

GROWING NON-GMO FORAGES AND GRAIN ON YOUR DAIRY FARM

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Today's consumers have choices about the kind of dairy products they purchase. Specialty milk-based products can be found in the dairy aisle of the grocery store and, among other things, may be labeled as *Non-GMO*, *GMO-Free*, or *Organic*. While still niche markets, demand for organic and non-GMO dairy products is growing and has attracted the attention of dairy farmers looking for an opportunity to enhance their income by producing milk for dairy processing companies which are sourcing non-GMO milk.



No standard exists. Today, no federal standard or definition exists for what constitutes a non-GMO dairy food product. However, industry advocates and marketers of dairy food products have created their own voluntary standard in which milk labeled as non-GMO should be produced from animals fed conventional (i.e., non-GMO) forage and feed.

Like organic farms, dairy producers making a transition to milk production for a non-GMO market means growing and sourcing conventional feedstuffs. Dairies looking to grow conventional forages and grain may experience higher production costs due to potentially greater pesticide use, production management, and yield risk.

Additional feed production and storage management efforts are required to meet purity standards for these markets while incurring risk that if purity standards are not achieved, the crop or milk may have to be marketed in channels with no pricing premium.

What crops are non-GMO? The principal forage species used in feeding dairy cows include, among others, alfalfa, corn for silage, sorghum-sudangrass, small grains, and various grass species. In addition, most feed grains and by-products used in dairy diets in North America are from transgenic crops. While alfalfa, corn, and soybeans have been genetically modified, many conventional (non-GMO) varieties are also available for sale.

Know your buyer's standard. Whether grown on-farm or purchased, producers who are considering feeding conventional feedstuffs should check their end-user's standards to see if there are any restrictions or provisions for these products. Growers must know for certain if the threshold of tolerance for transgene traits is defined in the contract as 5%, 2%, 0.9%, or some other standard. Clearly understanding these "rules of engagement" is necessary to make the best possible decision about participating in a non-GMO market opportunity.

Feeding conventional feeds in a dairy ration will differ from a ration with transgenic crops mainly with respect to cost and traceability. Among other things, growing conventional forage and feed requires identifying reliable conventional seed suppliers and developing a crop management system that addresses pest control. In addition, traceability will be required throughout the process to verify purity standards established by the buyer.

Growing conventional crops to meet purity standards. After carefully reviewing purity standards, producers must implement appropriate crop production practices to achieve those standards. This includes taking additional precautions during planting, growing, harvesting, transporting, storing, and feeding of the crop. Some contracts may require specific forms of documentation during the production of the crop. Be sure you are aware of any such contract requirements. Here are some key things to think about.

Find a reliable seed supplier. One challenge in buying conventional seed is the availability of high-yielding, elite genetics. Often companies have very limited conventional product choices, forcing the purchase of a variety which is not necessarily well-adapted to your farm. In addition to genetic choices, carefully consider the ability of your seed company to produce seed with low levels of adventitious presence (AP). A company like DuPont Pioneer is well-equipped to supply seed of elite conventional genetics with a proven track record of low AP levels for non-GMO markets like Europe.

Planting and growing the crop. At planting time record-keeping, isolation, and equipment clean-out are generally recommended to help ensure purity standards. Record-keeping may be as simple as hand-written notes or more sophisticated, depending on the technology available and grower expertise. As-planted (GPS-tagged) records or electronic "notes" recorded on a smart phone or tablet computer and backed up in the cloud are most effective.

Alfalfa forage crops generally do not require isolation since only the vegetative part of the plant is harvested. It will be important to track fields planted to transgenic varieties and avoid harvesting or storing forage from these fields with conventional alfalfa forage.

Corn is a cross-pollinated crop, and its pollen is wind-dispersed. This means providing adequate isolation is at the very core of conventional corn production, no matter what the harvested product is.

The degree of isolation required is closely tied to the level of purity targeted. Guidelines for isolation should always consider the distance and direction (upwind or downwind) of nearby corn fields. A commonly recommended isolation distance for corn production is 660 feet, but that distance could double when purity requirements are extremely high. Be sure to clearly understand the isolation distance needed to achieve your desired level of purity.

Switching to conventional forage or grain production will likely change the way a herbicide program looks. It could mean applications of more expensive pre-emerge and post-emerge herbicides. Also, protection of corn plants from insect pests like corn rootworm may require application of an insecticide at planting. If potato leafhopper is a consistent problem in alfalfa production, use of a conventional leafhopper-resistant variety is likely needed.

Harvesting the crop. Harvest presents an opportunity to increase or decrease the purity of the forage or feed. As with planting machinery, harvest and transportation equipment must be cleaned of contaminating forage or grain sources. If you hire a custom-operator for harvesting your forage or grain, make certain all of their equipment is cleaned prior to the start of harvest. The thoroughness of cleaning may differ depending on the level of purity required. As with planting, a crop harvest record can be logged using yield monitors and GPS-tracking equipment.

Storing and feeding the crop. Storage of forage crops and grain starts with a clean silo, bunker or grain bin. Forages can easily be isolated in a silo bag system. Labeling and record-keeping are important to maintain the identity of the crop in storage. Clearly document the variety planted and harvested, cleaning procedures, and other information according to intended end use or contract requirements.

Purity standards, verification, and risk management. Since no uniform standards exist in the production of milk claiming to be non-GMO, the feedstuff standards for milk production are dependent on the dairy processing company which purchases the milk. Companies will have different standards along with different premiums for this specialty milk. Some dairy processors will rely on third-party standards, such as Non-GMO Project Verification or NSF True North certification, while others have their own standards to which producers must adhere. Additionally, companies may have recordkeeping requirements to help verify how the crop was produced, like Certified Organic production.

Transgene testing is accomplished using one of several technologies. A strip test is a rapid, on-site method of testing for specific transgenes by analyzing DNA proteins. This is ideally suited for testing seed and feed grain supplements. It is often backed up by using a more rigorous test called PCR (Polymerase Chain Reaction). This test is conducted in an accredited laboratory and is typically very expensive. Some companies bear the cost of this testing while others expect the dairy producer to pay for testing and verification information.

The challenge and risks of producing milk using conventional feedstuffs remains high and dairy producers should expect additional compensation for milk produced in this way. In addition, dairy producers should seek multi-year contracts to help mitigate the financial risks associated with conventional forage and grain production or purchase.