Economics 051 The Economics of North Carolina

Hog Farming and Lagoon Management in North Carolina: Economic Impact on Neighbors

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As the hog farming industry has expanded in North Carolina, the economy has changed for Eastern North Carolina in many ways. According to "Hog Operations, Environmental Effects, and Residential Property Values," North Carolina became the second largest producer in the nation for swine in 1994 when the hog population grew from 2.8 million in 1991 to 7 million in 1994 (Palmquist, Roka, Vukina, 1). Along with this growth come environmental and economic issues. Not only does an increase such as this help the economy and employment rate of North Carolina, but the environmental affects of hog farms can cause huge economic problems, on such a thing as property value. Since the expansion of the hog farming industry in North Carolina, hog farms have come to not only be secluded in the country, but now can be found near businesses or by residential property, which is what caused the first issues of nuisance suits over hog odor and the hog farming effects on property values (Gribbins & Russ, 1). This odor might be a result of the nearly 20,000 tons a day of urine and feces that the hogs of North Carolina produce (Milla 1).

Residential neighbors of hog farms argue that the confined animal feeding operations, CAFOs, could cause mental and physical health problems, bad water quality, and terrible odors, all produced by the nearby hog farm (Milla, 1). As presented in the journal published by Milla, these externalities can have a huge impact not on the market price of the pork, but on the property values of surrounding home sites (Milla 1). The journal "Hog Operations, Environmental Effects, and Residential Property Values" states, "Rural residents have complained that living in close proximity to large hog operations has adversely affected the quality of their lives and they fear the swine odors and water quality impairment may pose long term health risks. Some residents further claim that they have suffered tangible economic damages from a decline in their real estate property values" (Palmquist, Roka, Vukina, 1).

Two hedonic studies will be predominately reviewed in this paper, one taking place in 1995 and the other taking place in 2005. In a hedonic study on the impact of hog farms on property values, the goal is to evaluate whether or not the environmental impact of being in close proximity of a hog farm can change property values and if so, how much the value will change due to a marginal increase or decrease in the environmental element (Milla 1). Basically, "the goal of this (1995) study is to test whether or not hog operations have a significant effect on surrounding property values" (Palmquist, Roka, Vukina 3).

The other paper that will be examined in this document is a paper that was published in April of 1996, "The Effects of Property Entitlements on the Level of Hog Odor," which mainly deals with nuisance suits due to hog odor.

In the hedonic study of "Hog Operations, Environmental Effects, and Residential Property Values," an economic aspect of hog farming, the effects on housing prices, are discussed, "if a new hog operation were to be established at a particular location, this might affect house prices in the immediate vicinity, but it would not be expected to change the market equilibrium represented by the hedonic price schedule. Thus, it would be a "localized externality," which is something that influences surrounding houses but does not affect the market equilibrium, and the welfare effect of the new operation can be estimated from the hedonic results" (Palmquist, Roka, Vukina, 4, 12). According to this same report, the first thing that must be done, before calculating the dollar impact on property value, is to figure out a connection between the manure index and the number of animals in a region (Palmquist, Roka, Vukina 12).

In this 1995 study, the original goal was to quantify the hog odor impact (Palmquist, Roka, Vukina 3). Unfortunately, this study faced some hardships: the absence of an odor measurement and the incapability of identifying the intensity and duration of the odor (Palmquist, Roka, Vukina 3). Another barrier stood in the way of quantifying the hog odor's impact as well, which was the number of other environmental factors that could be affecting the property value as well as the odor, such as water quality (Palmquist, Roka, Vukina 3). Therefore, the study was conducted by simply finding the total impact by relating the proximity of the hog farm to the difference in property value (Palmquist, Roka, Vukina 3).

This study was conducted with nine counties in eastern North Carolina (Palmquist, Roka, Vukina 5). A total of 237 homes were also included in the study, most including less than three acres of land, but none having more than ten acres of land with it (Palmquist, Roka, Vukina 5). To assure accuracy in the study, the house characteristics, such as structural, neighborhood, location, and environmental characteristics, were recorded in order to show how large of role the environmental factor plays into the market price of the house (Palmquist, Roka, Vukina 3). The three rings that were used to measure the proximity of hog farms to the houses being observed were: 0 to ½ mile, ½ to 1 mile, and 1 to 2 miles (Palmquist, Roka, Vukina 4). Assuring accuracy and precision to the study, 232 out of the 237 study houses were located no more than two miles from the nearest herd of swine, which can technically, by the State Veterinarian's Office, be any site with at least one animal, therefore the majority of the houses are staying within the boundaries of the data rings (Palmquist, Roka, Vukina 7).

The results of this study showed that "if the new operation locates within ½ mile of a house in an area with an initial manure index of 33.107 (the middle distribution of manure levels), house value drops by 4.75%. Alternatively, if the new operation locates 2 miles from the house, value falls by only 0.56%. The effect of a new operation locates 2 miles from the house, value falls by only 0.56%. The effect of a new operation will be felt more strongly in an area where the initial hog population is low (i.e. low manure index). As an area becomes more saturated with hogs, both the dollar loss and the percentage with the addition of a new operation become smaller" (Palmquist, Roka, Vukina 14).

This paper talked about, in the conclusion that something must be done with the expansion and growth of the hog industry and the conflict between neighboring landowners. Ironically, in 2000 something was done to avoid these issues and to put a stop to the overpowering hog farms that were going up left and right in eastern North Carolina: the Smithfield Agreement.

In the hedonic study of 2005, a function was formed in order to calculate the decrease in property value per hog depending on the distance the property is from a hog

farm. The model came out to show that at 1 mile away the property value decreases on an average at \$0.71/hog, which comes out to be about 6.2% decrease in value for a 10,000-swine farm, with an average house price of \$114,000 (Milla 3).

The "Evaluating the Effect of Proximity to Hog Farms on Residential Property Values: A GIS-Based Hedonic Price Model Approach" journal by Katherine Milla, compares results from their study to others of similar variables. For example, a study that was conducted in 2003 by Kim found that at .75 miles from a hog farm a property's assessed value decreases by \$0.47/hog, \$0.52/hog at 1 mile, and \$0.42/hog at 1.25 miles (Milla 4). This comes out to be about an 8% decrease in value, therefore making the results of these two surveys precise, since the results turn out to be very similar. This journal suggests the idea of using the model in which this hedonic study devised in order to come up with some way to measure the compensation for nuisance suits and to resolve conflict between farmers and surrounding residents (Milla 4). Milla believes that a potential resolution of this conflict would be for the GIS-hedonic model to evaluate an appropriate amount that the farmers could negotiate with the residents so that they could operate, while maintaining practical and reasonable rules (Milla 4).

Many nuisance suits have occurred over hog odor and property entitlement. According to Eric Gribbins and John Russ, "There is a wide variety of benefits associated with every piece of property. For example, a home owner has the right to many benefits in addition to the right to live in his house. He has the right to sleep with his window open, to play catch in the backyard with his son, to paint his shutters purple as long as zoning laws are not violated, and the right to barbecue chicken on his deck. These rights are conferred to the property owner by a property entitlement. They cannot be diminished or removed by an outside party without the consent of the entitlement holder or the decree of the court" (Gribbins & Russ 7). So, when a property owner's rights get taken away because he cannot step outside because of the terrible odor caused by the hogs, is when he sues; however, hog farmers usually have the right to raise livestock on their property, so when a nearby neighbor takes the farmer to court for the hog odor, the neighbor is basically saying that his right to odor free air outweighs the farmer's rights to raise the hogs with the odor (Gribbins & Russ 7).

In conclusion, the growth of hog farms in North Carolina throughout the years has caused so much controversy and economic issues. The neighbors of hog farmers have had to go through a lot, especially before the moratorium was in affect, and hog farmers were popping up everywhere. Basically, hog farming is like anything else in the world, good and bad come out of it.

Bibliography

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