

Conclusions

Powerful economic forces are driving the shift to large industrialized livestock operations. There are substantial economies of scale up to certain threshold sizes, and farms can operate efficiently at sizes that are much larger than the thresholds. In addition, tighter vertical coordination lowers costs and improves consistency for many products. Each provides strong financial incentives for producers to expand their operations and to enter into more formal contractual relationships with buyers and input suppliers.

The transformed production systems lead to improved productivity, with more production of livestock and livestock products from any given amount of labor, feed, and capital. Productivity improvements lead to lower wholesale and retail prices for meat and dairy products, while freeing land, labor, and capital resources for expanded commodity production or for other uses.

But industrialized livestock production has external costs. High concentrations of animal manure can lead to increased air and water pollution, with adverse health and environmental consequences. Concentrated livestock can also create odors that offend neighbors and reduce property values. A heavy reliance on antibiotics for growth promotion and for disease prevention may spawn antibiotic-resistant strains of bacteria, with human health risks. Changes in farm structure are intertwined with these concerns because larger operations concentrate manure more and rely more heavily on growth-promoting antibiotics than smaller operations.

Individual producers may have little incentive to take costly actions on their own to reduce the external costs arising from intensive applications of manure and antibiotics. Livestock production is highly competitive, and operations with relatively high costs jeopardize their own survival. However, there are ways to reduce the risks from high concentrations of manure nutrients on limited land areas. Nutrient management plans, which base nutrient applications on agronomic rates, are coming into widespread use as part of Federal, State, and local regulations. The plans have guided reductions in nutrient applications, and they are likely to compel more in the future through changes in breeding, feed attributes, farm location, and manure distribution.

Growth-promoting antibiotics are a feature of industrialized hog and poultry operations, and they are substantially more likely to be used on larger hog operations. However, many large operations do not use them, and they may be more valuable to producers at some stages of animal production than at others. Many producers that don't use growth-promoting antibiotics rely on alternative strategies, such as extensive testing and sanitary protocols, to prevent disease and promote growth. The evidence adduced so far suggests that steps can be taken, at modest aggregate costs, to limit the external costs associated with antibiotic use in industrialized operations.