A MARKET IN FLUX OFFERS PRICE PREMIUMS FOR THOSE WHO ARE ALERT

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ABSTRACT

The combination of a world market that is constantly in flux and the controversy surrounding GMOs has led to a complex global GMO regulatory landscape. Although this could be seen as a barrier to trade, the same situation can create unexpected opportunities for profits and premiums. The key to exploiting these opportunities is to understand the needs of your export partners. Here, we explain the four key tools that the grower/manufacturer/exporter can use to transform the barrier that GMOs appear to raise into new profitable opportunities: Knowledge, Testing, Identity preservation and Certification. In addition, current examples of successful Identity preservation systems in operation are presented to highlight how one can tailor a program to specifically address various regulatory environments. This demonstrates that one can add value by implementing such a program and reap the benefits of streamlined operations, reduced costs, and consolidation of information.

INTRODUCTION

With globalization, the world market is in constant flux. With an increase in both the variety and quantity of inputs, it is incumbent on producers, importers, and exporters to be up-to-date on global market conditions in order to plan effectively so as to maximize profitability. The global grain market reflects the new realities of globalization. Importing and exporting nations provide new opportunities which, if appropriately acted upon, can result in strong profit margins for grain producers. One such new instance involves the sale and export of genetically modified (GMO) and unmodified grain.

GMO CONTROVERSY RESULTS IN GOVERNMENTAL GMO IMPORT REGULATION

GMO's (Genetically Modified Organisms) are organisms whose genetic material has been modified in the laboratory suing genetic engineering techniques. Corn and soy, for example, have been genetically modified to withstand over the top herbicide applications that would be lethal to plants not so modified.

The impact of GMOs on the environment and on human health is controversial and has led to diversity in the global GMO regulatory policy. At least 55 countries have GMO labeling laws and 50 countries have either banned GMOs or restricted the amount and variety of GMOs that are allowed to be imported. For this reason, GMOs are often viewed as a barrier to trade, but the same situation also creates unexpected opportunities for profits and premiums. The key to exploiting these opportunities is to understand the needs of your export partners.

THE NON-GMO MARKET AND HOW TO BENEFIT FROM IT

In many nations, including grain importers like the European Union, Japan, and Korea, import regulations and market conditions impose certain GMO related requirements on North American

grain exporters. There are four key tools that the grower/manufacturer/exporter can use to transform the barrier that GMOs appear to raise into new profitable opportunities.

Knowledge

Clear, definitive knowledge of the GMO regulations and market requirements in the receiving country is the foundation for success. Global trade patterns for oilseeds are rapidly changing in response to expanding demand for biofuel feedstocks. In particular, reduced European demand for genetically modified canola and soy for food purposes is being balanced by increased demand for these commodities for fuel purposes whereas in Japan there has been a sustained demand for GM canola oil as a food ingredient. The EU does not currently import canola from Canada, despite the increased demand for its use as biofuel, because of the stringent regulations for import of GM canola into Europe. In contrast, Japan has set an informal tolerance level of 5% GM ingredients in products that are labeled non-GMO. Therefore, if a Canadian canola exporter desires to sell canola to Japan labeled as non-GMO then the seed should be tested using a quantitative PCR test that covers all commercialized genetically modified canola varieties. Such a test requires 5 sets of primers in order to achieve complete coverage and to take advantage of the price premium for non-GMO canola (Table I).

Table 1. Japan regulations for import of non-GMO canola

Genetically Modified Canola Events			Primers
Event	Trade Name	Commercialized in Canada	Test
GT73, RT73	Roundup Ready	Yes	GT73
MS8xRF3	InVigour	Yes	MS8 and RF3
MS1xRF1	InVigour	Discontinued	NPTII
MS1xRF2	InVigour	Discontinued	
Topas 19/2	Innovator	Discontinued	
OXY-235	OXY-235	Discontinued	35SP
T45	Liberty Link	Discontinued	35SP

The potential for importing Canadian canola into Europe is more difficult due to the complex regulations surrounding GMO canola. However, it may soon be possible to ship genetically modified canola seed to Europe to be crushed there for use as biofuel. Since the remainder of the crushed canola seed will be used for animal feed, GMO testing will be necessary to show that the canola shipments do not contain unauthorized canola varieties above tolerated levels. Of the seven commercialized GM canola varieties, only two are authorized by the EU for feed use. The remaining five varieties are no longer commercialized in Canada but must be considered since they may still be present in small amounts in canola shipments. Three of the discontinued events are tolerated in a proportion no higher than 0.9% and there is a zero tolerance policy toward the remaining two discontinued events (Table 2). Shipments of Canadian canola invariably contain at least trace amounts of T45, an event which is not authorized for import into Europe. Thus, at present, this commodity is not currently exported from Canada to the EU. Renewal of authorization for T45 in the EU is pending, however, and, if approved, will result in export of Canadian canola to the EU if testing verifies regulatory compliance for the remaining four events.

Testing

Appropriate testing allows one to achieve compliance with the complex global GMO regulatory environment and can be optimally designed such that it is economical and rapid. For example, assuming T45 is authorized in the EU for feed, testing will be required for the four remaining unauthorized canola events. One could perform a variety-specific test for each individual event of interest. Alternatively, one can develop a much more economical test using two target sequences. Together, these selectively detect all 4 unauthorized events, yet ignore the authorized events. This testing method offers more rapid and economical screening to provide definitive evidence of regulatory compliance.

Table 2. EU regulations for import of GMO canola

Event	Trade Name	Commercialized in Canada	EU Authorizations as of July, 2008
GT73, RT73	Roundup Ready	Yes	Authorized for feed
MS8xRF3	InVigour	Yes	Authorized for feed
MS1xRF1	InVigour	Discontinued	0.9% threshold tolerance
MS1xRF2	InVigour	Discontinued	0.9% threshold tolerance
Topas 19/2	Innovator	Discontinued	0.9% threshold tolerance
OXY-235	OXY-235	Discontinued	Zero tolerance
T45	Liberty Link	Discontinued	Zero tolerance at present. Authorization pending.

Identity Preservation

An important way in which one can reduce the volume of testing required and thus the overall cost associated with exporting commodities is through Identity Preservation. This type of program uses a combination of segregation measures, testing, documentation, and traceability to ensure the integrity of the shipment. For example, wheat is not a grain that has been subjected to GMO modification but, if in the course of harvest, storage, transportation and manufacture, facilities and equipment that harvested, stored, transported, or processed GMO corn were subsequently used for

wheat, inadvertent contamination of the wheat may occur. This "adventitious" presence of GMO corn in the wheat may result in import issues in the EU.

Certification

Third-party independent certification by an organization recognized and respected in the receiving country can add value to the product and aid in regulatory oversight and acceptance of the shipment by the buyer. Experienced GMO testing labs and third party certifiers have been working with companies for more than a decade to assist them in using the above described tools to control GMO risk in their products. Early on, they realized that, although GMO testing is an essential element, by itself, it does not lead to cost-effective control of GMOs. Alone, it can only be used in a quality control mode, i.e. test and reject. In the early days of the GMO crops, companies were using the quality control approach, but it was expensive. It became clear that it is better to take a quality assurance approach: design your production system to achieve a pre-defined degree of exclusion of GMOs and then use GMO testing as a method for spot-checking to verify that the system is working properly. This reduces the amount of testing required so that resources can be allocated where they will be most useful, namely, in improvement of the capacity of the production system to exclude GMOs. In such a program, a positive test result is used as an indicator that reveals a weakness in the system, which can then be corrected to improve future compliance.

The key elements of a process-based quality assurance approach include: segregation, testing, traceability, in-house monitoring, Information technology, training, and certification. Segregation allows integrated control of production, storage and transport of the product while in-house monitoring employs inspections, sampling, and GMO testing to insure the system is functioning. Documentation of the chain of custody through Traceability Certificates of Compliance (TCCs) verifies compliance along the supply chain and appropriate Information technology measures allow full traceability and accessibility of information at any time, i.e. a centralized database can facilitate information transfer in a complex system such as the physical supply chain.

Current examples of Identity Preservation systems in operation

U.S.- Sixty percent of the corn grown in the U.S. is genetically modified and there are few corn processing plants that are dedicated to non-GMO corn. Therefore, in order to produce non-GMO corn flour a stringent Identity Preservation program must be in place to avoid contamination with genetically modified corn. The requirements of such a program include obtaining seed that is < 0.1% GMO, an isolated farming area to decrease risk of contamination, on-farm storage for grain, and a miller who can operate according to stringent non-GMO specifications.

Testing is frequent and occurs at each stage of the process including seed, grain, silo (composited grain), and flour. In addition, both PCR and strip tests are used at various stages of the process. Using such a system, a corn miller in the Midwest is able to show that the vast proportion of their product is < 0.1% GMO and almost all of it is < 1% GMO.

Brazil- Although a significant proportion of the soy grown in Brazil is genetically modified there are many farmers who only grow non-GMO soy and several soy processing plants that are dedicated to non-GMO soy. This allows a less stringent testing program because there is less risk of contamination along the supply chain. In this case, the soybean is tested by strip test upon arrival at the warehouse and again by PCR upon arrival at the soy processing facility. The processed product is then tested once again by PCR. These examples have been operating for 5 to 8 years and have been very effective in controlling GMO risk in the supply chain.

CONCLUSION

One can derive value in the course of navigating the complex global GMO regulatory landscape by using knowledge of the regulatory policies, appropriate testing, identity preservation, and certification. This type of program results in streamlined operations, reduced costs, and consolidation of information and has been proven to be successful despite a world market that is in constant flux.