

Genetically Engineered Crop Committee
Subcommittee Report: Tracking and Monitoring
June 29, 2009 (DRAFT)

Although genetic purity can never be guaranteed, it seems improbable that identifiable transgenic inputs exist in Lake County at the present time. The small patch of corn that is the single GE crop known to have been cultivated here may indeed have pollinated other corn within a fairly large radius (the Seed Savers Exchange recommends a one-mile buffer zone; see Appendix B) but the rate of dispersal diminishes rapidly with distance¹ and unless these neighboring growers saved and replanted the seed the GE traits terminated in a single generation. Corn has no compatible wild relatives in this region (or anywhere in the United States), and is incapable of establishing feral colonies². If GE alfalfa hay has been imported into Lake County (something which cannot be determined) and subsequently persisted as a volunteer, some remnants of the engineered genome might continue to exist, with the potential of reproducing ferally, but even though these plants would contain a glyphosate-resistant gene that confers an adaptive advantage their extreme scarcity would make their continuation in the genome improbable from a statistical perspective. Lake County's geographic isolation makes the presence of other GE influences still more unlikely.

If additional GE crops are cultivated here unintended consequences will vary on a case by case basis. For example, a plant engineered to produce sterile pollen (as has been proposed for a crown gall-resistant walnut rootstock now in development) would not be expected to have any effect at all on either the cultivated or compatible wild genome. On the other hand the genetic influence of a plant (such as canola) which has pollen that travels long distances and a propensity to interbreed with a number of related species³ would be to all intents uncontrollable. A number of considerations should be evaluated in assessing the probability of unwanted gene flow, including the geographical distance of pollen drift (see Appendix B on Buffer Zones), the structure of the flower (for example, soybeans self-pollinate before their blossoms even open), whether the plant is a biennial normally harvested before flowering, or otherwise unlikely to reproduce, the probability of viable seeds persisting in the field, or being spread by natural means, the degree of adaptive advantage conferred by the genetically engineered trait, and the existence of non-GE crops, feral populations, or compatible wild relatives in the vicinity.

Nor is the possibility of unintended gene flow limited to accidental cross-pollination. Numerous instances have been documented of intermingling of seeds, entry of products not intended for human consumption into the food chain, and shipment of GE crops to markets which bar them⁴ Management of test plots of crops not yet approved for commercial distribution is particularly problematic, since APHIS does not routinely track compliance of permit holders, review containment protocols, or evaluate harmful effects

¹ Gilbert S. Raynor, Eugene C. Ogden and Janet V. Hayes, "Dispersion and Deposition of Corn Pollen from Experimental Sources," *Agronomy Journal* (July 1972)
<http://agron.scijournal.org/cgi/content/abstract/64/4/420>

² Norman C. Ellstrand, "When crop transgenes wander in California, should we worry?" *California Agriculture* (2006, Vol 60 #3)

³ Suzanne Ashworth, *Seed to Seed* (202)

⁴ Miguel A. Altieru, "The Myth of Coexistence: Why Transgenic Crops are not Compatible with Agroecologically Based Systems of Production," *Bulletin of Science, Technology & Society* (August 2005))

on the environment.⁵

In order to minimize potential hazards while simultaneously enjoying the advantages that some GE products may offer, the special characteristics of each must be considered. Many if not all may require registration, under conditions imposed to minimize gene flow or trait-specific adverse consequences such as the creation of herbicide-resistant weeds. Since the likelihood of adverse effects on neighboring growers will vary according to the nature of the neighboring agricultural operations, information about the existence of GE crops in the vicinity must be made publicly available. Transparency would also be improved by maintaining a voluntary registry list of individuals who wish to be notified of any new proposals for cultivation.

Grower anxiety about the possibility of confrontational activism, perhaps even extending to vandalism, is another subject that should be addressed: farmers who comply with a permit/notification process must be assured that their right to the peaceful enjoyment of their property will be strenuously protected. When conflicts exist, as seems inevitable, the principle "first in time, first in right" could be considered as part of an equitable resolution.

If Lake County adopts a regulatory structure to manage the introduction of GE crops, it must also devise a protocol to qualify a given crop as safe. Aside from evaluating the probability of unintended gene flow as detailed above, such a protocol should include an evaluation of the benefits conferred by the crop in question, possible hazards to other growers or the environment, and the means for achieving legal and economic redress should harm occur to others. The operations of such a structure should also be completely transparent to growers and other concerned citizens, and to the extent feasible minimize both administrative costs and interference with individual freedom of action.

Other possibilities that the subcommittee believes should be considered include

- monetary compensation for farmers who can conclusively demonstrate economic loss by being unable to grow a GE crop, possibly funded through a fee imposed on agricultural land that is converted to other uses
- a recommendation that the Board of Supervisors ask our legislators to pursue a national labeling law for GE crops, and the manufactured products that contain them
- a recommendation that the Board of Supervisors ask our legislators to promote periodic review of the "substantially equivalent" designation, and the systematic conduct of rigorous and objective studies on the long-term health effects of GE products.
- a recommendation that the county review its purchasing policy to favor non-GE products to the extent that these are identifiable and competitive

⁵ United States Department of Agriculture, Report of the Inspector General, December 2005 (<http://www.usda.gov/oig/webdocs/50601-08-TE.pdf>)

Appendix B: Buffer distances

The following distances are recommended by the Seed Savers Exchange. For additional details see Suzanne Ashworth, *Seed to Seed*, (Decorah, Iowa, 2002)

5-10 miles: spinach

One mile: *Brassica oleracea* (broccoli, cauliflower, cabbage, kale), corn (including popcorn), okra (although insect pollinated), onions.

one-half mile: beets (including swiss chard, radish, runner beans (cross-pollinate with other runner beans))

quarter mile: arugula, carrots (from other carrots and wild Queen Anne's Lace), watermelons, malabar spinach (doesn't cross with regular spinach), cucumbers, eggplant, "melons" (cantaloupes, muskmelons, honeydew, snake melon and Armenian cucumbers), squash (within the same species: *C. maxima*, *C. mixta*, *C. moschata* and *C. pepo*), gourds.

Miscellaneous shorter distances: peppers (separate by at least 500'), 'peas (separated by 50'), lettuce (slight chance of cross-pollination so separate by 25' from other varieties that are going to seed), tomato (cross-pollination between modern varieties seldom occurs, except in potato leaf varieties which should be separated by the "length of the garden").

Do not cross pollinate: garden beans, **soybeans**, tomatillo, garden huckleberry (*Solanum melanocerasum*)

NB: a number of these crops are biennials, and cross-pollination would not ordinarily be a problem unless they are being deliberately allowed to go to seed.

=====

Other buffer information

Alfalfa: two fields each less than 5109 feet from a given beehive might cross (<http://www.ars.usda.gov/is/AR/archive/oct01/pollen1001.htm>)