
Ruminant Nutrition Notes

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A Tale of Two Buttercups

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One of the signs of spring are the beautiful buttercups that adorn the roadsides, pastures and cropland. While to the casual viewer they really give a pretty yellow glow to the world in early spring, to an experienced forage manager they are clearly one of our most common and troublesome weeds.

Buttercups are non-native species that are very opportunistic at taking hold wherever there is bare ground in pastures. They are very common in hay feeding/sacrifice areas, around waterers, and everywhere in pastures that have been damaged due to animal impact during wet times, or due to overgrazing. The plants are very quick to set seed, so by the time you see the first yellow, there are literally only days left until they have set seed to provide for a good population the next year. So, if your pastures are really yellow each spring and you don't do anything about it, it is unlikely that you will ever have much of a break from their impact.

Buttercups can cause several problems, but the most significant is lost forage production during a time when it is needed the worst. The buttercups mostly germinate in the late autumn and then develop over the winter at which time they scavenge the nutrients that become available, limiting the amount available for desirable plants. The buttercups are bitter to grazing livestock, so they try to graze around them and this leads to poor pasture utilization. Buttercups are also mildly toxic, but any poisoning of animals is rare unless buttercups is all there is to eat.

The best way to control buttercups is to spray them when they are small during the winter. Spraying in our region in December is a good practice, but they can be sprayed anytime from December through March before the flowers develop as long as the weather has been warm (high temperature over 60 degrees) for several days before spraying and for several days after. The later you wait and the bigger the plants get the harder they are to kill. Winter time spraying is also a good practice because there are few sensitive crops or other plants growing at that time that might be damaged by drift or volatilization. Once you spray for a few years and the seed production is under control, doing something to encourage more vigorous forage growth on the infested areas will help inhibit future populations. Some areas such as holding pastures and hay feeding areas will be prone to infestation and often need to be sprayed each year.

I have always had pretty good luck controlling buttercups at home. There are areas on our farm that have a pretty good crop each year if we don't spray, so we watch for the first opportunity to spray them with 2-4 D at about 1.5 pints per acre. This has been very successful for us, and is especially positive because that rate

will not kill white clover, but just suppresses it for a few weeks. In normal years by late spring we have great stands of grass and white clover on areas that used to be a sea of yellow.

For the last several years we have killed some of our fescue pastures and have started planting summer and winter annuals. This practice has really helped us balance our forage system and provide very good quality grazing for our growing and finishing steers and heifers, but has also led us to a whole new range of weeds and other management challenges. One weed we have struggled with a little are buttercups which seem pretty persistent in our winter annual pastures. We grew mixed annuals (Ray's Crazy Mix) that included crimson clover, winter pea and hairy vetch on these pastures for several years which means we had to let the buttercups live and make seed.

As we have started preparing these pastures for planting back into non-toxic fescue, we have started to work to get the weeds better under control. Last winter we planted a mix of ryegrass and triticale so we could spray for buttercups, shepherd's purse, and other annual broadleaf winter weeds. In the early spring of 2016 we sprayed with our usual rate of 1.5 pints per acre of 2-4 D (with nonionic surfactant), but as sometimes is the case our sprayer was not quite putting out the desired rate and we were closer to 1 pint per acre. I was not too worried because in the past we have had nearly 100% buttercup and shepherd's purse control from 1 pint per acre. However, as we walked the pastures after spraying we saw smaller pale green buttercups that were very curled and broke off at the crown when pulled on, indicating they were completely dead. The shepherd's purse was burned down and nearly completely killed as well. However, there were some large, dark green buttercups that were only slightly curled, showing very little damage. Another walk a few weeks later showed those dark green, big buttercups had totally recovered and were starting to bloom, while the other smaller plants were completely dead.

I didn't think too much about that experience and wrote the failure off to the low rate of 2-4 D and the large size of the plants. As you might expect, after planting our ryegrass and triticale this past fall, we saw the buttercups germinating and planned to do a better job this year. We also saw some larger dark green plants that we assumed were the earliest to germinate. Despite their darker green look and larger size, they were still pretty small and not flowering so we felt pretty good about the situation. We rented a good sprayer from our neighbor and were more careful with our rate, this time spraying 2 pints per acre of 2-4 D with surfactant in late February.

An adjacent field had the buttercups present but also had a lot of chickweed, so we decided to spray that field with 2 pints per acre of Weedmaster (mix of 2-4 D and Dicamba). It was really nice using a good sprayer with a foam marker and a little bigger tank for a change, so we got all the area sprayed in a timely manner. After a week we walked the pastures and found that in the one that got the 2-4 D only we had 100% control of the small brighter green buttercup and shepherd's purse, but the darker green, more robust looking buttercups were only slightly damaged, much like the year before. In the pasture where we sprayed the Weedmaster, we had good control of the small buttercup, shepherd's purse and chickweed, and to our surprise very good control of those larger dark green buttercups.

I was walking the pastures with my nephew Noah thinking about the situation, and it dawned on both of us that there was something very different about those robust buttercups so I started doing some reading to try

to get to the bottom of it. What I learned was that while there are dozens of species of buttercups (*Ranunculus* species) in the Southern US, there are two that are prominent in our pastures, Hairy Buttercup and Bulbous Buttercup. They look very similar but the Bulbous Buttercup is darker green, and has the ability to store energy reserves in a corm (a bulb) at the base of the plant at the end of flowering. It is a perennial! The Hairy Buttercup has no such bulb storage organ, so it is pretty much strictly an annual. To be sure the Bulbous Buttercup makes a lot of seed, so it still can act as an annual, but I realized that those well established plants were the ones that were surviving over the summer, giving a very early and strong start the following season. Once the plants start to elongate to flower, the leaves of hairy buttercup remain lobed, looking similar to the basal leaves, while the bulbous buttercup has different, more simple leaves on the flower head compared to the basal leaves.

What we observed in our pastures was similar to what I learned reading. The Hairy Buttercup is very easily killed by a low dose of 2-4 D. Bulbous Buttercup, however, is a much more difficult plant to kill, even with higher rates of 2-4 D, so it requires an additional chemical such as dicamba (in Weedmaster) or aminopyralid (in Grazon Next HL) to get a good kill. Our poor results with 2-4 D and much better results with Weedmaster confirmed that this buttercup control issue is a little more complicated than what I have always thought.

The take home message from this is that it is critical to identify and understand the weeds you are dealing with. Getting the herbicide put on in a timely manner is critical, but having the right chemical in the first place is also a critical step. As you walk your pastures this month, look for the yellow flowers, ask yourself if you have a buttercup problem, what the major species are, and how you plan on controlling them next year. Doing a little digging and looking at the roots will help you identify if you have only Hairy Buttercup, or perhaps a mix of Hairy Buttercup and the harder to kill Bulbous Buttercup.



Photo 1. Hairy Buttercup on the right and Bulbous Buttercup on the left



Photo 2. Close up of the base of Hairy Buttercup (right) and Bulbous Buttercup (left)



Photo 3. Bulbous Buttercup. Note the morphology of the leaves on the flower stalk.