

the Nubian Desert. The foliage of some varieties of *prosopis* is unpalatable to livestock, yet its nutritious pods can be eaten by humans and cattle.

In Nairobi the International Council for Research in Agroforestry, supported in the planning stages by the IDRC, is trying to combine the growing of trees with growing food crops and pasturing animals.

Scientists from the Forestry Research Institute of Malawi have begun forestation designed to supply fuel from swift-growing trees that can be integrated with traditional crops.

The Philippine Council for Agriculture and Resources Research (PCARR) is working, with IDRC assistance, to develop the leucaena tree as an improved source of income for farmers. The tree is already a marvel. It produces wood more rapidly than any other known species. Resprouting



*Milkfish raised in tanks are an important food source in the Philippines.*

vigorously from stumps, it can be harvested every five or six years. The wood — strong, dense and attractive — can be converted to commercial lumber, plywood, pulp, paper, rayon and cellophane. The PCARR's genetic research team is trying to develop a strain that can be established easily from seedlings and that will grow in a broader range of climatic and agronomic conditions.

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## Planting the Ponds

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In Asia, where no one assumes that nature is bountiful, fish farmers multiply the natural harvest of the sea. Fish have been cultivated there for a long time. In the sixteenth century Magellan found the natives of the Philippines raising fish in saltwater ponds, and the Chinese were nurturing carp 2,000 years ago.

Old methods are being modernized, and the harvests are expanding. Since 1972 the IDRC's Agriculture, Food and Nutrition Sciences Division

has invested some \$4.4 million in 17 aquaculture research projects.

Feeding and harvesting high protein fish is about three times as cost efficient as feeding and harvesting cattle. Trout can be raised to maximum size in a volume of recycled water equal to their own displacement, and coastal farms off Singapore have produced 250 kilograms of mussels per square metre. Much of the technology is simple and inexpensive.

In 1973 the IDRC held a workshop for researchers from all over Asia in Malacca, Malaysia. They agreed that the critical fact hampering expansion was that fish seldom breed well in captivity. Experiments made forty years ago in Brazil had demonstrated that fish would breed when injected with pituitary extracts. Scientists at the University of British Columbia and the British Columbia Research Council, working with a commercial fish packer, collected 250,000 pituitary glands from Pacific salmon, extracted crude gonadotropic hormone, stabilized it and shipped it to IDRC-sponsored projects around the world.

The most spectacular result was in the Philippines. Cultivated milkfish feed millions in the Philippines, Indonesia and Taiwan. The fish live in fresh and brackish water, as well as in the sea, and they grow fast; but in the traditional system, fingerlings have to be gathered from the sea to replenish the ponds. The Aquaculture Department of the Southeast Asian Fisheries Development Centre injected female milkfish with gonadotropin from British Columbia salmon, and for the first time in history, captive milkfish spawned.

*Hormones from Canadian salmon are injected into Chinese carp in Mardi, Malaysia.*

