Building a SEED Park: Part VIII – Aquaculture

Aquaculture, or fish farming, seems to be a strange industry to find in an arid part of the world. However, the geothermal water available in the San Luis Valley, or from power plants, makes aquaculture of warm water species, such as tilapia, economically feasible. Water, feed and oxygen are the three major ingredients required for fish culture. All requirements for fish culture are available in the Mid-West and can be available in the San Luis Valley.

Tilapia

Tilapia are one of the most widely cultivated fish in the world, they are grown in the San Luis Valley and shipped live to primarily specialty markets in Colorado.

One might wonder "where's the demand for aquaculture products"? The demand is world-wide, but the local demand in Colorado is for fresh, live fish in the Denver and surrounding markets. The demand is also there for hobby fish to support the aquarium trade. However, on the global scale the demand for fish is huge.

The global supply of fish from fishing fleets and aquaculture was 132.5 million tons in 2003. Harvests from the wild were 77.7 million tons and from aquaculture 54.8 million tons, or 41% of the total world supply. Of the approximately 30,000 species of fish, only about 1,000 species are marketed as food fish. Only about four types of fish (Pollack, anchovies, bluefin tuna, and jack mackerel) produce about 13% of the global wild catch. Aquaculture is based on production of 10 species, of which the major ones are carp, tilapia, catfish, and salmon.

Fish are rather efficient at converting dry feed into weight gain. Many fish can put on 1 pound of weight after consuming 2 pounds of dry feed – a 2:1 feed:weight-gain conversion factor. Warm-blooded animals, such as poultry, swine, and cattle are far less efficient at feed conversion.

At a 2:1 feed conversion rate, the 54.8 million tons of fish produced by aquaculture in 2003 required nearly 110 million tons of feed. Much of the feed contains soy, wheat, corn and other grains produced in the Bread Basket of the US are shipped from the US around the world to be formulated into fish feed. Fish feed could be locally produced using the wet grain (corn and grain sorghum) from ethanol plants, plus any dry soy and other ingredients, and the waste heat from the ethanol plant. Converting stillage into a high-value fish feed manufactured in the US should be more economical than drying distillers' grain and shipping US ingredients around the world for manufacture abroad.

Fish supplies nearly 30% of the protein for about 1 billion people. Asians consume far more fish per capita than do non-Asians. The US is both the world's greatest importer and the world's greatest exporters of fish and fish products.

A local example within the San Luis Valley, Colorado Aquaculture (co-located with Colorado Gators) is currently producing tilapia in the San Luis Valley to supply markets in Denver and other places. The demand for live fish in the large urban markets is primarily to meet the demand of Asian residents.

The demand for hobby fish and sport fish is also huge. Attractive fish such as koi have sold for hundreds to thousands of dollars ($250,000 in Japan for one white koi with a red dot on its head resembling the Japanese flag). In this country, fish that people desire for display command far higher prices than do fish for the food market.

Sport fish such as largemouth bass, bluegill and trout have sold for hundreds of dollars as trophy fish. It's not uncommon today to find tanks of fish in shopping malls, at boat shows, or at sporting goods stores to provide on-site fishing for potential customers. It's a reflection of our time that some people never have the time to go fishing, but have the dollars to bring fishing to them. Aquaculture in the San Luis Valley can support the food industry, the hobby market, and tourism.