The Land Report

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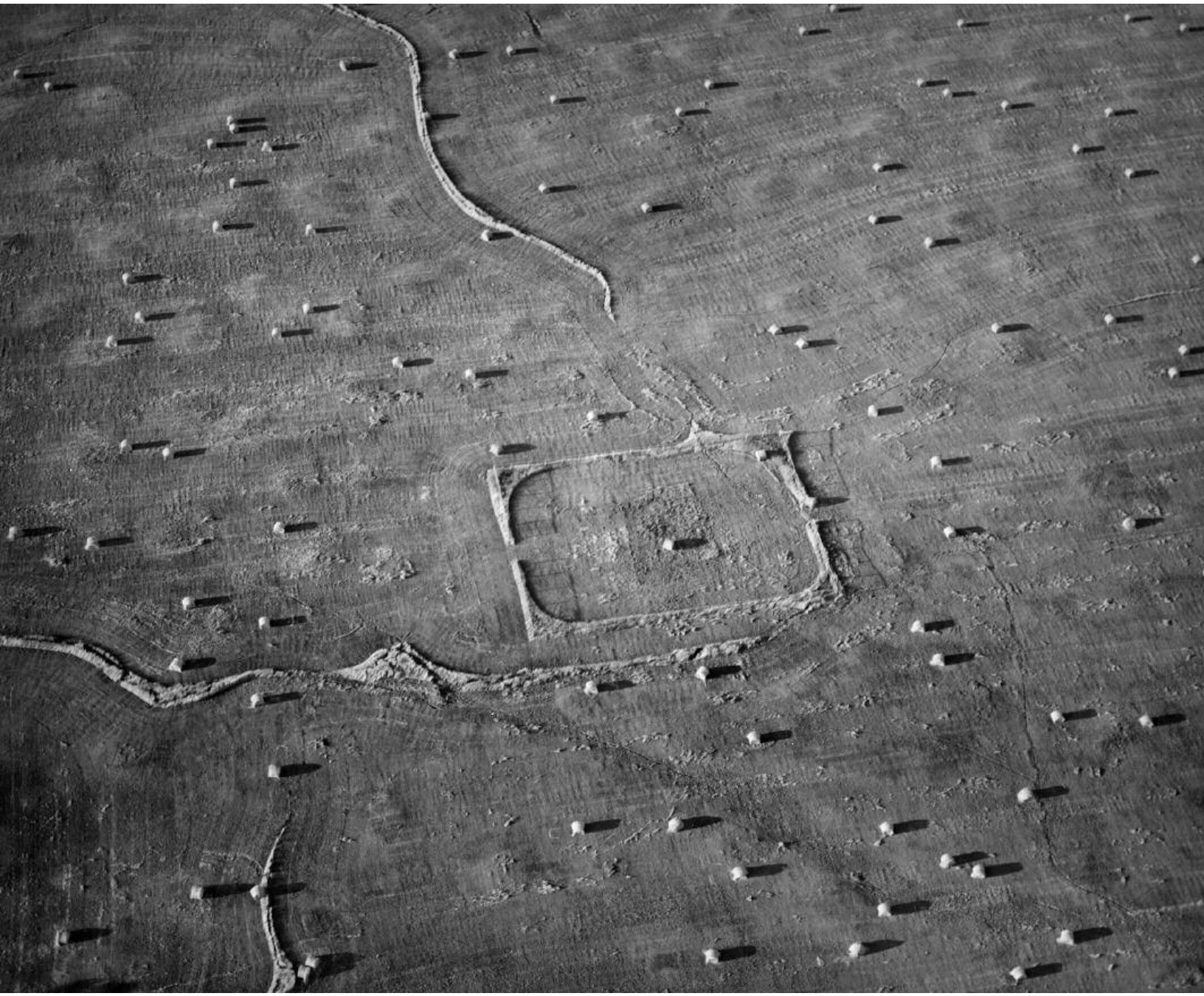

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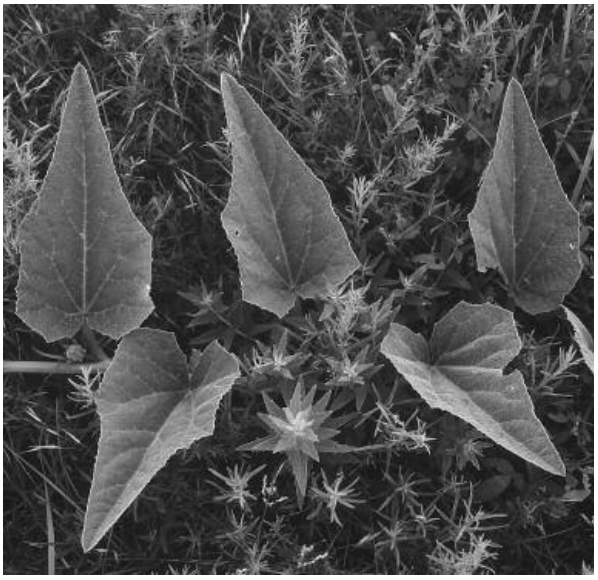
Cover: Martin Stupich. Hay near Pass Creek, Carbon County, Wyoming.

Above: Scott Bontz. Buffalo gourd on the prairie.



Our Mission Statement

When people, land and community are as one, all three members prosper; when they relate not as members but as competing interests, all three are exploited. By consulting nature as the source and measure of that membership, The Land Institute seeks to develop an agriculture that will save soil from being lost or poisoned while promoting a community life at once prosperous and enduring.

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India Looks West, Through Smog

Stan Cox

When I first breathed the dusty air of Hyderabad, India, it was 1980. Hyderabad, like India, was regarded as "underdeveloped." But along with the dust, there was hope in the air.

The Green Revolution was staving off famine, and it would be more than a decade before thousands of farmers began committing suicide by drinking the pesticides that had bankrupted them. Smallpox was gone, and HIV had not yet arrived. Millions had reliable, safe water supplies for the first time, thanks to the replacement of hand-dug wells with drilled wells, but aquifers weren't yet being sucked dry. More and more of Hyderabad's rickshaw-wallahs were sitting at the controls of auto-rickshaws rather than pedaling, underfed, toward the grave, but the city's atmosphere had not yet turned deadly.

In 1982 I returned to the United States and left an India seeking a way out of poverty without surrendering its economic independence. By 1996, when I came to live in Hyderabad for another four years, Gandhian self-reliance appeared to be crumbling, and representatives of U.S., Canadian and European companies were all over town, dealing joint ventures and trying to make them stick.

Not a part of that invasion force, I was in the city working for rupee wages. But as a fellow foreigner, I had plenty of chances to meet business people. On arrival in the city, they were pumped up with high- and low-tech dreams. But most of them left, deflated, within months. At farewell parties that cluttered the social calendar, they would tell me, "You just can't work with these people. They are unbelievably difficult." I would suggest, to little effect, that maybe they just weren't ready to roll over, bow down, bend over backward or perform whatever gymnastics are required of government and business people in more "business-friendly" countries.

And sure enough, India's stubbornness has begun to pay off — in a way. The excesses of a few corporate giants like Coke have provoked ire from the Himalayas in the north to Kerala in the far south, but Western companies in the booming "information sector" are being compelled to share the spoils of exploitation with their Indian counterparts.

Hyderabad is one of the hubs of India's "outsourcing revolution," with vast numbers of people working in software development, call centers, medical transcription and other mind-over-matter industries. The outsourcing boom has caused something close to panic in the United States, though the loss of white-collar jobs to India is small relative to the U.S. work force size. Economist Doug Henwood estimates that outsourcing to all countries is responsible for only one out of every 20 U.S. jobs that have gone missing since 2001.

At the same time, new information technology jobs in Hyderabad are far too few to propel a significant portion of the population into the middle class. To read the Western press, one might get the impression that most working people in India's major cities are sitting all day in air-conditioned offices tapping at keyboards. They are more likely to be in hotter, grimier jobs, perhaps slapping stucco on those new office buildings or manufacturing those air conditioners.

The stimulus created by Hyderabad's "weightless economy" extends far beyond the newly created, information-based industries. In tandem with the growth of more mundane industries, it is working a superficial transformation on the city, while taking a heavy toll on its 6 million inhabitants, their air, their water and their land — right down to the bedrock.

That was then, this is then

I returned to Hyderabad yet again in the winter of 2002-03. Back in 1980, it had been a dust-brown and chlorophyll-green city, but these days, the business districts are almost completely smog-and-concrete gray in the daytime and lighted like Vegas at night. The internal combustion engine holds Hyderabad in its grip more tightly than did the royal line of Nizams who ruled the city until the 1950s.

The cautious opening of India's economy has liberated enormous amounts of capital, both old and new. Today, through the traffic, you can reach clothier, jeweler, appliance store, restaurant, coffee shop, pub or, of course, car dealership without leaving a circular main route that traverses the twin cities of Hyderabad and Secunderabad. This central loop of new, black asphalt and still unblackened concrete is trimmed with green plants, sodium-vapor streetlights and billboards for cell phones that are guaranteed to "change your life." But a quick turn down any side street shows that, for most people, living conditions haven't changed significantly since 1996 or 1980. A trip across the river to the Muslim Old City of Hyderabad is a 20-year trip back in time, except that the air is much worse.

If you leave the loop and avoid Hi-Tec City, home of Hyderabad's weightless economy, on the city's western fringe, the same old problems persist. Lack of access to water is now an annual crisis. Last year, both major reservoirs that supply the city with water had dried completely four months before the start of the monsoon in

Stan Cox. Hyderabad two decades ago. Now imagine more cars, without U.S. pollution controls.

June. The April-to-June summer sees fierce competition for electricity between televisions and air conditioners in Hyderabad and irrigation pumps in rice paddies far to the south and east. Meanwhile, sanitation systems are groaning. Air quality, as quantified on scoreboards at major intersections, is frighteningly bad.

Technology, high and low

Indians, even middle-class people, live in very close quarters with the ecological consequences of growth and consumption. But it's the super-rich in both India and the United States who make the economic and political decisions that set the courses of their societies, and they can afford to accumulate capital with single-minded vigor while shielding themselves from environmental insults. Partly as a result, ecological thinking rarely figures in the economic policies of either nation. Once in a while, prospects of ecological crisis might furrow brows in Upper Manhattan or Jubilee Hills, a suburb situated high above the dense haze of Hyderabad's central city. But such crises are already killing people in places like Patancheru.

About 12 miles west of Hi-Tec City, too distant to be seen from the top floors of its high-rise, high-bandwidth office buildings, lies Patancheru, a village as I knew it in 1980, now both a city and a hellish industrial park. There, as in Hi-Tec City, sophisticated, often expensive products are born, but in a much less appealing way. Many of the companies operating in and around Patancheru, most of them Indian-owned, make bulk pharmaceuticals or intermediate compounds to be exported to the West for processing into finished drugs, including antibiotics and chemotherapy ingredients.

When methamphetamine labs are busted in small-town U.S.A., officials are faced with a dangerous cleanup of highly toxic intermediate chemicals. Many legal drugs are also made from nasty intermediate compounds, requiring companies either to take expensive precautions during manufacture or let the dangerous steps in the process be done by companies in countries like India. And in Patancheru, despite fairly strict pollution laws, factories continue to pipe their waste directly into nearby ponds and lakes.

In addition to the poisonous intermediates, the lakes are polluted with arsenic, lead, mercury, chromium and various pesticides. Nevertheless, with water shortages common, people often draw from the lakes for household use.

Indian states are encouraged to compete in making deals with companies, foreign countries and development agencies. Hyderabad is the capital of the state of Andhra Pradesh, whose chief minister, Chandrababu Naidu, was the World Bank's best pal in India and the nation's champion dealmaker until his defeat in the May 2004 elections. Those were the same elections that tossed out the ruling party at the national level. Both upsets have been attributed to a widespread awareness among India's poor that only the elites and parts of the middle class have benefited from India's economic boom.

Last year, Naidu brought in a massive new polyvinyl chloride plant that was to have been built in the neighboring state of Tamil Nadu. The Tamil Nadu Pollution Control Board had banned the operation, citing the deadly chemicals that are the inevitable inputs and outputs of PVC plastic production. Naidu was more than happy to step in and welcome the plant. But to win final government approval over environmentalists' objections, the Indian company behind the project, Chemplast Sanmar, has recently had to develop a "public awareness campaign." The campaign will likely go without a hitch; Indians' love affair with plastic is as passionate as that of any of the world's peoples.

In 1980, most of the output of India's economy was biodegradeable, but today India has waded deep into the Age of Plastic. And as if Hyderabad and other cities weren't already being buried under it, India welcomes waste plastic from around the globe, to be recycled along with mercury, batteries, old ships, computers and incinerator ash.

Any junk might be imported. In 2002, a public outcry stopped the importation of World Trade Center rubble into India. People had been told that the shipments were just the usual sort of garbage that arrives regularly in Indian ports. As a result, more than 150,000 tons entered the country before the cargo's origin became widely known. The intense reaction against dumping of the rubble had more to do with its karmic than its poisonous content. Nevertheless, specialists say that all remains of the towers — a nerve-center for the kind of "clean" economic growth that's fueled mainly by the global movement of electrons and photons — contain some extremely dangerous compounds that were produced when its carpets, plastic construction materials and furnishings, computers, etc., were melted, pulverized and incinerated.

It might be green, but it still has a cost

To his credit, Naidu invested heavily in parks and gardens around Hyderabad. They are open to all and very popular. But even the characteristics that we associate with desirable public and private urban spaces — "well-lighted," "green," "freshly painted," "accessible," "clean" — entail the consumption of resources and production of wastes.

Along the road to Hi-Tec City lies a square mile of prime real estate, once a hunting ground for the city's ruling family, that has been walled off as a national park where children can see what the region was like before the goat, the plow, the automobile and the computer. But

at the perimeter is a 30-foot-wide swath of path winding between beautiful gardens and high, ornate stone-and-iron fences, among native boulders, and up and down stairways. It attracts large numbers of fitness-conscious walkers every evening.

The making of this course took two years. Stone masons and other workers lived in huts of cardboard and palm fronds by the path and walls they were building. By early 2003, only a few of the laborers remained, putting on finishing touches. But with the path already in use, they had been forced to crowd their huts and families onto a traffic island next to the park, spoiling the view instead for passing motorists. But none could see what else enables the city's parks, its central loop road and Hi-Tec City: people somewhere breathing paint factory fumes, sacrificing their water supply, or seeing their village flooded by a hydroelectric project.

In the back streets of the city, conservation is still the rule. Proprietors of small shops, just as they did in 1980, make sure to keep their fluorescent lights turned off unless a customer comes in, and buildings are still allowed to turn soot-black before they are washed and repainted. But around the central loop and along the route between the airport and Hi-Tec City, which is the only territory seen by most foreign officials and investors, scarce water is lavished on annual flowers in the road's median — deep-rooted trees being long-gone — and huge billboards stay brightly lighted all night, each one consuming more electricity in the wee hours of one morning than a back-street shop uses in a month.

One day in early 2003, I walked along a wide, pleasant stone path that stretches for miles along the shore of the Hyderabad's central lake. I reached the end and found workers busy breaking up big granite blocks to extend it. No one had to tell me where those blocks came from.

Scattered around the countryside near Hyderabad and far beyond are high hills — actually piles of gargantuan boulders, some as big as houses, in often bizarre and beautiful formations. That region of India has been exposed to the elements longer than most other land on earth, and those rocks, being harder and more erosion-resistant than any surrounding material, have survived for billions of years. But a decade-long frenzy of blasting, cutting and pulverizing has flattened and scarred large parts of the countryside. In a geological or even historical eye-blink, most of the ancient rocks for many square miles around Hyderabad will be gone, reincarnated as roads, overpasses, park walls, office towers, and the mansions of software and call-center tycoons in Jubilee Hills.

In this way, a "weightless economy" can crush granite.

Stan Cox. People made home in sections of pipeline before its burial for sending reservoir water to the city of Hyderabad.

Sending Our Idea to School

For help in reforming agriculture, we reach into the formative ground of higher education with our Natural Systems Agriculture graduate fellowship program. Students working toward master's and doctoral degrees perform studies that advance our development of agriculture patterned after natural ecosystems. This research might otherwise not take place because it is perceived too risky, too lengthy, or unnecessary for today's dominant forms of agriculture. And students can take advantage of major universities' resources.

The program also plants the seeds of our ideas at these schools, both during the research and afterward as these bright young people move on to their life's work. We aim for a worldwide interdisciplinary network of research groups interested in Natural Systems Agriculture.

As our own work progresses, we are able to award fellowships to students increasingly in tune with The Land Institute's aim.

They receive up to $9,000 annually. Five to nine fellows have been added each year, and most fellowships are renewed for two to three years.

Each year we bring the fellows to Salina and then on to our renovated schoolhouse in rural Matfield Green, Kansas, to finish a weeklong workshop. They share their ideas, and hear ours and those of guest speakers from a wide range of fields and schools across the nation. The formal talks go all day, interspersed with tours of the surrounding Flint Hills, the largest remaining tallgrass prairie in North America, including institute board member Pete Ferrell's cattle ranch. Informal discussion continues over locally prepared meals and into the night with conviviality.

For the rest of the year, fellows are back at work and study, and we at ours, until all gather again to trade notes on how to make agriculture more like an ecosystem.

We have awarded 48 fellowships since the program began in 1998. More information about it, including how to apply, plus fuller, more technical descriptions of the fellows' work, are at www.landinstitute.org.

Following are sketches of work by the 2003 and 2004 winners who were at the June workshop.

Matthew Arterburn
Washington State University

Molecular mapping of regrowth trait for wheat

Thinopyrum elongatum, a perennial, regrows after producing seed, unlike its relative, annual bread wheat. Tons of soil per acre are lost annually due to tillage of soils for annual crops. Introducing a single chromosome from *Th. elongatum* makes annual wheat regrow, a great illustration of the genetics of regrowth and their significance for erosion control. My project will search for the gene or genes on this chromosome responsible for the regrowth trait. This will help in making a perennial wheat that will preserve our soil, and will also further understanding of flowering plants' life cycles.

Elena Beyhaut
University of Minnesota

Finding a good inoculant for Illinois bundleflower

Productive, widespread use in agriculture of the wild legume Illinois bundleflower will require its inoculation with a good rhizobium. Rhizobia are bacteria that help the plant use nitrogen from the air and consequently enhance soil fertility. My field tests, in Kansas and Minnesota, are for inoculants broadly effective with different bundleflower genetic materials. The best rhizobium will improve bundleflower's contribution to perennial agroecosystem sustainability.

Kevin Murphy
Washington State University

The role of root toxins in establishing perennial crops

Some crop roots exude toxins that suppress competitors. This allelopathy might affect weed control and crop plant interaction for perennial polyculture agroecosystems. I will screen 200 annual and perennial lines to document inhibition of weed root growth, and for using the trait in our breeding of perennial wheat. This could help in the establishment of perennial polycultures.

Scott Bontz. One of our new graduate student fellows, Rafael Otfinowski, examines soil rich in organic matter. The samples were pulled from several feet down in a never-plowed prairie north of The Land Institute.

Aaron Colson
University of Minnesota

Production and ecosystem effects of perennial cropping

Buying and using fewer chemicals, producer income should rise with NSA. Perennial crops also are expected to reduce soil erosion and the loss of phosphorus and nitrogen that degrade the natural environment. I will design perennial crop systems, and compare them with alfalfa and a rotation of corn and soybean. Production and environmental effects will be documented by measuring biomass, water use and nitrogen use, plus transport of the nutrients phosphorus and nitrogen, soil erosion, soil quality, and volume and rate of runoff.

Caterina Nerney
University of California at Berkeley

Comparing food chains in wild and domesticated sunflowers

Plants are eaten by herbivores which in turn are preyed on and parasitized by their natural enemies. Many plants have developed close relationships with those enemies to regulate herbivores. This dynamic is important for ecology and for agriculture, yet it is poorly understood. I will study this in annual crop sunflower and its wild progenitor, and make comparisons in the wild Maximilian sunflower and domesticated Jerusalem artichoke, both perennials. My aim is to learn the relative importance of plant characteristics regulating parasitism of sunflower herbivores, often considered pests in agriculture. This should aid in designing NSA. (For more, and an illustration, see page 14 of *Land Report* 77, fall 2003.)

Chasity Watt
Washington State University

Perennial chickpea for Natural Systems Agriculture

Little is known about the potential of perennial chickpea as a crop. I will collect data on important traits for use of this legume in NSA. The assessment will be made in the differing land and climates of eastern Washington and central Kansas.

Valentin Picasso
Iowa State University

Functional diversity in establishing perennial polycultures

NSA aims to mimic prairie with diverse plant functional groups: cool-season grasses, warm-season grasses, legumes and composites. I will study for two years after seeding whether functional diversity increases production of biomass and seed, and how it affects maintenance of plant communities over time. Plots include eight perennial species — Illinois bundleflower, Maximilian sunflower, gamagrass, intermediate wheatgrass, alfalfa, clover, orchardgrass and switchgrass — planted in monocultures, and polycultures of two, three and four functional groups, grown in two Iowa locations. Measurements will include production, species abundance, weed invasion and soil quality properties.

Meagan Cocke
Cornell University

Shifts in nitrogen fixation according to soil fertility

With their ability to build soil fertility by fixing nitrogen from the atmosphere, legumes are critical to NSA. As soil fertility increases, legumes reduce nitrogen fixation and often lose ground to grasses. Maintaining a legume component in NSA to support nitrogen demands for grain production will be challenging. I will measure the nitrogen fixation of annual and perennial legumes along a soil fertility gradient in both monocultures and mixtures on central New York farms. This will help decide legume composition of NSA at different stages of soil fertility development.

Rafael Otfinowski
University of Manitoba

Does crop diversity reduce root pathogen infestation?

Over time, perennial plants become host to root pathogens, losing their vigor and productivity. Especially vulnerable are monocultures of crops, where pathogens are able to grow and infest large areas rapidly. In my research with smooth brome, a perennial forage grass, I will test the hypothesis that growing perennial crops in mixtures, mimicking native prairies, prevents the accumulation of root pathogens and helps maintain yield.

Lois Braun
University of Minnesota

Nitrogen fertilization and beneficial fungi for hybrid hazelnuts
The ecosystem models for NSA in Minnesota include oak savannah and forest, in which two species of native hazelnut bushes are significant. Hybrids between high-yielding European hazelnuts and these natives, which are adapted to the region's extreme weather, soils and diseases, have been selected for nut production in hedgerows between mowed alleys of mixed species, mimicking features of the oak savannah. I aim to find the hazlenuts' nitrogen requirements and whether inoculation with beneficial fungi will help transplants survive.

Julia Olmstead
Iowa State University

Genetic comparison of annuals and perennials for production
Key to NSA will be perennial crops with high production sustained in varying environments. The genetic basis of biomass and grain production in annual crops has received considerable attention, but comparison of annuals and perennials for these important traits has not. I will compare genetic markers associated with sustained and high production in the annual *Medicago truncatula* and a perennial of the same genus, alfalfa. This will help us understand the usefulness of annuals as genetic models for perennials. It will also help plant breeders to develop marker-assisted selection techniques for sustained yield in perennial crops.

Jo Anne Crouch
Rutgers University

Contrasting the evolution of pathogenic fungi in farm and prairie
To broaden understanding of how harmful fungi have evolved in agriculture, I will compare several lineages of the grass pathogen *Colletotrichum graminicola* from agricultural monocultures against those in the diverse perennial grasslands of Kansas. It might be possible to determine the effect of plant species diversity on pathogen adaptation and disease development. Does host plant population structure, life and physiology influence pathogen development and habitat specialization? Can the evolutionary history and ecological dynamics of *C. graminicola* inform how to control it, and perhaps other pathogens? What can we learn from how populations of this fungus survive in diverse natural grasslands?

Lucia Gutierrez
Iowa State University

Genetic diversity in cultivated barley and wild relatives
NSA will require breeding perennials. In any breeding program, genetic diversity is key. It is not clear how much genetic variation there is in an annual crop plant compared with perennial relatives. I will study that variation in cultivated barley and two wild relatives. I will also determine the best method of measuring this diversity: genetic variation seen in DNA analysis or observation of plants' physical characteristics. Mimicking of the prairie must include its genetic diversity, and this research will help reach that goal.

Exporting Cheap Corn and Ruin

Michael Pollan

Americans have been talking a lot about trade this campaign season, about globalism's winners and losers, and especially about the export of American jobs. Yet even when globalism is working the way it's supposed to — when Americans are exporting things like crops rather than jobs — there can be a steep social and environmental cost.

One of the ballyhooed successes of the North American Free Trade Agreement has been the opening of Mexico to American farmers, who are now selling millions of bushels of corn south of the border. But why would Mexico, whose people still subsist on maize (mostly in tortillas), whose farmers still grow more maize than any other crop, ever buy corn from an American farmer? Because he can produce it much more cheaply than any Mexican farmer can. Actually that's not quite right — it's because he can sell it much more cheaply.

This is largely because of U.S. agricultural policies. While one part of the U.S. government speaks of the need to alleviate Third World poverty, another is writing subsidy checks to American farmers, which encourages them to overproduce and undersell Third World farmers.

The river of cheap American corn began flooding into Mexico after NAFTA took effect in 1994. Since then, the price of corn in Mexico has fallen by half. A 2003 report by the Carnegie Endowment says this flood has washed away 1.3 million small farmers. Unable to compete, they have left their land to join the swelling pools of Mexico's urban unemployed. Others migrate to the U.S. to pick our crops — former farmers become day laborers.

The cheap U.S. corn has also wreaked havoc on Mexico's land, according to the Carnegie report. The small farmers forced off their land often sell out to larger farmers who grow for export, farmers who must adopt far more industrial (and especially chemical- and water-intensive) practices to compete in the international marketplace. Fertilizer runoff into the Sea of Cortez starves its marine life of oxygen, and Mexico's scarce water resources are leaching north, one tomato at a time.

Mexico's industrial farmers now produce fruits and vegetables for American tables year-round. It's absurd for a country like Mexico — whose people are often hungry — to use its best land to grow produce for a country where food is so abundant that its people are obese — but under free trade, it makes economic sense.

Meanwhile, the small farmers struggling to hold on in Mexico are forced to grow their corn on increasingly marginal lands, contributing to deforestation and soil erosion.

Compounding these environmental pressures is the advent of something new to Mexico: factory farming. The practice of feeding corn to livestock was actively discouraged by the Mexican government until quite recently — an expression of the culture's quasi-religious reverence for maize. But those policies were reversed in 1994, and, just as it has done in the United States, cheap corn has driven the growth of animal feedlots, which contribute to water and air pollution.

Cheap American corn in Mexico threatens *Zea mays* itself — and by extension all of us who have come to depend on this plant. The small Mexican farmers who grow corn in southern Mexico are responsible for maintaining the genetic diversity of the species. While American farmers raise a small handful of genetically nearly identical hybrids, Mexico's small farmers still grow hundreds of different, open-pollinated varieties, commonly called landraces.

This genetic diversity, the product of 10,000 years of human-maize co-evolution, represents some of the most precious and irreplaceable information on Earth, as we were reminded in 1970 when a fungus decimated the American corn crop and genes for resistance were found in a landrace under cultivation in southern Mexico. These landraces will survive only as long as the farmers who cultivate them do. The cheap U.S. corn that is driving these farmers off their land threatens to dry up the pool of genetic diversity on which the future of the species depends.

Perhaps from a strictly economic point of view, free trade in a commodity like corn appears eminently rational. But look at the same phenomenon from a biological point of view and it begins to look woefully shortsighted, if not mad.

With the Prairie Writers Circle, The Land Institute invites and distributes essays to more than 200 newspapers and web services. For more, see At The Land, page 19, and www.landinstitute.org, which has all of the essays.

Our Broken Bond and Promise to Animals

Bernard E. Rollin

When Noah rescues breeding pairs of animals from the Deluge, one finds the notion that the lives of all animals rest in human hands. Elsewhere in the Bible, which expresses this and other concepts undergirding Western civilization, domestic animals — cattle, sheep, asses, goats and other farm creatures — are singled out as the beneficiaries of special human attention. We are obligated to give them environments suiting their needs and natures, protect them from predation, provide them medical attention and help them in birthing. In turn, they supply us with their toil and their products, such as milk and wool, and sometimes their lives. But while they live, they live well. Without human care, the lives of defenseless farm animals would be, in Hobbes' unforgettable phrase, "nasty, brutish and short."

This ancient symbiotic contract is the basis for the theory and practice of animal husbandry, a word derived from the old Norse phrase "hus/bond," bonded to the household. Indeed, so powerful and appropriate is the contractual relationship between humans and domestic animals that when the psalmist searches for a metaphor for God's ideal relationship to humans, he chooses the shepherd. In the hauntingly beautiful, too familiar words of the 23rd Psalm — I say too familiar because we sometimes forget what it tells us about our obligations to animals: The Lord is my shepherd; I shall not want. / He maketh me to lie down in green pastures: / He leadeth me beside the still waters. / He restoreth my soul. Our power over animals and our interdependence create a bond that would appear unbreakable to all but the sadists and psychopaths for whom the anticruelty laws are intended.

Yet, despite the seminal and symbolic significance of husbandry, it has shown itself vulnerable to the relentless march of modernism and technology. In the mid-20th century, the bond created by the ancient contract with farm animals was severed.

After World War II, agricultural scientists feared a shortage of food for many reasons: The Depression and the Dust Bowl had driven farmers off the land; farm land was being appropriated for spreading urban and suburban development; there were projections of unprecedented population growth; and the war had exposed rural youths to a far more exciting life than they could experience in agricultural communities.

Industrial approaches to agriculture were developed to assure increased production, and the values of efficiency and productivity supplanted the values of husbandry and way of life. Whereas husbandry was about putting square pegs in square holes, round pegs in round holes, and creating as little friction as possible, technologic "sanders" such as antibiotics, vaccines and air handling systems allowed us to force square pegs into round holes profitably. The huge costs were to animal welfare.

"Get big or get out" went the new mantra, and university departments of animal husbandry changed their names to animal science. One of my agricultural colleagues called this frank disavowal of traditional ethics "the worst thing that ever happened to my department."

What had been a symbiotic contract was transformed into patent exploitation. In industrialized confinement agriculture, animals no longer can express their biological or psychological natures. Sows, 600-pound, highly intelligent animals, are kept in crates 2 feet by 3 feet by 7 feet, with no room to stand, turn, groom themselves or interact, until they display what the industry absurdly calls "vices." Laying hens are kept in tiny cages, sometimes with one bird walking on six others, and are unable to dust-bathe, build nests or escape cannibalism. Dairy cattle are kept confined or tied. And so on.

Without environments suiting their natures, confined animals are plagued by new diseases either nonexistent or unimportant under husbandry, including liver abscesses in feedlot cattle caused by low roughage diet.

Attention given individual animals has vanished under the replacement of labor by capital and with the tiny profit margin per animal. An excellent — and depressing — example of this phenomenon was submitted to my monthly ethics column in the *Canadian Veterinary Journal*:

> You [as a veterinarian] are called to a 500-sow farrow-to-finish swine operation to examine a problem with vaginal discharge in sows. There are three full-time employees and one manager overseeing approximately 5,000 animals. As you examine several sows in the crated gestation unit, you notice one with a hind leg at an unusual angle and inquire about her status. You are told, "She broke her leg yesterday and she's due to farrow next week. We'll let her farrow in here, and then we'll shoot her and foster off her pigs." Is it ethically correct to leave the sow with a broken leg for a week while you await her farrowing?

I spoke to the veterinarian who had experienced this. When he offered to splint the leg at cost, he was told that the operation could not afford the manpower to

Scott Bontz. Goliath, who claims the record of world's tallest horse, visited Salina in July. The Percheron from Texas is 6 feet 5 inches at the shoulder.

separate this sow and care for her. It was then that he realized confinement agriculture had gone too far. He had been brought up on a family hog farm, where the animals had names and were provided individual husbandry, and where the injured animal would have been treated or, if not, euthanized immediately.

Finally, workers who know, understand and care about animals, who are, in the words of one of my agriculturalist friends, "animal smart," have been replaced by underpaid, inexperienced and in many cases uncaring workers with no real feeling for animals. As the same friend put it, whatever intelligence exists is in the system's mechanization, not in the workers, despite that human-animal interaction has been shown to be a major factor in both animal welfare and animal productivity.

Western cow-calf ranchers are the last significant group of husbandry agriculturalists in North America. As the president of the Colorado Cattlemen's Association once remarked at a seminar on animal welfare, "If I had to raise animals the way the chicken people do, I would get the hell out of the business!" These people have been characterized as romantics because they still worry about husbandry and way of life over maximizing profit. They may well be extinct in a few decades.

I was visiting a number of these ranchers in Colorado and Wyoming during a year that they were seeing a good deal of scours, a diarrhea in calves. I asked them, "How many of you have spent more money treating scours than the calf is worth?" Every one replied in the affirmative. One woman was antagonized by the question. "So what?" she snapped. "That's what we do!" One man told me that this was "part of my bargain with the animals."

At another encounter with cattle producers, one man coughed severely throughout my talk. As I explained the notion of husbandry and the good shepherd, he nodded vigorously. I asked him why. "Hear me coughin'?" he replied. "Well, last January a young calf fell through the ice in my pond. I jumped right in after her. She's fine, but I got pneumonia and chronic bronchitis!"

In contrast, one of my colleagues in animal science told me the following story about his son-in-law. The young man had gone to work for a confinement swine operation. One day he found sickness in the barn of feeder pigs. Having grown up with pig husbandry, he was familiar with the disease and how to treat it. He approached his boss for permission to do so.

"We don't treat sick animals," he was told. "We kill them by knocking them over the head with a crowbar."

Appalled, he disregarded policy, purchased the relevant medication with his own money, and came in on his own time to treat the animals, which were cured. When he told his boss, the response was, "You're fired!" — although when he could prove he had spent his own time and money, he was able to keep his job with a reprimand and warning. Within a year, he had left agriculture altogether and become an electrician, commenting to his father-in-law, "This is not agriculture."

We have, in essence, turned our backs on our contract with agricultural animals. We have bred them to depend on us, and we are dishonoring that dependency. The psalmist could not honestly pen the 23rd Psalm today. It would have to read like this: The Lord is the manager of Mega Hog Farms; I shall not fare well. / He leadeth me into small crates: / He maketh me to lie on concrete slats on my own excrement in a space smaller than I am. / He driveth me mad.

We are too busy using technology to assure that animals have productive lives to worry about whether they live decent ones.

Drawn from the writer's talk to the 2004 North American Veterinary Conference.

New Books

To Inherit the Earth: The Landless Movement and the Struggle for a New Brazil
By Angus Wright and Wendy Wolford

Wright, a Land Institute board member who teaches environmental studies at California State University in Sacramento, and Wolford, who teaches geography at the University of North Carolina at Chapel Hill, tell how, "scrupulously avoiding dependence on a single leader," 350,000 poor, landless families have faced down authorities and private gunmen to move onto and win redistribution of more than 20 million acres of farmland in Brazil, a nation with a vast gap between the rich and poor. The authors, who tell personal stories of many involved in this movement, say it speaks to an "urgent need in Brazil to find an alternative system of politics, a different way of organizing the fight for the 'right to have rights'." They say those involved have greatly improved education and health care. They also say this approach might offer the best solution to environmental problems both in the Amazon and elsewhere.

The Last Refuge: Patriotism, Politics, and the Environment in an Age of Terror
By David Orr

Orr, professor of environmental studies and politics at Oberlin College, proposes a constitutional amendment to safeguard nature and to protect the rights of future generations to healthy ecology. He advocates increased emphasis on environmental study in higher education, and he sees our current state reflecting "an unconstrained managerial and well-armed plutocracy intent on global plunder." Orr attacks "Skeptical Environmentalist" author Bjorn Lomberg as "scientifically dishonest," praises Wendell Berry's commitment to agrarian ideals, and, in an essay called "Leverage," critiques what he calls a patchwork of U.S. environmental regulations and the nation's libertarian tendencies.

Prairie: A North American Guide
By Suzanne Winckler

Winckler describes and provides directions to more than 300 prairie sites, scant and scattered survivors of grassland that once covered much of central North America, and which are the model for The Land Institute's agriculture. The information includes site size, management, phone numbers and characteristics. Winckler also provides recommended readings and web sites. The prairies covered are found within government land of many sorts, and on numerous working ranches, in Saskatchewan, Manitoba, the Dakotas, Minnesota, Illinois, Iowa, Kansas, Missouri, Nebraska, Oklahoma and Texas.

Food for Thought: Towards a Future for Farming
By Patrick Herman and Richard Kuper

The authors represent the French radical farmers union Confederation Paysanne, which argues for local food production by small, independent farmers, both for food quality and society. This English adaptation argues that the European Union's Common Agricultural Policy and the World Trade Organization's Agreement on Agriculture have for most farmers meant loss, with agribusiness thriving at their expense. It says the social and environmental prospects are dire, and argues for alternatives: to outlaw dumping of food on world markets effectively, to control the amounts of food produced, to share its production fairly among regions and countries, and to encourage rather than to outlaw the use of import controls.

Against the Grain: How Agriculture Has Hijacked Civilization
By Richard Manning

Manning, a contributor to The Land Institute's Prairie Writers Circle, argues that as hunters and gatherers we were smarter, stronger, more sensually alive. Drawing on the work of anthropologists, biologists, archaeologists and philosophers, he says the development of agriculture 10,000 years ago was a devil's bargain that went against nature's grain and our own, bringing wealth but also disease, imperialism, slavery, erosion, pollution, overpopulation, famine and war. Manning is pessimistic about political reform. He advocates hunting animals for food and hopes that movements like urban green markets and organic farms can lead to better nutrition.

Plain Beautiful

By Suzanne Winckler

One of the most beautiful places I've ever been is Cimarron National Grassland. It is 108,175 acres of flatness, short grasses and ghost-gray sages on the high plains near the town of Elkhart, Kansas.

Many people have written about the plains and the sublime feelings that come from standing on a flat place. In *Prairy Erth: A Deep Map*, William Least Heat-Moon, in addition to his own musings on the subject, has compiled an impressive collection of observations from other writers about prairies and plains.

The tendency is to overreach, to pile on the adjectives and torque the metaphors, in ways more appropriate for describing rococo landscapes, like mountains. I think this happens because the natural response to an overwhelming experience is to get frothed up. Taken by surprise by the potency of flatness, the overwhelmed writer is then convinced nobody else is going to believe level ground could really be so powerful unless he or she hammers the experience.

So far I've found no one who writes so steadily and convincingly about the plains as Willa Cather, because she is as simple and direct as the places she describes.

My favorite single quotation is from the artist Thomas Hart Benton: "For me the Great Plains have a releasing effect. They make me want to run and shout at the top of my voice. I like their endlessness. I like the way they make human beings appear as the little bugs they really are."

George Jerkovich. Sky, wheat, harvest, Saline County, Kansas.

I spent a sunset at Cimarron National Grassland, and returned the next morning for sunrise. Watching the passage of the sun, especially as it nests on the horizon, is one of the stellar attractions of flat places. There are, after all, not a lot of other visual distractions. I think I will never tire of watching the sun come up and go down on the plains.

I stood on the rim of Point of Rocks. It is a bluff of ancient Jurassic shales higher by 110 feet than everything else in the vicinity. This promontory projects from the surrounding landscape like the prow of an ocean liner.

Point of Rocks demonstrates a point that flatlanders such as I constantly make when defending the terrain we love. The plains are not really flat. To the contrary, they are full of contour and undulation, an endless variation of dunes, swales, coulees, potholes, moraines, gullies, rimrocks and buttes. In their rumpledness, the plains remind me of the bed I never make.

Point of Rocks was a natural vantage for Plains Indians looking for bison and interlopers, and for the interlopers — such as people traveling on the Cimarron cutoff of the Santa Fe Trail — to look for Plains Indians. From this perch, the view is long and the earth a dish. I would have described the sun that evening and morning, as it pulsed and puckered on the horizon, except I would get all frothed up.

The high plains, consisting of most of Nebraska,

western Kansas, western Oklahoma and the Texas Panhandle, all of which parallel the eastern slope of the Rocky Mountains, is essentially the Rockies reconstituted. This flat, high country is composed of vast fans of sands and gravels carried off the Rockies over the past 30 or so million years by wind, water and gravity.

I was born on the high plains in west Texas. Although I've had happy times in Boulder, Durango, San Cristobal de las Casas, Huehuetanago, Cuzco and other cities perched in high places, I've had no strong desire to live in any of them. This suggests that I imprinted on flatness at an early age. I do not deny that precipitous landscapes are gorgeous in their own way, but I have come to realize a simple thing about myself. I like my mountains lying down.

One summer, when I was living in Nebraska, some friends and I were talking about a trip out to the Black Hills of South Dakota, but the more I considered the prospect of all that verticality, the more I pressed for Crescent Lake National Wildlife Refuge, in the empty, undulating Sandhills of western Nebraska. I'd been there once, so I knew the terrain was flat enough, with enough topographic relief in the form of magnificent sand dunes, to make me happy, even ecstatic.

Besides the unfurled eastern skirts of the Rockies, the other places eroded to near flatness that I love are the glacier-shaped farmlands that once were prairie in western Minnesota, Iowa and Illinois. I am so especially enamored of Iowa that I have become something of a liability for my husband at cocktail parties.

I have brought numerous animated clutches of people to puzzled silence with talk of, for example, my raptures at Wearin Prairie in the utterly flat bottomlands of the Nishnabotna River, in southwestern Iowa, or at Rochester Cemetery Prairie on the rolling sandy banks of the Cedar River, near Iowa City.

Iowa, I tell them, is a voluptuous body in repose.

This observation embarrasses or disconcerts most people, who wish to think of Iowa as a prim, flat and featureless landscape. Virtually the whole surface of Iowa is the product of glacial activity over the past 2 million years. Glaciers are the primal sculptors, doing for landscapes what Rodin, Brancusi, Moore and Lachaise have done for the human form.

The human body, like the prairie, is flat in some places and curvaceous in others. It is these incremental topographic variations that make both forms so appealing. I nonetheless have difficulty convincing people of the commonality between, say, "The Kiss" by Rodin and Sheeder Prairie, which lies on the bosomy glacial plain just west of Des Moines.

The great lament among those of us who love glacial landscapes is that their cloak of prairies is all but gone. Much of the disrobing took place a hundred or more years ago, but even that passage of time has not assuaged the feelings or frustrations of people in quest of prairies.

I have become accustomed to long drives between virgin prairies. And I am settling into the reality of corn, soybeans, wheat, alfalfa, milo, beets, sunflowers, feed lots, pig parlors and vast warehouses full of chickens and turkeys. This is where our food comes from — so we are all implicated in what has changed the landscape — and the food is raised by people, who, like any other socio-economic subset, are by and large sweet, industrious, complicated and slippery of stereotype.

At least the shape of the land remains pretty much intact — the oceanic swells of southern Iowa, the shocking flatness of the Platte Valley in Nebraska, the equally impressive levelness of western Minnesota, the serpentine curves around Chicago, the sleeping-giant shapes of the Flint Hills in Kansas, the incline of the high plains as they end in the Pine Ridge of northwestern Nebraska. I cannot say which piece of sculptured earth I love more.

One of my favorite memories of flatness harks back to a trip I made in Illinois in October 1994. I had spent the day out on the Grand Prairie, a huge swath of black soils in east-central Illinois that supported what is said to have been the tallest of the tallgrass prairie in North America. The Grand Prairie, 80 miles wide and 100 miles long, lies south of Chicago and east of the Illinois River. The 13 million acres of tallgrass prairie are all but gone. It is prime farmland and nearly flat.

I ended up late in the day at Weston Cemetery Prairie, about 25 miles north of Bloomington-Normal.

The cemetery is a tiny vestige of the Grand Prairie, a five-acre plot of wild, woolly grasses and wildflowers amid a lonesomeness of cornfields.

There was the flat earth, the horizon unobstructed by mountains or structures, and the sky. An autumn front was moving in from the west, and the sun set against a wall of bruised blue-black clouds. I stood out in the dark all by myself, happy in the knowledge of the little bug I really am.

Appeared in The New York Times *on May 12, 1996.*

At the Land

Natural Systems Agriculture

We planted almost two acres of sorghum experiments. One study seeks plants with good crop traits. Another will compare rhizomes, the underground stems of perennials, in plants that survived winter and those that didn't. A third block of sorghum is from seed made by about 140 hybrids grown in the greenhouse by crossing quality grain plants and winter-hardy plants. This expands our sorghum gene pool diversity, which previously had been based on about 24 hybrids of annuals and perennials. It's a crucial step in building a base for breeding.

We transplanted Maximilian sunflower to 900 small plots this spring, and they are doing well. This experiment, our largest yet with the species, will allow us to identify plants with the most croplike characteristics.

In a smaller experiment, we transplanted seedlings of two species from the genus *Silphium*. These are cousins of the sunflowers and might have potential as new perennial crops. In fact, the growth and vigor of *Silphium integrifolium* in our original observation plots has been so impressive that we are planning to comb Kansas roadsides for additional diverse germplasm.

New Faces

Strachan Donnelley was elected to our board of directors. He is founder and president of the Center for Humans and Nature. Before that he was president of The Hastings Center, a bioethics organization. He has written about evolutionary biology, ethics and philosophy, for which he has a doctorate.

Tiffany Stucky, a recent graduate from Kansas State University with a degree in horticulture, is our greenhouse manager.

Grinnell College in Iowa supported biology major Dan Lesh to learn from us and help with field work this summer.

Prairie Writers Circle

We reached a milestone with these essays on ecology, farming and culture, sending No. 100 this spring. As with the others, we e-mailed it for free to more than 200 newspapers and a dozen web sites.

We also had a big circulation success, at well over 1 million, with Michael Pollan's piece on subsidized U.S. corn exports threatening Mexican culture and corn itself. It ran in the *Los Angeles Times*, whose wire service added it to our regular distribution. See the essay on page 11. Deborah and Frank Popper on the demise of the American farmer got similar benefit from the *Atlanta Journal-Constitution*. Jim French on the might of capital and the Agriculture Department besting what's right in the beef industry appeared in the *Cleveland Plain Dealer*. The *Miami Herald* published Dan Nagengast's essay on the wholesomeness of food production.

Other recent essays: David Van Tassel on wind power, Jake Vail on the emptying Plains, Matthew Miller on food labeling, Stan Cox on Monsanto's patenting of biology, Craig Holdrege on genetic engineering of food crops, William Rees on fuel prices, Angus Wright on meddling with nature and Fred Whitehead on the demise of rural humor.

All essays are at www.landinstitute.org.

Exposure

Publications

National Geographic's May issue cover story on the Great Plains included The Land Institute, with a picture of Wes Jackson and long perennial roots to demonstrate how our work is different. The photographer, Jim Richardson, also showed his chronicling of rural Cuba, Kansas, over 30 years — our kind of time frame.

Scientist Stan Cox's review of the book *Quality Improvement in Field Crops* appeared in *Journal of Environmental Quality* 33: 1576-1577.

Former institute scientist Jon Piper was writer for the topic "Ecology and Agricultural Sciences" in *Encyclopedia of Plant and Crop Science*

Cindy Cox, an institute graduate fellow who will become a staff member next year, was co-author of a study on wheat cultivar mixtures for managing diseases, in *Phytopathology* 94.

Presentations

Staff scientists gave 30 undergraduate students and others our weekend crash course — called the Short Course — on Natural Systems Agriculture.

At our schoolhouse in Matfield Green, Kansas, we assembled more than 20 people to discuss moving society toward realization that humans are more ignorant than knowledgeable, contrary to how they try to run the world. This has long been a topic for us, and the gathering was stimulating a exchange.

In June our science staff and NSA graduate school fellows met with visiting scholars for an annual week-long workshop. One day several speakers connected environmental and human health: Aaron Blair, of the

Scott Bontz. Tiffany Stucky arranges Maximilian sunflower for planting in 900 small plots. This experiment will allow us to identify which individuals of this wild, perennial are best for breeding crop plants.

National Cancer Institute, on a long-term study of agriculture and health; Warren Porter, professor in zoology at the University of Wisconsin-Madison, on the ecological effects of low levels of toxins; Elizabeth Guillette, on pesticides affecting the health of Mexican children; and Don Wyse, of the University of Minnesota, linking landscape use to human health.

Staff members gain as much as fellows from this weeklong mixer for mind, mission and home-cooked food while the Flint Hills around Matfield Green bloom with wildflowers and warm-season grasses. It's a high point at The Land Institute each year. For description of the program and the students' projects, see page 7, and www.landinstitute.org.

With the Center for Humans and Nature, a New York group that has interests overlapping ours, we con-

vened in Matfield Green about 20 scholars to discuss for three days "Mississippi Watershed: Land, Water, People."

For an international nursing conference at Washburn University, Topeka, Kansas, we hosted a symposium linking landscape to human health.

Land Institute staff members also spoke at Schumacher Society, Yale University, Amherst College, Smith College, Wilson College and Purdue University, White Earth Reservation, University of San Francisco, Carnegie Mellon University and Marquette, Nebraska.

On August 27 in Louisville, Kentucky, we will participate in "Inspired by Nature: A Public Forum on Thoughts Toward a Sustainable Future." For details, see the calendar on www.landinstitute.org or call us at 785-823-5376.

Our scientists, plus allies including Wendell Berry, will spend Nov. 3 in Seattle explaining "Perennial Solutions to the Annual Problem." This will be at the joint annual meeting of the American Society of Agronomy, the Crop Science Society of America and the Soil Science Society of America. More than 4,000 people from government, industry and higher education, both teachers and students, are expected to attend. For more details see www.asa-cssa-sssa.org/anmeet/.

Visitors

German Public Radio came for a documentary on High Plains water.

Will Brinton of Woods End Laboratory, Maine, is a compost pioneer now exploring practice of it on a large scale for organic farms.

Retired Johns Hopkins University physician Edward Dodge, who grew up in South Africa, and Methodist minister Kennedy Mukwindidza of Zimbabwe, are interested in African agricultural ecosystems.

Fifteen people bicycling from San Francisco to Washington, D.C., for Bike-Aid, an effort by the human rights organization Global Exchange, got out of the saddle for a day. We explained our work, and they theirs. They hoed corn for us, and we gave them campground, bathrooms and a home-cooked meal.

Electronic newsletter

We now produce *Scoop*, a brief newsletter sent electronically every six weeks to tell about Land Institute activities**.** We offer it to those who have provided e-mail addresses. You may subscribe by e-mailing scoop@landinstitute.org with "subscribe" in the subject field.

Hiring for a Big Idea

Our big idea will provide food while improving human health and sustainability worldwide — not immediately, but in time with global warming and growing populations. The soil that feeds us needs protection from erosion and chemicals, which in turn affect our water. We are developing an agriculture that feeds people and saves soil.

We need to double our staff and programs and their funding.

A new development director will work in a modest, farmlike complex on 580 acres in Kansas with a band of funny, friendly, smart, hard-working, committed environmentalists. Full of hope and expectation, their conversations range from social justice to Aldo Leopold to crop science.

If idea-motivated, practical people and our idea could become your commitment, browse www.landinstitute.org, go to the job description from the home page, and let us know your skills and interests.

Prairie Festival

Last year 600 people celebrated the Prairie Festival with us, about double recent turnouts. This made the gathering of folks who care about sustainable living and our land even more exciting and encouraging. Here's what is in store Oct. 1-3. You are invited to join us.

Speakers
Dan Glickman, U.S. secretary of agriculture 1995-2001, serves on our board. He is a native Kansan who represented the Wichita area in the U.S. House for 18 years. Now he leads the Institute of Politics at Harvard University. By festival time he will have moved to direct the Motion Picture Association of America.

Michael Pollan, director of the Knight Program in science and environmental journalism for the University of California at Berkeley, has written about food production for the *New York Times Magazine* and authored the books *The Botany of Desire: A Plant's-Eye View of the World* and *Second Nature.* He also contributes to our Prairie Writers Circle. See page 11 for his essay about the havoc U.S. corn subsidies wreak in Mexico.

Judy Wicks founded Philadelphia's White Dog Cafe, which buys produce in season from local organic farms and supports a foundation for promoting the local economy. She co-founded and helps lead the national Business Alliance for Local Living Economies. *Inc.com* named her one of the country's 25 most fascinating entrepreneurs "because she's put in place more progressive business practices per square foot than any other."

William H. MacLeish, son of poet Archibald MacLeish, wrote *The Day Before America: Changing the Nature of the Continent,* an environmental history of life before European arrival, *The Gulf Stream: Encounters with the Blue God* and *Uphill with Archie: A Son's Journey.* His essay "Walking Behind the Cinnamon Bear" appeared in *Land Report* 78.

Percy Schmeiser is a Canadian farmer who also has served in the Saskatchewan Legislature and been a strident voice for farmer rights, recently in a long quarrel with Monsanto over the patenting of genes and organisms, which made the news worldwide.

Wes Jackson is a geneticist and The Land Institute's president. His critical and inspiring talks are a regular festival feature. Jackson wrote the books *New Roots for Agriculture*, *Becoming Native to This Place* and *Altars of Unhewn Stone*.

The institute science staff will present its annual show-and-tell on progress in breeding perennial grain plants and why they are needed. And graduate students we fund will tell about their work.

You may share your thoughts too. The Saturday night feature will be a "town hall" discussion, moderated by institute board Chairman Conn Nugent.

Art
Earl Iversen will show his photographs of grass-roots art projects made over years of travel across the nation. See the opposite page. The University of Kansas professor's work has appeared in many collections and solo exhibits, and was featured in the book *Backyard Visionaries: Grassroots Art in the Midwest*.

Music
Former institute intern Ann Zimmerman will play and sing her homegrown songs for us between talks, and will join the band Calliope for the barn dance Friday night. Jamming may continue around a bonfire afterward if weather permits.

Food, books and lodging
Saturday's supper again will be Kansas-grown fixings prepared under the direction of Donna Prizgintas of Southern California, who has been chef to Hollywood celebrities. At other times through the festival food will be sold from our Red Barn.

You will also find there speakers' books, and audio tapes of their talks.

As always, festival-goers may camp in our field.

A tentative schedule and registration form follow.

We hope to see you.

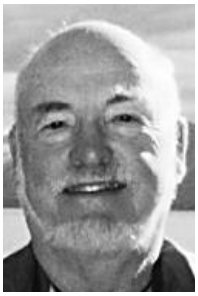

Pollan


Schmeiser


Wicks


Jackson


Glickman


MacLeish

Earl Iversen. LV's garden,
Kosciusko, Mississippi.

Prairie Festival Schedule

Friday, October 1

5 p.m. Early registration at office driveway, camping setup.
6 p.m. Gathering of current staff and former interns on office patio.
8 p.m. Dance in Big Barn.

Saturday, October 2

7:30 a.m. Registration opens at the Red Barn.
8:30 a.m. Land Institute research exhibit and tour, at the orchard.
10:30 a.m. Welcome and introduction.
11 a.m. Dan Glickman, topic to be announced.
Noon Lunch. Picnics for sale at Red Barn.
1:30 p.m. Michael Pollan, "The High Cost of Cheap Food."
2:30 p.m. Percy Schmeiser, topic to be announced.
3:30 p.m. Judy Wicks, "Building an Alternative to Globalization."
4:30 p.m. Land Institute staff recognition, dedication of Marty Bender Natural Area, music by Ann Zimmerman.
6 p.m. Catered supper for those who make reservations by September 24.
7:30 p.m. "Town Meeting of the Prairie," an all-comers discussion of The Land Institute's future and mission.

Sunday, October 3

9 a.m. Reports from our Natural Systems Agriculture graduate fellows.
10 a.m. William MacLeish, "Where in the World Are We Going."
11 a.m. Wes Jackson, topic to be announced.

Registration

Saturday
Friends of the Land . . . . . _____ x $12 = _____
Others . . . . . _____ x $16 = _____
Sunday
Friends of the Land . . . . . _____ x $ 6 = _____
Others . . . . . _____ x $ 8 = _____
Student rate, $10 for weekend, not including dinner . . . . . _____ x $10 = _____
Attending: ☐ Saturday ☐ Sunday
Children under 12 attend free . . . _____ x $0 = _____
Dinner Saturday evening, to be paid by September 24 _____ x $10 = _____
Vegetarian (not vegan) meal? ☐ Yes ☐ No
Enroll as Friend of the Land, one year, tax-deductible, $35 minimum. (You are already a Friend of The Land if you have given since September 30, 2003.) . . . . . $ _____
Additional tax-deductible contribution . . . . . $ _____
Total enclosed **$** _____

Credit card information
☐ Visa ☐ MasterCard ☐ Discover Exp. _____/_____

No. _____

Signature _____

To register by phone, call 785-823-5376 from 8 a.m. to 5 p.m. Central Time weekdays.

Names of those attending:

_____
_____
_____
_____
_____
_____

Street _____
City _____
State _____ Zip _____
Phone (day) _____
(night) _____
E-mail _____
How I learned about Prairie Festival 2004:

_____

We will not confirm your reservation. Programs, nametags and meal tickets will be at the registration desk. No refunds.

☐ Send map.

The Land Institute
2440 E. Water Well Road, Salina, KS 67401
Phone 785-823-5376, fax 785-823-8728

Thank You to Our Contributors, February Through June 2004

Thousands of tax-deductible gifts, from a few to thousands of dollars, are received each year from individuals and private organizations to make our work possible. Our other source of revenue is earned income from interest and event fees, recently about 6 percent of total. Large and small gifts in aggregate make a difference. They also represent a constituency and help spread ideas as we work together toward greater ecological sustainability.

Thank you to you, our perennial friends.

The first section of contributors below lists Friends of The Land who have pledged periodic gifts. Most have arranged for us to deduct their gifts monthly from their bank account or credit card. They increase our financial stability, a trait valuable to any organization.

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Martin Stupich. Glen Canyon dam and bridge against seeping sandstone, Arizona.

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The Writers and Photographers

Martin Stupich is a photographer based in Albuquerque, New Mexico. He makes pictures for the Library of Congress and state historical offices, and is now documenting landscape for a history of the Great Divide basin in southern Wyoming.

Stan Cox is The Land Institute's senior scientist.

Michael Pollan is director of the Knight Program in science and environmental journalism for the University of California at Berkeley, author of three books, including *The Botany of Desire,* and a contributing writer for the *New York Times Magazine* and our Prairie Writers Circle. He will speak at our Prairie Festival on Oct. 2. See page 22.

Bernard Rollin is university distinguished professor at Colorado State University, where he is a professor of philosophy, animal sciences and biomedical sciences, and serves as the university bioethicist. Among his writings are *Farm Animal Welfare: Social, Bioethical, and Research Issues*, and, with G. John Benson, *The Well-Being of Farm Animals: Challenges and Solutions*.

Suzanne Winckler is a free-lance writer in Mesa, Arizona. She has written Smithsonian history and natural history guides, and bird books. Her new book is *Prairie: A North American Guide.* See page 15 for more.

George Jerkovich, Salina, makes panoramic photographs, concentrating on the Kansas landscape. His work can be viewed at www.courtyardgallery.com, the Courtyard Gallery in Lindsborg, Kansas, the Strecker-Nelson Gallery in Manhattan, Kansas, and the Bluestem Gallery in Salina.

Earl Iversen is a professor at the University of Kansas. His photos of grassroots art will be displayed Oct. 1-3 at our Prairie Festival. See page 22.

Peter Jonker directs the Environment, Science and Technology Programs Extension Division at the University of Saskatchewan, and with Stan Rowe wrote *Sand Dunes of Lake Athabasca: Your Adventure in Learning.*

Ted Mosquin is a naturalist and ecologist now retired in Lanark, Ontario.

Aaron Paden is a photographer for the University of Kansas.

Earth-centered Stan Rowe, 1918-2004

Wes Jackson

Professor J. Stan Rowe died April 6 at his home in British Columbia after a stroke. Stan, 85, was an ecologist, environmental ethicist and writer. He was also my teacher. I never had a formal class from him, but if I had to pick three people whose thinking has affected my professional work the most, one of them would be Stan Rowe.

One way he shaped the lens through which I see the world is his comparison of the "outside" view, of the Earth as unified, with the "inside" view, which sees all sorts of things as separate. The latter "common sense" view is the one most of us have. If we were small enough to enter a cell and look around with binoculars, we would see things like crystals and regard them as nonliving and things on the move as living. That would be the view from the inside. The view from the outside would show that all are essential parts of the living cell.

Just so, all Earth is alive, not just the biosphere, a less useful term than ecosphere, which is both organic and inorganic. Both biosphere and the attendant idea of biophilia come from the faulty organism-centered view from the inside. This bio-bias leads us to regard the inorganic world as what Stan called "loose stuff lying around that we then tend to play fast and loose with." My world has been different since Stan pointed this out.

Here is a second shift he made in my thinking. Before the terms biosphere and biophilia came crashing down for me, Stan had written a paper in which he developed the "volumetric criterion for thinghood." This insight he drew from J.H. Woodger, a disciple of Alfred North Whitehead's "organic" philosophy, and from James K. Feibleman's *Laws of Integrative Levels*. Feibleman outlined twelve general laws applying to the hierarchy of structure, from atoms to molecules to cells to tissues to organs to organisms. What comes after organisms? Scientists proposed a variety of categories. Stan settled on ecosystem. He did so after asking what the other levels in the hierarchy had in common, and noted that it was contiguous volume, "things" unto themselves, like a rock. Species don't have contiguous volume, and neither do populations and communities, which are sprinkled around within ecosystems. An ecosystem's slab of space/time, whatever its shape, does have contiguous volume, and so Feibleman's laws apply.

Ecosystem is a better concept than environment, which, as Stan pointed out, is a vague term in which the center is on ourselves as something that belongs to us. He advocated acknowledgment that we belong to an "encompassing world … that sooner or later … claims us." It follows that the most important entities for scientific study of how to live on Earth are organisms and ecosystems.

These are two examples of the work of what was an eminently useful mind, and now that "encompassing world" that Stan understood so well has claimed him.

Peter Jonker

Another's remembrance

Ted Mosquin

Stan Rowe was born on June 11, 1918, in the rural hamlet of Hardisty in southern Alberta. He had a happy childhood in a prairie landscape later described in one of his many writings, *Growing up in Granum*. He was educated at the Universities of Manitoba and Nebraska, and worked as a research forester with Forestry Canada for 19 years, specializing in silviculture and ecological site classification. In 1967 he became professor of plant ecology at the University of Saskatchewan. Stan had lived in New Denver, British Columbia, in the 1940s when, as a conscientious objector, he was assigned to teaching the children of the interned Japanese. After retirement from academic work, he devoted himself to writing in the emerging field of environmental ethics and eventually returned to live in New Denver.

He used his superb literary skills and extensive ecological and philosophical knowledge to create a body of literature about the deeper values of the living Earth, its ecosystems and organisms. Articles from the 1980s were published in the book *Home Place: Essays in Ecology*. Stan authored the widely used book *Forest Regions of*

Canada and *The Level-of-Integration Concept and Ecology,* which in 1961 introduced the ecosystem concept to forestry. At his death, a book to be titled *Earth Alive!,* was nearing completion. Many of his inspirational ecological and philosophical essays are at http://www.ecospherics.net/.

Stan also made four creative and beautiful science videos, available from Waterhen Film Productions, for high school and adult audiences. In these he narrates the story of the ecology of the Earth and describes the meaning of the ecocentric valuation perspective.

I was fortunate to have worked as co-author with Stan on *A Manifesto for Earth,* published in January-March quarterly journal *Biodiversity*. He had been extremely pleased to have seen this in print two days before his stroke. The article is at http://www.ecospherics.net/pages/EarthManifesto.html.

I first met Stan back in 1954, when he was working on his doctorate in forestry and I, an aspiring undergrad botanist, landed a summer student assistantship with him, digging soil pits and carrying out ecological quadrat sampling for a forest site study in the boreal forests of northern Saskatchewan and Manitoba. I recall him getting out of his sleeping bag each morning, and with a tiny mirror hung on aspen branch or trunk, shaving while reciting or singing nature poems of Wordsworth and others.

Music and song were always important to Stan. In his youth he played the clarinet. Upon moving to New Denver he joined the choir and helped form an offshoot, the "Golden Oldies." He was noted for his ability to sing in perfect harmony — which is the way he knew the Earth, as a participant in a living symphony of evolving nature.

Beyond his formidable intellect, Stan was a kind, wise, cheerful and gently witty person, an inspiring teacher to students and his many friends. He made this observation about himself: "Not a misanthrope, but a defender of Earth against the excesses of anthropes."

Stan is survived by his love, Katherine Chomiak, his former wife, Julia, two children and three grandchildren.

His presence among us will be sorely missed.

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Aaron Paden. Rebecca Bruce, a University of Kansas student, on the Prairie Festival's morning prairie walk last year.

Prairie Festival

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October 1-3, Salina, Kansas

See page 22 for details

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