

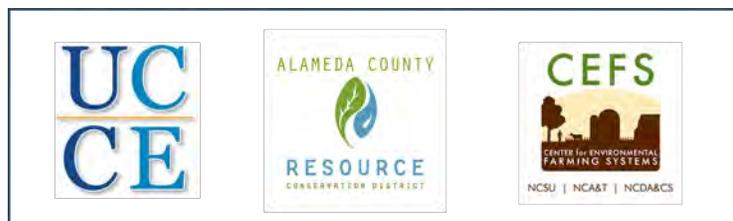


# Outdoor Hog Production

*Best Practices for Resource Conservation in the San Francisco Bay Area*

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November 2015



University of California Cooperative Extension  
Alameda County Resource Conservation District  
North Carolina State University Center for Environmental Farming Systems

# Acknowledgements

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This project and the resources provided herein would not have been possible without support from the United States Department of Agriculture Natural Resources Conservation Service Conservation Innovation Grant. We thank them for their support.

Additional funding was generously provided by the University of California Division of Agriculture and Natural Resources, as well as TomKat Ranch and the Alameda County Resource Conservation District.

Tremendous in-kind contributions were made by the following individuals, University of California Cooperative Extension Personnel, North Carolina State University's Center for Environmental Farming Systems staff, Resource Conservation Districts including Alameda, Contra Costa, Gold Ridge, Guadalupe Coyote, and Sonoma, as well as Natural Resources Conservation Service partners and others: Silvana Pietrosevoli, Sheila Barry, Theresa Becchetti, Morgan Doran, Stephanie Larson, Susan Ellsworth, Luke Macaulay, Julie Finzel, Linda Peterson, Jackie Charbonneau, Ling He, Alyson Aquino, Marie Harter, Roger Ingram, Kellyx Nelson, Jim Howard, Adria Arko, Donna Richeson, Ben Wallace, Brittany Heck, Kara Heckert, Kari Wester, Valerie Minton and Nancy Scolari.

The following livestock producers generously contributed their time and wisdom to this project: Dede Boies, Zavra Fortsen, Guido Frosini, George Hohnsbeen, Kylan Hoover, Steven Kopp, Pete Langley, Scott Long, Grace Magruder, Doniga Markegard, Nancy Mueller, Tim Mueller, Don Nash, Tommy Otey, Mark Pasternak, Blair Thompson, Mary Min Vincent, Kevin Watt, Kathy Webster.

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# Outdoor Hog Production

## Best Practices for Conservation in the San Francisco Bay Area

### Introduction and Project Background

*By Susan Ellsworth and Silvana Pietrosevoli*

Sustainable hog production, as with all sustainable agriculture, requires knowledge of local climate, ecology and economic conditions. Therefore, the development of best management practices for truly ecological production relies on the adaptation of prevailing models to reflect local conditions. This guide contains a series of factsheets intended to support outdoor pork producers, resource managers and agricultural professionals in implementing resource conservation best management practices within the Greater San Francisco Bay Area and Northern San Joaquin Valley. For our purposes, outdoor hog production refers to range or pasture-based, dry lot, or other alternatives to conventional slatted floor systems.

#### Collaborators

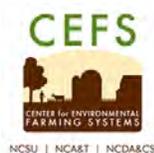
Collaborators on this project include UC Cooperative Extension Livestock advisors, Resource Conservation Districts, and numerous hog producers from around the Greater San Francisco Bay, Northern San Joaquin and Southern Sacramento Valley. Technical expertise was provided by the Center for Environmental

Farming Systems at North Carolina State University.

To characterize alternative hog production systems in this region, collaborators visited fourteen operations in eleven counties, including Alameda, Contra Costa, Marin, Mendocino, Nevada, San Joaquin, San Mateo, Santa Clara, Sonoma, Stanislaus and Yolo Counties. These visits allowed collaborators to explore issues related to potential environmental impact, husbandry and overall production, thereby informing the development of this resource guidebook. All farms visited were characterized by high standards of animal health and welfare and a wide diversity of management approaches.

#### Climate and Ecology

The Bay Area and surrounding counties are characterized by a Mediterranean climate with the majority of precipitation falling between October and April, followed by little to no rain from May through September. Total rainfall varies from 15” in the East and South Bay (Livermore and San Jose) to almost 50” in the North Bay (Mill Valley and Healdsburg). Topography is varied, with rolling hills and valleys, wetlands and estuary, as well as the low lying Coast Range running northwest to southeast. The Coast Range, though modest in elevation (Mt. Diablo at 4261’), nevertheless prevents the ocean air from



*Funding provided by the Natural Resources Conservation Service Conservation Innovation Grant # 86-9104-3-179*

readily entering the Central Valley, resulting in a hotter, drier climate to the east and a moister, milder climate to west, with numerous “microclimates” throughout. Given the seasonality of precipitation, both perennial and intermittent streams are common and riparian areas are often the only green vegetation in late summer and fall. Along with topography and rainfall, soils are also highly variable, resulting in a range of forage types and availability throughout the study area. Within the valleys, foothills and grasslands that make up the majority of grazed rangeland, annual grasses and forbs dominate, often interspersed with oak and various woody shrubs. In other areas, larger stands of perennial grasslands are present, also mixed with oaks and other vegetation types. Improved, irrigated pasture is limited to some regions. Lack of rain during the dry season, combined with thin soils and sloping hillsides makes erosion a significant consideration, particularly on annual range.

### Economic Context

Hog production has declined significantly in California over the last 50 years. In the Greater Bay Area, the number of operations has dropped by approximately 90%. Yet, during that time human populations have grown, and in the last ten years, demand for locally-raised meat products has increased dramatically (Gwin et al, 2008). In particular, consumer interest in flavorful, hormone/antibiotic free, humanely raised products has created demand for pork that outstrips supply.

Recognizing the opportunity to serve this market demand, an increasing number of direct-market oriented producers are adding hogs to their farms and ranches, in many cases relying on outdoor or forage-based systems. Additionally, given the reproductive capacity, opportunities to vary market age and weight, and relatively short time from birth to market, hogs are an agricultural commodity that has proven viable for many beginning farmers and ranchers.

### Case Studies

In an effort to better understand the needs of producers in the area, collaborators visited 14 outdoor hog production sites from a wide range of

ecological niches characteristic of the study area, as well as from a diversity of production approaches. Detailed surveys were conducted at 10 of the 14 locations to better understand conservation and production challenges and successes.



Figure 1 : Map of Field Visits to Outdoor Hog Producers by County

Of the 10 operations surveyed, hog production sites ranged in size from 5 to 200 acres on both private and public land, with the majority (80%) operating as farrow to finish systems. The remaining 20% purchased weaned animals for finishing, with nearly all operations harvesting the animals and selling the meat products directly. Of the 10 sites surveyed, all but one operate primarily as outdoor swine units; eight based on natural vegetation, two on natural and established grasses, and the last utilizing a deep bedded system where animals are reared in open-ended hoop houses with ample bedding material. In many cases, those in permanent or semi-permanent enclosures experienced significant loss of vegetative ground cover.

In the majority of operations, animals were reared in groups with plenty of space and freedom to express

instinctive behaviors. Predominant breeds included Tamworth, Large Black, Berkshire, Duroc, Hampshire, Red Wattle, Old Spot Gloucester, Yorkshire and European wild boar.

In general, producers used portable shelters, feeders and drinkers to allow for rotation of areas under production, thereby reducing the potential for nutrient build up, soil impact, parasites and other animal health-related issues. Most operations provided their animals with hay or straw bedding which is composted after use and either reused in pasture and crop fields, or sold as soil amendment.

Drylot, pasture and range-based systems were utilized, as well as alternatives like deep-bedded systems, with the majority of farrowing and lactating areas under continuous use, often with permanent infrastructure. Pasture and range-based grazing was observed more frequently in weaner or finisher areas, though in several operations all aspects of production are under continuous use.

For most operations, vegetative ground cover was comprised of naturally occurring, primarily annual grasses, often resulting in bare ground under continuous use with high stocking rates. Several operations worked to establish forage species through seeding; one as part of an irrigated pasture rotation and the other relying on straw mulch for protection. Stocking density varied widely from less than 1 hog/acre on extensive rangeland to 250

hogs/0.25 acre in the deep bedded system.

Most operations utilize at least some alternative feeds, ranging from dairy products such as whey, milk, yogurt or ice cream to bakery and restaurant waste, culled vegetables and fruits, to brewers grain, and cereals. The use of alternative feed contributes significantly to reduced feed costs and to improved economic sustainability; for most alternative hog operations, feed is one of the largest production costs.

The majority of animals were sent to commercial slaughter facilities within the region with average market weights ranging from 220 to 300 lbs per animal. Farmers employ a variety of marketing strategies to sell their products, including direct marketing to consumers through CSAs and on-farm sales, farmers markets and pig share, restaurants, local butchers and in a few cases, auction.

### Opportunities to Improve Sustainability

Environmental impact in outdoor swine production systems is generally associated with natural behaviors such as rooting, trampling and selecting dunging areas. If poorly managed, such behavior is often correlated with damage to vegetation, soil disturbance and soil nutrient build up, which in turn can result in erosion, soil compaction, nutrient leaching, and increased nitrogen and phosphorus in watercourses (Menzi et al., 1998, Miao et al., 2004; Eriksen et al., 2006, Quintern and Sundrum, 2006).

All the operations visited during the study were well managed, demonstrating high levels of animal health and welfare. Nevertheless opportunities to improve resource management were also present, exacerbated in many cases by prolonged drought. The following is a list of management successes and challenges observed during case-study visits:

#### ***Resource Management Successes***

- Use of well-adapted breeds
- Portable shelters with bedding
- Portable feeders
- Seasonal management
- Use of alternative feed sources



Brewers grains mixed with milk and whey. Photo courtesy of Devil's Gulch Ranch.

## ***Resource Management Challenges***

- Bare ground
- Soil compaction
- Potential for excessive nutrients in soil and water
- Excessive wallows
- Lack of shade

Factsheets included within this guide are designed to address many of these resource management concerns and opportunities, by laying out best management practices adapted to the local climate, ecology and market conditions. Also included are recommended conservation practices as developed by the Natural Resources Conservation Service.

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