

Environmentally-Friendly Outdoor Pig Production In North Carolina



Introduction

Welfare

In order to achieve acceptable standards of welfare, all pigs kept outdoor must be provided with:

- ◆ Easy access to adequate food and water
- ◆ A comfortable, dry lying area
- ◆ Effective prevention or control of disease and injury
- ◆ Conditions which permit expression of natural behavior

In North Carolina, the interest in outdoor pig production systems has increased considerably during the last decade.

Acceptance by consumers of pork produced under these conditions has helped to establish an alternative production system that is often preferred by small producers.

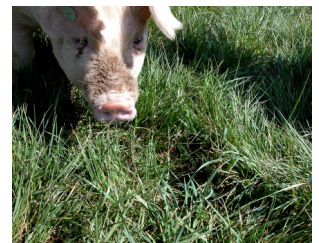
Management challenges for outdoor operations are similar to other livestock production systems, and present some environmental issues such as deterioration of vegetative ground cover, soil disturbance and high nutrient loads that could cause soil and water pollution.

Although there are several conservation

management practices available to farmers that lead to the development of livestock production systems that optimize productivity while minimizing environmental impacts, these practices need to be evaluated in outdoor swine production systems, taking into consideration the biology and the behavior of these animals.

Herd size, herd performance and the producers' technical management skills and decision-making have an

important influence on the resulting amount of animal waste as on its environmental impact.



Good quality pastures contribute to a proportion of the daily diet

The project

- ◆ Is oriented for small farmers
- ◆ Design flexible systems adaptable to the unique circumstances of each production system
- ◆ Proposes Management practices to reduce environmental impact
- ◆ Take in account the natural behavior and welfare of pigs



The approach



The farmer is a key factor for the adequate functioning of outdoor pig production systems



Monitoring soil nutrient content is important for the implementation of a nutrient management plan

Through the **Center for Environmental Farming Systems (CEFS)**, an integrated research extension approach has been adopted by a multidisciplinary team of researchers, extension agents, farmers and pork buyers, most of whom have extensive experience working with conservation programs, outdoor hog marketing efforts, small and limited resource farmers, and innovative farming practices.

This team is oriented toward the development of sustainable outdoor swine production systems that:

- ♦ Are flexible while permitting adaptation to a wide range of soils, topography and management practices,
- ♦ Maintain vegetative ground cover,
- ♦ Minimize the use of water,
- ♦ Provide for animal welfare and well-being,
- ♦ Decrease energy requirements,
- ♦ Minimize labor needs,

- ♦ Reduce impact on soil, water and air
- ♦ Are economically profitable.

To accomplish its goal, the team has established on-farm field research and demonstration sites to evaluate management practices that can impact natural resources such as:

- ♦ Site selection and preparation,
- ♦ Site design and animal control,
- ♦ Stocking density,
- ♦ Crop rotation,
- ♦ Buffers and filter strips,
- ♦ Vegetation management,
- ♦ Animal behavior management.

Field days, workshops and other events are held at research and demonstration sites and on cooperating farms for extension agents, farmers and district conservationists.

Educational materials such as production guidelines and check lists developed with the information validated through research and

demonstrations, are provided during these activities.

Three characteristics differentiate this innovative program:

1. Farmer mentorship and technical assistance, including with **NRCS** and/or conservation district staff, farmers, and/or extension agents who helps farmers with the implementation of the conservation practices;
2. Marketing assistance and support through **CEFS' NC Choices** initiative;
3. Development of conservation planning guidelines to assist planners who work with farmers to address natural resource issues.

Projected for a three year period, the program has incorporated the concept of cascade learning (i.e., those farmers initially involved have the responsibility to involve additional farmers).

Expected outcome

The project team has an opportunity to develop an effective model to make outdoor hog production a more sustainable farming system. Environmental benefits can be expected throughout North Carolina after the adoption of the conservation practices evaluated in the program.

The primary benefit will arise from better site selection and nutrient distribution and management of ground cover, which will reduce soil loss and nutrient runoff to surrounding waters.



Proper management ensures that adequate water and food are available daily

Preliminary results

1. For conservation purposes and maintenance of ground cover, raising hogs outdoors on perennial vegetation under a continuous grazing system may not be feasible unless the stocking rate is kept relatively low (15 to 30 weaned to finishing head/acre) with no more than two finishing cycles before an extended rest period is used.
2. Rotating an annual crop into the finishing pasture should be considered after two cycles of animal feeding. This would provide time for land shaping and would allow the removal of nutrients by crop uptake.
3. Utilizing adapted perennial species such as hay or silage may be a challenge because of the need to reshape paddocks to fill in wallows and rooted areas. Harrowing and land shaping will require reseeding of the perennial vegetation after two or three finishing phases, which means that the field will have a range of maturing forage within. This will not be conducive to favorable harvested forage management. However, harvesting by grazing with some other animal species may be an effective way to glean some of the nutrients in the forage.
4. Flash grazing of the area with cattle could be used to remove nutrients, but uncontrolled grazing will result in more recycling of nutrients and little removal from the site.
5. Appropriate positioning of feeders, watering tanks, huts and shade structures can significantly influence the distribution of nutrient loading and movement offsite.
6. Because hogs tend to

root near fence lines, placement of fences on contour can result in a “berm” that reduces the slope length and water flow patterns.

Stockmen should monitor ground and soil conditions in paddocks and when these prove unsatisfactory an adjustment of stocking density, or other management practices must be implemented.



Maintaining a good vegetative cover helps reduce erosion and nutrient runoff problems

Alternative Swine Research and Extension Project

Effect of Stocking Rate (250-300 lbs gilts) on vegetative (tall fescue) ground cover over 36 day period.

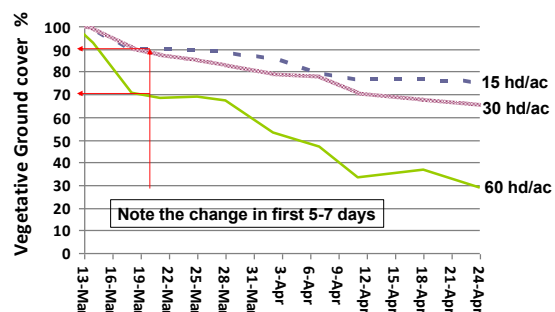


Figure 1. Ground cover estimates with heavy gilts on tall fescue. March-April 2008.

Effect of Pig Stocking Rate on Percent Vegetative Cover in a Bermudagrass Stand

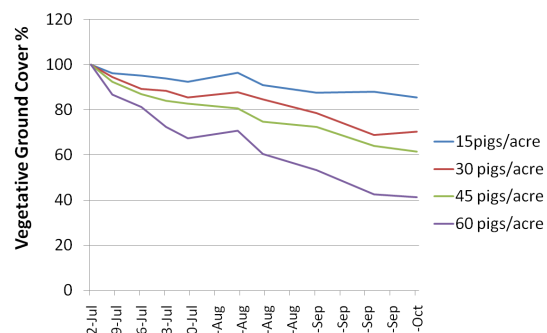


Figure 2. Ground cover estimates with growing- finishing pigs on bermudagrass. July-October 2008.

The effects of pigs stocking rate in tall fescue (*Festuca arundinacea*) and bermudagrass (*Cynodon dactylon*) can be observed in figures 1 and 2. In both pasture species, vegetative ground cover decreased as a result of animal activity; paddocks with the higher stocking rate showed a faster decrease rate. Stocking density must vary according to the interaction of climate, soil, drainage and stockmanship. Ground conditions should be very carefully monitored and when inadequate, a stocking rate adjustment or other management practices must be implemented.

Sponsors & Partners

Research and Extension Sponsors

The **Center for Environmental Farming Systems** (www.cefs.ncsu.edu) is a partnership of **North Carolina State University**, **North Carolina Agricultural and Technical University** and the **North Carolina Department of Agriculture and Consumer Services**. Project partners the **CEFS** initiative, **NC Choices** (www.ncchoices.com) and **Center for Agricultural Partnerships** (www.agcenter.org).

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