

ALFALFA: THE QUEEN OF FORAGE CROPS IT DON'T GET ANY BETTER

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For anyone who has grown or used alfalfa, there is no question but that alfalfa is the best forage crop they have dealt with. Perhaps that is one reason that we in professional agriculture have given so much special interest to the crop and why it is held in such high esteem and the position it demands in research and refinement investments over the years at the private and public sectors.

The one overriding fear all growers have is that alfalfa is an easy crop to kill. So through the years, researchers (especially plant breeders) have developed varieties that are 'miss-management-resistant'. The breeders talk disease and insect resistance when really their main objective is to have healthier thus more tolerant plants. Then, educators and marketers place these materials in regions and programs that give the best benefits to growers.

There have been some remarkable changes in alfalfa production and management refinements since the crop was first introduced in the late 1700's in America. Some remarkable changes have occurred over many generations. But most of the really big changes have taken place in the past three to four decades. Even today as in the future, changes will continue as more and better information and materials come forward.

SOME OF THE MORE IMPORTANT DEVELOPMENTS

1. **Better, more disease and insect resistant varieties.** Yield and persistence is at a standstill unless better adapted, more disease and insect resistant varieties are developed and used by growers. Thirty years ago we were dealing with some 10-12 recognized varieties around the USA. Today, there are 270 certified varieties on the U.S. market. Of these, well over 100 can be grown in Kentucky. What once was a simple variety selection process, (mainly just finding out what a neighbor was planting or what the local seed dealer had on hand), today, a grower has many options. If he looks hard enough and has good information, he can select a variety or a variety group that exactly fits his individual farming program and his special needs.
2. **Selecting deep well drained soils.** Selecting good soils is the first rule if growers are to succeed with alfalfa. Very seldom do even 'first-timer's'

attempt to establish alfalfa on shallow poorly drained soils knowing that a long life expectancy is doomed. Yet when less than ideal soils is all they have to choose from, many often plant alfalfa knowing that the fewer years they have the land in alfalfa is better than the next best alternative crop for hay and grazing.

3. **Revising pH and elevating P and K.** The availability of localized soil testing and quick personal amendment recommendations have made it easy for farmers to get good soil information and treatment. Soil testing has shown that amending soil pH is not an overnight program. Also by using follow-up testing, growers discover the high removal level phosphorus and potassium and replacement needs when the crop is harvested and removed as hay or silage.
4. **Timing plantings** to blend with the best early growing seasons. In much of Kentucky, the preferential time for seeding has changed from late summer-early fall to springtime. Mainly this change was the matter of more dependable springtime rainfall. Also this change took place to avoid Sclerotinia crown and stem rot that often occurred in fall seedings especially when new plantings did not get off to an early vigorous start/growth.
5. **Seeding depth** to attain uniform stands of alfalfa. Once a grower has buried his seeding more than $\frac{1}{4}$ to $\frac{1}{2}$ inch in most soils or $\frac{3}{4}$ inch in sandy soils, he has learned his lesson. Learning to adjust planting equipment and soil preparation and taking the time to get it right is a must. But still, this is a problem that causes entirely too many early stand failures.
6. **Recommended seeding rates** to produce uniform-longer lasting alfalfa stands vary widely from state to state and may vary from farm to farm. The 'standard' seeding rate on most Kentucky farms is 15-18 pounds per acre.
7. **Modify harvest systems** to improve quality, yield, and maintain stand persistence. This change has been largely due to better, more resilient, faster recovering varieties. For the most part, farmers on the 'cutting-edge' have moved from the three to the four cut system. In a few instances, a few have moved to five harvests. But seldom do these (five-cut) producers have as added net value of the current crop and persistence over time.

THE RECENT YEARS SOME REALLY BIG CHANGES HAVE BEEN MADE.

Better disease, insect resistant and specific fall dormancy varieties are available to growers all across the America. Since the initial breakthrough that virtually eliminated Bacterial wilt as a producers problem, a grower can select varieties with

resistance to four other prominent diseases, three primary insects and up to eight nematodes. There have been some major improvements in resistance to four other diseases, and four to five insects. But most of these pests have been very elusive but should be resolved in due time. Unfortunately for growers in Kentucky (and much of the humid-eastern sections of the USA), plant breeders have not been able to produce varieties that are resistant to the European Alfalfa Weevil.

Revising seeding methods and the introduction of No-Till has had a major impact on plantings. Perhaps the biggest breakthrough has been spring-early summer seeding into killed winter-grain cover crops. The introduction and use of Roundup and Gramaxone have caused this planting procedure to become a real boon to growers especially in this region.

Even though seeding alfalfa into an established grass stand has not been used as widely as it should have been used, it is one of the most potentially financially resourceful programs for beef and dairy farmers in Kentucky and surrounding states.

Producing grazing tolerant alfalfa is no longer just a dream of farmers who want high monetary returns from grazing beef and dairy, it is a reality. Since the introduction of Alfagraze in 1990 and the acceptance by the 'plant breeding community' that grazing tolerance is a specific trait, a growing number of new varieties have been developed from this basic germplasm. We have known for years that the acreage of alfalfa has been stagnant or dropping throughout the USA, and yields have been increasing slightly. Also, farmers, especially dairy farmers are switching to other sources of stored forage, especially corn silage, to replace alfalfa.

For generations, we in Kentucky and surrounding states have known that legumes and grass for pasture is a more profitable grazing than grass alone. Our search has been to find a legume that will live more than a year or two and produce high grazing yields even during the summer months. Grazing tolerant alfalfa fills that spot. Yet, still all too many farmers fear bloat perhaps even more than they fear bloat when grazing white clover.

Resistance to mechanical damage is a reality. On the heels of the release of grazing tolerance, it was discovered by scientists (in Japan at first) that these varieties were quite tolerant to mechanical abuse. Since that time, several alfalfa varieties have been developed from the Alfagraze germplasm base that have proven to be truly abuse resistant with higher yielding ability plus maintaining and improving pest resistance.

Coating to improve inoculation and stand performance. Alfalfa seed coating began in America in 1975. Through the years, this treatment has insured an ideal habitat for bacteria thus inoculation. Consequently, no longer do farmers who use these products have to worry about inoculating seed. So long as a recommended seeding rate is used, (15+ pounds per acre or more), research has found that even though coating is added, the resulting stand will be equal with and without coating even though the coating represents a significant proportion by weight of the product.

Higher yields are due primarily to use of better land, harvesting procedures and better more pest resistant varieties. **For the past 20-30 years, fertilizer studies have lagged well behind the development of new and better varieties and for the most part have been non-existent in many states.** The only time we see impressive continued high yields is not on research plots but on aggressive farming operations and added fertilizer application based on previous soil test results.

ABOUT THE FUTURE

Better, higher yielding varieties will continue to be developed from recurrent selection process. More attention will be placed on specific needs and specific locations.

Hybrid alfalfa will become a reality.

Biotechnology is going to play a big role in the near and distant future. We keep hearing about some of the big breakthroughs that are coming and we can rest assured that biotech will have a big role in variety development, weed control, and bloat resistance to name a few advancements.

Producers wanting higher yields will demand more soil fertility research. No longer will aggressive farmers be satisfied with 'ordinary hay yields' or anything less than 2.5 pounds of daily gains on beef cattle grazing improved pastures. Water use studies must be geared to soils and plant needs to attain satisfactory yields and persistence and minimize exploitation.

SUMMARY

These are some of my thoughts dealing with alfalfa, present, past, and future. You have a great group of leaders who will lead you well into the 21st Century. I wish you the best possible success in all that you do for yourself and the future of Kentucky.