ALTERNATIVE SWINE RESEARCH AND EXTENSION PROJECT

Importance of vegetative ground cover maintenance in pastured swine operations

Minimizing environmental impact with outdoor swine

Good animal management can reduce production costs. Over grazed pastures, under designed farmyards, mismanaged animal wastes or too many animals per unit area can jeopardize your farm productivity, your community water supplies and the environment. Suggested practices include:

- Select sites on the landscape that minimizes potential runoff to water courses.
- Use appropriate vegetation.
- Avoid hogs access to wetlands, ponds and streams.
- Construct green grass filters to limit runoff to water resources.
- Stocking rates must be adjusted according to climate, soil, drainage and managers' skills.
- Let your paddocks rest after grazing so plants have time to recover and re-grow.
- Adapt your grazing management as the seasons and grass growth change.
- Locate drinkers over slats.
- Include hogs in the crop rotation system.
- Provide an adequate amount of hay in heavy use areas.

Sustainable animal production requires farmers to be more conscious of the role they must play in preserving natural resources without losing focus on productivity, economic benefits and animal welfare. Farmers raising swine outdoors face management challenges to minimize environmental impacts, including the deterioration of vegetative ground cover, soil disturbance and high nutrient loads that can cause soil and water pollution.

Bare soil areas can quickly erode, generating large amounts of sediments that can damage bottom lands, streams and water reservoirs. Vegetative ground cover reduces erosion by increasing infiltration, trapping sediments, stabilizing the soil, and reducing the effects of intense rainfall. Ground cover ensures that nutrients from swine waste are held within the plants and soil, and are kept from leaching or flowing to surface waters. Vegetative ground cover also influences animal welfare: cover alters the temperature near the soil surface thus improving animal comfort, animals have fewer joint problems, sows demonstrate better reproductive performance and, indirectly, soil fauna habitat is preserved.

Outdoor swine develop an intense explorative activity of the ground through their rooting behavior. This activity, along with compaction caused by their trampling, may lead to the degradation of vegetative ground cover and to the alteration of soil surface structure. This degradation is accelerated with high stocking rates, lengthy periods of stay and wet soil conditions.

To develop a rational ground cover management, it is necessary to estimate potential hog stocking rates that can be maintained in an area during a specific period of time while limiting the occurrence of soil and ground cover deterioration. Over stocking can produce deterioration of the ground cover, whereas under stocking can result in less efficient utilization of the land area. Appropriate stocking rates and monitoring of ground cover conditions will help ensure that long term goals for natural resources are fulfilled.

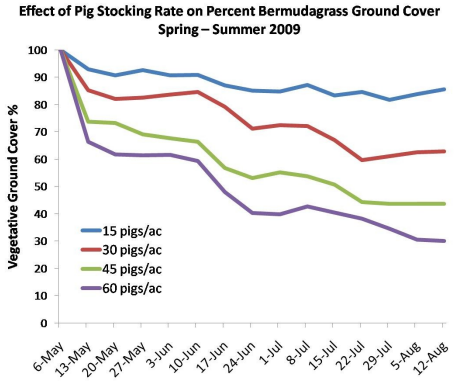
Two experiments were conducted at the Center for Environmental Farming Systems in Goldsboro, NC, to evaluate the impact of hog stocking rates on Bermudagrass ground cover and soil deterioration.

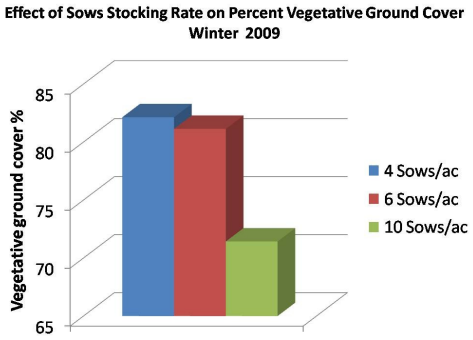
1.- Growing –Finishing stocking rates.

The effects of four stocking rates (15, 30, 45 and 60 hogs/acre) on vegetative ground cover were tested during summer 2008 and spring 2009. The hogs had free access to a grain mix with minerals, water and shade, and were maintained in the same plot until they reached market weight.

2.- Sows stocking rates.

During two seasons (Jan-Feb and Sep-Oct 2009) three stocking rates (4, 6, and 10 sows/acre) were tested in 0.5 acre plots which were further subdivided into nine paddocks. The animals were managed under a rotational grazing system, being moved to a new paddock (0.06 acre) every week. The central paddock was considered the heavy use area, and the huts/shade, and drinking barrels were located there. Animals were fed daily a grain mix with minerals (1.14 lb/100 lb body weight in Jan-Feb and 1lb/100 lb body weight in Sep-Oct).





In summary: Vegetative ground cover in the Bermudagrass stand decreased as a result of animal activity, and paddocks with the higher stocking rates showed a faster decrease. If maintenance of ground cover is the main goal, under a continuous grazing system the stocking rates must be kept between 15 to 30 hogs/acre, with no more than two finishing cycles before an extended rest period is used. Sow stocking rate of less than 10 sows/acre must be implemented to maintain over 60 percent ground cover during 56-day periods in dormant and non dormant Bermuda growth seasons.

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