



Rural Perceptions on Livestock and the Environment

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Outline

- Purpose
- Approach
- Data
- Characteristics of hog operations
- Distance
- Complaints and follow up
- Policy recommendations



Purpose of the Study

- Identify specific annoyances caused by hog facility operations
- Document complaints by neighbors
- Document corrective actions undertaken
- Derive solutions to attenuate odor problems perceived by neighbors



Approach: Two Surveys

- **A Hog operations characterization questionnaire developed by DGH Engineering Ltd;**
- **A Population questionnaire developed by Réjean Landry, Chair of the KUUC, Laval University;**
- **Both administered by phone in June, 2000 by DGH Engineering Ltd;**



Survey Data Collected in 2000

- **A total of 50 hog facility operators took part in the Operation characterization survey;**
- **282 rural households took part in the population survey;**
- **Surveyed hog operators and rural households are from 30 rural communities of the province.**



Characterization of Hog Operations

- **On the average, a hog operation**
 - **Is 2317 animals large;**
 - **Is 15 years old**
 - (47% <5 years old);
 - **Is a corporation**
 - (52% vs 48% of independent owners);
 - **Is located 1.65 mile away from the nearest neighbor's residence;**
 - 40% <1/2 mile
 - 64% <1 mile



Characterization of Hog Operations

- has a 388 acres manure spreading field;
- has trees around both the barn and the manure storage;
- Uses a gravity drain system to collect manure;
- handles manure in a liquid/slurry form;
- Injects all its manure (72% inject)



Distance of Spreading Fields from the Nearest Neighbor's Residence

- 1/2 mile for 63% of hog producers
- 1 mile for 93%



Complaints Received by Hog Facility Operators Regarding Odors

- 25% of hog facility operators received complaints



Corrective Actions Undertaken to Reduce or Control Odor

- **80% have undertaken some actions:**
 - 70% use injections
 - 65% use shelter belts
 - 60% use additives
 - 22% cover manure storage
 - 25% have increased their manure storage capacity



Changes Planned in Manure Management Practices in the Next 3 Years

- **61% intend to make changes in their practices:**
 - 30% shelter belts
 - 30% formal manure management plan
 - 27% injection to apply manure
 - 17% increase of storage capacity
 - 17% covering of manure storage
 - 10% use of additives



Proximity

- **45%** of respondents have a hog facility operator as neighbor or are themselves hog producers
- **68%** of the respondents live within 2 miles away from a hog operation;
- **70%** live within 2 miles away from a spreading field;



Extent of Odor Nuisances

- **25%** of the surveyed households made changes to their outdoor activities because of the presence of a hog operation in their neighborhood:
 - **20 times more** than for pollen and
 - **11 times more** than for dust;



Extent of Odor Nuisances

- **95%** of those living within two miles of a hog operation suffer odor problems;
- **97%** of those residing within 2 miles of a spreading field suffer odor problems;
- **75%** of the respondents experience odor problems in summer;
- **44%** experience odor problems late afternoon;



Complaints

- 85% of respondents did not complain personally about odor
- 15% complained to either hog producers, municipal or provincial authorities
- The number of complaints is not in direct correlation with:
 - The number of hog operations in the vicinity of residence
 - Distance to the nearest hog operation or the nearest spreading field



Corrective Actions

- 29% of respondents reported that hog facility operators undertook some actions to control or reduce odor
- 33% of respondents reported that hog producers do not take any corrective actions
- 54% reported that no corrective actions were taken by municipal or provincial authorities



Major findings

- **Hog Production in the province is intensive: over 2300 animals on average per farm;**
- **Odor is a source of inconveniences for hog farm operators' neighbors;**
- **Residents very close to hog operations (less than 2 miles) suffer odor problems the most;**
- **Manure is mostly handled in a liquid/slurry form and is mostly injected;**



Major findings

- **Perceptions seem to be a factor in hog farm operators' neighbors attitudes toward odor; in fact:**
 - ✓ *They are unable to know explicitly which farm operations they are victims of;*
 - ✓ *They are likely to complain independently of their occupation and the number of hog operations next to their residence;*



Policy Implications

- The issues identified can generate two reactions:
 - 1) negative-reactive actions
 - 2) positive-pro-active actions



Negative-Reactive Actions

- **Negative reactions to:**
- positions of opponents to hog production
- policy measures developed by governments
- **and:**
- Claim that projects meet criteria of economic, technical and institutional (regulation) feasibility
- assume that complaints are based on perceptions, not facts
- assume that opponents to hog production do not understand...



Positive-Pro-Active Actions

- Take steps to meet criteria of social feasibility (social acceptability):
 - Take steps to reduce odor
 - Provide information to neighbors (40% do not know whether hog producers took corrective actions)
 - Provide information regarding technologies, manure management plans, ...



Positive-Pro-Active Actions

- **Demonstrations**-visits of hog production facilities to show:
 - how things are done
 - what are the linkages between technologies and attenuation of odor
 - repeated interactions between hog producers and the population
 - trust + reciprocity (take time and are fragile)



END



Odor Exposure Index (OEI)

– **Definition:**

- **Measure the extent to which any given household is exposed to odor due to the proximity of hog farm operation**



Construction of The Odor Exposure Index (OEI)

Question	If The Answer is	Then The Score is
1. During the last 12 months, did your family has had to change his outdoor family activities ?	Hog operations in your neighborhood	1
2. What types of annoyances has led you to change your outdoor family activities?	Odor problems	1
3. Approximately, how many hog operations are located in the vicinity (<2 miles) of your house?	At least one	1
4. Do you think this (these) operation (s) could be a major cause of odor in your neighborhood?	YES	1
5. Approximately, how close is your residence to the nearest hog operation facility?	Less than 2 miles	1
6. Approximately, how close is your residence to the nearest spreading field of hog manure?	Less than 2 miles	1
7. During the last 12 months did you personally or any neighbors complain about odors ?	YES	1
8. Has the owner (s) of these hog facilities taken steps to reduce or control odor	NO	1
9. Have the municipal or provincial authorities taken steps to reduce or control odor?	NO	1
TOTAL		9



OEI AND ODOR NUISANCES

- **the level of odor nuisances suffered is independent of the farm operation size;**
- **newer hog operations seem to cause less odor problems than older ones;**
- **the presence of trees around the barn and the manure storage can help reduce or control odor nuisances;**



OEI AND ODOR NUISANCES

- **plywood offers a better protection against odor nuisances than other materials on the barn interior walls;**
- **solid floor does not provide more protection against odor nuisances than do slatted floors;**
- **solid cement offers less protection against odor nuisances than the other penning materials;**



OEI AND ODOR NUISANCES

- underslat scraper is as effective against odor as the gravity drain manure collection system;
- the level of odor nuisances felt by households is independent of the capacity of the outdoor storage;
- the level of exposure to odor nuisances is independent of the capacity of the indoor gutter capacity;
- "two-cell" manure storage provides more protection against odor annoyances than does the "one-cell" storage;



OEI AND ODOR NUISANCES

- **additives whether used in the feed to reduce solids or to reduce odor offer the same protection to hog farmers' neighbors against odor nuisances;**
- **The season when most of the manure is spread, i.e. Fall, is different from when the highest odor intensity is experienced by both hog farm operators and rural households, i.e., summer;**
- **farmers who inject their manure are no more effective in controlling odor nuisances than those who broadcast theirs;**



OEI AND ODOR NUISANCES

- **it is difficult for the interviewees to know to which farm operation their odor problems are related;**
- **The closer a residence to a hog farm operation, the greater the odor problems it experiences;**
- **Occupation has no effect on the number of complaints;**
- **The number of complaints by any household is independent of the number of hog operations next to its residence;**