Hawaii's natural advantages in climate, proximity to markets and water quality, could give farmers here a greater competitive advantage than was thought at the project outset.

Objective: Reproduce Amazon Basin fish using reverse osmosis technology.

Hanohano Farm established an enclosed production room with environmental controls and a reverse osmosis water treatment system patterned after the facility at the Hawaii Institute of Marine Biology.



- Established breeding pairs of several varieties of angelfish and discusfish were brought into the facility, and the angelfish continued to produce marketable fry without the expected time to acclimate to the facility. Within four months after purchasing the angelfish broodstock, more than 3,000 juveniles were sold at $0.40 each, for a total of $1,200.

Attempts to breed cardinal tetras have been unsuccessful thus far, but work is continuing on this species.

Investigators

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