

A NATIONAL CORN GROWERS ASSOCIATION TASK FORCE REPORT:

# TAKING OWNERSHIP *of* GRAIN BELT AGRICULTURE

HOW PRODUCER SELF-RELIANCE IS TRANSFORMING RURAL AMERICA



“Those who prosper in this future agriculture must adjust to a rapidly changing environment and be willing to challenge their traditional comfort zone. Growers must be willing to sacrifice independence for interdependence. Farmers, policymakers and agribusiness leaders must be willing to create competitive advantages rather than protect old ones.”

– *Choices in the Evolution of Corn Belt Agriculture, NCGA 2001*

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# Executive Summary

Recent spikes in commodity prices mask a stark reality for agricultural producers. If history is any guide, commodity prices are more prone to price deflation than inflation. Since World War II, advances in mechanization and crop technology have drastically reduced the manpower needed to produce an acre of corn, soybeans, wheat, rice or cotton. U.S. agriculture has benefited from constant technology innovation which has enhanced productivity and reduced cost to remain competitive. But the side effect of this technology treadmill is that it also lowers prices and forces Americans to produce a bounty of agricultural production at smaller and smaller margins.

Increasingly, economists are linking the commoditization of U.S. agriculture with a contraction in the number of full-time operators and depopulation in communities once dependent on agriculture. Pressure to curb farm price supports for budgetary reasons or compliance with World Trade Organization rules will only exacerbate this trend.

To revitalize rural America, agriculture needs a new focus—an emphasis on entrepreneurship versus entitlement. Hundreds of farmer-owned ventures have flowered throughout the Grain Belt since the mid-1990s. But more investment beyond production agriculture is critical, since future profits in commodity agriculture will grow only in nickels and dimes; upstream processors, owned, will capture the real agriculture. The ethanol industry is a perfect example: locate in a 50-mile radius 15% to 20% of the local corn and raise prices no more than 5¢/bu. Their goal is to make the plant profitable and to boost returns for suppliers. To benefit from processing, value-added or branding opportunities, farmers must participate as shareholders in the industry, not as vendors. Ownership of the manufacturing plant, not the raw corn, will offer far better futures for farmers and their communities.



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In an atmosphere where growers take more ownership in their futures, commodity producers will gravitate toward higher-value markets and business models where producers can participate in profits beyond the farm gate. For some producers, this means more vertical integration and alliances with processors, distributors and even retailers. For some, it could mean a technological advance that enhances product quality or enables speedier delivery or reduced handling or production costs. For others, it means ownership in multiple rural-based manufacturing facilities, such as boutique meat packers, ethanol processors or wind-generation plants that can recirculate profits within farm communities.

In many remote rural areas without scenic amenities, livestock agriculture remains the most logical route for value-added agriculture. If animal agriculture continues to move to other countries because of social and environmental concerns, grain production will quickly follow. This will have major implications for U.S. competitiveness and U.S. food security. Currently, livestock consume 56 percent the U.S. crop and 47 percent of domestic soybean production. Growers must continue to support livestock and poultry production and research, especially efforts to make it more environmentally friendly. Growth in U.S. animal agriculture is crucial to guarantee local markets for grain and ethanol plant byproducts. Without a healthy U.S. livestock industry, value-added agriculture, including soybean processing and ethanol production, won't reach its full potential.

Evolution from a petrochemical-based society to one that relies on plant-based products for fuel and materials could significantly improve opportunities for rural-based businesses in the next decade. Biotechnology is already making some of this conversion possible, with new-age enzymes that speed bioreaction times and increase the cost efficiency of ethanol plants. But policymakers need to set new national priorities to fund such bio-based research and help agriculture broaden its mission beyond a raw supplier of food and feed.

Legal and tax obstacles also impede farmers' ability to join forces in capital-intensive businesses, or to act with the nimbleness required as markets change. Some 35 states retain co-op laws first drafted in the 1920s, and they are largely inadequate for today's new generation cooperatives that are neither supply or crop marketing ventures. Growers desperately need business entities that are tax efficient, raise capital with ease and offer investors liquidity.

In a market-oriented agriculture, no single business plan guarantees survival. The failure rate of some of these new enterprises may seem high, compared to the attrition in a government-supported industry. What's important to recognize is that the transition to value-added agriculture can be enhanced if producers are willing to adapt, if public and private interests prioritize research on technological advances in plant-based fuels and materials and if state and federal governments remove barriers to rural business formation. Admittedly, the transition won't be painless, but fostering a policy of self-reliance in Grain Belt Agriculture offers far greater benefits than risks.

Specifically, the Task Force recommends that policymakers and farm leaders:

- Elevate bio-based research and technology to a national priority.
- Encourage farmer-owned brands by removing legal barriers.
- Reform producer-owned business structures to improve tax efficiency, easily raise capital and offer investor liquidity.
- Foster and fund value-added education and rural entrepreneurship.

## The Case for Change

“Unless new business models are developed, the future of corn production is bleak for those producers who do not want to compete in the razor-thin margin business of commodity corn.”  
– *Bruce Babcock, Center for Agricultural and Rural Development, Iowa State University*

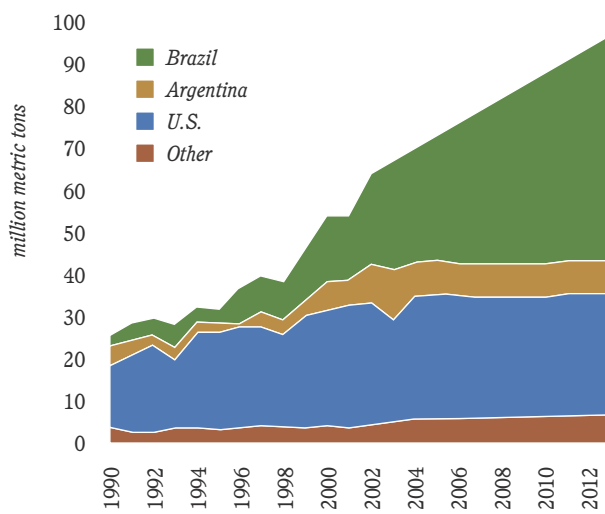


**Value-added agriculture creates a relationship between the producers and their customers with shared risk and reward, enabling the producer to receive a larger share of their customer's dollar. Typically that means that the producer must make an investment in management, equipment, processing or time. — NCGA Corn Board**

The universe of farmers and their communities will shrink severely in the next decade unless agriculture's stakeholders chart a new course. That's because U.S. agriculture remains largely focused on commodity production, where rewards accrue to those who can grow crops the cheapest and in the largest volumes anywhere in the world. While perhaps the top tier of U.S. farmers can compete effectively by adopting low-cost technologies and economies of scale, many of today's family-owned, commercial farm operators will find profit margins too thin to sustain a full-time living from farming in the future.

For example, South America's entrance into world markets assures a steady supply of cheap commodities competing head to head with U.S. exports. USDA expects Brazil to capture much of the increased demand for oilseeds over the next decade and significantly temper world prices in the process. Another threat is that the U.S. farm safety net faces budget and trade challenges. Federal deficits and World Trade Organization negotiations already are pressuring U.S. lawmakers to downsize support levels by the time the 2002 Farm Act expires.

### Global soybean exports



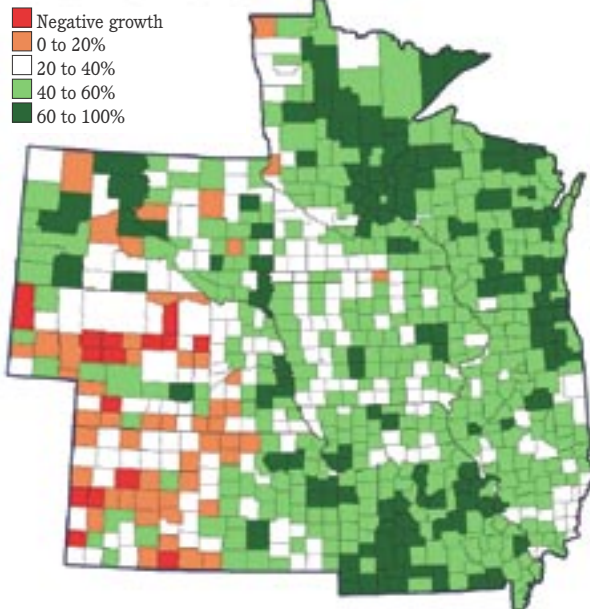
Even without these outside influences, farm policy faces new challenges. Farm price supports alone have proven to be only partially effective as rural development policy. During the 1990s, rural counties dependent on agriculture for the bulk of their income suffered serious setbacks relative to nonfarm communities. Three out of every four farm-based counties experienced sub-par economic growth and half lost farm population, some as much as 37% [Kansas City Federal Reserve]. The erosion occurred despite a record \$104 billion spent on farm payments targeted at individual producers. While it is clear that the government farm safety net succeeded in keeping farm operators in business during chronic low prices, it has not been as successful in stemming the economic erosion in farm supply businesses or Main Street storefronts.

Many of these distressed rural economies have been concentrated in Plains states, far from urban centers or in regions lacking recreational amenities. However, analysis of eight Midwestern states by Iowa State University's Center for Agricultural and Rural Development finds that the higher a county's dependence on farm income, the lower its per-capita income growth during the 1990s. Moving from a dependency of 10% of county income from farming to 20% from farming decreased growth 8%. The general rule applied to counties in Illinois, Wisconsin, Minnesota, South Dakota, Iowa, Missouri, Nebraska and Kansas (see maps on page 8).

Some economists believe that grain producers and their communities would benefit from developing markets for value-added processing and new value chains for differentiated agricultural products. For example, federal environmental and tax policies have encouraged ethanol producers to more than double capacity since the year 2000, a factor that already has extended oil supplies, boosted national corn prices by 20¢ to 40¢ per bushel and drastically reduced federal outlays for farm price supports. As an industry, ethanol will add \$15.3 billion to gross output in the American economy in 2004, including almost 12,000 jobs to the beleaguered manufacturing sector. Those workers typically earn about \$35,000 a year on average, good jobs for low-cost rural areas.

One of the most significant changes since 1996, however, is that farmers now own more than 40% of the ethanol industry and stand to benefit from its profit stream as both shareholders and suppliers of a raw commodity. In the past five years, those returns have been so robust that shareholders in an average Iowa plant could have earned a 23% annual return on investment, according to Iowa State University's index of ethanol profitability. However, equity ownership

**Growth in per capita county incomes  
1990-2001**

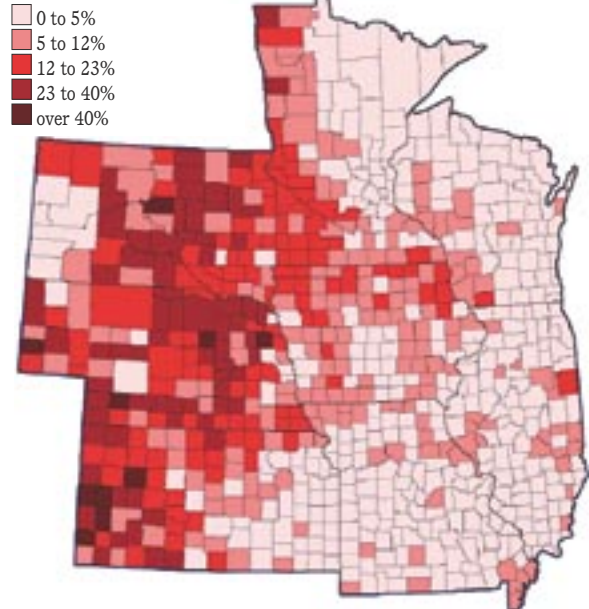


Source: Center for Agricultural and Rural Development

poses risk as well since ethanol returns have been far more variable than commodity prices.

Manufacturing plants provide welcome jobs and economic activity in any rural community. But local ownership provides the added benefit of recirculating profits nearby. A typical 40-million-gallon ethanol plant spends about \$35 million for annual corn purchases in the community and \$1.5 million in payroll. But a plant owned by farmers and local investors could also return an additional \$4 million (assuming a 20% return on

**Percent of county income from farming  
1990-2001**



Source: Center for Agricultural and Rural Development

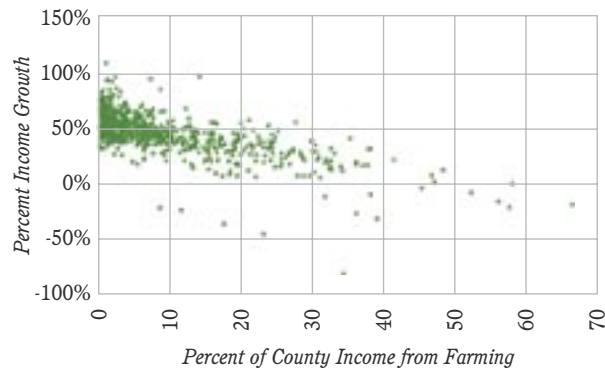
equity) to hometown bank accounts, if recent profit levels can be maintained.

Rural-based processing and manufacturing is only one route to boost farm incomes. Specialty markets, where growers are closely aligned with each step in the food chain, may offer another opportunity for some individuals. In the last decade, experts had expected designer grains to account for a much larger share of today's commodity industry, but forecasters underestimated the high costs of grain segregation



and transportation in a system designed for speed and bulk handling. Many growers experimented with these niche markets, only to be disappointed when premiums for crops like high-oil corn, popcorn or tofu-grade soybeans narrowed or vanished after several years. However, new information technologies are lowering the transaction costs of source identification from the farm gate to the dinner plate (see Chapter Four).

**Relationship between dependence on farm income in 1990 and per-capita income growth 1990 to 2001 for Midwestern states**



Source: Center for Agricultural and Rural Development

America’s growing affluence also will build demand for relatively expensive lifestyle foods. As European producers discovered, most success stories have been in branded products like Parma ham, Gruyere cheese or geographically designated wines, not intermediate products like corn or ethanol. In the 1970s, farmers and communities in Brittany benefited from large French government investments in distribution and transportation infrastructure, research and food processing companies. Income levels and the number of jobs in Brittany expanded dramatically.

Clearly, multiple choices exist for farmers and policy leaders to dramatically improve outcomes for rural residents. The key is to develop blueprints for change.



## Benefits of an Ownership Stake

“We don’t need to wait for solutions from Washington or Wall Street. We’ve already found ways to bring jobs and profit centers to farm communities.”

— *Luverne, Minn., farmer who helped broker two locally owned ethanol plants and a wind-generation co-op*



Today's booming ethanol industry is just one segment of a massive farmer-led movement to enhance the value of crops and rebuild the economic vitality of the U.S. heartland over the last decade. In the cattle industry, ranchers now own the fourth-largest meat packer and are earning sizable premiums on branded, high-quality beef. In the soybean industry, 4,400 farmers operate crushing plants in the new soybean regions of South Dakota and western Minnesota, representing a capital investment in excess of \$100 million.

While not a panacea for all of rural America's ills, this ownership trend represents what could be the largest infusion of private dollars in rural development projects in decades. Farmers have committed more than \$3 billion in a wide variety of rural-based factories and other value-added ventures since the mid-1990s. That stands in stark contrast to the mass migration of other types of U.S. manufacturing overseas during the same period, including a large number of the country's cotton mills and soybean crushing capacity. Producers of raw commodities know that without a commitment by private industry to reinvest in all types of grain, meat and fiber processing in this country, the ultimate profitability of U.S. crop and livestock agriculture, as well as the health of ag-dependent communities, remains at risk.

In many communities, farmers and rural entrepreneurs already are filling the gap left by corporations and traditional farmer cooperatives. More than 80,000 producers have invested in processing facilities owned by so-called new generation co-ops or limited liability partnerships in recent years. One measure of popularity is that while fewer than a dozen of these farmer-owned, value-added ventures existed in the early 1980s, today more than 165 are operational and at least another 100 are in some phase of development, according to the Illinois Institute for Rural Affairs at Western Illinois University. Projects range from tortilla plants to producer-owned meat packing co-ops, pasta and flour plants, egg-laying operations and designer hay for the pampered horse market.

Much of this entrepreneurial activity is concentrated in the Upper Midwest and Great Plains states, areas that have suffered chronic low grain prices relative to the Eastern Corn Belt. However, modified business models could be adapted to almost any region of the country. For example, despite initial production problems, a dozen crop producers who invested in a 1,500-cow dairy operation in South Dakota in 1999 typically capture at least \$100 more per acre by supplying haylage and corn silage direct to their own dairy rather than producing commodity grain. Raising

alfalfa hay in the crop rotation increases net returns per acre by 113%, compared to historic harvest-price corn sales to a local elevator. Beef producers in Nebraska, Colorado and Kansas are also enhancing profits through networks of branded, identity-preserved grower-packer chains such as U.S. Premium Beef or Ridgefield Farms, a fork-tender Hereford beef for white-tablecloth restaurants that will be born and raised in South Dakota.

These new farmer ventures differ significantly from traditional farmer-owned supply and grain cooperatives formed during the 1920s. Instead of a Fortune 500 company with thousands of members, most new generation cooperatives involve several hundred partners or less. Most of these "new generation" ventures are organized as (1) limited liability companies (LLCs), which allows them to be taxed as partnerships, or (2) hybrid co-ops that combine the business structure of a co-op with the flexibility of allowing outside investors (similar to Wyoming's Processing Cooperative or Minnesota's 308b-type cooperatives).

Unlike traditional co-ops which are forced to retain profits to rebuild equity and often suffer from chronic capital shortages, most new generation co-ops rely on some investors (such as retired farmers, small business owners and local entrepreneurs) to fully capitalize their businesses. This flexibility means that they can make a point to distribute dividends on a regular basis. Bylaws of some new generation cooperatives require that 70% of the profits be distributed back to members in any given year.

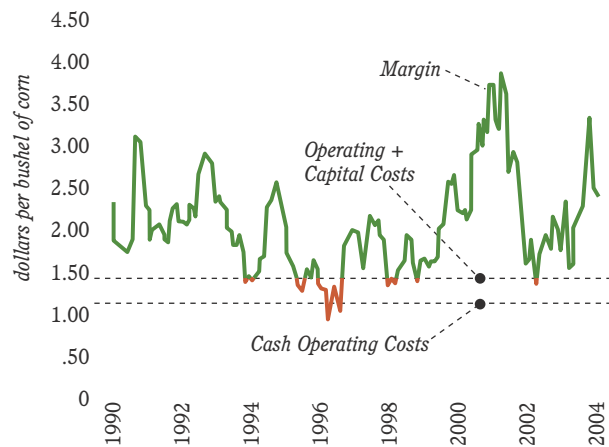
Upstream diversification for commodity agriculture is an important trend because farm price supports alone have not translated into robust growth in rural America (see Chapter One). In contrast, dollars invested in processing and value-added ventures appear to generate more economic activity than direct government transfer payments. For example, a single 40 million-gallon, dry mill ethanol plant not only increases local corn prices 5¢ to 10¢ per bushel, its operation and its secondary effects expand the economic base of the local economy by \$110.2 million, generate at least \$1.2 million annually in new tax revenue for state and local governments and support the creation of as many as 694 jobs, according to a study by economist John Urbanchuk of LECG.

Profitable farmer-owned enterprises also circulate more dollars back into a local community than would a traditional cooperative or a publicly owned company with stockholders scattered across the country. One southern Minnesota ethanol venture that required \$4.3 million in capital investment five years ago has since repaid more than \$14 million in investor dividends and

employee profit sharing.

Although profit margins fluctuate wildly (see chart on page 12), the current 5-year average after-tax return on investment for a typical dry mill ethanol plant is 23%, according to Iowa State University. That far outdistances the average returns to corn, wheat and soybean producers in the past decade. For comparison, ISU estimates that 70% of the state's counties averaged returns on farmland of only 2.5% or less in 2002. One community banker in Minnesota who actively finances stock purchases in value-added cooperatives considers the investment in processing plants far less risky and potentially much higher return than lending money to farmers to buy \$2,400/acre farmland.

### Iowa Dry-mill Ethanol Margins Soar



Source: Paul Gallagher/Hosein Shapouri

Such ventures can pose substantial risks, however. Several high profile failures—such as the bankruptcies of Spring Wheat Bakers in North Dakota and the Southwest Iowa Soy [Processing] Cooperative—remind investors of potential pitfalls in manufacturing technology or management. Failures also make farmers much more cautious about future projects.

Critics warn that many of these farmer-launched manufacturing enterprises remain commodity businesses where only the world's lowest-cost operators can thrive. With just three or four multinational players dominating some food and fiber industries, small independent operations can lack the scale, market access, technology innovation, capital reserves and sophisticated risk-management skills needed to compete and to survive inevitable down cycles. As global trade is liberalized, South American exports of both ethanol and soybean meal pose

potential challenges to high-cost, domestic operations that lack economies of scale. Conflicts inherent in co-op structures also can lead to management difficulties (see Chapter 5) that put farmer ventures at a competitive disadvantage compared to corporations or private partnerships. Of particular concern to bankers is the tendency of farmer owners to tolerate running value-added ventures at a loss so long as they profit from a higher price for their raw commodities.

Despite those caveats, farmer ownership of rural-based businesses makes sense as a way to diversify the sources of farm incomes and to rebuild rural communities. Northwest Iowa, Minnesota, the Dakotas and Kansas have experienced a flowering of value-added farm enterprises in the last decade. Although their prices were relatively low compared to the Eastern Corn Belt, their experiences could prove valuable to farmers and agriculturally-based communities nationwide.

The Task Force attempted to identify elements that incubate and foster successful rural-based businesses (see observations on page 17). During site visits and interviews in the spring of 2004, task force members focused on characteristics that have helped farmer-owned ventures weather start-up difficulties and/or unavoidable spikes in commodity prices. Each of the following case studies incorporate principles—such as economy of scale, unique competitive advantages, risk-management and/or a shift toward non-commodity products—that increase the odds of sustaining profits.

### South Dakota Soybean Processors (SDSP)

- *Volga, S.D. (founded 1996)*
- *Expanded from original 16 mil. bu. to 28 mil. bu. annual capacity*
- *Emphasizing value-added soy products, with a goal that they will generate 60% of revenues*
- *Invested in a supplier of soy-oil based polyol, a product used in polyurethane plastics*

### Minnesota Soybean Processors

- *Brewster, Minn. (founded 2003)*
- *Launched a 36-mil. bu./ year processing plant under joint management with SDSP*
- *Benefits from SDSP's risk-management experience and marketing contacts*
- *Secured over \$32 million to build a soy processing plant and a 30-million gallon soy diesel plant (to qualify for Minnesota's state biodiesel mandate)*

In 1993, a group of South Dakotans attempted to remedy some of the worst local soybean prices in the nation by launching South Dakota Soybean Processors.

They wanted to proceed with a feasibility study by the South Dakota Soybean Research and Promotion Council that had recommended the construction of the state's first soybean processing plant, and the nation's first new plant since 1978. No private processors were willing to take the risk.

South Dakota farmers recognized early in the decade that with Freedom to Farm legislation and conservation tillage, the state was evolving out of low-profit wheat production and into a soybean and corn powerhouse. In fact, the state added 143% more soybean acres from 1993-2003. In an attempt to become "price makers, not price takers," some 2,100 members formed South Dakota Soybean Processors, and eventually built a 16 mil. bu./year crushing facility that opened in Volga, S.D. in 1996.

**Land isn't the only thing that can make money. — Minnesota Soybean Processor investor**

The launch's timing couldn't have been worse: In 1996, soybean prices hit an eight-year high. Despite the difficult startup, SDSP managed to distribute dividends even in the industry's most challenging years. Today, the plant crushes 25% of South Dakota's rapidly growing soybean acres and is considered one of the nation's most successful value-added experiments. In the first five years of operation, local soybean basis (the difference between Chicago and local markets) narrowed 25¢/bu. and profits more than repaid members all of their original stock investment. Perhaps most significantly, SDSP inspired Minnesota Soybean Processors to build a 100,000 bu./day crush facility in 2003. Together, the two operations are owned by 4,400 family farmer members from 28 states and represent over \$100 million worth of capital investment.

**Future direction.** But the future poses some serious challenges. Erosion in South Dakota's livestock numbers means local demand for soybean meal is one-third smaller today than eight years ago. Soybean oil is normally a cheap commodity that represents 30% to 35% of the plant's income stream. Industry analysts also worry that opening the Brewster site within close proximity of a new 100,000 bu./day CHS soybean processing plant could inflate local soybean prices to the detriment of both plants.

However, supporters contend that adding the facility in Minnesota makes sense. Combining forces saves the two entities approximately \$500,000/year in marketing costs and allows for joint management. What's more,

Minnesota had been processing only 37% of its soybeans, versus crush rates of about 77% in Iowa and Illinois. A Minnesota state law mandating 2% biodiesel is providing new impetus for investment. Before the mandate can take effect, Minnesota plants must be capable of producing half the 16-million gallon market.

To adapt to changing circumstances, SDSP directors have modified their original vision. First, they converted the organization from a co-op to a limited liability company so as to gain the flexibility of building equity capital. Over the next 5-7 years, they hope to earn 60% of revenues from value-added income streams and rely less on commodities like meal and soybean oil. One promising alliance is a joint venture with Urethane Soy Systems Company, a research and marketer of SoyOyl™ to produce polyurethane products from soybeans. SDSP first entered into a supply agreement with the company in 1999, but in 2003 became the majority owner of the company. Markets SoyOyl has developed and served include soy-based carpets, spray insulation, rigid foam insulation and truck bed liners. Customers include Dow Chemical Company, Bayer/John Deere and Ford Motor Company. SDSP secured a patent on the process in 2002 that offers advantages through energy reduction, elimination of product shrink and reduction in variable costs.

The organization's leaders are preparing to take advantage of the increased demand for motor fuel, the support for renewable fuels in the farm bill and the prospect of a renewable fuels mandate. By mid-2004, Minnesota Soybean Processors successfully completed a \$7.2 million equity drive to build a biodiesel refinery and thus qualify for new state incentives for soy diesel production. It is scheduled to open in 2005.

### **VeraSun Energy**

- *Aurora, S.D. (Opened 2003)*
- *100-million gallon/year, dry-mill ethanol plant*
- *Benefits from economy of scale as one of the largest dry-mill plants in the country*
- *C-corporation owned by a South Dakota entrepreneur and eight nonfarmer investors*

South Dakota's largest ethanol plant illustrates some of the advantages of scale and business structure that are atypical for the industry.

VeraSun investor and South Dakota native Don Endres first founded and sold two technology companies in the 1990s. Looking for a new business opportunity, Endres then invested in two 40-million-gallon ethanol plants, one a cooperative and another a limited liability company.

Rather than limit the size of this new plant based on the amount of capital they could raise, VeraSun's managers focused on plant economics, engineering and environmental constraints. They determined that a plant properly located with 100 million-gallon capacity created optimum efficiencies and distribution of ethanol.

The optimum business structure also entailed one that could attract a few additional investors, while giving them the ability to make decisions quickly. The one-man, one-vote method common in co-op structure make it difficult to attract outside capital from large individual investors. In addition, corn delivery requirements, transfer restrictions and lender covenants requiring members to deliver corn below market during difficult times also created barriers to VeraSun's potential non-producer investors. These restrictions also tend to reduce shareholder value over the long term.

**We don't need Wall Street money. Farmers here have plenty of wealth tied up in farmland. That's capital that could be reinvested. — South Dakota ethanol investor**

The owners decided that a C-corporation best fit the needs of private equity investors. It offered them voting control proportionate to their investments and no corn delivery requirements. It also enabled the company to assemble a nimble, five-member board comprised of both company and industry leaders.

"The cooperative business model is an effective one for large numbers of producers to pool their financial resources and business experience.," says Endres. "By contrast, a corporate structure is a good model if investors want management to focus on profitability. Both structures create local economic development through new corn markets and jobs. Both have the ability to increase the value in the ethanol business. The decision of structure really comes down to the primary objective of the investor."

VeraSun's experience indicates that the farm-ownership model may need to adapt as the ethanol industry gravitates to larger plants. Such operations are increasingly financed by six to eight principal investors, without the need to deal with hundreds of small-scale farm investors. An innovative group of Michigan farmers solved the problem by forming their own co-op entity that became one of a handful of owners of an ethanol plant. The farmer-entity holds one spot on the board of directors, minimizing logistical issues. But the benefit of the arrangement

is that farmers can retain local ownership and stay in the equity stream while investors earn goodwill in the neighborhoods where they locate.

**Future direction:** Endres recently sold his stake in the co-op ethanol plant. The VeraSun team is now focused on constructing a 110-million-gallon plant with corporate structure and local private equity investors in Fort Dodge, Iowa.

### **Great Plains Ethanol**

- *Chancellor, S.D. (2003)*
- *Limited liability company owned by 500 members*
- *40-million gallon, dry mill plant operated by a professional management company*
- *Example of turn-key ethanol plant investments*

Turn-key management is one new model for farmer-owned ethanol plants, with several firms specializing in packaging the plant from design to ongoing operations management. The Chancellor, S.D., ethanol facility is a good example of how hired management can reduce the risks of independent farmer-owned ventures, while sharing a portion of the stockholders' profit. It's a cookie-cutter strategy to ethanol investments that can be considerably safer than a launch by farmers inexperienced with the manufacturing process or lacking industry contacts.

Broin Companies was hired to supervise the equity drive, the design, construction and operation of the plant. Plant managers work directly for Broin and rely on the company to hedge risks like fluctuations in grain prices and natural gas costs. This company also captures economy of scale for its customers by marketing DDG byproducts under a branded label. The board of directors includes both farmers and experienced business leaders and meets every few months.

A management firm's experience can reduce the chances of a flawed engineering design or other management errors. The Chancellor plant was built in a record 10 months instead of the normal 13. The firm has been involved in ethanol production for over 20 years, with 23 plants completed or in the building phase. Currently Broin manages 17 of those operations. In addition to management fees for its services, Broin maintains partial ownership collecting a proportionate share of profits.

Chancellor offered the advantages of a relatively wide corn basis and large local corn supply. Other considerations were water, rail, gas and electrical availability. The facility is on the Burlington-Northern line with good access to the West Coast.

**Future direction:** The Midwest's ethanol building boom could place plants too close together and erode profitability, managers say. In addition, ethanol imports under more relaxed free trade agreements could mean very low cost competition for ethanol producers in the next few years. Energy prices were so high in mid-2004 that ADM reportedly imported ethanol from Brazil for the New York market, and could still make money paying the 54¢ per gallon import duty.

### **Siouxland Energy & Livestock Cooperative**

- *Sioux Center, Iowa (opened 2001)*
- *14-million gallon ethanol plant producing high moisture distillers grain*
- *Close affiliation with a nearby feedlot saves natural gas and drying costs, often the second largest expense of ethanol production*
- *Members benefit by harvesting high moisture corn and needing no on-farm storage for grain committed to Siouxland*

Siouxland Energy & Livestock Cooperative may lack the sophistication of a corporately managed ethanol plant, but it offers members and its livestock-based community substantial benefits. Even though investors have not yet been fully compensated for their grain, it is in the process of turning the corner from a struggling venture with a flawed engineering design to an economic contributor.

Hiring engineers with a proven track record to design and build a plant would be top of this co-op's recommendations. After a year of operations, the co-op's financial projections had veered far off course due to fermentation problems. The plan had been for growers to deliver 25% to 32% moisture corn to the plant at harvest, but ethanol conversion rates were far below projections, due to a series of design problems. A second engineer was hired to correct those design flaws, improving conversion rates 50%. Conversion rates are now significantly higher using 19% moisture corn and a modified production process.

The main benefit to farmers is that they can deliver wet corn without the expense of drying or storing. Those savings are worth about 46¢/bu. to growers, on top of any dividends they might receive from the plant's profits. Meanwhile, a co-op affiliate feeds distillers grains to cattle and markets any surplus high-value feed co-products to local livestock producers. The plant also employs 27 people who earn average salaries of about \$35,000 a year.

**Future direction:** Ethanol is already becoming tomorrow's commodity. Small volume operations

like Siouxland could have trouble competing against industry giants or cheap South American imports in the future. The upper Midwest could be saturated with too many plants, managers also worry. To stay competitive in the industry, Siouxland is direct marketing E-85 blends (85% ethanol vs. the standard 10% ethanol) to cut distribution costs and sell more of its product directly to customers. It also has increased production capacity to 22 million gallons per year and is looking at the feasibility of producing methane from waste products to further reduce energy costs.

### **Dakota Premium Hay**

- *Meckling, S.D. (2002)*
- *Sell premium hay as a convenient forage product for horse owners*
- *Repackage bales into size easily handled by hobby farmers and stables*
- *Scrap the livestock feed mentality that favors high-protein hay over aesthetics*

South Dakota Ag Producer Ventures, a type of venture capital group that invests in a variety of value-added ventures, describes Dakota Premium Hay's mission as "providing nutritionally consistent, blended hay bales to the growing high-end equine marketplace in the United States. Compact and convenient Dakota Premium hay bales are finding success as far away as Florida and Texas."

This is a prime example of a success story utilizing a marketing strategy that worked so well that the demand exceeded the company's ability to deliver the product. This two-year-old company has not made money yet as technical difficulties rebaling round bales hampered production. The key to success will be to match their production capacity with demand for their product.

One important fundamental is that the pet food market is growing, with more horses in the United States today than when horses were used for locomotion. Many owners live on hobby farms where ease of handling hay/feed is of prime importance. The concept of easy to handle bales (50-lb.) has led to an increase in market demand. Horse owners want a one-stop pickup point of consistent quality hay. The company started out stressing protein values but soon learned that green hay was of primary concern to horse owners. It's newest product line slices large square bales into smaller sizes, stacks them with shrink wrap on pallets and ships them to feed supply stores or boarding stables.

Several problems arose at the start, the first being loss of leaves and moisture in rebaling. Second, some

employees did not have manufacturing experience and approached the business from a farm operation perspective. Staffing the plant led to inefficiencies in shipping, scheduling, freight rates, procurement and production. Equipment broke down and the company ran out of capital.

**Future Direction:** The company has since hired professional management and no longer uses round bales. It has now completed a second equity drive and has ordered new equipment for retooling. It sources hay from South Dakota, rather than importing it from Canada. Managers now factor in the value of time in production. In addition, owners say they underestimated the amount of capital needed to get startups off to a smooth launch.

### Dakota Layers

- *Flandreau, S.D. (launched 2002)*
- *Limited liability egg production company with 140 local investors*
- *Benefits from the synergy of corn farmers who earn more for their crop, a fertilizer dealer who contracts waste for organic fertilizer and an experienced poultry partner with established relationships in the Arizona egg market*
- *Advantage of European-style egg production facility with permitting for 2.3 million birds*
- *Entered market just as industry rebounded from losses to highest egg prices in recent history*

“Eggs are our business” is the motto of Dakota Layers, a model venture initially organized by crop producers and local businessmen with no experience in poultry, but who acquired the outside expertise they lacked. In an area with notoriously low grain prices, the founders’ goal was to generate jobs and perhaps raise the local corn price by 10¢ per bushel when at full capacity. But the nearly flawless launch demonstrates the importance that novices in a livestock venture align with a business partner knowledgeable in production practices and marketing. Dakota Layers’ biggest key to success is that it teamed with a well-connected equity partner who had considerable experience in the Arizona egg industry. He not only invested in the venture, but he agreed to buy the eggs under a seven-year contract and promised to find other customers for Dakota Layers.

After three years of planning, investors raised 40% of the initial \$10 million capital requirement, including a federal grant of \$131,000 and borrowed the balance with personal guarantees from a handful of key investors. In Phase One, they built five of the eventual 10 barns permitted for the site, with plans to house 230,000 birds per barn. The operation currently employs 40 people.

The venture capitalized on a strong dollar compared to the Euro and purchased a state-of-the-art egg-laying and conveyor system from Germany. This technology proved its advantages, since European designs had already been engineered to comply with consumer demands for animal comfort. It also allowed them to handle twice as many birds and avoid using a high rise system which creates a number of environmental problems. Consequently, their maintenance and energy costs are kept low. The facility has a separate profit center that processes the poultry litter to manure for an outside fertilizer dealer, who in turn resells the product to corn growers in the area.

**My egg check has a lot more zeros behind it than when I remember growing up on a farm. It’s enough to take my family out to eat for a year, not a just one dinner. — A investor commenting on her first dividend check from Dakota Layers**

Through the luck of timing, Dakota Layers opened for business just as the nation’s egg market rebounded from a period of extremely low prices. At times in the last year, egg prices have exceeded \$1/dozen above breakeven costs.

**Future direction:** Those profits have been maintained despite significant cutbacks in bird volume. The operation’s original capacity of 230,000 birds/building has been ratcheted down to 196,000 to comply with new industry standards of 67 square inches per bird. However, good demand for eggs since the Atkins diet craze, combined with higher prices, means the outlook for profits continues to look good. In addition to the Phoenix market, Dakota Layers is now developing regional markets in Nebraska and possibly Kansas.

## Observations of Successful Value-Added Businesses

- **Leaders possess vision and entrepreneurship**
- **Operate under a flexible business structure – not static business plan**
- **Sourced professional, rather than home-grown, management and technical expertise**
- **Linked with experienced partners in technology, marketing, and production to fill any gaps in knowledge or skill sets**
- **Located near low-cost materials**
- **Evaluated and used appropriate forms of technology**
- **Properly capitalized in the event of contingencies**
- **Allowed sufficient risk management for operation**
- **Managers receiving sufficient compensation**
- **Identified a compelling competitive advantage and how it fits the needs of the marketplace**
- **Clearly understands the competitive threats and substitutes**
- **Consulted with experienced legal counsel**
- **Diverse board members, including outside directors**
- **Built goodwill by encouraging local investment**

## Creating Sustainable Value-Added Businesses

“If you’re in the commodity business, you have to wake up every morning and lower your cost of production. In the next five years, I’ll concentrate on higher-value acres, not more volume.”

— *Indiana producer who specializes in identity-preserved crops*



Creating value-added businesses for Corn Belt agriculture is a necessity, not a luxury. In the future, economic cycles will continue to show the mixed wisdom of solely relying on the production of commodity crops. Commodity pricing, a key variable to the profitability of most major crops, is expected to become more volatile due to globalization and democratization of world economies. That trend is expected to intensify competition for U.S. agriculture in both domestic and export markets. Growing recognition of these profit pressures has intensified efforts to develop value-added businesses.

#### Strategies to Move Up the Value-Added Curve

- Capture a larger share of the value created between the farm gate and end users
- Create new, unconventional, value-added markets
- Develop new product/information-based systems that redefine value between farm gate and end users

An increasing number of rural business initiatives have created a broad diversity of first generation value-added businesses, largely financed by growers. Despite the successful efforts of many of these new value-added businesses, the strategic issue faced is creating and capturing enough sustainable value to generate adequate long-term financial returns. For example, many ethanol plant managers already worry that they are producing “tomorrow’s commodity.” Nevertheless, it is critical for U.S. agriculture, especially those commodity-oriented sectors in the Corn Belt, to move up the value-added curve to enhance growers’ value equation. This can be accomplished by: (1) creating and capturing a larger share of the value-added created between the farm gate and ultimate end-use markets; (2) creating new value-added markets, many of which will be non-conventional, non-food products; and (3) developing all together new integrated technology based product/information systems that redefine value creation between the farm gate and end-use markets. U.S. agriculture faces far different structural dynamics in global markets as it looks to the future. We are moving into a new world where democratization of Asian, Eastern Block and South American economies is accelerating. These dynamics are being manifested in markets, industries, breakthroughs in basic science that create new technologies, and most importantly, how people think about the role of production agriculture. For example, since entry into the WTO, China’s market-oriented farm programs

have encouraged subsistence farmers to abandon grain production, and grow more labor-intensive, high-profit crops like fresh vegetables and produce. U.S. specialty crop growers already are experiencing intensive competition in garlic, apples and even pine nuts as a result.

Globalization of trade requires a change in mindset as to how U.S. agriculture will have to evolve in order to compete in commodity and value-added commodity and specialty businesses. According to Sano Shimoda, president BioScience Securities, global agriculture is being impacted by the three main drivers:

- 1) *Market-Oriented Agriculture* – Since the fall of Communism and centrally controlled economies, many developing countries have, or are in various stages of developing, significant agricultural production infrastructures. Many of these areas have the potential to develop a competitive advantage in terms of lower cost structures compared with U.S. agriculture for both commodity and value-added commodity and specialty agriculture-based products.
- 2) *Free-flowing Information* – The Internet has allowed greater transparency in information, technology, and market access on a worldwide basis.
- 3) *Accelerated Science/Technology Transfer* – Broadening scientific expertise is enhancing the global development of basic science and derived technological innovation.

Potentially, U.S. agriculture is headed for the “perfect storm” involving all three factors. This confluence is likely to result in intensifying competition at all levels, including both commodity and many specialty ag businesses and new infrastructures that link the farm gate to end users. The question is whether U.S. agriculture can rise to the challenge by shifting its focus to the development of value-added businesses based on competitive advantage that create both short-term and long-term value sustainability.

Experience has taught us about the geographical evolution of industries, as competitive advantage shifts from industrialized to developing countries. In the last few decades, the history book is replete with major U.S. commodity industries that have almost become extinct, namely, steel, textiles, and electronics. These industries did not transform themselves in response to structural shifts in global competitiveness.

Could U.S. agriculture become a dinosaur? Possibly, but the strategic advantage that U.S. agriculture has is productive land resources,

infrastructure, technology, and expertise, the combination of which creates strategic advantage for many crops. However, U.S. agriculture cannot become complacent because the dynamics of global development is eroding U.S. competitive position for many major crops and intermediate products. Other developing agricultural regions have, or are developing competitive advantages. U.S. agriculture's relative competitive advantage is eroding due to three factors: (1) foreign productivity is increasing more rapidly; (2) transportation costs are being impacted by a deteriorating infrastructure; and (3) although U.S. labor costs are high, U.S. agriculture's relative labor costs have been moderated by the intensity of technology adoption, however, these technology benefits are increasingly being adopted globally.

U.S. agriculture has a critical advantage, at least, in the short-to-intermediate term, and that is broad scientific and technology development, especially in the area of biotechnology and information technology. However, U.S. agriculture can only maintain its advantage by staying on the edge of technological innovation and meeting the growing sophistication and product differentiation demanded by end users and consumer markets.

Developing a definition of value-added business is critical to this effort. Currently moving from planting and harvesting a crop, such as soybeans, and moving up one step to processing it into oil and meal for feed is considered value added today. In fact, however, this first level of processing creates another commodity business, which is subject to different competitive pressures. Many of today's value-added businesses are large volume commodity businesses, including ethanol. Given the required capital investment for many of today's value-added businesses, investors' risk profiles have increased due the greater complexity of market forces and competitive factors.

The challenges faced in creating sustainable value-added business are numerous. The question is whether enough value-added can be generated, and, equally important, whether values can be sustained in order to justify the additional investment. Business models for these value-added businesses must actually differentiate products in order to minimize the potential squeeze on profitability and investment

returns that could develop due to competitive pressures. The business challenge is to generate adequate long-term financial returns by creating and capturing enough sustainable value-added.

Creating sustainable value added will rest on embracing one or more of the following key factors that contribute to sustainable competitive advantage:

- 1) *Multi-layer business model* – In order to minimize the risk of profit pressures from commoditization, business plans must have evolutionary strategies that constantly enhance competitive position.
- 2) *Marketing/branding power* – Creating real and perceived value-added for a product through marketing/branding can insulate product values from competition.
- 3) *Technology treadmill* – In order to limit the risk of obsolescence, businesses must constantly protect, reinvent and broaden their technology platforms. Staying abreast of technology will enable producers to constantly enhance product performance and value.
- 4) *Linkages in supply chain* – To capture value throughout the chain, growers must establish an integrated structure of business relationships—from the farm gate to the retailer. This vertical coordination assures a constant supply of raw products with proprietary traits desired by end users.
- 5) *Government regulation* – Although government regulation can create market opportunities, just as it jump started renewable fuels, adequate profit levels are still subject to changing supply/demand dynamics. In addition, the long-term viability of biofuels will rest on reducing production costs, in order to compete in the marketplace without the need for government incentives (e.g., tax exemption). That may be a difficult goal to achieve, but it is worth attempting since U.S. ethanol producers may be competing with much cheaper foreign imports in the future.

## A Case for Success

Perhaps the best example of a farmer-owned business that has bucked the commodity trend is U.S. Premium Beef, a branded beef venture involving 1,900 producers from 33 states. In the mid-1990s, the nation's beef industry was largely a commodity business with three large packers controlling 80% of the market. Individual cattlemen had little control over the prices they received, no feedback from packers on the quality of their animals and little financial incentive to produce prime beef.



Since its inception in December 1997, U.S. Premium Beef has returned more than \$76 million in premiums and \$81 million in dividends to owners. Bonuses sometimes top \$50/head for the highest quality cattle, but averaged about \$21.51 during 2004's record-high beef market. Few of those returns would have been possible if the cattlemen had not taken the initiative to develop a system that rewarded producers of high-quality animals.

The co-op's business plan pioneered efforts to ally producers with packers and retailers, thus assuring that higher margins from branded beef would filter back to the producer. To maintain quality control, it initially purchased a 50% stake in Farmland National Beef, but it has since bought full ownership in the nation's fourth-largest packer.

Other farmer ventures attempted to copy U.S. Premium Beef's model, only to succumb to volatile beef prices and packing margins. According to Kansas State University economist Ted Schroeder, this effort succeeded because investors kept capital reserves high enough to weather skids in the commodity cycle. "One of the major reason other companies failed is because they were too undercapitalized for this highly cyclical industry," says Schroeder. "They didn't have enough reserves to absorb those very volatile and heavy loss periods."



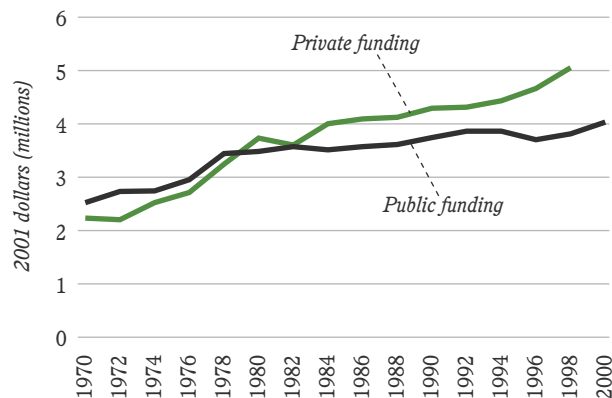
## Technology: The Key to Competitive Advantage

”The 20th century has been the age of the hydrocarbon. The 21st century should witness a rebirth of a carbohydrate economy [one that substitutes biochemicals for petrochemicals]. Living plants are again becoming attractive raw materials for manufacturers. The signs may be modest, but the conclusion is unmistakable.” — *David Morris and Irshad Ahmed, The Carbohydrate Economy*



U.S. agriculture's ability to maintain a leading-edge position in both domestic and global markets will rest on the combination of benefits from three key drivers: (1) scientific research and technology development to create technology/information driven value-added; (2) the development of new business systems that enhance value creation and sustain value capture between the farm gate; and (3) innovative marketing and branding strategies that create value stemming from technology-driven differentiated product value.

### U.S. Agricultural R & D Funding



Source: Public numbers based on data from the National Science Foundation and USDA Current Research Information System. Private numbers based on Klotz, Fuglie and Fray (1995)

From a big picture perspective, most new technologies, including biotechnology and information technologies, are expected to be incremental, not revolutionary, at least over the near-to-intermediate term, with the economic benefits (in terms of lower costs), largely accruing to the production/processing infrastructure downstream of the farm gate. Within a decade, however, there is the potential to create substantive product value premiums based on biotech value-added traits. Combined with the power of branding/marketing systems and new information driven supply chains, those advances could create meaningful value enhancement for farmers.

**The future growth and long-term competitive position of U.S. agriculture will depend on creating technology-driven businesses that refocus agriculture's mission beyond bulk food and feed. — Sano Shimoda, BioScience Securities**

A key driver behind our past economic growth has been government commitment for public investments in basic science and research. There is no better example than the federal funding of high-risk, high-reward science/technology breakthroughs that proved to be the catalyst for innovative industries that have created Silicon Valley.

At the core of enhancing our competitive advantage in agriculture is the need to place a national priority on a long-term funding for basic scientific research and technology development utilizing plants and agricultural crops. Priority should be placed on the utilization of plants and conventional crops for a broad spectrum of conventional and non-conventional uses. Most notable are technologies focused on creating competitive market economics (without the need for price supports or tax incentives) for: (1) biofuels and biomaterials, which could potentially redefine the strategic long-term competitive position of the U.S. economy as well as solve growing environmental concerns such as global warming; and (2) improved health and nutrition, which can help relieve skyrocketing health care costs.

Sustaining a national long-term research commitment to plants and agricultural crops will rest on agriculture's ability to harness grassroots support and build a broad political consensus to prioritize funding. These efforts, in turn, will require: (1) a mega-leap in America's understanding of the potential benefits; and (2) an educational program focused on the perspective that agriculture means more than just food.

### Biotechnology's Benefits

The application of biotechnology and related technologies already is broadening beyond conventional food markets and involving a number of non-traditional products. However, the reality is that genetically improved food crops for major value-added products for consumer markets are still at least five years away.

- *Genetic Traits* – Most of the visible benefits from biotechnology have focused on the development of input traits, such as herbicide tolerance and insect control in the major row crops. During the next few years, commercial emphasis will remain on input traits, reflecting two broadening dynamics: (1) an increase in the number of competitive traits, such as insect resistance and herbicide tolerance, from the major technology providers; and (2) stacking multiple traits together. By the end of the decade, the biotech trait pipeline is expected to shift focus to agronomic traits (e.g., drought tolerance and yield), output-oriented traits (e.g., improved oil and feed, enhanced nutritional profiles for food

products), and novel protein compounds that can be produced in plants (e.g., industrial, nutritional, and pharmaceutical proteins and compounds).

- *Breeding* – Biotechnology tools and genomics are also being used to speed up breeding efforts by locating the genes in specific in-breds and varieties responsible for desired characteristics.
- *Enzymes* – A major opportunity is biotech-based processing technologies that enhance the utilization and conversion of plant/crop-based substrates (materials) into non-food value-added products. The potential production of market competitive bio-based fuels (e.g., ethanol) and materials (e.g., plastics) from plant-based materials will require breakthroughs in genetically engineered enzymes. For example, the potential for biomass economics to be lowered to produce competitively priced ethanol will in part require additional progress in improving the conversion efficiency and cost of enzymes.

Although global biotechnology acceptance remains a patchwork quilt that is expected to continue for a number of years, there is a global proliferation in scientific research and the development of biotech-based traits. The best example is China, which is second only to the U.S. in biotech-trait development. This trend creates the potential that the U.S. edge in biotech-trait development could erode over the next 5-10 years and other developing agricultural economies will gain access to nationally developed traits. Once on the technology treadmill, the key will be for U.S. agriculture to maintain its competitive advantage by a combination of technological innovation and novel business systems that leverage the value of the technology in the global marketplace.

Beyond technology development, the key issue is whether there is sufficient incremental value-added to justify the development and commercialization of many traits, which, in large part, will depend on strategies and business models to create and capture sustainable value.

**By 2010, the consulting firm McKinsey & Co. estimates that bioprocessing will encompass 20% of the chemical market, worth \$160 billion in value creation.**

From a consumer perspective, one potential home run is the production of Omega-3 in oil crops. This is an essential fatty acid that is not produced in the human body, but whose nutritional and medical benefits

have been broadly validated. Recognition of these benefits by consumers provides the opportunity for food companies to create premium priced food products.

From an industrial perspective, the ability to apply metabolic engineering to enzymes that would more efficiently convert biomass into ethanol at crude oil equivalent costs without subsidies could not only create a major displacement in hydrocarbon based transportation fuels, but also potentially convert the source of many major petrochemical products from hydrocarbon to plant-based materials. For example, the National Corn Growers Association is funding a number of research projects to improve the efficiency of ethanol processing and to create innovative new uses for corn. NCGA's efforts have focused on improved fiber separation/hydrolyse technology, improved fermentation organisms for ethanol, creation of high-value specialty feed products from underutilized co-products and development of novel reaction and separation technology for chemical production. NCGA is also exploring technology that converts corn-derived products into higher value-added chemicals such as ethylene and propylene glycol (used in a broad array of chemical applications).

**Right now it takes \$80 million worth of enzymes to produce 1 billion gallons of corn-based ethanol. Based on research conducted with backing from the Department of Energy, California-based Genecore claims it can reduce the cost of creating enzymes used in ethanol production by tenfold.**

A combination of these technological and market breakthroughs could redefine the U.S. economy's competitive position from an energy and raw material perspective. What's important to recognize is that environmentally friendly plant-based materials can play a major role in reducing society's reliance on petrochemicals. As ethanol's rapid market growth has demonstrated, industrial demand can boost commodity prices and support more stable demand. All of those factors may eventually combine to reduce the need for farm programs to intervene with commodity price supports.

### **Information Technology**

Information systems are expected to play a growing role in the strategic transformation of agricultural supply chains that link the players in the production to the processing infrastructure, especially in the production of value-added crops and agricultural products. Critical will be the creation of segregation

and traceability systems that integrate the farm gate to downstream product producers and end-use customers. Given the large number of players involved, however, advances in traceability rely on developing new systems that focus on:

- 1) increasing the cost efficiency of product processing, logistics, and inventory control in the supply chain
- 2) creating improved and consistent product attributes desired by end-users, such as organic or non-GMO crops
- 3) assuring access to markets having compliance requirements, and
- 4) improving assurance of product safety (such as a nationwide cattle identification system).

Two examples demonstrate current efforts to create integrated information-driven supply chains:

- *Novecta*, an association formed by a group of Midwestern corn growers, is focused on improving their production practices consistent with the ISO 9000 management system to improve the quality of their products. This program includes grower training and certification and the development of a quality assurance program. In addition, Novecta is working with the USDA to create a certification process for the entire food production chain.
- *Food Origins*™, a company owned by John Deere, has developed commercial services that focus on creating automated information systems that link the supply chain to downstream customers. These services create value for processors of agricultural products, through a focus on cost efficiency, logistics support, and enhanced values for retail products. As an example, Food Origins™ worked with a national vegetable processor to improve the integration and cost efficiencies of the production process from product suppliers to the end-use producers, saving the company 1.3% of total production costs on a reoccurring basis, and a one-time 5% reduction in production costs during the year of implementation. In addition, Food Origins™ is working with the NCGA to demonstrate the value potential of a traceability model with a specialty corn miller.

While cost efficiencies will accrue to the individual players in the processing and retailing infrastructure, business structure will help determine whether a significant portion of the cost savings will accrue to the grower. In order to participate in profit streams, growers must own, control or somehow contribute to the processes that add value. But increased final

product value is key to generating potential increased profits at the farm gate. If consumers aren't willing to pay significantly more for end products, no one in the chain can prosper.

### Processing Technology

Although advances in processing technology are normally continuous, there are times when a combination of new technology development creates major breakthroughs that shift incremental improvement to mega jumps in cost efficiency and product yields. For example, a major obstacle to development of soy-based industrial lubricants has been the lack of sufficient oxidative stability. Low oxidative stability means, if untreated, oil will oxidize rather quickly during use, becoming thick and polymerizing to a plastic-like consistency. Initially chemical modification of soy oils and/or the use of antioxidants were used to address this problem, but the cost limited marketability. Recent advances in biotechnology have led to the development of genetically enhanced oilseeds that are naturally stable and do not require chemical modification and/or use of antioxidants. A soybean seed developed through DuPont technology presents more than 83% oleic acid as compared to only 20% oleic acid content in conventional soybean oil. High oleic varieties of canola oil, rapeseed, sunflower and soybean are now becoming standard base oils for biodegradable lubricants and greases. This breakthrough has significantly increased the cost competitiveness of soy-based lubricants.

Ethanol manufacturing and conversion efficiencies have advanced so rapidly in the last few years that managers say a five-year-old plant is the Edsel of the industry. Currently, ethanol generates 67% more energy than it takes to produce, according to USDA, up 36% since 1996. In the near future, other major advances in manufacturing technology could significantly boost the net energy balance. Corn Plus, a farmer-owned plant in Winnebago, Minn., expects to hike that ratio to as much as six to one, once it converts its plant power infrastructure from natural gas to a steam-powered system that burns the syrup left over from the distillation process. The technology, called a fluidized bed reactor, will reduce natural gas consumption 80% and has already been used for decades in the paper industry.

Clearly, agriculture has much to gain by borrowing advances from other types of manufacturing processes. Especially promising research into the use of "enzyme cocktails" could offer yet another technological leap in the efficient conversion of cellulose and hemi-cellulose to alcohol. Ultimately, this technology could allow other less expensive types of biomass—such as switchgrass—to replace corn as the preferred ethanol feedstock.

## Hurdles for Co-op Businesses

“Cooperation is not dead! The legal structure is tired, worn out and needs to be buried.” — *Partner in Lindquist & Vennum, a Minneapolis law firm*



As the business leaders and economic engines of their communities, U.S. farmers and ranchers play a vital role in revitalizing America. They possess the capital reserves needed to invest in new value-added ventures, and the willingness to diversify outside of raw commodity production. What they currently lack are business structures that facilitate large-scale, complex, capital intensive ventures. “Growers need business entities that are tax-efficient, raise capital easily and offer investors liquidity,” says Mark Hanson, a Minneapolis-based attorney who specializes in co-op law. “Yet securities laws are woefully inadequate for those purposes.”

**The co-op form can be a high-tax structure for value-added ventures since the entity pays corporate tax up to 40% on non-patronage source profits, then co-op members pay income tax and 15% Social Security tax on distributions.**

New-vintage manufacturing, processing, and value-added co-ops formed in the last two decades have evolved faster than the laws that support them. Some 35 states still retain the original co-op laws drafted in the 1920s which were designed to give growers purchasing power through supply or marketing cooperatives, not to structure processing ventures, Hanson notes. Cooperatives gained popularity by being a corporation that could deduct patronage-sourced income from taxation at the corporation (cooperative) level. While the advantage would apply to feed sales, it is unlikely that profits from blankets and clothing made from corn-based fabrics and other ingredients would be considered “patronage sourced income.” As a result, those non-patronage source profits would likely be subject to double tax first at the cooperative and then when dividends are distributed to the members. That means the co-op form can be a high-tax structure for value-added ventures because the entity pays corporate tax up to 40%, then co-op members pay income tax and 15% Social Security tax on their distributions.

In practice, growers are increasingly frustrated with the limitations of traditional cooperative structure. When business grew so fast that it could not source enough high-quality durum from local members, Dakota Growers, a Carrington, N.D., cooperative was forced to switch to a regular corporation. The process was expensive, but it freed the plant to source durum anywhere. Among common problems:

- *Restrictions on outside investors.* Federal law exempts Sec. 521 co-ops from some federal securities registration requirements (a long and expensive process). A Sec. 521 co-op must have members who are producers of the commodity used by the ventures and they receive a patronage based on their delivery of the commodity to the cooperative. A producer may want to invest \$50,000 in a value-added venture, but cannot commit to a corn delivery of 50,000 bu. because of the way his operating loan is financed. Another farmer close to retirement would need to sell his investment when he retires, as he is no longer a corn producer. Both of these individuals are barred from co-op membership.
- *Starved for equity capital.* The main method for a traditional co-op to raise capital is to retain earnings from current patrons. That’s one reason why today’s traditional co-ops have eroded capital during downturns in the farm economy. Co-ops can raise capital by offering preferred shares, but they are typically limited by law to pay no more than 8% interest on the shares (principal may or may not be repaid). That’s not enough incentive for venture capitalists to fund risky ventures like \$60 million processing plants.
- *Lack of liquidity.* The “graying” farm population poses demographic problems for co-ops, just as it does for the Social Security system. About one-third of all co-op equity is owned by retired or nonactive members. Currently, co-ops don’t have enough young members to buy out the over-65-year-old generation. So much of the nation’s co-op equity is illiquid and probably worth pennies on the dollar. A growing number of co-ops don’t even have the cash to redeem equities on the death of a member, well past the time when the patron ceased to use the co-op’s services.
- *One-man, one-vote issues.* The co-op principle of one-man, one-vote rarely appeals to shareholders who underwrite the bulk of an investment. In practice, someone who invests \$500,000 wants a bigger voice than someone who risks only \$5,000.

Limited liability companies (LLCs), a business form taxed as a partnership but with the liability protection similar to a corporation, offer some improvements over cooperatives by allowing for nonfarmer investment. However, even this option exhibits some weaknesses. Language to differentiate rules for patrons and passive investors can become complicated. Another issue is that ownership interests cannot be widely traded, so

investors cannot easily exit ownership: Federal law requires that no more than 8% of an LLC stock can be sold in any given year, or it will be treated as a publicly traded partnership subject to very expensive Securities and Exchange Commission regulations and corporate tax consequences.

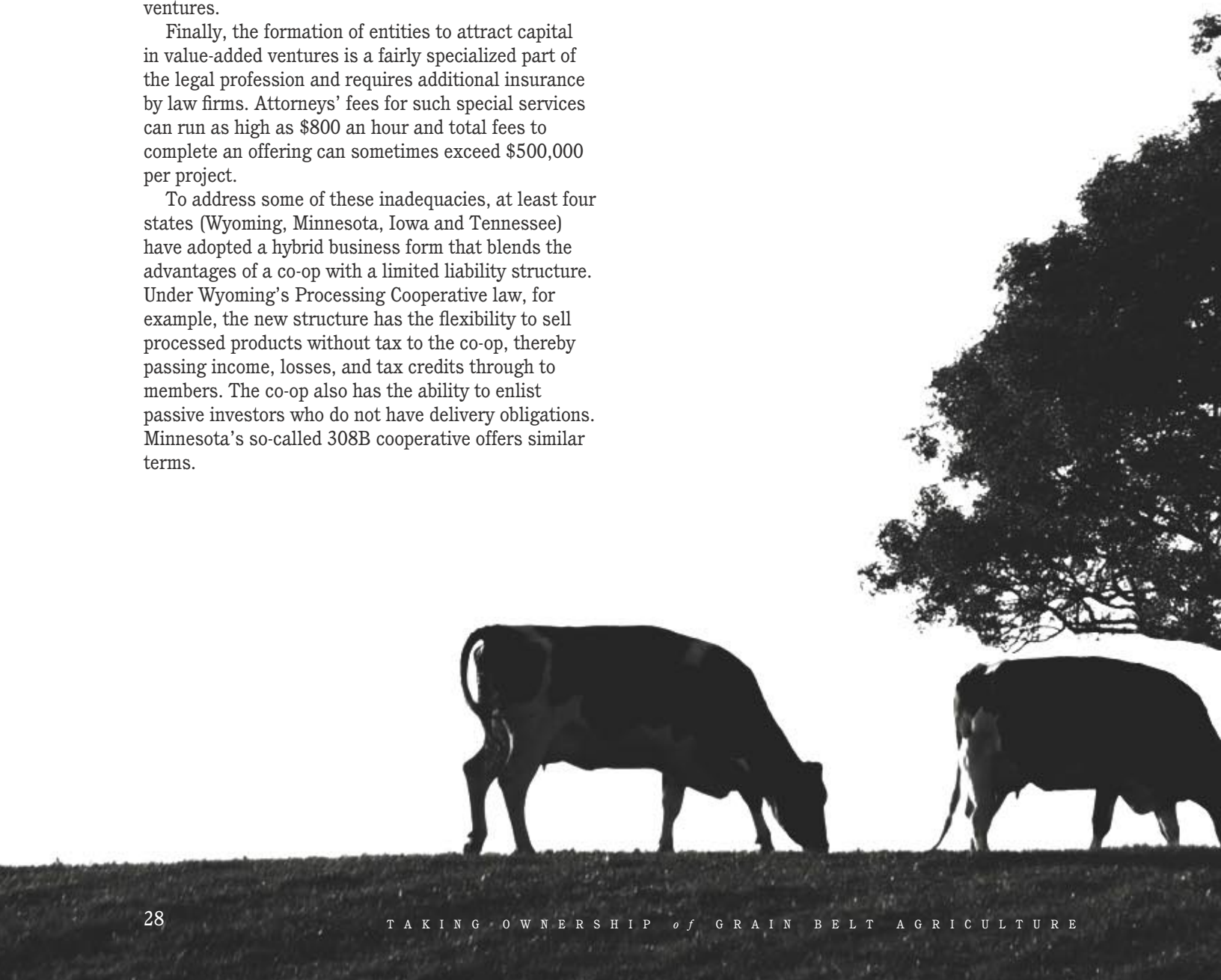
No matter what business type is selected, involving owners from across state lines can add significant logistics to an offering. If all the investors are from the same state, a federal securities exemption allows state law to apply. This works for some projects, but if investors cross state lines, then federal law comes into play. One way to avoid some of this regulation is to have private placement where only sophisticated investors participate; they need to have net worths above \$1 million or \$200,000 of income for the past three years along with knowledge and skill to evaluate such investments. These requirements prevent many producers from investing in private-placement ventures.

Finally, the formation of entities to attract capital in value-added ventures is a fairly specialized part of the legal profession and requires additional insurance by law firms. Attorneys' fees for such special services can run as high as \$800 an hour and total fees to complete an offering can sometimes exceed \$500,000 per project.

To address some of these inadequacies, at least four states (Wyoming, Minnesota, Iowa and Tennessee) have adopted a hybrid business form that blends the advantages of a co-op with a limited liability structure. Under Wyoming's Processing Cooperative law, for example, the new structure has the flexibility to sell processed products without tax to the co-op, thereby passing income, losses, and tax credits through to members. The co-op also has the ability to enlist passive investors who do not have delivery obligations. Minnesota's so-called 308B cooperative offers similar terms.

#### **Benefits of a Wyoming-type Co-op**

- **Blends advantages of a traditional co-op with a limited liability structure**
- **Can sell processed products without triggering tax to the co-op**
- **Can enlist passive investors who have no delivery obligations**





## Recommendations

“Rural incomes and farm communities will benefit if national priorities begin to encourage self-reliance and marketplace solutions.” — *Future Structure of Agriculture Task Force II*



In the last decade, production agriculture has begun a significant transformation. Today, tens of thousands of farmers own stakes in upstream rural-based businesses, hoping to boost their incomes through dividends and supplier premiums rather than relying solely on the whims of commodity agriculture. This surge of entrepreneurship entails additional risks, although successful enterprises share basic traits that can help avoid problem start ups (see p. 17, "Observations of Successful Businesses").

On the whole, this ownership trend is generating new jobs, recirculating profits locally and helping to revive depressed farm communities. Technological advances that help speed the conversion from a petroleum-based economy to a bio-based economy will also offer a rash of opportunities for investment in rural industries in the coming decade.

What's important to recognize is that the transition to value-added agriculture can be enhanced—if producers are willing to adapt, if public and private interests prioritize research on technological advances for plant-based fuels and materials, if regulatory agencies make timely permitting decisions and if state and federal governments remove barriers to rural business formation.

To achieve those goals, farm leaders and policy makers should focus on: (1) redefining U.S. agriculture's strategic importance beyond a food-based economy; (2) engaging a national effort to shift focus to basic science research for bio-based products in the health, environmental and energy needs of America; (3) fostering economically viable, value-added business opportunities in rural areas; (4) encouraging dynamic farmer-owned business models that can anticipate and take advantage of market opportunities; and (5) increasing government support for entrepreneurship and innovation in rural areas.

Specifically, the Task Force recommends that policymakers and farm leaders:

### **Elevate bio-based research and technology to a national priority.**

- Establish a national research priority to enable the U.S. to transition from a petroleum-based economy to a plant-based economy.
- Support an audit of current inventory of federal research to evaluate the effectiveness of public and private investments in renewable energy and materials. This will include renewable fuels, manure management, plastics, pharmaceuticals, nutraceuticals, textiles, building/construction materials, highway applications and chemicals.
- Encourage federal research funding to promote transfer of new technologies to rural commercial opportunities.
- Recommend a federal initiative to support the rural broadband communication act.
- Continue to develop cost effective manure management practices to eliminate environment problems from livestock facilities. This will ensure the number one customer for grain and oilseeds stays in the United States.

### **Encourage farmer-owned brands by removing legal barriers:**

- Simplify the paths needed for farmers to register value-added brands.
- Enhance intellectual property rights that would facilitate geographic or other attribute branding (examples: Vidalia onions, Champagne, Feta cheese)

### **Reform producer-owned business structures to improve tax efficiency, easily raise capital and offer investor liquidity.**

- Authorize 308B type cooperatives in more states and change Sec. 521 to recognize these new cooperative forms. This would allow hybrid structures to qualify for Sec. 521's preferred tax and securities status, as long as a majority of the stockholders or equity owners actually produce and deliver or market ag products for further processing or manufacturing. The proposed changes would also allow Sec. 521 co-ops to obtain outside capital and issue minority interests or issue preferred stock or equities and pay dividends of up to 18%.
- Facilitate transformation of co-ops to new business structures by authorizing tax and securities flexibility for farmer co-ops. Relax federal tax and securities laws that treat conversion from a corporate structure as a liquidation and equity in new entity as a securities offering.
- Authorize markets or equity exchanges for producer controlled entities, cooperatives, LLCs, and corporations. Keeping equity liquid will encourage investment and allow for timely exits as members age.

- Authorize federal exemptions for producer-controlled projects where state securities divisions approve offerings. A single-purpose project that has no more than 1,000 investors, less than \$50 million in new equity capital and only has investors from contiguous states could be exempt from SEC filing and reporting. Right now, small projects must shoulder Enron-induced legal and accounting burdens to raise equity.
- Allow rural processing ventures to qualify for New Market Tax Credits. This \$3.5 billion federal program is targeted to impoverished areas that have lost population in the last census. So far, most of the rural aid has been directed at urban areas. The only success in rural areas has been low-income, senior housing. Redirecting some of those funds to rural manufacturing might generate more economic impact.
- Authorize flexibility in the energy bill tax credits to pass to producers or be transferred to entities that can use the credits. Right now, size limits constrain their usefulness.
- Authorize Rural Electric Cooperatives and Mutual Companies to make investments in qualified rural processing business and retain the profits without jeopardizing their tax status. Right now, 85% of the earnings must be related to the cooperative's business with members.
- Improve governance of co-ops by amending state laws that prohibit outside directors on co-op boards. As farmer ventures become more removed from production, boards need to tap more diversity and expertise outside agriculture.

### **Foster and fund value-added education and rural entrepreneurship:**

- Establish continuing education for value-added agriculture
  - Provide and conduct e-learning/seminars for producers to understand co-op and business structure laws.
  - Provide and conduct e-learning/seminars for producers to learn how to write and effectively evaluate business plans.
  - Provide and conduct e-learning/seminars for producers on basics of investing.
  - Provide resources for Co-op Board of Director education
- Establish a rural development entrepreneurial online library (web information). This could involve a clearinghouse that links all available resources for value-added agricultural marketing.
  - Access to state co-op laws/regulations.
  - Access to state and federal tax regulations.
  - List prospective venture capitalists and their requirements for consideration of investment.
  - List resources and links of other well-established rural initiatives, such as the Small Business Administration, Illinois Institute for Rural Affairs, Purdue University's Center for Agribusiness or attorneys/accountants with specialties in cooperative law.
  - Provide professional contacts for all state and federal permitting processes.
- Establish a for-profit rural development fund.
  - Create a mutual fund for producers to diversify their investments in value-added enterprise.
  - Create a team of investment and business planning experts to evaluate potential rural business investments.
  - A portion of producers' initiation fee would be dedicated to conduct professional research and analysis.

## Conclusion

**In a more prosperous future for U.S. farm operators and their communities, producers will need to seriously examine the benefits of profiting from ownership in upstream businesses or branded ventures, rather than raw commodities. A bio-based economy can enhance opportunities for growers, but only if they hold some stake as shareholders, rather than as vendors.**

**A transition to a more entrepreneurial Grain Belt agriculture is not without pitfalls. In some cases, the failure of some high-profile ventures has soured grower enthusiasm. But the risk that U.S. agriculture will be under serious budget and trade constraints in the next few years raises the specter of reduced government price supports and lower incomes for growers dependent on commodity prices alone. Rural incomes and farm communities will benefit if national priorities begin to encourage self-reliance and marketplace solutions.**

## Future Structure of Agriculture Task Force II

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Jim Zimmerman (WI), NCGA Biotechnology Working Group Representative

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Minnesota Corn Research and Promotion Council

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Nebraska Corn Development, Utilization and Marketing Board

Ohio Corn Marketing Program

South Dakota Corn Growers Association



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