

## Putting Water To Work

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with a straight tail), American Fantails (goldfish with translucent, waving fins), Black Moors (with bubble eyes), Red Cap Orandas (white with a puffy red head), and Calico and Calico Telescopes are also part of the fish available from the hatchery.

Others are ornamental Catfish, Koi Carp, Longfin (Butterfly) Koi, Red-and-White Fantails, and Rosy Red Minnows.

### Challenges

"We take our hits with mother nature just like any other type of farm," said Rice. Droughts, floods, heat, ice, supply-and-demand, oxygen depletion, parasites, diseases, and predators take their toll on the farm's bottom line.

To protect the farm's prize brood fish, five acres of ponds have wire strung over top to discourage predators from the sky, such as blue herons, ospreys, kingfishers, and seagulls.

Predator barriers are also around ponds to keep bullfrogs, water snakes, snapping turtles, and mink from prey-

ing on the fish.

"We estimate that we lose 20 percent of the crop a year to predators," he said.

"When we stock the ponds, we try to stock maybe 20 percent extra for ponds that will have losses because of predators."

To offset these losses and continue to grow the business, "10 years ago we saw the need for a more exotic type of fish," said Rice. "We wanted a niche."

Facing increasing competition from southern feeder fish growers, the Rice family made the decision to begin a pilot project and began to build a closed system on the farm.

Consequently, more than three years ago the Rices put in twenty 400-gallon tanks that recirculate water with a filtration system — "high-tech fish culture" — said Rice.

The ornamental goldfish in the closed system enjoy 72-degree water year-round, since "goldfish won't grow when they're cold," said Rice.

An ornamental fish grown outside will take approximately two years to grow four

inches. However "we can do it in 12 weeks in a closed system."

With the success of faster growth and a ready market for the closed-system fish, the Rices expanded the facility to include another 20 tanks.

Outside, eight inches of ice cover the ponds except for small circles of unfrozen areas, kept open by circulating water, so employees can monitor the fish underneath. "Fish come up there if they are stressed or sick," said Rice.

During the winter months, employees feed the fish approximately once a month. In the summer, however, the hungry fish eat once a day, seven days a week. A blower truck sprays feed to the larger ponds, and workers hand scoop feed to the small ponds.

### Spawning Time

The fish that are marketed as breeding fish are culled three times before they make the cut, said Rice. Less than one percent of the fish that workers evaluate become breeding fish.

At the farm, 30 small ponds are set aside for the breeding fish. The outside ponds include an earthen bottom, concrete walls, and a netting to

protect the valuable fish.

Spawning begins about mid-April and continues through the beginning of July. The ponds include 50 percent males (bucks) and 50 percent females (does).

The fish can only be sexed in the spring, when the males exhibit a sandpaper-like grit on their gills.

All goldfish — and there are 200-some varieties — "are members of the Carp family and go to vegetation to spawn," he said.

Consequently, workers put racks with spawning mats made of hog hair and horse mane for the fish to gravitate to.

"The mats are collected when we get a decent amount of eggs on them, ideally 10,000," Rice said. The eggs "look like little white pinheads" on the black mats.

Workers may transport the mats five times in a morning, since the fish are generally finished laying eggs by noon. The mats are put onto a cart and can be out of the water ten minutes without damage.

Wet burlap suffices when the mats must be out of the water for longer than 10 minutes.

even 10 days, depending on the weather.

The young fish "are all black when they first hatch and start to color within 6-8 weeks," he said.

An egg sac remains with the fish the first five days. After the first week the fish begin eating a specially-formulated ration that will change as they mature.

"The crop that we spawn in the spring stretches until the following season," he said. Although they begin selling the fish when they are three months old, some of the fish will be there for one year.

Samples from the young fish are checked for diseases two to three times a week.

### Harvesting The Fish

When a customer order comes in during the cold months, workers go to the smaller ponds that are set up to allow winter harvest. After cutting into the ice with a chainsaw, the workers lift the ice out with a boom and fork of a logging truck.

The ponds — each averaging three feet in depth — are drained into a six-foot basin with a standpipe.

"We get it to about halfway down, bait the fish with feed, and then surround them with a seine," said Rice.

"We try to get out 80-90 percent with a seine."

The fish are then bucketed into a truck complete with an

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The mats are hauled to production ponds where the eggs hatch in 3-5, or

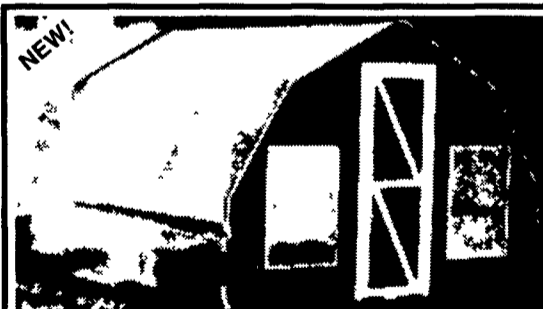
## Viticulture Meeting Draws Crowd

MIDDLETOWN (Dauphin Co.) — An alternative viticulture meeting here Jan. 28-29 attracted 152 participants from 13 states and Canada, demonstrating the broad interest in this topic.

The meeting also hosted seven regional and national product and equipment suppliers as well as the Pennsylvania Association for Sustainable Agriculture.

Sustainable viticulture was addressed by Alice Wise from Long Island and Al MacDonald from Oregon. Alice is currently involved in developing a formal sustainable program for her region. MacDonald is president of the only internationally sanctioned sustainable viticulture program in the U.S. Both talked about the thoughtful use of low input forms of viticulture.

Nancy Wenner gave an update on Elwin Stewart's work with vine decline organisms in Pennsylvania and New York vineyards, still a pressing concern in eastern vineyards.



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