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## **Executive Summaries**

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### **RESEARCH**

#### **Arkansas Landlord Selection of Land-Leasing Contract Type and Terms**

*Ronald L. Rainey, Bruce L. Dixon, Bruce L. Ahrendsen, Lucas D. Parsch and Ralph W. Bierlen*

Land leasing plays a significant role in providing the land input to U.S. production agriculture. Leased land accounts for 40% of total farm acreage and approximately 35% of farm assets.

Results from a survey of landlords leasing crop land in Arkansas are analyzed to better understand factors motivating landlords in the type and terms of leases they select. Three specific contract types are examined: cash, crop-share, and cost-share. Probit models are estimated to determine the relative importance of variables representing credit constraint, agency problem, and risk aversion factors. Regression models estimate the impact of site, landlord, and tenant characteristics on contract terms—the percentage of crop and cost sharing arrangements between landlord and tenant.

A credit constraint paradigm is used to initially specify the model for selecting lease type. This paradigm adheres to the belief that producers use leasing arrangements as a substitute for debt. This framework assumes tenants surmount credit constraints and increase the scale of operation by moving from a cost-share to a crop-share to a cash rent contract. The significance of the tenant equity variable shows that credit constraints are an important factor and supports the idea that tenants with higher equity have influence in the contracting process.

An alternative model emphasizing agency theory is estimated and discussed. With this approach, each lease presents unique opportunities for morally hazardous behavior, i.e. the tenant may take advantage of the landlord without detection. None of the model's variables significantly explain lease type selection.

For the risk aversion framework, the risk characterizations have typically been that the landowner is risk-neutral and the tenant is risk-averse, although in this study both landlords and tenants can be risk-averse. The results suggest landlord risk preferences play an important role in the contracting process, while the tenant risk variables are statistically insignificant.

Lastly, regression equations were estimated to identify variables affecting the level of crop-share and cost-share percentages for cropland contracts. Results reveal that irrigated crop-share acreage contracted at a premium. Estimates also reveal a significant difference in crop-share levels due to the type of crop planted on the acreage. Additionally, land quality and potential alternative uses of the land variables are significant in explaining the crop-share and cost-share percentages for contracts with cost-sharing.

The study results indicate that the factors motivating the two involved parties differ, primarily for lease type selection. This provides opportunities for both parties. The lease type selected is a function not only of the land characteristics, but of characteristics of the two parties involved in the negotiation. This suggests operators have an incentive to seek landlords who are more inclined, due to risk preferences or financial situation, to agree to lease types that are to the tenant's preference than would be the case with dissimilar landlords. Clearly, landlords have similar incentives with respect to tenants.

## **Research Feature: Economic Impacts of Animal Disease Management and Policy**

### **Introduction: Economic Impacts of Animal Disease Management and Policy**

*Walter J. Armbruster*

Globalization in the agricultural sector increases the potential for animal disease introductions, a form of invasive species increasingly critical for the livestock sector. Understanding how animal disease will impact the productivity of the animal product sector and the food chain is a complex, multidisciplinary problem. Potential economic impacts from an animal disease outbreak go well beyond the farm gate to meat processors, wholesalers, retailers and related input and marketing industries, as well as to consumers. While the primary thrust of this set of papers is to look at public policy implications, there are many lessons for private sector management strategies. Both our business and academic audiences will find these papers highly informative.

### **Animal Disease Economic Impacts: A Survey of Literature and Typology of Research Approaches**

*James Pritchett, Dawn Thilmany and Kamina Johnson*

Animal diseases such as bovine spongiform encephalopathy (BSE or "mad cow" disease) are a significant economic threat to the animal products industry. A variety of tools are available to prevent and mitigate an outbreak; however, industry stakeholders wish to quantify the benefits and costs of each tool before pursuing an animal disease strategy. This article's purposes are two-fold: first, recent animal disease economic studies are reviewed with special attention to

the economic methodology/impacts. Second, the review is used to suggest a typology to guide stakeholders as they develop future studies.

In general, animal disease studies posit outbreak scenarios defined by three elements: the geography (location) of the outbreak, the timing between the pathogen outbreak and recognition/response by health officials, and the strategy used to prevent, contain and respond to the outbreak. The reviewed studies quantify impacts at one or more stages – many studies detail consumer impacts or producer effects while fewer studies examine the broader marketing channel. Typical methodologies range from spreadsheet/budget analysis to impact analysis using input-output models. BSE and foot-and-mouth disease (FMD) are two diseases whose economic impacts have been quantified in several studies, and these impacts are reported in the literature review.

The article notes opportunities to improve economic studies of animal disease. One opportunity is a greater integration of epidemiological and economic models so that an outbreak may be better traced through the direct and indirect economic relationships linking stages of the marketing channel. As an example, the scope of an FMD outbreak influences the breeding herd (i.e. capital stock) of the animal products industry, as well as the flow of beef products from feedlot to slaughterhouse to wholesaler and retailer. Second, the distribution of economic losses within a stakeholder group needs be better studied. For example, economic studies often lump all producers together as suffering economic hardship when, in fact, some producers may benefit from temporarily higher prices and low supplies. Furthermore, the spatial dimension of disease outbreaks, including transmission between regions, has been largely neglected in economic studies due to a lack of available data. Likewise, the role of market structure (e.g., concentration among larger firms) on animal disease outbreaks is not well studied.

Animal disease outbreaks are likely to occur, and a relevant question for industry is whether the proposed mitigation strategies generate sufficient benefits to cover their costs. This article provides a contemporary summary of the animal disease literature, explores methods used to quantify impacts, and offers suggestions for improving analysis.

### **Producer Livestock Disease Management Incentives and Decisions**

*Christopher Wolf*

Livestock disease management is an issue of significant economic importance to producers, agribusiness, consumers and policy makers. The objectives of this paper are to understand farm decision making with respect to livestock disease prevention and control, and to relate farm incentives for prevention and control to existing public policies and industry priorities.

Livestock producers compare private returns of disease prevention and control actions to their associated costs. Private farm disease management behavior may therefore lead to externalities and a rationale for government intervention. Producer response to livestock disease includes tolerating positive levels of livestock disease when the required response cannot pay for itself.

Government or industry policies can change the response by changing price incentives or the cost of treatment. These policies may include adding information so that farmers understand spillovers and can effectively assess the total benefits from potential biosecurity and disease control decisions. In addition, public expenditures to improve the price and efficacy of disease tests might be appropriate. Industry or government programs can facilitate disease management by subsidizing farm testing costs. Bounties or indemnity payments may assist in locating and removing diseased animals. These payments must be large enough to encourage compliance without being so large as to encourage “manufacturing” newly diseased animals.

Economists have an important role in understanding livestock disease control. Economists can incorporate appropriate epidemiology of a given disease into models to inform policymakers of optimal control and management reactions to disease. Understanding where the private response may occur can facilitate more accurate disease prevalence paths and therefore more accurate cost and benefit estimates. Collaboration between economists and epidemiologists is essential for effective and efficient livestock disease control.

### **Economic Modeling of Livestock Disease Outbreaks**

*Philip L. Paarlberg, John G. Lee and Ann H. Seitzinger*

Recent outbreaks of animal diseases around the world have sparked interest in the impacts of such an event in the United States. Whereas agricultural commodity policy analysis has a long history with multiple analyses of most issues, there has been much less work on economic analysis of livestock diseases. The public, policymakers and analysts have limited experience generating, evaluating and using estimates of national impacts of livestock disease outbreaks.

This paper surveys articles by the authors on the economic impacts of livestock diseases. The intention is to focus on modeling issues and to investigate the implications of modeling decisions for estimates of the impacts of livestock disease outbreaks and policy implications. While the results of the research are presented, this paper focuses on methodological issues confronted in doing the research and how those assumptions influence the research. One set of papers considers setting an import barrier when there is a livestock disease risk. They show that the level of a risk-based import barrier is sensitive to the impact of disease on economic welfare. The remaining articles focus on estimates of the economic impacts. An outbreak is modeled in a U.S. agricultural sector model,

and shows the importance of lost exports and consumer response to the magnitude of losses. The final paper argues for decomposition of the welfare impacts. Lessons for future research include improved links to epidemiological research, improved inclusion of trade, extension to non-agricultural sectors and knowledge of consumer response.

### **Public Policy, Invasive Species and Animal Disease Management**

*Daniel A. Sumner, José E. Bervejillo and Lovell S. Jarvis*

This paper proposes a conceptual framework for understanding the public good aspects of control and eradication of invasive animal diseases and discusses the general rationale for active public policy. It illustrates the issues involved with a brief discussion of the foot-and-mouth disease crisis that occurred in South American countries during 2000 and 2001, and the finding of bovine spongiform encephalopathy in Canada and the United States in 2003.

The analyzed cases show clear policy implications. Successful eradication campaigns of highly contagious animal diseases call for a combined private and public effort and they must be treated with a regional perspective. Rather than by administrative or political borders, disease policy regions must be framed by the natural habitat and the likely paths of disease transmission. In the process of disease eradication, stringent border measures must be maintained for sub-regions. A country that has eradicated a disease may efficiently contribute to the eradication costs of its neighbors, because the cost of a new outbreak likely exceeds the cost of international cooperation to eradicate the disease from the natural habitat. In an era of opening agricultural markets, it is important to stress the need for a strong support system that will provide appropriate balance between openness and protection from disease. Such balance may only be understood in the context of economic analysis of costs and benefits. Trade embargoes that follow current WTO rules may lead potential exporters to incur costs well beyond the social optimum in order to satisfy importer demands. Foreign government demands may add little to food or animal safety in other markets including the home market.

A simple border inspection program may exclude an invasive exotic disease and thereby lower costs of production and the consumer price. In that way, both consumers and producers gain from the program. If the sum of producer and consumer gains is larger than the cost of operating the program, there is a net welfare gain from the efforts to exclude the disease. However, a successful disease exclusion program that restricts international trade reduces gains from trade and the loss may be large relative to the savings from excluding the disease. A program that is biologically successful and compatible with international sanitary rules may still harm the economy when consumer and producer interests are both important.

Given the importance of invasive species, economic research that attempts to model and measure the benefits of exclusion or eradication is still relatively underdeveloped. Some aspects of the problem clearly demand much more investigation.

**Concluding Notes: Private and Public Economic Perspectives on Animal Disease: An Emerging Strategic Issue for Agribusiness Managers**

*Dawn Thilmany*

The feature provides a convincing case for the importance of invasive species to the livestock and allied industries, while conceding that the economic research to model and measure the benefits of exclusion or eradication is still relatively underdeveloped. A progressive livestock manager realizes that his business must consider potential responses by individual people and firms (producers, consumers, businesses), as well as broader impacts within their supply chains and industries, when considering the potential threats (or opportunities) from an animal disease outbreak. To be an active voice in the formation of animal disease management and control policies that may influence the livestock sector, industry leaders may also need to understand the public policy perspectives on regional, national and international levels.

As a set, the articles provide a balanced overview of private and public research, in addition to motivating a stronger connection between social and managerial economics. Previous analyses of animal disease impacts, policies and management range from producer level to national welfare impacts. Yet, after a major disease and market event, stakeholders seek a single economic measure of loss, all inclusive of impacts. These articles demonstrate the need to clearly frame the research question surrounding potential economic implications of animal disease, as the approach and assumptions made about “what counts” may significantly influence the perceived cost and benefit trade-offs of public policy decisions.

## **CASE**

### **Decisions in Global Sourcing and Supply: Deep Red Canning Co.<sup>1</sup>**

IFAMR Case Number 8.1.A

*James Mwai, David Hahn and Melchior Mlambiti*

Procurement is a key business process, which has a major impact on a company's performance, costs and profitability. Today's global economy, offers a wide competitive supply base. Most successful companies do not limit their sourcing horizons to national borders but seek to find and establish sound working relationships with the best suppliers in the world, foreign and domestic.

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<sup>1</sup> The authors would like to acknowledge funding support for the writing of this case from the International Programs in Agriculture at the Ohio State University and USAID through the Association Liaison Office (ALO)

International procurement does however offer a variety of challenges. This case seeks to address global procurement strategies and the interactions and decisions necessary in implementing alternative sourcing strategies. The case is built to cater for two perspectives in the procurement process: the buyer and the seller. On the supplier side we seek to explore the complexities of developing the capacity to enable an organization to supply competitively on the world market. Our setting for this is Tanzania a developing country with a typical capacity building problem and the challenges of a transition from home based cottage industries to competitors in the global market place.

The case is built around the sourcing of raw materials needed in the manufacturing process. One key raw material – natural honey – was selected. The Deep-Red Canning Co© is considering alternative sourcing strategies for natural honey, a key ingredient in the manufacturing process. Declining domestic production of natural honey as well as growing demand by the local food processing industry has necessitated a rethink on their sourcing strategies. In 2003 honey prices have risen to a high of \$1.75/pound, a 36% rise from the previous year. This has largely been attributed to the poor 2002 crop occasioned by the drought and the imposition of import tariffs on China and Argentina who are the largest exporters of honey to the US. While this has positive tidings for beekeepers in the US it has many in the food industry weighing their options on alternative cheaper sources of honey.

The case is expected to create an understanding among students of various concepts in supply chain management including and not restricted to: vendor management, supplier education and the fostering of partnerships, supplier planning and scheduling, service level agreements and the establishment of accountability for supplier delivery performance and performance measures.