

Final Report

Full Capitalization of Water Resources

FNE96-150

Ward Rounsaville  
319 County Road 33  
Norwich, NY 13815  
607-334-4240

The goal of this project was to identify regionally applicable techniques that involve the use of surface waters from a variety of situations. It is essential that the flow of these surface waters be regulated in a profitable manner for the following reasons:

- a> to contain Agricultural non-point pollution.
- b> to limit erosion and expand or facilitate the usefulness of areas with limited potential.
- c> to minimize the threat to a community's infrastructure during heavy rains and/or snowmelt.
- d> to offer the greatest cost/benefit ratio for Federal flood control dollars in rural watersheds.
- e> to provide insight for more comprehensive watershed management programs.

This would be accomplished by capturing water from the surface of forest and non-grazed area as well as dairy and poultry yards. Water conditions and related yields were to be monitored. Products showing the greatest return and / or broader marketability would be studied and promoted in greater depth.

Initially I had deduced that my available water supply could support only a few hundred table ready fish annually. The work that I was able to do with this grant has proven that the actual annual production could exceed a ton. This is the result of an algae management technique that I had assumed, through studies on photosynthesis, would aid water purification. Some development still needs to be done to decrease the labor in the process but, I am happy to say that there has been no negative influence on the taste of the trout.

Fortunately, a large part of this property had not been developed. These findings have led to planning that will include more facilities for the raising of larger fish species. The fish production will provide an abundant supply of enriched water to sustain yields of other crops without extensive costs or labor to apply fertilizers. The success with the fish did halt development that had been previously planned. No major changes have taken place in area farmed since this grant.

My cooperators: Eric Schimke of Cornell Cooperative Extension and Lauren Johnson of the County Soil and Water District have made a considerable effort in networking with others involved in related issues. Together, we might soon establish an educational facility at an area Vo-Tech School. The site would actually divert and eliminate a flooding problem that plagues the neighbors of that campus. An interesting topic of discussion there is also that of experimentation with the microclimate created around a small body of water kept open by circulation.

Eric has been instrumental in work that has established the County's Alternative Agriculture Committee. This group will act as a sounding board for lending institutions that may be approached by future Aquaculturalists. The concept of this grant has received some favorable review from this committee. As a member of the County's water quality committee, he also encouraged a visit to my location by that committee.

Lauren and his colleagues have gained introduction to executive members of the Susquehanna River Basin Committee and it's associated Army Corps of Engineer Planning Staff. Lauren's county-wide in-field experience have also been valuable in assessing whether several properties had favorable soil types and surface flow area.

I am confident that we have pieced together a solid framework for the future institution of an Aquaculture industry in this area. My only reservation is that I may have built too much hope in the possibility that start up funds would be greatly supplemented by Federal flood control money. We need to recall, however, that the reason for my involvement in this project is my belief that more prevalent and extensive flooding is in our near future. This belief is based on extensive studies that link NASA research with history. We are beginning to see the manifestation of the truth in those studies and are at that point in time when it is not to early to make this kind of investment in the future.

The first step in this project was to build a small temporary storage pond in an area that was essentially useless as it stayed too wet in the spring, produced water after heavy rains, and turned nearly brick hard when it did dry out. Being spring, it filled rather quickly. A light algae bloom was encouraged, minnows were stocked and Wild Rice was seeded in. Next two circular fish tanks were constructed at a slightly lower elevation. The first tank is 15 feet in diameter. Three feet below that is an 18 foot tank. Both tanks range in depth from 28 inches at the edge to 40 inches in the middle. The tanks are framed with quarter inch hardboard and lined with 30 mil pool liners.

The pools were filled with a combination of rain and spring water. Algae and snails were added to one tank while only algae was placed in the other. The tank with the snails did have an algae situation that was easier to manage. The snails also began a "push" up the sides of the tank as the bottom water became more fertile (toxic). This movement of snails served as an indicator for tank cleaning that preceded a severe drop in feeding response in the trout.

At first, the oxygen demand was met only by the algae and gentle splashing produced by the one gallon per minute jet of water. The early morning presence of fish huddled and panting under that trickle made it clear that as the fish grew, night time oxygen levels need to be drastically increased. A 35 watt pump was added to each tank. This lifted water from near the pool bottom and sprayed it at a rate of about four gallons per minute. This was sufficient to add oxygen, degas the water to some extent, and create a gentle circular current in the tanks. After several nights of experimenting, timers were set to run the pumps from two hours after sunset to one hour before sunrise. This practice seemed to maximize health and feeding response.

In my situation, and working with trout, it was very beneficial to have a spring on hand that could deliver a constant one gallon per minute of fresh clear water. During and for some days after a hard rain, the water from the supply pond would become extremely murky (in part due to a lack of established sod around it). When muddied water is present in the tanks for a prolonged time, the feeding response drops taking health and growth down with it. During these periods, I replaced the surface water with the spring water. The spring water was also useful to reduce the water temperature during a few threatening days. Though not critical, the spring did also give the ability to lower the PH. In our area, typical surface water PH is 7.5 while spring water PH is 6.2. It was noted that the water running from tank #1 to tank #2 had a PH .5 higher than the original and, the water running from tank #2 a PH .4 higher.

In the situation described, if there had been a third tank, the PH level could have exceeded 8 which is considered the top end of aquacultural tolerance. The water from the second tank was piped to a pond built at the lower end of a small chicken yard which was also built for this project. The acidity from the chicken manure lowered the PH of this combined water to a nice round 7. Wild rice and minnows thrived in this water and the overflow was piped to another pond where trout showed fine health and a good feeding response. Unfortunately, during the month of July water temperature at this point in the process can exceed levels that are safe for trout. In an operation that relied entirely on surface water, another species such as catfish, bass or larger baitfish species could be profitable.

I feel a need to back up here to give more detail on the tank maintenance. The tanks were cleaned with a swimming pool vacuum attached to a small water pump. This combination of rich water and dead floor algae were pumped to a variety of locations. The most impressive was up by the storage pond where sweet corn and beans were planted in stony hardpan. The soil had to be kept moist to allow the sprouts through. The plants remained a pale sickly green until a few days after the first tank cleaning. From that time they were irrigated as necessary with surplus water and enriched from the tanks on two other occasions. Bean production was comparable to that of good soil while corn was quite impressive given the soil condition.

Overall, there were no plants that responded unfavorably to the enriched water. Obviously, care must be taken to not allow splashing or spraying directly on the leafy green vegetables and poorly regulated irrigation can cause unsightly scarring on a number of vegetables. Wise integration of this practice can increase anyone's yield. A storage pond built above a productive field or along it's wettest edge can capture and divert huge volumes of water allowing a farmer to get on the field several weeks earlier and giving him the opportunity to trickle irrigate with virtually no energy cost. Minnows and wild rice in that pond could bring an additional \$700 - 1,000 annually with very little labor. Once established, the ponds furnish a diversified attack against pest insects via frogs, toads, newts, dragonflies; other insects are drawn to reflections on the water where they are attacked by frequent bats or drowned and eaten by larger minnows.

The most interesting finding of the project was that the long accepted rule of thumb for fish farming could be exceeded by 700% through the controlled use of algae. This does not bear the expenses of a closed or partially closed recirculating system. I honestly expected the fish in the second tank to die within two weeks. A few years ago, I had placed thirty-five two inch trout in a clean 300 gallon tank with one gallon per minute of fresh spring water spraying down on it. The water had a nice circular current and was crystal clear and most of the fish died. I got a good deal on a hundred more fish but in the meantime, a green slime had begun to cover the floor and sidewalls and I had thrown several small minnows in to see how they would do. When I brought the new trout home, they were 2 - 3 inches long and fairly hardy. They quickly ate the minnows and only one died - choked on a minnow. I assumed that young minnows were the key, but soon tired of seining out small minnows and started using small pellets again. They were ferocious eaters and grew well through the summer. The intervals between clean outs was gradually extended to over a month. I had gained a lot of confidence in algae during that year and a half; and had even observed trout eating it off the sides.

In that situation just described, things were within the accepted parameters of 100 fish per gallon of pure clear water flow. Now I have attempted to place 500 fish in a tank with a much larger area but one fifth of the recommended water flow and a lesser quality of water. In turn, with even less purity in the water that flowed from this tank at one fifth the recommended rate only a fool could hope to see trout living and growing in the second tank. So, I hung an eight foot fluorescent fixture with gro-light bulbs and put it on a timer that turned it on twice for an hour and a half during the night. This was based on some photosynthesis experiments that I had read about. Then there are the bacteria-killing properties of ultra-violet light. Though the second tank did not have as much algae on the wall and floors as the first tank when they were stocked, it proceeded to have more surface algae during the first month. While the light was on, hundreds of trout could be watched lazily eating the algae while others swam circles eating snail eggs from the walls of the tank. Hundreds of drowned beetles and moths were skimmed from the tank during each morning observation period. Fish in both tanks were growing at the same rate; fish in the second tank were eating very little commercial food. It seems that polluted water was feeding the algae in tank 2 and the algae was feeding the fish. This grew the fish from 2 inches to 4 inches with very little expense.

To sum up these unexpected findings, I have to say that it was most rewarding to find that not only did they survive, they taught me in greater depth how to make food out of unclean water. In dealing with unclean surface water, and hoping to encourage others to contain large volumes of the same, this is very useful knowledge. This could not only serve to produce cleaner water but also to reduce the cost of producing marketable fish. I am not optimistic enough to think that this would work with water at every site or PH level or with every fish species but, it is worth further exploration.

There are thousands of sites that are ideally suited for this kind of aquaculture within a fifty mile radius of my location. They are from 50 to 800 feet above the valley floor. They are abandoned pastures, moist hollows in the middle of productive fields, overgrown soils that are just too tough to warrant tilling, and the hundreds of acres that once served the dairy industry which no longer has the profit margin to support them. The best sites will be those with terrain that forms a natural depression with a small open end that can be easily dammed to back up several feet of water. Gentle slopes that are conducive to gravity powered movement of water and heavy clay soils to hold the water are absolute requirements. For an operation to support a family, a watershed of 30 or more acres above the main storage pond would be necessary.

In terms of flood control, an acre foot of floodwater storage in this scenario would cost less than \$1,000. In a typical federal floodwater storage project, the cost is currently at \$4,500 per acre foot for this region; with a very modest project costing more than \$2,000,000. Then there is the taxpayer supported maintenance and liability. With this same \$2,000,000 plugged into this system of Aquacultural Integration, at least 4.5 times as much flood control could be obtained - saving huge amounts of tax dollars - and, building an industry that would broaden the tax base.

Clearly the benefits of merging poultry are beginning to emerge. Beside the PH lowering advantage of chicken manure, chickens quickly eliminate the fish entrails lowering the need for waste management and feed. When it comes to marketing a large volume of fish, fish cakes are widely accepted and chicken eggs are an excellent binder in the processing of fish cakes. A pond also works well as a natural border for a chicken grazing area. Chickens will not cross the water nor did predators during the 6 month test period. This can save money that might otherwise be required to fence in a chicken pasture and to insure a constant water supply. Note: Six chickens were killed by predators one night in a fairly secure moveable cage that was being used to graze between grape trellises less than 100 feet from this pond and grazing pasture.

The availability of inexpensive land that would support these methods has been causing me to think of doing this on a much larger scale than I would be able to at my present location. A larger operation would also make it easier for policy makers to envision the possibilities. Unfortunately, my little farm is still far from self supporting and I am spending far too much time working out of town. These factors combined with sacrifice of income and equity that went into this project and it's outreach make it impossible to consider making the big plunge at this time. Meanwhile, my focus will be to increase equity in this property with a possible fall sale and the purchase of a larger property to be extensively developed in 1998.

There are a growing number of farmers and landowners who have expressed the desire to begin farming the water that currently flows from their land. If significant funds were to come out of the initiative for the Susquehanna Watershed, expansion on a large scale could begin immediately. As it stands now, only wild rice cultivation has been expanded from my original one-third acre to about four acres. Several farmers and landowners have thrown the rice in their existing ponds to become more familiar with the species while the situation develops.

The regulations in New York State currently allow for the construction of small ponds without the expense of professional engineering. Some ponds in the system that I have been exploring would need to exceed the parameters of those regulations. They would only do so, however, at times when they were protecting the public and the infrastructure from flood or erosion damage. For this reason, I have been asking for a trade off: a smaller watershed for larger holding capacity. There is clearly agreement that this would increase public safety and at least one Senator has put his support in writing. This minor change in regulatory language would dramatically increase the return on investment potential for any would-be Aquaculturalist in Central New York.

I have established trade with several supermarkets and numerous farm stands and country stores. We are currently selling a blend produced by Lundberg Family Farms. The blend contains wild rice bits, two aromatic rices and two brown rices. The blend bears a sticker that informs buyers that quality wild rice will soon be available that was grown in their own neighborhood. The product has been fairly well received. This has been an encouragement to many who are interested in aquaculture. The larger stores have expressed a desire to help us market other products as well.

There is no question that there is a large market for the fish, rice and regionally grown produce. The most important question at this point in time is whether or not flood control money will be made available. A major part of my outreach program was to inform policy makers of the potential for extremely inexpensive flood /erosion and infrastructure protection existing in the program that I was developing. I have met with: the Regional Director of NRCS; Executive Director of the Susquehanna River Basin Commission; Planners for the Army Corps of Engineers; Regional Directors from US Fish and Wildlife; State Assemblymen; County and Town Planning boards. I have communicated via letter and phone with Congressional Water Resources, Farm and Conservation Planners; two State Senators; three State Assemblymen; several divisions of the State Department of Environmental Conservation; The Governor and his Office of Regulatory Reform; and the Oneida Indian Nation; to name a few.

Several articles have appeared in local papers; although I was often misquoted, these are included. At many of the stores that carry the rice blend there is a micro-poster that very briefly describes the process that has been refined through the grant (also enclosed). Similar information has been shared with infrastructure and conservation planners and farmers in several counties in the Upper Susquehanna Watershed. With the constant headlines of flooding somewhere in the U.S., conversation frequently turns to the project. People from many regions have been impressed by the low cost and capitalist potential of this technique.

## Description of Photographs:

1. This shows that useless area that nearly every farm around here has, too wet in the spring and too hard in the summer.
2. Here we have made it useful. Looking closely, you can still see a few wild rice plants that remained after harvest. This picture was taken in early September after a fairly wet period. The water level has risen a couple feet almost to full capacity.
3. The tedious task of removing sharp objects that could damage the liner has been completed. The pipe to the right, taped to a rod, is connected to a drain in the center of the floor. A trickle irrigation system could be connected to this pipe and much of the toxic water run off at a constant rate via gravity. This would raise the water temperature and would work well with trout if you had a better cold water supply than I do.
4. The upper tank (tank #1) is full and overflowing through a pipe to the lower tank (tank #2). At this time, the algae is being cultured and there are no fish. The water supply pond (photo 2.) is located about a hundred feet to the right of this photo at a slightly higher elevation.
5. Negative Algae - This problem, inherent in rich surface water will choke out a wild rice stand making it unprofitable. This is the pond that has had it's PH lowered by the chicken yard runoff. The photo was taken prior to that PH adjustment. Minnows and tadpoles now thrive in that water and are keeping the algae to a minimum. Wild Rice is also producing very well there.
6. Positive Algae - This is one day's surface bloom. By night, you could watch several hundred fingerling trout lazily eating their way through it like a child with spaghetti. By morning it was gone. Suspended off center is the eight foot fluorescent light fixture. This is tank #2.
7. This is the sweet corn planted in stony clay that received much of the manure and water when the tanks were cleaned. No super production, but a surprising yield of very good sweet corn. The ears were full and of good size.
8. This ten foot swath of wild rice rings a 20 year old farm pond. It can be harvested fairly easily and efficiently by a rig attached to the three point hitch of a tractor. This concept of planting a ring around fish ponds can produce a good yield, but, the big surprise is that the heron does not like fishing through the rice











## Description of Slides

Note: the numbers are facing in the direction from which the picture was taken.

1. At the very bottom you can see the stream of water from the supply pond as it splashes into the tank. Straight up from that you will see a trickle of cold spring water dropping near the overflow; this location allows it to have a light cooling influence on both tanks. To the left of the overflow, is a white half PVC pipe that is connected to a 35 watt submersible pump which was run at night to degas the water and supplement the oxygen. In the lower tank (tank #2) you can see the 8 foot fluorescent light and in order moving toward you, the night pump pipe and one and a half inch PVC inflow pipe. At the time of this picture there were 308 6 - 7 inch trout in tank # 1 and 480 in #2. Both tanks also had an average of 25 runts and deformities. These had been stocked at an average size of one and a half inches four and a half months earlier.

2. Here are some trout about 2 inches long slurping algae in the middle of the night.

3. Notice the algae clinging to the rice and cattail as the water level lowers between periods of heavy rain.

4. Above the same pond as slide 3, chickens are foraging for bugs with access to the water. Their acidic manure brought the water's PH from 8 down to 7 within a couple weeks of their introduction. I credit the rapid rate of minnow reproduction in part to this factor. This year, the algae has been well managed by the growing number of minnows.

5. Not only did rhutabaga do well in the trout manure irrigation, but in past years the leaves had been badly stripped by insects. it seems that many of these insects were attracted to the light over tank #2 and perished there.

6. This is the third year of attempting to raise domestic brown rice seed. Using the trout enriched water, this year's is the best ever produced here.

*In 1994, Chenango Aquafuture began growing Wild Rice in an established model of Water Resource management. That model captures large volumes of water and releases it at a non-destructive rate while producing quality foods for the regional market. Fish, wild rice and seedless grapes are among the many successes in the project. This fine product from our friends at Lundberg Family Farms is an example of the quality which can be gained from better stewardship of the Susquehanna, thereby expanding the regional economy.*

*Thank you for your support.*

*Ward Rounsaville*

*Chenango Aquafuture*

*Norwich, NY*

# FARM

THE EVENING SUN, NORWICH NY 13815

WEDNESDAY, JULY 3, 1996

CHENANGO COUNTY'S H

## Farming opportunities spring forth

By JERRY WEAVER  
Farm Writer

NORWICH - A grant from the USDA's Sustainable Agriculture research and Education Program (SARE) is helping a Town of Norwich resident fund a project he hopes will develop into a farming alternative in this area and the northeast, while controlling seasonal floodwaters and "virtually eliminating" soil erosion.

Approved for the grant was Ward Rounsaville, who owns small acreage in the Polkville Hill Road area. Assisting in making the grant was Eric Schimke, Cornell Cooperative Extension in Chenango County, and a panel of advisors. The project is titled "Full Capitalization of Water Resources."

Rounsaville said in his project plan that he is "suggesting that floodwater is not a menace to fortify against but rather a resource to embrace." He says that the technique he has presented "actually locates the protection above the erosion

problem." Runoff waters which eventually form gullies and carry away productive soil would be captured in ponds, according to Rounsaville's plans.

He lists some of the benefits resulting from catching runoff in series of ponds and using the pond water for a variety of purposes. One is to cultivate wild rice for the gourmet marketplace. He already has harvested wild rice growing in some of his ponds that also raise minnows. Raising minnows for bait and feed for other marketable fish is another of the benefits, Rounsaville says.

Water from the ponds (tanks) can also be used for irrigating growths of fruit and other produce and pasture. Rounsaville has been experimenting with a variety of seedless grapes that are sufficiently hardy to withstand the rigors of Chenango County winter weather. In addition, says Rounsaville, the ponds would capture nutrients that might otherwise enter public waterways.

A month ago, Rounsaville stocked his ponds with some

MISQUOTE  
↓  
"A program like this would, I strongly believe, lead this region to become the fish, fruit and vegetable bowl of the East."

Ward Rounsaville

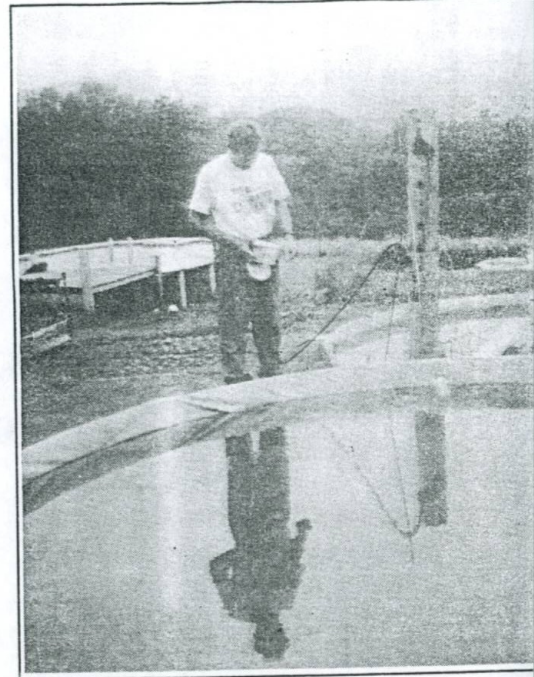
1,000 brook trout, which, he says, should be mature by the coming fall. He says he hopes to install underwater lights in the ponds to encourage the growth of algae upon which the fish feed. And, eventually, he says, he may consider raising larger marketable fish species.

Receiving water from the ponds will be the "relatively new variety of seedless grapes," says Rounsaville. He says these grapes ripen at a time when prices are ascending. And this fruit, with its superior flavor, could be a real benefit to this area, he believes.

In his grant application, Rounsaville states that he has been building a self-sup-

porting full time operation on his acreage. The goal, he says, is approximately four acres devoted to seedless grapes, three acres in the rice/minnow irrigation ponds and, during convenient parts of the growing season, free-ranged chickens.

Rounsaville says the project is aimed at showing profitable alternatives while at the same time assuring a water supply for existing operations. He points out that declining dairy prices have a number of farmers leaning towards the produce industry. "A program like this would, I strongly believe, lead this region to become the fish, fruit and vegetable bowl of the East."



FEEDING TIME - Aquiculture is part of a project on acres in the Town of Norwich. Ward Rounsaville feeds his fish in one of his three "ponds" where he grows food. (Photo by Jerry Weaver)

# 'Aquaculture' farmer seeks break

## Norwich man seeks incentive

By DONNA THOMAS  
Press & Sun-Bulletin

Rice — it does a body good. Throw in some trout, corn and grape vines and Chenango County's our abundant water supply and the Southern Tier can turn the flood damage into profit, Norwich resident Ward Rounsaville said.

"I think there's a lot of potential in this area for 'aquaculture' and we might as well slow down the floods at the same time," Rounsaville said. "I would like to encourage the government to use the same dollar in more than one place."

Rounsaville has been contacting lawmakers from the federal to the county levels with his Drought/Flood Infrastructure Protection Plan.

He went to the county Finance Committee meeting last month to ask for tax incentives for farmers, to encourage them to use an erosion and flood control process he has studied for nearly 20 years.

He received a letter this month from Board of Supervisors Chairman Robert Briggs saying that supervisors agreed the plan was viable and sent a copy of Rounsaville's plan to Rep. Sherwood L. Boehlert, R-Harford, and other legislative leaders repre-

senting Chenango County.

"We agreed he had a good project," said Adolph Chiarino, committee member and Town of Norwich supervisor. "We agreed to help him find some funding to further his studies and help him on his way. The man has some very good ideas."

Rounsaville's process integrates concepts of flood control and sustainable agriculture. The part-time telecommunications worker, part-time farmer has converted the roughly 10 acres where his family lives into an agricultural research station.

His land has a series of connecting pools that are set up in steps. The connecting conduits collect nutrients as they run downhill to the final pool where he grows rice.

Rounsaville has been experimenting with species of rice and seedless grapes that will fare well in our local climate.

The irrigation water he uses is captured in containment ponds that also function to alleviate flooding. In addition to the market value of the produce, Rounsaville hopes to sell the trout and minnows he stocks in the ponds.

The presence of the fish and plant life in the ponds contributes another benefit to storing water, Rounsaville said. The subsequent nutrients in the water function as liquid fertilizer.

Rounsaville said the interlocking of all these systems can

prove profitable for area dairy farmers, many of whom are growing produce to supplement their dairy income. Using water that would otherwise destroy lands to grow wild rice, farmers could get reap in excess of \$2,000 return from one acre, Rounsaville said.

The research has been entirely funded by Rounsaville until recently when he was awarded a matching grant from the U.S. Department of Agriculture's division of Sustainable Agriculture and Research Education. The grant will require Rounsaville to spend \$12,000 in order to receive half the amount.

Rounsaville would like to see some of the \$25 million that Boehlert proposed to study non-structural flood control go directly to farmers if the amendment

passes. He said the area has extensively been studied in the past and now it is time to find solutions.

"What are these tax dollars being used for?" Rounsaville asked. "With controls in place, you start to have more of a local, positive outlook instead of another study. You need a little more hope."



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BINGHAMTON - JULY



## ❖ ALTERNATIVE AGRICULTURE

# Today's menu: Emu, wild rice, trout and grapes

*Chenango farmers cook up some innovative alternatives to supplement dairy income*

By **DAVID WARREN**  
Staff Writer

Last year the agricultural community witnessed a new interest in alternative forms of agriculture with emus leading the way and wild rice, trout and grapes also on the table for discussion. As more and more dairy farmers attempt to subsidize their earnings, they are turning to forms of agriculture which seem foreign to many in the farming community.

For Ward Rounsaville of Polkville, alternative agriculture can also mean environmentally sound agriculture. "We are looking at ways to help keep the environment clean while supporting new forms of agriculture in the area," he said. "Our trout operation is one such form. We use the runoff water and capture it to assist in the growing of the trout. We know there is a large market for the fish out there and it becomes a relatively economical way to increase some farm profits. The major benefit of this form of agriculture is that we can set up an operation in areas where, perhaps, there is not a lot of water, because there is always some natural runoff."

Rounsaville said in 1996 the trout operation was successful and he is looking at funding for the erection of a similar project at

another site in Chenango County. "Right now we are interested in the BOCES area as they seem to have a minimal amount of water there. It would show just how well this type of agriculture could operate here. In fact, we expect to be able to begin that project in the new year," he said.

Rounsaville also grows wild rice - another alternative to the established dairy farming of the area. "The wild rice crop does very well and again, it uses surface runoff water as a base for its growth. This year we harvested a good crop and I think it has real potential," he said.

Not satisfied with the fish and rice, the Polkville man began looking around for another crop that would be easy to grow and yet return a good investment while at the same time being environmentally friendly. "We looked at several varieties of grapes that could be grown in this type of a climate and we finally found one that we think shows real promise," he said.

The variety, Candice, is a seedless grape that Rounsaville describes as hardy with a sweet taste. "It's a very good juice grape and I think we could do well with it. It would be a very marketable product," he said.

1996 was also the year of the bird - or at least the emu - in

Chenango County. Farmers began to discover a need for the raising of this livestock which provides red meat for consumers, leather and feathers for the fashion industry and oil for the pharmaceutical companies. What began as the raising of a few birds by one or two farmers, has grown into a major crop for eight Chenango County farm families and has seen the formation of the Central New York Ratite Producers, a group dedicated to sharing information concerning the raising of emus, ostriches and other uncommon livestock.

David Randall, Guilford, is one of the county's early entries into the raising of emus, a livestock he finds fascinating. "We began this as a way to find an alternative to dairy farming," he said. "The farm wasn't making much money in dairy and we had to look at alternatives or getting out of farming completely. The emus have made a big difference and there is now a big interest in them in the area."

The Cornell Cooperative Extension, Chenango County, is assisting those looking at alternative farming. The Extension highlighted emus during 1996, selling emu burgers on Agricultural Appreciation Day at the Chenango County Fair and a chef's training course and public



**KAREN HOFFMAN**

tasting of emu meat later in year. Agent Karen Hoffman the raising of Emus and ostriches is not as difficult as it appear. "Most of the ratites relatively easy to get started business with. Generally need some land - about one-acre for a pair of emus or one for ostriches - materials to fit the birds in with, shelter extremes in whether, and enough capital to buy birds, feed, an incubator for eggs once the begin to lay," she said.

In 1997, Cooper Extension expects to see farmers looking at alternative agriculture as a way to supplement their income.