Few pond management practices are as misunderstood and misapplied as fertilization. The questions of why, when, how and with what material need to be asked and answered by all pond owners before fertilizing their ponds.

Let’s start with why we fertilize farm ponds. Phytoplankton (single-celled algae) form the base of the aquatic food chain or web. If we can ramp up the production of phytoplankton at the base of the chain/web, it stands to reason that we should then be able to increase the production of critters at the upper levels of the chain or web. We often refer to these critters as sportfish (largemouth bass, crappie, etc.).

Production of phytoplankton requires nutrients, largely supplied by organic matter which enters the pond from the watershed and/or through the natural breakdown of organic matter in the pond itself. Like all green plants, phytoplankton require nitrogen, phosphorous and potassium (N-P-K) from these sources to grow.

Boosting phytoplankton increases the zooplankton population, the microscopic animals eaten by some invertebrates and larval/small fish. These are then eaten by larger predacious fish and perhaps an additional trophic level would increase to the top tier predators present in your pond, including but not necessarily limited to largemouth bass.

There is a huge decline in energy as you proceed up the food chain/web from one trophic level to the next. In the simplest of terms, an example would be 1,000 pounds of phytoplankton are required to produce 100 pounds of zooplankton which in turn produces 10 pounds of macro invertebrates and larval/baitfish which then produces 1 pound of largemouth bass.

This may be an over-simplification of the food chain/web, but you get the general idea. Fertilization can actually double or triple the pounds of fish at the top of the food chain/web which is desirable for many pond owners interested in maximizing their fish population for sport fishing success.

The when of fertilization varies across the great state of Texas due to latitude and vastly differing climatic conditions. In far South Texas, the temperature of pond water may reach 65-70 degrees near the water’s surface by March 1; however, ponds near Dalhart may not reach this same temperature until mid to late April.

It’s important to note that this is just the start of the fertilization process. Reduced rate applications will be needed as follow-up – another two to four applications (depending on weather conditions and the pond’s inherent productivity) until waters cool in September/October and fertilization ceases for the year.

The pond owner must learn to “read” the water. It should be a light greenish color (indicative of a phytoplankton bloom). Anytime the water begins to clear and allow visibility of more than 18 inches using a Seechi disk (see photo), it’s time for that next reduced rate application that is typically half the rate of the initial application.
I am often asked how late a fertilization program can be initiated. My answer is, "perhaps as late as the end of May." But even that is subject to the amount of native aquatic vegetation present and its growth stage, which could compete with phytoplankton for the nutrients provided through fertilization.

The how of pond fertilization depends on the product used. When I became a practicing fisheries biologist almost 40 years ago, the only option was to use granular fertilizer similar to what is used on lawns or pastures. The preferred fertilizer blends were 16-6-4 or 20-20-5 applied at initial rates of 100 and 80 pounds per surface acre of water, respectively.

Application of granular fertilizer requires splitting the sacks and placing them in shallow water to allow wave action and time to dissolve the granules or pouring the fertilizer on submerged platforms so it would dissolve and become available to the phytoplankton. Reduced rate applications as needed amounted to about half the amount applied in the initial application.

Thankfully, liquid pond fertilizers came on the market and in the late 1970s and early 1980s. This eased the application process. Two gallons per surface acre of a 10-32-0 or 12-34-0 provided quicker results with less labor than the old granular fertilizer, with reduced rates of one gallon per surface acre applied as needed to maintain the bloom.

The liquid fertilizers are heavier than water, therefore pouring them straight into the water column means they will sink to the bottom, which could limit their availability. By mixing several parts of water with each part fertilizer in buckets and pouring the solution into the prop wash of an outboard motor, pond owners found that the time spent fertilizing the water could be drastically reduced.

More recently, fertilizers packaged as water-soluble powders became available for pond owners to use. These products typically have an analysis of 10-52-4 or equivalent and should be applied at the rate of 6-10 pounds per surface acre. Simply open the bag and pour in the prescribed amount of fertilizer based on surface acreage, and it dissolves and becomes immediately available to plants.

However, there is a long list of caveats that go into making your final decision to fertilize or not to fertilize.

The ideal scenario would be to fertilize a larger pond (more than one surface acre) that is being managed for sport fish production (largemouth bass).

But first, ask yourself, "Do I really need to produce more fish?"

So, which ponds and under what conditions should one choose to skip the fertilization process? To start with, consider your commitment. If you do not plan to make the reduced rate applications required to maintain the bloom throughout the growing season or do not plan to continue in subsequent years, then don't start a fertility program at all!

I do not recommend a fertility program for catfish ponds where the fish are on a regular supplemental feeding program already. If the fish are getting their nutrient requirements out of a sack, then a fertility program is not necessary. However if the fish are seldom if ever fed, then a fertility program will increase the food supply better than nothing at all.

Do not fertilize a muddy pond. If there is no sunlight penetration into the water column to 12 to 15 inches, then it is doubtful that the phytoplankton can adequately bloom in response to the nutrients provided.

Likewise, do not fertilize a pond that has constant or steady water exchange. It is difficult to establish a bloom if the nutrients continually leave via the spillway. However, if the excess flow is being channeled through a bottom release drainpipe, then a fertility program may be applicable.

Lastly, do not fertilize a pond that already has aquatic vegetation that is present and actively growing. These plants will compete and often successfully outcompete phytoplankton for the nutrients and could make a weed problem worse. It should be pointed out however, that if the bloom is established and maintained before weeds begin to grow, the likelihood of submerged weed problems is decreased because the bloom blocks sunlight from the pond bottom.

Done correctly, a fertilization program is a cost-effective method to greatly increase fish populations if an intensive management strategy is in place. However, just like successful deer management often results in the need to harvest more does as the number of mouths to feed increases, more aggressive fish harvest may be a necessity as your largemouth bass, bluegill and channel catfish respond to the increased buffet that’s been created for them!