

A FEW SCIENTIFIC ADVANCES THAT HAVE MADE BIG IMPACTS

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I remember times many years ago that I had people question why in the world I would want to go to school to study agriculture. Their view was that raising cattle or crops involved little more than riding around on a horse or tractor, doing something that wasn't very scientific. You didn't have to be smart to do what people had been doing for hundreds of years. Over the last several decades, however, it seems there has been an increasing view of the importance of agriculture, and the incredible technology that is involved in profitable and sustainable farming. Here are a couple of examples of scientific advances that have made a dramatic impact on forage production.

Near infrared reflectance spectroscopy – This is a technology that is cumbersome to pronounce, which is why we use the abbreviation NIR. This is the new method of analyzing forage samples (along with many other types of samples) to determine the nutrient content. Prior to NIR, we used to measure this by “wet chemistry”, meaning that we would take a portion of the sample and do a chemical reaction to determine how much protein was in the sample. Then we would have to take another portion of the sample and use another process to determine the fiber content, and so on for all the measure constituents. It was a slow, cumbersome and somewhat expensive process. There was a limit to the number of things that a producer could afford to have run.

Many forage testing labs, including the UT Soil Plant and Pest Center, have converted to using NIR technology for forage testing. With this process, a sample of the forage is ground, then scanned with all the wavelengths of light in the near infrared spectrum. The amount of each wavelength reflected is measured, and this level is put into an equation that will tell us the amount of various things we want to know. It is a very technical process, involving developing calibration equations through complex computer programming. But this has been shown to be a cheaper, faster, more reliable method of forage testing. Our lab can now provide an estimate for many more nutrients in your hay than we could just a decade ago. Go to UTBeef.com to find out more about forage testing.

Novel endophyte tall fescue varieties - The endophyte in tall fescue may have more economic impact than any other single thing in American agriculture. This endophyte, which is a fungus growing inside the plant, results in reduced cow reproduction and calf weight gain. Back in the 80's, we tried to deal with this problem by planting tall fescue without the endophyte. We soon discovered, however, the endophyte has benefits by making the plant more drought and insect resistant, thereby making it more persistent. Without the endophyte, the plant would die in 2-3 years. So our next step was to use tall fescue with a toxic endophyte, but using clovers in with the tall fescue would help reduce the impact of the endophyte. If you have ever heard me give a talk about planting clovers, this is part of the reason why we had that recommendation.

A company name AgResearch from New Zealand initiated an effort to find an endophyte that would produce all the good chemicals that improved plant persistence without producing the chemicals that cause the animal toxicosis. They searched over the world and found one, and that endophyte was put into a tall fescue variety originally marketed as MaxQ. Since that time, there has been the release of several more of these non-toxic or novel endophyte tall fescue varieties.

These varieties offer an opportunity to utilize tall fescue with better persistence than endophyte-free varieties, but still without the animal issues. Should you kill every acre of KY 31 tall fescue and plant these? Probably not. There is still a place for KY 31 and clovers on cow-calf farms in Tennessee. But as people move more toward retaining ownership, market grass-fed beef, or other techniques to capture more profit, these new varieties and this new technology is a definite option that should be considered.