

# Farm Consolidation and Market Integration: Will Crop Production Follow Livestock's Lead?

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U.S. livestock production has changed from industries dominated by family-based, small-scale, relatively independent firms to one of larger firms more tightly aligned across the production and distribution chain. Poultry, dairy, and beef feedlot operations consolidated long ago, but pork has been more recent. The changes both in size of hog operations and in their vertical alignment in a period just over a decade have been dramatic. In 1991 68% of U.S. pork was produced on farms producing 5000 head or less each year, and about 13% came from farms of 50,000 head or more. By 2003 that had tipped, with less than 10% coming from smaller farms but 59% from the biggest farms. In 1993 about 90% of the pork was produced and marketed by independent growers using open access markets. By 2004 that had reversed, with nearly 90% of the pork produced and marketed under contract or vertically integrated. Stats from 2006 show those trends continue.

The changes in swine came hard and fast when they did come--but what about land-based agriculture—and particularly the commodity crops of corn, soybeans, wheat and cotton? Will they go through a similar transformation process, and as quickly as that experienced by the livestock industries? Other row crops such as potatoes and sugar beets have already experienced considerable consolidation and integration. To best predict, the fundamental drivers of consolidation and structural change must be identified and evaluated (see sidebar), and then compared to the general characteristics of today's crop farming sector.

The convergence of four characteristics and management practices suggests a more rapid rate of growth in large crop farms than has occurred historically:

1. Demographics and age of operators (not owners).
2. Technology that modifies or releases timeliness constraints in crop production.
3. New business models such as multi-site production that further alter timeliness constraints in crop production.
4. Increased use of the growth strategy of acquiring “businesses” rather than specific assets.

## Age of Operators

Much discussion of structural change in agriculture has focused on the increasing age of farmers and the expectation that significantly larger amounts of farm property will be transferred to other owners as these farmers retire. But the transfer of ownership of farmland may not be nearly as important and immediate as the transfer of control/operation of that farmland. Since almost 50 percent of U.S. farmland is rented (as high as 85 percent in some Midwest locales), changes in control and operation of farmland may not mimic changes in ownership.

In contrast to the past, it is not unusual today for a farm operator at retirement to control a substantially larger acreage than he or she owns. So in reality a larger proportion of the total land becomes available to prospective operators than just that acreage owned by the retiring farmer. Even though only two to three percent of farmland is transferred from the current to a new *owner* each year, the amount available for new *operators* each year is substantially more than that – maybe as much as 4-5% per year. Larger scale/more progressive growers, and especially growers who excel at relationship management are probably better positioned to buy or rent this land.



## New Technology

New technology has dramatically changed timeliness constraints that have been a significant limit on the growth potential for many grain operations. The ability to plant and harvest crops during the limited number of suitable field days in the spring and fall without encountering yield penalties is critical to overall efficiency and profitability. The development of guidance and auto-steer technology combined with larger planting and harvesting equipment (36 row planters and 12 row combines) has dramatically altered the timeliness constraint. For example, if planting 2000 acres in Illinois starting April 1 using a 24-row planter and working 12 hour days, there is about a 70% chance of finishing planting by May 1. If auto-guidance allows 16 hours per day and improves efficiency 5%, chances improve to 85%. With one 36-row planter and guidance, the chances of completion by May 1 exceed 90%.

More sophisticated monitoring and measuring technology that is part of precision farming also enables growth of operations. If crop production processes can only be monitored by people with unique skills, and hiring those skills or developing them in existing personnel is costly, the monitoring process limits the span of control to what one individual (or at least a few) can oversee personally. But if electronic systems can monitor the processes of plant growth (whether it be machinery operations, crop stage or development, or the level of infestation of insects or weeds), fewer human resources are needed for this task and generally larger scale is possible. Also, monitoring technology such as GPS or telemetry can allow more efficient management of employees through better work sequencing and scheduling, and reduce their workload through automating the capture and reporting of data. Electronic monitoring and control systems for crop production expand the span of control of a farmer/manager.

## DRIVERS OF STRUCTURAL CHANGE FOR CROP PRODUCTION

**Technology** The role for bio/nutritional, monitoring/measuring, communication, and process control expertise to be more precise and systematic in production

**Human Capital** The rate at which managers adopt business management skills in farming, attitudes about time to work vs. leisure, and the career path opportunities of those currently in agriculture, those considering ag careers, and competing opportunities in other areas

**Financial** Economies of size/scope and learning, risk and risk mitigation strategies, rental and outsourcing opportunities, financial and capital structure decisions and costs, and ownership and operation of the land resource in particular

**Business Climate** The roles of global competitiveness, power and practices of input suppliers and the purchasers of farm products, the availability of product/service substitutes, the potential of new entrants, and the role of government agencies and public interest organizations in shaping the institutional and regulatory environment for the sector

**Business/Family Life Cycle** Whether crop production continues to be dominated by proprietorships where the life of the business is profoundly impacted by the life of those providing the labor and capital, or go to a more "corporate" structure less dependent on the entrepreneur or their heirs

**Value Chain** How strongly the traditional open market among buyers and suppliers will be challenged with a more tightly aligned vertical coordination system. Drivers of that include the demand and importance of:

- unique and differentiated products
- traceability and identity preservation
- efficiencies of improved flow scheduling
- accurate information flows from users to producers
- quality and quantity availability by processors and others downstream in the distribution channel



## **New Business Models**

In addition to new technology and new operating procedures to relax timeliness constraints, farmers are also using management strategies and new business models to more fully utilize their machinery and equipment. One of those strategies is multi-site production. Growers are increasingly producing in more than one locale, and in many cases are choosing those locales based on both weather patterns and transportation/logistics capacity and systems. They then move equipment from site to site, in essence allowing them to not just increase the utilization and lower the cost of machinery operations, but to again relax the timeliness constraint on size of operation without investing in additional machinery or equipment.

Another newer business model for many growers is the use of operating leases or machinery sharing to cost effectively acquire additional machinery services. Such arrangements have typically been individual agreements between growers and machinery owners (sometimes dealers, sometimes other growers), but increasingly these arrangements are developing through more formalized custom farming agreements or with such entities as Machinery Link that provide operating leases for combines, cotton strippers and power units similar to rental arrangements for automobiles, trucks and other equipment.

Precision farming combined with creative ways to schedule and sequence machinery use including 24 hour-per-day operations, moving equipment among sites and deployment based on weather patterns has the potential to increase machinery utilization and lower per acre machinery and equipment costs as well.

## **Growth Strategies**

Finally, more and more of today's expanding crop farmers are adopting the common business strategy of mergers and acquisitions compared to buying assets as in the past. Thus, farmers are buying businesses or acquiring the package of assets (including leased land) rather than purchasing individual parcels of land or pieces of equipment. And in fact, an increasingly common growth strategy for some growers is to approach a current operator with say 1000 to 1500 acres of farmland, who is near retirement, offer to buy the "farm business," and retain the current operator and his/her machinery to complete the machine operations on that acreage. In essence, the acquiring farmer obtains control of not only the owned but also the rented acreage of the current operator, and also increases his capacity to farm this additional acreage by outsourcing some of the machine and other operations to a skilled farmer who likely is uniquely qualified to farm that particular acreage. This strategy of acquiring businesses rather than acquiring assets usually involves obtaining control over a larger asset base, and thus accelerates the rate of growth and consolidation of large scale operations.

## **A Final Comment**

The rate of consolidation to larger size and scale crop farms is expected to accelerate in the next decade as new technology and management practices are adopted by grain farmers. And lenders and the capital markets will reinforce these trends as they fund those growers who adopt strategies such as multi-site operations, machinery sharing and other techniques to manage the operating risk and improve efficiency. Like livestock operations, grain farming in the future will likely move to a more consolidated industry with large scale farms increasingly dominating the industry.

