**Pond Weed Management**

*Josh Payne, Ph.D.*

If managing a pond for fishing purposes, aquatic weeds should be controlled, but not eliminated. Pond weeds can be categorized into 4 groups:

1) *Algae*
2) *Emersed weeds*
3) *Submersed weeds*
4) *Floating weeds*

**Preventative measures**

The best method for controlling excessive growth of pond weeds is through proper preventative measures including:

1) *Pond location*. A flowing stream is not a good location for a pond as this complicates fertilization and any needed herbicide applications. Ponds should not be located in areas receiving runoff from barn lots or highly fertilized fields.
2) *Pond construction*. Ponds should be constructed to avoid shallow water less than 2 ft deep as aquatic plants tend to grow in shallow water.
3) *Fertilization*. A proper fertilization program can stimulate the growth of beneficial plankton, blocking sunlight from reaching the pond bottom and preventing rooted aquatic weed establishment.
4) *Fall-winter drawdown*. A drawdown reduces the water level during the winter, exposing the shallow areas which helps reduce aquatic weed populations.
5) *Fence off livestock*. Livestock can erode banks, create shallow muddy pools of water and provide excess nutrients and organic matter from manure deposition.

**Biological methods**

The grass carp can be useful for controlling certain pond weeds with tender vegetation such as algae and duckweed; however they are ineffective against controlling tougher, woody vegetation such as cattails and lilies.

**Chemical methods**

If selected and used properly, aquatic herbicides are an effective pond weed control method. Since differing herbicides are effective at controlling differing weed species, it is imperative to first properly identify the aquatic weed and then select the appropriate herbicide. The herbicide product label can be consulted to determine the weed species controlled. Treating the pond in the spring during the early weed growth stage and only treating a fraction of the weeds at a time in a heavily infested pond will
reduce the risk of a fish kill. After weeds are killed, the decay process consumes oxygen. If large quantities of weeds are killed at once, the resulting low dissolved oxygen levels could cause a fish kill.

For long-term weed control, a combination of these methods should be implemented. Your local County Extension Office can help identify pond weeds and assist with herbicide recommendations.

For more information on aquatic weed management, refer to the following Oklahoma Cooperative Extension fact sheets:

- SRAC-360 Aquatic Weed Management: Control Methods
- SRAC-361 Aquatic Weed Management: Herbicides
- NREM-9206 Common Pond Problems

**Growth Promoters: Beta Agonist**

*Earl H. Ward*

We use several growth promoters in the beef industry and the newest promoters available for use are beta agonists. Although relatively new to the beef industry since their approval in 2004, beta agonists are not a new concept; asthma medications are also beta agonists and have been used since the 1960’s.

The “beta” refers to the specific receptors on the muscle cell that the agonist binds with. Beta adrenergic agonist simply means that it acts like an adrenaline. Adrenaline is used during the “fight or flight” response of an animal by diverting blood flow from the digestive organs to the muscles. Much like adrenaline, the beta agonist re-directs nutrients to promote more growth in the muscles than in the internal organs.

Beta agonists are feed additives used in the feedlot sector of the beef industry to promote the production of muscle. They are approved to increase protein deposition (muscle), feed efficiency, growth, and leanness of the carcass in beef cattle. Feedlots use these feed additives at the end of the feeding period when muscle growth and feed efficiency are decreasing and fat deposition is increasing. There are currently two beta agonists approved for use in beef cattle: Optaflexx™ (Elanco Animal Health) and Zilmax™ (Intervet, Inc.). Optaflexx™ contains ractopamine hydrochloride as the active ingredient, which is the same compound that is in Paylean™, which is labeled for use in swine. There are also some supplements containing this active ingredient available for use in show cattle. Zilmax™ contains zilpaterol hydrochloride and is only available to licensed feedlots, but the show steer feed supplement Showmaxx™ is approved for direct sale to individuals. Zilmax™, a class 2 beta agonist, is more potent than Optaflexx™, a class 1 beta agonist. A class 1 beta agonist increases the rate of muscle synthesis with no change in degradation which will increase overall muscle production. Class 2 beta agonist also increase muscle synthesis but decrease muscle degradation at the same time, this explains the greater response of class 2 products. Other differences between the two beta agonists are listed in Table 1 on the following page.