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Love Thy Neighbor—But Does that Include a Six Hundred Eighty-Four Cow Dairy Operation? A Survey of Community Perceptions

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ABSTRACT

The juxtaposition of nonfarming residences to operating dairy farms often precipitates conflict over appropriate land use. This was the situation facing the residents of the town of Charlotte, Vermont, in 2002 when a local dairy farmer proposed expanding from 225 to 684 cows with the construction of a new dairy facility and manure storage lagoon. The proposal raised considerable concern within the community and presented a unique opportunity for extension researchers to examine and analyze the attitudes and concerns of local residents toward the planned expansion, including their reasons for supporting or opposing the expansion, and to develop recommendations for farm operators considering future expansions. A survey instrument was developed and inserted in a local newspaper that was delivered to all households of Charlotte to identify important concerns of the community and explanatory factors differing between supporters and nonsupporters. Of those responding to the survey, 44.3% opposed the proposed dairy facility, 30.6% supported it, 17.9% needed more information to make a decision, and 7.2% had no opinion or were unaware of the proposal. There were no significant demographic (age, gender, educational attainment) differences between supporters and nonsupporters. Yet, the closer the proximity of the respondent's residence to the farm, the more likely he or she was to oppose it (β = 1.018). The concerns of greatest importance were water quality (4.42/5), effect on property values (3.07/5), and animal welfare (3.58/5). Responses to the open-ended questions on the survey revealed strong views toward the farmer personally as well as concentrated animal feeding operations in general. The results indicate that farmers and extension need to take proactive steps to provide education and information relevant to the facts and issues surrounding new dairy facilities for 500 to 700 dairy cows.
Key words: confined animal feeding operation, dairy farm, land use conflict, community conflict

INTRODUCTION

Conflicts over land use are increasing between agriculture and residential neighbors as more farms are becoming surrounded by nonfarming neighbors. According to the US Census of Agriculture (USDA, 2002), over one-third of the nation's farmland is now located within or adjacent to metropolitan areas. This can pose a challenge for dairy farmers whose economic survival depends on expanding or modernizing their operations. Nonfarming neighbors often oppose such changes, citing concerns over water and air pollution and other negative externalities from the farm that may interfere with the enjoyment of their property. A proposed new dairy facility in Charlotte, Vermont, presented a unique opportunity to study the aspects of community conflict over the establishment of 500- to 700-cow dairy operations through a survey of community members.

Charlotte is a rural community with a population of 3,569 (US Census Bureau, 2000) and land area of 107.4 km^2 (41.5 mi^2) immediately south of the most densely populated area of the state. All residents live within 9.7 km (6 mi) of the proposed dairy facility. The dairy farmer proposed to increase herd size from 225 to 684 milking cows and construct a new barn and manure storage facility on a site away from existing facilities. Many Charlotte residents voiced their opposition in local media and at town meetings. A community group called Citizens for Safe Farming (**CFSF**) was formed, and the group initiated legal action against the farmer, seeking to stop the construction of the new facility (CFSF, 2003). In the legal suit, residents cited environmental concerns over water pollution and their perceived inaction by the Vermont Agency of Natural Resources. Members of CFSF objected to the proposal

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based on its potential to increase noise, traffic, odor, and other nuisances (CFSF, 2003).

The Vermont Agency of Agriculture, Food and Markets (**VAAFM**) is responsible for issuing permits for large farm operations (**LFO**; i.e., farms with more than 950 animal units of horses, cattle, or sheep in Vermont). The permit requirements are outlined in the state's LFO law adopted in 1996 and revised in 2000. This law meets the requirements of the federal Environmental Protection Agency, which provides oversight for regulating water quality associated with concentrated animal feeding operations (**CAFO**). Vermont's LFO program established design and operating standards to ensure that farmers obtaining LFO permits meet or exceed the technical CAFO requirements (VAAFM, 2001).

The farmer submitted his permit application to VAAFM for a proposed 684-cow plus 416-replacement heifer operation with a new 5,574-m^2 (60,000 ft^2) barn and 0.69-ha (1.7 acre) manure pit designed with a storage capacity of 240 d (Van Dis, 2006). As part of the application, the farmer was required to use his best judgment and indicate whether he believed the proposed facility would generate more odors, noise, insects, flies, or other pests compared with other similarly sized farms with the same type of animals (VAAFM, 2001).

Nutrient management and prevention of environmental pollution are 2 requirements of CAFO. When manure is overapplied, N and P can potentially pollute ground and surface water (Gollehon et al., 2001; Aillery et al., 2005). Charlotte is located along the shores of Lake Champlain, which has P levels exceeding Vermont's water quality standards (Environmental Protection Agency, 2006). Research by the Lake Champlain Basin Program identified dairy farms located in Addison, Chittenden (location of this specific farm), and Franklin counties as significant sources of nonpoint P loading of the lake (Lake Champlain Basin Program, 2006).

Although properly constructed manure lagoons protect water quality, they release volatile organic compounds such as ammonia, which adversely affect air quality (Lefcourt and Meisinger, 2002; Aillery et al., 2005; Kryvoruchko et al., 2006). Flies and other insects as well as rodents and other vermin are attracted to stored manure and can multiply to nuisance levels. Although the VAAFM does not require permit-seekers to obtain input from neighbors on these or any other matters, several studies showed that negative externalities constitute the main reasons why residents oppose the location of CAFO in their neighborhood (Jones et al., 2000; Kelsey and Vaserstein, 2000).

The events in Charlotte provided a unique opportunity for examining the factors underlying conflict between local residents and a dairy farmer seeking to consolidate and expand his operations. Although several studies examined conflict issues between farmers and nonfarm residents over land use (Jones et al., 2000; Kelsey and Vaserstein, 2000; Vaserstein and Kelsey, 2000), the authors could not identify studies in the literature that focused specifically on the dairy industry, so this study was undertaken to do so.

The 3 key objectives of this study were to: 1) determine if there were any significant demographic characteristics distinguishing residents who opposed the farmer's proposal from those who were in support; 2) identify the critical issues of concern to residents with regard to the proposal for a modernized, large dairy facility and how these concerns influenced individual decisions to support or oppose the plan; and 3) assess whether there were overarching or fundamental values, perceptions, or attitudes that may influence individual decisions to support or oppose the farmer's proposal.

MATERIALS AND METHODS

Study Hypotheses and Conceptual Framework

Six study hypotheses pertinent to the land use conflict in the town of Charlotte emerged.

1. Sociodemographic factors affect an individual's support for the proposed facility. These factors may include gender, level of education, number of years a resident in Charlotte, the number of months spent in Charlotte throughout the year, ownership vs. rental of residence, and acreage of land associated with the residence.
2. Residents living within 1.6 km (1.0 mi) of the proposed facility are less likely to support it than residents living more than 1.6 km (1.0 mi) away.
3. Residents having environmental concerns (water quality, manure storage, and pesticide usage) are less likely to support the proposed dairy facility.
4. Residents concerned with the effect of the LFO on their view or property value are less likely to support the proposal.
5. Residents who express animal welfare concerns are less likely to be supportive of the proposed dairy facility.
6. Residents are more concerned about environmental factors than they are about economic factors.

The Survey Instrument

Based on the 6 study hypotheses, we designed a survey instrument to obtain information on the factors