Note: Pages extracted from Final Environmental Impact Statement (FEIS) for Roundup Ready Alfalfa December 2010

B. Description of Alternatives

This EIS analyzes the potential environmental consequences of a proposal to grant nonregulated status to glyphosate-tolerant (GT) alfalfa. APHIS considered the impacts to the human environment of three alternative actions, each of which are described in more detail below:

These alternatives include:

1. Deny the petition (no action alternative).
2. Grant the petition in full (preferred alternative).
3. Allow the commercialization of GT alfalfa using a combination of restrictions on hay and seed production designed to promote coexistence. It includes a combination of best management practices, isolation distances, and geographic restrictions (preferred alternative).

These alternatives represent a full range of reasonable alternatives in reference to the petition for nonregulated status of GT alfalfa and are framed to highlight the issues associated with the cultivation of GT alfalfa if it is allowed to have nonregulated status. These alternatives vary in their feasibility based on regulatory and economic considerations. An additional alternative is analyzed in detail in this final EIS. The inclusion of this alternative in the detailed analysis is based on public comments on the DEIS. Several commenters believed that an alternative that considered isolation distances and geographic restrictions was reasonable and should not have been dismissed from detailed consideration as it was in the DEIS.

APHIS is therefore analyzing the additional alternative in detail. This third alternative combines very specific isolation distances and geographic restrictions. Additional alternatives rejected from further consideration are discussed in Section C below.

1. No Action

Under the No Action Alternative, APHIS would deny the petition to grant nonregulated status to glyphosate-tolerant (GT) alfalfa lines J101 and J163, The lines would continue to be subject to the regulations in 7 CFR part 340. Permits would continue to be required to introduce viable GT alfalfa plant material[2]. Permit conditions would be specified by APHIS. These conditions would be designed to confine GT alfalfa. The size of planting would be limited to help maintain confinement. In addition, the number of permits granted would be limited by agency resources, both in terms of the number of permits which could be reviewed by APHIS, and in APHIS' ability to inspect the fields and enforce compliance with regulations. Therefore, the number of acres planted and the amount of seed and hay transported between states would likely be far less than the current commercial production of conventionally-bred alfalfa for seed and hay in the U.S. In time it is expected that the number of acres of GT alfalfa would decrease because the alfalfa that was planted while GT alfalfa had nonregulated status would be replaced by conventional varieties.

2. Grant Nonregulated Status to Both Lines (Deregulation Alternative)

Under the Deregulation alternative, GT alfalfa would be granted non-regulated status and would no longer be subject to the regulations at 7 CFR part 340. Permits or notifications issued by APHIS would no longer be required for introductions of GT alfalfa derived from these events. Under this alternative, growers could freely move and plant GT alfalfa seed without further oversight from APHIS. Although APHIS would no longer have any regulatory control over the planting, distribution, or other actions related to GT alfalfa, APHIS does assume that growers would continue to be subject to contract restrictions imposed by Monsanto's technology use agreement.[3] These non-regulatory restrictions include managing hay to prevent seed production, harvesting at or before ten percent bloom in areas where seed is produced, and prohibitions on use in wildlife feed plots. Similarly, growers who raise alfalfa for seed are assumed to be directly contracted by the licensee, Forage Genetics, and are required to follow Forage Genetics Best Practices. These management practices include pollinator management, specific isolation distances, stand termination documentation, and product segregation (FGI, 2007). The developer, Forage Genetics International, predicts that approximately 50 percent of the alfalfa acres would be planted to GT alfalfa. There is a

[2] Introduce is defined in 7CFR 340.1 as: To move into or through the United States, to release into the environment, to move interstate, or any attempt thereat.

[3] http://www.monsanto.com/SiteCollectionDocuments/Technology-Use-Guide.pdf

prediction that the majority of these acres would be located in the Western U.S. Because glyphosate is not labeled for use on seed in all states, only in those states where it is labeled for use on seed will likely have any GT alfalfa seed production.

3. Combined Isolation Distances and Geographic Restrictions on the Production of GT Alfalfa

Alternative 3 (Isolation/Geographic Restrictions Alternative) describes a combination of isolation distances and geographic restrictions on hay and seed production to address and resolve coexistence issues and concerns about risks of cross pollination and other potential impacts to conventional, and organic alfalfa producers while allowing the commercialization of GT alfalfa. This third alternative would impose management practices for the planting, harvesting, use or sale of GT alfalfa seed and in some locations hay. This alternative could be implemented by an APHIS decision to deregulate in part, or through a Federal/industry partnership arrangement. Under this alternative, the developer (marketer) of GT alfalfa would ensure that end users are using the required management practices. They might choose to do this through contracts or licenses, or by other means. A training component would also be part of the program to educate producers about the required stewardship practices. Reporting requirements for the developer (marketer) subject to verification would be used to ensure compliance with the terms of the program. Under this alternative, failure to comply with the requirements may result in penalties to the developer (marketer). The required management practices would undergo periodic reviews to determine if modifications were warranted. Changes to the management practices would be approved based on available data on their effectiveness in supporting coexistence.

The following is a description of the very specific management practices that would be included in the requirements described above for GT alfalfa.

GT Alfalfa Production

- GT alfalfa forage fields may not be harvested for seed. The only GT alfalfa seed fields would be in the geographically restricted areas, described below, that are designated for GT alfalfa seed.
- GT alfalfa seed bag labeling and seed identification (e.g., a unique seed colorant) would be required. These product identity mechanisms would be designed to notify all GT alfalfa forage growers of the presence of the GT alfalfa trait and the geographic limitations for product use.
- An annual report would be submitted to the USDA summarizing activities in education and training, monitoring, and compliance with the conditions of this license agreement. The USDA or a designated third party could audit the petitioner's records to determine compliance with the conditions of this license or otherwise investigate potential noncompliance with these conditions.

- Develop an education program and provide training to ensure that all growers, distributers and handlers of GT alfalfa are aware of the management practices, geographic restrictions and the isolation distance set forth in this licensing.

GT Alfalfa Forage

- In Tier I states there are no restrictions on planting GT alfalfa for forage production. Tier I states are those states in which commercial alfalfa seed is not produced. The 2007 Census of Agriculture identifies these states as: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, Pennsylvania, Maryland, Delaware, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Tennessee, Kentucky, Indiana, Illinois, Wisconsin, Alaska, and Hawaii.
- Tier II states are those states that produce some seed, but seed production is limited to less than one percent of the total U.S. seed production. States in Tier II are: Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, New Mexico, New York, North Dakota, Ohio, Oklahoma, South Dakota, and Texas.
- In Tier II states, GT alfalfa planted within 165 ft of a seed field must be harvested at or before ten percent bloom.
- Tier III states produce more than 1 percent of the U.S. alfalfa seed. These states are: Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.
- In Tier III states GT alfalfa for forage cannot be planted in counties where seed is grown (based on the 2007 Census of Agriculture). If a GT alfalfa forage field is located within 165 ft of a conventional alfalfa seed field (which may occur on the border of a county), the GT alfalfa grower must harvest forage at or before ten percent bloom. All GT alfalfa forage growers are required to report GPS coordinates of all GT alfalfa forage field locations. GPS field location information will be made available to the supervising program and seed certifying agencies for monitoring and for enforcing the planting restrictions applicable to GT alfalfa forage fields.

GT alfalfa seed production

- GT alfalfa seed production will be limited to the geographic areas in Tiers II and III where the grower can maintain isolation distances of 5 miles between GT alfalfa and conventional alfalfa.
- Field locations will be identified by GPS and will be included in the annual report to USDA. Location data will be made available to official seed certifying agencies upon request.

- Equipment will be used only for GT alfalfa seed production or cleaned by an appropriate protocol to remove GT alfalfa from the equipment before use on other (not GT alfalfa) crops.
- GT alfalfa seed will be handled and stored in a way to prevent comingling with other agricultural products.