

What is Wrong with Round Up Ready Alfalfa?

Geertson Seed Farms Position Paper On the Release Of Roundup Ready Alfalfa

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INTRODUCTION

Geertson Seed Farms opposes the commercialization of Roundup Ready alfalfa because the USDA failed to properly consider the environmental impacts and associated economic effects of commercialization. The deregulation and commercialization of Roundup Ready alfalfa poses significant problems that must be considered and resolved in particular concerning biological contamination and weed resistance development. Additionally, myths about the benefits of Roundup Ready alfalfa must be addressed. In particular, there are claims that Roundup Ready alfalfas yield as well as the top conventional alfalfa varieties. This is simply untrue. The following paper addresses some of these issues and demonstrates why a more critical analysis of Roundup Ready alfalfa is necessary before the USDA allows commercialization of Roundup Ready alfalfa.

BACKGROUND

Alfalfa is a native of Eurasia with many different subspecies; this diversity allows it to grow in many different environments, from the harsh climate of Northern Asia to the subtropical areas of India. Alfalfa is well established in all areas of the US and grows, thrives and maintains itself where the soil pH is correct and where there is sufficient soil

moisture. It thrives in most areas where the annual precipitation is greater than 12 inches and along rivers, creeks, roadways, irrigation canals, fence lines and edges of irrigated fields. It is generally considered a beneficial plant because of its high nutritional value for livestock, wildlife and is a host to many insects including bees of many species.

Its ability to thrive in a wide range of environments allows alfalfa to grow as a prolific weed in most areas, including fields, ditches, roadways, backyards and beyond. When rotating out of an alfalfa forage crop, getting rid of the old alfalfa plants can be difficult. It is possible to use heavy tillage equipment and cut the plant off at the crowns, however glyphosate has proven to be the best way to completely remove a stand of old alfalfa plants at the time of crop rotation.

CONTAMINATION

Contamination of conventional alfalfa from genetically engineered alfalfa is a major concern. The primary mode of contamination is from the movement of pollen by bees from plant to plant. Alfalfa is pollinated by many different bees and other insects that fly long distances. Sudden wind gusts like



those associated with summer thunder storms can carry pollinators over greater distances. When a pollinator visits an alfalfa plant that has the Roundup Ready (RR) gene inserted, it will pick up the pollen that contains the RR gene and carry it to a distant conventional alfalfa plant. If that pollen fertilizes the blossom of the conventional plant, the resulting seed will contain the RR gene. The plants that result from these seed will be Roundup Ready.



Field volunteers are another important source of seed contamination. The seed produced by alfalfa can have 50 % or more dormant seed; the mechanism of this dormancy is a waxy outside coat that breaks down over time. This dormancy is noted on seed tags as hard seed. The hard seed can lay dormant in the soil for many years after an alfalfa seed crop is harvested or when an alfalfa forage crop is allowed to mature and make seed. These hard seeds can be a serious problem when they germinate where sugar beets, onions, or other crops are planted after an alfalfa rotation. The volunteer alfalfa plants from hard seed are difficult to control, and can show up many years after the alfalfa plants have gone to seed. These volunteer plants are also a serious problem when trying to establish a new stand of alfalfa for seed production. Even after ten years of row-cropping, a field that was used for alfalfa seed production can have volunteer alfalfa plants. In a new seed production field, these volunteers can be a significant percentage of the new alfalfa plants.



Alfalfa is not just a prolific field crop, but feral alfalfa and weedy alfalfa is commonly found beyond the fields by roadways, irrigation canals, backyards and beyond. Glyphosate is the preferred herbicide of home owners, municipalities, canal companies, and others, and can be purchased by anyone without a pesticide applicators license. If Roundup Ready alfalfa is planted throughout the United States, feral and weedy alfalfa will become contaminated by RR alfalfa from cross-pollination. Because glyphosate is the herbicide of choice in areas where Roundup Ready alfalfa is established, the Roundup Ready alfalfa will have a selective advantage over non GE alfalfa and will become the dominant weed variety. In turn, the weedy Roundup Ready alfalfa will be difficult to kill and will become a source of pollen and seed that will contaminate other feral plants and conventional alfalfa seed fields in the area. In a few years, it will be extremely difficult to avoid contamination from GE alfalfa to conventional alfalfa seed.



As conventional seed stocks become contaminated by GE alfalfa, alfalfa forage growers will be forced to grow alfalfa seed with the Roundup Ready trait. Thus, their forage will be contaminated with this genetically engineered material and will not be natural or organic. Additionally, when they try to kill out the stand to rotate to corn, soybeans, sugar beets or onions and they use glyphosate to kill the old alfalfa stand, which is the currently preferred method, the Roundup Ready alfalfa plants will survive. In no-till farming methods, if the farmer does not kill the surviving RR alfalfa plants with some other method, the Roundup Ready alfalfa plants will grow, blossom and produce seed. Some of that seed will be hard (dormant) seed, perpetuating a permanent cycle of GE alfalfa field contamination.

Thus, while proponents of Roundup Ready alfalfa downplay the problems associated with contamination from GE alfalfa, once Roundup Ready alfalfa is grown commercially throughout the country, the GE genes will be virtually impossible to contain and will spread through the environment threatening all conventional and organic alfalfa.

WEED RESISTANCE

The development of weed resistance is another very serious problem associated with Roundup Ready alfalfa. Weed resistance to glyphosate can occur through two mechanisms. First, weeds already in the area develop resistance to glyphosate because of repeated glyphosate use and simple natural selection for resistant types. It is well documented that when farmers convert from a conventional crop to a Roundup Ready crop, glyphosate use in Roundup Ready crop fields increases dramatically. This increased glyphosate use puts selection pressure on weed populations to develop Roundup resistance. Second, new weeds resistant to glyphosate will be introduced to fields as glyphosate resistance weeds become more common in alfalfa seed fields. Alfalfa seed is small and it is difficult to separate from weed seed. Certification allows as much as 0.2% weed seeds in alfalfa. No noxious weeds are allowed in alfalfa seed, but sampling sizes and sampling error makes it impossible to completely eliminate such weeds.

The alfalfa seed production areas in the United States have many different noxious weeds that are totally resistant to glyphosate and their seeds are often the same size as alfalfa. When Roundup Ready alfalfa seed is produced using glyphosate as the main weed control method, the resistant weeds will survive and make seed which will then be harvested with the alfalfa seed. It will only take a small amount of this resistant weed seed to inoculate fields where Roundup Ready alfalfa forage is grown.

Compounding this effect is the fact that alfalfa is commonly rotated with other crops that are genetically engineered to be resistant to Roundup. Roundup Ready corn, soybeans and cotton have become very popular with many farmers. As more glyphosate is used with Roundup crops, particularly where Roundup crops are rotated together, Roundup as an agronomic tool will become obsolete as weeds in these fields become resistant to glyphosate.

YIELD PERFORMANCE

Roundup Ready alfalfa proponents make unfounded claims that Roundup Ready alfalfa yields are as good as the top conventional alfalfa varieties. However, University trials of Roundup Ready alfalfa show just the opposite – that Roundup Ready alfalfa yields lag behind the higher yielding conventional alfalfa varieties by about 8%. In a five year stand, yielding 6 tons per acre at \$200 per ton, the Roundup Ready alfalfa grower will lose on average of \$480 per acre during the life of the stand plus the added cost of the RR alfalfa seed. Just go to www.naaic.org and click on alfalfa variety trial yield results.

FORAGE GENETICS HAS ACTED IRRESPONSIBLY

Forage Genetics Inc. (FGI) has irresponsibly rushed Roundup Ready alfalfa into the fields and market before the major problems discussed above were addressed. First, FGI was producing seed for commercial planting well before the USDA approved Roundup Ready alfalfa. In 2004, FGI contracted with seed growers to grow 5332 acres of Roundup Ready alfalfa for seed. (1) FGI sold this seed to Roundup Ready alfalfa forage growers in the summer and fall of 2005 after the USDA deregulated RR alfalfa in June of 2005. They also planted more acreage for seed production in the spring of 2005 before RR alfalfa was deregulated. Given the many unresolved issues associated with Roundup Ready alfalfa, this pre-deregulation seed production was irresponsible.

Additionally, FGI acted irresponsibly by failing to protect conventional alfalfa seed growers. FGI contracted the RR alfalfa seed acreage in Colorado, Wyoming, Montana, Idaho and Oregon to grow Roundup Ready seeds within the same areas as major conventional alfalfa seed production fields. FGI did not inform nearby conventional alfalfa seed growers that RR alfalfa seed had been planted next to their fields. The result has been contaminated seed fields in these seed growing regions. FGI has a responsibility to ensure that its technology does not threaten conventional farmers. To date, FGI has demonstrated that it is not living up to this duty.

CONTAMINATED SEED MUST NOT BE PLANTED

As part of the Court ordered injunction, which halted all planting of Roundup Ready seed, the Court required USDA to issue rules concerning the movement and storage of Roundup Ready alfalfa forage that was planted before the injunction. The rules, however, fail to address the problem of the possibility that contaminated conventional alfalfa seed may be distributed and planted. The USDA should issue rules requiring the testing of conventional alfalfa seed for Roundup Ready contamination to prevent the spread of the Roundup Ready genes in conventional alfalfa seed stocks, and to prevent farmers from planting products that are illegal to plant.

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(1) Taken from the Direct Testimony of Timothy J. Nantell regarding permanent relief to the United States District Court For the northern District of California San Francisco Division Judge the Honorable Charles R. Breyer

Pictures taken by Blue Planet Photography, Mike Cherim 208-466-9340