

Does Aerating or Renovating Hay and Pasture Fields Pay?

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After a summer that yielded little hay and pasture forage due to the drought, many hay producers are asking if aeration would be helpful. This is a hard question to answer because there is little clear research that shows that aeration is economically feasible. In fact, **aeration is unlikely to be of economic benefit** in the vast majority of cases.



A couple examples of pasture aerators (aka renovators).
Left: Spiked-drum aerator. Right: Short-shanked subsoiler.

Why Aerate?

One reason why aeration equipment is used is because thatch has built up to the point it limits water infiltration into a soil. Thatch was not much of a problem in our recent drought years, especially if cattle were allowed to graze. Most pastures were grazed close and the hayfields were cut short to harvest every available bale. Furthermore, it is rare that thatch is a major problem in hayfields and pastures in Georgia.

The second reason aeration equipment is used is to remediate compaction. Cattle and heavy equipment that run over the soil can cause compaction. This is most often a problem where cattle are fed and when hay equipment is continually run in the same direction in a field every time. Certainly, the soil can become so compact as to reduce the infiltration of water and fertilizer and reduce root exploration in the soil.

So when do fields need to be aerated?

We have all walked across fields taking soil samples, noticing the soil is hard as a rock in dry weather. However, after a good rain, the soil probe is (usually, at least) a lot easier to push into the soil. So, it stands to reason that we can't judge how hard the soil is when we are in the midst of dry weather (or for that matter, if the soil is just a little wet).

In fact, the most appropriate time to determine if soil is compacted is when it is very wet or even soggy (technically speaking, at "field capacity"). The easiest way to get some reliable information on whether or not your soil is compacted is to use a soil compaction tester (technically speaking, a soil cone penetrometer). This instrument can help you make a more informed decision by indicating if a soil is compacted or not. However, it really won't give a definitive answer to the question "will aeration pay"?

Does aeration pay?

Many cattlemen really believe in aeration. With production costs being so high these days, the cattleman really needs to think hard about whether or not aeration will pay. The confusing thing for some producers is that aeration can sometimes provide a short term benefit. All too often, the temporary effects are primarily the result of a flush of nutrients being released by the mechanical tillage (aka breakdown or destruction) of organic matter in the soil. So, was the problem that the soil needed aerating or that the soil needed some fertility? Ninety-nine percent of the time, poor soil fertility (usually low soil pH or K) was the problem and the sole reason for the "[Bermudagrass Decline](#)."

Several research studies (including some that have focused on severely compacted sites) have shown that aeration is **often merely a temporary fix**. The lack of a long-term benefit in these studies (yield differences in aerated vs. non-aerated treatments usually become insignificant in less than 2 yrs.) suggest that aeration should not be routinely performed and is a questionable practice in all but the most extreme situations.

Dr. Carl Hoveland, Professor Emeritus of Forage Management at the University of Georgia, wrote an article a few years ago for "The Georgia Cattleman" on "[Does Aeration of Pastures and Hayfields Pay?](#)" He highlights a few studies of very extreme conditions where aeration and deep tillage has remedied soil compaction, but he also cites many more studies where the compaction was very bad and the aeration didn't help (and in some cases made the problem even worse).

Bottom Line

Aerating your pasture or hayfields is unlikely to be a good investment. However, if you think your soil is severely compacted, consider testing the soil with a soil compaction tester before going to the expense of aerating. Bottom line, consider looking at other limiting factors of forage production like soil fertility before wasting expensive diesel and your expensive time pulling expensive equipment across your pasture or hayfield.

More Info

Extension Article from Texas:
["Bermudagrass Decline"](#)

Research from Mississippi:
[Influence of Spike-tooth Aeration on Permanent Pastures in Mississippi](#)

Research from Alabama:
[Renovation Treatments Studied on Hayland](#)

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