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Karnal Bunt

A Wimp of a Disease

...But an Irresistible Political Opportunity

by Bruce R.
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Karnal bunt (Kb), a fungal disease of wheat, rye, and triticale, was first reported in India in 1931. From that time through 1995 it was known to have spread to Pakistan, Afghanistan, Iraq, and Mexico. In 1983, more than ten years following the reported discovery of Kb in northwestern Mexico, the United States quarantined the import of all Mexican wheat and wheat seed, in effect enacting a zero tolerance strategy. Taking their cue from the United States, all of the major wheat *exporting* countries in the world followed suit. In 1982, only four countries had phytosanitary international trade restrictions involving Kb. Following the U.S. action against Mexico that number immediately jumped to twenty-two. Doubtless, this action did not help Mexico's up-and-coming wheat industry.

Ironically, on March 8, 1996, the Arizona Department of Agriculture detected Kb in a durum wheat seed lot during a routine seed germination inspection. Ultimately, Kb spores (*Tilletia indica*) were found in three seed lots grown in Arizona and shipped within Arizona and to California, New Mexico, and Texas. On March 26, the USDA's Animal and Plant Health Inspection Service (APHIS) quarantined all wheat in Arizona, four counties in southern New Mexico, and the two most western counties in Texas and announced intentions to eradicate Kb in the United States. Subsequently, two southern California counties were added and the rangeland and forested areas of northern Arizona were removed from the quarantine area. The quarantine restricted the interstate movement of wheat, wheat seed, milling products and by-products as well as grain harvesting and shipping equipment from the

quarantine area (Rayner). Following the USDA action to quarantine the Desert Southwest, the number of countries adopting phytosanitary trade restrictions involving Kb-contaminated wheat jumped again, this time to more than fifty.

The decision by the U.S. secretary of agriculture to quarantine wheat in the Desert Southwest created considerable turmoil among Arizona and southern California wheat industry participants (including cereal-grain breeders and seed producers), just as it was urged and applauded by U.S. wheat sector political interests outside the quarantine area. North Dakota officials, Senator Dorgan and Agriculture Commissioner Sarah Vogel, were especially vocal advocates of quarantine and eradication (Pates). Interestingly, prior to the early 1980s when desert durum entered the market, the only major U.S. durum producing area was centered in North Dakota, with lesser acreage in the adjacent states of South Dakota, Montana, and Minnesota. The Montana Farmers Union honored the Arizona plant pathologist who made the Kb find with their "Outstanding Public Service Award": "For saving American farmers and the U.S. economy from untold billions of dollars in losses in this growing season and for years to come..." (*AgWeek Wire Reports*). Wheat industry interests in Kansas (Cline) and Washington (Washington State Department of Agriculture) were also not shy in voicing their support of a Desert Southwest wheat quarantine.

In contrast, Arizona and California participants reasoned that quarantine and all that it entails was a serious action, presumably to be utilized only when the threat justifies such action. Yet in the



case of Kb it seemed that the pathological, agroeconomic, human health, and related risks were of little or no consequence. In fact, few people, inside or outside the quarantine area, regarded any of these risks a matter of serious concern. Rather, the issue seems to have turned on a perceived need to take prompt and decisive action to protect U.S. wheat export markets. At the time of the quarantine action, it was presumed in some quarters that perhaps half of U.S. wheat export volume was at risk. No doubt the fear of retaliatory action using "our own" phytosanitary regulations against us was strong motivation for swift and decisive action. Following several months of intense political activity, Desert Southwest grain interests prevailed with considerable help "late in the day" from others who had reason to worry that they might be next (*Capital Press Agriculture Weekly*; Winn et. al). After the discovery of wheat-Kb spores in several southeastern states and alleged Kb spores in Oregon ryegrass seed, the USDA relaxed considerably its Desert Southwest quarantine provisions on April 25, 1997.

In this article we suggest (1) that Kb is not now and never has been a serious plant disease, (2) that the 1996 regulatory action was taken in pursuit of politically motivated economic interests outside the quarantine region (what economists call rent seeking), and (3) that this seemingly irresistible action, as is usually the case, was costly.

A wimp of a plant pest

The Kb disease cycle starts with the deposition of Kb teliospores on the soil surface via wind, birds,

animals, humans, farm equipment, contaminated seed, or other conveyor (Curtis). Moisture conditions permitting, teliospores on the soil surface germinate and produce sporidia, which can infect the wheat plant during a two- to three-week period after head emergence. The disease is not easy to detect because generally only a portion of an infected kernel is occupied by teliospores (partial bunt), and the few kernels that may become fully bunted are often destroyed during harvest. In severely infected grain a "fishy odor" may be detected (Ottman).

The American Phytopathological Society is on record suggesting that Kb is a minor plant pest of little or no consequence. In a position statement adopted at their 1996 annual meeting, the society states:

Virtually every smut or bunt disease once important on cereal grains...is or can be effectively managed today... [E]xperience from countries where [Kb] has occurred would suggest further that this is a minor disease, and what little risk does exist can be effectively managed without the use of quarantines.

...Considering the flow of agricultural goods and products of international commerce, and the ability of the Karnal bunt fungus to travel considerable distances as airborne spores, the opportunities for movement of these fungi are enormous. Moreover, in regions where bunts and smuts occur, there is no evidence or experience to suggest that a smut or bunt fungus can be eradicated once established in soil.

...none of the species or strains of smut or bunt

fungi currently known to affect cereals *represent an unmanageable threat* to agriculture in the world today (emphasis added) (American Phytopathological Society, p. 1).

Unlike some other cereal grain diseases found in the United States and for which quarantine and eradication strategies have not been employed, Kb poses no known health risk to animals or humans. In contrast, areas of the United States where ergot has been found have never been quarantined. Ergot, unlike Kb, can make humans and animals seriously ill. Furthermore, yield loss is inconsequential with Kb. Fuenres reports reduced yields of only 0.12 percent per year in the affected areas of northwest Mexico. In contrast, TCK-smut, among other things, is considerably more damaging to yield than Kb; yet U.S. regions known to be heavily infested with TCK-



smut have never been quarantined. It is also the case that management of Kb is eased because its manifestation is environmentally sensitive, requiring cool, wet conditions (uncommon to the Desert Southwest) at the time of seed head formation (Ottman).

Indeed, the only potential problem associated with Kb is the possibility of "a fishy odor" imparted to the grain flour if spores are present in high (greater than 3 percent bunted kernels) concentration. Three percent bunted kernels is a very high concentration and most unlikely in the United States given our farming practices and environmental conditions. The bunted kernel problem is not unlike other grain quality defects, which the private trade handles routinely via grades, standards, price discounts, and blending. Quality defects are not the sort of thing that have ever inhibited grain markets.

Rent seeking: nontariff trade barriers and preserving economic advantage

So why is Kb such a dreaded disease, worthy of quarantine action and eradication? Quarantine is a sanction having severe/devastating economic consequence—a protective action that should be reserved for situations where the biological/health/environmental consequences of not doing so are real and serious. The National Research Council's Board on Agriculture recommends that "*Quarantine should not* be used as a mechanism to further economic or political objectives" (emphasis added) (p. 276); see also Curtis (1985 presentation to the National Plant Genetic Resources Board following U.S. quarantine of Mexican wheat). If Kb has no known health risks to humans or animals, poses no serious agronomic difficulties in the form of reduced plant yield or other harm, and likely cannot be eradicated, why was a quarantine and eradication strategy pursued?

Many individuals, especially adversely affected parties, tagged Kb a *political disease* of wheat. Economists would classify the problem as a "nontariff barrier to trade" (Hillman)—one of many kinds of political opportunities to use the coercive power of government to gain economic advantage in world and regional markets. It belongs to the broader class of public-sector activity known as *rent seeking*.

The concept and consequences of rent seeking were formally introduced to the economics profession by Nobel laureate James Buchanan and his colleague Gordon Tullock during the 1950–60s, as part of the body of economic theory known as *public choice* (Johnson, p. 11). Rent seeking is the act of seeking special privilege and protection from competition through political action. Examples include attempts to restrict entry into an industry or profession, import tariffs and quotas, and rules and regulations to disallow or restrict the production or consumption of substitute (competing) goods and services.

Because the rent-seeking process consumes financial and other resources, such activities decrease the size of society's economic pie. Rent seeking amounts to a "transfer activity" which adds to the wealth of an individual or group but reduces the wealth of other individuals or groups (Anderson and Hill). It is an "I win, you lose" proposition in contrast to the "win-win" advantage afforded by unrestricted trade (between individuals, economic sectors, and countries) and competitive markets. Since "my win" is "your loss" and because we both expend valuable resources in "the political tussle," the size of the economic pie is reduced. No doubt public-choice economists and others concerned about the social cost of rent seeking smiled approvingly at dubbing Kb, "a political disease of wheat."

The high cost of rent seeking

Rent seeking is an expensive proposition. Serious attempts to influence government policy require the hiring of attorneys, economists, lobbyists, and other experts to "make your case," political campaign contributions to "buy attention," membership fees and contributions to interest group associations to "gain strength of numbers," and telephone bills, frequent trips to Washington, D.C., and state capitals to "stay in touch and on top of things"—none of which comes cheaply. The ill-advised, ill-fated Kb quarantine and eradication experiment in the Desert Southwest is a case in point. Kb rent-seeking-game-playing costs included expenditures for additional accounting services; economist and other consulting fees; attorney and legal fees; considerable communication, travel, and meeting expense; and other costs associated with the political battle (for example, political campaign contributions, entertainment expenses, new association membership fees). Desert Southwest wheat industry participants opposing a strong regulatory posture certainly realized such costs. Doubtless, similar costs were realized by those advocating the "get tough, let's quarantine and eradicate" policy.

An important and sometimes overlooked component of rent-seeking cost is the foregone opportunity value of time "wasted" by management and support staff. In the case of those defending their economic interests against the quarantine/eradicate advocates, there was time spent attempting to understand and comply with federal regulators and their evolving regulations. And for all interested parties—both those favoring quarantine/eradication and those opposed—otherwise valuable time was invested in encouraging "more favorable regulatory terms and a more appropriate" Kb policy. Obviously, this was no small task. There were many players, inside and outside the quarantine region, whose efforts needed to be mobilized and coordinated. Finally, it is also often the case that the politicians and the regulatory bureaucrats are themselves self-interested rent seekers—adding to the complexity and cost of the rent-seeking game. The sum total of such activity without doubt imposes a real deadweight, economic-pie-reducing drag on the performance of an economy.

Other, more obvious, costs of the failed Desert Southwest Kb-quarantine/eradication experiment included regulatory and compliance expenses of firms and the government; lost markets and market windows; reduced value of inventory; added costs to meet contracted obligations (both forward-linked contracts with seed and grain milling customers and backward-linked contracts with growers); lost royalties on existing certified seed patents

and due-to-release-date delays of new varieties in the pipeline; and customer damage control costs. These costs were real and large for the Desert Southwest wheat industry.

Accumulated fallout of the Kb quarantine: it's not over yet

We will never know how much has been spent to date by APHIS and other public-sector and private-sector players, both on the pro and the con side of the Kb quarantine/eradication "solution." The accumulated economic-pie-reducing drag of Kb-related rent seeking cannot have been trivial. And it is not over yet. Now we can look forward to the embarrassing task of trying to persuade our trading partners that "...past U.S. characterizations of the disease [Kb] as a major destroyer of wheat and one against which extraordinary precautions needed to be taken" (*The Food and Fiber Letter*, p. 5) were mistaken (see also, Kleckner).

Unfortunately, claimed threats to health and food safety, even when the factual base is wanting, resonate with voters and politicians, providing a ready excuse for rent seekers looking to gain advantage in world and regional markets. Nontariff trade barriers in the form of phytosanitary regulations will continue to provide an irresistible playground for untold rent seekers around the world—including U.S. participants. Policy makers need to resist pressure and the temptation to misuse phytosanitary regulation for purely rent-seeking advantage. To be sure, rent seeking is an ugly, wasteful game to which there seemingly is no end. ■

■ For more information

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Economic Harmonization in the Canadian/U.S./Mexican Grain-Livestock Subsector Proceedings of the Fourth Agricultural and Food Policy Systems Information Workshop

**Edited by R.M.A. Loyns, Ron D. Knutson, and Karl Meilke
Published by University of Guelph and Texas A&M University**

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