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Segregating Genetically Modified Crops

Starting with the fall 1999 harvest, farmers and other grain handlers need to consider segregating genetically modified crops from those that aren't genetically modified. Genetically modified crops (also called GMOs, or genetically modified organisms) are ones that have been developed using genetic engineering techniques to have special characteristics that haven't normally occurred in nature (Bt corn or Round-Up Ready soybeans for example). Some foreign and US grain and oilseed buyers are asking for segregation of GMOs and non-GMOs so that they can respond to their customers who would prefer not to buy products made from certain types of GMOs, or at least would like to have products labeled so that they have a choice about buying such products. Some buyers will not be accepting any GMOs and some might actually offer premiums for non-GMOs.

The process of segregating crops involves separate storage and handling and documentation of separation and is called "identity preservation." The idea behind identity preservation is to make sure that a crop that has a special characteristic is protected from contamination by crops that don't have that characteristic. Once mixing occurs, it is often nearly impossible to re-separate the higher-value and lower-value crops and the marketing opportunity for the higher-value crop is lost. Along with maintaining purity of the crop through careful physical separation, farmers and grain handlers should also develop a good record keeping system so that they can document the identity of the crop or prove that they have maintained the separation. The need for identity preservation is not unique to producers of non-GMOs; identity preservation is also used by producers of seed, malting barley, organic crops, and value-enhanced crops.

Identity preservation of non-GMOs is particularly tricky because in most cases, they are not visibly distinguishable from GMOs. There are tests available to detect the presence of specific types of genetic material or other compounds that are associated with that genetic material. Several companies have developed relatively quick (5 to 20 minutes) and relatively inexpensive tests that some grain elevators and other buyers will be using to check for GMO contamination in crops that are being sold as non-GMO. Here are some tips for approaching identity preservation of non-GM crops.

Develop the proper attitude. Most crop producers and grain handlers are used to producing generic commodities and to blending crops that have different quality levels or that come from different fields. Identity preservation, on the other hand, is all about meeting the needs of customers, maintaining specific quality levels, and avoiding mixing of crops. It is important for farmers and grain handlers and their employees to buy into the concept and to be vigilant about keeping records and preventing mixing. Although genetic testing will be used by some buyers to make sure that GMOs and non-GMOs have not been mixed, honesty and trust are still important factors. Violation of that trust is likely to result in loss of customer confidence, premium prices, and future marketing opportunities. In addition, positive tests for crops that are claimed not to contain GMOs could result in lawsuits and financial penalties.

Know what the buyer wants! Some buyers specify the amount of contamination that they will allow in the delivered crop and some buyers specify the steps that they require in identity preservation programs. Check with potential buyers as early in the crop production cycle as possible - preferably even before planting.

Develop a plan for segregating crops. Draw a flowchart or at least list all of the steps involved in producing a crop from seed to delivery of harvested crop and try to anticipate all of the points where the crop could become contaminated. Then develop a plan for taking action steps and documenting those action steps to reduce chances of contamination. For some crops, you are allowed to have a certain percentage of contamination in the final product. Small amounts of contamination at each step add up and can cause the final product to exceed tolerances. Here are some places where GMO contamination can occur:

- Impure seed
- Mixing of seed during planting due to mistakes or due to inadequate equipment cleaning
- Movement of pollen by wind or insects from GMO fields to non-GMO fields
- Inadequate cleaning of combines, bins, hauling vehicles, or conveyors when switching from one crop to another
- Mistakes in filling bins or hauling vehicles

Consider growing and storing non-GMO crops in separate locations. If you own or rent farms that are physically separated from one another, it would be much easier to maintain and prove crop separation if the entire non-GMO crop is grown and stored on a separate farm. This approach can also help reduce problems with pollen drift from neighboring GMO crops. Even if you don't have separate farms with separate grain handling systems, you might consider storing non-GMO crops in bins that are not tied into the grain handling and storage system that is used for your other crops. This reduces the chances for mistakes and makes it easier to document separation. If you still have some grain in storage from last year's crop, it might be worth moving some grain around to free up separate bin space for non-GMO crops.

Keep detailed records. Use names or numbers to identify each field, grain bin, and grain hauling vehicle and consider placing signs or labels on each field, bin, or vehicle. Develop a record system that is complete, but is easy for you to use and for others (crop inspectors, for example) to understand. Record planting dates, field location and size, seed identity, inputs used, harvest date, crop yield, bin number where crop is stored, date crop is delivered, and the name of the person who delivered the crop and the number of the vehicle used. Records will be useful to you in future years and they will also be helpful if there are disputes about crop purity.

Clean equipment between crops. Most farmers don't have the luxury of using separate equipment for non-GMO crops, so they need to thoroughly clean combines, trucks, grain conveyors, and bins when they switch from one crop to another. Try to design your system and select your equipment to minimize the time and effort required for cleaning. Also, if crop maturity allows, consider cleaning your equipment before harvest and then harvesting your non-GMO crops first. With this approach, you won't need to stop to clean equipment when you switch to harvesting of GMO crops, because buyers are usually not concerned about non-GMO contamination in GMO crops.

Keep an eye on custom operations. If you hire someone else to harvest, haul, dry, clean, or do anything else with your grain, make sure that they understand the concepts and importance of identity preservation. Watch to make sure that they clean their equipment and that your crop does not become contaminated. Record names, dates, amounts, and locations to document custom operations.

Keep samples. Consider taking samples of your seed, of the harvested crop, and of the delivered crop, attaching meaningful labels, and preserving the samples until you are sure that the final buyer is satisfied that the crop meets identity and quality standards.