

UNLIKE WATER, MONEY CAN FLOW UPSTREAM AND NEW FOOD SYSTEMS WILL MAKE IT HAPPEN

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New (modified grain) technologies and systems are driving the transformation of the supply-driven commodity market to a demand-driven customized product market. It is argued that this transformation will result in a flow of value to upstream related industries, with a share for every link in the value chain, from input supplier to food retailer.

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Water would flow upstream only if the earth reversed polarity. That is exactly what is happening in the food industry. New (modified grain) technologies and systems are changing the flow of food from the supply-driven, commodity market that has defined agribusiness in the 20th century to a demand-driven, customized product market. Seed and chemical companies at the top of the food production stream, the input providers, must seize the remarkable opportunity to reinvent the system to draw more value upstream from consumer food sales.

The old system had them in a box. A year ago, analysts in the consulting firm McKinsey & Company published their assessment of the potential for the new market (Cook *et al.*, 1997). The authors noted that agricultural inputs accounted for only 8 percent of the total food industry value in 1992. Food manufacturing and retailing, however, accounted for 56 percent. They cautioned food companies against adopting an overly cautious attitude toward change. “A ‘wait and see’ attitude is risky,” they wrote. “Industry change will be rapid, and food companies adopting a passive stance may find their options limited later.”

The top input companies reached the same conclusion. They spent billions of dollars to enter the race for market share in biotechnology. The wave of mergers and acquisitions of the past several years absorbed dozens of promising biotechnology labs and concentrated the know-how in a few chemical and seed giants with the resources to see the business from gene prospecting to product launch.

Just over a year ago, DuPont bought a 20-percent stake in Pioneer Hi-Bred International for \$1.7 billion to form the alliance that spawned Optimum Quality Grains. Its mission is to develop and market high-value crops. The money spent to bring these combinations into being is only the beginning. But these numbers do not seem to disturb investors. Analysts project the new market to be worth \$300 billion annually in the not-too-distant future (Brownlee, 1998). The same author

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pointed out that other companies are focused on expanding value in their traditional input market positions, introducing plants with input traits like herbicide, insect and drought resistance, or introducing plants with improved yield characteristics to provide growers better crop performance.

Conversely, consumer demand provides the direction for others. Consumers exert pressure on companies to produce new products to meet their desire and industries respond through innovation.

Consumer demand for food products is no different. It has turned the general store into the supermarket and created TV dinners and junk food. Marketers who have catered to the Baby Boomer's every whim now hear the generation loud and clear, "We want our food to support healthy, active lifestyles and we want it to taste good." In other words, they want their food to be an ally rather than an adversary. They do not want cheeseburgers to become a subject of nostalgia. Labels featuring "Low Fat," "Low Cholesterol", and "Low Sodium" (sell well) among those for whom health is paramount. The growing market for "functional foods" with added health benefits proves people are willing to pay premiums for the food properties they desire.

What if industry can deliver all that and have it taste like cake, too? What if agriculture can deliver the raw materials to make that possible and deliver it in concentrations that improve processing efficiency? New grain varieties, whether conventionally bred or engineered, deliver just that.

Food processors, manufacturers, and retailers are seeking out enhanced grains and paying premiums to obtain specific ingredient traits rather than trying to wring them from commodity grade equivalents. They place value on brandable exclusivity and we can forge alliances with them to capture that value, even assisting them in product development to take best advantage of the traits we feature in our crops. We can also learn where existing parts of the chain lose value, such as in milling quality, and further enhance crops to reduce these losses. Thus, the pull of the consumer market pushes value upstream.

New technology presents opportunities for all food industry leaders to create value and capture value — as much for food manufacturers and retailers downstream as for the input companies and farmers upstream. Paying premiums on specialized raw materials will give the savvy food company the ability to meet or exceed consumer expectations, which they can leverage into a greater market share.

Although the market potential of reversing the polarity of the commodity system has been demonstrated and it's ultimate value conjectured, it still remains to be realized. There remain considerable obstacles to the upstream value flow between consumers and the input companies who are generating it. Some have faith. They hear a voice in the corn murmur, "If you design the seed, they will come."

We think it will require more effort. The basic structure of the value chain is still geared to commodity delivery and downstream value flow. In a true entrepreneurial spirit, we must view the obstacles as opportunities. Under such rapidly changing conditions, it makes more sense to stake out as much streamside property as possible to capture as much value as possible. By that, I mean participants at every point in the value stream — inputs, crop production, origination, transportation, processing, manufacturing and retail — will prospect for acquisitions or alliances to take part in the more equitable distribution of consumer value upstream.

In developing a new crop variety, we will research consumer demands and expectations, identify food manufacturers developing products to meet those demands, and design output traits to make manufacturers' tasks easier. Likewise, retailers and manufacturers will be quick to recognize new consumer food demand characteristics. They must research output traits in new seed varieties to meet

those needs or actively commission seed companies to design crops for their exclusive use, creating brand identity and reserving a share in patent and licensing rights. The competition and combinations will result in even more consolidation from one end of the value stream to the other as more participants in the current food industry awaken to the possibilities.

With only limited success, producers have sought to escape from the boom and bust commodity cycle by taking a position further downstream and making “value-added” products from their commodities. The shifting landscape in the food industry now provides more and better opportunities to do just that. AGRI Industries, a cooperative of 130,000 Iowa farms, bought Mrs. Clark’s Foods which produces mayonnaise and salad dressings. The purchase ensures that the farmers have a guaranteed consumer market for the low saturated fat soybeans they raise.

Processors and manufacturers must enlist farmers to grow value-enhanced grain and livestock to secure supplies of unique raw materials rather than commodities. A proprietary contract production system may need to be set up with growers to ensure supplies for downstream partnerships. Such a production system will be crucial to branding output traits and maintaining brand identification of traits that consumers value, such as low-saturated fat levels. And growers must realize greater value per acre if we expect them to respond.

Although the many and varied connections from farm gate to dinner plate will provide respite from the price swings of a commodity system, the law of supply and demand will remain in effect. Success will require adequate consumer demand and supply to meet it. Assuring supply, however, risks commoditization. To escape this paradox we must build a value network system to facilitate the new relationship between farmer and consumer. No single link in the value chain can meet consumers’ demands alone.

We think one answer is to provide an online information clearinghouse to put growers of value-enhanced grain in touch with contract opportunities and appropriate elevators. In this way, we help ensure that no value-enhanced grain fails to earn its value, and that no demand for value-enhanced grain goes unsatisfied.

Although many growers already see the benefits of seed modified for input benefits, it may be easier to attract them to the value-enhanced side. For example, corn growers can expect substantial premiums for high-oil corn used by large hog operations, because high-oil corn saves the operator money on additional feed supplements. The hog operator in (will eventually) take advantage of improved animal genetics and nutrition to deliver the lean pork that the more health-conscious consumer demands.

Change will reshape other stretches of the value stream and create further opportunities. The new food industry requires grain handling and transportation to preserve grain identity and maintain its output trait value. These systems already buckle under the weight of bumper commodity crops. They will be slower to develop the agility and dexterity necessary to preserve grain identity, even if we must provide additional incentives. If grain handlers are slow to respond, farmers will fill the gap by adding more on-farm storage. In addition, the trucking industry can be a less expensive, more nimble transportation supplier than railroads.

Thus, the transformation of the food industry will proceed, gaining momentum that defies resistance. Technology will drive and accelerate the process. By keeping the entire system focused like a laser beam on the ultimate objective — meeting consumer expectation and demand — we can ensure a continuous flow of value upstream and a share for every link in the value chain, from input supplier to food retailer.

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