

Introduction

Hal Harris

In 1996 the South Carolina General Assembly debated and passed the so-called “Hog Bill.” The debate generated a great deal of heat and very little light. Events in North Carolina, not South Carolina, appeared to tilt public opinion toward passage of the bill. The Department of Health and Environmental Control has now incorporated the law into its regulatory framework. The new regulations went into effect in June 1998, giving the state one of the most stringent set of conditions for siting and operating confined animal feeding operations in the nation.

DHEC is in the process of revising its regulations. Meanwhile, the controversy over animal agriculture continues. A team of Clemson University scientists conceived a project to study economic and social forces affecting animal agriculture in the Palmetto State. This project was funded under the General Assembly Agricultural Productivity and Profitability initiative.

The initial purposes of the project were:

- 1) to improve the knowledge base of both interest groups and the general public about animal agriculture issues,
- 2) to ascertain South Carolinians’ attitudes and opinions about animal agriculture; and
- 3) to create the environment for an improved dialogue between the industry, concerned citizens, and government on animal agriculture.

Animal Agriculture in South Carolina: A Fact Book was released in 1998 and contained many general statistics and the results of a random survey examining South Carolinians’ attitudes about animal agriculture.

Concerns and Tradeoffs

This report marks a continuation of the team’s efforts to provide a sound basis for resolving disputes surrounding animal agriculture. In particular, statistics are updated, and the results of a new survey on the opinions of members of interest groups concerned about animal agriculture are presented.

Formulating public policy involves tradeoffs and compromises among affected citizens. The animal agriculture issue involves a particularly broad array of social, economic, health, environmental and even ethical concerns. Proponents of animal agriculture in South Carolina argue that a viable agricultural sector demands a healthy value-added animal component as an engine of economic growth. Their arguments are bolstered by current low crop prices, and by the search for a replacement for plummeting tobacco income in the state’s highly rural and far less prosperous coastal plain region. They also argue that private property rights give landowners wide leeway to engage in legitimate economic activity, subject only to reasonable restrictions to protect the general public.

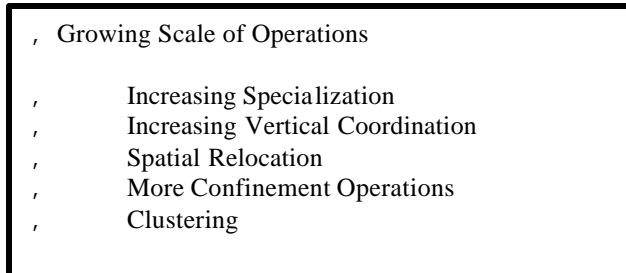
Opponents of an expanded animal industry argue that such operations lead to a decline in water quality, health concerns, and bad smells. They say that even if the production and processing sectors bring more jobs, that they will be of low quality. They tend to believe “big is bad” and talk in terms of corporate agriculture driving out family farms. They believe government should play a very active role in devising rules of conduct for businesses such as animal farms. The evidence used by both sides in arguments about these issues is often anecdotal, at best. For some issues, peoples’ perceptions may be as important as the facts. A major purpose of this study was to ascertain the importance of some of these issues to South Carolinians based on a purposeful survey as reported in a later section. Another purpose is to provide factual documentation for some of the concerns raised by proponents and opponents of animal agriculture. The authors have attempted to remain neutral as to the benefits and costs of additional animal farming operations.

Trends in Animal Agriculture

While there are considerable differences in current trends within the hog, beef cattle, dairy and poultry sectors, there are a number of common directions (Figure 1). Farms and processing operations are becoming fewer, much larger

and increasingly specialized. Vertical coordination through contract or ownership through the system is increasing. The industry is relocating from historic production regions. There are more confinement operations. Farms tend to “cluster” in relatively small geographic areas. Each of these trends raises contentious issues.

Figure 1. Trends in Animal Agriculture



Growing Scale of Operations

Just a few years ago, a dairy operation with 200 cows would have been large by national average standards. Today, herds of 1,000 cows or larger are the norm for areas of rapidly expanding milk production such as California, Idaho and New Mexico. Half the nation’s milk supply now comes from herds of over 200 cows.

Large animal operations mean greater concentrations of waste at a particular site, attracting more public scrutiny. Bigness per se is an issue. Much of the furor over animal agriculture is fed by particular farm interests. Allied with environmental groups, their main concern is that large farms (terms used in the press include megafarms, factory farms, corporate farms) are driving “family” farms out of business. Indeed, today’s large animal operations rely on hired rather than family labor. Processors are becoming fewer and larger as well. As this is being written, the news of Smithfield and Tyson’s rival bids to purchase IBP fills the press.

Increasing Specialization

Historically, meat and animal product producers raised crops and fed those crops to animals as a value added marketing strategy. Size was limited by acreage of cropland. Today, they tend to produce just meat, milk or eggs. Crop-raising is often done only as a means of nutrient (manure) disposal. Raising of replacement animals is another production stage that is commonly being spun off. Hog production seems to be moving to a three tier system of production, with large specialized units handling farrowing, nursery, and finishing to market weight, respectively.

Increased Vertical Coordination

Terms applied to the strengthening links between input supply, production and marketing phases include vertical integration, agricultural industrialization, and contract farming. The broiler industry has been vertically integrated for over 40 years. Some of the main names associated with the industry include ConAgra, GoldKist, Tysons and Perdue. Such corporations own and operate feed mills and processing plants. Since they own the chickens and the feed, it can be argued that technically they are the farmers. Broiler producers own the production facilities and, significantly, the manure and any birds that may die during the production process. They are paid a fee, as specified in a contract with the integrator. Usually the contract contains efficiency incentives. The swine industry is now moving toward the broiler model. Today 40 percent of pork volume is accounted for by production contracts, mostly with large producers. Some observers note that this trend is not dissimilar to the movement toward franchising in the fast food and other industries. Like the McDonalds clerk presses the key with the Big Mac picture, the farmer pushes the buttons according to the integrator’s specifications.

Spatial Relocation

Separation of growing feed and raising animals means that the local availability of feed no longer determines where animals will be produced. Thus, North Carolina jumped from sixth to second in hog production in

the past decade. It made a similar jump in turkey production in the previous decade. California passed Wisconsin as the number one dairy state several years ago. Animal agriculture is growing rapidly in such states as Colorado, Idaho, New Mexico, Oklahoma and Utah. Geographic relocation, among other things, means that millions of people unaccustomed to the sights, sounds and smells of animal agriculture now face those issues on a daily basis.

More Confinement Operations

Except for the cow-calf sector of the beef industry, animal agriculture today generally means many animals in a relatively small space — often specialized buildings. This production practice raises the concentration of waste at any particular site. For some, this practice raises questions of humane treatment of animals. A surprisingly large percentage of South Carolina residents in our earlier survey (39 percent) agreed with a statement that animal agriculture raises ethical concerns.

Clustering

Not only is animal agriculture relocating among states, within most states production units tend to cluster together. As an example, two-thirds of South Carolina's milk production occurs in just five counties, three of which are contiguous in the upstate, and two that border one another downstate. Proximity to processing plants is a major factor behind this phenomenon. Achieving economies of size in feed manufacturing plants is another consideration. Clustering also insures that the requisite industry infrastructure exists — access to such things as veterinary services, skilled technicians, and a knowledgeable labor force. Clustering means that statewide statistics such as those given in this report can mask the true picture in given localities.

Clustering raises many questions. Should statewide environmental control regulations be adopted because a few counties have large concentrations of animals? Is local control the answer? Clustering also increases the prospects for different avenues for manure disposal, such as municipalities have for sewage.

Forces of Change

Several key factors are driving the dramatic changes in the meat and animal product industries. The most important are technology, changing consumer demand, changes in processing, economies of scale in production, and instability in input and output prices.

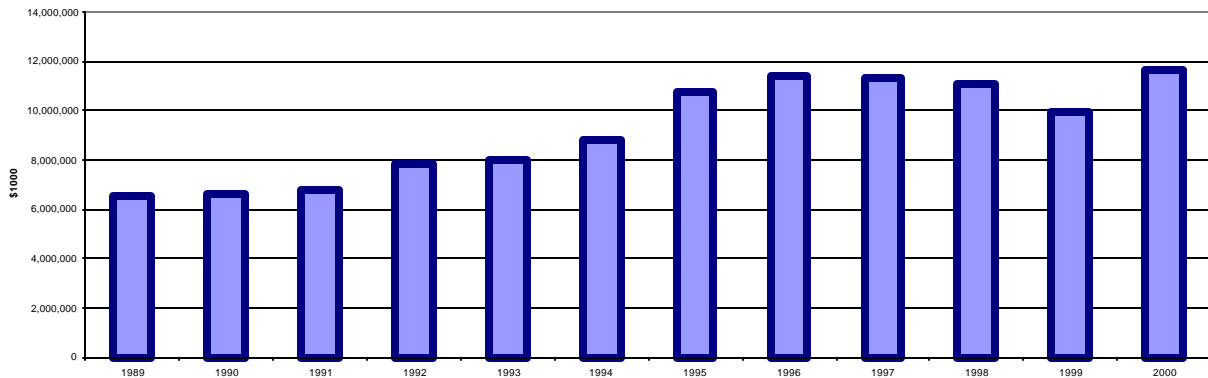
Technology

The animal industries have witnessed amazing growth in productivity in recent years. Since 1988, milk production per cow has jumped 20 percent. The pork and poultry sectors have shown similar gains. Even in the cow-calf sector of the beef industry, which is still characterized mostly by small operations, productivity has doubled in the past 40 years based on the weaning weight of calves. Improved genetics have been a major technological force behind such gains. Not only have improved genetics raised productivity and feed conversion efficiency, they have resulted in leaner, more uniform animals. Although such technology is not available only to large farms, studies repeatedly demonstrate that large firms have an advantage because they adopt technology earlier than small farms. Note that in the vertically integrated sectors, it is the integrator who controls the genetics and supplies them to producers.

Changing Demand for Food

The restructuring of animal agriculture is in no small measure a response to changing consumer demand. United States consumers are demanding lower fat, easily prepared food. The away-from-home market is becoming increasingly important, now representing one-half of food expenditures. In addition, the export market has become a major factor driving growth and change in animal agriculture. United States meat and animal product exports are today highly competitive in the growing world market. Such exports grew from slightly over \$4 billion in FY 1986 to almost \$12 billion in FY 1999 (Figure 2).

Figure 2. Value of US Exports of Animals and Animal Products, Fiscal Years



Changes in Processing

The intermediary sector between consumers and producers has undergone even more dramatic structural change than the production sector. For example, in 1996 there were 28 pork processing plants in the United States with annual capacity of 1.5 million head or greater. These plants accounted for 80 percent of total slaughter. In 1982 there were only six such plants, and they accounted for 17 percent of processing while smaller plants processed the other 83 percent. In 1997, 80 percent of plants slaughtering steers and heifers were large plants (over 500,000 animals/year). In 1980, less than one-fourth were large. Now the fewer and much larger plants produce an incredibly diverse product line of specialty items designed for the ready-to-eat and away-from-home market. They demand high quality, uniform animals and products — and are willing to pay premiums or maintain captive supplies to get them. They also prefer prescheduled delivery of truckload lots.

Economies of Scale in Production

Studies repeatedly show that the largest swine, dairy, beef and poultry operations have lower production costs. The rapid exit of smaller units and growth in number of larger ones provide the ultimate evidence. The U.S. Department of Agriculture (USDA) reported that over 24,000 farmers left the hog industry in 1996 alone. Half of these had an inventory of less than 100. In contrast the number of farms with 2,000 or more head grew by 80 farms.

Studies also indicate that lower cost per unit of production for larger farms includes the cost of waste disposal. The more elaborate the system used to dispose of manure, the greater is the cost disadvantage to smaller farms. Thus, those who seek to save family farms by requiring more stringent environmental regulations face a serious flaw in their logic.

Feed Prices

The 1996 Farm Bill freed farmers to produce commodities other than those that previous farm programs locked them in to producing. Animals, as well as alternative crops, could now be produced. Internalizing feed purchase decisions through vertical integration provides a mechanism to cope with price instability, as does the assured regular check provided from a livestock or poultry production contract. In addition, the new law has led to higher corn and soybean acreage, and thus lower feed prices, which encouraged the growth of large, drylot animal feeding operations.

Summary

Many citizens have expressed dismay about the changing structure of animal agriculture. Many of their concerns center around the five trends outlined in this section. It is important to note that these forces of change show no signs of abating.

Current Status of Animal Agriculture in South Carolina: Comparison with Adjacent States

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It is hoped that the following section will provide agricultural leaders, policymakers, and environmental groups some basis to make informed decisions about the future of animal agriculture in the Palmetto State. Some may question the use of Georgia and North Carolina as a basis of comparison. However, they are our neighbors; their geography and topography are similar to ours. As can be seen from Figure 3, South Carolina's land base is much smaller, but on a percentage basis, land is distributed into cropland, pasture and forest use in a similar pattern (Figure 4). About one-third of the land in each state is in farms, a percentage which has been declining (Figure 5).

Figure 3. Land Utilization: SC, NC, GA, 1997

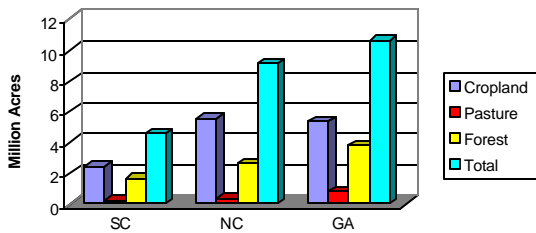


Figure 4. Land Utilization: SC, NC, GA, 1997

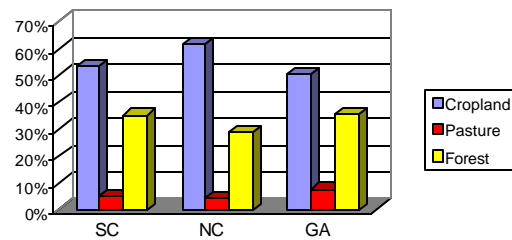


Figure 5. Land in Farms, 1999

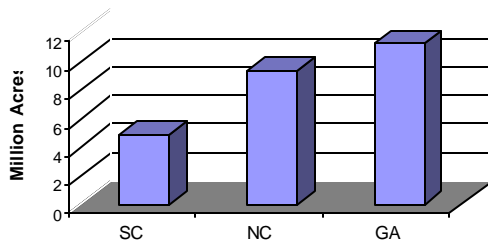
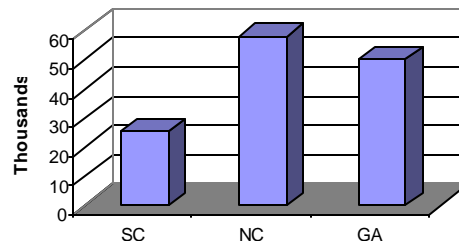


Figure 6. Number of Farms, 1999



North Carolina has many more farms than either South Carolina or Georgia and the average size of farm is quite a bit smaller in terms of acreage (Figures 6 and 7). In terms of dollar sales per farm, South Carolina lags far behind our two neighbors (Figure 8). A major reason is the growth in animal agriculture in North Carolina and Georgia compared to South Carolina.

Figure 7. Average Size of Farm, 1999

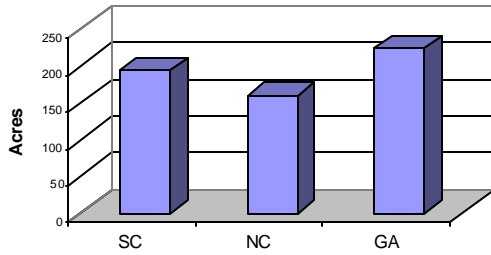
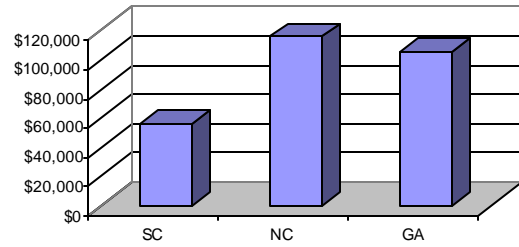


Figure 8. Sales per Farm, 1999



Figures 9 through 13 illustrate trends in animal numbers in the three states during the past 12 years. Key points shown by the figures include:

- Growth in the cattle herd in North Carolina and Georgia during the 1990's, then a falling off with the cattle cycle in the past four years. Declining to steady cattle numbers in South Carolina.
- Dramatic increase in hog production in North Carolina, particularly since 1990. Declining numbers of hogs in the other two states. Note that hog production expanded in North Carolina despite a moratorium on new facilities in 1998. Numbers seem to be leveling out at just under 10 million head.
- Growth in layer numbers in Georgia, declines in the Carolinas.
- Steady growth in broiler production in all three states, but South Carolina production only one-sixth of Georgia's.
- Declining, but far greater turkey production in North Carolina than the other two states. South Carolina production up.

Figure 9. All Cattle and Calves, Jan. 1: 1988-2000

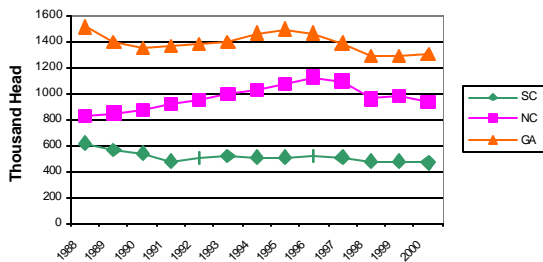


Figure 10. All Hogs and Pigs, Dec. 1: 1986-99

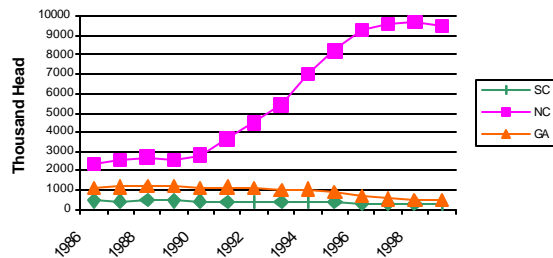


Figure 11. Hens and Pullets of Laying Age, Jan. 1: 1988-1999

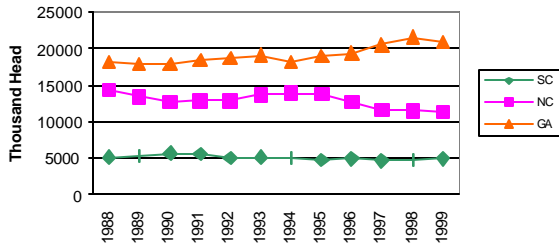


Figure 12. Broilers Produced: 1988-1999

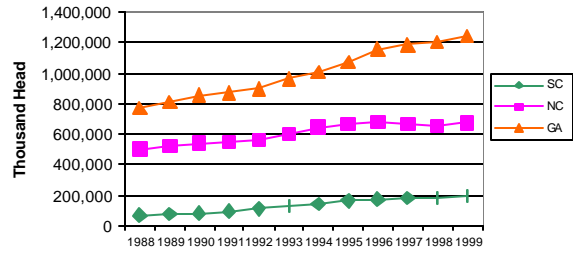
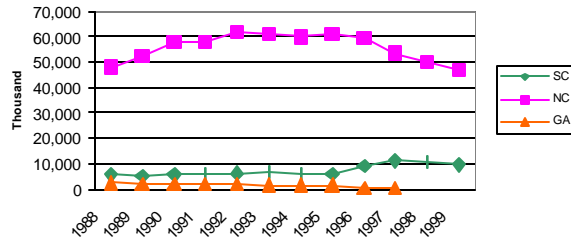


Figure 13. Turkeys Raised: 1988-1999



The next three illustrations (Figures 14, 15, and 16) show total farm cash receipts, first broken down by crops and livestock, followed by the total of the two. North Carolina's agriculture (in dollar valuation) is now almost five times as large as South Carolina's; Georgia's is more than three times as large.

Figure 14. Cash Farm Receipts: Crops

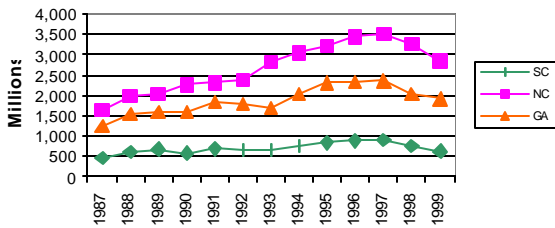


Figure 15. Cash Farm Receipts: Livestock

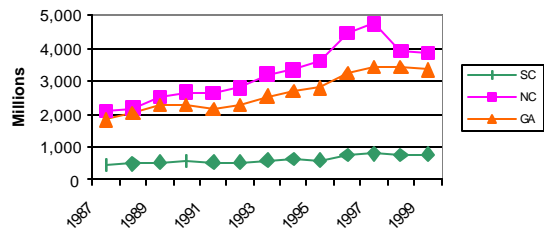


Figure 16. Cash Farm Receipts: Total

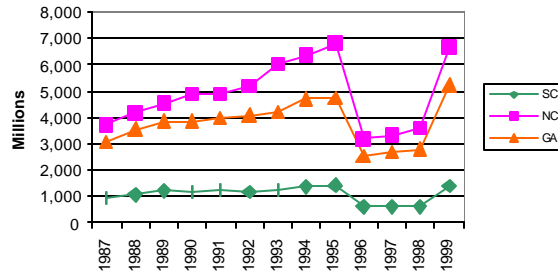
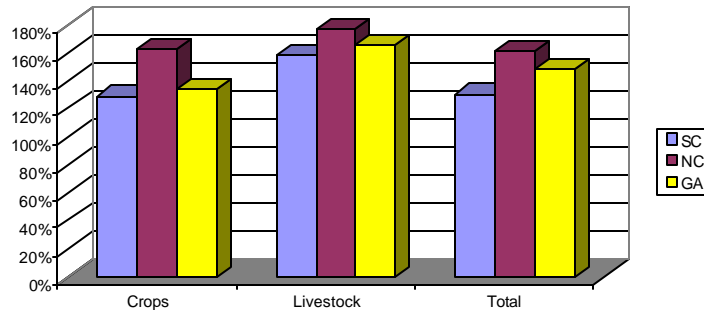


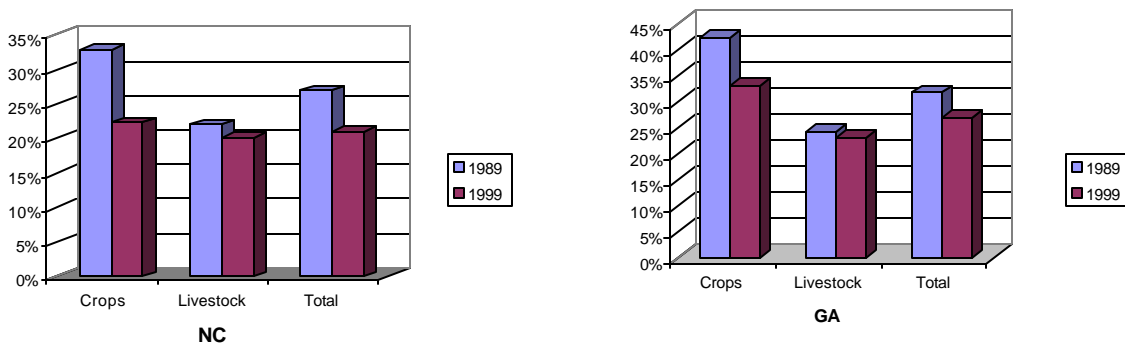
Figure 17 puts these totals in a relative change perspective. Growth in South Carolina’s cash receipts has not kept pace with our neighbors. Income attributable to the poultry and livestock sectors increased 70 percent in North Carolina from 1988 to 1999. In Georgia the increase was 60 percent, and in South Carolina it was 50 percent.

Figure 17. Changes in Cash Receipts, 1988-1999



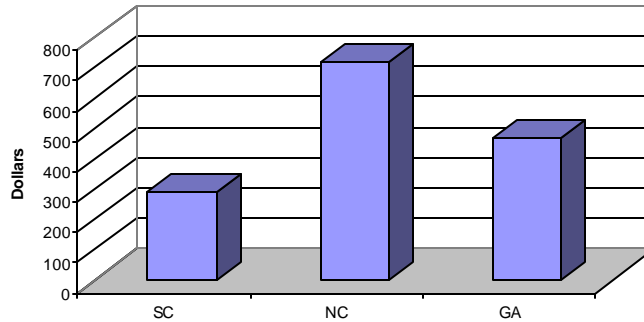
In summary, aggregate farm income in North Carolina and Georgia now dwarfs that in South Carolina, and a major portion of the widening gap has been caused by the growth in animal agriculture (Figure 18).

Figure 18: SC Farm Cash Receipts as a Percentage of NC and GA, Cash Receipts 1989 & 1999



Intensive animal agriculture produces much more income per acre than extensive crop farming. Driven largely by growth in value-added animal agriculture, sales per acre of farmland in 1999 were nearly \$700 in North Carolina, around \$400 in Georgia, and only about \$250 in South Carolina (Figure 19).

Figure 19. Sales per Acre of Farmland, 1999



Comparing animal numbers to the total land base provides an indication of animal concentration. Under the currently used method of manure disposal (land application), acres per animal provides some notion of statewide application rates. The higher the bar on Figures 20 and 21, the greater is the land base per animal. For example, South Carolina currently has one pig for each 70+ acres; North Carolina has only about 4 acres per hog. Only in turkeys per acre does South Carolina surpass either of the other states - and then only in Georgia.

Figure 20. Acres per Animal, 1999

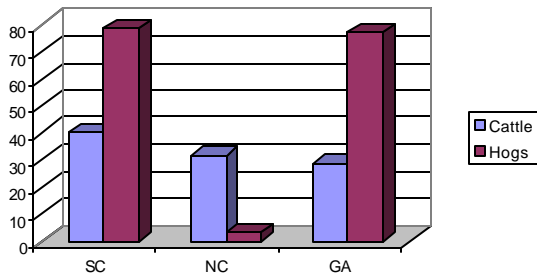
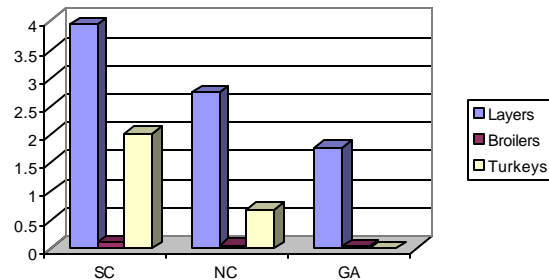
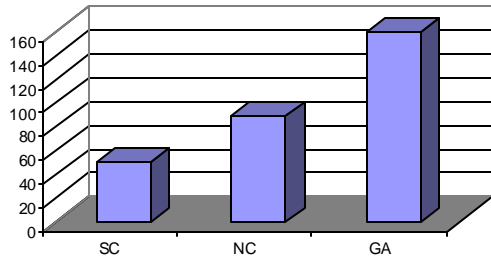


Figure 21. Acres per Animal, 1999

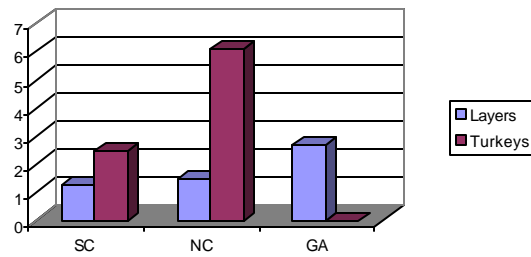


Figures 22, 23, and 24 provide a final basis of comparison among the states. The more animals there are in comparison to people, the greater it would seem the likelihood of incidents of unpleasant interactions in the form of odors, etc. South Carolina annually produces half as many broilers per capita as North Carolina, one-third as many as Georgia. The most striking comparison is with hogs — in North Carolina each citizen today could adopt a pig! The only case where South Carolina has more animals per capita is in turkeys compared to Georgia.

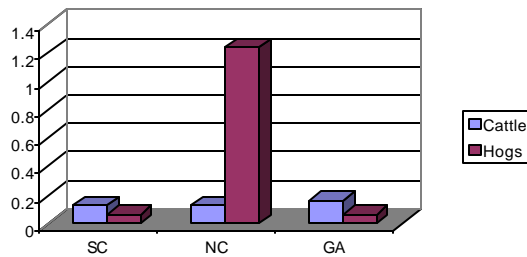
**Figure 22. Animals per Capita, 1999:
Broilers**



**Figure 23. Animals per Capita, 1999:
Layers and Turkeys**



**Figure 24. Animals per Capita, 1999:
Cattle and Hogs**



Conclusions

The individual reader must form an opinion as to whether we have too few animals on farms in South Carolina, whether there are too many in our neighboring states, or whether animal agriculture in all three states can continue to grow under the right regulatory environment. It is clear from the data shown here that farm income in South Carolina has suffered because of slow growth in animal agriculture. The gap in incomes by any basis - total, per farm, or per acre - is widening compared to our neighboring states. This gap carries over into employment opportunities in the farm supply, feed, processing and marketing sectors.

There is a long list of tradeoffs involved in public decisions about the growth of animal agriculture in our state. The changing structure of the animal industries makes discussions of these tradeoffs even more contentious. But an improved dialogue among affected interest groups needs to occur. It is hoped that the information in this publication will be helpful in achieving more enlightened discussion of the issues involved.