

SPECIAL ISSUE

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PERC REPORTS

The Center for Free Market Environmentalism



AGRICULTURE AND THE ENVIRONMENT

FROM THE EDITOR

THINKING OUTSIDE THE HEDGEROWS

If there is any group that ought to be high on PERC's list of heroes, it is farmers and ranchers. As owners and lessees of land, they are living testimony to the productivity and stewardship that come from private ownership. Yet there are some environmental problems down at the farm. PERC has been spending a lot of time figuring out why. Not surprisingly, federal policies have something to do with that.

Two years ago, PERC associates began a three-year study of agriculture, especially the impact of federal policies. Initiated by Bruce Yandle, this research has led to many activities, including a PERC Policy Forum and a forthcoming book, *Agricultural Policy and the Environment*, edited by Roger E. Meiners and Bruce Yandle. It provided the impetus for our 2002 conference for journalists, as well as an economics curriculum for high school students, "In Farmers and Ranchers Do We Trust?" This special issue of *PERC Reports* offers a sampling of the ideas and information that have emerged so far.

Among the greatest concerns surrounding agriculture are the multi-billion-dollar federal subsidies. P. J. Hill, a PERC Senior Associate, professor of economics, and rancher, explains how so few farmers can so effectively tap into the federal treasury. Dan Zinkand, an editor with *Iowa Farmer Today*, urges critics to ponder what may happen if—or, as he believes, when—these major crop subsidies disappear.

Linda Platts tells us about Kelmscott Farm in Maine, founded by Robyn Metcalfe. Its goal is to maintain and restore endangered livestock breeds such as Cotswold sheep and Kerry cows. PERC Research Associate Clay Landry reports on cooperation between breweries and agriculture. His story will appear in *Ecological Agrarian*, a book by J. Bishop Grewell and Landry, forthcoming from Purdue University Press.

Linda Platts' regular feature, "Greener Pastures," also has an agricultural theme, while Daniel Benjamin's "Tangents" explores how land preservation could be more effective. One of the researchers he features is R. David Simpson, a Julian Simon Scholar at PERC this summer.

I hope that these essays will help you think "outside the hedgerows." Anticipate more such stories (and maybe some reaction to these) in the months ahead.

Jane S. Shaw

From left: Yandle; Meiners; Zinkand; and Metcalfe.



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WHAT'S SO SPECIAL ABOUT THE FARM?

Championed by Thomas Jefferson, agriculture has long had an exalted place in the thinking of Americans. And the farming sector's continuing economic struggles have strengthened its case for government intervention.

WHY AGRICULTURE RECEIVES FAVORS

By P. J. Hill

A well-known historian captured the relationship between the U.S. government and agriculture: “No sector of the economy has received more systematic government attention, more technical assistance, more subsidy for research and development, more public investment in education, and energy supply, and in infrastructure, more price stabilization, more export promotion, more credit and mortgage relief” (Schlesinger 1984, 8).



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This intervention has allocated farm inputs inefficiently and encouraged overproduction—often at the cost of environmental quality. For example, sugar subsidies have resulted in pollution of the Everglades (Thurman 1995, 33–38), the Bureau of Reclamation has dammed many free-flowing streams and its rules (plus state laws) have kept water from moving to higher-valued uses outside agriculture (Anderson and Snyder 1997; Gardner 2003), government spraying of DDT caused significant environmental damage because of its exemption from common lawsuits (Meiners and Morriss 2001), and crop support programs have encouraged excessive use of pesticides and fertilizers (Thurman 1995, 15–29).

How did this happen? How did politics replace markets and property rights as the allocation mechanism for agriculture?

The “bootleggers and Baptists” theory of regulation, developed by Bruce Yandle, helps explain government intervention in agriculture (Yandle 1983). Yandle explains that those who seek government favors (the bootleggers who increase sales through a ban on legal liquor sales) ally with those seeking the same objective but for moral reasons (Baptists, who want sales banned on the grounds that drinking liquor is wrong). Although the alliance may be inadvertent, it leads to governmental control in the interests of both.

The appeal of agriculture as a superior way of life has given farmers the moral cover that the Baptists gave bootleggers. Championed by Thomas Jefferson, agriculture has long had an exalted place



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Low farm incomes have been the result of the market process signaling to farmers that many of them need to move out of that sector. Many have responded to that signal. In 1800, 75 percent of the labor force was in agriculture. Today it is less than 2 percent.

in the thinking of Americans. And agriculture's continuing economic struggles have strengthened its case for government intervention. Low farm incomes have been the result of the market process signaling to farmers that many of them need to move out of that sector. Many have responded to that signal. In 1800, 75 percent of the labor force was in agriculture (Margo 2000, 213). Today it is less than 2 percent (Myers and Kent 2001, 48).

Those remaining have been able to parlay the sympathies of the general population into government intervention, thanks to the principle of concentrated benefits and diffuse costs. Most agricultural programs are targeted to a very small group while the costs are borne by taxpayers and consumers as a whole. Congress or a regulatory agency will feel great pressure from those who stand to benefit from a subsidy, while those bearing the cost find it difficult to organize and find opposing the subsidy hardly worth their time.

The self-interest of those in government also aids agricultural programs. The Department of Agriculture has grown to more than 100,000 employees (U.S. Census Bureau 2001, 319) who benefit from program maintenance and expansion.

Through their producer organizations, farmers have been able to make common cause with politicians who find "saving the family farm" to be useful rhetoric. Furthermore, as agricultural employment has declined, the costs of organizing producer groups have fallen, and the increase in farm size has meant that benefits of agricultural programs are even more concentrated than in the past.

In spite of these forces, however, for the first seventy-five years of the nineteenth century the Constitution provided a formidable bulwark against governmental intervention. Tariffs and subsidies for transportation were the two exceptions, but the basic tenor of constitutional interpretation limited exceptions.

The one area in which the Jeffersonian ideal did play a substantial role was in land policy. The federal government was responsible for disposing of a huge amount of land and, until the Progressive era, there was a general commitment to transferring land to private hands. Unfortunately, the ideal of the family farm and the dislike of speculation in land created inefficiencies in land policy (see Anderson and Hill 1980).

Agriculture also received support from the 1862 Morrill Act,

which created the land-grant public universities with the goal of underwriting education in agriculture and the mechanical arts. However, more significant pressure for government intervention came after the Civil War through constitutional interpretation.

Agrarian unrest—primarily, dissatisfaction with low prices and high costs—during the post-Civil War period led several Midwestern states to pass laws regulating the rates of railroads and other enterprises, in particular, grain elevators. Such blatant price regulation would have been declared unconstitutional in the past, but the courts broke new ground (see *Munn v. Illinois* 1877). Under what became known as the public interest doctrine, railroads, elevators, and farm mortgage companies were viewed as using their property in the public interest and thus were subject to public regulation. Finally, in *McCray v. United States* in 1904, the court upheld a statute that regulated margarine production. In a move to help dairy farmers, the law placed a tax of ten cents per pound on artificially colored margarine, but only one-quarter cent per pound on the uncolored product. After *McCray v. United States*, discriminatory taxation became available to farmers.

Other opportunities came from the U.S. Congress. In 1902, the Bureau of Reclamation was established with the goal of “making two blades of grass grow where one had grown before” through irrigation projects. Repayment provisions for these projects were either extended or forgiven during times of agricultural hardship. Other interventions included the creation of the agricultural extension service in 1914 and the Federal Farm Board of 1929, which was designed to raise the prices of agricultural output through government purchase and storage (Pasour 1990, 71–72).

With the onset of the Great Depression, output prices for agriculture declined by more than 50 percent, while input prices fell only slightly. The banking sector collapsed. With small towns and the rural economy hard hit, twenty-five states passed legislation delaying farm foreclosures (Alston 1983). Economic conditions had not been propitious for farmers in the 1920s, but with the deepening crisis of the 1930s, Congress responded. The Agricultural Adjustment Act of 1933 gave broad powers to the secretary of agriculture to intervene in agricultural markets. In 1936, the Supreme Court declared most of the provisions of the



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Blatant price regulation would have been declared unconstitutional in the past, but the courts broke new ground. Under what became known as the public interest doctrine, railroads, elevators, and farm mortgage companies were viewed as subject to public regulation.

act unconstitutional but this limitation was short-lived. Later in 1936, Congress passed the Soil Conservation and Domestic Allotment Act and, in 1938, a new Agricultural Adjustment Act. This legislation withstood court review and reinstated almost all the provisions of the original 1933 law.

In 1934, the Supreme Court had decided another case with important implications for freedom of contract and private property rights. In *Nebbia v. New York* the Court upheld a New York law giving a state milk control board the power to set maximum and minimum prices for milk. The Court used the public interest doctrine of *Munn v. Illinois* in deciding the case. Justice Roberts, writing for the majority, said that “a state is free to adopt whatever economic policy may reasonably be deemed to promote the public welfare” (*Nebbia v. New York*, 291 U.S. 502 [1934], at 537).

Thus by the end of the Great Depression the agricultural sector was well able to secure government subsidies, regulations, and tariffs in its favor. Many of the interventions had negative effects for the environment, but, with respect to these efforts, there was one more shoe waiting to drop.

After 1970, with the rise of environmental legislation, statute law came to trump common law. Statute law is much more amenable to special interest pleadings than is common law (Meiners and Morriss 2000). For example, many states have passed legislation that has exempted certain agricultural operations, in particular large hog farms, from common lawsuits (Yandle and Blacklocke 2003). Under common law, hog operations that cause air and water pollution would have faced liability for their actions.

The history of agriculture in the United States is a prime example of what can happen when special interest pleading is combined with moral approbation. Although the Constitution initially set clear limits on interference with property rights, those constitutional provisions gradually deteriorated. Over time, the state and federal governments gained the power to intervene

in the agricultural economy, and common law doctrine was replaced with statute law, giving further power to those who sought political advantage.

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FACING THE FUTURE

In spite of the passage of the 2002 Farm Bill, which will lead to an estimated \$18 billion in direct government payments this year, there are several indications that these programs are a temporary phenomenon. One sign is the increasing criticism of farm payments in the U.S. media.

CONTEMPLATING THE END OF CROP SUBSIDIES

By Dan Zinkand

Two freshly butchered and eviscerated chickens—pinfeathers plucked and singed—peer out at the world, held up by two bespectacled youngsters. This photograph mesmerized the Philadelphia-born-and-bred children in the show-and-tell class. Then they asked, “Don’t chickens come from the supermarket?”

Farmers lament responses like this one. A public several generations removed from the farm neither understands nor appreciates agriculture, they say. “We’ve got to tell our story better” is the usual conclusion.

But the distance between farmers and urban consumers is not something new. My sister and I held up these tasty fryers some thirty years ago. The photographer was my mother, who grew up on a farm in Kansas and who thought nothing of butchering chickens.

These days, there’s more likely to be confrontation than communication between farmers and consumers. Try repeating this show-and-tell today and protesters from PETA (People for the Ethical Treatment of Animals) would picket the school, squawking for TV cameras. While a conversation between agriculture and the public is worth having, I don’t think it will focus on making the public understand and appreciate modern agriculture. Instead, I think it will continue to escalate into a debate that eventually will result in the elimination of government payments related to production of crops, milk, and other forms of food and fiber. Although some USDA programs will almost certainly remain, support for the so-called “program crops,” which include corn, wheat, cotton, rice and barley, probably will end.

In spite of the passage of the 2002 Farm Bill, which will lead to an estimated \$18 billion in direct government payments this year, there are several indications that these programs are a temporary phenomenon:

- Al Olson, chief executive officer of the Independent Community Bankers of Minnesota, says farmers should not count on commodity payments after this farm bill ends in 2007. Olson, a stalwart Republican who served as attorney general and then governor of North Dakota, made this statement in September. When someone with Olson’s credentials prognosticates, I listen.
- Fighting a war on terrorism exacts a high cost. During the 1980s and 1990s, there was public sympathy and money support for U.S. farmers. This was before the cost of the new war on terrorism, the dot.com implosion, and the sobering effects of corporate scandals. Suddenly scrutinizing costs looks positively chic.



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- Perhaps most significantly, there is increasing criticism of farm payments in the U.S. media even as there is a demographic shift. More people live in urban areas and eventually far fewer legislators will represent “farm districts.” The growing sense of outrage and thinly disguised criticism of farm program payments isn’t confined to “activist” groups.

Consider the tone of these titles: “A New Villain in Free Trade: The Farmer on the Dole,” (*New York Times*, August 25, 2002); “Old McDonald Had a Subsidy” (*Salon*, May 1, 2002); and, most ominously, the recent coffee-table book *Fatal Harvest: The Tragedy of Industrial Agriculture*. These contrast sharply with the save-the-family farm movies in the 1980s such as *Country* with Jessica Lange. With each of these articles, the image of the farmer erodes, from the positive one as a steward who feeds people and cares for the earth to depiction of the farmer as a welfare bum.

I’ve heard estimates that eliminating these payments would cut Iowa’s land values in half and that the effects would be greater than those during the “farm debt crisis” of the 1980s.

If Olson is right that payments to farmers will end, what’s at stake? You can agree or disagree with the current food and agricultural system, but the nation does receive value. A 2002 farm bill summary called “Facts on U.S. Farm Policy” says: Current farm policy costs just 4.4 cents a meal per day; this cost is just slightly more than one-half of one percent of the federal budget; consumers spend a minuscule 10.9 percent of their income on food; current farm policy generates 25 million jobs and contributes \$3.5 trillion in agricultural output (15 percent of U.S. GDP).

Nevertheless, I think the current system of providing payments will disappear. As we contemplate such a change, here are a few of the questions we should be asking.

What will be the short-term impact and who will bear the costs? I’ve heard estimates that eliminating these payments would cut Iowa’s land values in half and that the effects would be greater than those during the “farm debt crisis” of the 1980s. You may doubt this, but it’s prudent to contemplate what this shift might entail. For example, it could increase demand for already-strained social services.

What will farmers be freed to do? Will the end of farm payments force them from being producers of raw materials to makers and sellers of fresh and processed foods, and to generators and sellers of electricity generated from wind and biomass? Will they be compen-

sated for providing clean air and clean water—goods now deemed to be public? Some farmers already do this and I admire their vision and tenacity. Prominent examples are Niman Ranch (www.nimanranch.com), which supplies “free-range and hormone-free” beef, pork and lamb, and Kamut, the business of Montana farmer Bob Quinn, who grows an ancient variety of gluten-free wheat using organic methods (www.kamut.com).

But moving from commodity production to niche businesses and from niches to larger markets is not a slam dunk. Farmers who move from selling milk to making cheese may once again end up being squeezed on the price they receive, says Richard Levins, University of Minnesota economist says. “They lack the market power to successfully face the giant retailers head-on in negotiations over cheese prices.” (See Levins’ “An Essay on Farm Income,” <http://agecon.lib.umn.edu>.)

Elbert van Donkersgoed, strategic policy advisor for the 4,500-member Christian Farmers Federation of Ontario, Canada, says a private supply management system is emerging. “Companies will use value chains—controlling, but not necessarily owning the production of food from field to table—to enhance their market opportunities,” he says. “The strength of value chains lies in the

ability to manage the supply of raw materials and products from field to table. They will manage the supply and the price for the benefit of those in control of the chains. Private price fixing is abhorrent to the public good.”

It’s been argued that the United States could import all of its food from places such as Brazil, China, and Ukraine. But isn’t there value in having people farming in the United States? I believe so. Do consumers want competition between and among farms, agribusinesses and food retailers? Do they want efficiency and competition? Does the public really want the least expensive food? And how do we define least expensive—in terms of money or security?

While I think that the major commodity programs will end, we need to expect the unexpected. Just when free-market advocates gained steam with China’s accession to the World Trade Organization, things changed. Terrorists attacked the United States. Some prominent Americans now stress food security, believing that producing more food domestically increases security. The farm bill summary from the House Agriculture Committee bears these words on the cover: “We are a blessed nation because we can grow our own food and, therefore, we’re secure.” These are not the words of some aging Democratic lefty.

They were uttered by President George Bush.

All it will take—God forbid—is one terrorist act that sabotages the U.S. food system and sickens and kills people. Then certified-safe, domestically-grown food will look inexpensive at almost any price.

“The primary role for the government is to ensure adequate, safe, and affordable food for its citizens,” says Michael Duffy, an Iowa State University agricultural economist. “If a government does not provide food for its people then there will be revolution because a hungry person has nothing to lose.”

After twelve years of covering agriculture and related industries as a journalist, I can say this with certainty: Few of the questions about food and agricultural policy are stupid. Few of the answers are easy. All of the questions are worth asking.

Dan Zinkand is the Agronomy and Biotechnology Editor for Iowa Farmer Today. The opinions expressed here are his alone. Zinkand, the Midwest vice-president of the North American Agricultural Journalists, has worked on a North Dakota pig farm and in an Iowa butcher shop. In September 2002 he attended PERC’s conference for journalists on “Agriculture and the Environment.”

SAVING HERITAGE BREEDS FROM EXTINCTION

THE KELMSCOTT FARM HAS A MISSION

By Linda Platts

Robyn Shotwell Metcalfe, a former management consultant, never imagined she would take up farming. But that was before she went to England and met the Cotswold sheep. At one time, it was a common farm animal along with the Kerry cow, Gloucestershire Old Spots pig, Black Jersey Giant chicken, and English Shire horse. Today, many of these animals are teetering on the edge of extinction. Modern agriculture has relegated them to obscurity in preference for more efficient breeds.

Metcalfe was moved by the plight of the animals, but she also saw the bigger picture, the threat to biodiversity. Extinction would mean the loss of invaluable genetic material. If she wanted to help save these rare breeds, farming was the way to go. After a brief go at raising sheep in Silicon Valley, she bought a 150-acre farm in Maine and established the Kelmscott Rare Breeds Foundation to give these unique animals a chance at survival.

The Cotswold sheep was Metcalfe's introduction to livestock breeding. Although she had no experience to draw upon, she says, "I did my own research. I talked to people, and more people, and did some digging until I had a little bit of knowledge, which is always dangerous because it leads you to think that you might actually be able to do it."

Soon after her husband signed on to the project, she had six Cotswold sheep milling about her yard.

In response to her hard work, her small flock flourished, so when the police arrived to investigate a complaint of animal cruelty, she could not have been more shocked. Apparently neighbors in her upscale community had reported her for leaving the sheep out in the rain.

Metcalfe quickly managed to clear up any misunderstanding with the authorities, but the irony of the situation remained. Cotswold sheep are known for their hardiness. They have dense coats of long, coarse, curly wool and can easily withstand cold, wind, and rain. For those whose memories extend back to pre-polar-fleece days, wool was the fabric that kept you warm when it was wet. Cotswolds can forage for themselves and have a strong mothering instinct, ensuring a high survival rate for their lambs. A bit of California rain would do them no harm.

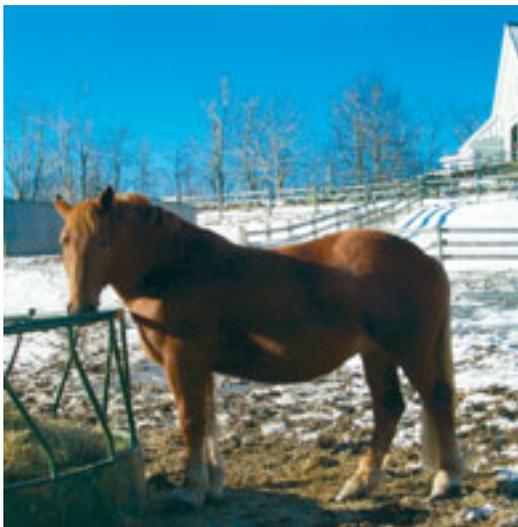
The characteristics that made the Cotswold so valuable to farmers in the 1800s and early 1900s are mostly inconsequential today. Farmers



© Kelmscott Farm

Cotswold sheep are known for their hardiness. They have dense coats of long, coarse, curly wool and can easily withstand cold, wind, and rain. Cotswolds can forage for themselves, do not need supplemental feed, and have a strong mothering instinct, ensuring a high survival rate for their lambs.

At Kelmscott Farm, the mission is not only to save rare breeds from extinction, but to find a niche for them in the modern world where their unique characteristics will have value in the marketplace. Kelmscott Farm is not a museum for the animals; rather, it is a place to breed them and to educate the public about the importance of heritage livestock.



© Kelmscott Farm

prefer sheep that grow a softer wool, and they are more concerned with meat yield than mothering.

The most extreme example of breeding for consumers may be the turkey. Preference for white meat has led to the creation of turkeys with such huge breasts that they are no longer able to perform the act of procreation. The frozen turkeys in the freezer section of the local supermarket are brought to you through artificial insemination.

Modern agriculture has bred animals that are ideal for mass food production. They grow more quickly, reproduce faster, and give more milk, more meat, and more eggs than the old breeds. What has been lost in the process is a certain hardiness and self-sufficiency that is common to wild animals.

The other downside of this high-production model is the reliance of the entire industry on a handful of breeds. For example, the Holstein cow provides 95 percent of our milk. It is a prodigious producer at 24,000 pounds a year compared to the Kerry cow, which can manage only 8,000 pounds. Eggs, broiling chickens, and pork products face the same problem; two or three breeds are responsible for most of the production. If disease should target these breeds, food supplies would plummet.

To prevent just such a disaster, Kelmscott Farm and a small number of other breeders are saving heritage livestock and thus preserving biodiversity. During the recent outbreak of mad cow disease in Britain, American breeders anticipated they might have to supply the country with new genetic material.

Metcalf's approach to saving rare breeds is to re-establish market niches where the unique characteristics of the animals will have value. Kelmscott Farm is not a museum for the animals; rather, it is a place to breed them, to introduce them to farmers and producers, to sell them, and to educate the public about the importance of heritage livestock.

On a recent visit to Kelmscott Farm, neat gray barns and sheds overlooked a panorama of red and gold autumn leaves. The pastures and pens were stocked with 200 animals representing twenty varieties of sheep, pigs, cows, horses, and poultry. David Oakes, the farm manager, was eager to show off his charges, most of which were soaking up the late fall sunshine. The waterfowl at the pond were entertaining a flock of Canada geese, while the chickens pecked without pause in the farmyard. A Gloucestershire Old Spots sow watched her rowdy piglets fight for a friendly scratch from the visitors. And a Jacob's sheep with beautiful curving horns pranced



To preserve as much biodiversity as possible among their reduced numbers, cloning was the only option. A tiny piece of Princess's ear (Princess is pictured above) was delivered to Infigen Inc., a biotechnology company in Wisconsin. The DNA was extracted and inserted into the eggs of a common Yorkshire pig. In April, the piglets were delivered naturally—the first endangered swine in the world to be cloned.

daintily while the warmly clad Cotswolds chewed.

The scene could easily have been one from a hundred years ago, but Oakes was quick to point out that despite appearances, the farm operates with all of the advanced technology of the twenty-first century. In one of the lower pastures, two identical piglets nuzzled and played. They were cloned from a Gloucestershire Old Spots sow that was the last of her bloodline, but too old for breeding. To preserve as much biodiversity as possible among their reduced numbers, cloning made sense. A tiny piece of Princess's ear was delivered to Infigen Inc., a biotechnology company in Wisconsin. The DNA was extracted and inserted into the eggs of a common Yorkshire pig. In April, the piglets were delivered naturally—the first endangered swine in the world to be cloned.

Perpetuating breeds the old-fashioned way is what normally happens at Kelmscott. In order to do this, Metcalfe is slowly setting in motion the wheels of supply and demand. "You have to demonstrate to a farmer that there is a good compelling reason for taking these breeds on because they have been deemed to have no commercial value," Metcalfe says. "When you show that you can make a profit at it, this will hook the farmers into raising them."

As a one-person marketing department, Metcalfe packed a leg of lamb in a red Coleman cooler and hopped a bus from Maine to Boston. She had an appointment with a top-of-the-line meat retailer who sells to gourmet chefs. At the meat counter, she revealed her leg and announced, "You should buy this because it is fabulous meat." They tried it. They liked it. They bought it. Chefs at three five-star restaurants in New York now list pasture-raised, heritage breed, Kelmscott Farm lamb on their menus.

"The chefs are really into this now," Metcalfe says. They love the tenderness and the subtle flavor of the lamb that doesn't require it to be doused in sauces and herbs. Orders are flowing in and the meat is commanding nearly double the price of commodity lamb. Metcalfe has stimulated demand, and in so doing created a supply problem. "Right now we are trying to increase supply so we are looking for more pastures and ways to get additional animals on the market," At this point, farmers might be able to see some of the advantages of raising old breeds.

The more consumers who eat pasture-raised meat, the more old breeds that will survive. It might seem counterintuitive to eat animals in order to save them, but the market works.

Linda Platts is PERC's Editorial Associate and Web site manager. She recently visited the Kelmscott Farm on a trip to Maine.

BEER FOR BESSIE

During the brewing process, a rich, sugary brew is siphoned off to fermentation tanks. Left behind are heaps of wet, soggy grains, often called spent or brewers' grains—4.5 million tons of them. Fortunately, farmers know how to use these grains.

FARMERS AND BREWERS MAKE A DEAL

By Clay J. Landry

The beer industry uses more than 400 million tons of grains annually, and that poses a problem. What do you do with mountains of wet grains?

The brewing process begins by grinding barley or other grains, immersing them in water, and boiling them to extract the sugars and starches. The rich sugary brew is siphoned off to fermentation tanks. Left behind are heaps of wet, soggy grains, often called spent or brewers' grains—4.5 million tons of them. Fortunately, farmers know how to use these grains.

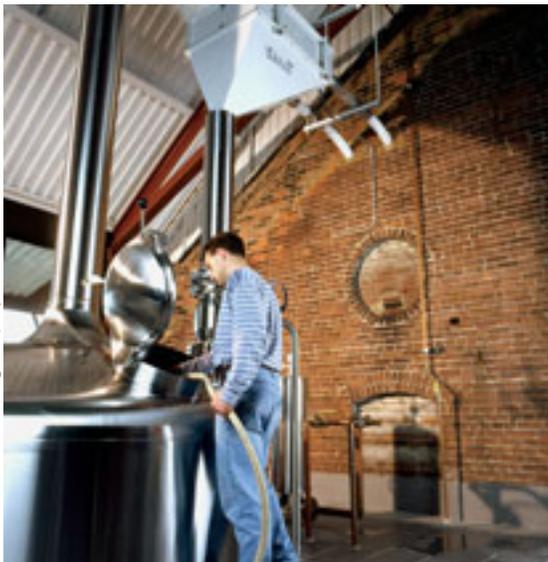
For industry entrepreneurs such as George Wornson, manager of Miller Brewing's by-products business, spent grains are an opportunity. Committed to virtually eliminating landfill use, the company had to find new uses for its grain waste. Marketed under the brand name Barley's Best, the grains are sold to farms and commercial bakeries as a fiber supplement (Wornson 1989).

Similarly, Anheuser-Busch keeps all of its spent grains out of landfills. Most end up as food for milk cows. In 1999, Anheuser-Busch sold 1.76 million tons of spent grains to dairy farmers to feed more than 200,000 cows.

One problem with the grains that breweries sell to farmers is that they are wet. They can be stored for only two weeks before the smell could "gag a maggot," reports Mark Hissa, an Ohio dairy farmer who uses spent grains as feed (quoted in O'Malley 1997). Wet grains are also expensive to transport and ship because of the added water weight.

During the early days of the wet grain industry, larger beer manufacturers installed drying facilities to make their grain more appealing to farmers. However, most major brewers are moving away from drying because it is expensive and energy-intensive. And, according to the Nebraska Institute of Agriculture and Natural Resources, wet grains provide more nutrition. The study found that feeding wet by-products to livestock compared to dried grains yielded cumulative net economic benefits of \$215 million in Nebraska from 1992 through 1999 (Perrin and Klopfenstein 2000).

Wet or dry, major brewers have developed a variety of outlets for their spent grains. "We're always looking for new uses for our spent grains," said Steve Rockhold of the Coors brewery.¹



© Great Lakes Brewing Company



Today, local farmers have again become vital for waste disposal for small microbreweries like Cleveland's Great Lakes Brewing Company.

Coors started forming pellets with some of its grain so that the product can be shipped internationally. The pellet-shaped grain makes tasty bite-sized morsels for livestock in foreign markets. The pellets are also easier to handle, ship, and store.

The revival of local beers has renewed an old tradition between local farmers and breweries. In the past, farmers would show up each week and haul off as much spent grain as needed. They took small loads that would fit in their farm trucks. After World War II, however, consolidation occurred in the industry and small local breweries gave way to large commercial breweries that produced more spent grain than local farmers could handle.

Today, local farmers have again become vital for waste disposal for small microbreweries like Cleveland's Great Lakes Brewing Company. Great Lakes and six other breweries contract with Mark Hissa, who runs a dairy just outside of Cleveland. The dairy sends a dump truck into the city about five times a week, picking up mushy mixes of wheat, oats, and barley. "Each cow gets a big shovel full in the morning and one at night," explains Hissa. The grain has lost much of its sugars, enzymes, and flavor in the brewing process, but according to Hissa, it contains enough protein to supplement a cow's regular rations of corn, dry grains, and hay (Truini 2001).

In 1988, Ohio dairy farms were struggling with a shortage of food supplements for their cattle due to an extended drought. Even a small amount of grain would be helpful. As luck would have it, Hissa's uncle stopped into the Great Lakes, Cleveland's first microbrewery, for an evening pint. He spotted barrels of spent grain stacked in the alley. He mentioned it to his nephew and shortly afterward a handshake agreement was struck between Hissa and Great Lakes. The brewery did not want money for the grain as long as the dairy agreed to pick up the grains on a regular basis.

The brewery's popularity grew. As other microbreweries opened, word of the dairy's free pickup service got around. Hissa had to buy a small dump truck to handle the volume. "The cows gobble it up," said Jim Conway, co-owner of Great Lakes (quoted in Truini 2001).

Another real brewing problem is—what do you do with beer that has outlived its shelf life? Until recently, the Canadian brewery Molson paid the city of Edmonton to dispose of stale outdated beer.

Now that same beer is being served to cattle at a nearby ranch. Molson's outdated brews are mixed with the regular cattle feed to create a kind of wet mash. Each cow gets a daily allotment of 10 pounds of beer (the equivalent of about 12 bottles) mixed with 40 pounds of feed. The cows don't get tipsy, though. Cows have a complex stomach that breaks down the alcohol in beer, transforming it into nonalcoholic food energy.²

And then there are hogs. The pigs of Fen Farms in British Columbia are slurping a little louder these days thanks to a balanced diet of grain and beer. The porkers throw back over 100 gallons of beer a day as part of a project to develop low-cost liquid feed from beer by-products. The supplier is the Labatt brewery of New Westminster, British Columbia. The pigs are in hog heaven, banging snouts together to be the first in line for the new feed. Yet there aren't any soused sows. The alcohol is removed from the beer waste during the brewing process.

In sum, the beer industry has solved many of its spent grain disposal problems by partnering with agriculture. The solution wasn't more regulations or subsidies for recycling, but the desire to reduce costs and create new sources of revenue.

NOTES

1. Telephone interview with Steve Rockhold, special products manager for Coors, August 16, 2001.
2. Telephone interview with Peter Rochefort, environment specialist for Molson, June 6, 2001.

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Clay J. Landry is a PERC Research Associate and a principal with WestWater Research, LLC, a leading firm in water marketing. This essay is adapted from Ecological Agrarian, by J. Bishop Grewell and Clay J. Landry (Purdue University Press, forthcoming).



Outdated brews are mixed with the regular cattle feed to create a kind of wet mash. Each cow gets a daily allotment of 10 pounds of beer (the equivalent of about 12 bottles) mixed with 40 pounds of feed. The cows don't get tipsy, though.

By Linda Platts

WASTEWATER ON SALE

A tidal wave of wastewater from rapidly growing towns and suburbs is creating a headache for officials in counties north of San Francisco. Somehow, somewhere, they have to dispose of it. Small farmers who buy the water for agricultural uses have helped relieve some of the pressure. They also have eased the problem in another way. By continuing to farm their land rather than sell out for new subdivisions or shopping malls, they have put the brakes on development that creates more wastewater.

In Santa Rosa, Calif., farmer Kevin McEnnis is proud of the fact that he uses recycled urban wastewater on his five acres of broccoli, beets, scallions, and winter squash. The water is highly treated at a regional facility and is similar in quality to swimming pool water. When McEnnis takes his produce to local farmer's markets, he does not hesitate to give his customers the facts about his farming methods. He tells them he uses no pesticides or synthetic fertilizers, but he does use recycled wastewater. Other farmers have been slower to try out the treated water for fear the stigma of sewage could hurt their sales.

McEnnis believes that better education for both consumers and farmers about the benefits of wastewater would lead to wider acceptance of its use. He is committed to using recycled water rather than siphoning off fresh water from rivers and streams.

He also wants to maintain the rural character of the area and preserve open space, which means keeping farmers in business. This growing source of water is one way to give farmers a leg up and also provide water for thirsty parks, golf courses, and highway landscaping. But even with more users signing on, the city continues to seek new contracts for its wastewater. In California, even slow growth can seem fast.

—*Santa Rosa Press Democrat*

A BLAST FROM THE PAST

Grain growers in Washington's Spokane Valley traditionally burned the rubble on their fields after harvest. More recently, concern about air quality amidst the growing population is forcing

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many of them to give up the practice. As a result, the farmers have been left in the lurch. They still must remove the rubble, which they do by cutting and baling. It is more costly than burning and leaves them with tons of straw bales sitting in their fields. Without a market, farmers have taken to simply dumping the bales in gullies on their land.

Jim Armstrong, a creative thinker with a local conservation district, proposed a better solution for all the baled-up residue. It was his idea to build homes from the straw bales using a centuries-old technology that was once common practice in Nebraska and other Great Plains states. The bales provide walls two feet thick, which keep the homes warm in winter and cool in the summer. The straw also deadens the sound of traffic, noisy neighbors, and even howling winds.

With financing through the conservation district, two 1,400-square-foot, three-bedroom, straw bale homes were constructed on speculation. The walls of each home contain about four hundred straw bales, while the only wood used is in the rafters.

The houses are listed for \$135,000, which is fairly typical for the area, but the thick walls should translate into savings of 40 to 60 percent on heating and cooling bills. And because the bales are stuccoed on the outside and plastered on the inside, they are actually more fire-resistant than a wood-frame house.

If the homes prove popular, Armstrong estimates that Spokane County produces enough residue from agricultural production to build 3,000 straw bale homes a year. Both farmers and urban dwellers could benefit from a bit of old technology.

—*Spokesman-Review*

ALLIGATORS GO WEST

The high desert of southern Idaho seems an unlikely spot for fish farms and alligator ranches, but one ingenious farmer has made a success of just

such an operation. Leo Ray, who studied fish farming at the University of Oklahoma, visited the area after graduation and decided it would be a near perfect location for his business. Geothermal springs are commonplace along the Snake River in that area. By mixing the hot spring water with cold surface water, Ray figured he could achieve the ideal 78- to 80-degree temperatures needed for year-round fish farming.

He invested in a series of artesian wells and concrete ditches and ponds. His catfish thrived, and later he added trout, sturgeon, and tilapia. However, success produced some problems of its own. With an operation as large as Ray's, it was inevitable that some fish would die and others would need to be culled. The results were huge piles of dead fish.

Ray took the next logical step and brought in some alligators from Florida. With plenty of free food and water warmed by nature, it looked like alligator ranching would be another business success. And the giant reptiles have provided Ray with a free disposal system for his fish.

The alligators have proven to be a tasty lot because of their high-grade food and pure water accommodations. Alligator meat is not in great demand around Idaho, but Ray says he can barely keep up with orders coming from the South.

Alligator hides are also a money-making venture for Ray. He has hundreds of tanned and dyed hides which are both supple and durable. His future plans include a gift shop on the farm where he will sell alligator purses, wallets, and boots.

The breeding facility has become a popular field trip for local school children, but it still takes some locals by surprise. The stunned expressions on people pressing their faces against the cyclone fence topped with barbed wire are a dead giveaway that alligators swimming in hot springs is not a common sight in Idaho.

—*Associated Press*

TANGENTS

IF YOU WANT IT, BUY IT

By Daniel K. Benjamin

Over the past fifteen years, private organizations and government agencies have spent billions of dollars in the name of conserving ecosystems in low-income nations. Most commonly, the spending has been to promote commercial activities, such as ecotourism or other ecologically benign ventures, that generate ecosystem protection indirectly. But most reviews of these programs have found discouraging results: Costs are high and environmental protection has been limited. Is there a better way? Recent research suggests there is: Pay for conservation performance *directly*—for example, by purchasing sensitive parcels of land, or acquiring development or logging and mineral rights on key tracts.

Paul J. Ferraro and R. David Simpson (2002) focus their empirical work chiefly on efforts to preserve rain forest in Madagascar. They compare the costs of three different methods of conservation. One is to subsidize the output of production activities (such as beekeeping) that are environmentally friendly to the forest. Another is to subsidize the capital inputs (such as beehives) used to produce such goods. And a third is to directly subsidize the preferred use of rain forest land—for example, by purchasing or leasing the land and then subleasing it to beekeepers at a reduced rental rate.

The authors find that the third approach, that of directly purchasing or leasing the environmentally sensitive resource, can cut costs by up to ninety percent compared to indirect means, such as subsidizing output prices or the prices paid by farmers for other inputs. And for those who would like to see more conservation, the direct purchase or lease of ecologically sensitive land can yield ten times more environmental protection for a given cost.

An analogy may prove helpful in seeing the advantage of direct payment. Suppose you wish to increase the protein in your diet. Most dishes contain protein, so one indirect way to get more protein is to simply eat more food. This entails paying for foods (such as pasta) that add little to meeting your objective, and you may even be getting things you don't really want (such as an extra dessert). Alternatively, you could purchase the same number of dishes, but select ones that are protein-intensive—buying more steak dinners and fewer pancake breakfasts. This can cut the cost of achieving your objective, as well as reducing unwanted effects of the first approach (such as having to enlarge your waistband). This is exactly what direct payments for ecosystem protection do: They focus on what is actually of interest—the ecosystem itself.

economist, *n.* a scoundrel whose faulty vision sees things as they really are, not as they ought to be.

—after Ambrose Bierce

Daniel K. Benjamin

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Directly purchasing or leasing an environmentally sensitive resource can cut costs by up to ninety percent compared to indirect means, such as subsidizing output prices or the prices paid by farmers for other inputs. And the direct purchase or lease of ecologically sensitive land can yield ten times more environmental protection for a given cost.

The direct payment approach is exactly that taken by numerous organizations in preserving ecosystem attributes in the United States. For example, the Delta Waterfowl Foundation's "adopt-a-pothole" program pays prairie farmers who protect nesting areas for ducks, while Defenders of Wildlife has offered U.S. ranchers and other landowners a reward for occupied wolf dens on their property. Similarly, the Nature Conservancy and hundreds of smaller land trusts have purchased farms, forests, wetlands, and development rights to protect ecosystems directly. The findings of Ferraro and Simpson suggest that similar approaches will work around the world, and will yield more ecosystem protection.

Nothing in this research suggests that *profitable* eco-friendly activities should be discouraged. Nor does the research imply that organizations should stop trying to encourage environmental protection in low-income nations. Rather, the issue is the most effective means of achieving that protection (and thus the most environmental protection) when the private profit stimulus is not enough.

The authors go on to suggest why direct payments have not been used more frequently, despite their advantages. First, incentives of donors and recipients don't always match up. Many donors presumably want to minimize the cost of any given amount of conservation (because doing so permits more total conservation to be achieved). But the eco-entrepreneur (such as the beekeeper) wants the donor to spend money on his or her services rather than land, because this maximizes the eco-entrepreneur's income. It obviously takes two to tango—donor and recipient—and sometimes (often, it seems, in low-income nations), the recipient's wishes prevail, leading to less protection for the environment.

As Ferraro and Simpson note, there are probably other reasons that direct payments have not been used more often. In the case of government, World Bank, and United Nations projects, political realities affect outcomes. Indirect approaches, especially those involving large capital investments in the recipient nations, result in large budgets that support the staff and infrastructure of the donor organizations. Moreover, the tangible nature of the staff and infrastructure of the indirect approach may give a stronger appearance of immediate action—always a valuable attribute in the political arena.

But if the objective is really ecosystem protection rather than political posturing or power grabs, the findings of this paper are clear and compelling: When it comes to a better environment, if you want it, buy it.

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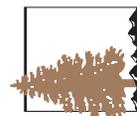
In this special issue of PERC Reports, we consider a variety of ways in which agriculture interacts with the environment and how private initiative and government controls affect both.



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