

Socio-economic effect of livestock operations on their neighbours in Ilorin metropolis, Nigeria: implication for extension programme development

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Abstract

The paper investigated the socio-economic effects of livestock production on their neighbours in Ilorin metropolis. Specifically it examined selected personal characteristics, and social as well as economic effects of livestock operations as perceived by neighbours. Purposive random sampling was used to select sixty two neighbours to pig and poultry farms culminating to a sample size of one hundred and twenty four. Interview schedules were used to elicit information from respondents. The data were analysed by using means and ranking.

The findings show that neighbours were under 40 yrs of age, spent 4.3 years close to pig farms and average of 7.26 yrs close to poultry farms. Complaints from friends and more money spent on water purification ranked highest on social and economic effects, respectively.

Education programmes for farmers on water purification should be jointly mounted by agricultural extension and environmental protection agencies.

Keywords: Extension programme development, livestock operations, neighbours, socio-economic effect

Introduction

Current and anticipated future trends suggest that as the rural community becomes increasingly urbanized, there will be an escalation of conflict between residents and growing scale and concentration of livestock industry. Agriculture, which used to be the occupation of the rural majority, has a major part of its animal production situated on a commercial level in urban areas. The authors had on different occasions discussed with farmers who were either banned from operating poultry farms or those whose pig farms were burnt by neighbours.

Ritz (2005) concluded that understanding the context out of which complaints, criticism and legal challenges against farmers are arising is a useful first step in learning how to prevent and resolve conflict. The expansion of livestock production has led to increase in odour, noise and dust, which serve as a nuisance to people who are neighbours to animal farms.

Wang et al (1999) reported dust as a major contributor to increased incidence of respiratory disorder among swine workers. Pigs and poultry raised in a deep litter system raise dust that could keep neighbours homes dirty and increase the cost of home management.

Tyndall and Colletti (1999) have characterized livestock odour into six categories: odours at or very near ground level; limited plume rise, due to certain weather conditions; plume shows spatial and temporal viability; plume may be of large aerial extent; close proximity to critical

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receptor of odour; and odour generated in animal facilities that are intense and detectable at appreciable distances due to travels as aerosol. Agtec Centre (2002) observed that odours from livestock facilities were one of the key issues affecting the growth of livestock industry in Alberta. They identified human sense of smell and psychological make up as well as trend to large scale production as factors contributing to odour being regarded as a nuisance. Four factors contributed to determining whether or not odour constituted a nuisance. These were:

- Frequency - how often odour occurs;
- Intensity - the length of an odour;
- Duration - the length of time the odour is encountered; and
- Offensiveness - the unpleasantness or character of the odour.

Powers (2001) viewed odour tolerance as a function of public relations and good will rather than the actual presence and intensity of odourous compounds. A perception of odour is individual, and is influenced by personal preference, experiences and association. Persons from an agricultural background or working with livestock found livestock operations less offensive. However, in an Arkansas survey, Van Devender (1997) reported assessors who had association with pig production did not report lower odour score when evaluating pigs with other animals. In Canada, Van Kleeck and Bulley (1985) found no difference between neighbours of farm and non-farm background in the nuisance perception of animal odour. Residents of rural origin complained as much as those of urban origin.

Jacobson et al (1998) reported that 50% of all odour complaints were traced back to land application of manure, about 20% were from manure storage unit, another 25% from animal facilities. Between the three animal species, pigs received slightly more than half (54%) of the complaints with cattle and poultry receiving 20% and 24% of the complaints, respectively.

These findings represent the general distribution of animal farm complaints in UK, Minnesota and Midwest USA. Klages (2003) reported changes that have occurred in neighbours as a result of livestock operations. He ascribed most changes to manure spreading schedules, which averaged twice per year. 8% have had to keep windows closed, 4% have stopped having outdoor functions, and 6% have had to stop hanging out laundry. However, 58% of neighbours have not had to change their normal activities due to livestock operations.

On noise, the Queensland Environmental Protection Agency (2005) identified problems caused by noise to include annoyance, speech interference, sleep interference and decrease in work performance. In the city of Salisbury, neighbours have been advised to keep a diary of when animal or poultry noise occurs for litigation if animal or poultry owners refuse to change his/her pet habits.

Van Kleeck and Bulley (1990) conducted a survey of neighbours around seven, 100 to 225 - sow farrow - to - finish operations to assess the relationship between the perception of odour nuisance, separation distance and the size of the facility. The frequency of swine farm perceived as a nuisance was inversely proportional to the square of the separation distance. About 20% of the neighbours living around 220ft away from a swine farm perceived it to be a nuisance. Farm size appears to have no effect between 600 and 1200ft away. Miner and Barth (1988) recommended a ½ mile set back for units with more than 1,000 pigs, otherwise ¼ mile for neighbouring residences in all directions.

This paper therefore attempt to answer the following questions:

- What are the characteristics of the neighbours to animal farms?
- What are the social effects of livestock operations on the neighbours to animal farms.
- What are the economic effects of livestock operations on the neighbours.

Materials and Methods

The study was conducted in Ilorin Metropolis. The target population consisted of pig and poultry farmers who have their farms located within the city. The list of members of Poultry Keepers Association of Nigeria, in Kwara State was obtained to locate the farmers.

Sixty-two pig and poultry farm neighbours each were purposively sampled for this study making a sample size of one hundred and twenty four. An interview schedule was used to elicit information from respondents. The instrument for the study was divided into three parts:

- The neighbours personal characteristics which include age, years spent in the residence and distance of residence from animal farm.
- Social effect of animal production which consist of nine items arranged on a five point likert type scale of strongly agree to strongly disagree and
- Thirteen items of economic effect of animal production on their neighbours designed on a five point likert type scale.

Professionals in animal production and agricultural extension and rural development validated the instrument. Data were analysed by using percentages, mean and ranking.

Result and Discussion

Table 1. Distribution of respondents according to their selected personal characteristics

Personal Character	Pig	Poultry
Age, years	31.8	31.3
Years in residence	4.3	7.6
Distance from Animal house, m	103	1.1

The poultry farm appears to be closer to resident buildings than pig farms (Table 1). This may be due to the level of indigenous tolerance to the two animals in a Muslim community.

Table 2. Social effect of livestock operation on neighbours

S/N	Social issues	Neighbours to pig farms		Neighbours to poultry farms		Pooled analysis	
		Mean	Rank	Mean	Rank	Mean	Rank
1	Friends ceased from coming to my house because of animal odour	2.9	5 th	2.0	9 th	2.45	7 th
2	Friends complain about my house being dusty as a result of animal	3.0	2 nd	3.7	1 st	3.35	1 st

3.	farm I have physically confronted animal operators on environmental issues caused by them	3.1	2 nd	2.4	3 rd	2.75	4 th
4.	Our house is unfit for social gathering because of environmental pollution	3.1	2 nd	2.4	3 rd	2.75	4 th
5.	Odour from animal farm always make me sick	2.9	5 th	2.04	7 th	2.47	6 th
6.	Flies from animal farm does not cause irritation on my body	2.6	7 th	3.5	2 nd	2.40	9 th
7.	I am indifferent to living so close to animal farm	2.6	7 th	3.5	2 nd	3.05	2 nd
8.	We do not have to dust our furniture at regular interval as a result of dust from animal farm	2.5	9 th	2.35	5 th	2.42	8 th
9.	I avoid the source of drinking water close to my house because of water pollution	3.5	1 st	2.01	8 th	2.76	3 rd

Note: Strong agree = 5, Agree = 4, Undecided = 3, Disagree = 2 and strongly disagree = 1 for every positive statements and vice versa for negative and neutral statements.

Neighbours to pig farms ranked "avoiding source of drinking water that is close to my house because of water pollution" as 1st. "I have physically confronted animal farm owner on environmental issue and our house is unfit for social gathering" as 2nd, and "friends complain about my house being dusty as a result of animal farm" ranked 4th (Table 2). On the part of poultry farm neighbours, "complaints by friends about dusty house as a result of animal farm" ranked 1st, while "being indifferent to living close to animal farm" ranked 2nd. In the pooled analysis for both animals, "complaints from friends about their house being dusty" ranked 1st, while "being indifferent to living close to animal farm" ranked 2nd. All other items tended towards disagreement. This implied that animal farm managers need to devise means for reducing dust for peaceful co-existence in the neighbourhood.

Table 3. Economic effect of livestock operations on neighbours

S/N	Economic issues	Neighbours to pig farms		Neighbours to poultry farms		Pooled analysis	
		Mean	Rank	Mean	Rank	Mean	Rank
1	Our rent is relatively low because of the odour from poultry farm	2.9	6 th	2.84	11 th	2.87	10 th
2	Vehicle do not avoid transporting us to our house because of odour	3.2	2 nd	2.79	12 th	2.99	8 th
3	We spend money on drug as a result of sickness caused by animal farm	2.8	10 th	3.56	2 nd	3.18	3 rd
4	I am indifferent to money spent on air fresher is as a result of odour from animal farm	2.9	6 th	3.32	5 th	3.11	6 th

5.	I am indifferent to money spent on netting my house to prevent flies from animal farm	3.1	4 th	3.19	6 th	3.15	5 th
6.	We do not spend extra money on detergent because of dust from animal farm	2.6	13 th	3.58	1 st	3.09	7 th
7.	I am indifferent to large amount of manure from animal farm which make soil useless for cropping	2.9	6 th	3.08	7 th	2.49	13 th
8.	I am indifferent to less patronage of personal business because of the odour from animal farm	2.9	6 th	3.45	4 th	3.18	3 rd
9.	More money spent on water purification due to animal pollution	3.2	2 nd	3.55	3 rd	3.38	1 st
10.	Customer of the animal farm does not patronize our personal home business	2.7	12 th	2.92	9 th	2.81	12 th
11.	We do not purchase animal products at reduced price	2.8	10 th	2.84	11 th	2.81	11 th
12.	Animal farm owners maintain our roads	3.0	5 th	2.89	10 th	2.95	9 th
13.	In time of scarcity of animal products preference is given to neighbour during sales	3.4	1 st	2.98	8 th	3.19	2 nd

The economic indices show both positive and negative effects of livestock production on their neighbours (Table 3). There were only five items which skewed towards pigs for neighbour agreement. These were: "In times of scarcity of animal products preference is given to neighbour during sales"; "vehicles do not avoid transporting us to our house because of odour", "more money spent on water purification due to animal pollution"; "I am indifferent to money spent on netting of my house to prevent flies from animal farm" and "animal farm owners maintain our roads", arranged in descending order of magnitude.

The respondents from the poultry farm neighbours seem to be more positively skewed as seven of the 13th items point towards agreement. These were: "we do not spend extra money on detergent as a result of dust from animal farm", "we spend money on drugs as a result of sickness caused by animal farm", "more money spent on water purification due to animal pollution", "I am indifferent to less patronage of personal business because of odour from animal farm", "I am indifferent to money spent on air freshener as a result of odour from animal farm", "I am indifferent to money spent on netting as a means of getting rid of flies", and "I am indifferent to large amount of manure from animal farm which makes soil useless for cropping".

When responses of both neighbours were pulled together, "more money spent on water purification due to animal pollution" with mean of 3.38 was ranked 1st, "In times of scarcity of animal products preference is given to neighbour during sales" ranked 2nd, "indifference to less patronage of personal business because of odour from animal farm" ranked 3rd, "we spend money on drugs as a result of sickness caused by animal farm" ranked 3rd.

Discussion

Though the poultry farms are in closer range to residential buildings, the residents claim to have been living close for upward of seven years. Perhaps if the residents who are close to pig farm had spent up to seven years there might have been a greater reaction. This study agrees with Jacobson et al (1998) that neighbours complain about animal farms but place more emphasis on dust than odour. This suggests that the animals were either raised on un-cemented floors, or a deep litter system was used which allows animals to cluster together while feeding.

The source of drinking water available near the animal farm has both social and economic implications. The neighbours especially those living close to pig farms tend to avoid it while more money was spent on water purification due to animal pollution. The neighbours appear to enjoy the contributions of the farmers to their economy in terms of preference for animal product in time of scarcity. This may be one of the incentives that made the neighbours indifferent to their living close to the farms. This finding agrees with Klages (2003) that neighbours had never expressed concern about nearby livestock operations.

The agricultural extension agency needs to develop programmes not only for rural farmers but also for commercial livestock keepers in the urban centers. Education needs to be provided in collaboration with environmental protection agencies on how to keep water around the farm clean for drinking. The poultry farms appear to need urgent attention since they were located close to people's residents. However, there should be a long term plan for the pig farmers on how to maintain the cordiality with neighbours through attendance to meetings, contribution to development of the environment and invitation of neighbour to end of the year celebrations. Current innovations on how to minimize odour, flies, noise and dust need be taught to the farmers.

Conclusion

- Livestock farmers in Ilorin metropolis will maintain good neighbourliness if the source of water around them could be kept drinkable
- Devices for reducing dust should be used so that this is not a nuisance to the neighbours

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