WHAT ARE THE KEY ELEMENTS TO IMPLEMENT COEXISTENCE BETWEEN GE AND NON-GE ALFALFA?

By Philip Bowles[1]

SPEAKER BACKGROUND

Phil Bowles is the president of Bowles Farming Company, Los Banos, CA, an intensive farming operation that produces alfalfa hay, cotton, tomatoes, and wheat under irrigation. It is one of the oldest farms in California, with a history going back to the 1850s. He is a graduate of Yale University, with a degree in Drama, and was a member of California Ag Leadership Class XVI. Phil Bowles is current chair and founding member of the California Alfalfa & Forage Association, and a grower representative to the National Alfalfa & Forage Alliance.

HOW WOULD YOU DEFINE COEXISTENCE?

Whatever growers decide to do should not interfere with the practices of neighboring growers, within reason. Sometimes, incompatible practices cannot coexist, and one or the other must be heavily restricted. For instance, in many states production of weasels or ferrets is outlawed because of the risk to the poultry industry; the fishing industry as we speak is attempting to balance the needs of fish farmers and wild fish harvesters. Cotton can be grown as a semi perennial crop, but the practice is prohibited (at least in California) in order to disrupt insect pests' life cycles.

IS COEXISTENCE POSSIBLE?

Coexistence between conventional and organic growers ought to be possible, but it will take both sides to make it work. On the conventional side, the pesticide use and reporting rules in California ought to be implemented nationwide. Our system allows everyone to know what material was applied, when, where, how, and why. On a more local level, simple neighborliness ought to suffice. For their part, the organic industry and its consumers need to separate myth from reality. There is nothing wrong with growing crops without the use of herbicides and pesticides. All home gardeners ought to follow these practices. As with fly fishing instead of gill-netting, it may be a little more trouble, but can be very rewarding and informative. Fly fishing will not feed the billions, however.

People who grow and consume organic produce are driven by concerns over the safety of their food, and the dangers they feel conventional agriculture presents to workers and the environment. While to many of the rest of us the risks seem negligible, the concerns themselves are certainly ones that any thoughtful human ought to share. Pesticides and herbicides are

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dangerous chemicals; we can discuss the science about whether and how they ought to be used. However, organic consumers and producers need to separate the physical from the cosmological. Quackery is quackery. Promulgating medieval nostrums about plant nutrition is constitutionally protected religious expression, but it is not science. The hysteria over the perceived dangers from GMO crops is nearly as unsupportable. Bacteria (yes, even those found in organic cheese) and viruses have been happily exchanging DNA for eons. Creatures in nature such as *Malacosteus niger* are transgenic: this fish makes chlorophyll (probably from ancient genetic material borrowed from an algae) not for photosynthesis but for vision in the red spectrum. Our own human genome contains the remains of ancient viral invaders; as we decode more genomes, and increase our understanding of infectious and inherited diseases, I suspect we will find that most, if not all, life forms contain genetic material not only from other species, but even from other orders, or possibly higher taxonomic ranks. Serious environmentalists, like Stewart Brand, realize that the potential benefits from GM technology far outweigh whatever risks might arise from its use.

Asking, or requiring, other growers to modify their behavior to accommodate the legitimate business interests of other growers is acceptable. Turkey farms agree to mutual isolation distances that protect their animals from infection, for instance. This issue becomes more tricky when growers are asked to modify their behavior because of the religious beliefs of other growers and/or their customers. Should a pork producer not be allowed to operate near a Kosher poultry plant, lest the proximity of an unclean animal affect the poultry operator's Kosher customers? Most people would suggest that the Kosher producer should find a more congenial location for his business. A similar shift in balance is appropriate when objections to field practices are based on the *feelings* of the complaining party, rather than their competing commercial and property rights.

WILL THE INTRODUCTION OF ROUNDUP-READY ALFALFA INEVITABLY RESULT IN THE DESTRUCTION OF ORGANIC, EXPORT OR OTHER GE-SENSITIVE ALFALFA PRODUCTION?

There is no reason to believe this insofar as GM is concerned. People around the world are rapidly losing their fear over GM crops. I'm not aware of one case, one time, anywhere when someone got so much as a bellyache from exposure to or eating GM plants. There have been billions of meals eaten, over more than a decade, and no one has gotten ill from DNA poisoning. Ever. But as long as there are consumers who want food grown without *pesticides and herbicides*, there will be growers eager to meet that demand, and more power to them. Many organic growers find an inherent virtue in practicing the ancient methods, the same way some fine woodworkers eschew power tools. This is a principled and disciplined approach to life we should admire. I often buy organic produce, not because of any safety concerns, but because of the more interesting varieties, and sometimes higher quality. Farmers working near homes or public parks can find it less trouble to just farm organically. Organics is a big business, and those of us who practice IPM can learn a great deal from successful organic farmers. Growers who do

not supply that market should be required to take all *reasonable* precautions to ensure that the organic industry can continue to serve its customers, such as controlling spray drift and managing pesticides in drain water, and in managing pollen drift from GM crops. But they cannot be expected to remain in a time warp, and abandon tools just because someone, somewhere, might detect the presence of something that makes them unhappy, but not unwell.

IS ZERO CONTAMINATION OF ALFALFA HAY OR SEED POSSIBLE? HOW SHOULD ACCEPTABLE THRESHOLDS FOR CONTAMINATION (WHETHER ZERO OR LOW LEVEL PRESENCE) OF GE-SENSITIVE HAY PRODUCTION BE DECIDED?

"Zero" is a mathematical conceit not identifiable in nature. Absolute zero, a perfect vacuum; these are useful constructs for theoreticians, but abstractions just the same. Every day we make risk decisions based on perceived value versus perceived risk. Do I drive my child to the doctor, risking a car accident, or do I ignore the pin she just jammed in her eye? The same logic applies, or should apply, to pesticide residues, genetic purity of all seeds (not just GM), and most other regulatory standards. Erring on the side of safety over commerce, regulators and consumers need to stop making the perfect the enemy of the good. The only people who live risk-free are dead.

HOW IMPORTANT IS A COEXISTENCE STRATEGY FOR ALFALFA?

At the moment, there is a substantial portion of the alfalfa industry that is not farming organically, but which depends on being able to furnish non-GM forage for their customers. As long as this is the case, their interests must be protected. Producers have gotten along fine without GM alfalfa; so if push comes to shove, the legitimate commercial interests of the non-GM folks have to come ahead of those of us who plant the Roundup ready varieties. In most locations it is not an either-or choice, but more a matter of figuring out, on a regional level, how to play nicely with one another. The seed companies need to cooperate as well, and agree not to furnish seed to areas where it is not presently wanted, like the Imperial Valley. But some might ask, what's to prevent a renegade grower from buying seed elsewhere and planting it in a prohibited area? At least in California, because of our exemplary pesticide reporting and use regulations, this would be very difficult, and very illegal. Our renegade grower would have to conspire with a licensed PCA and licensed applicator to falsify a report, or fail to report altogether, the application of Roundup to his alfalfa crop. Perhaps he could do the application himself, without a written recommendation. But he would still be in violation of the law. Farm communities are small. Except during football season, the principal weekend amusement consists of driving around to see what the neighbors are doing wrong. A completely weed free alfalfa field, or one with standing dead monocot and dicot weeds, is pretty darned obvious. Our hypothetical renegade would not get away with his misdeeds for very long.

My guess is that within a decade, the widespread acceptance of GM crops will make many of these issues disappear. China is aggressively courting genetic scientists to relocate there. Roll-

your-own gene jockeys can gear up today for less than $100,000. The United States can remain in the top tier of countries in carrying out responsible and useful genetic research, including research into the risks presented by this new technology; or we can abdicate our place, and let other nations and individuals do as they please. The future of agriculture is not a return to the seventeenth century. New technology will be required to feed the billions coming, and this progress cannot be stopped. The cat is long out of the bag.

NOTE ON THIS PUBLICATION:

This article is published as a part of a panel discussion on Coexistence between Genetically-Engineered (GE) alfalfa and non-GE alfalfa held December 13, 2011 at Las Vegas, NV at the Western Alfalfa & Forage Conference. Each panelist was asked for their views on coexistence, guided by several specific questions. ***Background:*** *As a general background, Roundup Ready alfalfa was first released in 2005, and subsequently the subject of a lawsuit which precluded further planting from 2007 through 2011, while USDA-APHIS conducted an Environmental Impact Study. A key component of both the lawsuit and the EIS was the question as to whether gene flow and contamination would harm non-GE growers. USDA-APHIS decided in 2010 that Roundup Ready alfalfa was safe for the environment and further plantings were authorized early in 2011. However, coexistence between divergent systems remains an important issue, particularly for organic growers, seed growers and companies, and exporters. Subsequent documentation and efforts to encourage coexistence and solve the issues between GE and non-GE production have been ongoing by farmers, companies, hay grower and seed groups, Universities, and government agencies.*