

Ensuring coexistence of GE and non-GE alfalfa: status of current research efforts

Alfalfa routinely places among the top five crops in the nation in terms of both farmgate value and total acreage. In 2005 it became the first major perennial genetically engineered (GE) crop when Roundup®-Ready alfalfa (RRA) was deregulated. In 2006, GE alfalfa was seeded on 80,000 ha, representing 5% of the approximately 1.3 million ha seeded in the United States. In 2007 an injunction prohibiting further planting of GE alfalfa was passed. Following review of an Environmental Impact Statement, USDA APHIS announced the complete deregulation of glyphosate-resistant alfalfa in 2011. Since then grower demand for RRA seed has surged. Recognizing the need to support all facets of the market, industry has developed coexistence strategies. The National Alfalfa and Forage Alliance (NAFA) has outlined stewardship practices. More recently industry has been working with AOSCA (Association of Official Seed Certifying Agencies) to develop the Alfalfa Seed Stewardship Program (ASSP). Since the deregulation of GE alfalfa in 2005, industry has been testing conventional seed lots for adventitious presence (AP) of GE traits and has been detecting low level AP. This suggests that early proposed production standards may be insufficient. Because coexistence of GE and non-GE crops is a top priority for the USDA, several research projects have been funded to support coexistence in alfalfa. This paper will provide an over view and update on a NIFA Biotechnology Risk Assessment Grant currently being conducted. In the fall (2012) and spring (2013), alfalfa seed and hay fields were surveyed in alfalfa seed production areas in Walla Walla Co., Canyon Co. and Fresno Co. and maps prepared showing the presence of RRA hay and seed fields and feral plant populations. Based on the maps, RRA sources (from seed fields and feral populations) and 43 sink fields (conventional alfalfa seed fields) located various distances from RRA sources were identified. During the summer of 2013, pollinator surveys were conducted and seed harvested every 30 m along the edges of sink fields. Parent seed lot and overall bulked samples of the 2013 harvest were also obtained for sink fields. This past winter we developed high throughput seedling assays to quantify level of RRA. We have begun testing our sink fields and will report on preliminary findings.