

A PLAN FOR CO-EXISTENCE

Know your buyers

GMO growers, know the market requirements for the GMO crop(s) being grown. Not all GMO crops are accepted by all buyers. Be prepared to segregate crops to meet buyer expectations. Know your buyer's sampling and testing protocols. Know the market-driven GMO rejection levels (tolerances) for the crops grown. Know the labeling requirements for GMO crops, if crops are being exported. Communicate with buyers, GMO seed companies, and Extension agents concerning GMO market issues.

Non-GMO growers, know the contract specifications under which non-GMO crops are being grown. Know your buyer's sampling and testing protocols. Know the market-driven GMO rejection levels (tolerances) for the crops grown. Communicate with



This research was conducted as part of Jim Riddle's tenure in the Endowed Chair in Agricultural Systems at the University of Minnesota. Earlier drafts reviewed by Paul Porter, Bill Wilcke, Helene Murray, and Gary Biel.

January 2004

Over the past 22 years, James A. Riddle has been an organic farmer, inspector, educator, policy analyst, author, and consumer. He was founding chair of the Independent Organic Inspectors Association, (IOIA), and co-author of the IFOAM/IOIA International Organic Inspection Manual. He has trained hundreds of organic inspectors worldwide. Jim serves on the Minnesota Department of Agriculture's Organic Advisory Task Force, and currently serves on the National Organic Standards Board.



The School of Agriculture
**Endowed Chair
in Agricultural Systems**

buyers and organic certifying agents (or non-GMO certification body) concerning GMO contamination issues.

Know your risk

GMO growers, be clear on your risks and liability coverage. For example, Bt corn is an EPA-registered pesticide. In addition to genetic drift exposure, pesticide trespass laws may apply if the Bt toxin planted on your land is found to cause harm to neighboring landowners. Review your farm's liability insurance policy to determine if you are covered for genetic drift and related damages. Talk with your seed dealer and GMO company representatives concerning liability, since the GMO company retains ownership of the proprietary crops planted on your farm. Establish who is liable for potential damages prior to planting GMO crops.

For more information on GMO and IP seed, contact:

- *Jim Riddle, Endowed Chair in Agricultural Systems, University of Minnesota, 507-454-8310, jriddle@hbc.com*
- *Minnesota Crop Improvement Association (MCIA), 800-510-6242, mncia@umn.edu*
- *Bill Wilcke, University of Minnesota Extension Specialist, Grain Storage and Identity Preserved Seed, 612-625-8205, wilck001@umn.edu*

A PLAN FOR CO-EXISTENCE



Best Management Practices for Producers of GMO and non-GMO Crops

Co-existence is the ability of farmers to provide customers with a choice between GMO (genetically modified organisms), non-GMO, and organic crops and products. Since different types of agriculture are practiced on adjoining fields, suitable measures during planting, cultivation, harvest, transport, storage, and processing are needed in order to prevent the accidental mixing of GMO and non-GMO material. Contamination may result from seed impurities, wind- or insect-borne cross-pollination, volunteer plants, and/or inadequate harvest and handling practices.



Producers of GMO crops, including herbicide resistant canola, soybeans, and corn, and insecticidal (Bt) corn and cotton, have a responsibility to implement best management practices (BMPs) to minimize genetic drift and other forms of contamination which can negatively impact organic, identity preserved (IP), and other non-GMO producers.

Organic, transitional, IP, and other non-GMO crop farmers also need to implement BMPs to minimize risks of GMO contamination. This publication outlines some BMPs that GMO and non-GMO farmers need to know in order to minimize genetic drift, commingling, and other contamination.

Before you grow:

Know your crop

GMO growers, prior to planting, verify the type of GMO seeds to be planted. Read and understand licensing agreements issued by biotech seed suppliers. Follow all planting instructions. Retain copies of licensing agreements you have signed and all other communications with GMO seed suppliers. Know the distance pollen is likely to travel. The isolation distance required for the production of certified seed provides guidance on the distance pollen is likely to travel for any given crop. Know the types of tests used to establish the presence of the biotech crop(s) you are growing. Manage herbicide resistant crops to minimize the develop-

ment of herbicide resistant weeds. Rotate between herbicide resistant and non-resistant varieties. Rotate herbicide chemicals. Make sure that GMO crops do not "volunteer" the following year, presenting additional risks of contamination.

Non-GMO growers, prior to planting, verify that non-GMO seeds will be used. Obtain statements from seed companies concerning the non-GMO status of the varieties to be planted. Have seeds tested for all applicable GMO "events". Retain copies of test results, seed samples, and letters from seed suppliers. Make sure not to use genetically engineered legume inoculants. (e.g. Dormal Plus is a GMO.)

A PLAN FOR CO-EXISTENCE

Know the regulations

Be informed concerning regulations pertinent to GMO crops. For example, farmers who plant Bt corn are required to plant at least 20% of their corn acreage to non-Bt corn in order to delay resistance among target pests. Larger refuges are needed when farmers grow both Bt corn and Bt cotton.

Know your farm

Know your fields and determine which have the lowest risk of creating GMO contamination of neighboring crops, or susceptibility to GMO contamination from neighboring crops. Select isolated fields for planting wind and/or insect pollinated crops such as corn and canola. Know the prevailing wind direction. Establish physical buffers, such as windbreaks and hedgerows, to contain/prevent contamination from GMO pollen drift.

Know your neighbors

Establish good lines of communication with neighbors, especially those whose fields directly adjoin fields where GMO or non-GMO crops are to be planted.

GMO growers, notify neighbors that you are planting GMO crops. Let them know which crops are being planted and the steps you are taking to minimize GMO pollen drift.

Non-GMO growers, let your neighbors know where your organic and/or designated non-GMO fields are located. Get to know the farmers who farm adjoining fields, even if they rent the land. Post “Organic Farm” signs along field margins, where needed.

Know neighboring crops

Gather information from neighbors, seed dealers, Extension educators, and input suppliers on the types of crops being grown in the vicinity.

GMO growers, know which neighbors grow organic, IP, and other non-GMO crops. If your neighbor is growing non-GMO corn and you are growing Bt corn, plant your required non-GMO refuge acres next to your neighbors’ non-GMO fields. If possible, adjust your planting dates so that your GMO crops do not pollinate at the same time as neighboring non-GMO crops. Be willing to provide your cropping information to neighbors so they can make appropriate adjustments.

Non-GMO growers, know which GMO-related plantings are in the area. If neighbors are growing Bt crops, ask them to plant their “20% non-Bt refuges” in areas that adjoin non-GMO fields to provide some buffer protection. If possible, delay your planting dates so that your non-GMO crops do not pollinate at the same time.



Know your equipment

Know how your equipment is used, calibrated, and cleaned. This includes rented and borrowed equipment and equipment used by custom operators. Know how to clean all pieces of equipment, including planters, combines, wagons, trucks, etc. If the equipment is used for planting, harvesting, or handling any non-GMO crops, make sure to thoroughly clean equipment prior to use. Don’t let your equipment contaminate your own or someone else’s non-GMO crop. Keep records to document your equipment cleaning activities.

Know your transport

GMO growers, carefully inspect and clean trucks and trailers after your crops have been unloaded. This includes tarps and trailer covers. Keep records to document the cleaning of transport units. By keeping records to document that you clean storage and transport units when you are finished using them, you can verify that your GMO crops did not contaminate someone else’s non-GMO crops.

Non-GMO growers carefully inspect and clean trucks and trailers prior to loading with non-GMO grain. Make sure that transport units, including overseas shipping containers, are free of grain, dust, and other foreign material. Keep records to document cleaning activities, including clean transportation affidavits and bills of lading.

Know your crop storage

Carefully inspect and clean storage units prior to use. Make sure that storage units are well segregated and that GMO and non-GMO crops are not stored in the same vicinity. Dust and grain from GMO crops can contaminate non-GMO crops. Thoroughly clean

augers, bins, grain dryers, rotary screen cleaners, etc., if they are to be used for both GMO and non-GMO crops. Have proper cleaning equipment, such as air compressors or vacuums, on hand. Document cleaning activities.

Know your harvest

Non-GMO growers, submit crop samples prior to harvest for GMO testing. If contamination is likely, collect samples along a grid pattern, going from areas with the highest risk to areas with low risk. Maintain and submit the samples separately in case part, but not all, of the field is contaminated. Make sure samples are tested for all applicable GMO events. Retain duplicate crop samples and copies of test results.

Know your records

GMO growers keep records of all fields where GMO crops are planted. Maintain field maps or GPS/GIS systems to record GMO and non-GMO crop locations. Document harvest and handling activities. Document your efforts to minimize GMO contamination. With good records, you will have a better chance of identifying causes of problems and determining liability. Valid records of BMPs can help protect you from being held liable, should contamination occur.

Non-GMO growers, you must document efforts to minimize GMO contamination. With good records, you will have a better chance of limiting losses, identifying causes of problems, and determining liability. Valid records of crop yields, test results, cleaning activities, storage, transport, and sales may help establish claims for losses, should contamination occur.