

# **GROWER ATTITUDES ABOUT ROUNDUP-READY ALFALFA: A Survey**

**Daniel H. Putnam and Steve Orloff<sup>1</sup>**

## **ABSTRACT**

Roundup-Ready (RRA) alfalfa has been the subject of much public discussion about the relative safety and environmental impact of genetically-engineered (GE) organisms. However, often farmers have been largely left out of these discussions. A survey of US alfalfa growers was conducted Fall, 2011 to ascertain grower level of satisfaction, and general attitudes towards Roundup-Ready alfalfa, including the issues associated with glyphosate-resistant weeds, gene flow and coexistence with organic, export and other non-GE growers. The survey was only open to alfalfa growers—381 growers participated in the survey, 113 of which had grown RRA. Over 90% of growers who have planted RRA were largely pleased with the technology, citing better weed management as the most important attribute. Cost was considered the biggest negative. These growers were concerned about Roundup resistant weeds, but not as concerned about gene flow in hay crops. Of those growers who have not grown RRA, about 62% were not interested in planting it, but about the same percentage felt that other growers should be allowed to plant it, with or without restrictions. The major reasons for not planting RRA among this group were that they had other effective weed control methods, were philosophically against GE crops, grew organic hay, it was too expensive, or felt it would affect their markets. Sixty five percent of all growers felt that coexistence was definitely possible or possible if some conditions were met, whereas 35% felt that it was not possible. A majority were willing to make adjustments to accomplish coexistence. However, views on coexistence were widely divergent between different classes of growers, organic, RRA, conventional, and organic-conventional, showing a significant remaining polarization of views on these issues. We should keep in mind that this survey probably overrepresented organic, export and western growers, and underrepresented some regions such as the Northeast and parts of the Midwest where alfalfa is commonly grown. Since the survey was voluntary, not a random sampling of all growers, the respondents likely reflects those with strong views on the issue, pro- or con. A wide range of individual comments were collected, many of which reflected the public debate that has occurred during the past 6 years since the introduction of RRA. While this survey revealed significant divergence in opinion on the issues, it also offered some comments that offered some positive indication of the possibility of coexistence for GE and non-GE alfalfa.

## **INTRODUCTION**

Glyphosate-resistant alfalfa, otherwise known as Roundup-Ready alfalfa (RRA) has been the subject of much public discussion during the past 5 years. The major objections to the technology, through lawsuits and public discussions has been the possibility that a GE crop could permanently harm organic, export or other GE-sensitive growers through pollen-mediated gene flow (alfalfa is pollinated by insects), and subsequent contamination that would ruin their

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<sup>1</sup> D. Putnam, UC Cooperative Extension Specialist, Department of Plant Science, University of California, Davis, CA 95616. Email: [dhputnam@ucdavis.edu](mailto:dhputnam@ucdavis.edu). S.B. Orloff, UCCE Farm Advisor, Yreka, CA. Email: [sborloff@ucdavis.edu](mailto:sborloff@ucdavis.edu) IN Proceedings, Western Alfalfa & Forage Conference, Las Vega, NV 11-13 December, 2011. Department of Plant Sciences, University of California, Davis. See <http://alfalfa.ucdavis.edu> for this and other alfalfa symposium proceedings.

markets or ability to farm as they wish. Also at issue was the possibility that the introduction of RRA would result in large increases in Roundup resistant weeds. Roundup resistance and weed shifts have occurred in other annual crops (corn, soybean, cotton) that have the RR technology. These issues were the subject of a 4-year USDA-APHIS Environmental Impact Study, which found in 2010 that RRA was safe for the environment. However, the issues of whether GE alfalfa would harm non-GE growers or whether Roundup resistance is an inevitable component of RRA production systems remain important to alfalfa growers and the public as a whole. USDA has initiated committees to study the issues associated with ‘coexistence’ of GE and non-GE or GE-sensitive production systems. Unfortunately, much of the public discourse has not included a large sampling of alfalfa hay growers’ views on these issues, including a lack of presence on the USDA coexistence committee. Thus we initiated a survey of alfalfa hay growers with the objective to characterize their views and attitudes about RRA, its performance, and on coexistence. This survey did not include a focus on seed issues, which are distinct production systems from forage, and where gene flow and coexistence issues loom large, but was focused only on alfalfa hay and forage growers.

## **SURVEY METHODS**

This on-line survey was conducted in late October through early November, 2011. The target audience were growers of alfalfa hay, which constitutes >99% of the alfalfa acreage in the US. To our knowledge, there is no national database of alfalfa growers from which to conduct a balanced survey of all growers. Therefore, we relied upon email announcements and news releases to advertise the survey. The population surveyed thus consisted of alfalfa farmers who had heard of the survey, had internet access, and took the time to respond. Requests for participation in the survey were forwarded to former participants in forage educational programs, by several state hay grower groups, hay grower magazines, grazing groups and organic advocate groups. Participants over many years in the Western and California symposia were included. Thus, the survey should be considered as biased towards those groups. We did not independently verify the information provided by participants (such as acreage grown or other information), or the veracity of their responses. We should keep in mind that the results of the survey may be somewhat more polarized than what they would be for the general alfalfa grower population at large. That’s because those most likely to respond would very likely be those who have the strongest feelings about RR alfalfa—pro or con. Questions consisted of yes-or-no questions, multiple choice, questions with multiple possible answers, and open-ended questions to elicit comments. The survey was designed to give respondents an opportunity to weigh in on several key questions, as well as to provide their own perspective through written comments.

## **DEMOGRAPHICS OF THE SURVEY POPULATION**

There were 381 respondents to the survey (Table 1). Since most of our email contacts were in western US states, those states tended to predominate in the participants in the survey (particularly CA, WA, OR, ID, NV, MT). Several states are likely underrepresented (for example NY and PA, which have considerable alfalfa acreage). Some states may be over-represented, (e.g. MN, CA) likely due to the nature of the mailing lists and the activity of those who forwarded the link for the survey. Survey respondents represented 233,631 acres of alfalfa, or approximately 1.2% of US acreage in 2010. Average acreage per farm was 613 acres. The

whole group was largely owner-managers (56%), with about 25% being managers, not owners, and 16% being owners not managers, and a smaller group of farm workers (Table 2). The predominant use of the alfalfa was dairy, followed by beef, horses, and goats/sheep (Table 2).

**Table 1.** Number of respondents, states, acreage represented, average acres per farm, percentage reporting herbicides applied or having planted RR alfalfa. Results of an on-line survey of 381 alfalfa growers, October-November, 2011.

State	Number of Respondents	Acreage Represented	Average Acreage/Farm	Percentage reporting having applied herbicides of any type		Percentage reporting having planted Roundup Ready Alfalfa	
				% of acreage	% of respondents	% of acreage	% of Respondents
AZ	8	10,320	1,290	94%	88%	0%	0%
CA	99	112,896	1,140	98%	96%	66%	46%
CO	4	2,195	549	93%	75%	91%	50%
DE	2	59	30	85%	50%	0%	0%
IA	9	965	107	10%	11%	0%	0%
ID	15	7,986	532	95%	73%	81%	53%
IL	3	470	157	57%	67%	0%	0%
IN	4	3,031	758	100%	100%	99%	50%
KS	4	1,260	315	92%	75%	79%	50%
KY	2	160	80	100%	100%	81%	50%
MD	3	135	45	33%	33%	33%	33%
ME	1	50	50	0%	0%	0%	0%
MI	1	42	42	0%	0%	0%	0%
MN	43	7,181	167	27%	28%	17%	16%
MO	3	305	102	69%	33%	0%	0%
MT	19	3,950	208	42%	37%	21%	16%
ND	12	2,089	174	19%	17%	0%	0%
NE	9	3,975	442	88%	44%	5%	22%
NH	1	100	100	0%	0%	0%	0%
NM	3	2,820	940	65%	67%	1%	33%
NV	10	15,045	1,505	100%	100%	25%	40%
NY	4	710	178	85%	50%	56%	25%
OH	4	151	38	0%	0%	0%	0%
OR	20	8,525	426	96%	90%	61%	40%
PA	3	154	51	0%	0%	0%	0%
SD	18	5,460	303	18%	17%	14%	11%
TX	1	100	100	100%	100%	0%	0%
UT	9	5,210	579	81%	89%	37%	56%
VT	6	348	58	0%	0%	0%	0%
WA	33	21,939	665	98%	88%	10%	21%
WI	26	15,570	599	93%	58%	90%	42%
WY	2	430	215	0%	0%	0%	0%
<b>Total</b>	<b>381</b>	<b>233,631</b>	<b>613</b>	<b>89.5%</b>	<b>64.0%</b>	<b>50.4%</b>	<b>29.7%</b>

**Farming Practices of Respondents.** Sixty-four percent of respondents reported applying herbicides of any type at any time during the life of an alfalfa stand, totaling nearly 90% of the acres represented (Tables 1 and 3). This differs from some public reports that put the amount at less than 10% of acreage. An average of about 30% of respondents (113) reported planting RR alfalfa, representing about 50% of the respondent acreage (Table 1). There were considerable differences in herbicide use between states, with generally greater use in western vs. eastern states (Table 1).

**Table 2. Respondent role, and the reported market for their alfalfa. Results of an on-line survey of 381 alfalfa growers, October-November, 2011 (University of California Cooperative Extension).**

Questions	Answers	
Question 1. What is your role with Alfalfa?	<b>Percentage of Respondents</b>	
Manager	24.7%	
Owner Manager	56.7%	
Owner	16.0%	
I work on a farm that grows alfalfa	2.6%	
Question 2. What animals are the primary and secondary consumers of your alfalfa?	<b>Primary</b>	<b>Secondary</b>
Dairy Cows	59.8%	33.6%
Horses	10.0%	20.7%
Beef Cows	24.4%	32.3%
Goats/sheep	4.5%	7.1%
Other	1.3%	6.3%

About 25% of respondents reported growing at least some organic alfalfa, and 21% reported exporting at least some of their hay (Table 3). This represents 11% and 36% of the acreage reported, respectively. It is likely that these two groups are over-represented in this survey, since national figures place organic alfalfa at less than 2% of acreage, and export at less than 5% of US production (USDA-NASS, Foreign Agricultural Service and Dept. of Commerce data). Organic and export growers also may have been more likely to respond to the survey because they might have stronger opinions regarding RR alfalfa. A majority of respondents (62%) representing 79% of acreage sold the majority of their alfalfa off-farm, and about 25% of respondents exclusively used their alfalfa on-farm (Table 3). Most of the respondents who used alfalfa on-farm only resided in eastern states, while most of the alfalfa in western states was sold off farm. A majority (55% of respondents representing 65% of the acreage) reported that their markets were not 'GE sensitive' whereas 35% of respondents (representing 23% of acreage) reported at least some sensitivity to genetically-engineered crops (Table 3). This may also reflect the relatively high percentage of organic and export growers in the survey population.

### **GROWERS WHO HAVE GROWN ROUNDUP-READY ALFALFA**

**Performance.** About 30% of the respondents have grown RR alfalfa, representing about 50% of the acreage of growers surveyed (Tables 1, 3). A more complete discussion of the findings of growers who have tried RR alfalfa can be found in a companion article ('Roundup-Ready

Alfalfa-What we have learned to date', Orloff & Putnam, 2011, this proceedings). Nearly 90% of those who have grown RR alfalfa were either satisfied, very pleased, or found that the technology exceeded their expectations (Table 4). Better weed control, simplicity in weed management, and flexibility in weed management were cited as the key advantages seen by respondents. Not surprisingly, cost was considered the largest negative (Table 4). About 27% felt that RR alfalfa yields were superior, and 41% felt that RRA was higher quality, while nearly 49% felt that persistence was superior to conventional alfalfa. Seventy-two percent of those who have tried it plan to plant RRA in the future, while 21% felt that they might, while about 7% said that they would not plant it again (Table 5).

**Table 3. Farm Practices, markets, herbicide use, sensitivity of markets, and planting of Roundup Ready alfalfa. Results of an on-line survey of 381 alfalfa growers, October-November, 2011 (University of California Cooperative Extension).**

Questions	Answers	
	Percentage of Respondents	Percentage of Acreage
Question 1. Do you grow certified organic alfalfa?		
No, I grow only 'conventional' alfalfa	75.1%	89.1%
Yes, I grow both organic and 'conventional'	6.6%	5.9%
Yes, I grow only organic alfalfa	18.4%	5.0%
Question 2. Do you grow hay for export?		
No, all my hay is used domestically	78.7%	63.7%
Yes, but just a small amount of my hay is exported	12.6%	22.1%
Yes, majority of my hay is exported	8.7%	14.3%
Question 3. Approximately what percentage of your alfalfa is marketed On-Farm vs. Sold off-farm?		
Nearly 100% Sold off-farm	51.2%	70.8%
75% sold, 25% fed on-farm	11.3%	8.2%
50% sold, 50% fed on-farm	7.3%	2.2%
25% sold, 75% fed on farm	6.6%	1.5%
Nearly 100% is fed on my farm	23.6%	17.4%
Question 4. Do you currently use any herbicide whatsoever (this includes conventional or Roundup) at any point during the production of alfalfa, including pre-plant or stand establishment?		
Yes	64.7%	90.0%
No	35.3%	10.0%
Question 5. Do you grow any of your alfalfa for 'GE sensitive' markets - that is, markets that don't want genetically engineered crops?		
Yes all of my market is sensitive	24.1%	11.1%
The Majority of my market is sensitive	10.6%	11.6%
Some(a minority) of my market is sensitive	10.6%	12.3%
No, my market is not sensitive to GE crops	54.8%	64.9%
Question 6. Have you ever planted RR alfalfa?		
Yes	29.7%	50.4%
No	70.3%	49.6%

**Concerns.** A large majority (85%) of RRA grower respondents indicated that they were not concerned about gene flow to neighboring non-RR alfalfa fields, about 10% indicated that they were somewhat concerned, and 5% indicated they were concerned about gene flow (Table 5). It should be noted that gene flow in hay is widely considered to be a much lower probability event than in alfalfa seed crops, where gene flow is not only common, but necessary for seed production. Forty-one percent said that they were cutting fields at pre-bloom stages to prevent gene flow, whereas 48% said that they weren't doing anything, didn't believe it was a problem. Other practices (adjusting cutting schedules, cleaning equipment, and maintaining buffer areas) were being used by a minority of RR alfalfa growers. Seventy-four percent of RR alfalfa growers were concerned or somewhat concerned about the possibility of Roundup-resistant weeds occurring in their fields. Growers were using, or planned to use, rotation of herbicides, rotations with non-RR crops, carefully monitoring weeds, and tank mixing of herbicides to mitigate herbicide resistance in the weed population. Less than 10% reported spraying Roundup, nothing else.

### **GROWERS WHO HAVE NOT GROWN ROUNDUP-READY ALFALFA**

About 70% of the respondents reported that they had not grown RR alfalfa, representing close to 50 % of the acreage (Tables 1, 3). About 61% of these respondents indicated that they did not wish to grow RRA in the future, whereas almost 20% indicated that they would, and 19% indicated 'maybe' (Table 6). Sixty-two percent of this group, including both organic and conventional growers, felt that even though they did not grow RRA, other growers should be allowed to grow the crop, either with or with restrictions, and 38% felt that others should not be allowed to grow the crop. When asked why they did not choose to grow RRA, 48% answered that they already have an effective weed control system without RR alfalfa. Other common answers: they were philosophically opposed to GE crops (38%), they grow organic alfalfa (32%), and were concerned about the marketability of the crop (24%), and expense (21% of respondents) (Table 6).

### **COEXISTENCE BETWEEN RRA AND CONVENTIONAL/ORGANIC/EXPORT HAY**

The issue of 'coexistence' became an important issue during the introduction of RR alfalfa and ensuing lawsuits. Coexistence refers to whether the introduction of this technology would preclude the successful production of non-RR alfalfa due to excessive gene flow from RR fields and consequent contamination of non-RR alfalfa. About 65% of all respondents felt that coexistence was either definitely possible, or possible if certain conditions were met, while 35% felt that it was not possible (Table 7). Seventy one percent of respondents said that they were willing to sacrifice and/or change practices to adjust to neighbor's practices, either unequivocally, or dependent upon what the steps were taken (Table 7). Twenty nine percent indicated that they were not willing to adjust practices. In a multiple-choice questions, when asked how to implement coexistence approaches, 36% of respondents said that this should be led by industry, 34% said that restrictions should be mandatory, and 23% indicated that those restrictions be voluntary. Only 17% said that these should be instituted by government agency, and only 10% indicated no restrictions were necessary. When asked whether small amounts (e.g. <0.3%) of contamination would be important to their customers, 52% of respondents indicated

that this would not be a concern, 35% indicated that it was definitely a concern, and 13% indicated that it was somewhat of a concern. When asked whether a compensation fund should be developed to compensate growers who are harmed by gene flow, 44% indicated no, that this would invite lawsuits, 36% said that yes, definitely a fund was needed, and 20% didn't know or hadn't thought about it.

**Views on Coexistence differed between groups.** There were significant differences between groups in how they felt about coexistence issues. Figures 1-4 show a divergence of opinion between organic and conventional growers. For example, almost 90% of organic growers felt that coexistence was definitely not possible, whereas a large majority of conventional or RRA growers felt that it was, either unequivocally, or if certain conditions were met (Figure 1). A larger percent of organic growers were not willing to make adjustments or sacrifices in production methods compared with conventional or RRA growers (Figure 2). Perhaps not surprisingly, a very large majority (>90%) of organic growers felt that a small amount of contamination was an important issue whereas about the same percentage of RRA growers felt it was not a problem. About 90% of organic growers were in favor of a compensation fund compared with near zero RRA alfalfa growers. Conventional and combined conventional and organic growers' views appeared to be intermediate between these two different (apparently polarized) groups, organic and RRA.

## **GROWER COMMENTS**

There was a wide range of grower comments on RR alfalfa (Table 8). Further details about the performance, successes and disappointments for the technology are found from those who have grown the crop. Similarly, further details on the concerns regarding the technology expressed by those who have not grown the crop can be found in Table 8. Many of these comments echo the public debate during the deregulation process in 2007-2010, and in comments to be found in numerous on-line discussions. This collection of comments indicates the degree of interest in the technology and a divergence of views within the alfalfa hay-growing community. As stated earlier, the responses represented in this survey may be more polarized than the actual sentiments of the entire alfalfa grower population. Those growers willing to take the time to complete an on-line survey may have stronger feelings about the technology than those who were not inclined to complete the survey. Someone who is more or less ambivalent about RR alfalfa is less likely to go through the effort of completing a survey.

**Table 4. Views of farmers who have grown Roundup Ready alfalfa. Results of an on-line survey of 113 RR alfalfa growers, October-November, 2011 (University of California Cooperative Extension).**

Questions	Answers	
Question 1. How would you rate your level of satisfaction with roundup-Ready alfalfa?		
	<b>Percentage of Respondents</b>	<b>Percentage of Acreage</b>
Far Exceeded Expectation	21.7%	23.9%
Very Pleased	53.0%	50.8%
Satisfied	14.8%	12.6%
Disappointed	8.7%	12.3%
Extremely Disappointed	1.7%	0.3%
Question 2. What have you liked most about RR alfalfa? (choose up to two only)		
	Frequency of Answer	
Better Weed Control	62.8%	
Flexibility in application timing	37.2%	
Cost Effectiveness	23.0%	
Simplicity in Weed Management	48.7%	
Higher yields/quality or persistence	23.9%	
Haven't really liked it at all	7.1%	
Other	0.9%	
Question 3. What have you liked least about RR alfalfa? (choose up to two only)		
	Frequency of Answer	
Cost of RR Alfalfa Seed	77.0%	
Weed Control was Not Effective	4.4%	
I don't like the technology use agreement	15.0%	
Roundup-Resistant weeds	18.6%	
Varieties Don't seem to Yield Well	12.4%	
Difficulties in marketing RR hay	5.3%	
None, there were no negatives	16.8%	
Question 4. Do you believe RR alfalfa provides higher yields than conventional?		
	Percentage of Respondents	
Yes, definitely	26.8%	
No, about the same	50.9%	
RR alfalfa gives lower yields than conventional	11.6%	
Don't know	10.7%	
Question 5. Do you believe RR alfalfa provides higher quality than conventional?		
	Percentage of Respondents	
Yes, definitely	26.8%	
No, about the same	50.9%	
RR alfalfa gives lower quality than conventional	11.6%	
Don't know	10.7%	
Question 6. Do you believe RR alfalfa provides better stand persistence (stands last longer)?		
	Percentage of Respondents	
Yes, definitely	48.7%	
No, about the same	36.3%	
RR alfalfa gives lower stand persistence than conventional	3.5%	
Don't know	11.5%	

**Table 5. Views of farmers who have grown Roundup Ready alfalfa (continued). Results of an on-line survey of 113 RR alfalfa growers, October-November, 2011 (University of California Cooperative Extension).**

Questions	Answers
Question 1. Do you plan to plant RR alfalfa in the future?	
	Percentage of Respondents
Yes	72.3%
Maybe	20.5%
No	7.1%
Question 2. Are you concerned about gene flow (contamination of conventional fields with RR alfalfa) to neighboring non-RR hay fields?	
	Percentage of Respondents
Yes	5.4%
Somewhat	9.8%
No	84.8%
Question 3. Are you employing any of these management practices to minimize the likelihood of gene flow to neighbors' fields (check all that apply)?	
	Frequency of Answer
Not Doing Anything-Don't believe it's a problem	47.8%
Cutting all fields pre-bloom	39.8%
Adjusting cutting schedules of RR and/or conventional fields so that pollen transfer doesn't occur	11.5%
Removing rogue alfalfa on the edges of fields or fence lines so that it doesn't flower or set seed.	0.0%
Cleaning baling and other harvest equipment	9.7%
Maintaining a sufficient buffer distance between RR and conventional fields	18.6%
Question 4. Are you concerned about the possibility of Roundup-resistant weeds occurring in your fields?	
	Percentage of Respondents
Yes	40.5%
Somewhat	34.2%
No	25.2%
Question 5. If yes, are you using or plan to use any of these practices to prevent the development of Roundup-Resistant Weeds (check all that apply)?	
	Frequency of Answer
Rotating herbicides	46.9%
Tank mixing herbicides	22.1%
Rotating to non-RR crops after alfalfa	36.3%
Carefully monitoring for weeds that escape Roundup treatment	31.9%
I'm spraying Roundup on my alfalfa, nothing else	9.7%

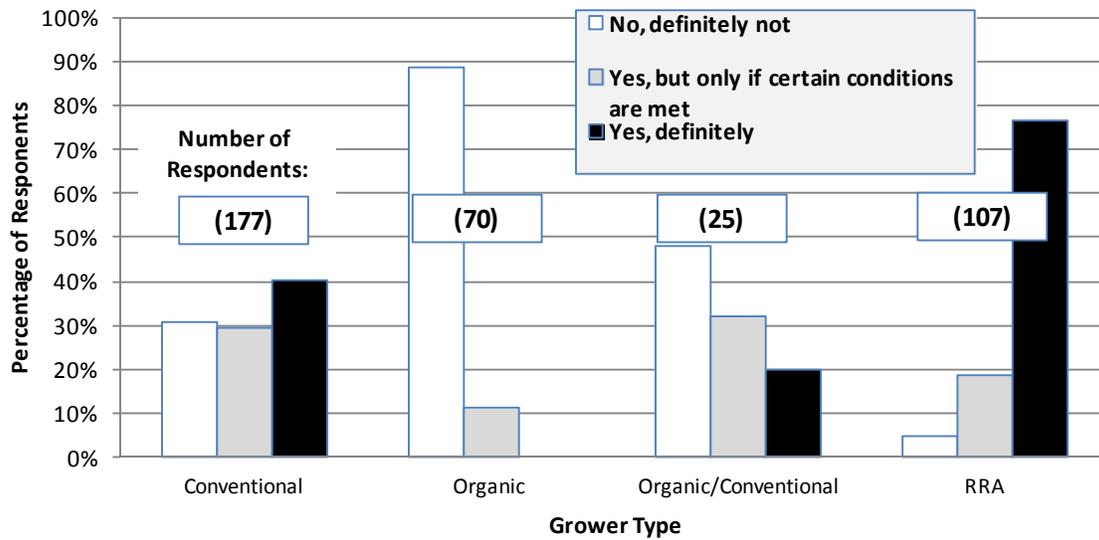
**Table 6. Views of farmers who have NOT grown Roundup Ready alfalfa. Results of an on-line survey of 268 alfalfa growers, October-November, 2011 (University of California Cooperative Extension).**

Questions	Answers
Question 1. Do you plan to plant RR alfalfa in the future?	
	Percentage of Respondents
Yes	19.6%
Not sure, Maybe	18.9%
No	61.5%
Question 2. Even though you have not grown RR alfalfa, do you think that other farmers should have the right to grow RR alfalfa?	
	Percentage of Respondents
Yes	39.6%
Yes, but there should be restrictions on production	22.6%
No	37.7%
Question 3. Why have you chosen not to grow RR alfalfa (select up to 3 reasons)?	
	Frequency of Answers
Just haven't had the opportunity	17.9%
Waiting to see how it performs	13.4%
Concerned about the marketability of RR alfalfa	23.9%
Philosophically against genetically-engineered crops	38.1%
Produce organic alfalfa	32.1%
Produce alfalfa for export	13.8%
Don't like Monsanto	16.8%
Too Expensive - cost	20.9%
Legal Delays, concerned about another lawsuit	10.4%
Already have an effective weed control program without RR alfalfa	48.1%

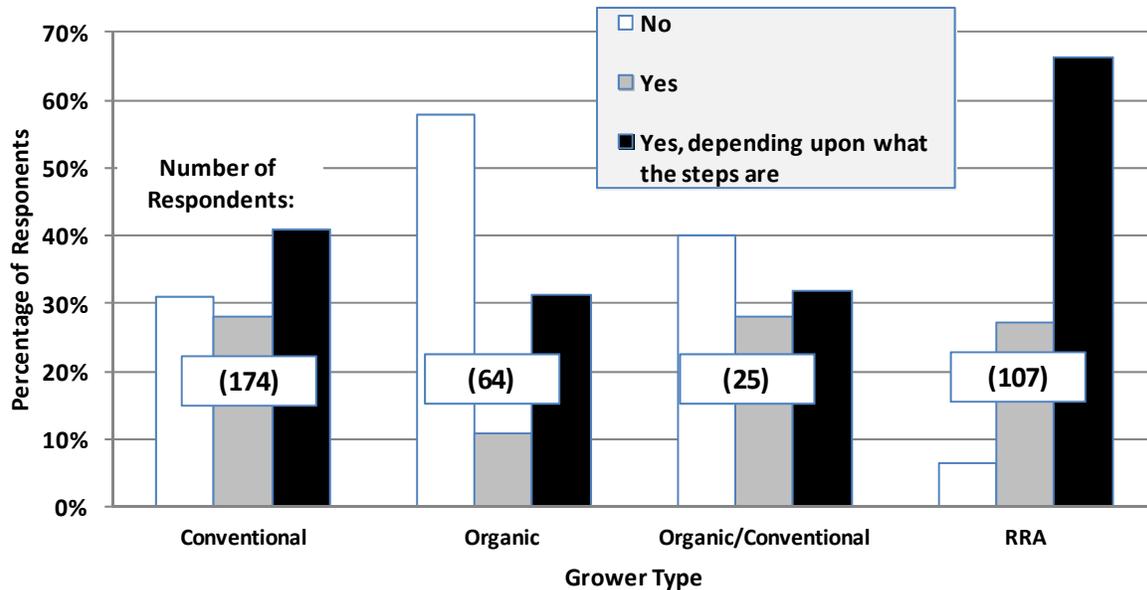
**Table 7. Views of all survey participants on the issues associated with coexistence. Results of an on-line survey of 381 alfalfa growers, October-November, 2011 (University of California Cooperative Extension).**

Questions	Answers
Question 1. Since RR alfalfa has been released, do you think it's possible for GE crops (Roundup Ready), and Non-GE alfalfa to coexist so that farmers can farm the way they want? (e.g. producing hay for organic, export and other markets)?	
	Percentage of Respondents
Yes, definitely	41.7%
Yes, but only if certain conditions are met	23.2%
No, definitely not	35.1%
Question 2. Coexistence may involve some sacrifice, that is, paying attention to the needs of your neighbors, controlling gene flow from excess flowering, etc. Are you willing to take these steps?	
	Percentage of Respondents
Yes	24.9%
Yes, depending upon what the steps are	45.9%
No	29.2%
Question 3. If changes/restrictions on planting or management of alfalfa are to be instituted, should these be mandatory, voluntary, worked out by industry or government enforced? (choose any that fits your views)	
	Frequency of Answer
Mandatory	34.1%
Voluntary	23.1%
Worked out by industry	36.2%
Enforced by a government agency	17.1%
No restrictions should be instituted	10.0%
Question 4. Are your customers concerned about a small amount (for example less than 0.3%) of contamination of conventional hay with RR Alfalfa?	
	Percentage of Respondents
No, it's not a concern at that small level	51.9%
Yes, somewhat of a concern	13.2%
Yes, definitely a concern	34.9%
Question 5. Do you think a mandatory compensation fund should be developed to compensate growers who have been harmed by the contamination by genetically engineered crops? (NOTE: this has been proposed)	
	Percentage of Respondents
Yes, definitely	35.8%
No, this would invite lawsuits	43.9%
Don't know/Haven't thought about it	20.3%

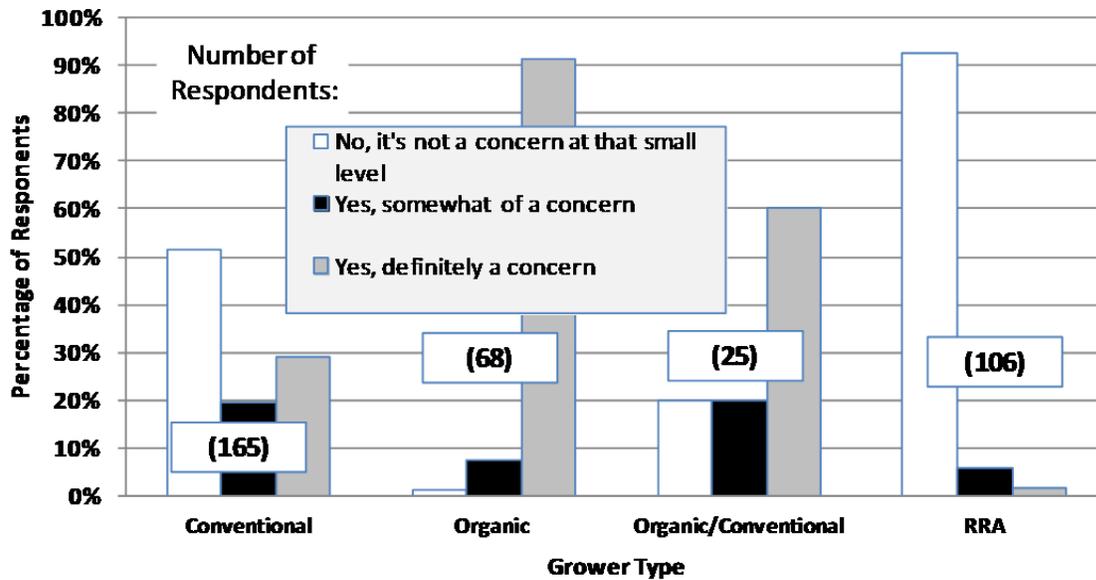
**Figure 1. Since RR alfalfa has been released, do you think it's possible for GE crops (Roundup Ready), and Non-GE alfalfa to coexist so that farmers can farm the way they want? (e.g. producing hay for organic, export and other markets)?**



**Figure 2. Coexistence may involve some sacrifice, that is, paying attention to the needs of your neighbors, controlling gene flow from excess flowering, etc. Are you willing to take these steps?**



**Figure 3. Are your customers concerned about a small amount (for example less than 0.3%) of contamination of conventional hay with RR Alfalfa?**



**Figure 4. Do you think a mandatory compensation fund should be developed to compensate growers who have been harmed by the contamination by genetically engineered crops? (NOTE: this has been proposed)**

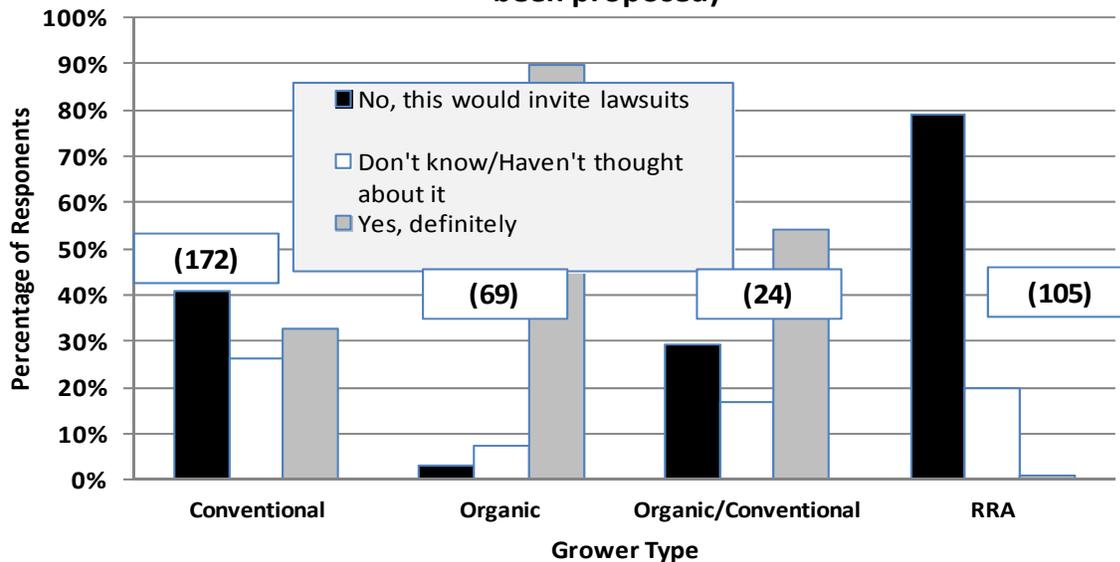


Table 8. Written comments collected from the survey from alfalfa growers. Comments are taken verbatim.

### Comments from growers who have grown RR alfalfa

- Stand removal is difficult especially since I don't use tillage for weed control, growing no till wheat and strip till corn.
- We had one pivot of RR hay and we enjoyed it very much. The weed control was very good with no damage to the hay. We did see a better growth and we contribute that to no weed competition and no chemical damage to the hay plant.
- I plant RR in my lower fields, close to the river where weed control is tough at best. RR worked great and lowered my spray cost by 70%. As a new seeding it came up fast and full.
- Because of the relatively small number of varieties available until now, proper comparison on traits like quality and stand persistence has been difficult.
- We have had a good experience with RR alfalfa. We planted our first field in 2006 and then some additional in 2007. We have grown about 500 acres. The initial cost is high, but recouped in the first year from herbicide savings. We have a problem with water and nut grass and Roundup works well on these. The chemistry is much safer than Gramoxone or Velpar which we used to use.
- I really like the ability to clean the first year's crop and not worry about damage to small plants.
- The main advantage for me with RR alfalfa is at establishment to control weeds.
- So far I see more weeds in the RR field as it doesn't have pre-emergent treatment.
- It works great for stand establishment, but after that the weeds came back after cutting and we would have to spray after 2nd cutting.
- I make my first application when the weeds need spraying, but before 35 days past planting to make sure it is all clean and weeds were small and killed easily. Thicker stand, better regrowth and persistence looks great.
- RR alfalfa allows me to use less dangerous herbicides.
- Yields are about the same as conventional alfalfa. The weed control in RR alfalfa is easier and more effective. Control of perennial grasses is much better. And control of weeds in seedling alfalfa is also much better with RR alfalfa.
- I planted about 25 acres when the RR was initially released. I was very impressed with the weed control and lack of setback seen with other herbicides. The yields were very good and I think the stand persistence was also above average. This was a single observation and I did not take the yearly weather conditions into this observation.
- 2006 RR variety had a better germ rate than this year's Feb 2011
- We like it on the seeding year to control weeds and do not spray our alfalfa after that.
- the best hay I have ever on the first year of planting
- I think RR Alfalfa is a great crop that has many benefits including weed control especially during crop rotations which will help lead to better future crops.
- This has been the cleanest and consistently highest quality alfalfa that I have ever produced.
- Great rotational crop for our area
- Did not yield as well as conventional. Still had to use tr-10 and eptam.
- it has made it easier to control weeds
- New seeding in fall of 2011, just took a clipping so far.
- Able to apply Roundup Herbicide at early stage of alfalfa seedling growth.
- Weeds were less of a problem in the establishment year.
- I had a very difficult time killing the remaining stand and it was expensive to kill!!!
- Have experienced yield, quality and persistence improvements over conventional alfalfa. Ease of use. Higher income per acre return.
- Only negative I see at this point is that RR was not given the opportunity due to the lawsuits and our courts to develop more varieties that could produce higher quality and yields.

## Comments from growers who have grown RR alfalfa (continued)

- Used RRA once and it did exactly what we hoped it would do. It saved our crop and the stand lasted 3 years as normal. We may have suffered on yield a bit after the first year, but it did well after that.
- Main advantage is reduced cost of seedling weed control and control of tough weeds like nutsedge and dodder.
- I think it would be nice if the public were informed how resistant conventional alfalfa is to Roundup. It's extremely hard to kill alfalfa with Roundup.
- This whole issue will be a moot point within a few years. Herbicide resistant weeds have been around as long as herbicides. There's nothing specific to Roundup, except that it is easier to over-use than other products. There need to be strong penalties for growers who do not follow labels!
- I believe that if we are all good stewards and harvest our alfalfa crops in a timely manner, take care of any rouge plants around the edges we should be able to co-exist with little or no problems. None of my neighbors seem to be concerned about it.
- I am tired of hearing about the possible gene flow. I would like to see the organic farmers have to become responsible for the noxious weed seed flow that does exist. If the organic folks feel the need for a fund if they are harmed then the conventional growers need a fund set up by the organic folk to combat the noxious weeds. I think my father who is 85 summed it up best when he said why would anyone want to farm like we had to 50 years ago.
- Legal/regulatory uncertainties keep me from incorporating more RR alfalfa, even if cost was the same.
- Proper management and cutting will prevent most of these issues. I raise alfalfa more than 2 miles from the next alfalfa field and I am not worried about it at all.
- I'll never buy RR Alfalfa from WL ever again, regional manager kept getting me a 58% pure seed vs 91.1% they also have. Had to reorder and reship twice!
- Growers need to talk to neighbors about potential concerns and come to agreement.
- I think that there is too much worrying being done about the use of all technologies not only in crops but in livestock production. We will not be able to feed the growing population if the use of technologies do not exist.
- Our RR alfalfa field is in its 5th year and going strong.
- Question #35, even with the example of less than 0.3%, this question has a grey area.
- Keep government out of this.
- Roundup ready alfalfa is a personal right to choose
- I don't understand why roundup alfalfa was ever considered because there are many other ways to control weed pressure in alfalfa. Some of the large dairyman want grasses in their alfalfa fields for their feed rations. If you spray roundup on alfalfa fields that takes out the grasses that were planted. In my opinion you can take this junk off the market!!
- Coexistence will be successful with communication and cooperation from parties of interest.
- I have grown RR less than 100 yards from organic alfalfa for 5 years with no issues from my buyers. the only problem I have had is in the summer when army worms from my organic alfalfa head to my RR alfalfa as I cant kill them in the organic alfalfa. Let's have a fund for that-its a much greater threat than pollen flow.
- It's my opinion that we need to watch our environment very close. But I strongly feel that this should be done within the Industry. Agriculture has shown that it can deal with these issues.
- RR alfalfa is a mistake
- We have some fields which we would like to plant the RR because of the weed competition. The expense of the seed is also a concern.
- Still need to work on weed control, RR alfalfa is for after weeds come up, need something for before they do. This is what is an added cost.
- Why are we going to RR alfalfa when we have products that produce more already? We already have Roundup tolerant weeds we are just creating more of an environment to have more resistant weeds. This is just another way for Monsanto to obtain more money without yield advancement. I understand there is a Hybrid alfalfa in the market place that has exceptional yield and much better persistence than the roundup varieties. Why are we not embracing that kind of technology instead of lining the pockets of Monsanto!!

## Comments from growers who have grown RR alfalfa (continued)

- I like to plant winter wheat at the end of my alfalfa in the fall. RR alfalfa is difficult to kill and I don't like waiting for plant-back restrictions of the herbicides. so in some situations conventional alfalfa works better for me because I can apply roundup before cutting last crop and no till wheat direct into the ground
- All of our RR fields are more profitable than our conventional.
- With RR I can control certain weeds that most herbicides used on Alfalfa do not control.
- Since weeds don't choke the RR alfalfa out, we've been able to leave the fields in the original planting for years without having to reseed. Of our 35 acres of alfalfa, we have about 10 of them in RR, which look as good as the first year we planted them. The others have thistles, fox tail, etc.
- not much financial benefit for grower, more obligation with Monsanto has negative impact. Still need some work with contamination issue with traditional seed.
- RR has only been valuable during stand establishment. After that alfalfa in my area holds its own against weeds.
- Love it!
- Our experience is that we are not getting better yield, quality or persistence from RR varieties. RR does provide us the opportunity to establish better stands, with much greater weed control, at planting. Because of our isolated location, we do not feel that gene flow is a problem for us. This would likely not be the same for other locations.
- Due to extreme weed pressure on our ground, if RR alfalfa had not finally been released when it was, we would've been unable to continue farming. We and our 15 employees would be unemployed.
- Love RR alfalfa in the right place IE heavy grass pressure etc. rotation on my farm is the limiting factor for me
- Planted RR alfalfa in Fall of 06. Got partial stand. Sprayed distressed areas and re-seeded in Spring 07. Since RR alfalfa was then banned, didn't use RR to control weeds, so in effect didn't get to see benefits or negatives to RR alfalfa, other than kill off weeds to re-seed!
- I think I should be able to sue the organic farmers for all the weed seed they put out and the damage they do to the environment.
- I believe people who are concerned about RR alfalfa or any other GMO crops are a pain in the butt. These are people who whine about what they don't have a clue about what they are whining about; however they still want that glass of milk or steak. This goes along with Organic food. Are you kidding me?? I'm sorry but that's a joke. Farmers do not and cannot afford to apply pesticides or fertilizer over and above what is needed. It's the home owner that is polluting the groundwater and food. People do not realize N is taken into the plant as NH<sub>3</sub>- no matter if it is derived from manure or urea. And if it were not for pesticides farms would not survive and we would all die! Pull your head out all you Opera listeners and don't knock a farmer with your mouth full!
- I wish that those people who are so negative about RR could experience the benefits that I have waited over 30 years as a commercial alfalfa to see and experience.
- Not all seed has the RR gene, or they lose the gene I have seen herbicide kill later on in the stands life.
- Personally, I think the gene flow issue is overblown. That being said, if RR alfalfa improves my operation, why should I be restricted from growing it simply because my neighbor wishes to grow organic hay? If growing RR alfalfa improves my operation and reduces my costs, is that neighbor willing to compensate me for not growing RR alfalfa, if he is worried about gene flow into his organic field?
- The chance of cross-pollination is incredibly slim. If I had an organic farm neighbor, I would be much more concerned about his weeds infiltrating my fields and his bugs eating my crops.

## Comments from growers who use herbicides but have not grown RR alfalfa

- I don't believe in RR alfalfa
- What the hell about the Tech Fee to Monsanto at \$125/bag? Seems a bit steep, they should license the technology and call it good, it's already expensive enough.
- When this crop spreads off farm, and it will. It will become just another Roundup resistant weed.
- Roundup resistant weeds are developing and I am concerned about secondary impacts as roundup resistant weeds develop in other crops that are not roundup ready.

## Comments from growers who use herbicides but have not grown RR alfalfa (continued)

- I am concerned about the long term environmental impacts of RR Alfalfa. This perennial 'weed' is going to cause major issues.
- Unable to purchase the seed in Canada
- It fits our operations well, we need to control nutsedge and Bermuda grass with something besides the conventional herbicides we are using. They are not as effective as the grass/nutsedge populations have become more established.
- We produce alfalfa seed for export to non-GMO nations and Roundup ready gene flow contamination will be a problem. Monsanto needs to step up and market their product to these nations before it is planted in the states and causes a problem for the seed growers here.
- 1. Have had problems with Roundup sterilizing organic matter in soil.2. High elevation here, low tonnage per acre (less than 5 tons), hard to get back cost, about 5-7 years to break even on cost.3. Super weed worries. Seed Availability.
- If this is still free country than as long as the product is legal a producer should have the right to choose!!!
- I think this will be a great tool in our toolbox. I won't rely completely on RU but at least I have it as an option.
- We already have good weed control, and do not want to pay Monsanto any more.
- It is not worth it to lose my overseas market because my neighbor wants to plant RR alfalfa.
- I believe that improved tonnage has been over-stated.
- Tried to plant RR alfalfa before it was regulated, but seed was seized before planting. From others in my area who have planted it, they have seen exceptional weed control and longer productive stands from easier management in their weed control. They are much more flexible on when to spray in regards to weed size, plant development, and hay/grazing interval restrictions.
- RR Resistance
- Currently use Roundup to remove an alfalfa stand. What do with a RR stand to remove it? Need RR Timothy long before need RR alfalfa.
- The concern has always been its acceptance in the Far East export markets. Even though I don't export my hay, the strength of that market is essential to the success of my domestic market.
- Planted RR Alfalfa the year it was taken off the market. Had a drought that year and none of the alfalfa germinated.
- Watching RR alfalfa grow this year it appears not to produce as well as conventional alfalfa does. We had a very severe drought this year and little production. Some RR alfalfa that was beside conventional was not cut while the conventional did produce a little hay.
- There seems to be a large opportunity for cross pollination. Organic growers should perhaps be compensated for lost crops if it occurs
- In our production system we need varieties that can handle hoof traffic and not wear down a stand grazing in the fall months.
- Our farm is looking forward to planting RR this fall, (if product is available). I have heard the RR Alfalfa has a longer field life than traditional alfalfa and we are eager to see if this is true. We also hope RR alfalfa will help us to eliminate some of the dodder issues we have in our area. The potential negative of course being more weeds could become Round-up resistant, thus harder to deal with.
- Some concern about long term weed resistance problems.
- Our hay production is only from the aftermath from our seed fields. See below for comments.
- Very concerned about the weed resistance issue. We are growing other RR crops and glyphosate is not killing certain weeds by itself.

## Comments from growers who use herbicides but have not grown RR alfalfa (continued)

- While RR alfalfa has perceived benefits for some growers, I can see no monetary reason to justify the expense of this product. Producers in our region claim that weeds hinder feed value. However, weeds appear to have less negative impact on feed RFQ than a person might think. Additionally, producers complain that weeds lengthen crop dry-down time; however, many producers harvest alfalfa as silage, therefore, the impact on crop dry-down is negligible. Another point to note is that, again, in our region, dandelions are likely the most challenging weed to control, and glyphosate is not particularly effective on this weed. While I don't think that farmers should be prohibited from planting RR alfalfa, I do believe that over-use (that's over-use, not over-availability) of the glyphosate-tolerant trait has severely diminished the effectiveness of this product, to the extent that many corn and soybean producers find that glyphosate has become more of an additive, rather than a primary method of weed control. More use of Roundup Ready crops will continue to decrease the effectiveness of this once great product.
- We use other classes of herbicides for alfalfa to avoid resistance problems in RR cotton. Our rotation also includes wheat that gives even more chemistry diversity.
- Looks like a good way to grow a high quality, weed free hay.
- I grow a mix of forage grasses with alfalfa; thus round-up ready is not compatible. Also concerned about resistant weeds to round-up; these are increasing.
- Is a good fit for special weed situations
- Plan to put in apx. 100 acres next year
- We do a lot of crop rotations and use round up to take out the alfalfa before we plant our next crop, with RR alfalfa we wont be able to take out the old crop as well, further the spectrum of available herbicides for alfalfa is good enough that we don't have a need for the RR alfalfa.
- We are becoming to dependent on glyphosate, round-up, for weed control. need to use alternate methods of weed control
- RR doesn't fit my kill it with Roundup on the stand 36 hrs. prior to cutting the final cutting.
- Keep rr alfalfa out of Imperial Valley. We would be able to get a premium for our hay.
- A concern that I have with RR Alfalfa is if a Moratorium is implemented on the export of all Alfalfa. A Moratorium of all alfalfa exports sales has the potential of adversely affecting the market for both RR and conventional Alfalfa growers; this should not be taken lightly as such an event would be catastrophic to all Alfalfa Growers nationwide.
- If ALL my buyers say they can sell it then I will try it
- I have hear it doesn't test or yield as well and its too expensive
- I have spoken with all the major buyers of our alfalfa and none have a concern with RR alfalfa.
- Totally unnecessary for production and why jeopardize the organic markets for the sake of corporate profiteering
- RR alfalfa just makes good sense, you need to be as productive and efficient as possible, that's hard to do a field full of weeds!
- I'm a grower in the lower desert of So Cal; I haven't seen the results of appropriate dormancy varieties (RR alf) for our area. Additionally, I think it is currently priced to high (approx. \$7.50/#). I would consider planting an appropriate RR alf variety if the price were in the \$3.75-4.50/# range. I'm after Nut Grass control (purple and yellow nutsedge). My thought would be to plant RR alf in areas where nutgrass is a problem; currently, the cost for nutgrass control is less using current chemistry than planting RR alf. I wouldn't plant RR alf on a widespread basis, only in certain areas.
- When I get my gopher population under control I will plant RR Alfalfa. It also seems it may be the only real solution for lambs quarter. We are able to control it in our RR corn
- I am surrounded by RR corn and soy, both already have weed resistance issues, I so far prefer other strategies
- I don't see the need for RR alfalfa, I already have an effective weed control program for conventional alfalfa. RR alfalfa is to hard to kill when spraying out and direct seeding another crop.
- I grow alfalfa Hay and Seed, and I will not tolerate Monsanto contaminating my seed with their genetics, due to their poor stewardship. I have watched RR alfalfa in AZ. and the stand persistence is extremely poor. I am not against GMO, But it's got to perform much better than it does now before I would even think of planting any.

## Comments from growers who use herbicides but have not grown RR alfalfa (continued)

- Genetic contamination is only a problem in seed growing areas. RR seed needs to be produced in locations that are not traditional alfalfa seed growing areas. Hence 0.00% chance of genetic contamination. I grow RR corn and have nothing against GMO crops. My biggest concern with RR ready alfalfa is that unlike corn or soybeans, alfalfa is a very winter hardy, abuse tolerating perennial that will likely become another hard to kill WEED.
- No seed production in my area so should be no concerns about crossing
- I've had a few customers not want to purchase hay from me if it is roundup ready. I would suspect that a fair % of my horse customers would refuse to purchase RR alfalfa. A lot would depend on the attitudes of the advice their getting from vets. If there needs to be a lot of government regulation over the growing of alfalfa because of roundup ready, I would not want roundup ready alfalfa allowed to be grown. I believe that the cost of increased regulation by imposed fees, restrictions, and oversight on ALL the industry would not worth it. If available, I would seriously consider RR alfalfa where the yields are comparable to other varieties offered, and in a field where historic weed pressure is high. I have a nutgrass problem in all my fields which, I understand, roundup may not be very effective. Given roundup resistant rye spreading rapidly, not sure that I would escape expensive weed control programs. I would probably look for the advice from industry leaders such as you.
- Common Sense tells me that it is going to be a weed that is difficult to control and that it may become resistant to other control methods like other 'super weeds' we now have and cannot kill.
- So long as GE crops are scientifically proven to be safe there is no concern from myself. I have no tolerance for trade distorting barriers or false agendas based on feelings.
- This issue has been overblown by the opponents of GE and can be handled by using common sense and judicious placement of the RR alfalfa. It should be controlled by the seed companies vs. voluntary grower participation to insure good results.
- RRA is the start to other GE traits that can be used in alfalfa. The other GE traits would definitely benefit a larger portion of the growers - even for export. I'm not sold that it's the GE trait or genetic modifications that are continuously in question. I believe people are scared of 1 GE plant - the RR tolerant one.
- If Monsanto's gene ends up in my seed without my permission and causes me to loose a sale then shouldn't Monsanto compensate me for the loss? Monsanto needs to control their gene not the government. This should not be pitting me against my neighbor or my bee keeper either. Monsanto needs to be responsible - question is will they?
- For question 32- as long as I can get certified non GE seed. .For question 34- If restrictions are needed for GE alfalfa, then it should not be GE grown. Enforcement and control will not work. Question 36- The fund would not be large enough.
- #36, mandatory compensation would need careful monitoring. Too many freeloaders out there and folks trying to take advantage just to screw up the process!! No compensation for being a poor farmer!
- Hay harvest is a stressful busy time of year; I don't believe that most farmers will have the time to worry about if they are contaminating their neighbors.
- We also need educational awareness of steps to reduce RR intolerance (weeds) in older alfalfa fields.
- Talking to people in my community I have found that GE alfalfa is not a concern. There is a handful of people who are really loud but they don't like conventional either, just organic but even then they are rather uneducated of what an organic crop really is (i.e. believe that no sprays are ever used with organic crops). To me the biggest issue seems to be within the industry between conventional and RR ready. If RR ever becomes allowed for export I believe you'd stop seeing any concern whatsoever other than from a fringe group who want something truly organic (which in my opinion will lessen with time and being education a little more, like the fact that organic crops are unsustainable, and RR uses less sprays).
- The above questions are the very concern of having RR alfalfa grown in the Columbia Basin. With our dependence on the export market, trying to manage GMO alfalfa and maintaining our reputation as a premier alfalfa growing area raises some very negative implications to our oversea markets.

## Comments from growers who use herbicides but have not grown RR alfalfa (continued)

- The gene flow of alfalfa is quit a long distance. I see no way to limit flowering of RR alfalfa to stop the problem. I have seen flowering alfalfa right after it was cut. The primary reason is that when cutting there are some shout that lay down and are not cut off of the plant and these continue to bloom. This year some fields were never cut for hay but they did bloom in some spots.
- I have mixed feelings about Question # 36, but feel that if the RR industry inflicts harm on any producer, they should act responsibly.
- No farmer or seed company should be allowed to disturb the peaceful practice of current farm practices without restrictions or compensation.
- I can see where in many cases it will be difficult for both RR and traditional Alfalfa to coexist. Fortunately, where we are located it is not an issue. It would be nice to be able to farm a seed that could potentially have a higher return, be easier to maintain, and last longer in the field.
- We grow alfalfa for seed, and I am quite concerned with contamination of GMO traits entering our production through cross pollination with local RR hay fields. Unlike soybeans and canola, alfalfa relies entirely on insect pollination. I unfortunately can't control where our bees travel, nor can I ensure that my neighbors' fields will be hayed prior to bloom. How can Monsanto ensure that our production will be GMO free? Putting the entire policing emphasis on my neighbors is not fair for them either.
- In regards to a mandatory compensation fund, I believe that this would likely come in the form of some government oversight, and this is certainly what this country needs less of.
- It is unfortunate that genetically engineered crops are being judged in the marketplace more strongly by emotion than science - but I'm not sure how we beat those who profit from negativity.
- Herbicide applications already regulated by the county Ag Commissioner, in California...
- I am primarily a alfalfa seed grower who grows this small amount of hay. I feel that the round up gene has some potential problems that can be managed with come cooperation. I am more interested in the other genetic traits that can be coming. I am concerned that the adventitious presence of any patented trait could be a big marketing problem or a legal one that I cannot afford should the patent holder wish to make an example of someone.
- The contamination of RR with non-RR is an issue that has not been solved; look at other crops that are contaminated and the impact on the contaminated grower
- Unless a grower has a problem with Johnson grass, I don't see the need for RR alfalfa. Growers should pay attention to the basics, and only use RR crops when necessary.
- Coexistence is not possible unless all markets accept some level of AP in hay and seed.
- I think it will be impossible to keep the seed clean, that is no cross contamination. Eventually their will be no pure seed.
- How do you un-ring a bell?? To irreparably pollute/damage/contaminate the alfalfa gene pool in the name of corporate - Monsanto - profit is reprehensible. At what point do we say enough is enough when jeopardizing an entire industry for the benefit of a few?? The verdict is still out on GE and it will future generations that will likely pay the price.. Have you heard of thalidomide effect or the law of unintended; do we really understand/appreciate the long term implication of GE. No, but I'm sure future generations will!!!
- This is still America! We have Never been hungry! I honestly believe common sense will prevail! We do not need to create more fodder for useless politicians and ambulance chasing lawyers!
- Weed management is not a serious issue without RR. I would not like to see Monsanto have so much power. It would hurt competition in weed control innovation.
- In the low desert our alf crop must flower (75-110% bloom) between cuttings in order for growers to reach historical yield potentials. Limiting bloom to 30% (as a random number) would be virtually impossible. 80% of our market is for the retail industry. Pushback to RR technology, from the retail industry, is unknown at this time. Ultimately, the cotton industry has been revolutionized in the last 15 years because of the introduction of GE technology. I don't think RR alf is the silver bullet, that some may think, but it could provide a very needed alf variety that can be planted in problem areas.

## Comments from growers who use herbicides but have not grown RR alfalfa (continued)

- Vigilance toward negative impact from new technology is always appropriate. Let science do it's best to Quantify cost and benefit. That takes time. Our record of quickly diluting the benefit of RR in other crops does not encourage anything less than mandatory restrictions on management.
- it is still alfalfa that does every thing that an alfalfa plant is expected to do
- I think that we should be free to sue Monsanto and/or there Growers for damages if they contaminant our non GMO Seed or Hay.
- Along with farming I am a crop consultant that has been contracted to check roundup ready alfalfa fields.
- Don't have it on my farm and don't believe it belongs on any. Weed problems in alfalfa are a result of poor management and excessive successive stands of the same crop, and any regular application of glyphosate to any crop poses a problem but especially in alfalfa where no tillage is done for years.
- Our farm is managed by a farmer who does not share our philosophical views but RR alfalfa is, in my opinion, unsafe for those consuming it, the environment, and will only lead to resistant strains as Nature adapts with survival of the fittest. It is just like an arms race.
- May not be able not to kill it out when rotate to another crop
- Laws and Monsanto are extremely unfair in that if RR alfalfa spreads to your field, you are in the wrong. It should be the other way around; grower of RR alfalfa should be required to compensate non-RR farmer if RR alfalfa spreads inadvertently.
- We use alfalfa as a rotational crop to improve soil quality and reduce nitrogen purchases. Because of its high labor requirement we do not view it as a good cash crop, so are not highly concerned about the market.
- I think it is dangerous - too much conjecture about the low likelihood of resistance in weeds such as purple nutsedge (it may be unlikely but it is possible, even probable, that someone will abuse the technology with sub-lethal rates and breed a resistant strain) and there is no weed that cannot be controlled in some crop with the use of conventional herbicides, after which the field may be rotated back to alfalfa. RR alfalfa is an excuse for laziness and greed, no more.
- Some of the largest markets for Alfalfa in the world do not allow GMO alfalfa. Cross pollination concerns of RR Alfalfa planted near conventional alfalfa will contaminate the conventional variety and the export documentation, Phytosanitary Certificate, would have to note that possibility due to trade terms between Countries. This would eliminate the market.
- There is no practical way to prevent contamination; as with corn, the idea is preposterous. Regarding question 34: a third party organization might be the most fair option here, with no political or monetary ties to the industry. I understand wanting to increase yield and make profit, but we have strip mined the earth in our non sustainable farming methods and should be ready to take some responsibility in giving back as we take. Roundup is poison, plain and simple.
- My concern is this going to become a invasive species like the Kudzu vine. It had good intentions at the start and now is out of control.
- I am concerned about gene flow primarily during seed production. Also contamination during harvest, RR getting mixed with conventional. I think some farmers are only concerned with near term profit. Some may be unwilling to sacrifice.
- The entire labeling process has been a mess created by anti-capitalist individuals and organizations bent on controlling the amount of food that is produced in the United States and around the world. No matter how accurate the science that supports genetic modification safe adoption in farming systems, these individuals will remain rigid and will continue to stand against any corporation discovering these traits and the farmers who choose to adopt them.
- It is a known fact that weeds have developed resistance to Roundup from repeated application. Thus RR alfalfa is not viable long-term. Additionally voluntary regulation does not work, as a grower's own self interest and financial concerns are going to be of more importance than their neighbor's situation.
- #32 & #33 were answered based on my limited knowledge of the potential for cross pollination and the survival of the new plant. If the survival of the new RR plant is minimal perhaps some steps could be taken to coexist. I just don't know enough on the subject to make a decision.

## Comments from growers who use herbicides but have not grown RR alfalfa (continued)

- Cooperation among neighbors is not a natural phenomenon. Farmer's neighbors are their competitors, even if they are friendly, which often they are not. This has already been experienced in our area between melon and cotton growers and between alfalfa seed and cotton growers.
- This survey completely ignores seed production which is a very large market in terms of dollars per acre returned to the farm. Seed is susceptible to contamination due to the range of honey bees, commercial or wild, having a range of 5 miles for pollination. Any contamination of the conventional variety by the RR Alfalfa variety would make it unmarketable to the largest markets internationally. The International tolerance is zero% not 0.3%. You could not get a clean Phytosanitary Certificate for International shipment. There are 150,000 acres of Alfalfa in Imperial Valley. The 5 mile Honey Bee work radius make contamination inevitable.

### • Comments from growers who don't use herbicides, but not organic

- Don't use it.
- Corporations like Monsanto should not be allowed to patent crops, and then sue farmers who suffer from pollen drift from Monsanto crops to their own non-GMO crops.
- No comment
- Also don't choose to grow RR alfalfa because I want timothy and orchardgrass mixed in.
- We currently rotate our hay and crops in a 3 year rotation of corn, beans, hay. So weeds are really not much of an issue. I really don't want to feed any more GMO products to my horses. My dogs are already allergic to the corn in their dog food. What's next horses allergic to corn in grain?
- long term effects of GMO crops are not known; its too easy to contaminate other nearby crops
- I don't believe that GE plants have been proven safe, for cattle or for people. In fact there are studies that show that it is not, especially roundup ready varieties. And with the industry fighting the consumers desire to have GE foods labeled, it makes me trust them even less. Monsanto has perpetrated many injustices and they need to be controlled, rather than they being the controllers of the system as it now stands.
- Generally have a mix of Grass/alfalfa.
- We find value to use a forage barley cover crop planted with our alfalfa seeding. This provides excellent erosion control to protect the seedling establishment and an additional source of highly digestible fiber grass forage.
- Not needed. If the crop is mowed off timely the weeds are wiped out. The only weed problem I have had was dandelion.
- In our area herbicide use on alfalfa is not needed, four cuttings annually is all the weed control we need, and a large percentage of the our alfalfa is alfalfa/grass mixture. The organic producers are very concerned about GM alfalfa and rightfully so.
- Plant an alfalfa / grass mix
- Yield data doesn't justify cost
- I grow grass in all my legume stands.
- Concerned about environmental changes due to so much glyphosate already used, and think we still don't truly know all consequences.
- RR Alfalfa, if allowed, in the Imperial Valley would have a huge negative impact on all conventional grown alfalfa. First, the likelihood of contamination is certain. Second, marketing of our alfalfa would be very limited and would cause a huge decline in the monetary value of our hay and seed.
- Very concerned about gene drift from neighboring farmers.
- Potential organic growers I have talked with do not realize that their wishes could wipe out usually larger commercial farms around them. They tend to back down when they realize this.
- If you're going to grow RR alfalfa, and have contamination of .01 percent you should be held liable to whomever you contaminated!

## Comments from growers who don't use herbicides, but not organic (continued)

- Our farm has produced nice alfalfa for over a hundred years without Roundup Ready alfalfa, don't see any reason to try it right yet.
- If I choose to not use RR alfalfa and my neighbor does, then it puts me at significant risk of a contaminated food supply and legal issues with Monsanto. It is not unheard of for them to apply legal action to farmers who have non-voluntarily become victims of cross pollination from neighbor's fields. Did I say how much I hate and don't trust Monsanto? I hope that house of cards falls soon.
- Insects definitely would cross pollinate the plants giving no protection to those who don't want it. Outlaw it.
- The majority of alfalfa growers do not want this RR alfalfa. If all alfalfa is eventually contaminated with GE alfalfa, the rights of the organic growers, and those who want to grow only conventional alfalfa, will be greatly infringed upon.
- My customers want grass in the hay for horses. I don't want a solid alfalfa hay.
- again, concerned not enough truly known yet, think we opened Pandora's box, It looks good to start with, but I not sure it really is.
- Keep RR alfalfa out of Imperial Valley and any other area that dose not have it yet.
- Planted RR alfalfa in Fall of 06. Got partial stand. Sprayed distressed areas and re-seeded in Spring 07. Since RR alfalfa was then banned, didn't use RR to control weeds, so in effect didn't get to see benefits or negatives to RR alfalfa, other than kill off weeds to re-seed!
- Transitioning to organic.
- In properly managed alfalfa growth/fields, there should be very little or no weed problems. I see no reason to risk the endangerment of conventional seeds. I believe this is a method of control of seeds and thus food source by larger corporate ag companies.
- The restrictions on RR crops/GE crops in general should make the patent holder liable for damages related to chemical and genetic contamination. Trespassing is trespassing. If they own the genes in the pollen and enforce their contracts with growers the way they do, then I should be able to go after them in the same way when they can't contain themselves.
- Use of RR alfalfa will compromise those of us who do not wish to grow a GMO crop. Local seed producers will be affected as well as my customers who feed my crop.
- I rent most of my land at the time being. My renter manages and feeds this alfalfa for the time being. I think RR alfalfa looks like an enormous threat to my intended organic certification of my alfalfa fields and organic alfalfa seed production. Hoping to certify next year as my fields have not been sprayed in four years.
- If RR Alfalfa is produced and one of my neighbors use it, bees will carry pollen to my crop. My alfalfa will test positive for GMO's and I have built a business selling beef free of GMO feed. Plus I suspect some of the colony collapse problems stem from GMO's and the chemicals used with them. And alfalfa is the easiest thing in the world to grow without chemicals. Why select this world wide favored seed for genetic engineering? Makes even people not usually suspicious, suspicious of Monsanto's motives.
- Heard it is good. Can't wait to try this year.
- Contamination is the worst problem as there are both conventional and organic producers that do not want to be contaminated
- Once it is released, it is life and it will reproduce. We already have issues with cross contamination with our neighbors' GMO crops and this will add to it. We have been considering expanding our acres to market alfalfa, and this would hinder our process.
- I think the enforcement and rules should be placed on those who insist on GMO crops. Conventional growers should not bear the expense, even through the government. When any danger or problems are found, GMO sources should be held completely responsible for all damages. A compensation 'fund' should be established in advance.
- This is a perennial plant. There are alfalfa plants in the wild that will be vectors for gene flow so .3% contamination is just a starting point. It will persist in the environment and continue to contaminate at increasing levels as the wild population re-seeds itself.

## Comments from growers who don't use herbicides, but not organic (continued)

- Where property rights and impacts to crops are certain to occur with GMO presence, this damage to markets and businesses should be avoided. Don't let it happen in the first place by reversing the decision to allow RR alfalfa on the open market.
- Alfalfa seed production and organic alfalfa seed production are normal parts of farming here in North Dakota. RR Alfalfa is a threat to our normal practices. My intended organic alfalfa seed customers will not want any contamination and other farmers may not be allowed to sell or grow alfalfa seed carrying patented transgenes. How can this be protected with alfalfa growing wild across this state and so many bees?
- Where I didn't comment above it was because I want RR alfalfa seed production stopped, and don't believe that we can smooth over and use some standard when bees and pollen can travel miles.
- It was unfortunate that Congressmen Lucas and Saxby encouraged the Secretary of Ag to OK this technology. They are both getting money from the Biotech industry.
- With the ND winds, there is absolutely no chance for coexistence. In a few years all alfalfa will be GMO regardless if the seed is purchased or not. Then where will the grass-fed beef market be? We don't sell alfalfa but we do sell organic grass-fed beef. Thank you.

## Comments from organic growers (includes growers that have both organic and conventional)

- Used RRA once and it did exactly what we hoped it would do. It saved our crop and the stand lasted 3 years as normal. We may have suffered on yield a bit after the first year, but it did well after that.
- There is no way to stop the spread of GE pollen so GE plants should not be allowed. Similarly, there is no way to stop the abuses of the legal system by Monsanto so GE plants should not be allowed. Stopping the production of GE plants and animals solves both problems. Simplicity.
- The makers of RR Alfalfa have no right to spread their engineered life form without the express permission of landowners. The makers of RR Alfalfa inherently cannot control its infection into non RR alfalfa. The makers of RR Alfalfa should not be allowed to release their engineered organism into the environment if they cannot control its spread.
- Most dairy producers want quality grass will their alfalfa and it will be impossible to maintain seed germplasm that is not contaminated. I may have to go to the European market for gmo free seed.
- I just worry about modifying anything, what it will do to our eco system. Sometimes I think we need to leave some things alone
- Alfalfa with grass improves digestibility for the cow. How does RR alfalfa fit this known fact?
- 2 things: We have not conducted enough research to evaluate the long-term consequences of RR crops on the environment; I am concerned that RR crops will infect my organic food.
- I am very concerned about GMO seeds and foods. I think if everyone knew the issues it would be outlawed in this country.
- There is absolutely no way to contain it!!!!
- Because alfalfa is insect pollinated, there will eventually be no GMO-free alfalfa. They can't contain there technology.
- Coexistence with such crops as alfalfa will never work because of the very nature of the pollination of this crop. Secondly, to attempt to police any restrictions would be virtually impossible. We need look only as far as the refuge requirement in GM corn to know how difficult this is. And finally modern equipment for harvest seed is impossible to clean adequately to prevent contamination. Alfalfa especially travels long distances when it comes to seed purchases and sales and once the perennial alfalfa is in the land scape system it is there almost permanently whether it is road sides or pastures or fields.
- RR alfalfa will eventually contaminate all alfalfa and make organic and non-GMO alfalfa worthless to feed or market.
- I fear one day there will be repercussions of the use of GMO products that we will never be able to overcome.
- Given the resistance already developing as a result of RR corn, soybeans and cotton, why would we want to add to the problem?

## Comments from organic growers, includes growers that have both organic and conventional (Continued)

- I'm concerned about keeping the seed sources pure. I don't feel RR alfalfa is needed.
- I see no advantage to growing it.
- 1) All of our alfalfa is as alfalfa/grass mix 2) Our favored varieties won't be sold as RR
- With timely harvest, there is no need for weed control in alfalfa stands. GE perennial crops are scarier than most, in my eyes.
- Because alfalfa is insect pollinated, this gene will contaminate all alfalfa and honey with GM in very short time. Agronomically, I don't see any advantage to RR alfalfa. If there were away for farmers/ranchers to grow RR alfalfa with NO trespass on my land/crops/cattle, I'd be ok with it. But I do not see any way of keeping this gene contained. There is no public good in this technology.
- RR alfalfa will cross pollinate and contaminate all conventional alfalfas over time and also will contaminate all forage crops which will threaten our EU market for forage seed. RR alfalfa contaminating red clover seed and timothy seed going to Europe.
- I don't see the need for RR alfalfa, I already have an effective weed control program for conventional alfalfa. RR alfalfa is too hard to kill when spraying out and direct seeding another crop.
- I grow alfalfa Hay and Seed, and I will not tolerate Monsanto contaminating my seed with their genetics, due to their poor stewardship. I have watched RR alfalfa in AZ. and the stand persistence is extremely poor. I am not against GMO, But it's got to perform much better than it does now before I would even think of planting any.
- Better than a compensation fund is simply do not allow any GE crops. While you're at it, don't use roundup or other herbicides or pesticides. Farming works fine without any of these.
- It should be mandatory that if a person/corporation releases something into the environment, they are required to clean it up and compensate those who are damaged by that release.
- I think restrictions should be on users of RR alfalfa not conventional. Those who use to use GE crops should have to make the adjustments necessary so as not to affect their non GE neighbors.
- Open up Pandora's box--you already did--you can not clean up or fix this mess, the stupidity of government will not fix it universities are too far behind the curve and Monsanto is only out for profit. We were all fine without roundup ready alfalfa, but now as an organic grower I may be forced to never grow it again and switch to clovers--until they screw that up. in about three years, i will never be able to find alfalfa seed that is 100% gmo free, not even organic seed.
- I do not want my alfalfa to accidentally become contaminated with RR or GMO products thru cross pollination
- Question 33) As an organic farmer I already sacrifice some of my adjoining land with conventional neighbors. Question 36) Monsanto et al should foot 90% of the bill and farmers planting RR should foot 10%
- I skipped #33 because it doesn't pertain to me; I'm certified organic and I already make massive sacrifices in order to protect the food I produce (as well as the soil / water / air of our grandkids) from the really bad practices of my neighbors.
- The safety of our food supply is at stake. We need to act now to stop anything connected to GMO's.
- What is everybody going to do when it seeds out on the road or down the hwy etc. I wouldn't have the biggest problem if there was no contamination. But then there is ethnics, and probably a lot of unknown digestive problems with livestock and probably even down to the human chain of life!!!!!!
- But the compensation referenced in question 37 must originate from the pockets of those who use the potentially contaminating crop and not from the government or from some insurance coverage purchased by the non user of these crops.
- It has been rumored that brood cows fed GMO grains, forage, etc. are now having reproduction problems. I am beginning to wonder about my dad's cattle who are on GMO crop residue pasture having low birth percentages. My cattle don't have the problems his have since they are managed organically, no GMO anything. If there has to be coexistence with GMO alfalfa, like all other GMO crops, the restrictions will be put upon us who refuse to use it. We will only have our self-ingenuity to depend upon to protect our food and feed stuffs from contamination. Our neighbors and Monsanto could care less.

## Comments from organic growers, includes growers that have both organic and conventional (Continued)

- It is hard to coexist when cross contamination is so easy to happen, If Monsanto was more concerned about coexistence and not there WALLET, we wouldn't be having these problems.
- Question 34--Gov agencies are strong-armed by the industry. Industry--police itself???? I can't feature any of these options working. Only solution--eliminate the RR alfalfa. Also, tell the full story--glyphosates demineralize the plants, decreasing their food value. What are we gaining by RR alfalfa????
- Non RR seed fields must be strictly protected from GM contamination.
- RR alfalfa does not fill well with typical New England forage systems, though it could be OK for a quick (~2-3 yr) rotation with corn to replace continuous corn.
- To propose that we can mandate controls that will be effective in preventing the cross of RR alfalfa with conventional alfalfa is ludicrous and cavalier. This is a perennial crop, and the number of acres in alfalfa in my part of the world is very high. I believe we are crossing an extremely dangerous line with GM perennials.
- It's not just hay customers that are concerned about GM contamination - it's dairy consumers, too.
- European farmers are enjoying an important non- tariff trade barrier by banning GM crops. This will not change at the country level even though EU trade councils are relaxing import restrictions. I know this first hand by talking to Seed Trade members. RR alfalfa will become feral very soon in most areas that grow RR alfalfa which will limit exports of all forage species as alfalfa seed is hard to completely clean out of most other forage seeds.
- I have grown RR less than 100 yards from organic alfalfa for 5 years with no issues from my buyers. The only problem I have had is in the summer when army worms from my organic alfalfa head to my RR alfalfa as I cant kill them in the organic alfalfa. Let's have a fund for that-its a much greater threat than pollen flow.
- It's my opinion that we need to watch our environment very close. But I strongly feel that this should be done within the Industry. Agriculture has shown that it can deal with these issues.
- RR alfalfa is a mistake
- I think that we should be free to sue Monsanto and/or there Growers for damages if they contaminate our non GMO Seed or Hay.
- This ruins our market!
- As an organic hay farmer, I oppose the production of RR crops. They are not necessary, cause pollen drift and contamination. I will have to pay a laboratory to prove that my hay is not contaminated with the RR gene, even though I do every thing that I can to avoid RR pollen contamination in my fields.
- It is an unnecessary crop which contributes to an already severe problem with corporate control over agricultural crops. Health effects on livestock and thus humans have not been researched. Hidden beneath a false veil of choice for chemical farmers, it will in fact in the long-run eliminate choices for all of us, conventional and organic alike.
- I don't see the need for it in non-certified organic agriculture. It's a failing strategy, because weeds will evolve to overcome Roundup. The profits will go to the seed seller, and the environmental and health costs will accrue to the public. Recent research is showing that the Roundup Ready strategy has some very bad results for our environment and probably for human health
- This is an un-needed, unwanted and unnecessary product.
- don't want cross-contamination like in rape seed... so we don't want it ANYWHERE NEAR us
- 1 - GMO crops including alfalfa have not been properly approved, just like the chems so far have not 2 - the primary reason for lack of appropriate approval has been special interests 3 - we are at the '50th monkey' in this game, and GMOs are on their way out 4 - really need labeling
- If weeds in conventional RR varieties of Corn and Soybeans are becoming resistant to the RR chemical, why do we need to grow RR resistant weeds in alfalfa?
- Environmental concerns
- gene trespass is inevitable
- Cannot understand why anyone would want to use it. Weeds are controlled by cutting and how are you going to kill when you want to rotate crops?

## Comments from organic growers, includes growers that have both organic and conventional (Continued)

- As with any RR crop, there has not been enough research at to cross pollination and what effects it will have on the environment, not to mention what it is doing to people and animals.
- Properly grown alfalfa does not need weed control
- There is already a growing number of plant species that are resistant to RR and using it on alfalfa will only increase the speed in which resistance will develop. I produce alfalfa seed and having a RR field near-by could be a problem, especially with Monsanto's past history of suing farmers even if the field was contaminated by pollen drift. Also most seed cleaners would be loathe to clean seed if the possibility of contamination of a seed lot came in from the country and they didn't know its origin. Perfect clean out is just not possible with most cleaning equipment. This could spell the end of the local seed market, which is a multi million dollar market in South Dakota.
- The argument for GE crops that seems to gain the most public support is that it will enable more food to be produced and more people to be fed. At some point it seems that the human population will outstrip the earth's resources at the expense of the entire ecosystem. Even if GE crops yield higher, which isn't necessarily the case, is it really beneficial to postpone the day of reckoning, especially with crops that have unknown long term side effects on human health and the environment?
- The feed does not have the nutrition that organic non RR alfalfa has.
- Approval was pushed through without adequate research. Greedy big ag companies only care about how much money they can make and how much control they can have over farmers. The consumer is not thoroughly educated about the dangers of round up but we see it on a daily basis when we have a high rate of cancer in our county and even children being born with cancer. Also see damage to wild life - frogs born with only 3 legs!
- I think other growers should be able to produce RR alfalfa if they could completely prevent gene flow and exposure to honeybees. I do not think that such prevention is possible.
- I believe Monsanto wants to contaminate all seed stock so they can control all seed sources.
- The detrimental effects of GMO grain in our livestock feed will carry over into our human food supply. This is unproven technology, and only benefits a couple of companies that now control all of our seed. A dangerous situation for our world to be in.
- The right to grow RR alfalfa interferes with the right to grow RR-free alfalfa.
- No one should be forced into using GMO seeds if they are don't want to. Farmers that use RR seeds better be careful of GMO and Chemical drift. They are liable if a problem arises on an Organic farm.
- RR alfalfa genetics will spread uncontrolled. Someone's right to plant this new technology should not be able to overcome my right to not have the GMO genetics contaminate my operation (and with current patent law, open me to an infringement lawsuit from Monsanto). I have alfalfa intentionally planted in my pastures that can and do set seed from time to time. Any RR alfalfa planted near me will ensure that I am contaminated with the GMO pollen.
- All we have to do is look at what happened to Canola in Canada. All Canola has been contaminated with RR genes by cross pollination. The same thing will happen with alfalfa. Then Monsanto will have the terminity to sue us because our alfalfa tests positive for RR due to the work of pollinators.
- If it endangers a grower or consumer it is not right
- the use of similar traits in multiple crops, corn, beans, alfalfa will lead to even more resistant weeds as well as decrease the genetic biodiversity of our crops.
- we have planted some years ago for a neighbor. At planting time kill deer birds were picking seed up. We worry about contamination.
- 1. Scientifically against genetically-engineered crops, as the megatechnics behind them tends to violate the science of ecology. 2. Major safety concerns (regarding soil fertility issues, impact on livestock, etc.) about GMO crops. 3. Another long term profitability/science/etc. issue is that I don't buy from the largest vendors in concentrated agriculture sectors, as it tends to destroy profitability. In Monsanto's case they tend to dominate government, leading to irrational laws. 4. In Monsanto's case, I won't buy from a corporation that aggressively sues farmers for trying to maintain diversity.
- I do not want any negative chemicals, such as glyphosate, or in my soil, or neighboring soil, or on this planet.

## Comments from organic growers, includes growers that have both organic and conventional (Continued)

- Anyone who needs feels they need to use RR, needs to change their production model instead of expecting me to pay for it. GMOs are nothing more than a short-term profit model for a vertically integrated food system controlled by greedy profiteers.
- There is no such thing as co-exist. There are GMO canola found in ND state parks. This is not co-existing
- I believe that approval of GE alfalfa was an ill-conceived, insufficiently adjudicated, and reckless subservience to short-term, monopolistic Seed company interests. I fear that it moved forward because officials at the highest level of government have insufficient understanding of ecological systems, and an ill-informed faith in narrowly-conceived technologies. Because of this ignorance, they are able to misconstrue resistance to GE crops as a form of 'technophobia' in 'old-fashioned' farmers and consumers, in accordance with the marketing strategy of the biotechnology industry. To the contrary, many of us are disturbed by GE agriculture for precisely the opposite reason; it is a primitive, over-simplified tool which is unnecessary, unable to fulfill its stated promise, and unduly risky to cropping systems. The debate over GE alfalfa is important in and of itself, but is also a critical threshold in the development of further GE crops, for both political and technical reasons. Coexistence would be nice and I would support it if possible, but I have yet to see convincing technical evidence that it is a plausible tool in real systems. Coexistence tools may help buy time to seek a more intelligent approach to agriculture, since none of us know exactly how rapidly GE alfalfa will contaminate other fields; therefore I do not oppose such efforts under the current unsatisfactory regulatory regime. However all participants in coexistence planning need to be honest with themselves about the shaky integrity and understanding upon which the GE alfalfa promotion has been founded. The risks related to herbicide resistant weeds, to interference in healthy crop rotation in both conventional and organic systems, and to vibrant seed research and commerce are substantial and sobering. Responsibility for consideration of these risks rests on all of us as farmers, researchers, regulators, vendors, consumers. Thank you for the opportunity to comment.
- We need to hold growers of Roundup Ready crops responsible for damaging growers of non-GMO crops. The precautionary principle should be put into practice, in other words completely prove it's safe before it's put into use. At present we allow anyone to use any technology if they can make money, and when we find out the public is harmed, it's the public that suffers and pays. (public includes the environment)
- The expense and effort necessary to allow coexistence MUST be borne by the entities who are profiting from sales of RR alfalfa.
- How can this altered perennial possibly be controlled and kept from contaminating non-gmo fields? Bees, wind, birds, dropped seed, commingled seed lots...gene flow from this crop is impossible. Volunteer alfalfa shows up everywhere. It is impossible to harvest every plant in a field before blossoming and seed set. To this point all sacrifice has been the responsibility of non-adopters of gm technology. That is not coexistence.
- coexistence doesn't work. Period. Don't drink the Kool-Aid.
- Most of your questions above in this last section are not yes/no questions, and the 'depending' option does not provide enough detail 32 = it is not possible to coexist, you know that...33 = thus why ask about coexistence? 34 = industry/stakeholders including consumers, should have a say 36 = where is liability in this scenario?
- If weeds are present in your alfalfa fields it is due to poor soil management. Healthy soils provide for healthy alfalfa and not for weeds. A holistic view of an alfalfa field will yield little in the way of undesirable plants.... many plants have different elements and minerals that can be beneficial to the animals (target source) that consume them. So tolerating a certain amount of undesirables within the alfalfa field can actually be beneficial!
- I don't believe you can coexist when you cannot control pollination. there is no way to prevent unwanted crossing if the gene is out there. Many experts are recommending multiple species in forage crops as a better choice for cattle so why would anyone want to us RR alfalfa when it can cause market issues, is costly, and presents a risk to those who don't want it.
- When cross pollination occurs, it is the organic producer who suffers. Most RR producers give little concern to their organic neighbors. it is the organic producer who has to try and protect himself. Buffer zones are an idea with out much effect. It just keeps the sprayer boom off your land, for the most part. Coexistence has been suggested and tried on a number of RR crops and has failed. it cannot be done.
- I do not believe that coexistence is possible due to the nature of pollination.

## Comments from organic growers, includes growers that have both organic and conventional (Continued)

- Because of pollen drift and the fact that RR alfalfa will not always be managed as it should, contamination will take place, this is a truism of Murphy's law if something can happen it will.
- If my cows get on the neighbor's property and destroy his crops I am liable for the damage. If my neighbor's pollen gets on my property and destroys my crops why should he not also be liable?
- RR alfalfa should not be allowed.
- Compensation fund should be paid by Monsanto!!! They need to be held accountable for the damages they create!
- I think we need far more research concerning the effect of GE crops in general, but especially of RR alfalfa, on the health and production of honeybees.
- It is impossible for RR alfalfa and non RR alfalfa to coexist without high levels of contamination from RR alfalfa. Monsanto needs to prove that the chemicals they sell are not causing a large part of the health problems [heart problems, cancer, high blood pressure, etc.] seen today.
- I could support conventional farmers using the technology if and only if there was no risk of their crop could contaminate mine. Can you keep bees from crossing the fence? I view the liability of pollen contamination from GMO's the same as pesticide drift - plus 3 years to decontaminate and recertify the acreage affected. Does my neighbor's right to grow RR ready alfalfa negate my right to grow organic alfalfa? Besides contamination, does a pure alfalfa stand make the best feed for livestock and is it good for the soil? Pure alfalfa on HEL acres doesn't keep soil from eroding. Perhaps RR alfalfa acres should therefore not be eligible for any carbon credit or conservation programs.
- How are you going to control the pollinators traveling from field to field? All alfalfa will be contaminated with this GMO. What, are you stupid?
- The size buffers needed to control drift to any extent are workable only for very large acreages.
- Mandatory compensation won't be enough if there is contamination. It would take us out of the Organic Certification for 3 full years, but what's worse; it would ruin the integrity of our Organic land. We have been Organic since 1975. How could you replace that with money? It would take a very large settlement, and we still would be very unhappy.
- I do not see any option for co-existence with zero tolerance for people that do not want to plant the RR alfalfa technology. Based on all previous GM releases, non-GMO seed stock will be contaminated, then add that this is a perennial planting that can and does exist in the wild (think of the seed that gets washed in the ditches and waterways with a big rain after planting). Additionally that I have alfalfa in my pastures that does set seed from time to time. Seed setting helps me maintain alfalfa presence in the pastures.
- Coexistence is a sham and Monsanto has been well aware of this fact.
- I feel the glyphosate resistant gene is way over used in the world. The virus marker is likely to mutate and minute metallic vitamins and enzymes are being tied up with the chemical.
- #34 doesn't address what kinds of changes/restrictions. Various Monsanto laws now on the books make it illegal to be contaminated by Monsanto, so farmers who are contaminated can be sued by Monsanto, not the other way around, as your survey suggests. This survey is biased in favor of Monsanto, as major issues against Monsanto are not mentioned, as in my comments. Apparently you're afraid that you would look biased if you went against the convention of allowing Monsanto to dominate farmers, by including stronger multiple choice options against Monsanto. What Monsanto has been doing for years should not be legal, and the culprits should be behind bars.
- I am disappointed that a company who patents a gene within a seed ends up controlling the whole seed. This is absolutely immoral. When a company cannot control contamination because of pollen drift. They should have no rights to claim ownership once they sell their seeds to another producer. All farmers should have the right to retain their own seed or sell their crops as seed to others no matter where or who they purchased the seed from. FSA payments have yet to be enforced for obvious soil erosion that occurs on land that receives payments. What possible system could be created that would police the growing of RR crops?