

## **Transgenic Legislative Committee inquiry.**

### INTRODUCTION

Leopold Center position re. transgenic technology relative to agriculture.

\*LC Advisory Board decided a number of years ago NOT to engage in research specifically devoted to transgenic modifications. Since our legislative mandate requires us to promote research specifically to reducing negative environmental and socioeconomic impacts of agricultural practices and in developing alternative practices that are consistent with sustainable agriculture, and because this research tends to be very expensive making it impossible for us to have much of an impact with our limited resources, it was decided not to invest our resources in this technology. This decision was arrived at in part as a result of research conducted in 1998 by Mike Duffy which indicated that farmers in Iowa who raised transgenic crops compared with those who did not experienced “no significant difference in returns.” That study was repeated in 2000 and “found the same results.” At a American Seed Trade conference in 2001 Mike presented his overall conclusions in which he suggested that “the primary benefactors” of transgenic technologies were “the seed and chemical” companies. (DUFFY STUDIES)

Given these findings we felt that investing our scarce research dollars in this technology would not be consistent with our mandate to reduce the “socioeconomic” impacts of agriculture for farmers.

We do understand, of course, that farmers benefit from these technologies---and that benefit appears to be primarily that it enables farmers to simplify their pest management practices, which, in turn, enables them to manage more acreage. The practice of adding acreage each year to increase income to pay last year’s bills is, of course, one of the principle survival strategies farmers have to employ to stay in business in today’s dismal farm economy. But in our view that strategy does not lead to economic sustainability and has other, well known, side effects.

\*Whether or not transgenic technologies reduce environmental impacts is still widely debated. While many claim that transgenic technologies have led to reduced pesticide use, some studies, using USDA data, have disputed that claim (Benbrook).

\*Our position re. transgenics has been to avoid the good/evil dichotomy. If history is any guide, this technology, like most technologies, can have some unanticipated consequences that may be undesirable for both farmers and the environment. At the same time this technology may prove very beneficial. But in our view it is always prudent to view any new technology, especially a technology that did not evolve with nature, through the lens of an ecological screen. Two “laws of

technology” may well be applied in this case---one was articulated by climatologist Stephen Schneider:

1. The bigger the technological solution, the greater the chance of extensive, unforeseen side effects and, thus, the greater the number of lives ultimately at risk.

The second comes from the pen of Aldo Leopold:

2. The greater the rapidity of human-induced changes, the more likely they are to destabilize the complex systems of nature.

These laws of technology beg for ecological screens against which to test the potential effects of technologies before they are released into the environment.

One final observation with regard to transgenic technologies seems worth mentioning. The current application of transgenic technology unfortunately for farmers does not attempt to change the paradigm which has bankrupt them using chemical technology. The reason is clearly articulated by Joe Lewis, Pest Management Specialist with the Agricultural Research Service.

(quote)

An increasing number of geneticists are now suggesting that the most important contribution which genetic research could contribute to agriculture will be research which helps us to better understand the functions of whole genomes of plant and animal organisms and the interactions of the genome with the organism and the organism with the environment. Such knowledge would enable farmers to manage their operations in ways that could capture the maximum ecosystem services that nature provides---thereby tapping into the self-regulating and self-renewing capacities of nature and thus reducing energy and input costs---as well as impacts on the environment. Consequently genetic research, applied in this new way, may be one of the most important resources for the future of agriculture.

\*So what does the Center see as its role with respect to transgenic technologies?

1. Encourage dialog. We always believe that more information is better than less and that when people with opposing views openly discuss their differences mutual understanding is always a possibility.

2. We are always willing to be a participant in any efforts that seek solutions to problems. In that regard, for example, we fully participated in planning and facilitating a multi-state conference on biotech coexistence in Minneapolis several years ago.

3. We are very interested in exploring alternatives for farmers that are less costly to farmers and to the environment and that enable farmers to produce and retain more value on the farm.

## Question # 1. What are the Existing Agricultural Standards and Regulations

Based on inquiries that I have made there currently appear to be no special state standards or regulations with respect to transgenic production.

As far as organic regulations go, the state of Iowa simply has adopted the federal standards.

With respect to organic production, the federal standard does not allow any transgenic organisms to be used in organic production. Technically this could be interpreted to mean that any level of contamination would disqualify a product from organic certification. In point of fact the federal regulations are currently not being administered by such a strict application of the standard. To the best of our knowledge no certifier currently tests organic production to see if it tests free of any transgenic contamination. Federal standards do require organic producers to maintain (and harvest separately) a 25 foot buffer strip on the edge of their crop of that cropland borders a neighbor's field which is managed by conventional methods. No special buffer is required if the neighbor uses transgenic seeds.

While crops for domestic markets are not tested, ALL organic production destined for export markets, however, is routinely tested and strict standards are applied. Most foreign markets have some level of tolerance that they apply---ranging from zero to 2 parts per million.

There currently also appear to be no state regulations to regulate the production of transgenic crops, except for the requirement to grow certain percentages of non-transgenic crops of the same species to reduce the potential for developing resistance.

These standards and regulations as they apply to organic production also apply to most all Identity Preserved products.

Consumer standards. Any farmer producing food for the market must, of course, pay attention to another standard and that is the consumer standard. Most consumer surveys indicate that consumers want labeling that enables them to choose transgenic free foods if they wish to do so. There seems to be no evidence, however, that consumers as a class have formed standard regarding tolerance levels for contamination. As with foods produced without chemicals there seems to be a general assumption that such foods are "chemical free"---and similarly that foods produced without transgenic organisms (like organic food) is therefore GMO-free.

As we have learned from the Starlink incidence, however, consumers are very sensitive about pure food claims, suggesting that even if the current application of standards does not disqualify organic food from the market, consumers could well reject such foods if certain levels of contamination become evident. This will likely be especially true of

transgenically modified pharmaceutical crops. Consumers are at least as likely to reject corn flakes with pig vaccines in them as they were to rejecting them with Starlink corn in them.

All of this leaves producers in a very vulnerable, uncertain position.

Question # 2. Do we have a problem with transgenic, non-transgenic, organic and IP crops co-existing in Iowa?

This question is actually more complex than it may initially appear to be.

\*Since federal regulations currently do not require testing of organic products to determine the level of contamination for domestic consumption, growers are not likely to experience losses. In fact Maury Wills at IDALS reported to me that to date no grower has reported a single loss due to contamination to him.

But this is not to suggest that farmers raising non-transgenic crops are not at risk. The risks, in fact, may escalate dramatically as new varieties of transgenic crops are introduced and as transgenic crop acreages increase and transgenic animals become more common.

The issue here is that there is no way to isolate an organism in nature, and so there is no way to effectively protect a non-transgenic crop from transgenic contamination.

So whether or not we have a problem with co-existence depends on a number of variables---levels of tolerance, consumer acceptance of those tolerance levels, what types of contamination the public accepts (pig vaccine in corn flakes will probably meet with more public resistance than Starlink) and what kinds of markets producers are targeting.

Question # 3. What Are Those Problems?

The fact that no losses due to transgenic contamination have been reported to IDALS does not mean, as Maury Wills is quick to point out, that there have been no losses. We know that there have been instances in which organic growers in Iowa have had production rejected which was destined for foreign markets. To my knowledge no one is collecting the data to determine how extensive such losses have been or whether or not these producers were able to find comparable **domestic** markets to sell their production for comparable prices.

Farmers have also reported losses which are not strictly related to the commodity markets. Laura Krause, who has been producing an open pollinated variety of corn seed that she has been developing for many years reported transgenic contamination of her heirloom corn which now jeopardizes her market for her seed. David Vetter, organic farmer and processor near Marquette, Nebraska has been similarly developing a line of open

pollinated corn and now, despite his best efforts to control cross pollination from his neighbors' fields finds that his corn seed tests positive for transgenic contamination and he has consequently lost some of his best customers.

Such seed contamination seems to be wide spread. A Union of Concerned Scientists study published some months ago revealed that almost 50 percent of the corn and soybean seed, sold as conventional, non-transgenic seed on the market, tested positive for traces of transgenic material in the seed. Again, as long as federal regulators do not require that seed be tested for transgenic purity this may not cause an immediate loss to seed producers or make it difficult for IP producers to find non-transgenic seed. But if contamination levels continue to increase surely at some point tolerance levels will have to be set and some losses can be expected.

The biotech industry now generally concedes that zero tolerance is simply not possible when it comes to transgenic production. Trish Jordan with the Monsanto Corporation already admitted several years ago that if what people were expecting was "zero tolerance," then, of course, "no one could deliver that." (See News Release) That is simply a true statement. No organism in nature can be isolated. It is the nature of nature to disperse its seeds---and it has many ways to accomplish that---normal pollen drift, using animals as carriers, dispersal by wind and water, severe weather events, human error, terrorist activities and hundreds of other ingenious ways. The problem is that we know that zero tolerance is exactly what at least **some** segment of the buying public **DOES** expect.

Naturally these risk of losses can be mitigated by introducing more effective buffer strips and isolation distances between conventional and transgenic crops, and by introducing completely segregated handling systems, including designated farm equipment. Of course the cost of such separate systems may be prohibitive.

So whether or not farmers who choose to add value to their production by entering markets that pay a premium for "transgenic-free" crops suffer an economic loss due to contamination depends entirely on the level of tolerance that such markets will allow. Transgenic FREE production is not a realistic possibility.

There are other dimensions of loss. Canadian organic growers have had to largely give up raising organic canola since much of their production was destined for European markets. The potential for contamination, given the fact that Canola is an insect pollinated crop, and given the huge acreage now devoted to transgenic canola, there was simply no way that they could continue to produce organic canola that met European standards and so have essentially lost that market. This not only represents an economic loss it is also the loss of part of the diversity in crop rotation that is so essential to maintain weed and pest control in organic production systems.

The other real potential loss that IP producers may experience is related to the introduction of certain kinds of transgenic crops specifically destined for human consumption that enjoy significant export market demand. Hard Red Spring Wheat in the

Northern Plains is just such a crop. 70 percent of this crop is destined for Japanese and European export and those markets have made it very clear that if transgenic wheat were introduced into this region of the country, the mere introduction of the technology would cause such markets to look elsewhere for their needs since they know that complete segregation is not possible. Bob Wisner's (ISU economist) analysis of the potential loss to wheat farmers were such a transgenic variety introduced projected a price impact of some 30% loss were such a transgenic variety released.

So the nature of the problem depends on many variables, but the potential for loss can be considerable.

The other problem here which is often overlooked is the extent to which our farm economy nourishes farmer choices that often puts farmers at odds with one another. (See charts re net farm income, disappearing middle, etc)

Given the fact that net farm income has remained essentially flat for over 50 years, farmers are forced to choose between two strategies:

- a. Constantly increasing their acreage to continually increase their income to be able to continue to pay their bills. For farmers who make this choice, transgenic crops are a significant tool that simplifies their pest control management and therefore assists their effort to get bigger.
- b. On the other hand, farmers who choose to add value to their production by producing products for the emerging market that is increasingly demanding highly differentiated food products---and more often than not such market demands include non-transgenic crop varieties---and often pay significant premiums. Farmers choosing this path employ management practices that enable them to access these markets. These two different survival choices end up putting the two farmers at odds with one another. Naturally each group of farmers feels they have the right to produce in accordance with the path they have chosen and so are not inclined to abandon their chosen path.

Question # 4. "What are the Solutions?"

As we all know there are no easy answers. If strict segregation of these two cropping systems is impossible, than tougher regulation will not solve the problem. That is not to say, however, that all regulations are useless. Stricter handling regulations, for example, might reduce the potential for contamination at the harvesting, processing and distribution level.

Preventing contamination in the field, even with the strictest of regulation, seems hopeless, unless either the transgenic crops, or the non-transgenic crops are grown under greenhouse conditions.

Aside from being ineffective, regulations often end up placing unacceptable burdens on farmers and therefore further threatens their economic survival and leads farmers to find ingenious ways to circumvent the regulation.

While some regulations may be appropriate a more fruitful approach might be to encourage the development of neighborhood cropping plans to reduce the risk to both parties. If farmers in the same neighborhood developed annual cropping plans that provided the greatest separation of crops vulnerable to contamination or other potential losses, such neighborhood cropping plans can help to insure the success of the production strategy of everyone.

On my farm in North Dakota we have implemented such an informal arrangement with our neighbors. They respect the fact that we farm organically and take the necessary steps to protect my fields from contamination. I respect their farming practices and take extra care to make sure that the slightly increased weed populations on my farm do not add to the weed pressure in their fields.

While such a plan has nice---some might say nostalgic---appeal---we seem to be losing such “good neighbor” sentiments in much of modern agriculture. It would be important, I think, to find out why this social capital is eroding in our rural communities and what we might do to restore it.

A more practical solution, I think was proposed by the conference attendees in our Minneapolis co-existence meeting several years ago. The proposal that emerged from that meeting suggested that we consider establishing an insurance program which would protect the financial interests of both transgenic and non-transgenic farmers. So long as both parties followed accepted strategies for preventing contamination and contamination still occurred then the non-transgenic farmer would be compensated for proven loss of market value, and the transgenic farmer would not be held liable for the contamination. All farmers would pay a small “insurance premium” into a fund to pay for the program. The conference attendees had hoped that such an insurance program could be initiated at the state level as a private project to demonstrate its viability and to identify and resolve potential problems, and then recommend it as a national program which might become part of the federal crop insurance program. Such an insurance program, it was anticipated, would be for all IP crops.

Eventually such an insurance program should probably be combined with nationally agreed to tolerance levels for various crops. Naturally the establishment of such tolerance levels would require the broad participation of consumers who would have to agree that the tolerance levels were acceptable, as well as the scientific community, which would have to establish the scientific criteria by which such level were arrived at.