Outdoor Hog Production

Best Practices for Resource Conservation in the San Francisco Bay Area

Site Selection and Planning

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Deciding where to locate an outdoor swine operation is one of the most important early considerations for any producer. Appropriate site selection will lay the groundwork for a successful business while minimizing environmental impacts, ensuring animal welfare and minimizing conflict with neighbors.

The following is a list of key considerations for choosing your outdoor hog production location:

General location considerations: When locating your operation, you'll want to consider a number of general factors such as access to processing, local zoning, general social acceptance and access to markets. In California, many markets are centered in more densely populated urban areas some distance from agricultural land. Access to feed resources is also important, particularly if you're planning to utilize alternative feeds like whey, brewer's grains or other by-products.

Size: It is critical that a producer consider the size of operation he or she will ultimately manage and ensure that a particular site can accommodate the total number of animals desired without damaging natural resources. The area required per animal will vary considerably depending on site characteristics and management, however the stocking densities provided in Table 1 can be used as a guide.[1]

Irrigated Pasture	Growers/Finishers	15-30 head/acre
	Sows + Litters	4-6 head/acre
Rangeland	Growers/Finishers	4-10 head/acre
	Sows + Litters	0.5-1 head/acre

Table 1. Stocking densities for outdoor hog operations

Soil: Selecting a site with appropriate soil is a key consideration both because of its relationship to forage quantity and quality as well as drainage and erosion potential. Soils should be well-draining in order to minimize plugging or waterlogging, which in turn can result in erosion, run-off or compaction, not to mention management difficulties related to mud. Highly erodible soil should be avoided, particularly for high-use areas – visit web soil survey or talk to your

[1] *Proposed stocking densities are recommendations only and derived from observation of outdoor hog systems in California, Texas, North Carolina and Europe*

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local Resource Conservation District (RCD) to determine if this will be an issue in your area. Alternatively, sandy soils or those with shallow ground water should be avoided due to nutrient leaching potential. Because drylots may have limited vegetative cover, locate them on sites with less than 5% slopes to minimize erosion. As with all agricultural production, sites should also be evaluated for flood risk. Hogs have a tendency to follow the same path between shelters, feeders, drinkers and fencelines, so consider overall site layout and potential erosion and compaction from trails. Stony, flinty or rocky soils may pose a risk to hog's hooves and legs and should be avoided if possible.

Neighbors: Even the most well-managed outdoor swine operations have the potential to generate odors, noise and dust, so it is critical to consider your neighbors and ensure that your site has a sufficient buffer to minimize these impacts. This buffer may take the form of vegetation such as a hedgerow or line of trees, topography, or man-made infrastructure such as a large fence or highway barrier. In some cases, simply ensuring enough distance between the production site and a neighbor may sufficiently mitigate these issues. Vegetative buffers such as trees or shrubs have the added value of providing habitat for insects, birds and other wildlife, while creating shade, bedding and potential food sources for livestock. In some cases, vegetative filters may also help capture and utilize run-off before it leaves the site. See factsheet on Riparian and Wetland Management for more details on filter and buffer. If an appropriate vegetative buffer does not exist, consider establishing one as an early site modification and talk to your local Natural Resources Conservation Service (NRCS) office for guidance.

Sensitive habitat: Consider proximity to sensitive habitat such as riparian areas, waterways, rare plant communities or habitat for special status wildlife. Contact your local RCD or NRCS to determine what sensitive species might be present in your area.

Other Swine Operations: Similarly, you'll want to make sure that you aren't located too close to another hog operation as a means of preventing the spread of disease. Generally, 1.5-2 miles is considered sufficient provided appropriate bio-security measures are taken (Levis et al, 2011).

Key concepts: Location matters! When you are deciding on a site for your outdoor hog operation, the following are some essential things to consider:

1) access to markets and feed resources, 2) size of the operation, 3) soil quality, 4) proximity to neighbors and how they'll feel about hogs, 5) any environmentally sensitive areas nearby and 6) whether there are biosecurity risks associated with neighboring swine operations.

Climate is another critical factor to consider in choosing a location for your swine operation. Temperature and precipitation stand to impact both animal health as well as the environment within and immediately adjacent to the production site.

Temperature: Hogs can adapt to varied temperatures, but generally tolerate cold weather better than hot. In Northern California where summer temperatures routinely reach triple digits, hogs should be managed early in the morning or in the evening to reduce heat stress and should have access to drinking water at all times. Water demand will increase at hot times of year and care should be taken to ensure that drinking water does not get too hot, or that pipes don't freeze in winter.

Rainfall: Whether you are a pasture or drylot-based operation, it's critical to understand how much precipitation to expect at a given site. Sufficient rainfall is particularly important for rangeland-managed hogs, to ensure sufficient forage and ground cover. In light of California's Mediterranean climate and low precipitation averages, low stocking rates will generally be required to limit the impact of hogs on the soil and vegetation. In areas prone to large rain events, consider the erosion potential of a drylot or a pasture with degraded cover and how it might impact adjacent waterways, sensitive habitat or neighbors.

Shade and Shelter: Ensuring sufficient shade is essential for keeping hogs cool and minimizing sunburn, to which hogs may be prone if they are not allowed to wallow. In selecting your production site, make note of what areas have natural shade and at what times of day. If natural shade is not available, shade structures may need to be provided. Hogs will also need free access to clean, dry shelter in the case of wind, rain, heat and cold.

Wind: While air movement can help keep hogs cool during hot summer months, locations with persistent or frequent strong winds should be avoided. Wind not only dries out pasture more rapidly, but contributes to erosion and transports odors.

Feeders/Drinkers: Protect high use areas, such as around drinkers, feeders, sprinklers and shelters to minimize impacts to soil and the creation of wallows. Consider installing feeders or drinkers on a cement slab or perforated sheets made of wood, plastic or rubber. Do not locate feeders or drinkers in the vicinity of watercourses.

Wallows: While wallows enable hogs to cool off and minimize sunburn, they typically lead to significant erosion and or compaction damage that may take years to recover. Providing shade or access to sprinkler systems are better alternatives that will minimize ecological damage as well as supporting animal welfare. Hogs will create wallows from any water or food source they can, such as nipples or slop buckets so be conscious in designing your site of this potential. Some producers use nose rings to minimize a hog's interest in rooting which contributes to the creation of wallows, though this practice is somewhat controversial as rooting and wallowing are both considered instinctive behaviors.

Predators: Understanding what wildlife may be present in and around a potential production site is another important consideration. In particular, the potential for predators should be assessed. Predators are primarily a concern for newborn or young pigs and can include foxes, coyotes, feral dogs, and in some cases eagles or crows. While predators are rarely an issue for larger hogs, an attack may cause them to break out of paddocks. Inquire with neighbors or other livestock producers in the area as to the presence of predators. Appropriate housing, exclusion fencing and guard animals will also minimize predation.

Feral hogs: Feral hogs are a growing issue in California and are now present in 56 of 58 counties. The major danger is the introduction of diseases, and the potential for feral hogs to mate with outdoor kept sows. Make note of whether feral hogs are present in your area and take appropriate exclusionary measures if they are present. See factsheet in this series on Managing Wild Pigs for more information.

Key Concepts: Understand the climate and local ecology

Temperature, wind and rainfall will affect not only the health of your hogs, but will also your ability to manage their impact on natural resources. Climate and geography will also help you understand predator risks or the need to safeguard against feral hogs.

Before bringing animals onto the production location, it is important to create a site plan that takes into account the number of animals you plan to raise and their management needs as well as natural resource considerations both on and adjacent to the site.

It is generally recommended to manage groups of animals according to their age, sex and physiological status. In particular, you will want to consider where each of the following types of animals will be housed and how this will integrate into a larger management plan:

- Boars
- Gestating and dry sows, gilts
- Lactating sows and litters
- Weaners to growers
- Growers to finishers

Farrowing area for sows. Photo courtesy of Hidden Villa

If you will need a quarantine paddock, herd handling or sorting facility, consider where this infrastructure will be located and how roads and paths will work to promote easy and stress-free movement of animals. As a means of minimizing damage to soil and vegetation, fences should be laid on the contour when possible.

Literature Cited

Levis, Donald G. and Baker, Rodney B. 2011. Biosecurity of pigs and farm security. University of Nebraska Lincoln. EC289. 31 pages. http://porkgateway.org/wp-content/uploads/2015/07/biosecurity-of-pigs-and-farm-security1.pdf.

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