

# ALFALFA VARIETIES FOR TODAY AND TOMORROW

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There are a number of new alfalfa varieties that have come on the market in the last few years. In fact, it can be hard keeping up with all the developments. In the following pages I will overview most of the important traits that can be found in new varieties. These include Roundup Ready®, potato leafhopper resistance, hybrids, lodging resistance, rapid regrowth, higher quality, resistance to new diseases, and more... Many times I am asked “Are new varieties really worth the cost?” The best way to answer that question is to consider work by Dr. Jimmy Henning where he summarized 24 location years of Kentucky alfalfa yield data and found that the best 5 varieties in each test yielded 0.9 tons/A higher than the checks. Over a 5 year stand life this conservatively translates into more than \$400 added profit. New varieties can make a difference! That being said, the most important thing that you should do when you go to your local seed dealer is to be an educated consumer. Review recent variety test results by going to the Kentucky Forage Website at [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage) and clicking on “Forage Variety Trials” or “Forage Trials: Other States”.

## **Roundup Ready® Alfalfa**

The most significant thing in alfalfa varieties for 2011 is the January 27, 2011 decision by USDA to deregulate Roundup Ready Alfalfa (RRA) without conditions. This was the final step in an extensive environmental review process by the USDA over the last 46 months. If you would like to know more about the safety of Roundup Ready Alfalfa you can review the complete Environmental Impact Statement at: [http://www.aphis.usda.gov/biotechnology/downloads/alfalfa/gt\\_alfalfa%20\\_feis.pdf](http://www.aphis.usda.gov/biotechnology/downloads/alfalfa/gt_alfalfa%20_feis.pdf). Most importantly, seed dealers in Kentucky and surrounding states should hopefully have Roundup varieties for this spring seedings.

Extensive research shows that Roundup Ready® varieties have excellent tolerance to Roundup, good disease resistance, and good yield potential. Roundup tolerance is definitely a useful trait in alfalfa, but Roundup Ready® varieties are not necessarily superior for other traits. Roundup Ready® varieties will be best used on fields where traditional weed control strategies have been unsuccessful. Some current advertisements promote Roundup Ready® varieties as significantly higher yielding and higher quality. These statements are not untrue, but they are based on the fact that weedy stands are lower yielding and lower quality than clean stands. Therefore, if you keep your existing stands weed free, then you will also produce high yields of high quality forage.

The advantages of Roundup Ready® alfalfa are self-explanatory, but let me list a few advantages: Improved likelihood of successful establishment, decreased competition from weeds and/or cover crops, decreased crop injury from herbicides, increased management flexibility, no crop rotation restrictions, decreased herbicide costs, and ease of use. There are a few things to remember when planting these varieties. For example, the first varieties released have about 90% Roundup tolerant plants and about 10% conventional plants. That means when you spray Roundup the first time, you will kill around 10% of your stand. Therefore, know that some alfalfa plant death is normal. Monsanto recommends that you use an early spray even if weeds populations are low. If you wait until the stand is more mature, the loss of the conventional plants might leave spaces in the field. Roundup Ready® alfalfa varieties will be available in multiple brands with the same combination of traits/germplasm available to growers in conventional varieties.

### **Potato Leafhopper Resistance**

Plant breeding companies have continued to make progress in the development of potato leafhopper (PLH) resistant varieties. These varieties not only show high levels of resistance to PLH feeding, but also have good forage production and high levels of disease resistance. The most recently released varieties have been through 4 to 5 stages of improvement since the first varieties came on the market almost 15 years ago. For example, results from a regional trials seeded in Ames, IA and S. Charleston, OH in the showed that the newest PLH resistant varieties yielded 15 to 50% higher than the checks during the seeding year when subjected to PLH feeding. To review the most recent potato leafhopper variety resistance trials in Ohio go to: <http://oardc.osu.edu/forage2010/table6.asp>. Note: even the most resistant varieties may require an insecticide spray during the seedling year since young plants are the more venerable to damage.

### **Standfast® Technology**

CalWest Seeds has continued to develop their line of alfalfa varieties with Standfast® Technology. This trademarked phrase refers to varieties with improved lodging and/or improved rate of regrowth. Company data indicates that these varieties showed minimal lodging in tests where other varieties were almost flat (note: try to cut any alfalfa before it lodges, but that's not always possible especially during rapid spring growth). Interestingly, the European genetics that provides lodging resistance also provides for faster regrowth. The first variety with this trait "Attention" was not well adapted in Kentucky, but new varieties show a good combination of yield, lodging resistance, regrowth, and disease resistance.

## **Hybrid Alfalfa**

Dairyland Seeds released the first hybrid alfalfas in 2001 after many years of development. Research over the last 50 years has shown that hybrid alfalfa has the potential to significantly increase alfalfa yield. There is still some debate as to whether a hybrid variety will show significantly higher yield at each cutting, but a University of Wisconsin report indicated that hybrids consistently yielded in the top 10% of varieties over 25 test environments [www.uwex.edu/ces/crops/uwforage/HybridAlfalfa.html](http://www.uwex.edu/ces/crops/uwforage/HybridAlfalfa.html). In other words, hybrids definitely appear to show strong yield stability from location to location. This translates into a variety that should show high yield on your farm. Dairyland has continued to improve the technology they use to produce hybrid seed and the genetics of the varieties. The latest hybrid alfalfa varieties are worth considering in your operation.

## **Improved Quality**

WL Alfalfa and other companies have made significant improvements in alfalfa quality over the last 10 years. WL's merger with Forage Genetics International in 2000 has meant a combining of forces in the development of improved quality varieties. If you are producing for a market that pays for top quality then a high quality variety may be an option for you. Remember though that cutting management is still the most important factor to insure high quality. When comparing varieties advertised for high quality, make sure to compare at the same stage of maturity. Almost without exception, an alfalfa variety cut at the bud stage will be higher quality than one cut at a bloom stage.

## **Grazing Tolerance**

Americas Alfalfa and other companies have released a number of grazing tolerant varieties during the late 20 years. In the last 10 years, grazing tolerance has been combined with traffic tolerance to provide further benefits from dual purpose alfalfa plantings. If you are planning to pasture your alfalfa stand for much of the growing season, then consider planting a grazing tolerant variety. Before planting, consult variety test bulletins that show variety differences to grazing tolerance. In Kentucky, go to [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage), click on "Forage Variety Trials" and look at the Alfalfa Grazing Tolerance Reports from the last few years.

## **General Purpose Alfalfa**

One of the major goals of all alfalfa breeding companies is the development of solid general purpose varieties with high yield, good disease resistance, and long stand life. Pioneer is one such company that continues to produce good general purpose alfalfas for their customers. In addition to solid varieties with proven performance,

Pioneer has recently released varieties with potato leafhopper resistance, lodging resistance and other traits.

### **New Traits: Bloat Resistance, By-pass Protein, Pharmaceuticals, etc...**

A tremendous amount of research is taking place on the development of biotech or genetically engineered alfalfa varieties. These include the development of bloat resistant alfalfa through the expression of tannins. Low levels of tannins would also provide by-pass protein. Progress is being made on "low lignin alfalfa" that will result in improved fiber digestibility. The USDFRC estimates that a 10% increase in cell wall digestibility (from lower lignin) would increase milk and beef production by \$350 million/yr and reduce manure production by 2.8MM tons/yr. Companies are developing biopharmaceutical products using alfalfa as the protein production platform. In other words, alfalfa is genetically engineered to produce pharmaceuticals which are later extracted from the plant material. The recent deregulation of Roundup Ready Alfalfa should now make it easier for other genetically modified alfalfa varieties to come on the market.

### **New Varieties for 2011**

For a complete listing of alfalfa varieties go to [www.alfalfa.org](http://www.alfalfa.org) and download the Alfalfa Variety Leaflet. This was published before Roundup Ready Alfalfa was approved so check with your local seed dealer for the Roundup Ready varieties they are carrying. In the November 2010 issue of "Hay and Forage Grower" Fae Holin overviewed the 37 new conventional, proprietary alfalfa varieties available this year. Nineteen are listed in the National Alfalfa & Forage Alliance NAFA pamphlet (NAFA) pamphlet. Since alfalfa varieties in the fall dormancy range of 3, 4 and 5 are best adapted to Kentucky, I will only list these below:

#### **Fall Dormancy 3:**

eXclaim, marketed by LG Seeds and AgReliant Genetics, exhibits moderate multifoliolate leaf expression. It has high resistance to anthracnose, race 1; aphanomyces, race 1; bacterial, fusarium and verticillium wilts; phytophthora root rot; pea aphid; and stem nematode. The variety is resistant to blue alfalfa aphid.

Ezra, sold by Seedway, LLC, has high resistance to anthracnose, race 1, and fusarium wilt; with resistance to phytophthora root rot and verticillium and bacterial wilts. The variety, developed by Cornell University breeders, is susceptible to aphanomyces, race 1.

## Fall Dormancy 4:

4S417, from Mycogen Seeds, has high resistance to bacterial, fusarium and verticillium wilts; phytophthora root rot; anthracnose, race 1; aphanomyces, race 1; and northern root knot and stem nematodes. It provides moderate resistance to southern root knot nematode.

AmeriStand 445NT, marketed by America's Alfalfa, exhibits moderate multifoliolate leaf expression. The variety has high resistance to bacterial and fusarium wilts; phytophthora root rot; spotted alfalfa aphid; stem nematode; anthracnose, race 1; and northern root knot nematode. It shows resistance to verticillium wilt; aphanomyces, race 1; and pea aphid.

AV4211, from AgVenture, has high resistance to bacterial, fusarium and verticillium wilts; phytophthora root rot; anthracnose, race 1; aphanomyces, race 1; and stem and northern root knot nematodes. It is resistant to aphanomyces, race 2, and offers moderate resistance to southern root knot nematode.

Dairyland Seed's HybriForce-2420/Wet is a branch-root hybrid alfalfa offering high resistance to bacterial, fusarium and verticillium wilts; phytophthora root rot; anthracnose, race 1; aphanomyces, race 1; and northern root knot and stem nematodes. It shows resistance to aphanomyces, race 2, and southern root knot nematode.

LS 604, marketed by Byron Seeds, has high resistance to anthracnose, race 1; bacterial and fusarium wilts; phytophthora root rot; and aphanomyces, race 1. It is resistant to verticillium wilt.

Legacy 449-APH2, from Legacy Seeds, is highly resistant to bacterial, fusarium and verticillium wilts; phytophthora root rot; anthracnose, race 1; and aphanomyces, races 1 and 2.

A Chemgro Seeds variety, Milestone II is highly resistant to bacterial, fusarium and verticillium wilts; phytophthora root rot; anthracnose, race 1; aphanomyces, race 1; and stem and northern root knot nematodes. It shows resistance to aphanomyces, race 2, and southern root knot nematode.

Radiance HD, from Ampac Seed, has high resistance to anthracnose, race 1; bacterial and fusarium wilts; phytophthora root rot; and aphanomyces, race 1. It is resistant to verticillium wilt.

Rebound 6.0, from Croplan Genetics, has high multifoliolate leaf expression. The alfalfa has high resistance to anthracnose, race 1; bacterial, fusarium, and verticillium wilts; phytophthora root rot;

aphanomyces, races 1 and 2; and spotted alfalfa aphid. It's resistant to pea aphid and stem nematode.

Red Falcon BR, from Blue River Hybrids, has high resistance to bacterial, fusarium and verticillium wilts; phytophthora root rot; anthracnose, race 1; aphanomyces, race 1; and stem and northern root knot nematodes. It's resistant to aphanomyces, race 2.

ReNew, from T.A. Seeds, exhibits high resistance to bacterial, fusarium and verticillium wilts; phytophthora root rot; anthracnose, race 1; aphanomyces, race 1; and northern root knot and stem nematodes. It's resistant to aphanomyces, race 2, and shows moderate resistance to southern root knot nematode.

Seneca, marketed by R.M. Seeds, has high resistance to bacterial, fusarium and verticillium wilts; anthracnose, race 1; phytophthora root rot; aphanomyces, race 1; and stem and northern root knot nematodes. It shows resistance to aphanomyces, race 2.

NuTech Seed's Sonic has high resistance to bacterial, fusarium and verticillium wilts; anthracnose, race 1; phytophthora root rot; aphanomyces, races 1 and 2; and stem and northern root knot nematodes.

#### **Fall Dormancy 5:**

Triple Trust 500, from Central Farm Supply, has high resistance to anthracnose, race 1; bacterial, fusarium and verticillium wilts; phytophthora root rot; aphanomyces, race 1; and pea aphid. It's resistant to northern root knot nematode and shows moderate resistance to stem nematode.

#### **Marketing Company Contact Info:**

AgReliant Genetics – 317-896-5552; AgVenture – 888-999-0859; Ampac Seed – 541-928-1651; Blue River Hybrids – 800-370-7979; Byron Seeds – 800-801-3596; Central Farm Supply – 859-588-0265; Chemgro Seeds – 800-346-4769; Dyna-Gro Seed – [www.dynagroseed.com](http://www.dynagroseed.com); Legacy Seeds – 866-791-6390; LG Seeds – 800-752-6847; Millborn Seeds – 888-498-7333; Mycogen – 800-692-6436; Renk Seed – 800-289-7365; NuTech Seed – 800-942-6748; R.M. Seeds – 866-399-3640; Seedway, LLC – 800-952-7333; T.A. Seeds – 866-753-5503.