What’s the deal with sainfoin?

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I have been getting a lot of questions on my travels around the state about sainfoin (*Onobrychis viciifolia*), and how can it fit into forage production in Montana.

Sainfoin is a legume, with a bright pink flower (although they can also be white or purple), and leaves with 11-21 leaflets. It may grow a little taller than alfalfa in certain environments, but a lot of times we are seeing similar production results.

One of the biggest benefits of sainfoin is that it is a non-bloating legume, which means that not only is it valuable in hay production, but we can also safely graze our livestock on it without having to worry about any bloat issues. In addition, because it is a legume, it is providing Nitrogen back to the soil via nitrogen fixation, which is a huge benefit and a large reduction in cost. Because let’s face it, the cost of fertilizer these days can be a little hard to swallow. When we add sainfoin, or other legumes, in a mixture with other grasses, we can significantly reduce or eliminate the amount of Nitrogen that we need to apply (however, soil samples should always be taken to know exactly how much we need to fertilize and with what).

We also know that sainfoin is very palatable. I have even heard it described as being “too palatable” (if you can imagine that) with it being preferred by wildlife over alfalfa and other forages. It has been described as being slightly more drought-tolerant than alfalfa, although it likes a little higher average precipitation, typically over 14” of annual rainfall. However, some producers actually state that they have had better luck with sainfoin in dryland situations than alfalfa, although this may not always be the case. It also likes soils with a pH above 7, and it seems to prefer coarser soils, or calcareous soils.

Another huge benefit is that sainfoin does not exhibit the allelopathic, or autotoxic effect that we see in alfalfa. This means that when we have a declining stand, or one that is producing below our desired goals, we can interseed more sainfoin, or allow itself to interseed naturally. This is a huge benefit, as we don’t have to worry about completely renovating our stand.

Typically, we see sainfoin mature at a quicker rate than alfalfa. One study found that sainfoin reached full maturity (100% bloom) while alfalfa was only at 78% bloom. The same study also recommended that for the highest yield of both dry matter and nutrients that you harvest when sainfoin is closer to full maturity, a little different than that of alfalfa. We do see slightly lower crude protein values when the plants are compared at similar maturities, but they have similar TDN (total digestible nutrients) concentrations, and in some cases the NDF and ADF (see previous column, “The case for RFQ” for an explanation) were actually lower in the sainfoin compared to alfalfa. Because sainfoin is able to retain its lower leaves better than alfalfa, we see a slower decline in nutrient quality through the growing season, another added benefit.

Another interesting thing about sainfoin is that it seems to have a natural resistance to glyphosate (Roundup). This does not mean that it won’t have significant yield reductions like RoundUp Ready alfalfa after glyphosate application, but when varying rates of glyphosate were applied to a stand of sainfoin over two years in Wyoming, the stand was able to survive glyphosate application. However, it should be noted that it did have a significant reduction in yield. Even glyphosate applied at a rate of 8 fluid oz. per acre resulted in a significant yield loss. However, the stand was able to recover the following year after in the low-rate treatments. So while it may potentially be a tool for weed control, it should not be a first resort.

So what are the drawbacks? Sainfoin can be finicky to get established, and it seems to take a little bit longer than other forages such as alfalfa. It also requires significantly higher seeding rates than alfalfa, which can prove costly. Also, when being grown in a mixture with many forage species, alternate seeding is more conducive to adequate stand establishment than a complete mixture. This is especially important when it is grown with bunchgrasses like Russian wildrye and crested wheatgrass. Another limitation to establishment is that it does not like soils with high water tables, or soils that are poorly drained. We also recommend that you do not graze for two seasons after planting to allow it to get established.

Care should be taken when harvesting and grazing sainfoin so that there is still some leaf area remaining. Sainfoin does not store carbohydrates during the summer, and relies on photosynthesis for regrowth, hence the need for extra leaf area.

On average, we typically see alfalfa persisting for longer periods of time than sainfoin, but there are stands that are over 20 years old in Montana. The biggest problem that producers have is that it is a little more susceptible to root and crown rots than alfalfa, this typically being the reason that a stand needs to be terminated. But, especially in a rotational setting, sainfoin can be a great option to look at.

Overall, sainfoin is a great forage, with a lot to offer to Montana producers. If you have any questions or comments, contact Dr. Emily Glunk at 406.994.5688 or emily.glunk@montana.edu.