

❖ Back grounder: RR (GM) Alfalfa ❖

Roundup Ready (genetically modified) alfalfa

About Roundup Ready Alfalfa

Alfalfa is a perennial legume, a forage crop used for livestock feed, pasture, hay, sprouting seeds. Because it fixes nitrogen from the air, it is used as a soil builder and provides valuable organic matter when ploughed back into the soil. Alfalfa is cross-pollinated – it produces seed only when pollinated by insects that have visited flowers of other alfalfa plants.

Roundup Ready alfalfa (RRA) contains a gene sequence that enables it to continue producing a critical enzyme through a pathway that in other plants is destroyed when sprayed with glyphosate (the active ingredient in Roundup herbicide). The engineered gene sequence combines bacteria, plant and virus genomes. The sequence was inserted into alfalfa cells using a parasitic bacterium, and whole plants grown from resulting tissue that survived the glyphosate treatment with glyphosate were bred to produce seed. Pure stands of RRA can be established by repeatedly spraying fields with glyphosate, which eliminates all weeds and grasses.

Status of Roundup Ready Alfalfa in Canada

In 2005 RRA was approved for environmental release and food and feed safety. The CFIA's approval process was conducted in secret, and any supporting data provided by the company was not publicly available.

Monsanto licensed Forage Genetics International (FGI) to insert RRA genetics into their varieties. In 2011 Monsanto commercialized RRA in the USA. FGI applied for variety registration in Canada and by August 2013 had registered five RRA varieties. So far, no RRA seed has been sold in Canada. FGI intends to sell RRA seed in Ontario and Quebec once a coexistence plan has been developed. However, there is no legal impediment to selling these varieties elsewhere in Canada.

The concept of "coexistence" is used to promote the idea that GMO and non-GMO production can be done in close proximity without negative consequences. The Canadian Seed Trade Association (CSTA) published a coexistence plan for RRA hay production in September 2013, yet used a lengthy disclaimer to distance itself from the plan and from any liability for losses that might result from relying on the plan.

Potential Effects of Roundup Ready Alfalfa in Canada

Because RRA is cross-pollinated, pollen containing the patented gene sequence will begin fertilizing non-GMO plants soon after RRA plants start blooming. The seed produced will contain the GMO trait and be passed on to subsequent generations. Each GMO alfalfa plant can produce thousands of seeds, and will continue producing seed throughout its multi-year lifespan. Feral (uncultivated or wild) alfalfa often lives for many years, and once contaminated with Monsanto's genes, will become a vector for continuous contamination of non-GMO fields.

Certified organic production prohibits use of GMOs and alfalfa is an important crop for organic producers. RRA alfalfa plants are not distinguishable from natural plants, and even if they were, it is impossible to hand weed unwanted plants due to their deep roots. RRA contamination would harm Canada's expanding organic agriculture sector and other sensitive domestic production systems such as grass-fed livestock. Hay is normally grown as mixed stands of grasses and



alfalfa to meet the nutritional needs of cattle, but RRA fields would include no other plant species, thus reducing biodiversity and eliminating the pasture ecosystem.

Producers growing herbicide-resistant crops such as corn, soybeans and canola would consider unwanted RRA plants in their fields to be a new weed problem. To control RRA as a weed problem, farmers would have mix 2,4,D with glyphosate or accept RRA plants as unavoidable, complicating harvest and reducing yields. Such plants will form an additional contamination vector, as their flowers will bloom and seeds may set before the crop is harvested.

If RRA is sold in Canada, the farmers who use it will spray with glyphosate, which promotes faster development of glyphosate-resistant weeds. Increasing use of glyphosate in Canada and the USA is leading to serious weed problems in both countries, as well as a return to using older, more toxic weed sprays.

Canadian alfalfa farmers have significant export markets that reject GMOs. Recently, a Washington State farmer's RRA contaminated-conventional alfalfa crop was rejected by an Asian buyer. Western Canada's alfalfa seed production sector is particularly sensitive to GMO contamination. Even if RRA is only sold in Ontario and Quebec, the RRA trait will eventually spread westward through various natural and human-facilitated means.

The farmers who would suffer losses and damage from unwanted RRA have no power to prevent contamination, yet beneficiaries of it face no consequences from causing contamination. Very few farmers want it and none need it, but RRA would cause irreversible harm to those who don't grow it. Introducing RRA into Canada's agriculture would thus create an avoidable injustice.

Deregister RRA

In 2001, the genetically modified flax variety Triffid was deregistered and stocks were ordered destroyed based on the industry's concern that GMO contamination would destroy its health-oriented and European markets. Contaminated flax was discovered in exports in 2009, resulting in losses of billions of dollars. The Triffid experience sets a precedent, and shows that deregistration is possible and that the consequences of GMO contamination are very costly.

No retailers currently offer RRA for sale in Canada, but we expect sales for spring planting in Ontario and Quebec to begin shortly. Now is the time to act to prevent harm. By deregistering RRA now we will maintain our market share of non-GM alfalfa, continue to see growth in the certified organic sector, and slow the development of glyphosate-resistant weeds.

The NFU calls for the immediate deregistration of RRA and the destruction of any RRA seed that may have already been imported.

Make the GMO approval process public

The NFU calls for open and transparent regulatory processes regarding genetically engineered plants. All documents used to assess plants with novel traits (GMOs) should be made available for public scrutiny and comment well in advance of any decisions. When new information comes to light it should also be made public and used to review past approval decisions.

Include Market Effects in criteria for decision-making

Variety registration criteria need to include market effects. Since genetically modified plants reproduce themselves and thus spread in the environment, their effects go beyond the intended growing area.

The NFU calls for the effect of such plants on neighbours and the needs of future farmers to be examined, and if negative impacts are probable, registration denied.

