

## Coexistence of GM, Conventional and Organic Food Not Always Possible

The coexistence of genetically modified (GM) products with their conventional and organic counterparts has been one of the most scrutinized issues surrounding the introduction of products of agricultural biotechnology into the agri-food system. Fears that the widespread adoption of GM products will drive their conventional (and, perhaps, organic) counterparts out of the market have been countered by arguments that their presence enhances the equilibrium product variety in the market. Central to the argument is, of course, the possibility of coexistence of GM, conventional and organic products with the main focus having been on farm production systems and the prospect of coexistence of GM, conventional and organic crops.

While the coexistence of the three different cropping systems is certainly necessary for the existence of GM, conventional and organic food products in the final consumer markets, the availability of GM, conventional and organic crops is not sufficient for ensuring the coexistence of food products utilizing these crops. The coexistence of GM, conventional and organic food products will be determined, instead, by the consumer attitudes towards these products, the food suppliers, and their interaction in the relevant product markets. The possibility of coexistence of these different types of food is the focus of a recent CAFIO-PRG study.

### ***CAFIO-PRG Research***

This research develops an empirically relevant, integrated, multi-market framework of analysis that explicitly accounts for the, well-documented, (a) heterogeneity in consumer preferences for GM, conventional and organic food products, and (b) imperfect competition among the suppliers of these products.

Once developed, the framework is used to identify (i) the *determinants* of coexistence of GM, conventional and organic food products and (ii) the *exact conditions* under which this coexistence will occur.

### ***CAFIO-PRG Findings***

The CAFIO-PRG research shows that:

- The coexistence of GM, conventional and organic food products depends on the consumer attitudes towards these products, their relative prices (which are determined, in turn, by the structure of the different supply channels and the supplier costs), and the labeling regime governing the GM products.
- When the GM and conventional products are marketed together as a non-labeled good (as is, generally, the case in the US), their coexistence will depend on (a) the structure of the market for the non-labeled product and the nature of the strategic interaction among the suppliers of the GM and conventional products; (b) the relative costs faced by the suppliers of GM and conventional products; and (c) the ability of suppliers to switch to the production of a (cheaper) substitute.
- If the suppliers of the non-labeled product are either perfectly competitive or involved in an oligopolistic price competition, then the conventional product will, in most cases, be driven out of the market. For GM and conventional products to coexist under these conditions, their supplier costs should be the same.
- For different cost suppliers of (non-labeled) GM and conventional products to coexist in the market, they would have to compete in quantities and be unable/find it unprofitable to alter the type of their produce.
- If different cost food suppliers can switch their production between the GM and conventional food products, they will always do so since changing their production would enable the high cost firms to increase their profitability by producing the (undifferentiated) non-labeled product at reduced costs. Consistent with Akerlof's *lemons theorem*, the marketing of GM and conventional products as a non-labeled good could result, then, in the low quality product driving the high quality product out of the market, jeopardizing the potential for coexistence of GM, conventional and organic food in the market.

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