North Carolina's increasing nonfarm population and rapidly expanding large-scale hog operations have led to strong conflicts over swine odor—conflicts becoming more common in other states too. Here we discuss three ways North Carolina has tried to resolve these conflicts: through voluntary negotiations, litigation, and regulation.

With seven million pigs at the end of 1994, North Carolina became the second leading hog-producing state in the United States, trailing only Iowa. Most of the industry's growth occurred in large-scale operations with more than 500 pigs at one site. An explosion of technological knowledge in genetics, housing design, nutrition, and waste management has accompanied the move to larger hog operations. North Carolina also leads the country in the movement toward vertical integration of the hog industry. Hurt and Zering estimate that producers raise over 80 percent of the state's hogs under coordinated arrangements with processors.

Critics of the rapid expansion of the swine industry argue that North Carolina's lax environmental regulations promote large-scale production at a very high cost to the environment. Critics have raised serious questions about the safety of existing manure handling practices and their contribution to ground and surface water pollution. The strongest public opposition has focused on offensive odors released from hog barns and manure-collecting lagoons of these large hog operations. People complain that hog odors adversely affect the quality of their lives, may cause yet unknown long-term health problems, and reduce real estate property values. Such disputes between farmers and neighboring property owners could be resolved through negotiation, litigation, and/or regulation.

Voluntary negotiation

Neighboring landowners occasionally settle their disputes informally through direct negotiation. Parties to the conflict may agree to change the siting of the facility, modify the operation and management practices, purchase easements, or accept bribes or favors as means of compensation. In Harnett County, North Carolina, for example, fifteen livestock companies and the county commissioners negotiated a voluntary agreement on siting swine and poultry operations. The memorandum of understanding, designed to strike a balance between the expanding livestock industry and the county's nonfarm population, says that new swine confinement operations and waste treatment facilities must be at least 1,000 feet from any occupied home, business, or public meeting place. Between the implementation of the memorandum in January 1993 and its evaluation in spring of 1994, fifteen swine and poultry operations were constructed, and approximately fifteen other farmers or livestock companies decided not to proceed with construction. Except for maybe one or two cases, farmers and companies have acted as advised by the memorandum's guidelines prior to locating new facilities. To date, only one major complaint may require court action.

Litigation

If an informal settlement cannot be reached, a nuisance lawsuit often resolves the odor dispute. The premise of nuisance law is that all property owners
have the right to reasonable use and enjoyment of their land. If one owner uses the land in a manner that materially and adversely affects the reasonable uses of adjoining property, nuisance law gives the affected party the right to sue for monetary damages and an injunction to stop the objectionable activity. Lawsuits regarding this issue can be traced back to early sixteenth century England when William Aldred sued his neighbor, Thomas Benton, alleging that Mr. Benton "maliciously intending to deprive Aldred of the use and profit of his house and land, erected in his orchard a large wooden structure and used it as a hog sty for the pigs in his orchard" (Philpott). The pig sty obstructed the windows of Aldred's house and the stench emanating from the pigs drifted onto Aldred's premises to the continuous annoyance of Aldred and his friends. Aldred claimed damages of forty pounds. The court said "that for stopping as well of the wholesome air as of light, an action lies, and damages shall be recovered for them." The court found that the nuisance did exist and awarded the plaintiff damages of forty pounds.

The law of nuisance is based on a rather vague tort law principle of "reasonableness." The courts decide reasonable use by examining the extent and duration of interference, character of the harm, social value of the plaintiff's use of the land, burden on the plaintiff, social value of the defendant's activity, defendant's motive, and burden on the defendant to alleviate the nuisance. In the words of the North Carolina Supreme Court (Pendergrass v. Aiken, cited according to Hetrick): "Reasonableness is a question of fact to be determined in each case by weighing the gravity of the harm to the plaintiff against the utility of the conduct of the defendant." It is also well established that a completely lawful use of property can be a nuisance if it is not located in an appropriate area or if the operation is not properly conducted or maintained. Successful plaintiffs in nuisance suits may receive equitable relief (injunction), damages, or a combination of the two. Monetary damages are most common in private nuisance suits. The measure of damages depends upon the permanence of the alleged nuisance. A temporary nuisance can be corrected at a reasonable cost, but a permanent nuisance causes low damages compared to the cost of abatement. In case of permanent nuisance, the defendant basically buys the right to continue the nuisance by paying damages to the plaintiff because the balance between the two uses tips toward continuing use. The plaintiff receives compensation for injury corresponding to the decrease in the value of the property harmed by the nuisance (Philpott).

The fact that a previously existing lawful use can become a nuisance concerned farmers in the areas where residential development was spreading into formerly agricultural areas. As an affirmative defense against nuisance suits, North Carolina followed the lead of most other states when it enacted the right-to-farm statute in 1979. The purpose of this law was "to reduce the loss to the State of its agricultural resources by limiting the circumstances under which agricultural operations may be deemed to be a nuisance." The North Carolina right-to-farm law establishes that no agricultural operation in existence for more than a year can become a
Is it Costly to be a Hog Farm Neighbor?

Do hog operations materially affect surrounding property values? Neighbors of hog farms and pork industry people often disagree. Our study (Palmquist, Roka, Vukina) gives some of the first scientific evidence of the effect of hog operations on home values.

As a real estate appraiser can attest, the price for which a house can be sold depends on many things, including the size and type of house and the character of the neighborhood. Our study used actual sales prices for rural houses in southeastern North Carolina and information about the houses and neighborhoods. A statistical model estimated the contribution of house and neighborhood characteristics, including proximity to hog operations, to its sale price. The proximity of sample houses to hog operations ranged from no hogs within a two-mile radius to over 10,000 head within that radius.

Our estimates show hog operations can cause housing prices to fall. The predicted price of the median house in an area with low hog densities is $63,272, but the estimated price of the same house falls by 9.5 percent to $57,266 if it is in an area with the greatest hog concentrations. Results also indicate that the price effect depends on the distance between a hog facility and the residence. The closer the hogs, the greater the house price discount. In an area with few preexisting hogs, building a 2,400-head finishing operation within one-half mile of a house reduces its value by over 8 percent. The price declines by only 3.6 percent if a new operation locates between one-half and two miles from the house. However, if the area already has a large number of hogs, adding a new operation changes housing values very little. For example, even if a new 2,400-head finishing operation locates within one-half mile of such a house, values go down by less than 0.3 percent. Moving the new operation back to at least one-half mile causes no change in house price.

Regulation

Disputes over conflicting land uses might be resolved through new or modified government regulation. North Carolina laws prohibit the contamination of surface waters by the direct or indirect discharge of animal waste. Safety and health laws limit workers' exposure to some gases such as ammonia found in swine odor, but these regulations do not apply to neighbors' complaints. Federal and state environmental laws in North Carolina do not directly regulate odor emanating from swine production facilities.

New regulations adopted in 1992 by the North Carolina Environmental Management Commission require that confined animal feeding operations with more than 250 hogs (other animals have different thresholds) register with the Division of Environmental Management. Such operations must file and implement an approved waste management plan by the end of 1997. The North Carolina General Assembly considered a bill to regulate swine production in 1993. The proposal mandated that new swine facilities be set back a substantial distance from neighboring property to reduce odor problems. Critics of the proposed bill argued that it imposed unacceptably high costs on industry and could eliminate swine production as a viable enterprise in the state. The bill died before becoming law, and a substitute bill passed to fund further research on odor abatement and ground and surface water contamination caused by swine farms.

After the series of controversial articles published by the Raleigh daily newspaper in early 1995 about possible risks of hog operations to air, land, and water, legislators introduced several new bills in the North Carolina General Assembly. The most comprehensive bills included "An act to protect the public health by regulating the management and disposal of animal waste by intensive hog operations" and "An act to amend the zoning laws to clarify county authority to regulate by ordinance intensive hog operations to protect the health, safety, or welfare of county citizens and the peace and dignity of the county." The two bills would have tightened rules on virtually every aspect of hog farming and would have given counties the power to zone hog farms. The swine industry opposed both bills. Another bill would have allowed the state to classify a farm as a nuisance if it repeatedly violated environmental laws and to fine the operator and the owner up to $250,000. A fourth bill would have created a state-approved referee organ to work out a settlement after someone complained about a hog farm.
In April of 1995, the North Carolina House Agricultural Committee sent the first bill to a subcommittee and instantly killed the second bill after it received an unfavorable report. Instead, the committee adopted substitute legislation creating a “Blue-Ribbon Study Commission on Agricultural Waste,” replaying the action taken two years earlier when it killed an almost identical bill and created a panel called the “Swine Odor Task Force.” The study commission will consist of scientists and experts, but not legislators, and will study complaints and problems tied to hog farms and report its findings and recommended solutions before next year’s legislative session.

Environmental groups interpreted the legislative moves as a delaying tactic and wanted fast and concere legislative action. In the middle of this controversy, Mother Nature took things in her own hands. After several weeks of heavy rains, one of the poorly constructed lagoons in Onslow County ruptured creating a catastrophic twenty-five million gallon manure spill with a massive fish kill in the nearby New River. Public pressure generated by this event and several other smaller incidents caused the governor to order an emergency inspection of all animal waste lagoons in North Carolina. A flurry of legislative activity followed, and by the end of July 1995 the general assembly passed three bills regulating the swine industry in the state, partially resurrecting some of the bills rejected earlier. The Senate passed the Swine Farm Siting Act requiring that new swine farms or lagoons be located at least 1,500 feet from an occupied residence; at least 2,500 feet from any school, hospital or church; and at least 100 feet from any property boundary. The second bill requires mandatory mediation prior to filing a nuisance suit against a farm. The third bill requires certification for people who apply animal waste from swine production to the land.

Debate goes on
North Carolina’s swine industry generates $1 billion in revenue annually and will likely surpass broilers this year as the state’s number one agricultural commodity. But with growth and prosperity have come increased complaints about odor and concerns about ground and surface water contamination. Newly enacted statutes will certainly help cool down the debate but will not solve all the problems. For example, the Swine Farm Siting Act applies only to new swine farms for which a site evaluation is conducted on or after the date this act becomes effective. Mandatory mediation prior to filing a nuisance suit would increase the transaction cost for the plaintiff but might not preclude further legal action. More regulation may follow, but will depend on some extremely complicated policy issues including the issue of what constitutes tolerable odor levels. Hopefully, new technology will reduce the intensity of odors generated by large-scale swine operations and provide more secure manure handling systems.

For more information

![Image of lagoon and fish kill]