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THE NATIONAL OUTREACH ARM OF USDA-SARE

Profitable Pork: Strategies for Hog Producers

Iowa producer Tom Frantzen employs pasture and cropland in managed grazing strips that allow him to produce a 30-pound feeder pig "for half the price you can indoors."

– Photo by Prescott Bergh, courtesy of Minnesota Department of Agriculture

FOR 14 YEARS, NEW HAMPTON, IOWA, FARMER TOM FRANTZEN reared hogs from farrow to finish, alternating the 1,200 hogs he raised annually from closed buildings each winter to pastures each summer. The buildings, where Frantzen raised the sows in pens with slatted floors, were an unpleasant winter home. In the cold months, the hogs did not gain weight very efficiently and behaved aggressively.

Pig waste fell through the slats into a pit. Frantzen pumped and disposed of manure on his crop fields, where he grew corn, soybeans and hay. "Our manure management was haphazard," he recalls. "I was both over-applying and under-utilizing those nutrients."

Frantzen had to race to the finish line every season. And while he always got everything done, reaching that point was difficult and stressful. In 1992, he decided to create a more environmentally sound system that would be both profitable and allow him to spend more time outside. The linchpin: a combination of pasture and housing that brought his livestock and crops into sync.

Today, permanent pastures, rotating strip pastures and cropland offer him a plethora of options for feeding pigs, including having them "hog down" – or self-harvest – crops. As they move across the fields, the pigs spread their own manure. Deep-straw bedding in huts or sheds provides warmth and exercise for the animals and produces a pack of solid waste that is far easier to handle and spread on crop fields than the slurry from Frantzen's former liquid manure system.

The new life cycle worked. After receiving a producer grant from USDA's Sustainable Agriculture Research and Education (SARE) program to document the economics of farrowing hogs on pasture, Frantzen found he could halve his feed costs compared to his former indoor/outdoor system. The SARE grant "showed we can produce a 30-pound feeder pig for half the price that you can indoors," he said.

Deep-straw systems provide natural warmth for hogs and require far less financial investment and risk than typical confinement approaches.

– Photo courtesy of USDA-ARS

Over three years, Frantzen's costs to raise a pastured feeder pig ranged from $10 to $13.50, taking into account all supplemental feed, land expenses and labor.

"On a farm that produces grain and finishes hogs, we want the grain to go into the animal during the finishing stage and the manure to go back to the crop fields," said Frantzen, who also raises 75 Angus brood cows. "From the hoops, I can put composted manure on the correct field at the correct time. The odors aren't bad, there's no pumping involved and it puts the animals in an environment they like."

Today, Frantzen is as busy as ever, but he is a lot happier. "Working conditions for me weren't nearly as good as working outdoors," he said. "The health of the animals wasn't good, either. You could almost see the stress on the sows in the farrowing crates. Now, they seem to enjoy life. And so do I."

Farmers like Frantzen who successfully produce pork on a small scale have preserved their independence in the face of the consolidating hog industry. In the late 1980s, hogs began disappearing from small family farms. Now, most pigs are produced by corporations, with 35 percent of hogs sent to market produced by just 20 firms selling more than 500,000 per year. Usually, one company owns the pigs and retains farmers to raise the animals – often on the farmer's property, using his buildings and manure lagoons.

Those changes have narrowed choices for farmers, steering most toward a new option – working under a contract using the corporation's methods of production. Corporate contracts offer pork producers more certainty about earning modest profits than raising pigs independently but also require farmers to shoulder considerable debt to construct confinement buildings and assume environmental liability for manure.

The corporations own the processing plants and distribution system, too, effectively locking small, independent producers out of the wholesale pork market.

"It is hard for small producers to put together a semi-load of market hogs or find a buyer who will even accept hogs without a contract," said Martin Kleinschmidt, an analyst with the Center for Rural Affairs. "If you want to sell commodity hogs, you have to be big. If you want to stay small, you have to look for niche markets."

This bulletin showcases examples of another way to raise pork profitably. While many of the farmers profiled here have assumed bigger workloads – particularly in designing hog systems that work on their farms and identifying unique marketing channels – all appreciate the greater flexibility and a better quality of life inherent in systems with alternative housing or a strong pasture component.

Use this bulletin to gain ideas about alternative swine systems, then consult the list of resources on p. 16 for more detailed information.

PART I

Alternative Hog Production Systems

YEARS AGO, PIGS FORAGED IN PASTURES, WALLOWED IN MUD to stay cool and nested in family units. Now, most pig producers raise their animals in confinement buildings containing thousands of pigs with sows in two-feet-wide crates. Lately, some farmers and consumers have begun to balk at that system.

"When the current conventional systems create profound, widespread concerns, we are compelled to look elsewhere for solutions," said Mark Honeyman, an Iowa State University researcher and national expert on alternative swine housing options. "The public's growing concern about the environment and the impact of vertical integration upon rural communities, worker health and animal welfare calls for innovative approaches and ethical judgment in the ways producers raise pigs."

Determining the Right Alternative Hog System

Before overhauling a hog production system, evaluate your resources, define your goals and visualize what type of operation might work best. In weighing your options, consider your buildings and what might be renovated to fit your goals, as well as your pasture or forage options.

Consider also your location and whether you have access to processing and markets. For more information about planning for a new farm enterprise, consult "Hogs Your Way." (See "Resources," p. 16)

The significantly lower start-up costs for alternative swine systems may be one of the most convincing factors for producers, especially beginning farmers who may have difficulty raising capital. Other farmers adopt the systems because they allow great flexibility. Inexpensive, easy-to-build hoop structures, for example, incur no debt and are easy to adapt for other uses.

"These systems appeal to someone who doesn't want to borrow capital," said Honeyman. "If you construct a building that costs hundreds of thousands of dollars, you're going to produce, whatever happens. If you want more flexibility, you need a lower cost option. In a rapidly changing industry, why not create a system that's flexible rather than one that locks you into a certain production system?"

Deep-Straw Systems

When Swedish regulators imposed stricter animal welfare laws, banned sub-therapeutic antibiotics for livestock and passed other environmental protection laws in the late 1980s, hog farmers pulled pigs out of confinement crates and into group settings. By providing deep straw bedding for groups of pigs, Swedish farmers turned manure into a solid waste, provided warmth and exercise and created an opportunity for the animals to develop natural herd and social instincts that they say promotes better animal health and less piglet mortality.

Many alternative hog systems rely on deep straw. Mixed with the hogs' urine and manure, the deep straw bedding composts in hoop structures. In addition to providing heat, deep straw systems center on hogs growing in groups and allow the pigs freedom of movement.

While much less capital-intensive than confinement swine systems, alternative systems relying on deep straw require careful farm management to minimize disease and provide the feed and bedding hogs need at different stages of life. In economist parlance, raising pigs in these systems means more variable costs – feed, bedding, labor – versus fixed costs such as confinement buildings. Alternative swine researchers like to point out that such systems provide flexibility and less up-front investment.

While the systems are gaining in popularity, especially in England and Sweden, their use in the United States is still clustered in the Midwest, particularly Iowa and Minnesota. Raising hogs in deep straw can be accomplished virtually anywhere because it keeps hogs warm in cold climates. (It's easier to keep hogs warm than cool because hogs only sweat through their noses and have difficulty losing body heat.)

"Alternative swine production systems allow more freedom of movement and choice to the pig and require a unique style of husbandry," said Honeyman. In 1995, Honeyman won a SARE grant to explore the feasibility of importing Swedish systems here and hosted a group of visiting Swedish researchers, farm advisers and farmers for 10 days.

Farrowing in Deep Straw

Some farmers use deep straw for farrowing piglets. Researchers have found that providing individual pens with straw for farrowing sows – but larger rooms with straw for group gestation and lactation – reduces stress by giving the pigs and sows something to root through. Sows on deep-bedded systems are always group-housed, which helps encourage them to go into heat simultaneously.

Hog farmer Dwight Ault's decision to move from a confinement system to deep straw for farrowing was a financial necessity. The Austin, Minn., farmer had 26-year-old crates, gates and other confinement materials badly in need of an upgrade. Aided by a SARE producer grant, Ault decided to emulate a system he had seen firsthand in Sweden and converted a barn for deep-straw farrowing. The work cost $3,000, less than one-third the cost of replacing the confinement equipment.

"I was sick and tired of the ammonia and smell" in the old confinement system, he said. "I figured that my enjoyment of raising hogs would be enhanced."

Why Switch?

- Minimize environmental concerns such as water and air quality
- Improve hog worker health, which can be compromised by dust and gases in confinement buildings
- Assume less financial risk
- Create fewer objectionable odors
- Assume lower start-up costs
- Minimize neighbor problems when farming near population centers
- Manage animals rather than equipment and automated machinery
- Provide pigs with access to bedding, freedom of movement, sunshine and each other

Today, Ault farrows 60 sows in the deep-bedded system each January, then on pasture each June. After his second season using deep-straw farrowing, in 1998, Ault declared he "never had better performance" from the pigs. "If anything, I'm worried that [production is] going to be way ahead of schedule," he said.

Deep-bedded farrowing requires a room large enough to house about 10 farrowing sows. Providing temporary farrowing boxes in the nursing rooms enables the sows to build straw nests in which they give birth. Piglets stay in the boxes for up to 10 days before farmers remove the boxes and encourage them to mingle with the group.

In the winter, the heat generated by the sows and the composting straw means farmers do not need to provide as much supplemental heat. Large windows and doors allow air to flow, and ventilation systems draw fresh air. The quiet ventilation system allows the sows and piglets to better communicate, which may reduce pig deaths by crushing.

In general, the Swedish farrowing system requires more management, observation and planning than a conventional system, but labor averages only about 18 hours per sow per year. Sow culling rates, building repairs, cleaning, moving, medicating and assistance at farrowing are lower in the Swedish system. However, piglet mortality can be higher in the Swedish system compared to conventional farrowing crates.

When farrowing in deep straw:

- Use enough straw (usually two large round bales) to insulate the pigs from cold cement or ground to start a nursing room of eight to 10 sows.
- Add a bale per week, plus more as needed.
- Allow 27 square feet per sow and 81 square feet per sow and litter.
- Be vigilant about cleanliness to prevent disease.

Raising Feeder Pigs in Hoop Structures

Tent-like shelters that house hogs for a fraction of the cost of a typical confinement house, hoop structures are gaining in popularity as producers realize the benefits of this simple structure that resembles a giant, opaque greenhouse. Originally developed in Canada, "hoops" usually hold up to 250 hogs on an earthen floor that is heaped with a generous amount of bedding. The structures are topped with 15-feet-high steel arches covered with fabric tarps.

Iowa State University researchers found that initial investment was about one-third cheaper for hoop barns than confinement barns. Confinement operations cost a producer $180 per pig space versus just $55 for a space in a hoop structure. Initial hoop barn construction costs vary from $9,000 to $16,200 to hold 200 head – compared to $150,000 to $200,000 for confinement structures that hold 1,000 head.

"Hoops are attractive to a lot of people who don't have a lot of equity to invest," said Mike Brumm, an extension

– Photo by Ken Schneider

SWEDISH-STYLE HOG PRODUCTION IN MINNESOTA – By Lisa Bauer

Minnesota farmer Nolan Jungclaus' great-grandfather homesteaded the family farm in 1896. But a century later, the crop farm was no longer generating enough revenue to support the three families involved with the operation.

Looking for an income-generating practice that would allow him to quit his off-farm job and help support three families, Nolan Jungclaus decided to test a Swedish-style system on his Minnesota farm. With Iowa State University researchers and farmers, he traveled to Sweden to look at the systems firsthand.

Jungclaus found that Swedish farmers fit the system to the animal rather than the animal to the system. In so doing, hog producers must have excellent animal husbandry skills, an appreciation of pig behavior, attention to detail and a desire to work with pigs in a more natural environment.

In 1994, Jungclaus received a SARE producer grant to adapt an existing 36-by-60 foot machinery pole shed to accommodate four phases of Swedish-style swine production: breeding/gestation, farrowing, nursery and finishing. Lack of experience with livestock led the Jungclauses to decide on a low-cost structure that would be adaptable enough to allow the family to use their investment in other ways, if necessary.

"We wanted to maintain flexibility in our operations so that if we were poor managers or if there were drastic changes within the hog industry, we could still salvage our investment," Jungclaus recalls. "Our goal was to diversify the current

swine specialist at the University of Nebraska. "They can pay the day-to-day costs, but don't have to come up with the big money up front." Hoop structures are "favorable to beginning farmers who don't have the equity."

Most hoop structures are used for finishing feeder pigs. Since 1996, close to 3,000 hoop structures have been built in Iowa, where much of the research into alternative swine housing systems is taking place. At Iowa State University, a team of researchers comparing finishing pigs in hoops versus confinement systems found that "hoop pigs" grew slower in winter and were less efficient than the confinement pigs. In summer, however, the opposite was true.

Yet, weight gain must be compared to costs of production. Overall pig production costs in hoops have been reduced by approximately $4 per hog, according to the nonprofit information clearinghouse, Appropriate Technology Transfer for Rural Areas (ATTRA).

Deep bedding really works as a source of heat. In the winter, researchers have recorded bedding temperatures in hoops to be at least 80º F.

Another big difference between hoop barns and standard hog confinement houses is air flow. While hoop barns are naturally ventilated, confinement systems have forced air systems that rely on electrical power. If a farmer experiences a blackout, the fans cut out and the pigs may die from toxic gas buildup. Most confinement systems therefore include backup generators, which are an added expense and worry for producers. By contrast, Canadian researchers have found that 94 percent of hogs raised in hoop barns exhibited normal lung function, compared with 70 percent of the hogs reared in confinement.

Pig production costs have been reduced by about $4 per hog in hoop barns, built at a fraction of the bill to erect a confinement structure.

– Photo by Jerry DeWitt

Pigs raised in hoops may develop internal parasites, so aggressive worming is recommended. Otherwise, pigs in hoops are reportedly quite healthy, with foot and leg problems greatly reduced. (See "Animal Health" in Part II.) Hoop structures require labor to unload bedding, haul solid manure and check pigs.

When evaluating hoop houses:

- Remember that a supply of good-quality bedding is a major consideration.

farm operation by establishing a farrow-to-finish swine facility with attached pasture."

They purchased 15 bred sows the first year. Having all of the sows farrow within five days is ideal for the system, although the Jungclaus' sows farrowed over a 10-day period. They started their sows in temporary nesting boxes measuring about 8 feet by 8 feet that they removed after a week to allow sows and piglets to roam inside the building.

They provided ventilation from intake and exhaust fans, plenty of space (the equivalent of about 80 square feet per sow and litter), and quiet surroundings – where the pigs can exhibit natural desires to nest and live in family units.

In the first year, the operation showed a small net loss, but that took into account the $10,682 in initial capital purchases and livestock supplies the first year.

"Overall we had a net worth increase of $7,213," said Jungclaus. "Although there will be some capital improvements made to the system, I anticipate a profitable system based on a capital investment loan payment of only $2,400."

Six years later, Jungclaus has found that he can turn a profit using the Swedish-style system. In fact, he improved farm efficiency from 65 percent to 70 percent, meaning he now spends 65 cents per dollar earned, thanks to the more diverse farm operation.

While Jungclaus now raises about 400 head a year and markets the hogs through a buying station, his involvement with the new Prairie Farmers Cooperative means he will soon be able to sell his pork as a "natural" meat free of antibiotics. Jungclaus serves on the co-op board, which is overseeing construction of a new hog processing facility scheduled to come on line before the end of 2001. Already, two grocery store chains in the area have expressed interest in the co-op's product.

The Swedish-style system produces a happy, healthy pig free of antibiotics and offers the Jungclauses a clean, healthy working environment. Jungclaus now farms alongside his children, who are often found playing with piglets.

"We felt diversifying our farm was the first step, but there were other family and community oriented goals we considered," he said. "We wanted a livestock enterprise that would allow us to work together as a family unit and that would increase our family time and give us the opportunity to teach our children responsibility. We also wanted a community-friendly facility because we are one mile down the road from town."

- Expect higher feeding costs. During the colder months, pigs in hoop structures may need about 10 percent more feed than their confinement counterparts to recover the energy spent keeping warm.
- Make sure you have the equipment necessary for manure loading and handling.
- Develop an internal parasite control program.
- Take advantage of the versatility of hoop structures, which may be used for other livestock or storage needs.

Raising Pigs on Pasture

Farrowing on pasture. In recent years, hog farmers thought sows needed to farrow in confinement to ensure piglet survival. However, some criticize the system as promoting ulcers, sores and behaviors such as bar biting. Instead, producers are raising sows outdoors to allow them more space and access to fresh air and sunshine. Researchers and farmers have found that, with small portable huts and good pasture, they can drastically reduce the cost of production.

Outdoor pig production on a large scale is gaining a hoof-hold in the southern High Plains because of the moderate climate, relatively flat land and sparse population. In fact, the traditional cattle country of the Texas panhandle is beginning to diversify into hogs. Texas Tech University's Sustainable Pork Program began studying intensive outdoor pig production in 1993 and, in 1998, built a research farm dedicated to exploring profitable, environmentally sound systems they call "animal-, environment-, worker-, and community-friendly."

In a well-managed farrow-to-finish pasture system, producers can net more than $10 per pig, according to Texas Tech University.

– Photo by Jerry DeWitt

The prototype, larger than the indoor-based models, operates within a paddock system that requires about 100 acres for every 300 sows – or three sows per acre. The 12-acre paddocks radiate out from a central circular area, used for handling and observation, and are demarcated by electric fence. The separate paddocks isolate breeding, gestation, farrowing and pasture growth.

Texas Tech researchers are evaluating production costs, behavior and environmental impacts, dust and microbe levels, and pork quality. Thus far, they have found improved pig health, a better work environment, less odor, less microbial activity, fewer regulatory problems and lower start-up and operating costs. More specifically, they found it costs $23.20 to raise a pig in "intensive outdoor" production versus $31 in a typical confinement system. In that 1995 study, they found a net profit of $10.39 per pig in the outdoor system.

The institute's director, John McGlone, is sure sustainable pastured pork systems will take off once more producers learn of their environmental benefits, lower start-up costs and marketing opportunities. "Pigs are going to be bigger than cattle on the southern Plains, and it could happen within the next 10 to 20 years," said McGlone, who has received lots of ink in newspapers and magazines in Texas and beyond for his new production model.

A study conducted in Iowa by Mark Honeyman and Arlie Penner of Iowa State University compared economic and production data of indoor and outdoor herds. Results showed that fixed costs for the outdoor herds were approximately $3 less per pig weaned than for the indoor herds. "There is much variation between individual producers' costs within a given system," Honeyman said. "A lot of producers are doing it for other reasons," primarily the low start-up costs and improved quality of life. In the Midwest, pasture farrowing is limited to spring, summer and fall.

Large pasture farrowers have developed time-saving systems, such as arranging huts in set patterns or creating same-size paddocks so fencing and water lines can be pre-measured.

The main cost in a pasture hog system is supplemental feed, with grain accounting for 60 to 70 percent of the cost from farrow to finish. Lately, more hog producers are allowing their pigs to graze directly on grain crops to cut down on the labor and expense of harvesting row crops. ISU researchers studying the feasibility of grazing sows on alfalfa found similar costs for raising sows in confinement versus grazing alfalfa in a managed four-paddock rotational system. The grazing animals were

supplemented with 1.5 to 2 pounds of corn per day. In the meantime, the alfalfa stand improved the soil.

Although an Iowa study found that outdoor farrowing produced fewer piglets per litter, the lower costs of production makes it more profitable than confinement. Honeyman said that fixed costs were $3.33 less per pig weaned outdoors, 30 to 40 percent lower overall than confinement systems. Production costs for a 250-pound outdoor market hog were $4.88 less per pig, reflecting feed, labor, repairs, utilities, health and fixed costs.

The environmental considerations, too, make this an attractive system for hog producers. While grazing through different paddocks, the hogs evenly distribute manure across the field. Pastures can be seeded or natural, and including leguminous plants like alfalfa in a rotation can improve nitrogen cycling and supply a nutritious feed for pigs. One of the biggest benefits of raising pigs outside is giving the animals access to mud, water and shade to cool themselves. McGlone recommends that producers design and build wallows for them.

Hog producers use a variety of wood, metal, or plastic huts to house their farrowing sows. Lined with bedding – hay, corn cobs, cornstalks, straw or shredded newspaper – the huts stay warm despite outdoor conditions. At Texas Tech, researchers use English arc-style huts to decrease the likelihood of piglet crushing.

If farrowing hogs on pasture, keep in mind:

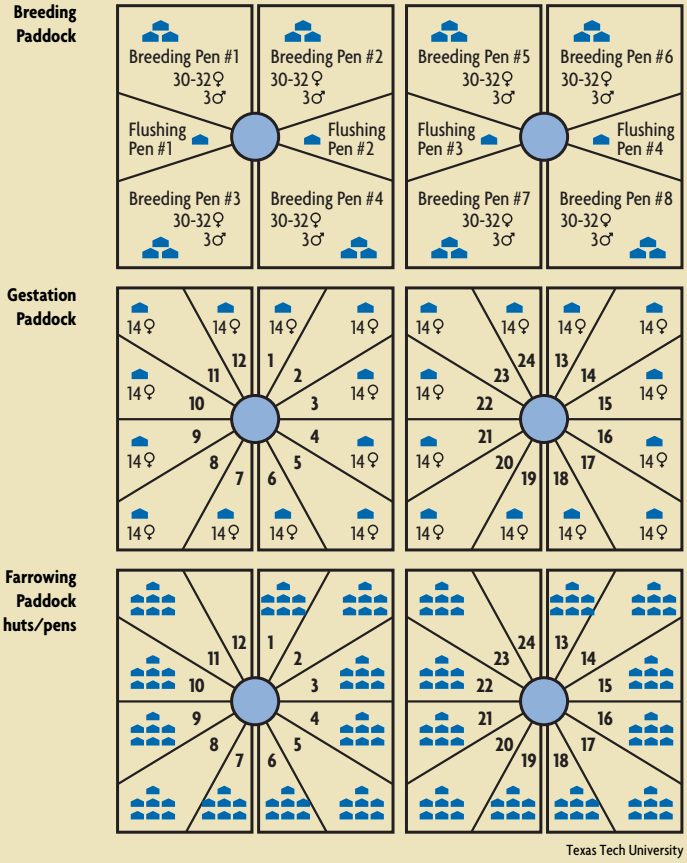
- When choosing a farrowing hut, seek portability and an easy entrance and exit for the sow and litter.
- Pasture systems require portable waterers and feeders.
- Do not use floors in farrowing huts and move huts to fresh ground for each new litter.
- Labor is more seasonal than in confinement systems, so evaluate whether to raise one or two litters per sow each year and time group farrowing around crop chores.
- Most swine herds suffer from internal parasites that may persist in soil. Develop a rigorous parasite control program as part of a whole-herd health program.
- Fencing options vary, although some veterans recommend steel wire or electric fences that use rolls of netting on fiberglass posts for greater visibility.
- Thanks to the low start-up costs, pasture systems create an ideal way for new hog producers to get started in the industry.

Feeding hogs with pasture. New Hampton, Iowa, farmer Tom Frantzen grazes his gestating sows in permanent paddocks in the warm season. He plants corn alongside strips of pasture, partly to provide shade or act as a windbreak. Sows about to farrow graze on corn, oats and clover strips. Then, as cold approaches and the sows are ready to give birth, Frantzen moves them into a straw-bedded cattle shed. The sows overwinter in the shed, while the piglets spend the rest of their lives there. Each spring, Frantzen re-seeds his 30 half-acre paddocks and the system begins anew.

Jim and Adele Hayes raise poultry, cattle, pigs and sheep on 200 acres of pasture in Warnerville, N.Y. They believe their intensive pasture management has strengthened the operation, both by adding biological diversity and creating marketing options. During the grazing season, they rotate ruminants through a series of paddocks to provide high quality forage and to allow the pasture to re-grow before animals return to graze.

Careful attention to pasture conditions makes the system work. "We have a 'sacrifice' pasture near the barn that's well fenced so it's easy to maintain the animals in there," Adele Hayes says. "We allow that to get destroyed if we need to," a better option, she says, than damaging prime pasture acreage through overgrazing.

Outdoor Breeding System 600 Sow Revolving Design



Texas Tech University

The pasture-based system developed at Texas Tech's Pork Industry Institute moves 600 sows through paddocks developed for different reproductive stages.

PART 2

Environmental Benefits

Manure Management

THE BEST TYPE OF WASTE MANAGEMENT IN ANY LIVESTOCK operation converts manure into a resource rather than creates a disposal problem. Many hog producers also raise crops, so manure, treated correctly, offers a valuable soil amendment. Manure from a 50-sow operation is worth about $4,000 as a fertilizer, although other benefits such as increasing organic matter, enhancing soil structure and building more diverse soil organisms make it even more valuable.

In pastured hog operations, the hogs distribute manure themselves as they move across a field. With proper rotations and a reasonable stocking rate, manure does not pose a problem. Manure from hogs raised in deep bedding mixes with the straw or other material and becomes a solid pack that is relatively easy to handle. The manure-bedding mix adds another plus. Bedding materials contain high amounts of complex substances, such as lignin, that do not decompose rapidly and therefore improve the soil's organic matter and tilth over the long term.

Roger Hubmer of Mankato, Minn., analyzes his manure mixed with cornstalk bedding so he can knowledgeably apply it to his crop fields. Hubmer, who began finishing hogs in hoop barns when he realized he didn't want to spend $100,000 on a new confinement barn, spreads compost based on the phosphorus rating.

Odor and Pollution

One of the biggest considerations about raising hogs is odor generated from manure. Stories about bad-smelling manure lagoons and community opposition to large hog confinement operations regularly appear in the media. Liquid manure stored in a lagoon sits in an anaerobic state, and that creates disagreeable odors. The smell might be unpleasant for people nearby, but some of the gases produced – methane, hydrogen sulfide, carbon monoxide and ammonia – can be toxic.

If there's a power outage in a confinement building, pigs face very real dangers, including death, from heat and the gases that build up in liquid anaerobic manure systems. Many confinement hog operators equip their buildings with alarm systems and backup generators. Such high-tech systems come at considerable cost. The free flow of air through a hoop structure, however, eliminates the need for such expensive systems.

"Hog odor is the most divisive issue ever in agriculture, damaging the fabric of rural society and disenfranchising pork producers from their communities, even on the roads in front of their farm," said R. Douglas Hurt, director of Iowa State's Center for Agriculture History and Rural Studies.

Outdoor systems eliminate the problem. There is virtually no odor at Texas Tech's pastured pig demonstration site, said John McGlone, who runs the facility. "I told some colleagues from NRCS that it wouldn't smell and they didn't believe me," he said. "I had them out there in the fields a year after we started and they couldn't believe it. It doesn't smell."

Perhaps worse than odor concerns is the potential of swine lagoons to leak into surface water or groundwater. In September 1999, Hurricane Floyd wreaked havoc throughout North Carolina. Particularly hard hit

In "dry litter" systems being promoted in the Pacific Islands, farmers eliminate water typically used in cleaning confinement barns and thus, reduce movement of nutrients into surface and ground water.

– Photo by Glen Fukumoto

opposite page, top

Marion Storm, a Bosworth, Mo., hog producer and member of the Patchwork Family Farms Cooperative, moves his 100 sows and piglets through a series of barns with access to pasture. By managing his hogs on pasture, Storm alleviates manure concerns.

– Photo courtesy of Missouri Rural Crisis Center

was the state's huge hog industry. Overall farm losses were estimated at more than $1 billion, with at least 21,000 hogs drowned or washed away in their pens. Water pollution became a serious threat partly due to floodwaters carrying away manure from countless hog lagoons.

"Confinement poses more risks," Honeyman said. "If we concentrate these animals, we also concentrate animal waste, so our risks of environmental degradation increase."

A solid manure system, on the other hand, doesn't leak or spill. The only threat to water quality is possible leaching from the composting bedding pack if it is stored outside in heavy rain. As an aerobic process, composting, done correctly, shouldn't emit objectionable odors.

"It may sound funny," said Hubmer, the Mankato, Minn., farmer, "but the composted manure that comes out of the hoops is almost sweet-smelling."

Pastured systems pose even less of a risk. At Texas Tech, researchers installed a buffer of Old World bluestem around the site to catch runoff from heavy storms. It works, too, McGlone said. "You can see the runoff isn't leaving," he said. "Our pastures are dark green, while the buffer is pale green," indicating that nitrogen is staying on the pastures.

"If it's done right, manure and nutrient runoff is not an issue."

HAWAIIAN DRY LITTER SYSTEMS – *By Barb Baylor Anderson*

Producers in Hawaii are exploring a different approach to manure and nutrient management that employs a dry litter technology. The system, imported from land-limited countries like the Netherlands, Japan and Taiwan, could help producers effectively manage livestock waste, especially since Hawaii producers contend with more expensive land and bedding costs. Moreover, Hawaiians face truly unique ecological issues.

"Animal manure can be processed and developed as a marketable organic soil amendment for the agricultural, garden and landscape industries," reports researcher Glen Fukumoto with the University of Hawaii Cooperative Extension Service. "The interest in organic products is creating opportunities for innovators of nutrient management."

Dry litter systems must be adapted to work in the tropics because excessive heat, disease and parasite build-up in litter are common. With funding from SARE, university researchers have worked to adapt the dry litter system to the state. The work began with a demonstration on an intensive 10-acre pig farm/orchard and market garden at 1,600 feet altitude. There, the lava is thinly covered with erodible soil that has low nitrogen and organic matter content – and could benefit from nutrient-rich compost.

The modified dry litter system that has evolved from the research combines animal manure with shredded green residue from orchards, market gardens and landscape operations to produce compost. Dry litter systems also reduce or prevent non-point source pollution by eliminating the use of water to clean hog production facilities.

"Elimination of water in the system removes the possibility of pollution from various components of a typical confined feeding operation waste management system," said Fukumoto.

The key to the system is sloping pen floors that through a pig's hoof action propel the litter material out of the pen and into a holding trench. The carbon-nutrient mix flows out of the pens, and the separate composting trench keeps hogs from exposure to pre-compost material, where diseases and parasites may develop. This separation is the key difference in the modified design.

Masazo's Pig Farm on the southern point of the Big Island of Hawaii has used the modified dry litter system since 1996 to collect and compost manure from 30 to 40 sows. Masazo's owners, Dane and Terri Shibuya, constructed a modified greenhouse structure with two sets of pens for sows in different reproductive stages. Their system, which contains no mechanical parts or specialized equipment, provides cover and protection for the animals while collecting manure in a pit. After mixing the manure with carbonaceous material, they spread the compost on bananas, ti leaves and taro in their fields.

Cost analysis shows initial construction at approximately one-fourth the cost of a typical system in Hawaii. In addition, dry litter systems have lower operational, maintenance, labor and water costs, and may avoid potential water pollution fines and legal costs emanating from odor complaints.

One of the greatest benefits is the potential for economic return from the compost. When the litter compost was applied to market garden bananas in the initial demonstration, for example, researchers measured savings of $201 per acre.

"The modified dry litter system concepts may be adapted to larger, temperate ecosystems utilizing the hoop-type structures," said Fukumoto. "The dynamic flow of animal and green waste streams eliminates composting heat in pens and reduces exposure to disease and parasites. Ultimately, the value-added nutrients generate either a new revenue stream or fertilizer savings for the integrated farm."

A modified greenhouse design holds particular appeal for the Pacific Islands, where expensive commercial fertilizer can be replaced with composted hog manure.

– Photo by Jerry DeWitt

Soil

Soil improvement is a built-in benefit of alternative swine systems. Some producers plan their grazing strategies not only to manage the pasture, but also to build the soil for other commodities, such as feed grain or cash crops. Planning a rotation with crops that both improve soil and complement a hog operation makes doubly good sense. Oats, for example, can provide straw for bedding and nutritious feed for sows. Moreover, raising pigs on pasture growing on ground that previously raised a crop can break pest and disease cycles in the rotation.

Manure improves the organic matter content and overall quality of the soil – whether deposited by grazing animals or applied as compost from hoop structures.

Frantzen of New Hampton, Iowa, also raises brood cows, alternating the livestock through the same paddocks. Rotating both cows and hogs through the pastures has helped the soil, he said. "Either one of the livestock groups on their own would make it hard to manage the ground cover," he said. "But I've noticed that when they rotate through the same pasture, hogs and cattle will eat a wider range of plants and improve soil stability."

Animal Health

Increasingly, confinement systems have been found to have adverse effects on hog health and well-being. Studies from the United States and abroad report that animals raised in confinement experience increased aggression, higher incidence of abnormal behavior, decreased response to external stimuli, and numerous physical and chemical indicators of stress, such as shoulder lesions from rubbing on crates and flooring and diarrhea in piglets.

Toxic gases such as methane, ammonia and hydrogen sulfide can threaten hog health, particularly in older confinement facilities, or when ventilation systems fail. Even at lower concentrations, these gases can lead to decreased respiratory function.

Dust in swine facilities may contain particles of feed, feces, dried urine, swine dander, pollen, insect parts, mineral ash, mold and bacteria, according to 1999 articles in the *Journal of Agromedicine* and the *Journal of Agricultural Engineering Research*. Those biological, chemical and physical components of dust are blamed for elevated mortality and incidence of pneumonia, rhinitis and pleuritis, among other conditions reported in pig houses.

In confinement facilities, producers need efficient ventilation systems with high airflow volume to rid the structures of dust and gases. By contrast, hoop structures or pasture systems do not require automated ventilation systems. Outdoor systems may have greater incidence of internal parasites, however, as discussed below.

Producers can anticipate that hogs raised in deep bedding or on pasture likely will have fewer respiratory diseases and foot and leg problems. Most producers using conventional systems routinely add antibiotics to feed or water to help prevent disease or stimulate growth.

Dave Serfling of Preston, Minn., who successfully converted an old farm building into a deep straw wean-to-finish facility, observed greater health benefits for his pigs. He had pasture-farrowed hogs for 25 years, but with help from a SARE grant, added a winter deep straw system. What he saw impressed him – almost all of his pigs reached 240 pounds by six months of age without the use of antibiotics. Moreover, pig mortality was less than 1 percent.

"It worked so well to have mothers with their pigs that we call our remodeled hog house a pre-wean to finish facility," he said, attributing the better health to the combination of straw, fresh air and sunshine.

To prevent disease, experts recommend moving entire groups of hogs. "Strict all in/all out grouping is very beneficial to the health status and growth performance of pigs," Honeyman said. "This works best with a proper facility layout where pigs are born in a narrow time window and sows avoid cross suckling of older and newborn pigs."

Producers will need to take a proactive approach with internal parasite control. The eggs of many worms persist in soil for years. Water and feed dewormers are effective forms of control, and Honeyman recommends following a year-round, whole-herd life cycle health program that includes post-mortem exams, fecal samples, slaughter checks and blood tests to help diagnose pathogens and parasites.

PART 3

Marketing Options for Pork

WHILE MEAT PRODUCERS ONCE SOLD PRODUCTS DIRECTLY to customers, the modern feedlot-to-wholesale system sends most meat to the grocery store case. Recently, however, a surge of interest has renewed direct farmer-to-customer meat sales. While selling meat directly offers farmers and ranchers a chance to retain a greater profit share, finding a reliable, small-scale processor who meets federal and state food safety regulations may be difficult.

Meat producers will likely find few slaughterhouses that accept small quantities. A number of innovative pork producers are managing to bridge the gap by forging contracts with small slaughterhouses, pooling hogs or taking advantage of new mobile "processors on wheels" funded by programs like SARE.

Niche Marketing

Hog producers can develop niche markets for their pork by emphasizing the animal welfare benefits or environmentally friendly aspects of their systems.

A survey of Colorado, Utah and New Mexico grocery shoppers determined that many – especially high-income frequent pork consumers and those concerned about growth hormones and antibiotic use – are willing to pay a premium. "These target consumers are very concerned about the production practices utilized by the producers," writes Jennifer Grannis and Dawn Thilmany of Colorado State University, who surveyed 2,200 shoppers and analyzed 1,400 responses in 1999. "A highly visible and descriptive label that highlights production practices must be part of the packaging."

Research funded by the Leopold Center at Ames, Iowa, found that consumers would pay nearly $1 more for a package of pork chops labeled as produced under an environmentally friendly alternative system. (The study defined the "most environmentally raised pork product" as being produced in a way that results in 80 to 90 percent odor abatement and 40 to 50 percent reduction in surface water pollution.) The study by ISU economics professor James Kliebenstein surveyed randomly selected consumers in four diverse market areas. Of those, 62 percent said they would pay a premium for pork raised with such a guarantee.

"As the industry develops methods that help sustain or improve the environment, a segment of society will support a market for such products," Kliebenstein said.

To gauge potential for pasture-raised pork in Arkansas, the Arkansas Land and Farm Development Corporation (ALFDC) worked with the University of Arkansas, partly funded by SARE, to conduct market research into consumer perceptions and preferences.

Almost 70 percent of respondents to a 1998 questionnaire sent to 1,200 consumers and 42 supermarkets and restaurants in the Delta region indicated a preference for "environmentally friendly" pork products over conventional. More than 73 percent identified pasture-raised pork as natural and healthy, and 65 percent of retailers preferred to sell local, organically grown meat if available at premium prices.

After perfecting his rotational grazing system, LaGrange, Ind., hog producer Greg Gunthorp turned to marketing. "I spend more time marketing than I do farming," he said.

Meeting and getting to know the chefs at the best restaurants in Chicago is a major focus, and Gunthorp travels more than 100 miles to the city at least once a week to talk with them in their kitchens. Once the chefs have tasted his product, Gunthorp has little trouble getting orders. He also sells pork at a popular Chicago farmers market, where he simultaneously promotes his burgeoning catering business, which has ranged from wedding receptions to company picnics to family barbecues.

It costs Gunthorp an average of 30 cents per pound to raise a hog to maturity. The lowest price he now gets for his pork is $2 per pound, although he commands as much as $7 per pound for suckling pigs – which weigh in at 25 pounds or less. Overall, Gunthorp's prices average 10 times what hogs fetch on the commodities market.

The bottom line for Gunthorp is making enough money to keep his family healthy and happy. "We can get by just selling 1,000 pigs a year, and the smarter I can raise them and sell them, the better off we'll be," he said.

Direct marketing drives the Hayes' operation in Warnerville, N.Y. Sap Bush Hollow Farm markets a variety of meat directly to about 400 consumers in New York, Massachusetts, Connecticut and Vermont. They sell a lot of poultry and beef and about 40 pigs each year.

They sell in bulk and as retail cuts – to restaurants, stores and directly from their home – to eliminate distribution costs. Adele Hayes uses newsletters, postcards and even phone calls to inform customers of sale days and products available.

"The demand is incredible for field-raised, naturally raised pork. The taste, according to us and our customers, is far superior, as well as the texture."

– Adele Hayes
Warnerville, N.Y.

Pennsylvania hog producer Barbara Wiand, who received a SARE grant to explore new ways to market pork, graced the cover of Successful Farming magazine as one of 10 "positive thinkers."

– Photo courtesy of Successful Farming

"The demand is incredible for field-raised, naturally raised pork," she said. "The taste, according to us and our customers, is far superior, as well as the texture."

In the New England climate, the Hayeses send the pigs outside to graze throughout the summer, then keep them in a barn equipped with deep bedding during the cold months.

Even when it's cold, the pigs get access to the outdoors and help advance the Hayes' composting process by rooting through vegetative material.

The couple uses two federally inspected slaughterhouses, although, for the Hayeses, like many other small meat producers in the Northeast, the decreasing number of slaughterhouses remains challenging. "Our biggest problem continues to be reliable slaughter and processing in a timely fashion for our customers," Hayes said.

Cooperative Marketing

Given the consolidation climate in the hog industry and the low profit margins for pork, cooperating with other producers to market meat offers a profitable alternative for small and medium-sized farmers.

Patchwork Family Farms, a marketing cooperative supported by the Missouri Rural Crisis Center, rewards 15 pork producers for their dedication to "sustainable" and "humane" growing standards with a fair price, regardless of the market. The market for this Missouri pork is hot. The co-op has seen a doubling in sales volume each year since it was founded in 1994. In 2000, Patchwork earned $250,000 in gross sales.

Patchwork's expansion has been steady. Originally, the co-op sold to three restaurants. Today, it sells pork to about 40 restaurants, grocery stores, at community events and directly from the co-op's Columbia office. "It has taken a lot of knocking on doors," said Lindsay Howerton, Patchwork marketing coordinator. "We have tremendous success with the media. I'll send out a press release and suddenly I'll have three TV stations in our yard."

Howerton attributes the intense interest to the co-op's unique pricing structure – 43 cents per pound or 15 percent over market price – and dedication to raising pork not in confinement, without hormones and without continuous feeding of antibiotics. "We've stepped out of the system," Howerton said, "and are being extremely successful at it."

In 2000, Patchwork producers received $50,000 more than if they had sold their hogs on the open market. Producers saw these payments up front, not after the product was sold. Ovid and Mary Jo Lyon, Patchwork producers for several years, have seen the economic benefits.

"Patchwork supports independent family farmers; we just couldn't continue to raise hogs without this project," said Mary Jo Lyon. "Patchwork gives my family a way to produce hogs in the same way we always have, out in the open with plenty of sunshine, and we get a fair price for our hogs."

Other hog producers in Missouri may have an opportunity to tap niche markets, thanks to A Family Farm Pork Cooperative, which has researched consumer support for the concept. What began as a small project blossomed to serve producers in 20 counties with a pork slaughtering plant and a cooperative marketing plan, initially in the St. Louis area.

Feasibility studies for value-added pork, "have shown this will be a good venture," said Russell Kremer, president of the Missouri Farmers Union and co-op director, who received a SARE grant to explore alternative ways to distribute Missouri-grown food. Producers interested in the slaughtering plant have offered some 250,000 hogs per year.

"A common strategy to gain and maintain better access to slaughter markets was pooling several different producers' hogs in a single load and providing such loads on a regular basis," Kremer said. The co-op serves small- and medium-sized producers who combine

PORK FROM THE PORCH – *by Barb Baylor Anderson*

Barbara Wiand, of Mifflinburg, Penn., retails her farm's pork product from her back door, offering her an outlet for value-added pork and the opportunity to work from home with her young children close by. After their slaughter plant closed, she organized area pork producers to begin shipping hogs together to another plant, this one 175 miles away. That way, they could meet quota numbers and defray trucking costs.

She and her husband, Glenn, who were both raised on farms, live in a historic house they call the Olde Stonehouse Farm on 240 acres in central Pennsylvania. They raise 300 sows in a confinement crate system; each sow produces 2 ½ litters per year. In groups of 20 to 25, their piglets remain in pens through finishing.

Previously, they sold pork under a contract, but fearing low hog prices and the changing structure of the hog industry would negatively affect their operation, Wiand began looking for ways to cover the risk. Beyond producing 7,000 market hogs per year, Wiand wanted a more rewarding outlet for pork. She began to research a marketing plan for value-added pork products, then used a SARE grant to put the plan into place.

"I felt value-added pork would increase farm income, allow us to maintain the same number of animals, improve the quality of life and continue to be active in production agriculture," she said.

Wiand did research into all angles of the plan and set the basic framework for the business. "It took nearly two years to develop the products, labels and retail site," she says. "It takes a lot of work to determine where to slaughter and package the meat and label and market it."

She obtained a Pennsylvania Department of Agriculture certificate to sell meat as a retailer from her home and also participates in area farmers markets. A local USDA-certified packer processes the meat, which Wiand stamps with her own "Olde Stonehouse Farm" label featuring a picture of the 1811 house. She has labels for 12 different products – smoked country bacon, Canadian bacon, boneless ham and specialty sausages among them – along with a generic label that can be used on fresh pork and even ultimately beef or lamb, if her business expands.

Wiand's retail shop, which is open Thursday-Saturday, is registered with the state department of agriculture. She currently slaughters one or two hogs per week for her local customers.

"Inventory management is challenging," she said. "It can be difficult to sell all of the cuts from every hog every week." Wiand works with federal prison procurement officials to move pork at cost and is exploring opportunities to donate excess product to community shelters and nursing homes.

Reaching into the community and being able to help her family is the greatest reward of the business, Wiand said. "I get to be with my kids and it feels good to be able to offer top-quality pork products to people. I am leaving my options open to grow the retail business or even explore ways to supply one or more major grocery chains in our area. Every step requires finding the right people to work with and convincing people your business is legitimate."

genetics, nutrition and other management strategies to meet quality standards. "If you want a cooperative venture like this to be successful, producers have to communicate from the very beginning," he said.

With start-up help from a SARE grant, a farmer-owned meat marketing cooperative is netting top dollar for its products and providing its 52-member farms with crucial income. Vermont Quality Meats now sells more than $1,000 a day worth of New England lamb, goat meat, pork, veal, venison and game birds – most of it to upscale New York and Boston restaurants at double regular auction sale prices. The cooperative has put between $100,000 and $150,000 extra profit into the pockets of producers, estimates diversified livestock farmer Lydia Ratcliff.

Cooperative members benefit from both lower production costs and higher sales prices by meeting market demand for significantly younger animals. About 10 part-time jobs have been created through the project, all of which are filled by co-op members, further supplementing farm income. "Our farmers are also getting the reward of knowing they're producing such fine products that their efforts are being recognized by some of the most distinguished chefs in the country," Ratcliff said.

Minnesota crop and livestock farmer Carmen Fernholz sells hogs on the conventional market through a buying station that he operates about 10 miles from his family farm. To obtain advance contracts, most producers need to supply 40,000 pounds of carcass, or 225 head, which can carve small producers out of the market.

By pooling their product, the hog producers with whom Fernholz works are able to secure their market price in advance. Between 1997 and 2000, the station served up to 50 farmers in a 30-mile radius. Under the arrangement, farmers let Fernholz know how many head they have to sell. Fernholz then coordinates truck transportation and works with a National Farmers Organization office in Ames, Iowa, to secure a buyer. Farmers bring about 50 to 100 hogs to the buying station for shipping each week.

"We were losing market access, and that was critical," Fernholz says. "If a group of us can each contribute 20 to 25 head toward a forward contract then we can all price-protect ourselves."

Taste

Pork produced from pigs raised on deep bedding proved tastier than pork from confinement animals, a study at

Texas Tech University found. They compared pork loins from a large swine operation that raises pigs on slatted floors versus 20 pork loins in a deep-bedding system, measuring responses from a trained sensory panel. Results, published as an abstract in the *Journal of Animal Science*, indicated that pigs housed on bedding produced pork that was juicier and better tasting. Moreover, carcasses from the deep-bedded group had a lower trim loss – 5.8 percent compared to 14.9 percent for the group raised on slats.

"Historically, consumers' desires have been fairly simple – to have cheap but wholesome food," said John McGlone, head of Texas Tech's Pork Industry Institute. "Now a large segment of consumers is demanding new requirements from the meat they buy."

Organic Pork

Raising pork organically – and marketing it that way – presents another profitable niche. In 2000, USDA announced the final standards for organically grown agricultural products, including practices that can be used in producing and handling organic livestock.

Organic meats appear to be part of a growing niche market. While organic food makes up a small share of retail sales, it is growing by about 24 percent a year. The Food Marketing Institute, an organization representing food retailers and wholesalers, found that 37 percent of consumers look for and purchase products labeled as organic.

All agricultural products labeled "organic" must originate from farms or handling operations certified by a state or private agency accredited by USDA. Farms and handling operations that sell less than $5,000 of organic products per year are exempt from certification. Animals for slaughter must be raised under organic management from the last third of gestation. Producers are required to use certified organic feed, but they may provide vitamin and mineral supplements.

Organically raised animals must not be given hormones or antibiotics. If an animal is sick or injured, producers must not withhold treatment, even if that means administering antibiotics and selling the meat on the conventional market. All organically raised animals must have access to the outdoors, and be confined only for health, safety or stage of production reasons, or to protect soil or water quality.

For more information about organic pork production, see "Resources" p. 16.

PART 4
Community, Family and Lifestyle Benefits

Working Conditions

LABOR, A HUGE FACTOR IN THE LIFE OF ANY FARMER, TAKES ON a new perspective in hog operations. Toxic gases and associated offensive odors from manure produced as part of a confined system remain a major concern, while producers trying alternative housing systems report few or no problems.

"There's no comparison," said Mark Moulton, a Rush City, Minn., swine producer who uses a deep straw system. In a hoop barn, "there's no runoff, there are no lagoons and no gases. The smell doesn't compare."

When Moulton's neighbors saw him building hoop barns, they were concerned about pungent odors wafting across their fields. Over the past few years, however, they have found their fears groundless. Moulton invited them and others to a picnic 10 feet from his hoop house.

"You couldn't smell a thing," he said.

For producers, working with animals directly can be more rewarding than shoveling grain to pigs in crates. The systems require more attention and pig handling, which many producers relish.

"It's relatively easy, the pigs will teach you how to do it," Honeyman said, "and it can be rewarding if you like working with animals." Hogs, which Honeyman said may be smarter than dogs, are fun to work with.

Alternative swine production systems are for people "who like managing animals rather than equipment and machinery," he continued. "One reason people raise animals is because they want contact with them. In confinement, we've automated ourselves into managers of the system rather than working animals."

Dwight Ault, who has raised hogs for more than four decades, genuinely enjoys working with pigs. Once he switched to winter farrowing in a deep-straw system, he found he could hone his husbandry skills. "It's wonderfully productive," he said of the system. "It gives me more time with the hogs and a chance to observe."

Health

Research has turned up potentially troubling information about the health of workers in confinement systems. David Schwartz, a University of Iowa pulmonary specialist, and other researchers found that workers were prone to upper respiratory disorders from lungs inflamed from exposure to grain dust, airborne particles of fecal matter, and other debris and gases such as ammonia, hydrogen sulfide, carbon dioxide and carbon monoxide from hog manure in confinement barns.

Workers in confinement buildings have greater incidence of acute respiratory illness – with symptoms such as coughing, sore throats, runny noses, burning or watering of eyes, shortness of breath and wheezing, chronic bronchitis, and inflammation, wrote Kelly Donham of the Iowa Center for Agricultural Safety and Health in the *Journal of Agromedicine*. Others have reported reduced lung function.

The dust and gases blamed for such ailments are much less prevalent, or nonexistent, in alternatives such as hoop structures or pasture systems. Moreover, alternative system producers do not administer antibiotics for disease prevention. Administering antibiotics to livestock has been blamed for lowering the effectiveness of those medicines for the treatment of human health problems because indiscriminate use encourages the evolution of new strains of bacteria immune to drugs.

Family and Community Benefits

Alternative hog production systems provide excellent opportunities for producers to work with other family members and develop relationships with other workers. In some cases, children can check and bed huts, while older children can help with fencing, feeding, watering and bedding. An alternative system also allows family members to work as a team in moving pigs, setting up pastures, placing huts and shelters, laying water lines and feeders and rounding up pigs for weaning or treatments.

Vic Madsen of Audobon, Iowa, who uses hoop houses in his hog production system, told participants at an annual Iowa swine systems conference in 1999, that alternative systems meet the "fun test" in helping producers do a better job.

"This winter, my 15-year-old son helped me put cornstalk bedding in a hoop with finishing hogs," Madsen said. "When we were done, he started laughing out loud. One of the pigs had picked up a corncob, had it sideways in his mouth like a big old cigar, and was literally prancing around the building. That pig made chores fun for my son."

Greg Gunthorp's prices average 10 times what hogs fetch on the commodities market, although the bottom line for Gunthorp is making enough money to keep his family healthy and happy.

– Photo by Kathy Dutro, Indiana Farm Bureau

Dwight Ault finds raising pigs on pasture enjoyable as well as profitable and environmentally sound.

"It is a real treat for me and the sows when they are taken to pasture," he said. "It is good for mental outlook, a kind of therapy that farmers need. To me, it is a joy when you watch sows munching green legumes and grass after a winter of dry feed."

Small, independent producers also can stimulate local economies. Independent producers use local veterinarians, farm supply stores and feed companies, and pay local truckers to transport their animals. Other businesses may receive indirect support from additional dollars circulating in the local economy.

Profits from an independent producer can multiply three or four times in a community, said University of Missouri rural sociologist William Heffernan. Profits from a corporate or private company-owned farm leave the community almost immediately.

Patchwork Family Farms in Columbia, Mo., brings different segments of society together that are connected by an interest in quality meat or pork raised by independent producers. The co-op, which sells pork from its retail outlet, collects about $3,000 in four hours on sales days. With prices competitive with conventionally raised pork, the co-op is able to serve both low-income and affluent residents.

"You'll see a homeless shelter resident, a doctor in a suit and a university professor, and they're all standing in line talking," said Lindsay Howerton, the co-op's marketing coordinator. "We know this is something special, because usually these people wouldn't interact. They're all talking about where their food comes from."

Alternative Swine System Resources

– Photo by Prescott Bergh, courtesy of Minnesota Department of Agriculture

GENERAL INFORMATION

Sustainable Agriculture Research and Education (SARE) program USDA, 10300 Baltimore Avenue BARC West, Bldg. 046, Beltsville, MD 20705; san@sare.org; www.sare.org
SARE studies and spreads information about sustainable agriculture via a nationwide grants program. See specific research findings at www.sare.org/projects/

Appropriate Technology Transfer for Rural Areas (ATTRA) P.O. Box 3657, Fayetteville, AR 72702; (800) 346-9140; http://attra.ncat.org/
Provides assistance and resources free of charge to farmers and other ag professionals.

Alternative Farming Systems Information Center (AFSIC) USDA National Agricultural Library, Rm 132, Beltsville, MD 20705; (301) 504-6559; afsic@nal.usda.gov; www.nal.usda.gov/afsic
Provides on-line information resources, referrals and database searching.

Iowa State University/ Mark Honeyman Honeyman has written many articles on sustainable hog production and is doing research on hoop shelters and Swedish deep-bedded group nursing systems. For alternative swine production systems information and research results:
B1 Curtiss Hall, Iowa State University, Ames, IA 50011 (515) 294-4621; honeyman@iastate.edu

Minnesota Institute for Sustainable Agriculture (MISA) Alternative Swine Production Systems Program, 385 Animal Science/Vet Med, 1988 Fitch Ave., University of Minnesota, St. Paul, MN 55108; (877) ALT-HOGS; (612) 625-6224; marti067@tc.umn.edu www.misa.umn.edu/programs/altswine/swineprogram.html

Texas Tech University Pork Industry Institute For a free sustainable outdoor pork production information package, (806) 742-2826 or www.pii.ttu.edu

PUBLICATIONS

A Gentler Way: Sows on Pasture Inspirational testimonials from Minnesota and Iowa hog farmers.
Free from Alison Fish Minnesota Department of Agrigculture; (651) 296-7686. alison.fish@state.mn.us

An Agriculture that Makes Sense: Making Money on Hogs Describes and analyzes a 50-sow sustainable hog enterprise in Minnesota. $4 to Land Stewardship Project, 2200 4th Street, White Bear Lake, MN 55110; (651) 653-0618; www.landstewardshipproject.org/resources-pubs.html #hogs

Graze A monthly magazine offering production information on dairy, beef, sheep, hogs and poultry. $30 for one year (10 issues). To subscribe or for free sample, contact: Graze, P.O. Box 48, Belleville, WI 53508; (608) 455-3311; graze@mhtc.net; www.grazeonline.com/

Hogs Your Way Options for keeping all sizes of hog production systems profitable and environmentally friendly. Includes profiles of hog farmers successfully using Swedish deep-straw farrowing systems, pasture farrowing and hoop house finishing. $5 plus s/h to Minnesota Extension Service Distribution Ctr, Item #07641; (800) 876-8636; www.extension.umn.edu/units/dc/abstract.html? item=07641

The New American Farmer A collection of in-depth interviews with farmers and ranchers across America, including profiles about diversified hog farmers. $10 to Sustainable Agriculture Publications, 210 Hills Bldg., UVM, Burlington, VT 05405-0082; (802) 656-0484; sanpubs@uvm.edu; www.sare.org/newfarmer

Swine Breeding, Gestating & Housing Series. MidWest Plan Service, (800) 562-3618; www.mwpshq.org/catalog.html, click on "Livestock"

Swine Source Book: Alternatives for Pork Producers A collection of research and demonstration articles that focus on hoop structures, Swedish deep bedding, pasture systems, low antibiotics and marketing. $30 plus s/h from Minnesota Extension Service Distribution Ctr, Item# 07289; (800) 876-8636; www.extension.umn.edu/units/dc/abstract.html?item=07289

The Stockman Grass Farmer This monthly magazine is devoted to the art and science of turning grass into cash flow. $32/year. To subscribe or for free sample, contact: The Stockman Grass Farmer, P.O. Box 2300, Ridgeland, MS 39158; (800) 748-9808; www.stockmangrassfarmer.com

WEB SITES, LISTSERVS AND E-PUBS

Swine-L Hosted by the University of Minnesota and maintained by the staff of Swine Health and Production, a journal published by the American Association of Swine Veterinarians.
www.aasp.org/swine-l.html

Appropriate Technology Transfer for Rural Areas (ATTRA) On-line hog information ;

Alternative Marketing of Pork www.attra.org/attra-pub/altpork.html

Hooped Shelters for Hogs www.attra.org/attra-pub/hooped.html

Organic Matters: Considerations in Organic Hog Production http://attra.ncat.org/attra-pub/PDF/omhog.pdf

Sustainable Hog Production Overview www.attra.org/attra-pub/Hogs.html

American Farmland Trust Grazing Links http://grassfarmer.com/glink.htm

Hoop Structures for Swine Leopold Center for Sustainable Agriculture. www.abe.iastate.edu/hoop_structures/

Missouri Alternatives Center http://agebb.missouri.edu/mac/links/index.htm

Pigs on Pasture – The Gunthorp Farm http://grassfarmer.com/pigs/gunthorp.html; www.sare.org/newfarmer/gunthorp.htm

Swine Facilities for Production on Pasture Oklahoma State University Cooperative Extension Service Swine Publications, www.ansi.okstate.edu/ten/swine/F-3676.PDF

Top Ten Reasons for Rural Communities to be Concerned about Large-Scale, Corporate Hog Operations By John Ikerd, Univ of Missouri Agricultural Economist. http://ssu.agri.missouri.edu/faculty/jikerd/papers/TOP10.html

USDA National Organic Program Richard Mathews (202) 720-3252 richard.mathews@usda.gov

SARE works in partnership with Cooperative Extension and Experiment Stations at land grant universities to deliver practical information to the agricultural community. Contact your local Extension office for more information.

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