Danny L. Cain
Walker County Extension Agent
1501 North Airport Road
Jasper AL 35504
(205)221-3392

For Publication in *The Daily Mountain Eagle*

Recreational fish ponds are very popular here in Walker County. Home ponds vary in size but are generally small impounded bodies of water ranging from one-half to three acres. I get many calls each year from pond owners who lose part or all of their fish population. While several things can cause this, by far the most common are fish kills due to oxygen depletion. Many factors can cause such oxygen depletion kills some of which can be controlled by the pond owner while many others cannot.

Most oxygen depletions occur during warm weather usually from June through September. The warm water holds less oxygen than does cool water. This problem is compounded by the fact that fish increase their metabolic rates during warm weather resulting in their needing higher levels of oxygen to sustain them. Under these conditions, fish are much more likely to succumb to oxygen depletion problems.

Another cause of oxygen depletion problems is the weather. Sunlight is necessary for the tiny algae and planktons to produce oxygen in your pond. Periods of cloudy weather, especially accompanied by hot temperatures and no wind conditions, make this problem much worse. In such cases the oxygen consumption by your fish is greater than the amount of oxygen being produced in your pond resulting in a fish kill.

Another extremely common weather related event that can cause oxygen problems is summertime afternoon thundershowers. We have certainly had our share of those lately. Ponds are generally stratified meaning that the deep layers of water are cool while the surface water tends to be warmer. The warm layer of water near the surface is where most of your oxygen is located while the very deep parts of the pond usually contains very little oxygen. Summer thunderstorms (such as the one that hit the Eastern part of the county this past week and the potential for other such storms during next few days). dump another cool layer of water on top resulting in a rolling or mixing affect of the water layers. The result is that what oxygen is in the pond will be dispersed and decaying organic matter stirred from the bottom will be as well. Again, the result is an oxygen depletion fish kill. We refer to this as a pond “turn-over”.

Stocking fish at too high rates can also cause problems with overcrowding, increased stress, and oxygen depletion. Many of us pond owners do a fairly good job with our original stocking, but without periodic checking and fish harvesting the population can grow quickly in a home pond.

Poor weed control can also contribute to oxygen depletion fish kills. Most pond owners wait until aquatic weeds hamper fishing until they implement a control strategy. I am guilty of this myself, and I get very frustrated while I try to fish and spend more time cleaning weeds off my lure than I do removing fish from my hook. Many of you know exactly what I'm talking about. Ponds with two feet deep edges will have fewer problems with weeds than most other ponds. I also recommend stocking grass carp or white amur fish into the pond to help with weed control. There are also a number of aquatic herbicides that can be used if you use them carefully and only according to the labeled directions.

One additional word of caution…. You can actually cause an oxygen related fish kill by applying herbicides on heavily weed infested ponds during the summertime. Here is how it happens. The herbicide does its job by killing the undesirable weeds. Once the weeds are dead and begin to decay, the decay process takes oxygen right out of the pond. A good be would be to use spot treatments or treat only a fraction of the pond at a time and space the applications out at one week or so intervals.

Finally, overfeeding or overfertilization can cause oxygen problems. A deep green or blue-green color often results. For those of us that do fertilize ponds, try using a sechi disk, to measure the algae bloom in your pond. The disk is nothing more than a small rectangle or circle suspended from a measuring stick. If the submerged disk disappears from view between eighteen and twenty-four inches, you have about the right amount of bloom. If it disappears from view at eighteen inches or less, you are at increased risk for having a fish kill.

If the fish appear at the surface of your pond and appear to be moving slowly or acting sluggish, this could be the first sign that an oxygen related fish kill is eminent. I have even seen fish congregate very close to the shore and actually appear to be panting for air. It is best to observe fish exhibiting this behavior very early in the morning since the oxygen level in your pond begins to drop around nightfall and hits its lowest level about sunrise.

Unfortunately most pond owners only discover an oxygen depletion when it is too late. Aeration is the only sure way to correct the problem and save your fish. This means the use of supplemental aeration such as PTO driven aerators or pumps to pull water from the pond and spray the water

over the surface of the ponds. There are emergency techniques such as running an outboard motor locked in a stationary position and others, but these are often too little too late to do much good.

Nitrate Poisoning

The dry weather conditions this summer have not only affected home gardens, lawns and landscapes, crops, but pastures and hay as well. This is true not only from the standpoint of lower yield but another potentially serious condition called nitrate poisoning.

Nitrates accumulate in plants during periods of low soil moisture and high temperatures. Especially in crops that have been heavily fertilized such as corn, bermudagrass, and several others. Summer annual grasses such as sorghums or sorghum-sudan hybrids are also very prone to accumulate nitrates during these weather conditions.

It is worthwhile to note a couple of things …. First of all, nitrate poisoning can be deadly to livestock and often times it is not just one animal that dies since the entire herd typically feeds off the same hay, corn, or other feed. Secondly, nitrates do not tend to break down much over time. This means that hay stored this summer (if you are lucky enough to have hay) can still have deadly levels of nitrates when fed later on this winter. It is interesting to note that nitrate poisoning is more likely to happen with cattle eating free choice hay from large round bales because of the unlimited access those cattle have to the hay with high levels of nitrates.

The best, safest, and most practical thing to do is to have forages and hay produced in droughty conditions tested for nitrates. Several local producers have already had samples tested. The test is relatively simple (much like a soil test actually) and inexpensive. It is a good idea to test not only hay produced here under dry conditions, but also hay that has been purchased from other dry weather areas.

The symptoms of nitrate poisoning include labored breathing, muscle tremors, a staggering walk or gate followed by falling. The membranes of the eyes and mouth are usually bluish indicating a lack of oxygen. Death from nitrate poisoning is usually very rapid; however, if you suspect nitrate poisoning call your veterinarian immediately as there are treatments.