

Fish Tales Newsletter

West Virginia's Aquaculture Newsletter was created to encourage development of the WV aquaculture industry and to inform readers about the production and sale of aquatic products in the recreation and food markets.

Evaluating Demand for Omega-3-Enhanced Brook Trout

By Cheryl Brown, Ph.D.

The Summer 2009 issue of the *Fish Tales Newsletter* featured results from an experiment at Reymann Memorial Farm that investigated feeding brook trout two different diets and then comparing their omega-3 fatty acid profiles and sensory perceptions. The study reported here, based on these same fish, surveyed chefs to examine whether there is a niche market for these omega-3-enhanced brook trout. The objectives of this marketing study were to determine if chefs (1) preferred the flavor of the omega-3-enhanced fish compared to those fed the regular diet, (2) preferred brook over rainbow trout, and (3) were willing to pay a premium for brook trout or omega-3-enhanced fish.

A mail survey was sent to 73 W.Va. and Washington, D.C., area restaurants along with a sample of both the omega-3-enhanced brook trout (fed a diet with flax oil) and the control brook trout (fed a diet with menhaden oil). These fish were processed into fillets (pin bones out) at a commercial facility, vacuum packed, and shipped UPS overnight. Of the 24 restaurants responding, 88% were in W.Va. and 43% were state park resorts or lodges.

Characteristics of responding restaurants	Percentage
Menu changes seasonally	67%
Includes brand name info on menu	63%
Provides production location info on menu	63%
Serves or has served rainbow trout	92%
Serves or has served brook trout	21%
Currently buys from an aquaculture farmer	29%
Willing to buy from an aquaculture farmer	71%

Chefs were asked to cook both samples (red and blue – they didn't know which was which) and then report on the product's taste and desirability. Of the 24 chefs who responded, 43% preferred the omega-3-enhanced fish, 24% picked the control, and 33% had no preference. Thus, the majority did not choose the omega-3-enhanced fish as their preferred product. On average, the chefs rated the flavor of the omega brook trout at 6.625 out of 8, whereas the control was rated slightly lower at 6.5.

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Trout farmer calls for help, then charged.

By John Ours

Josh Hedrick, of Smoke Hole Resort, has raised brood trout for several years. He conducts his business, Smoke Hole Outfitters, by having a catch-and-keep pond and permitting catch and release in the runoff of a spring that flows into his parents' property. Hedrick stocked the stream with trout that he purchased from WVU. The trout are stocked in a series of pools he created in the runoff from the spring. Last fall, Hedrick and his cousin collected some of his trout for spawning, putting them into two large tubs in front of the spring for the spawning procedure the next day. Nets were secured over the tubs to keep the trout from escaping. The tubs were checked the next morning and all was secure. That afternoon, Hedrick, his cousin, and a friend returned to the tubs to start the spawning process. Hedrick saw a man sitting on the bank across from the spring. He then noticed his 6 ½ lb. golden trout lying on its side in front of the spring, and that the nets over the tubs were removed. When he tried to retrieve the golden trout, the man grabbed a stringer out of the stream and headed up the bank. On the stringer were four of the brood trout Hedrick raised and placed in the tubs the day before in preparing to spawn. The man dropped the stringer of fish on the ground. Hedrick retrieved them and rushed them back to the stream to revive them.

At this time, the man began cursing and throwing rocks at Hedrick; heading straight to the tubs, he threw large rocks into the tubs saying, "If I can't have them, neither can you!" Hedrick called 911 for help, as the man continued cursing him and finally spit in his face.

(continued on page 2 - Charged)

Biosecurity for Fish Farmers

By Daniel Miller

Participants interested in aquatic animal health from six states learned about minimizing the spread of fish diseases and disinfecting surfaces at fish farms at a biosecurity workshop on July 29 in Moorefield, W.Va. The event was sponsored by the **Northeast Regional Aquaculture Center** and the **WVU Extension Service**. Participants included fish producers from both the public and private sectors as well as personnel from the W.Va. Department of Agriculture, WVU, and private veterinarians.

Michelle Walsh (second from left in photo below) from **Micro Technologies, Inc.** opened the workshop with a presentation titled "Principles of Biosecurity" She described the basic concepts of biosecurity and discussed practical measures for limiting disease transmission.

Western Chemical Inc. generously donated materials for the event. All workshop participants were able to take home reinforced plastic signs that indicate restricted entry and explained shoe and hand sanitizers. Free samples of Vikron® Aquatic were made available to participants.

Dr. Paul Bowser from the **College of Veterinary Medicine at Cornell University** spoke about New and Emerging Viral Pathogens of Fish. In addition to VHS, he spoke on Largemouth Bass Virus, Koi Herpesvirus and Spring Viremia of Carp Virus.



Michelle Walsh (in white) speaks to workshop participants at the WVU aquaculture facility.

Photo by Sarah Whitney

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No Stimulus Funds for W.Va. Aquaculture.

By Ken Semmens

The Recovery and Reinvestment Act of 2009 provides \$50 million to administer a program to assist aquaculture producers for losses associated with high feed costs during the 2008 calendar year. Funds will be in the form of block grants to State Departments of Agriculture that agree to provide assistance to eligible aquaculture producers. The West Virginia Department of Agriculture (WVDA) has decided not to participate in the program.

WVDA investigated the opportunity in early March and sought to obtain the information requested by USDA. It was determined that approximately 543 tons of feed were sold to growers by three feed companies in 2007 (Burriss, Melick and Zeigler). This estimate did not include feed sales to WVDNR. It was estimated that cost of feed was about 60% of the total cost in a well-managed private trout farm growing fish to eat. More information was needed before an imminent USDA deadline. WVDA sought a list of aquaculture producers with contact information, what each farm grew, and an estimate of volume produced. A list was generated and farmers were sent a letter requesting information. It became apparent that few producers were large enough to benefit from the program. This fact plus poor communication between the industry and WVDA and lack of response from many farmers resulted in the Department's decision not to participate.

(Charged – from page 1)

When law enforcement arrived, Hedrick requested that the man be charged with trespassing, theft, destruction of property, and battery. Amazingly, several weeks later, Hedrick was charged by the WVDNR for interfering with a lawful fisherman. After a two-day jury trial, Hedrick was found guilty of interfering with a lawful fisherman and the Magistrate Court sentenced him to 10 days in jail, along with significant costs.

Hedrick appealed the case to the Circuit Court. The Circuit Court upheld the conviction, but eliminated the jail term, reducing Hedrick's punishment to a \$200 fine and the costs of the trial.

New logo for WVAA

(Biosecurity - from page 1)

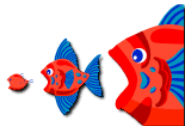
A new logo has been developed for the West Virginia Aquaculture Association. It was presented to the Board of Directors and approved at the July 28 meeting in Moorefield, W.Va.



The design, which came in two styles, was done by Rachel Hedrick of Dynamic Designs in Cabins, W.Va.

2010: Tri-State Aquaculture Forum

For the first time, the annual Aquaculture Forum will be held jointly by three states - West Virginia, Ohio, and Kentucky. Producer associations, regulators, and educators are working together to develop a program. The meeting will be held Jan. 16, 2010, at the Student Activities Building on the Marshall University Campus in Huntington. Doors are expected to open at 8:30 a.m. and close at 5 p.m. The program will feature an industry update, research highlights, presentations by leading aquaculture businessmen, and discussions about development of the aquaculture industry. Planned activities also include a poster session featuring results from aquaculture research, and a reception featuring aquaculture products grown in the region. Organizers also seek to offer a tour of a prominent aquaculture facility on the Friday afternoon before the meeting. Nearby lodging will be available at the Pullman Plaza Hotel and other area motels. This is an uncommon opportunity for growers, researchers, and regulators from these states to exchange ideas. Even though growers in these states have much in common, programs in each state are in different regions. Kentucky is in the southern region. Ohio is in the north central region. West Virginia is in the northeast region.



Dr. Mark Hostuttler spoke about the biosecurity measures taken at the **National Center for Cool and Cold Water Aquaculture**. Effective biosecurity is essential to their program.

Martin Gardner from **Blue Ridge Aquaculture**, spoke about the operation in Logan County where his company is producing trout and salmon. Many of the biosecurity measures in Logan County have been adapted from their indoor recirculating tilapia, shrimp, and cobia farms located in Virginia. Employees at Blue Ridge Aquaculture facilities are educated to understand that **biosecurity is job security**. A disease that would require a dry out and disinfection would eliminate many jobs, if not the entire operation. Biosecurity plans are living, dynamic, written documents that are communicated to everyone on the premises, including visitors.

Following the oral presentations, Michelle Walsh led the farm audit of the trout facility at **Reymann Memorial Farm**. Michelle had everyone put on plastic boots and gloves. It is important that participants become familiar with these procedures and that they are able to educate others in their use. Selecting a biosecure water source for an aquaculture operation was cited as the most important decision for proper biosecurity control. Employee training and input for annual reviews are important steps for maintaining a secure facility.

A 52-page booklet covered best management practices, principles of biosecurity, and an overview of vertical (reproductive) and horizontal (water, air, and animal) disease transmission. A list of references was also included.

This booklet is available from Michelle Walsh at mwalsh@microtechnologies.biz and will be available on the NRAC Web site in the near future.

Farmers Market Vendor Guide Includes Fish!

Below is text taken from a brochure developed by W.Va. Dept. of Health and Human Resources / W.Va. Dept. of Ag. / W.Va. Farmers Market Association. The guide is available at: www.wvdhhr.org/phs/food/Farmers%20Market%20Brochure.pdf

Commercially raised and harvested fish may be offered for sale at Farmers Markets. Wild caught fish are **NOT** allowed. Fish vendors must provide to market managers a certificate of wholesomeness that states for all species of product that the product was farm-raised, at what farm it was raised, and whether or not the product was administered FDA-approved medication. These documents must be provided every time fish is brought to the market.

The required water tests shall be submitted once per year per water source to insure safe water samples. Markets shall keep a copy of these for two (2) years. Additional requirements are:

- Raw products must be kept in cold holding equipment capable of holding 41° or less.
- Annual Scale certification.
- Fish must be gutted at an approved facility.
- Fish products must be held, stored, and transported in a clean sanitary environment to keep products wholesome.
- The vendor shall receive a Food Establishment permit from the local health department before the date of sale.

As part of the routine inspection, the local health department may inspect the storage space of the product off premises of the sales area. Off-premise storage should be in separate designated cold holding equipment that is stored in a clean, safe, and secure environment.

Labels must be provided for the product, which include:

- Common name of the product
- Net weight of the product
- Other information as required by WVDA

WVDA is able to assist with labeling and W.Va. Division of Labor, Weights and Measures office can assist with determining net weights. Refer to §61CSR23A WV Fish Processing Rules under WVDA for further info.

Editors note:

It is good to see fish included in this guide. Farm-raised fish are not commonly sold at W.Va. farmers markets. As these rules are used, it will become apparent that they can be improved. WVU Aquaculture Extension staff are interested in how this pathway can be improved. If you currently offer farm-raised fish at a farmers market, please contact Ken Semmens or Dan Miller to share your experiences.

Rodney Kiser Takes New Position

The aquaculture team at West Virginia University lost a star player earlier this year when Rodney Kiser accepted a farm manager job at WVU's Reedsville Farm. Though Rodney will always be a fish farmer at heart, a permanent position with higher pay and other advantages made the choice obvious. His aquaculture position will be moved from Morgantown to the Reymann Memorial Farm.

Ruling for Fish Waste Bill

A number of producers have asked about when they can start using fish waste as a land application. **Legally, the rule will become effective July 1, 2010.** In the meantime, it is prudent to send a composite sample (leak-proof bottles and submission forms can be obtained from the lab) of the waste, early in the week, to the WVDA Moorefield lab for nutrient analysis and determine land application rates for the field where it will be applied. The Moorefield Agricultural Complex lab is located at 60B Industrial Park Road, Moorefield WV 26836.

West Virginia Representation on NRAC Advisory Committees

Earlier this year the board of directors for the **Northeast Regional Aquaculture Center** approved the nomination of **Daniel Miller** as a member of the Technical Advisory Committee for a 3-year term. **Tom Ort** has been nominated as a member of the Industry Advisory Committee. The technical and industry committees advise the board members on what topics should be researched and which proposals to fund. If you have ideas on what regional issues (besides marketing) the organization should address, please tell your representatives.

A new regional Web site that focuses on preventing the spread of Viral Hemorrhagic Septicemia (VHS) can be found at: www.focusonfishhealth.org/

Acceptability of the omega trout was also only slightly higher at 6.95 out of 8, compared with 6.85 for the control fish.

It was estimated that production cost was about \$0.35 more per pound of fillet to use the flax oil diet. To determine if farmers could cover this added cost, we asked the chefs a series of questions designed to determine their willingness to pay a premium for omega-3-enhanced brook trout. Given the variability in feed costs over time and in different production systems, we used a price premium of \$0.50 per pound for the omega trout in our questions to chefs. As would be expected, they preferred the omega-3-enhanced fish to the non-enhanced fish if the price were the same for both, but they did not appear to be interested in paying an additional \$0.50 per pound for an omega-3-enhanced brook trout. One chef explained that marketing such an added health benefit would be unconventional for a restaurant and not warrant the extra expense. But, this group of chefs would prefer brook trout over rainbow trout if it were available for a comparable price.

Comments about the fish samples were noted and were mixed about the desirability of the omega-3-enhanced product. Below is a sample related to the potential for selling brook trout to West Virginia chefs:

- I would purchase brook trout if I could find a place that carried the product.
- I would like to know as soon as possible if this is a product I will be able to purchase. I am extremely interested in 8- to 10- ounce brook trout fillets.
- Much better than rainbow I'm currently getting in texture, taste, appearance, and overall quality.
- I thought both samples were delicious. I could not tell much difference in either. I would love to use this product. It would make an interesting menu item! Please keep in touch and tell me how to purchase your product!!

Conclusions:

Is there a market for omega-3-enhanced brook trout that will cover a grower's added costs? Not according to our study.

Is there a market for brook trout? Yes, if the right restaurants are targeted. Restaurants that might be interested in W.Va.-raised brook trout are those located in the state that change their menu with the seasons, focus on providing brand-name, locally produced products to their customers, and charge from \$16 to more than \$25 per dinner entrée. Most chefs preferred to purchase trout as a butterfly fillet, but growers without a nearby processor, or desiring to add value, should work with chefs on acceptable product forms.

Continued at top of next column

As you can see, more than 70% of the chefs surveyed were willing to purchase fish directly from an aquaculture farmer. Growers will have to sell brook trout at a reasonable price compared to currently available rainbow trout, but this price is likely to vary by restaurant depending on ability to pass any added cost on to consumers. Growers who wish to consider selling brook trout into the W.Va. foodservice market should contact chefs before beginning production to discuss the needs and budget of chefs in their location.



Brook trout were processed at Trout Lodge and Angler's Resort near Lindside, W.Va. Fillets were vacuum-packed and marked with a colored dot to denote separate treatments.

Did YOU KNOW?

Brook trout (*Salvelinus fontinalis*) is the only trout native to West Virginia. It is also West Virginia's state fish.

Unlike some other fish, trout do not need to be scaled before eating. The skin and scales will easily separate from the meat after cooking. Cooking methods should be hot and quick--usually 5 to 6 minutes per pound at 350 degrees Fahrenheit.

Trout Farm Facility for Sale – Pocahontas Co.

The facilities consist of two 800-gal. hatching tanks; the remaining tanks are round fiberglass production tanks: 1 x 10,000 gallon; 12 x 1500 gallon; 6 x 500 gallon tanks. In addition, a feed shed and a trailer are within the 8' high 3-strand barb wire fence. Land and water are leased at \$100/mo. McNeil Spring is the water source.

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A W.Va. Farmer

We encourage contributions to Fish Tales newsletter by W.Va. residents. If you are interested in contributing, or would like to be put on the mailing list, please contact Dan Miller at dmille31@wvu.edu or call 304-293-4832, ext. 4465. The deadline for contributions to the next issue of Fish Tales is Nov. 1, 2009.

This publication is available, in a printable format, on the Web at:

www.wvu.edu/~agexten/aquaculture/newsletter.htm