

## Small Scale Pastured Hog Production

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Over the last thirty years, the mainstream pork industry has become increasingly vertically integrated, with contracted arrangements between producers/processors/packers linked from farrowing to packing to the retail counter. Large-scale confinement operations are now the norm, as many smaller independent producers have left the industry. The number of hog producers has steadily declined from 869,000 in 1971 to just over 79,000 in 2002, while the larger operations have expanded. Those marketing more than 50,000 head per year (.002% of producers) account for 51.3% of hogs produced.[1] However, as more and more consumers begin to support alternative agriculture, new opportunities have emerged for those who opt to raise pigs using more humane and sustainable methods.

Like all species, hogs have evolved to survive in relationship to a natural environment. Conventional managers seek to control the environment in order to overcome ingrained behaviors. This strategy can cause animal discomfort and stress, which often leads to health problems that require further intervention and increase costs. By contrast, pasture-based producers strive to understand and work *with* the unique capacities of the animals. Small scale pastured-based hog producers will find that they can take advantage of niche markets while keeping animals healthy and costs low. To this end, small scale producers will benefit from better understanding the instinctive behaviors, nutritional needs and farrowing capacities/limitations of hogs.

### Pastured hog operations have:

- Lower feed costs on good pasture
- Similar weight gain and feed efficiency
- Lower initial and annual costs for capital improvements
- Higher labor costs (but these are more than offset by lower costs in other areas)
- Reduced animal health problems, especially respiratory disease, rhinitis and leg soundness, but greater potential for parasite problems
- Lower costs associated with heating, cooling and ventilation
- Fewer odor problems

### Natural Hog Behavior

Hogs are bright, inquisitive and social animals that enjoy life with gusto if given an opportunity. For many pastured-hog producers, quality of life for the hogs is a strong motivator in implementing a pasture-based production system. It just so happens that this method is also very cost-effective and very appealing to consumers. Hogs display a wide range of instinctive behaviors, such as rooting, foraging, nesting and wallowing. In order for hogs to be healthy and happy, they need to be raised in an environment that will allow them to express their natural behaviors. It is possible to create a confined space that mimics a natural environment enough to meet many of these instinctive needs. But grazing hogs on pasture not only benefits the animals but also improves the overall farm, as hogs will clean up weather-damaged crops and weed species, fertilize pastures/fields with manure and can even be used to “till up” underproductive areas. Pastured hogs harvest their own food, which reduces feed costs. Like other grazing systems, pastured hog production requires careful management. Suitable pastures will allow the hogs to:

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*Interact* – Social structure is very important for hogs and they prefer to live in family groups. Within the family group, sows establish a hierarchy, which is based largely on age, size and aggressiveness. Maintaining sows in individual family groupings throughout stages of production will minimize stress and potential for confrontation.[2] Careful monitoring is the best way to ensure healthy herd interaction. According to pastured-hog producer Jim Van Der Pol:

Sows have a strict social structure. We can understand much of what happens by knowing the dominant and submissive sows, and how they act. The dominant sow can usually be found in the gatekeeper position, closest to the waterer or feeder. The most submissive sow will farrow in the furthest corner. Every other sow fits between. Knowing something about the social ladder can help when deciding which sow of a twosome to move and which to leave, should a problem arise.[3]

*Nest* – Hogs have the most elaborate nesting behavior of any farm animal and a sow will work for about five hours to build a nest before she farrows. If unable to do this “due to confinement or an absence of appropriate nesting material, a sow may delay parturition and/or display agitated behavior.” [2] Suitable space, a comfortable distance from other sows, and nesting materials, such as plenty of straw, should be provided to satisfy the maternal instinct to create a safe place for farrowing.

*Root* – Allowing hogs to express rooting behavior is key to reducing daily stress levels. Pigs will start rooting the day they are born and through their lives, according to research, will spend about 51% of their time rooting. [4] Access to pasture and/or deep bedding in farrowing huts will allow hogs to satisfy this instinct. If overstocked, rooting hogs may cause damage to permanent pasture, but the behavior can be managed to benefit the farm and the farmer. If confined in small paddocks hogs will clear land of prickly briars and bushes. Greg Gunthrop uses hogs rather than a plow for pasture renovation. [3]

*Forage* – For hogs foraging is a social activity and when enough food is available all members of a group will eat at the same time. Grazing provides hogs with a wide range of appropriate foodstuffs and allows them to express this natural behavior.



**Foraging is a social activity for hogs.**

*Wallow* – Because of their thin hair cover and inability to sweat except through their mouths, hogs have a poor heat regulation system and are susceptible to overheating and sunburn when outside. Providing hogs with a mud wallow in the pasture helps keep animals cool, protects them from the sun and gets rid of external parasites. Outdoor wallows do increase exposure to internal parasites, however, so a holistic approach to parasite management that includes pasture rotation is recommended.

### Alternative Feed Options

Over 50% of the total cost of raising hogs will be feed costs. Like all livestock, hogs need a diet with an appropriate balance of carbohydrates, fats, proteins, vitamins, minerals and water. Water is actually the largest requirement: for every pound of feed, hogs require 2-3 pound of water. [4] Lack of water will significantly reduce intake and daily gain. Be sure that there are a sufficient number of waterers to avoid overcrowding. For other nutritional demands, conventional producers feed primarily corn and soybean meal—corn for energy and soybean meal for protein. However, these grains are not only expensive to produce, process, store and transport, but they are also nutritionally limited. Because hogs have high energy requirements and do not process fibrous forages as efficiently as ruminants, grass-based producers will not be able to get away from energy concentrates entirely. However, stored corn and soybean meal are not the only options for energy. Small-scale hog producers can make use of pasture forages, self-harvested grain and small grains in order to keep costs low.

A pasture based system takes advantage of the sow's excellent grazing ability. Hogs are versatile omnivores and will forage on legumes, grasses and non-legume brassicas (as well as flowers, fruits, weeds, seeds, acorns, worms and insects). By most estimates, pasture can replace up to 50% of the diet in gestating sows and 30% of a finishing diet. [4] Legumes have higher protein, calcium and carotene content and can furnish an adequate supply of most vitamins, except for vitamins D and B12. Alfalfa, ladino, sweet clover, red clover and lespedeza are favorites of pastured hogs. Perennial grasses such as orchard grass, endophyte-free tall fescue, timothy and brome grass, while not as high-quality as legumes, should be used in mixtures with them. Annual grasses such as sudan grass, Sorghum-sudan crosses, oats, wheat, rye and ryegrass may also be used in hog pastures.[5] In addition, non-legume brassicas, including turnips, rape, kale, fodder beets and mangels are high in protein, highly digestible and make excellent pig pasture. [1] Plants at an early stage of maturity are more digestible as well as higher in both protein and energy. By utilizing rotational grazing practices, hog producers can manage pastures for maximum nutrition and palatability. Stocking rates will vary with breeds, season, pasture composition, pasture quality and stage of life of pigs, gilts and sows. Some general guidelines for good quality legume pasture are as follows:

Pasture Recommendations	
SOWS with LITTERS	6 to 8 per acre
PIGS, weaning to 100 pounds	15 to 30 per acre
PIGS, 100 pounds to market	10 to 20 per acre
SOWS, gestating	8 to 12 per acre

In addition to grazing hogs on well-managed pastures, many small-scale hog producers have successfully incorporate a practice known as “hogging off” by which hogs self-harvest the grain in the field. Some benefits of hogging off are that harvesting costs of feed concentrates are eliminated, crop residues and manure are left in fields and parasite problems may be reduced. Examples of grains that can be self-harvested by hogs are wheat, rye, oats, dent corn, Grohoma sorghum, Spanish peanuts and popcorn. This practice can sometimes turn a profit from even a low-yielding grain crop. [1] Legumes and brassicas must also be available to provide sufficient protein.

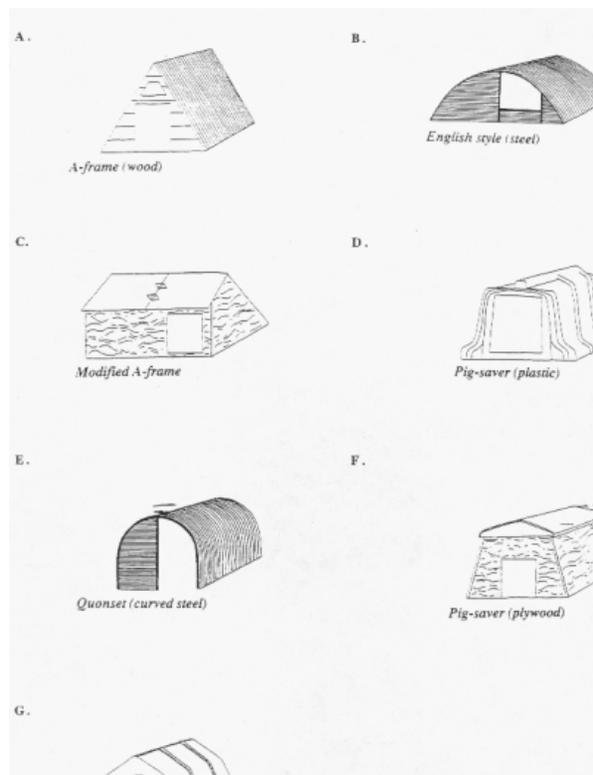
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Small grains can be used to replace corn in hog rations. Oats, barley, rye and triticale can totally replace corn but rations need to be formulated differently because of different energy and nutrient content. Wheat, flax, hulled oats, high-fat oats, buckwheat and popcorn can also replace a percentage of corn in hog rations. In general, small grains have less energy, more crude protein and more lysine (an essential amino acid) and a higher percentage of phosphorous. More crude fiber decreases constipation in sows, ulcers in growing pigs and incidents of diarrhea in weaned pigs.[4] However, small also grains have a higher incident of aflatoxins and mycotoxins, which can cause infertility, abortions, lack of gain and death. For this reason, newly harvested grain should be stored four to six week “sweat period,” during which compounds undergo a change that renders them non-toxic, before being fed to any livestock. Small grains also need to be more coarsely processed than corn in order to reduce flouring effects, as continuous feeding of finely ground grains can cause ulcers in the gastrointestinal tract of hogs. [1]

### Farrowing on Pasture

Farrowing crates, which severely restrict the sow’s movement, have been thought necessary to prevent accidental crushing of piglets when the sow stands up, changes position, gets up to eat or lays down. However, this restrictive system is stressful for sows, often resulting in ulcers, sores, barbiting and other abnormal behaviors. Pastured hog producers work to keep stress levels low for sows, use deep bedding to buffer pigs, create a protected area where they can escape the sow and breed for good mothering genetics in order to minimize piglet loss.

Farrowing huts may be made from wood, metal or plastic. They should have 45-60 sq. ft. of floor space and be placed approximately 50 ft. apart in the pasture. An Iowa State University study found that larger huts with deep bedding, a sloped roof and/or guard rails provide more piglet protection.[5]



**An ISU study found that models with more floor space (B, C and F) had lower crushing rates.**

Farrow on well-drained pasture, not bare ground and move to fresh ground for each new litter. Portable waterers and fencing are required for pasture farrowing.[7] Place polywire at snout height with a strand above to prevent sows from stepping over. Huts should be also portable with no flooring and with an easy entrance and exit for sows and litter. They should be air-tight and draft-free with lots of dry bedding, especially in wet weather. Bed huts with small-grain straw, chopped or baled corn stalks straw, soybean straw, low-quality grass hay or shredded newspaper. Whole or ground corn cobs are too abrasive for small pig and sawdust, peat moss or other dusty materials can cause respiratory problems. Sows should farrow within a week of one another so that piglets are about the same age. Otherwise the older piglets may steal milk from the younger litters.

After weaning, some pastured producers move pig into deep-bedded hoop houses. During winter months, farrowing huts may be placed inside deep bedded barns to protect animals from extreme cold. Other housing options are also available for sustainable producers who want to utilize pastures. As examples, the Edinburgh “Enriched” Family Stall, Swedish Housing Systems and Danish Tents all suit the natural behaviors and needs of hogs.[2] For small scale producers, the same general principles of protecting piglets and keeping stress levels low for sows to ensure optimum health and productivity apply.

If given adequate space and privacy, a sow will become accustomed to smells and sounds of her piglets, and they to hers. There is some research to suggest that overcrowding in confinement desensitizes sows to the squeals of piglets in distress.[3] If transitioning from confinement, producers can expect higher piglet loss initially. But each generation of sows will become more adept at pasture farrowing. As Jim Van Der Pol notes,

There is a learning process that goes on between the mothers and daughters in the pasture farrowing huts that is important to farrowing success. We demonstrated that fact to ourselves last year, when a few purchased gilts immediately showed their inability to farrow outside of confinement. Our farm will no longer purchase gilts; farm-raised replacements are a must.[3]

In fact, a closed herd is highly recommended. Producers should select hardy, robust breeds and cull for good mothering instincts, foraging ability and parasite resistance. Colored breeds that are medium framed with a larger lung capacity are generally better suited to an outdoor environment than larger narrow-bodied breeds. In the United States, breeds commonly pastured include Yorkshire, Tamworth, Landrace, Hampshire and Duroc. Tri-crosses of Yorkshire-Duroc-Hampshire have also performed well on pasture.

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