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Economic Impacts of Animal Disease Management and Policy

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Globalization in the agricultural sector increases the potential for animal disease introductions, a form of invasive species increasingly critical for the livestock sector. The U.S. livestock sector has been largely protected from major outbreaks of animal disease through border inspection regimes. But increasing trade expands opportunities for transmitting animal diseases across borders. The potential economic importance of the introduction of a significant animal disease is evident when one considers that approximately one-half of agricultural income derives from the animal product sector. A devastating animal disease outbreak would have serious economic impacts on producers, the marketing chain and gross agricultural income.

Understanding how animal disease will impact the productivity of the animal product sector and the food chain is a complex, multidisciplinary problem. The role of public institutions, private incentives and information in a highly efficient and integrated U.S. agribusiness sector must be critically examined to comprehend and help avoid unintended consequences from policies or regulations, to maintain consumer confidence and to maintain industry viability in the animal product sector.

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. As in the case of the foot-and-mouth disease outbreak in the United Kingdom, the implications to a rural economy beyond the farm gate can be equally costly. It is important to examine not only the direct benefits, costs and consequences of animal disease prevention and mitigation strategies, but also indirect impacts.

In the first paper, Pritchard and colleagues examine the literature and characterize research approaches used to examine animal disease economic

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impact. The focus is to help guide researchers as they define the scope and policy alternatives to be examined in various research approaches. Policymakers as well as industry stakeholders seek ways to assess a disease threat's potential economic impacts. When evaluating prevention and mitigation measures, the numerous analyses of impact each have a different focus–production level prices, market prices or societal economic welfare. This is compounded by different geographic and marketing phase analyses, as well as proposed policy alternatives. Market structure plays an important role in determining how losses associated with an animal disease outbreak will be shared. This article summarizes past work on animal disease, provides a framework to show the complexity of defining impacts, and finally, presents potential synergies for integrating work from various fields and at different levels to provide more robust findings. Managerial, as well as market or policy issues, are looked at in the context of creating a typology of research objectives and processes for analyzing animal disease issues.

The paper by Wolf examines producer livestock disease management incentives and decisions. The focus on the economics of farm decisions to prevent and control infectious livestock disease helps to understand farm decision making and its implications for livestock disease prevention and control through public policies and industry strategies. It may be rational for individual producers to tolerate some level of disease from the economic perspective. Government or industry policies can change producer behavior by changing price incentives or the cost of treatment. As suggested by one reviewer, the implication of this paper is that "agribusiness economists and epidemiologists need to work together to achieve more efficient/effective disease management." It also implies that the private and public sectors must cooperate closely.

The paper by Paarlberg and colleagues addresses economic modeling of livestock disease outbreaks from a methodological perspective. It may appeal particularly to academic readers, but there are important lessons for industry readers, as well. The paper addresses several different aspects of livestock disease impacts. One section focuses on import barriers to prevent livestock disease risk from materializing in the form of an incident within a country. The extent of use of such barriers depends on the potential impact on the total economic welfare of a country from a disease outbreak. Another section focuses on estimating economic impacts using a model of the U.S. agricultural sector to examine the importance of lost exports and consumer response. The authors point out that it is necessary to look at the impact on producers whose animals cannot be marketed because of an outbreak vs. those whose animals are still saleable. In the case of consumers, it is necessary to examine where significant and ongoing, or structural, changes occur in demand following an outbreak, and those consumers whose preferences for the product are unchanged. The authors identify important topics for future research to include better incorporation of epidemiological research, improved inclusion of trade impacts, extension of impact to the nonagricultural sectors, and better knowledge of consumer response to disease outbreaks.

The final paper by Sumner and colleagues addresses public policy and animal

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disease management in the context of invasive species issues. The authors note the rapid increase in economic research on invasive species and animal management because of the relevance to public policy. The public good nature of animal disease measures to control entry at the border and eradication efforts in the event of an outbreak are examined. The authors note that public policy needs to assess disease control and eradication on grounds of biology, national economic interest and international cooperation. Specific regulations and programs must be evaluated individually in terms of their benefits and costs to the general public, to the industry and to individual producers. The authors note that individual farms respond to clear private profit incentives to reduce losses associated with disease occurrence, even if their responses do not achieve eradication of a disease from a country or region. Government actions are driven by whether the disease is endemic or invasive, how contagious it may be, the potential human health threat, and expected aggregate economic impact or potential loss. Successful eradication campaigns for highly contagious animal diseases obviously require a combined private and public sector effort. Contagious diseases can only be treated from a regional perspective rather than according to a strict administrative border, such as a state or nation. Countries without the disease can benefit from helping pay the cost of eliminating the disease in adjacent countries or regions.

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.

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