

Division of Marketing  
Agricultural Development and Diversification (ADD) Program  
1997 Grant Final Report

Grant Number 12058

**Grant Title** Raising Yellow Perch in a Low Discharge Recirculation System With  
the Advanced Aeration Process

**Amount Awarded** \$16,845.00

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Our grant project was started in November, 1997, with our yellow perch being put in the production tank Aug. 16, 1998. The intent of our grant project was to raise yellow perch in a recirculation system with less than 4% discharge. This project was intended for those aquaculturists that reside in areas that are or will be governed heavily by wastewater management. Throughout the grant project, our discharge stayed below the 4% rate.

We devised a system consisting of one 1,200 gallon plastic tank, a hydro-sparging unit to control ammonia and aerate the water and a bead filter for filtration. We were able to monitor the system quite closely and test for ammonia, nitrite, ph, and dissolved oxygen. The big challenge we faced was the amount of food we wanted to feed while at the same time trying to control the nitrites. We relied heavily on the positive performance specs we received on the bead filter as to how much food it could handle. What the specs told us and what we found to be true over time were two completely different things. Therefore, we found it to be a constant battle to keep our nitrite levels to an acceptable level.

We were quite disappointed with our project results. Our original goal was to pull no less than 700 pounds of fish out of the tank in the 10-month project. We only pulled 520 pounds out, far less than we anticipated. We feel our great degree of reliability of the bead filter was our major problem. We were told we could feed, on a daily basis, 7-9# of food at 72 degree water temperature and it would also control TAN (total ammonia/nitrite) to less than 1 ppm. The filter could not do for us what the designer/manufacturer said it could. We have found it to be very difficult to completely eliminate the nitrite levels and we are not sure what level is acceptable to the fish for long periods of time. We know the nitrite levels can go to 1 ppm but cannot stay at that level for any length of time. Our fish were actively feeding and meat mass calculations were very good up to December. We encountered high nitrite levels on different occasions from the start of the project which, we found by the end of the project, was too much for the fish to overcome. What that safe level is, we do not know. Our feeding patterns decreased half-way through our project, but we feel the fish were already sick because over a period of time the nitrite levels were too high. In the future we will never feed more than 1% of gross body weight and this will always keep the fish a little hungry, which will cause them to come to the surface to eat so a visual check can be made of their health.

We have heard in the past, at aquaculture conferences and talking with growers, that 3-4% of the gross body weight can be fed to yellow perch in recirculation systems thus indicating this would be a very profitable endeavor. We feel this statement is very misleading. Through our grant project, we know it is almost impossible to feed that amount without proper filtration. We would like future aquaculturists to know that, in a recirculation system with low discharge, this is very, very hard to accomplish.

Until a filtration system is devised that can effectively help with nitrites and solids removal, we feel many recirculation systems may suffer consequences such as ours. The big obstacle to overcome in recirculation is the filtration. The industry definitely needs to research capable methods to support low discharge system.

We had visitors from the State of Wisconsin, Canada and Japan come through our facility to see the grant project. An article was also published in The Country Today, a newspaper in Eau Claire, Wisconsin. The article was written by Judy Brown, regional editor, from Fond du Lac.

Mike and Mary Kaye  
Door County 5-K Fishery