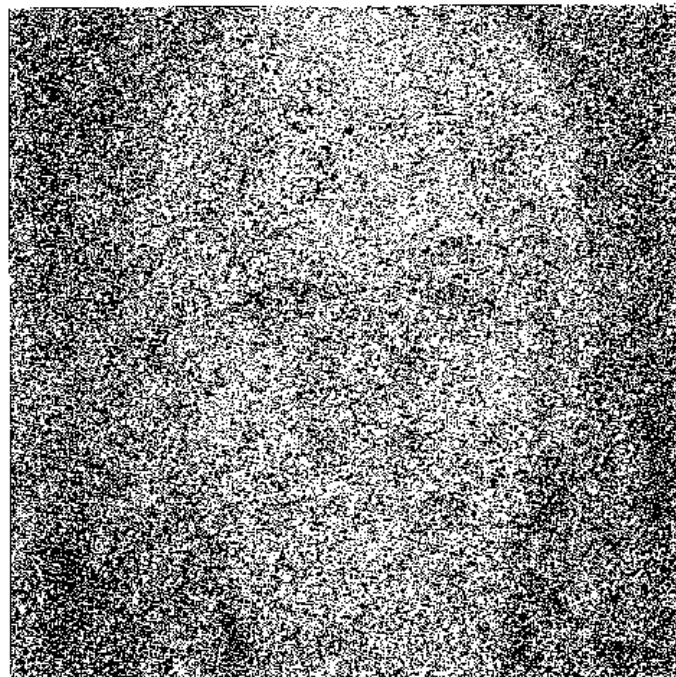


# *The Land Report*

A publication of  
The Land Institute  
Number 54  
Fall 1995



*Inhabiting Kansas...*

## Inhabiting Kansas

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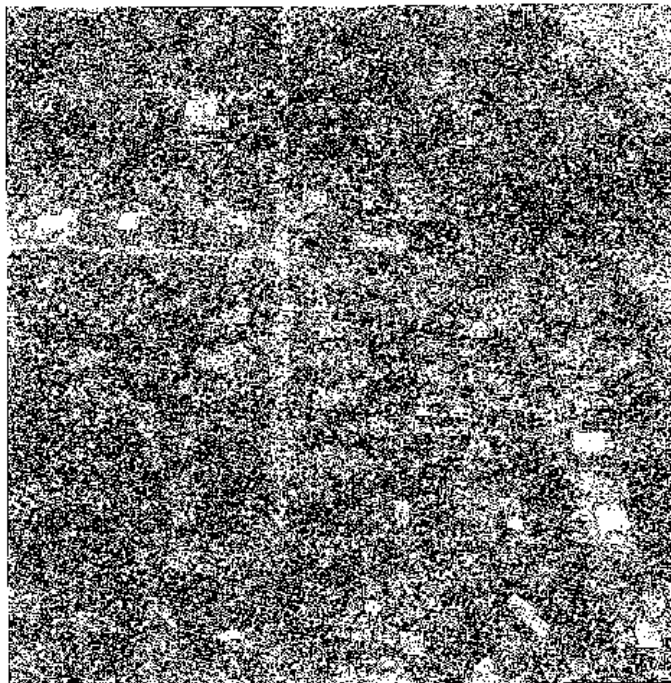
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Matfield Green, Kansas. They say it takes a whole village to raise a child. Where are the whole villages? The front cover shows Roxanne Rogers, Jewell Swift, Eugene Thomas (and Whitey), and Toots Conley, all of Matfield Green. The rear cover shows long-time inhabitants Gladys and Kenny Brent. The photos are by Terry Evans.

*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. To become a Friend of the Land and support the work of The Land Institute, please turn to page 39.*

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## *The Land Institute in Matfield Green*

*Brian Donahue, Wes Jackson  
and Nancy Scott*

Matfield Green lies on the South Fork of the Cottonwood River, in the southeast corner of Chase County, in the midst of the Kansas Flint Hills. Average annual rainfall is thirty-three inches, most of which falls in the spring and early summer. Most of the acreage in the Flint Hills has never been plowed and remains in native tallgrass prairie. The prairie grasses and forbs—including big and little bluestem, switchgrass, Indian grass, sidecoats grama, and a host of colorful legumes and composites—once fed huge migrant buffalo herds. Today, they make the Flint Hills the largest commercial range for transient cattle in the United States.

The village of Matfield Green has a population of about fifty and is contained within one square mile. About one-fourth of its buildings are uninhabited and have fallen into disrepair. The rest are well maintained; lawns are conscientiously mowed and most residents grow summer vegetable gardens. There are several young families in the area, but the majority of residents are over forty-five years of age.

Matfield Green is typical of America's small rural places. Its current economy is heavily dependent upon the extraction of non-renewable resources, both locally and around the world. Much of the productive land in the region is absentee-owned, so both the produce from the land and the profits from local enterprises tend to be exported. The population of Matfield Green and the surrounding countryside has been dropping steadily for decades, and is aging. But like many rural places, the Matfield Green area is still home to a group of dedicated families and individuals who wish to make a living there in a sustainable way.

Fossil fuel energy subsidizes farming in the Flint Hills and the larger economy of which local agriculture is a part. Most farmers in the Matfield Green area, as elsewhere, depend on petroleum products for traction, synthetic fertilizers, pesticides and herbicides to grow their crops. Transient graziers truck cattle from southern winter pastures to the Flint Hills in the spring, then from Flint Hills pastures to feedlots outside the region in the fall. These feedlots concentrate the grain produced by

petroleum-subsidized farming over a wide region. Given the limited supply of fossil fuels and the environmental impact of their rapid consumption, these practices are not ecologically sustainable. Neither is the economy which treats the countryside as a pool of resources from which grain and beef are to be extracted as efficiently as possible, with no regard to the future of places like Matfield Green.

The Land Institute's program in Matfield Green seeks to employ the insights of ecology as better organizing principles for human communities. Our goal is to develop conceptual tools which will help minimize dependence upon non-renewable resources, and maximize possibilities for local cultural innovation and adaptation. We are beginning by studying the ecological history of Matfield Green and a representative portion of the surrounding creek bottoms and upland range. We will identify a succession of "ecological regimes" and evaluate the degree to which each was sustainable, and determine what forces drove evolution from one stage to the next. We hope to draw on the experience of local residents throughout our work. This will give all of us a deeper sense of how Matfield Green came to be the way it is, and will suggest options to pursue for a sustainable future.

Ecological history will help us draw meaningful boundaries and better understand the interplay of parts for making an "ecological community accounting," the next stage in our research. We propose to study Matfield Green and the surrounding landscape as an ecologist would study an ecosystem. We will measure the flow of energy, materials and nutrients into and out of the system, and examine the dynamics within. Communities are endowed with ecological capital such as minerals, deep soil, timber, and rich prairie grasses. Such assets are protected by healthy ecosystems. The erosion of this capital through export, destruction or ecological over-simplification must eventually be accounted and paid. This sort of accounting will identify shortfalls and surpluses that might be redirected to meet long-term local needs. We believe balanced ecological books—characterized by relatively equivalent inputs and outputs, based primarily on renewable resources like sunlight, water and muscle power—cannot be separated from a prosperous and enduring community life.

How is the Land Institute's program being carried out? Over the past few years, we have established a presence in Matfield



Green. Our first concern was, and is, to be good neighbors. We began by renovating the old hardware store at the lumberyard to create a community cafe, and to provide housing for Land Institute staff, interns and guests. The cafe served coffee, leadplant tea (gathered from the local prairie), and bread baked in our Tuscan wood-fired oven, and also served as one of the community's gathering places. This function is now being moved to the renovated Matfield Green school building. We have been fortunate in the empathic and hard-working staff and interns who have lived at the hardware store and worked on Land Institute projects, exemplified by Sara Wilson Doyle, Caroline Mahon, Cathy Bylinowski and Susan Vickery. They have engendered tremendous goodwill from townspeople, and given Matfield Green a good introduction to The Land Institute.

Our central project has been the rescue of the Matfield Green School, closed in 1973 due to low enrollment and county-wide consolidation. Doug Tompkins, Don Worster, Conn Nugent and Wes Jackson purchased the derelict building a few years ago, and then deeded it to The Land Institute after extensive legal work donated by John Simpson cleared the title. The building has been painstakingly restored and renovated thanks to the diligent efforts of Ron Armstrong, with countless hours of intern and volunteer labor. The school now serves as a meeting place for The Land Institute, groups such as the Kansas Folklore Society and the Tallgrass Prairie Producers, and the local community. We intend to continue to develop it as a conference and community center.

As our research evolves, our educational program will develop alongside it. We will create a program of workshops to introduce teachers to our research and methods. Our projects and facilities will be available to teachers from institutions throughout the region for field trips and special classes. This educational model is exemplified by Terry Evans, The Land Institute's Art Associate and a nationally recognized photographer, recently nominated to serve on the National Arts Council. Terry has her darkroom in the school basement and spends about one week every month working in Matfield Green, photographing townspeople and the surrounding landscape. But beyond her own work, Terry runs workshops and classes on photography and land use with community members, and with teachers and students in the Chase County schools. Operating in this way, artists and scholars can pursue their own specialties, teach, and learn from the people who know Matfield Green best.

We also plan to host conferences at the school to accompany and inform our research program.

Emily Hunter has joined us as a conference coordinator to organize several of these gatherings, which will bring together diverse groups of academics, independent artists and thinkers, and local people. Emily was special events coordinator and is a long-time board member at the Naropa Institute in Boulder, Colorado. Topics will range from the concrete such as building with local materials, to the abstract such as defining boundaries in the study of complex systems. Our object is to explore every aspect of what it means to live within the ecological limits of one specific place. We believe our results will be felt beyond the region as they are published, as conference participants return home with new ideas, and as the programs in Matfield Green attract publicity.

While many small towns are deteriorating, others are being repopulated willy-nilly. Americans have for decades demonstrated their preference for country living by moving to the suburbs. Today, many small places have become bedroom communities to large cities; others are quickly becoming pastoral settings for businesspeople commuting on the information superhighway. We seek to offer resettlers new possibilities—ways to live well within the ecological limits of their place.

We would like to see places like Matfield Green remain viable, places where the young are raised in a healthy and productive way and are able to return to live if they desire. But we cannot promote a return to these places with the same set of assumptions with which they were originally settled—the assumption that resources are infinite and that it makes no difference how or where we extract them, so long as it is cheap and efficient. Those assumptions have led to the decline of thousands of places like Matfield Green, in spite of the best efforts of those who have cherished them. We hope to discover, in one such place, how the costs imposed by the industrial economy have remained hidden for so long. The Land Institute would like to help put rural communities on a more secure economic footing, by inventing a new, ecological form of accounting that credits the value of places like Matfield Green.

*Brian Donahue is Director of Education, Wes Jackson is President, and Nancy Scott assisted The Land Institute endowment effort in 1995.*



## *A Place for Elijah: Thoughts on Natives and Wanderers*

Angus Wright

*Adapted from a talk given at Prairie Festival 1995*

How does a native son come back home to speak on "becoming native to this place?" Although I was born in Salina and spent my first eighteen years here, I have now spent a little more time in Sacramento, California than I have in Kansas. I think I may be as much a wanderer as I will ever be a native.

I do believe in natives, though. Because I am a wanderer in much of my work, I have by necessity imposed frequently on the hospitality of natives, whether indigenous people of southern Mexico and coastal Brazil, or sidewalk natives as fondly dedicated to the rich urban life of Mexico City and Salvador de Bahia, Brazil as people here are to Kansas. That hospitality has been again and again something rich and amazing—something that speaks powerfully of those qualities of being native that I most admire. I have eaten the last chicken because an ancient Mixtec woman insisted that I do so, as she sat and

watched, having herself dined on tortillas and salt. I have eaten the last plate of potato stew high in the Andes—my host insisted and said without making much of a sacrifice about it, "we, of course, are used to hunger, while you are not."

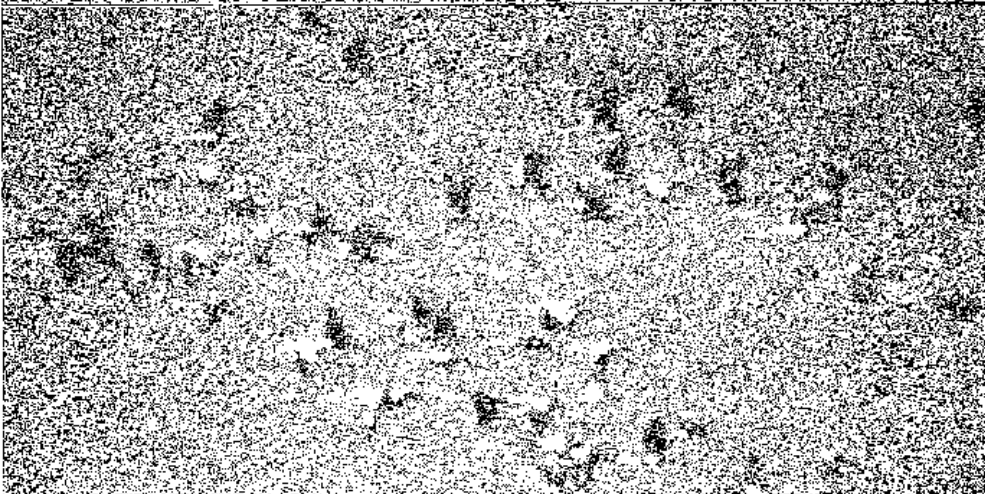
But while I believe in being a native, I am a little afraid of the self-conscious project of becoming native. Any historian must be. For just as imperial conquest has been one of the most ecologically and socially devastating forces in the world, so has the fanaticism of nativism been a powerfully destructive force. Like all love, the love of home may be a jealous love, paranoid, intolerant and violent; or it may be generous, tolerant and giving. There are few things more needed in this world than the love of place, but love can be blind, and we need to keep our eyes open. What I want to talk about is not whether it is better to be a wanderer or a native, but about the relationship between two principles—cosmopolitanism and localism—embodied in wanderers and natives.

Though it goes against stereotypes of the Midwest and of the 1950's, I was raised a pagan in Salina by my mystic-pagan parents. Every year while most Salina folk were preparing Easter, we went to the Passover Seder dinner of our Jewish friends the Cushmans, the family of the librarian. Jerry Cushman was a wanderer who made the natives of Salina bloom with creativity, art, and learning. My parents explained that both Easter and Passover were just organized religion's way of stealing the fire from the older and more honorable pagan festivals to celebrate the rebirth of life evident in the greening and blossoming natural springtime world.

One of the things I remember about the Jewish Seder was that the door was always left open a crack, no matter what the weather, and a special wine cup was filled at an empty place-setting. Jerry Cushman explained that this was for Elijah, the prophet and traveler who might stop by at any time and who must be welcomed. I just loved this idea. I imagined what this Elijah might look like. First he was the obvious wild-eyed, bearded, ragged old prophet, wandering out off the prairie. Then I imagined others—a woman carrying a message of peace throughout America, or a survivor of a Nazi death camp, or one of Jerry's funny librarian friends full of dirty jokes, or an unemployed railway worker, or a poet, or a man who had just lost his farm. It wasn't



*The Northern Goshawk—a wild winter visitor to Salina*



*Sandhill Cranes pass through Kansas on spring and fall migration*

hard to imagine these people—my parents were always inviting them in off the streets to share our home and meals throughout the year. For me, Salina was a place through which Elijahs traveled all the time, and we were to welcome them—it was part of the Cushman's religion and part of ours, too.

Although the world is full of such wanderers, humans now for the most part live in settled communities, like Salina. Those communities all account for a very special piece of earth that needs to be intimately known and nurtured, year in and year out. Our agricultural and industrial technologies must with great urgency be bent to the "expectations of the land," in Wes Jackson's favorite quotation, after "consulting the genius of the place." For communities to be decent and just places to live, there must be some stability of institutions, some shared assumptions, some characteristic and locally appropriate way of doing things—in a word, a culture. I think that this is what The Land Institute's work is about, and I hope it is what much of the American and planetary environmental movement is about.

Perhaps unfortunately, we have to think and work on this task of becoming native very consciously. It doesn't "just come naturally." For one brutal fact, we people of European extraction have just a historical moment ago seized a large number of the world's local places from the previous and time-honed natives by force of arms, disease, slavery. We have to remember this raw truth. We can seek to become native because we killed the natives; or most of them, anyway. It won't be undone anytime soon and it won't help to feel guilty about it. But it does define the task. We *aren't* the natives outside of Europe in any significant historical sense. Not yet. Making it happen is a difficult responsibility.

The first and enduring task of becoming native to a place is to know its history and to conceive of what exists here now and what is to become in historical terms. Otherwise, you remain a thief forever, no matter how long you stay in the same place, because you are taking without consideration for



*White Pelicans take off from Cheyenne Bottoms, Kansas*

what you owe. Anthropologists tell us, and my experience has confirmed it to me beyond any doubt, that the first principle of indigenous cultures is reciprocity. For everything taken, there must be a return, for every return there must be another gift. Our community is held together by our debts to each other and to nature. The eternal exchange of gifts defines the work we are to do in the world. Elijah's cup acknowledges all those debts we have not yet been given the opportunity to repay.

Our culture possesses the land of America partly because we forced others to pay the price of conquest. Have we repaid our debts to the Native Americans? On the contrary, the conquest continues. In one of Salina's best motels I talked to several of the room staff and janitors. They were all from Mexico, and initially terrified of someone asking them questions in Spanish. Many of the Mexican people working in the United States are indigenous people of Mexico, for whom Spanish is a second language. They are Mixtecs, Zapotecs or Mixc from

Oaxaca; Puripechua from Michoacan; or Tzetzales and Tzotziles from Chiapas. You will see a lot more of them. Why? NAFTA and the fabulous productivity of Kansas, Nebraska and Iowa farmers virtually guarantee it.

NAFTA not only phases out tariffs and quotas on U.S. grains exported to Mexico, it also phases out support prices and subsidies given to Mexican grain farmers. While there are large agri-business firms in Mexico that will compete successfully, the millions of small farmers in Mexico will not be able to compete. They need at least twice the price the Kansas farmer needs per bushel to survive. They are going to be coming off the land, by the millions. Some say that the already rapid rural-urban exodus will be burdened with another four or five million people in the next decade. Others say there will be more like fifteen to twenty million. As they leave, many of the last and richest indigenous cultures of the Americas will bow to complete conquest at least. The descendants of Mixtecs who twelve hundred years ago made magnificent gold and jade jewelry traded by early American wanderers all the way up to the ancestors of the Iroquois people of New York state will be changing sheets in the Holiday Inn in Salina. The descendants of the people who domesticated corn and developed the thousands of varieties that modern corn is based on will be picking truck crops in Douglas and Johnson counties for the suburban shoppers of Kansas City and Topeka.

What does this have to do with becoming native to Kansas? It's not simple. One basic thing seems clear, however: becoming native cannot mean becoming parochial. It cannot mean becoming less concerned with national and international politics. It cannot mean whining about how NAFTA will hurt Kansas without also asking how it will allow Kansas farmers and city people to profit from the collapse of native cultures in Mexico. Right out on motel row along I-70 and I-135 there are lonely wanderers in this town, as in virtually every sizable town in the United States. What do we have to do with them? Are the terms of reciprocity ones of dignity and respect, even of mutual recognition of who we are and who they are?

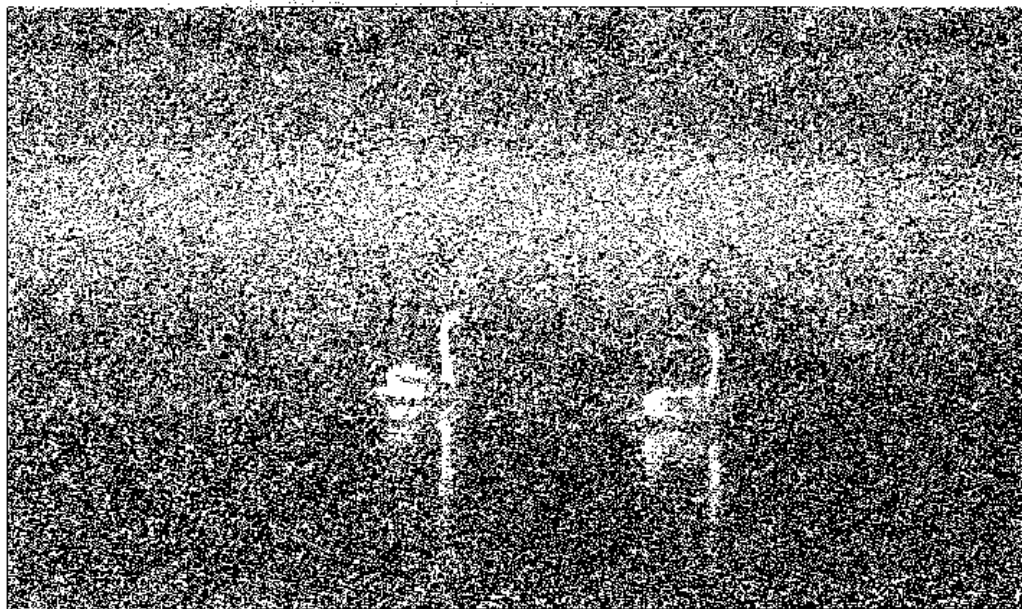
We need to look at the economic and political policies that are guiding our international system. They are often called neo-liberal. This is, speaking only a little roughly, a euphemism for laissez-faire capitalism, a return to the robber baron and colonialist days, where the new barons and colonialists are the CEO's and chief stockholders of the world's major corporate entities and private and public investment banks. While these policies have stoked a powerful engine of growth, in most nations they have led to increasingly wide disparities between

rich and poor, and just as dramatically, between rural and urban. They have greatly magnified and hastened history's greatest exodus—that of the world's rural people to the cities. They have sharply increased the gap between the world's rich nations and the world's poor nations. In the United States itself, the concentration of wealth has become much more dramatic over the last three decades, with one percent of the population now owning forty per cent of our wealth. And everywhere, this process of economic concentration has come at the expense of rampant environmental exploitation. There will be no place in the world for strongly-rooted native economies and cultures unless we fight back politically at every level against these policies.

This task, like many, does begin at home, and we must work with the spirit and the vision locally that we would have prevail globally. More than a century ago in central Nebraska, my great-grandfather killed Indians with his own rifle to make comfortable room for his own family. I would be somewhere else now if he hadn't. We cannot change that past. But twenty-five years ago, my parents volunteered thousands of hours to make Air Force brides from all over Asia citizens of the United



*A wandering Sandhill Crane*



*Trumpeter Swans—rare visitors to central Kansas*

States. They did everything they could to make these people, often despised by good Salinans, into informed voters and English speakers. They made dozens of young Japanese and Chinese women into Salina natives. But I am convinced that when my mother and father did this, they also made themselves more deeply native to this place. They said, we have a community here now, and it must be a community of tolerance, of mutual respect, of dignity for every person. My parents taught that it is a fine thing to live on this rich Kansas soil and to celebrate the gifts of the prairie summer. But they also taught that we will only deserve it, and we will only have a decent, peaceful community when we behave with responsibility and dignity toward others.

My pagan parents, who had studied and submitted themselves to the disciplines of several religions and ethical systems, challenged us to work out our own beliefs. In this stage of my life, I am thinking that humans need two kinds of gods. We need the very local, very concrete and specific earth divinities we can see and touch and taste, embodied in the feel

and smell of prairie soil and in the perfume of the prairie flower. The pagan gods that pull us into the here and now and that set the rules for what it is to be a native to a place and to know it and to love it.

But we also need the gods of wandering tribes. Those who lay out principled commandments, universal rules of human behavior. Thou shalt not kill. Thou shalt not covet, lie, steal. Christ told us we would never live without the sin of breaking these commandments, because our lives are filled with complicated dilemmas and temptations. So we need universal concern and generous love, as well as specific, pagan love of our own place and our own people.

To argue for many gods would be hopelessly heretical to the original Elijah. He would have no tolerance for my message. But wanderers are often maddeningly contradictory. As natives, you must prepare the cup for many wanderers, and learn how to work cooperatively with others who would like to stay rooted in their own land and culture all around the world. Each wanderer, and each native has his own story. Each of us are wanderers across a different stretch of earth, native to wild places and tame. We each make our own different and sometimes irritating demands.

Have you prepared our place, have you filled our cup? And for my friends, Jose and Maria?

*Angus Wright chairs the  
Environmental Studies  
program at California State  
University, Sacramento*



*Franklin's Gull*



## Kansas Homecoming

Valetta Seymour

Moving to Moundridge, Kansas in 1985 was a homecoming for me. I grew up on a farm near Moundridge where my Mennonite ancestors settled over one hundred years before. All eight of my great-grandparents were Mennonite immigrants from Russia who settled here. Each of my parents' siblings raised their families here. So my roots are pure and deep.

As I grew up in this rural community, I experienced a place with memory, where one generation after another has grown up together. Now our daughter Kate goes to school in the same building I did and was taught by an old friend, classmate and second cousin. I have the privilege of attending reunions to which all descendants of my great-grandparents are invited, and many still come from close by. Memory and marriage between families with a shared history still help bind this community together.

Living elsewhere for twenty years, I still felt very connected to this place and wanted to return. I was drawn to a life which was rich with childhood memories of chasing bees, ground squirrels, and field mice. Memories of participating in the rich musical traditions of the Mennonites. Memories of learning the skills of the homeplace—sewing, cooking, baking, caring for farm animals, and gardening. I still use these skills daily, which has made this part of my homecoming very satisfying.

For my husband Miner, our move to the prairies of Kansas was a homecoming of a different nature. With neither the framework of an extended family here to build on nor the boundaries of expectation that embrace a returning native son, he was both adrift and afforded some freedom denied to me.

Our homestead began within days of our arrival. Miner built our home on

land given to us by my family. Earth-bermed and passive solar, its completion had to beat the deadline for receiving energy conservation tax credits (thank you, Jimmy Carter!). Soon after we moved in our daughter Kate was born and home life began to take shape.

Growing a good share of our food in a large garden was one of my first priorities. Eating the fruits of our labors nourishes body, mind, and soul, and reduces our dependence on more environmentally destructive forms of farming. With the help of my Swiss Mennonite Dad who loves poppy seed rolls, we even grow our own poppy seeds by the gallon!

One of our goals here was to find ways to be employed at home. To that end, Miner planted two thousand strawberry plants and one hundred twenty apple trees for the local U-Pick market. In preparation for his version of perennial polyculture, the soil had to be rebuilt after a century of continuous wheat cropping. Successive green manure crops of sweet clover and sudan grass were tilled in. Chicken manure from a neighbor and lime were worked in to bring the soil back to health.

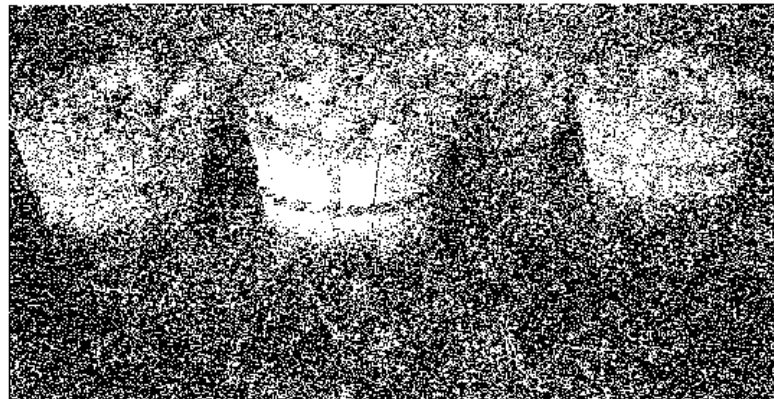
Happily, his first U-Pick season for strawberries was a bonanza. The fruit was plentiful and there were pickers for every berry. The following seasons couldn't match the first, but continue to be financially and socially worthwhile. A field full of folks picking and sampling and visiting across rows is a delight. When we have lots of ripe organic berries, and a van full of bonneted women pile out all smiles with buckets swinging, Miner is a happy man.

Building community has been more difficult than building soil. We feel frustrated with ourselves and others for being so individualized that sharing work has not always come easily. When my Dad talks of the way farmers shared work as he was growing up, I can see how important that was for building community. People *needed* one another, and, as a result, they had to get along.

This need for one another doesn't exist anymore. We have replaced one another with equipment. In this respect, Moundridge is very different from the

way I knew it. The Church continues to function as a central part of the community, but without shared work, even Church life is diluted.

Without a functional community, we become a group of disconnected individuals, and the





*Kate Seymour*

community is in danger of forgetting itself.

Growing strawberries for the local market was one small step toward reviving this mutual dependency. Miner's next step was to join the Moundridge business community by purchasing the oldest building on Main Street. The title abstract showed that eighty years ago the building was owned by my great-grandparents. Not being from Moundridge gave him the license to try an idea that locals would not have thought viable. A familiar sentiment in Moundridge is "do people do that here?" Part of what makes a community a community is keeping to traditions, granted. However, now and then a mutant gene comes along to ripple the pool. Thus was born the Old Settlers Inn acoustic singer/songwriter series.

Now, songwriters who roam the continent like buffalo bring us stories from the road and collect ours to take to the next town. There is an audience, and now, people do that here. Seemingly out of the prairie soil has come a community of contemporary folk music lovers to find music with something to say, and to find each other.

One of my greatest delights in coming home has been the opportunity to take up quilting with family and friends. My grandmother had helped me start a quilt a number of years ago while home on a visit. As the quilt lay unfinished during my years away, I grew anxious to complete it in my Grandma's lifetime. After our return, as the reuniting with family took shape, my ninety-five year old Grandma, my aunts, my Mom and my sister all spent a day with me stitching my first quilt. They took on my quilt as their own, stopping only reluctantly and as briefly as possible for lunch, hoping to see as much progress as possible. We had both friendly and contentious discussions. But for a day, we all became partners in working toward a finished product. The quilt is put away for Kate now, and may she feel a special warmth from it.

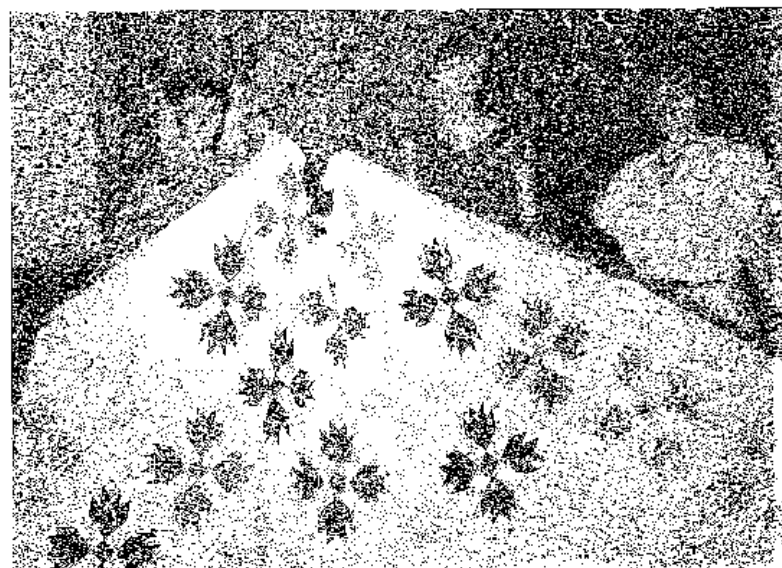
Since then, four friends and have I organized a quilting group. We meet in my home every Monday evening for quilting and women's talk. One of the

quilts has been sent to Miner's nephew, another was made for the daughter of one of these women. We are now working on a large quilt to donate to the Mennonite relief sale next spring. The shared work and conversation bring us closer together with a strong loyalty to one another.

We are raising another generation to know life on the prairie. Kate is ten years old, and I love seeing her run on the same soil I did. She sees her only living grandparent often and rides her bike regularly to visit my sister, who lives in the house where I grew up. My aunts and uncles are now elderly and many have died since our move here. I am grateful to have spent time with each of them in their last years. It intensifies the warm memories of Christmas at Grandma's with all the cousins, aunts and uncles eating and singing songs together. Even as an adult and parent, I continue to be raised by this family. Perhaps some of that teaching will touch Kate as well.

Kate's path may lead her away from this community as mine did, but perhaps she will be drawn to a homecoming someday, too. I hope that there will be a real community for her to come back to, one that lives up to her memory of growing up here. That hope reminds us to do our part in carrying on this dream of community.

*Valetta Seymour lives in Moundridge, Kansas. Her husband Miner shared in writing this article.*



*Valetta Seymour, left, with quilters*

## *The History of the Land in Chase County*

David Tepfer

In 1875, less than twenty years after white settlers arrived, the population of Chase County, Kansas reached 3,100—about the same as it is today. In 1875, eighty percent of the county was owned by nonresidents and was used primarily for grazing cattle—again, very similar to today. However, population, landownership and land-use patterns in Chase County have hardly remained stable for the past one hundred and twenty years.

After 1875, the number of people increased dramatically to a brief plateau in the 1890's, slowly declined through the 1930s, and then fell rapidly (Figure 1). The number of farms and ranches, and most notably small to medium sized farms and ranches, also rose and then dropped away (Figure 2). By contrast, the number of cattle that graze in the county increased dramatically and has stayed high to this day. Much of the land that was absentee-owned in 1875 entered the local market but eventually ended up back in absentee hands. Through it all, about eighty percent of the land remained in prairie.

Some would conclude that history has determined that the system of transient grazing, absentee ownership, and large ranches is what works best in Chase County. But there is another view on this. Long time residents who have watched their neighbors depart wish to remain, and others who wish to return would like to make a living on small farms and ranches. Many people are interested in reinhabiting Chase County, or a thousand other places like it, but wonder how it can be done.

What can we learn about how to live in one corner of Chase County, the area around Matfield Green, by studying how it was settled and used in the past? One critical question is why the small and medium sized farms and ranches that once existed, and the vibrant social institutions that went with them, largely failed to persist. Were some of the practices on these farms ecologically inappropriate? Was there something about the social structure that brought about the end of the small farms? Did outside economic and technological forces cause their demise?

This leads to the question pivotal to all those interested in inhabiting or reinhabiting any place: what is the potential here for supporting an ecologically sound and culturally vital community of people engaged in making their living on the land?

At The Land Institute, we have begun a study that seeks a more complete understanding of how the ecological system in the Matfield Green area functioned with people as part of it. This understanding must be deeply grounded in the nature of the place. Around Matfield Green nature provides a combination of fertile bottomlands, steep side-slopes and rolling uplands, variable soils and an erratic climate, narrow creek bottom forests and the tallgrass prairie ecosystem. An understanding of the possibilities and limitations of this landscape can be gained by examining how people have lived on the land and made use of it at different times.

For now, our study focuses on European American settlement and the farming systems of the past 140 years. The complete story must eventually include the systems employed by Native Americans, as well. Our study of land use regimes will center around the different kinds of farms that existed during successive periods, how each combined and used various types of land, how these farms fit together on the landscape, and how this system evolved over time. The detailed description of each period will assess its ecological impact and social and economic viability.

What follows is a first sketch of Chase County agricultural history based on aggregate trends in population, farm size and numbers, and agriculture production as provided by state and federal census returns. As more information is brought into this initial framework and as representative farming areas are mapped and analyzed, a more complete ecological history will emerge.

### *Phase 1: 1857 to 1890*

Settlement, growth in population, and expansion of agriculture onto nearly all of the land in the county characterized the years from 1857 to 1890. The first permanent white settlers came to Chase County

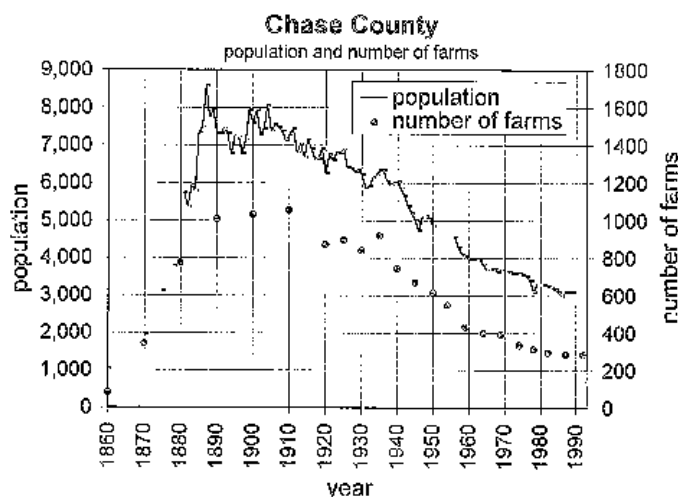


Figure 1

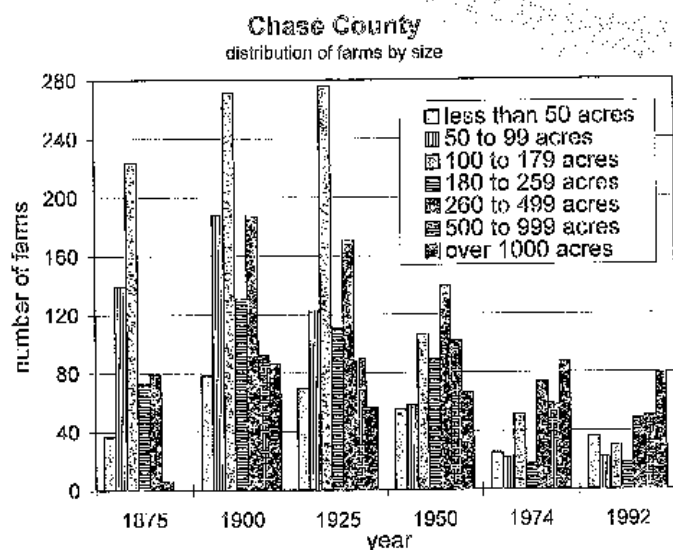


Figure 2

in 1857, and the population grew steadily to a high of 8,600 in 1887. The number of farms showed the same trend, passing 1,000 farms by 1890 (Figure 1). Land in tillage grew rapidly and steadily through this period, driven almost entirely by ever expanding acreage of corn grown to feed cattle.

Cattle numbers also grew, but much more rapidly with the rise of transient cattle grazing in the latter part of this period. The cattle boom of the early 1880's brought about a distinct change in the structure of Chase County farms. Anthropologist Joseph Hickey captures this difference by calling the settlers of the 1870's "creek-bottom farmers," and those from the middle 1880's on "farmer-stockraisers" (p. 135).

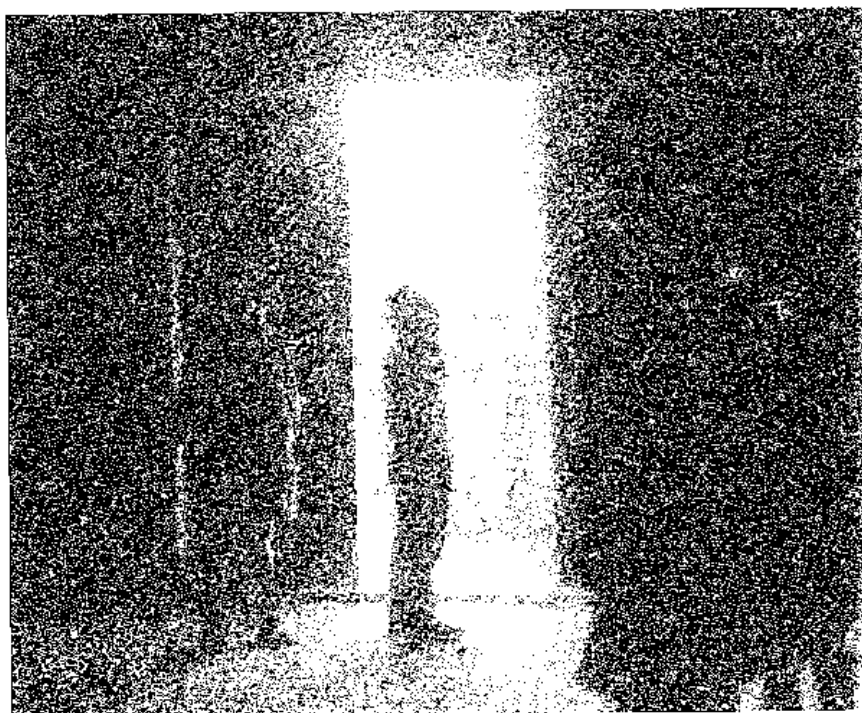
In 1875, about 500 small farms were located in the creek bottoms, occupying about fifteen to twenty percent of the land in the county. This included almost all of the flat fertile bottomland (about twelve percent of the land area), along with some of the surrounding uplands necessary to form square pieces of property. The rest of the county was not yet settled and was owned mostly by the Federal Government and by railroads.

In 1875 farms averaged 160 acres and were fairly uniform in size. In the Matfield Green area, less than one-tenth were greater than 300 acres and the largest was 560 acres. Most farms had at least a few head of cattle, and many had from twenty to eighty head. Many people living in towns both within and beyond Chase County also grazed cattle in the county. Many of these cattle

ranged freely over the uplands, which were still owned by outside interests.

Even though the bottomland was all settled, only about one-fourth was plowed and planted to crops. About one-tenth was cut for prairie hay, while the rest apparently was grazed. At the same time, some farmers in the Matfield Green area were beginning to till the fertile but highly erodible slopes immediately above the creek bottoms. This may have been done because this land was less prone to the flooding that plagued the more stable lowland and would provide more consistent yields, at least until it eroded away. Or, it may have been done mostly by a few farmers who did not have enough flat bottomland to meet their needs.

By the last half of the 1880's farms a more diverse array of farms was on the landscape than during the 1870's. Some of the small creek bottom farms were still there, but often under new owners. A few of them had expanded by acquiring more upland for cattle grazing. In the 1880's, Chase County saw some of the first big ranches covering thousands of acres and completely financed by outside capital, part of the cattle boom throughout the West. In the Matfield Green area there were none as vast as in some other parts of the Flint Hills, but a few large spreads were put together by families that



A barn in Matfield Green—old but still sound





*Jane Koger's Homestead Ranch*

had been in the area since the 1860's.

Once the upland was purchased from speculators and the railroads it was fenced, making it impossible for small creek-bottom farmers to graze their animals. This removed an important source of income and may have helped drive many pioneer settlers to sell out and move on. Meanwhile, there was a new farming boom underway in the southern Flint Hills, and throughout Kansas, in the mid-1880's (Sheridan, p. 133), and a new wave of farmers was moving in. In the Matfield Green area, Hickey found that the most extensive settlement and plowing of the uplands occurred at the end of the 1880's (p. 160). Many of these small, 160 acre farms were founded in the years of good weather and prices during the mid-1880's, but did not make it through the hard years of the next decade (Hickey, pp. 172-173).

By 1890, the settlement of Chase County was complete, and an agricultural system that combined grazing and crop lands through a variety of farm ownership patterns was in place. The critical questions would be how well these croplands and rangelands would be managed and integrated, and who would control these resources.

## *Phase 2: 1890 to 1935*

Between 1890 and 1935, agriculture was fully established and supported the most farms and the highest sustained population in the history of Chase County. This was the time of great social activity and events, still remembered in stories many current residents of the county heard from their parents. But despite the relative stability and prosperity of the period, there was constant change in ownership structure and a gradual erosion of number of farms and population. Two moments which perhaps capture the essence of the period were the first few years of the twentieth century, the height of community; and the late 1920's, the last few years before the big declines following the Great Depression and World War II.

After drought, depressed prices, and mortgage foreclosure in the early and middle 1890's, the weather and economic conditions turned more favorable in 1898 and farmers prospered. The first decade of the present century marked the peak of rural life and community prosperity in the Matfield Green area.

As Hickey says, it was the Golden Age of Agriculture in Chase County, as it was in all of the United States, and there seemed to be hope for an enduring way of life. "During this time... people may have begun to shift from perceiving land solely in terms of its profit potential and to develop an embryonic sense of a partnership and commitment to the local landscape." (Hickey, p. 183)

Although the population and the number of farms were about the same as in 1890, by 1910 the ownership and management structure had changed. The number of farmers who were tenants had increased dramatically in the early 1890's (Sheridan, p. 242). Many of these tenants in the Matfield Green area were kin of their more prosperous landlords (Hickey, p. 201). They typically grew winter feed for the larger ranches and often served as hired hands when needed. Thus land and community were still largely an integrated whole, although control was passing steadily into fewer hands.

By the late 1920's, however, the end of the era of small farms in Chase County was at hand. In 1925, farm size and the number of smaller farms and ranches was still much as it had been at the start of the century, although population and number of farms had started to decline. Telephones, cars and

trucks, and all of the other new technology of the time did not seem to have had a great effect. But underneath the surface, as Hickey's study reveals, the social and economic bonds that had held rural communities together were starting to erode. The upcoming depression and drought of the 1930's and migration to the cities through the war and after would eliminate over half of these small farms and ranches in the next thirty-five years.

### *Third Phase: 1935 to present*

From 1935 on, population and number of farms has declined steadily and farm size has increased dramatically in Chase County. The biggest part of this change took place prior to 1960. Until the mid-1930's there were about 900 farms in the county and they averaged a little over 400 acres in size. By 1959 there were only 432 farms, and the average size had increased to 1135 acres. A detailed study of 1959 disaggregated this average and found that there were two quite different kinds of operations in Chase County (Kollmorgen and Simonett, 1965). Nearly three-fourths (73%) of the operations were small to medium crop farms of less than 640 acres with half their land, on the average, in crops and half in grass. They controlled just twenty-one percent of agricultural land in the county. Traditional small farms of 160 or 80 acres had all but vanished from the land (Figure 2).

At the other end of the spectrum were farms and ranches over 2,600 acres which made up just five percent of the operations but controlled over two-thirds of the land in the county. The largest two percent controlled nearly half of the land in the county. These large operations were almost entirely in grass and apparently mostly absentee owned.

The trend seen in 1959 has continued to today. Even though modern technology has increased the defining acreage of a "small to medium sized" farm or ranch, they have become even less common. Very large ranches with their summer herds of transient cattle dominate the landscape. Significantly, crop farms now grow more wheat and soybeans for export from the county, and less feed for local cattle herds. Although we have not yet teased it out of our census figures, we strongly suspect that far less food is grown for local human consumption than in earlier periods. It seems that ever more land is dedicated to products exported from Chase County.

Obviously, today's agriculture system takes fewer people to run and supports fewer people within the county than ever before. What is not so obvious is whether this need be so, what other options have been lost, and how they might be regained. Deeper understanding of the agricultural history of the

Matfield Green area will help answer these questions. This deeper understanding can re-inform those who remain, or wish to return, about the possibilities of the place which were overlooked or forgotten in the process of rapid agricultural development.

In the history of a local place, stories are mostly remembered about those who stayed, particularly about early settlers who founded farms and ranches which would last for generations. These stories can inform and inspire those who would live there, but they do not give a complete picture. On the Great Plains, settlers whose descendants remain were a small minority. The story of the place can only be told by uncovering the history of the large majority of people who did not stay. To know the place, we need to know why these people left.

People who live in places like Matfield Green are continuing their long struggle to make a life on their home ground. A deeper understanding of that place's ecological history can help keep alive the affection and the imagination needed to live sustainably. That is the ultimate purpose of our study in Matfield Green.

Hickey, Joseph V., *Ghost Settlement on the Prairie: A Biography of Thurman, Kansas*, University Press of Kansas, 1995.

Kollmorgen, Walter M., and David S. Simonett, "Grazing Operations in the Flint Hills-Bluestem Pastures of Chase County, Kansas," *Annals of the Association of American Geographers* 55 (June 1965):260-289.

Sheridan, Richard, *Economic Development in South Central Kansas, Part 1a, An Economic History, 1500-1900*, School of Business-Bureau of Business Research, University of Kansas, Lawrence, Kansas, 1956.

## *Resettling Matfield Green*

*Sara Wilson Doyle*

Every day as I drive home from work, I pass four yellow road signs that warn "Thickly Settled." I have lived in rural New England for just more than a year now, and still, every time I see these signs I am amused and sometimes a little indignant.

I am not used to living in such a crowded and capital-rich region, so I am amused at the signs' redundancy. Every mile of road I drive here is obviously thickly settled, especially compared to any place that would be called "rural" in Kansas. My indignation is triggered by the gnawing questions I cannot help but ask: What about places like Matfield Green? What about all the places that can't seem to remain settled at all, let alone thickly?

Matfield Green is thinly settled; about fifty people inhabited the town during the nearly two years I was living there. Since I left, there have been additions to the population. Theresa and Carl Wagoner, a young ranching couple, have been blessed with twins. However, there have been many more losses. Eighty-nine year old Matfield rancher and farmer Kenny Brent has moved into a nursing home in Cottonwood Falls. Matfield has lost his humor, his storytelling, his well-tended garden, and his skill at weaving and welding. Tools Kenny made are still in use at the Land Institute's demonstration bakery. Matfield will no longer be the same without the sight

of Kenny working in his yard, or driving his Honda trailbike around the local roads picking up trash and aluminum cans.

Gladys Brent, his wife, is also in a nursing home. Lost to the community is her sharp memory, her moral sensibility, and even the flock of birds that would surround her house through the winter. Gladys was the first resident of Matfield to understand the Land Institute's research and its implications. At eighty-two, with a heart condition, Gladys helped us scout the surrounding prairie for leadplant, to use for tea in the Lumberyard Cafe.

Also lost are the Carpenters, another older couple who have gone to live with their kids in a city. Hazel and George's house used to be surrounded by the most beautiful, meticulously cared for vegetable and flower garden. And residents Erna Seency and Bill Burton, Sr. have passed away.

The old, as they depart, are not being replaced by the young and their families. With almost no jobs in town, those younger residents who have not moved away mainly work in other communities. Some, like Virgil Marcotte, drive sixty-five miles round-trip to and from work daily. As the young vacate the town, many buildings are falling down, and there is no longer a business district.

Everything seems stacked against an enduring settlement in Matfield Green—the loss of population, lack of capital, loss of jobs, loss of kids to the cities, the loss of the post office last year. Yet in real terms, Matfield's natural resources are great: the rich tallgrass prairies stretch beyond view on each side of

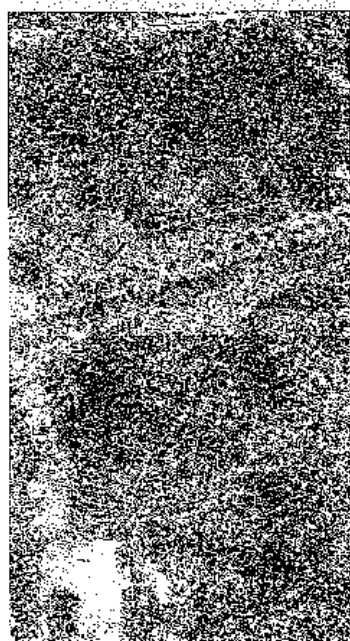
town. Matfield has a river, several springs, an average thirty-three inches of rainfall every year, and good bottomland soil in the river valley. Why is Matfield Green not thriving?

New England does not have the answer. Areas of rural New England may be "thickly settled," but quantitative wealth is not qualitative wealth. To be thickly settled does not ensure a thriving community. Because of the great wealth accumulated in nearby



*The renovated hardware store building in Matfield Green*

cities and the high value of land in the region, most New England farmers have long been out of business. Former farm communities have become largely either suburbs or second-home communities for the wealthy. Ironically, many of the best-kept houses here are not owned by natives, but instead are weekend and summer retreats for New Yorkers.



Because of this, the cost of living and land are so inflated that people who were born here struggle to remain in their own community.

Settling a community, and keeping it settled in a way that maintains and supports what is valuable to humans—relationships, meaningful work for all adults, productive education and guidance for the young, clean air and water, quality non-toxic food, community feeling and interaction—seems to be a losing battle in western Massachusetts, just as it is in Matfield Green, Kansas. It is also a battle in my home state of Utah, where middle and upper-class refugees from California are suburbanizing the small towns.

All the rural communities I know are in different stages of erosion, or transformation to something else. The forces which undermine small communities are the same nationally, and internationally: capital flight to urban and suburban centers, and the marginalization of human-scale agriculture and rural culture. Western Massachusetts is just a century or so farther down this road than Matfield Green.

When I visited Matfield last spring, the big news (besides the twins) was land speculation, just beginning to push up local land prices. Erna Seeney's quarter section and house were sold at a much higher price than anyone expected, to city folk who plan to use it as a weekend getaway for hunting and fishing. They may be perfectly nice people, but if rising land values take hold Matfield could easily follow the path of many New England towns. Chase County is not all that far from Wichita. Younger people who have been able to have a home in Matfield because the value of housing was low may be forced out. Today they can live in Matfield but can't work there; tomorrow they may be able to find jobs in Matfield yet not afford to live there.

Absentee owners and "smart investors" may buy out the river valley where the community lies. The valley could become like the upland range surrounding it, owned by people who don't live locally. Matfield could become diluted with landowners who only want to get away from the cities, not live in a community.

Is it inevitable that all small communities will go this route—to die, or become suburbs, or be left for a handful of people to extract the raw resources? Maybe so. Counter-examples in our culture have been rare. True, Amish communities have not lost their land base, or their population. They are surviving, in spite of transnational corporations and the insatiable appetite of the urban centers. But Matfield Green will not become Amish. We cannot expect that kind of religious vigilance at the community or household level, or such uncompromising self-sufficiency—although a few residents, including eighty-four year old Evie May Reidel, come close by living out of their gardens. Without making radical changes toward the Amish way of life, can Matfield Green be resettled without becoming a suburb, a tourist town eco-disneyland, or a thickly settled non-community?

To stand by and passively watch Matfield Green resettle itself is unlikely to result in a vital community. Matfield can easily be bought out and developed, so that the community and landscape lose their special character and meaning. The Amish have survived because of their thriving communities. There is little incentive for individuals to speculate on land. They see the value of their land in owning it, and working it among their neighbors; not in selling it to a stranger for more than they paid. Matfield Green needs more inhabitants who, like many of those who remain there today, care about the real value of people and the landscape; not just the value of real estate.

*Sara Wilson Doyle is a former Land Institute intern in Salina and Matfield Green. She now works at the E. F. Schumacher Society in Great Barrington, Massachusetts.*



## *Grassfed Beef and Family Ranches: A Vision for Prairie Landscape and Communities*

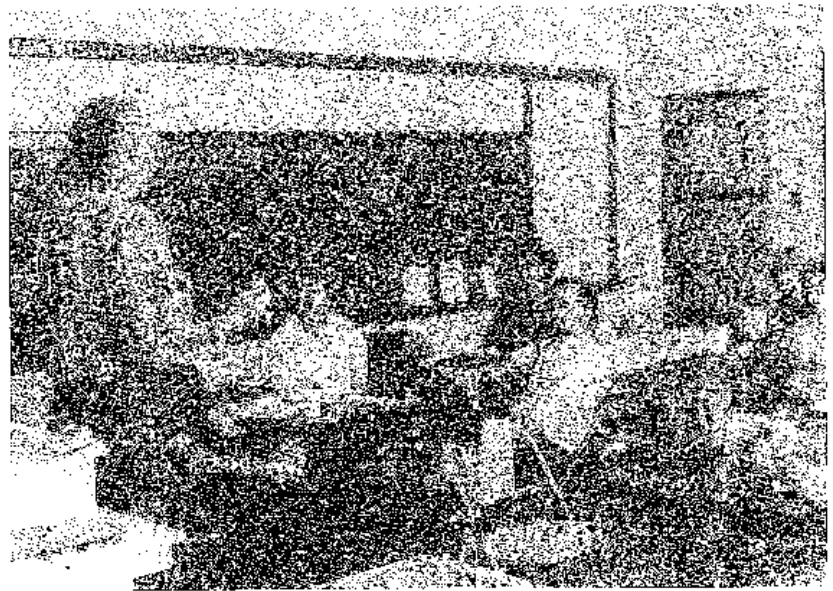
Anne Browning Wilson

I slow and steer the truck gently right and left, winding past the stone fences and green meadows of the Roglers' Ranch on the way to Matfield Green. It is a forty-five minute drive from our ranch in northwest Chase County, and covers some of the loveliest scenery in the world. From ridgetops above Middle Creek and the South Fork of the Cottonwood River, you can see the timbered valleys and bluestem hills in undulating lines of ridges, layered green to graying blue as they withdraw into a dreamlike horizon.

The peace and serenity of this landscape is so enticing that I often want to "fly away" into it as I drive by. Then I remember, I am already blessed to live in this place, with all its serenity and its daily demands. The reason I am driving to Matfield is a desire to hold onto my home; to find a way to support sustainable food production here, and thereby provide a solid economic foundation for the preservation of its beauty. My faith in parks and preserves is weak—their impact is minimal and their fate subject to political winds. I want something self-supporting—something that preserves the prairie because it works.

I was raised in Wichita, the first generation born away from my family's land, and have returned, back in the Flint Hills now for twenty years. Like many urban resettlers, I expected a simple pastoral life, but instead have found complexity and intense economic challenge. Rather than cutting me off from human contact, my rural life connects me to many others in my neighborhood and small community who depend on me, and on whom I depend, to create the culture that makes life satisfying for us and our children. Because there are few of us, we all have to take a larger share of the load. If we want something to happen, we have to make it happen, and a great deal does go on—more community, school, church and other social events than I can certainly partake of.

But, though our community life may be fulfilling and supportive, it belies the underlying economic crisis in this area, where young ranchers are rare as



*Pete Ferrell addresses fellow Flint Hills ranchers at the school*

thunderstorms in winter. Most of their parents in ranching don't have enough income to share with a son or daughter in partnership. The best most young people wanting to stay on the land can hope for is to find a job as a manager or hand for one of the absentee "mega-ranchers." I grieve for their loss of a personal, longterm stake in the land—the bonding and commitment that comes from knowing the hills and grasses they manage are truly their "home" and must be preserved for their children.

Even many of my older, established neighbors with their own small and mid-sized ranches can't survive on the prices for their cattle. As I see them selling out either to the huge landowners or city people wanting vacation homes, I mourn this loss of persons with a deep knowledge of the natural world where we live.

I also mourn the losses these trends inflict on our communities. The mega-ranches typically have a very low labor input, so conversion of ownership to them results in a real loss of population. Although their employees can be excellent contributors to the community, there just aren't very many of them. The weekend, second-home owners may increase the number of houses (often built on formerly pristine scenic overlooks), but with a few exceptions they do not contribute significantly to local culture and institutions. Scenic highways and the proposed Tallgrass Prairie Preserve may attract visitors, but depending on tourism with its low-paying service



*Arlene Bailey separating cattle*

jobs concerns me, as does the frightening exposure of beautiful, unmarred landscape to development-minded urbanites.

Instead of giving in to these trends, I propose we rescue our rural culture and landscape by reviving our agricultural base. By focusing on grass and cattle we can find ways to improve stewardship and profitability that preserve the prairie and revitalize prairie communities.

So today I am going to the old Matfield schoolhouse renovated by The Land Institute for a meeting of the Tallgrass Prairie Producers, a newly-formed cooperative of "family ranchers," (defined as living on or near your ranch and doing the daily work on it). Our goal is to provide a product that is good for the people who eat it, good for the land it is raised on, good for the animals raised to produce it, and good economically for the family ranches and nearby communities where it is raised. Our idea is to produce and market a product called Tallgrass Beef: lean, grassfed beef raised on pastures and never in a feedlot.

To realize what a "revolutionary" notion this is, some historical perspective may be helpful. Seventy-five years ago, my grandfather's pasture-raised cattle left the Flint Hills "finished on grass,"

shipped up the rail lines directly to packing houses and on to urban kitchens and steakhouses. Then the grain surplus following World War II led the USDA to encourage the grain-fattening of beef, through development of a grading system which said the fatter the animal, the higher the supposed quality and price.

This grading system is obviously upside-down for health reasons alone, but it has had other sinister results as well. In one of the most productive grassland regions of the world, it has created the illusion that we must depend on the grain farmers of Iowa and the feedlots of western Kansas to produce beef for people to eat.

We don't believe it. Instead of relying on grain grown with massive chemical and fossil fuel inputs to "finish" our animals, we raise them on the herbage nature put here for herbivores. Careful attention to modern genetics, forage utilization and beef aging results in tenderness and consistency. Our model is quite different from conventionally raised beef which comes from cattle who spend the last few months of their lives confined with thousands of others in pens devoid of vegetation, essentially doing nothing but eating tremendous quantities of trucked-in grain and hay and producing mountains of waste.

In contrast, the cattle in our program spend their entire lives in a natural grazing system, harvesting their own food by grazing over beautiful, clean pastures. The grassland habitat of our wild neighbors—coyotes, deer, bobcats, badgers, hawks, prairie chickens, quail, songbirds and many more—is preserved, while at the same time sustainably pro-

ducing human food. Instead of relying on annual soil cultivation and monocrops, our production model keeps land in grass—nature's "protective blanket" that holds and conserves soil, protecting it from water and wind erosion. And unlike feedlots where concentrated waste is a serious pollution hazard, our free range animals' waste is naturally dispersed, returning nutrients to the soil, with the thick grass acting as a filter to clean runoff before it reaches the streams.

Instead of relying on fossil fuels to plant, harvest and transport grain to fatten our cattle, our production model relies on renewable resources already in place—sunlight, soil and rainfall which grow the forages our animals harvest by themselves directly from the earth. Instead of highly marbled, high-fat meat, our animals produce lean, healthy beef we can feel good about recommending to people. In fact, we think our grassfed beef has a special delicious flavor resulting from the natural grasses and forages of the tallgrass prairie. Finally, for individuals with particular health concerns, we also do not give our animals any hormone implants or antibiotics.

By directly marketing this higher-quality beef ourselves, we hope to recapture enough profit margin to make family ranching economically sustainable. But the key here is marketing: it is one thing to raise beef, and another to sell it. Ranchers have not traditionally been salespeople. Many are shy outside of their usual realm, less given to the bragging and aggressive behavior they associate with "salesmen" than to reticence and courtesy. For many, "marketing" means driving their animals to the sale barn or taking a cattle buyer out to the pasture; contact with consumers occurs only far down the line of middlemen. The marketing goal of Tallgrass Prairie Producers is quite different: to sell our beef directly to people, creating a connection between producer and consumer. To enhance this, each year we will have a "Ranch Day" inviting customers to come visit one of our ranches.

However, our budget is very limited and we can't afford large advertising campaigns. We've learned that shelf space in grocery stores does not necessarily go to the "best" product, but the one whose distributor has paid a high "slotting fee." Government regulations seem designed to prohibit our success, imposing procedures that are too costly for small marketers. Processing and distribution costs threaten to make us economic casualties in an

industry in which only four corporations control 82% of the fed-cattle market. Big feedlots and packers thrive on razor thin per head margins through massive volume, while small operators are squeezed out.

Our biggest hurdle is trying to re-educate consumers who have been indoctrinated for more than a generation to believe that only "grainfed" beef can be good. We need to let people know there is a real alternative, and to encourage them to exercise the power they have as consumers to buy healthy, quality products that come from land that is well loved and looked after.

I have found complexity and challenge in my reinhabitation of the land, but I have also learned that you find what you seek. If you look for ignorance, failure and despair in rural communities, you can find it. But if you look for depth of experience, compassion and hope, you will find it also. In the members of our cooperative, I have found a shared vision, valuable experience, and the will to work together for the common good. I cannot imagine a more exciting or satisfying place to be.

*Anne Browning Wilson is a family rancher in Chase County. For more information about Tallgrass Beef, contact the Tallgrass Prairie Producers at RR 1, Box 53, Elmdale, KS 66850. (316) 273-8301.*



*Ranchers Annie Wilson and Bruce Spare*



## The Matfield Green Section House

Steve Anderson

The Santa Fe Railroad section house at Matfield Green is believed to be the last of its kind anywhere on the railroad. It is a symbol of a way of life that is past. A time when the railroads hauled cattle by the thousands from Texas to pasture in the nearby hills putting on weight, before going on to Kansas City or Chicago for slaughter. A time when both railroading and farming were less mechanized and more labor intensive. A time when Mexican nationals came here for a year to work, and then returned to their families in Mexico.

Although Matfield Green did not become a booming railroad town when the rail line from Bazaar to El Dorado came through in 1923, the railroad did provide an important link to outside markets. The cattle pens were busy for brief periods in the spring and fall as cattle arrived and departed; at other times the freight trains hardly slowed as they went through. None of the Santa Fe's famous passenger trains came through Matfield Green. A single-unit motor car called a gas-electric car or doodlebug provided local passenger service and delivered mail and small amounts of freight. The railroad did not change lives or bring prosperity to the community as some residents had hoped, but it was a vital part of the local economy which depended on exporting beef. The Matfield Green section house belongs to that era. (Hickey 1995, 213-14)

Before mechanized equipment came into use, maintaining the track and the structures of a railroad involved more intensive physical labor than it does today. Manpower was spread out in small groups along the line, living in section houses like the one in Matfield Green. A section was eight to twelve miles long, depending on the terrain. This section at Matfield Green originally employed about eight men and a foreman, but was reduced to a crew of four in the 1950's.

The existing section house was actually a bunkhouse. The other sheds and houses associated with the section have been torn down or moved. The foreman's house was located south of the bunkhouse, and his wife prepared meals for the section hands. Breakfast and supper were taken in the foreman's dining room, and lunch boxes were filled for the men to eat working.

The bunkhouse was available to anyone who worked on the section. Most of the residents were single or head family who lived elsewhere, though a

very few may have had their wives with them. Most were here temporarily from Mexico on work visas.

The exterior walls of the bunkhouse were built with concrete blocks cast to resemble cut stone. The uninsulated building had ten single rooms, with doors containing removable panels with screens at the front and a pair of windows at the rear, overlooking the tracks. Each contained a small wood stove. The center eight rooms measure ten by twelve feet, and the two end rooms are fifteen by twelve. A veranda faces east across the front. A water faucet and an outhouse were located outside, and the building had electricity.

Every few days the track was inspected by one or two men who would walk to the section boundaries and return. Rails and rail joints, one every thirty-nine feet, were checked for wear and tightness, and bridges and other structures were inspected for damage or deterioration. A shovel might be taken to clear debris washed into culverts and ditches, or a spike maul carried to hammer in loose spikes. The men (there were no women track workers then) might flag a passing freight for a ride back. Any large problems would be noted for later repair by the full crew. Transportation of crew, tools, and materials to work sites was provided by the railroad, which was actually pumped by hand until motorized versions like the Fairmont Speeder came into use.

Today handcars have gone the way of the steam engine, and smaller mechanized maintenance crews cover a much larger area. Inspection (still done every few days) and lighter maintenance is done using the ubiquitous pickup truck—equipped with two pairs of small flanged wheels which can be raised for highway travel or lowered to guide the wheels on the rubber road tires from the rails to provide traction.





By the time Howard Taliaferro of Matfield Green worked on the section in the mid 1950's, the section foreman's house was still lived in but the bunk house was not continuously in use. He and his co-workers lived elsewhere. When a project was bigger than the four-man crew could handle, his crew and the one from either Bazaar or Cassoday would combine forces. For large projects the railroad brought in a work train, which had bunk and kitchen cars for the "extra" crew.

Today "extra" crews usually stay in units in RV parks or motels. The section foreman's house has since been removed to the Johnson place near Bazaar. The maintenance sheds, signalman's passenger car house, and the passenger/freight station in town have all been torn down. Now none of the 72 trains that pass every day stop in Matfield Green, except to sit on a siding to allow another train to pass.

Railroads don't operate cattle cars anymore—cattle are transported by the thousands up from Texas and later to feedlots by truck. Mexican nationals still look for work in the area, but now find it at places such as Iowa Beef Products in Emporia. Area section workers live in their own homes and commute to work, as most of the rest of us do. Only the bunk house and cattle pens remain, to remind us of a way of life that is no more.

Hickey, Joseph V. (1995). *Ghost Settlement on The Prairie: A Biography of Thurman, Kansas*. Lawrence, Kansas: University Press of Kansas

*Steven Wells Anderson is a student of railroads and history. He recently earned an M.S. in Library Science from Emporia State University. Some of this information was obtained through conversations with Lawrence Foose, whose father was section foreman at Matfield Green; and Howard Taliaferro, who worked for the senior Mr. Foose in the 1950's.*

## A Bucket of Golden Pears

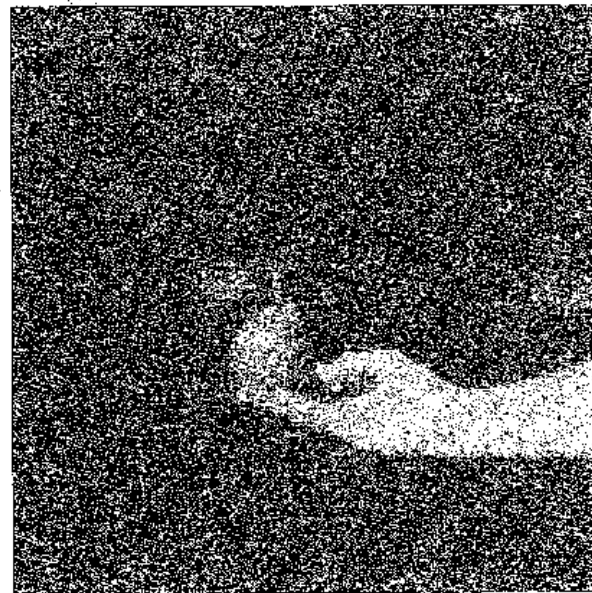
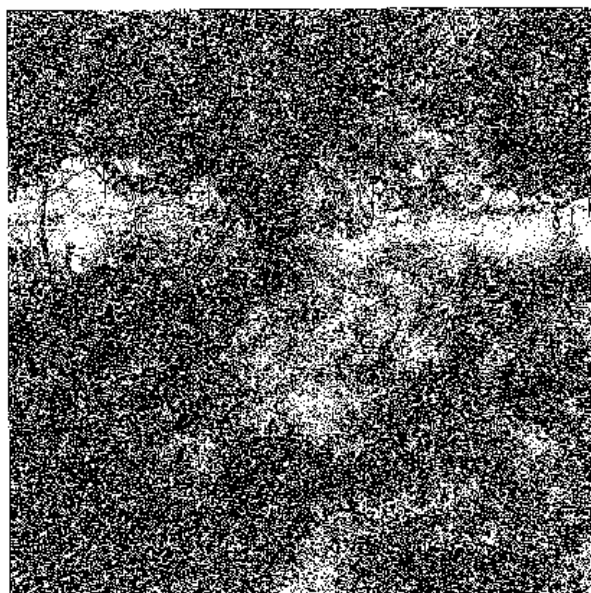
Jean E. Anderson

It was later than I had intended, and getting cold, but I was determined to go check under the pear trees in the orchard today without fail! There had been windy days and freezing nights so I wasn't sure whether there would be any pears worth picking up or not. The ones we had gotten earlier had been good—not as good as that one year when they were huge, crisp and delicious even while still green, but good. And there were so many this year! It would be a shame for them to go to waste.

So I quickly changed to some old clothes and made sure I had a warm, bright scarf for my head. (We had noticed our lady bow-hunter's car in the lane across the road.) Taking a bucket, I headed across the highway. As I came around the south side of the red shed I noticed movement toward the far end of the orchard. Getting closer, I could make out at least three deer browsing on the fallen pears. At my approach, they reluctantly backed off, then bounded away, white tails waving "good-bye." I kept on, thinking as I went that perhaps they'd run into the lady bow-hunter and she just might get one, even if they did look a little small.

Under just the first tree, I picked up an entire bucket full of golden pears. I only bothered with the best ones. They were for Emily.

*Jean Ellen Taliaferro Anderson moved to Matfield Green in 1951 at age 10. A schoolteacher and mother of four with seven step children, today she is home again in Matfield.*



## Land Institute News from Matfield Green

Emily Hunter is now living at the Lumbyard Cafe, and working half-time for The Land Institute as Conference Coordinator. Emily's job is to develop and raise funds for our Matfield Green program, and to organize conferences on ecological community accounting.

Ron Armstrong has completed renovations on the school, and is turning his attention to other buildings owned by The Land Institute.

Ron was assisted until November by Stan Amick, who has now moved on after several years

association with The Land Institute in Salina and Matfield. Ron's place has been taken by Aaron Bolster.

Aaron began as a Matfield Green intern in September. Besides working on the buildings, Aaron has been assisting Brian Donahue and Dave Tepfer with research on land use history in the Matfield area. Kate Worster also served as a Matfield intern during the past summer.

Terry Evans has her darkroom installed in the school basement, and visits Matfield regularly to photograph. Terry gave a well-attended slide presentation of her work at the school in November, and she will be teaching a photography workshop with Chase County high school students this spring.

The school is being used for community functions, and for monthly meetings of the Tallgrass Prairie Producers.

The real "News from Matfield Green" is reported for the Chase County Leader every week by Evie May Reidel. Evie May is eighty-four years old, and moved to Matfield from Tennessee in 1929. She is a teacher, and her husband Henry farmed. She tends the best garden in town.

### News from Matfield Green 11-16-95

by Evie May Reidel

Give a man a fish, and he eats for a day. Teach him to fish, and you get rid of him for a weekend.

Dale and Ginger Hull and grandchildren, Kyle and Amanda, were visiting Della and Bob Lawrence Saturday. Terri Lawrence, Sherri and Stacy Funk were also there.

Kathy and Kate Carr and Mary Van Buskirk were at church Sunday.

Cynthia Deering and Thelma Swift went to Bazaar Saturday night to eat supper.

Howard Talafiero had his cataract removed Thursday. He went back Friday and had the patch removed.

Bob and Della Lawrence went to Emporia Tuesday on business and to get groceries for Evie May Reidel. On Wednesday they went to Newton and had dinner with Chet and Mary Danby and Sherri Funk.

Phyllis and June Talkington had Bible Study Wednesday night.

Most everybody will go to the Terry Evans showing of slides Saturday night at the school house.

Phyllis and June Talkington went to the film

shown at church from Billy Graham. Clara Jo went to Deb and Jim Peter's Sunday and Tuesday. She attended the Yeager funeral Friday and the McCahes funeral Saturday. She went to Shoemaker's Wednesday and Thursday nights.

Reva Andrews and Cynthia Deering went to Wichita.

They are having a lot of grass fires around Wichita but it hasn't burned any buildings.

Wichita but it hadn't burned any buildings. Brad and Becky Conley, Bruce Conley, Carolyn Nichols, Jackie, Alex and Tyler Conley, helped Delores Conley celebrate her birthday Sunday. Eugene Talkington was there, too.

Delores Conley and Eugene Talkington stopped by Wednesday afternoon to visit Leone and Bob Kirk. Mattie Conley, who is 94 years old, wasn't feeling so well.

Delbert Armstrong went to the Veterans Hospital, and Thursday to help at the Veterans Hospital.

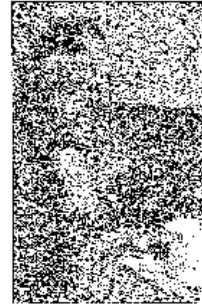
Jane Sanden spent Sunday and Monday with Wilma Martin.

Brad Wood and Barbara Louther were down Sunday. He was feeling much better and preached on "Where are we at?"

Steve and Sharon Griffin went to Herington to see Stephanie Griffin last week on Saturday.



The Tallgrass Prairie Producers break for lunch at the Matfield Green school



A volunteer

## Cyclists "Ride and Work" at Matfield Green School

Cathy Bylinowski

Fourteen Oz Bicycle Club members headed to Matfield Green on June 3rd and 4th, 1995, stopping at the former grade school for a

"Ride and Work" weekend. This

combination of activities was suggested by John Hobbs, owner of Great Plains Bicycle Shop in Newton. John and his wife Carol Sue sponsor the annual "Matfield Green Death Ride," a grueling 100K tour of Flint Hills backroads in the dead of

summer. John recruited bicycle club

members as a way to say thanks to the Land Institute for allowing some 400 cyclists to use the school grounds as the start and finish for the August event.

After a 30 mile jaunt on area roads Saturday, everyone got down to work on Sunday, glazing, scraping, dusting,



Ron Armstrong

washing and painting. Clear, clean windows, new glass and painted gutters were the results, bringing the building ever closer to being complete.

Everyone had such a good time that plans are in the works to invite them down to Matfield Green again. Non-bicyclists are also welcome to help out, and are invited to call Emily Hunter or Ron Armstrong in Matfield Green for information regarding upcoming work weekends. Call 316-753-3433, or leave a message at 316-753-3405.

Cathy Bylinowski lived in Matfield Green for a year as The Land Institute's gardener.

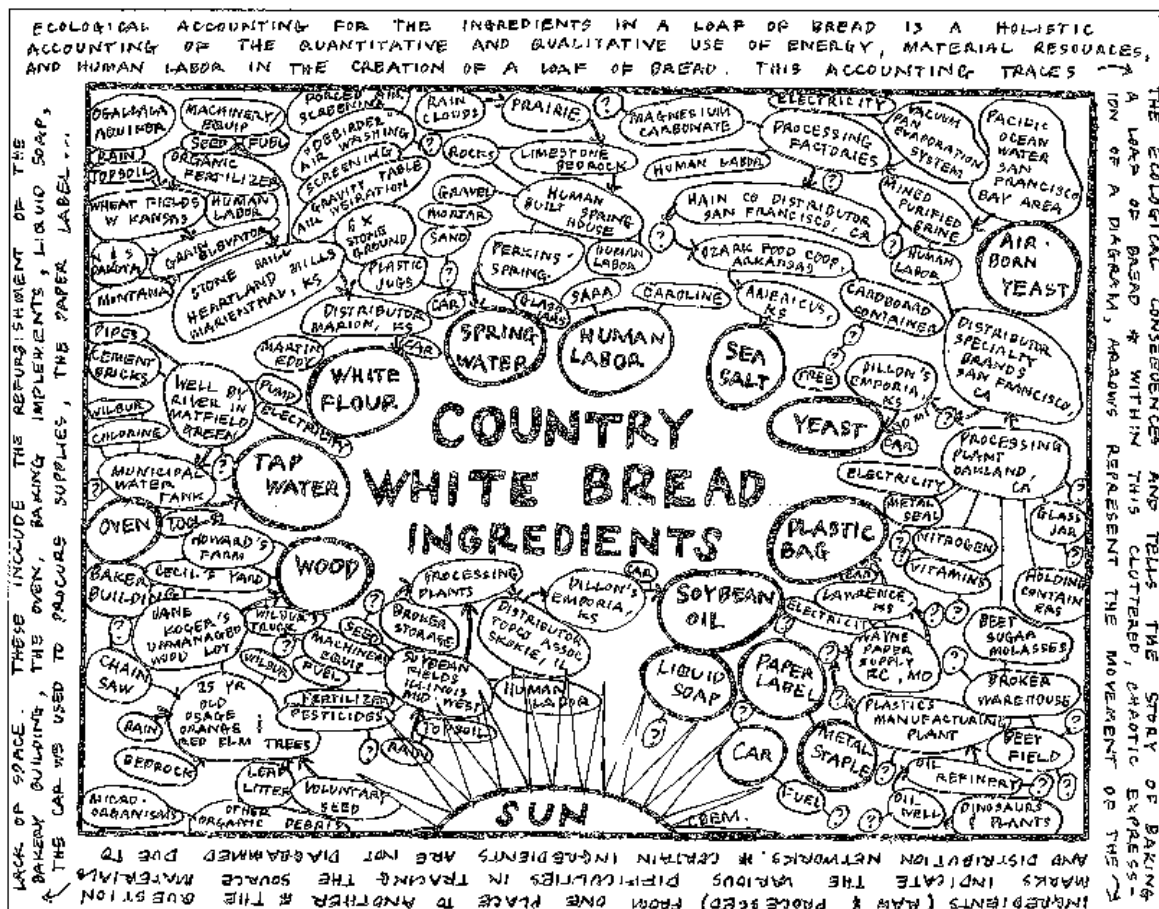
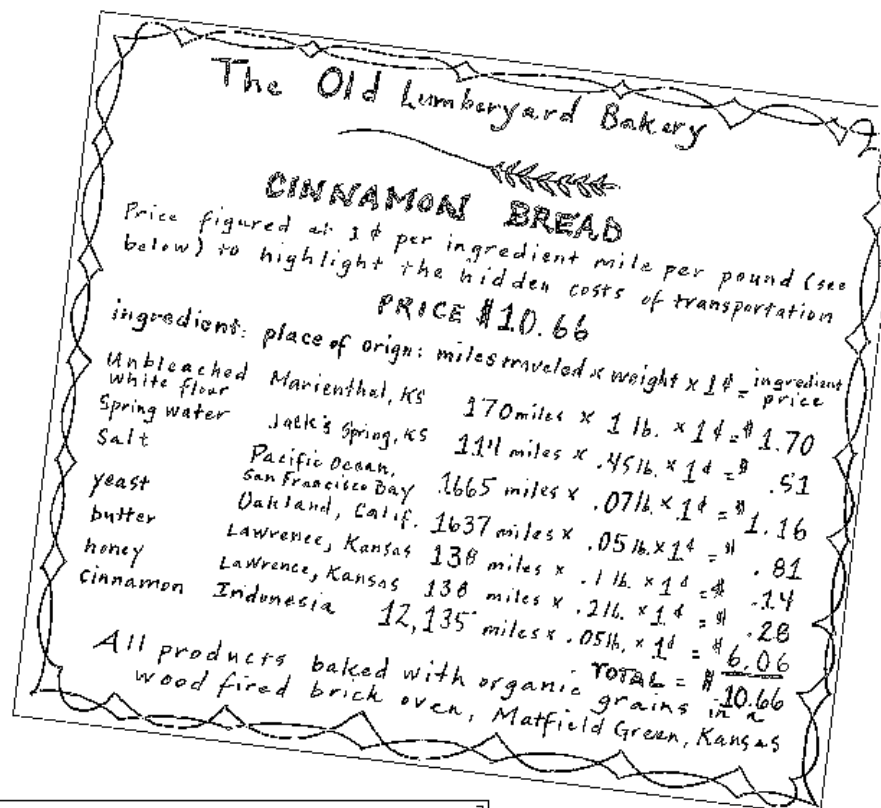
## Gathering Cattle

January 28, 1994

Around 9 o'clock, Carl arrived. We drove to the Brent's old farmstead where we got on horseback and joined the other cowboys to herd Carl's cattle from one pasture across the turnpike and into another pasture.

9-1:30 No success trying to route them through the narrow underpass (I was worried I wasn't holding my position well and was breaking the circle). Then we moved them across the bridge. Lost two calves. Another baby collapsed. The rein on Carl's steed broke... One big adventure.

Caroline Mahon is a former Land Institute intern. She is currently living and working in Matfield Green.



Bread labels from The Land Institute's bakery in Matfield Green designed to demonstrate the external costs and ingredients in a loaf of bread. By Sara Wilson Doyle and Caroline Mahon, 1994, 1995.

### Secretary/Receptionist Alice Sutton

Karen Andersen

"Alllice?" inquires Director of Development Matt Logan through his office door, asking about something or somebody.

"Hold on a minute, Matt," Alice calls back as she answers the phone, the request of another staff member waiting at the other end of the line. No, this is not Alice's Restaurant, but folks around The Land Institute have learned that they can get just about anything they want when they come to Alice for information.

Alice Sutton joined us in April as the new Secretary/Receptionist at The Land Institute. A native Salinan, she spent several years in the printing business before coming to work here. She and her husband Willis, and their two daughters, Jenny and Lisa, live northwest of town where they moved ten years ago.

Alice grew up spending many of her summers at her grandfather's farm near Moran, in eastern Kansas. When she moved outside of Salina she had hoped to capture a bit of the country life, raising her own chickens and garden. But to no one's surprise, raising a family and working left little time for those pursuits. Since she began working at The Land Institute, however, Alice says that these ideas are resurfacing, and she is thinking about acquiring some chicks when the Sunshine Farm makes an order next spring.

When Alice is not at The Land Institute deftly handling the rigors of the office, you might see her out on her bicycle deftly handling the rigors of the Kansas terrain (and climate). This summer, she and her husband spent four days touring the Flint Hills on bicycle. "And there are hills in the Flint Hills," she reminded me, distinctly recalling the topography as most cyclists are prone to do. You might also find her attending one of her daughters' volleyball games or debate team meets, or packing for her next camping trip. Wherever she is, she's likely to be smiling, and waiting to crack a joke should the opportunity arise! Fortunately, around The Land Institute such opportunities do not require much waiting. Welcome Alice.



Alice Sutton



Frantiska Palacek

### Artists of Place

Karen Andersen

An icy frost clung to the blades of grass and limbs of trees as I drove through dense patches of fog on a crisp December morning in Kansas. Fellow intern Dave Henretty and I were on our way to Munden, a few miles south of the Nebraska border in the north central part of the state. In this small town live Frantiska Brzon Palacek and Lauren Kisby, two people whose work has been deeply influenced by the place in which they live.

Frantiska Brzon Palacek was born on February 2, 1912 to pioneer parents of Bohemian-German descent. Since childhood she had always wanted to create art, but the business of farm life never left her much time to pursue this desire. When she was forty, however, a tornado blew through the farm, destroying the hen house to which Frantiska had always attended. When she and her husband, Frank, decided not to rebuild the hen house, Frantiska finally had the opportunity to pursue her interest in art. So began her "official" creating.

Having always lived on a farm, Frantiska says that she feels a deep connection to the natural rhythms and cycles of the earth. This influence is evident everywhere in her work. Her theme is "Earth Music" and her subject matter consists of portraits, wildlife, abstracts, genre and historic scenes. She works in oil, tempera, and mixed media, on limestone, chamois, masonite and wood. Frantiska specializes in "organic abstract personality portraits," and feels that she expresses herself best through her abstract works.

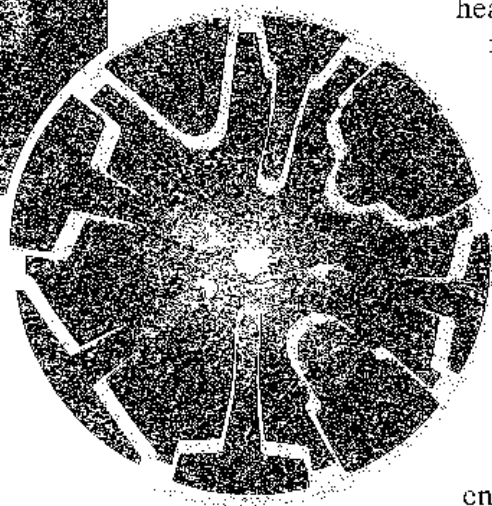


Images of the native prairie and both the native and non-native trees of the Rose Creek countryside abound in Frantiska's works. Earthy browns, yellows, and reds compose a huge painting that hangs above the mantle piece in her gallery, inspired by a magnifying-glass view of the flora of the prairie floor. The materials that she uses in her work are also products of her place. She paints on skulls found on her property, limestone that she collects on her walks, and shingles and boards that she recycles from old farm houses and barns. She also incorporates the gnarled and twisted roots of Osage orange trees into her sculptures, her created lines flowing smoothly out of the natural lines of the root.

Walking around Frantiska's homestead in the late morning, we came across a fallen branch, glistening as the sun hit its frost-covered bark. "Everything is beautiful if you just look at it," she said, as we passed this object of simple beauty. This ability to see and capture the beauty of her place is one of the defining qualities of Frantiska's work.



Lauren Kisby



Lauren Kisby is another resident of Munden, who has drawn his inspiration to make creations out of his local surroundings in another way. In the old Munden schoolhouse, which held its last classes in the fall of 1992, Lauren operates his new business of recycling old farm disk blades into hand hoes.

Lauren started farming in 1971, on a piece of land four and one half miles north of Munden. The inspiration for his new business came during hard times on the farm when he needed to dig a trench but did not have the right tool at hand. A cut out piece of an old disk welded to an improvised handle provided the solution to his problem, and the idea for what has become his "Rogue" line of hoes.

In 1991, the Small Business Development Center in Manhattan took on his hoe as a marketing project and helped with advice on getting what is now a family business off the ground. A local artist designed the "Rogue" logo. Today, the sturdy, well-shaped hoes are selling faster than Lauren and his family can make them.

The production of the hoes begins with using templates and a plasma torch to cut the various shapes out of the old disks. Once the blades are cut, a spin in an old cement mixer with a little sand removes any rust. The edge is then ground, and the blades are heated and bent before being attached to the handles with ferrules. They are finished with a sanding disk or an angle grinder and fitted with the "Rogue" logo. The end product is a durable, hand-crafted hoe, ready to take to the fields. We got a heavy duty model for next year's interns to use in The Land Institute research plots.

Lauren hopes to sell around 10,000 hoes a year in order for the family to make a decent living. When asked about some of the benefits and disadvantages of owning his own business Lauren replied, "I'm my own boss, but sometimes the boss doesn't pay too well".

This issue of *The Land Report* raises the question of how we can keep small rural communities culturally interesting and economically viable places to live. The endeavors of Frantiska Palacek and Lauren Kisby provide two examples of the kind of local inspiration and creativity that is part of the answer.

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May 27-28, 1995  
Salina, Kansas

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### Qty. Session Title, Speaker(s)

#### Saturday, May 27

- \_\_\_ S1 Gardening to Save Lives, Cathrine Sneed
- \_\_\_ S2 The Day Before America, William MacLeish
- \_\_\_ S3 Flint Hills Landscape and Culture - Panel (Part 1)  
P. Ferrell, J. Hickey, J. Hoy, D. Tepfer, N. Veregge & A. Wilson
- \_\_\_ S4 Flint Hills Landscape and Culture - Panel (Part 2)
- \_\_\_ S5 Mutuality and Sustainable Development, Marty Krasney
- \_\_\_ S6 Economics, Technology and Local Food Systems, Stewart Smith
- \_\_\_ S7 Journey to the Prairie: A Reenactment, 1860-1875, John Jagger
- \_\_\_ S8 Strangers and Sojourners, Mary Catherine Bateson
- \_\_\_ S9 Sustainable Cropping Systems: Feeding the Soil (or: Diet for  
a Small Microbe), Rhonda Janke
- \_\_\_ S10 Yo Soy! Culture, Community and Ecology in the Face of  
Development: Stories from Venezuela and Costa Rica,  
Neddy Astudillo Mazueva & Tom Spaulding
- \_\_\_ S11 Adding New Dimensions to Dietary Guidelines: Choose Locally  
Grown in Season Foods, Karen Wilken & Brian Donahue
- \_\_\_ S12 Becoming Native to this Plate - Panel Discussion with  
Kansas Gardeners & Farmers (Part 1), C. Bylinowski, K. Collmer,  
D. Nagengast, E. Reznicek & J. Scharplaz
- \_\_\_ S13 Panel Discussion with Kansas Gardeners & Farmers (Part 2)
- \_\_\_ S14 Making Sustainability Practical: Developing Measures on  
the Last Frontier - Juneau, Alaska, Bill Leighty
- \_\_\_ S15 Kansas Landscape Patterns and Biodiversity, Kelly Kindscher
- \_\_\_ S16 Enjoying the Fruits of Our Harvest, Nancy O'Connor

#### Sunday, May 28

- \_\_\_ SU1 A Place for Elijah: Thoughts on Natives and Wanderers, Angus Wright
- \_\_\_ SU2 Natives and Newcomers: Land and Culture in Central Kansas,  
B. Buskirk, H. Elliott, J. Lilly
- \_\_\_ SU4 What Artists Offer the Environmental Movement, Lynne Hull
- \_\_\_ SU5 Sustainable Agriculture and the 1995 Farm Bill Panel, W. Jackson,  
J. Jost, P. Johnson & G. Youngberg
- \_\_\_ SU6 Horse Logging for Sustainable Community Development, Dick Austin
- \_\_\_ SU7 Permaculture: Global Grassroots Initiative, Thomas Mack
- \_\_\_ SU8 Skyfire: A Community Study in Sustainability, W. Pickett, P. Krum
- \_\_\_ SU9 Sustainable Farming Systems: What's At Stake? Fred Kirschenmann
- \_\_\_ SU10 Closing Remarks, Festival Participants

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## Kansas Women Sing Out

Karen Andersen

Three Kansas women have released new recordings that have some connection to The Land Institute and its concerns.

Vicky Foth's *Nighthawk & Cottonwood: Songs of the Kansas Prairie* is a musical tour of the Kansas landscape, people and history. Vicky sings of the rhythm of the prairie seasons, and celebrates the possibility of land, animals and generations of people joining in community. Several of these songs were inspired by a walk Vicky took across the state of Kansas, following the course of the Smoky Hill River part of the way. She confronts environmental degradation in songs such as "Ballad of the Smoky Hill," which mourns the "dewatering" of the river—the fate of over 700 miles of Kansas streams and rivers, largely as a result of irrigation.

*Going Home*, the new CD by Kim Forehand, is a collection of songs with themes ranging from typical love stories to atypical accounts of everyday people and events. Kim sang at last year's Prairie Festival. She has a flair for quirky tunes, so if you happen to

be a guru of garden decorations or a connoisseur of our segmented annelid friends, the earthworms, this album is sure to please. Kim has won several awards including the Kaw Valley Songwriting Contest in Lawrence, Kansas, and the New Folk Award at the prestigious Kerrville Texas Songwriting Contest, an annual competition that has helped launch the careers of such current stars as Nancy Griffith and Lyle Lovett.

Perennial Prairie Festival favorite Ann Zimmerman's new album *Love and Weather* is an eclectic mix of material from her own compositions to covers of artists such as John Gorka, Greg Brown and Cheryl Wheeler. Folk, blues, and oldies but goodies might best describe a collection that ranges from her "Rolling Home I-70 Blues" to "Two Sleepy People." A reminder of Ann's days as a Land Institute intern surfaces in "Bad Attitude Blues," a song inspired by a bicycle commute into a strong Kansas headwind. Former interns will want Ann's CD for this song alone, and prospective interns might do well to check it out before applying.

## Book Reviews

### *At Nature's Pace: Farming and the American Dream*

by Gene Logsdon

New York: Pantheon Books, 1994.

### *The Contrary Farmer*

by Gene Logsdon

Post Mills, VT: Chelsea Green Publishing, 1993.

Reviewed by Kathy Collmer

In the hills around Salina, scores of houses are under construction. The countryside is being repopulated, without a doubt, but something tells me this is not what Land Institute folks mean when they talk about reinhabiting the land. For although the houses overlook wheat fields and pastures, in most cases they have nothing to do with the farmland that surrounds them. Rather, these are the dwellings of Salinans who can afford elegant country homes only by virtue of well-paying jobs in town.

A better vision of reinhabitation is beautifully evoked in two recent books by Gene Logsdon, who quit his editing job at a conventional farm magazine two decades ago to join the ranks of sustainable farmers, returning to his native northwestern Ohio to farm on old family land. Logsdon advocates a general return to smaller "cottage farms," and to a version of economics that incorporates broader values such as family, community and nature into the farm balance sheet. Those who have visited his own small farm say it is a thirty-two acre paradise. In *The Contrary Farmer* and *At Nature's Pace*, we are treated to many glimpses of that paradise.

Logsdon would reject the idea that he lives in a specially blessed spot. As we soon learn, paradise is wherever you are—if only you will listen to nature and take care of your place accordingly. In *At Nature's Pace* Logsdon takes a look, by turns poetic and cheeky, at our fall from agricultural grace and how we might find our way back. *The Contrary Farmer* is a practical guide to the trip home. "Contrary" describes a way of thinking about farming that goes against the grain of conventional wisdom. That is, bigger is *not* better, more high-tech gadgetry will *not* solve all our problems, farmers are *not* supposed to live like their "urban counterparts." On the contrary, a farm cannot be considered profitable if those profits come at the expense of family, community and nature.

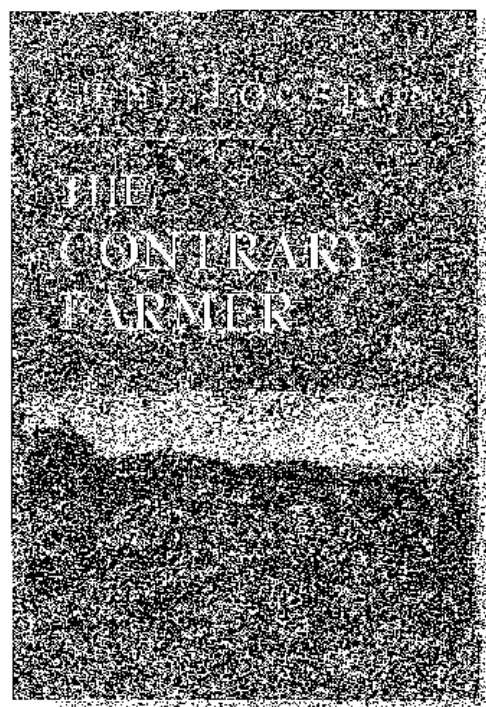
Logsdon believes that the current system, with its crop-dusted wastelands and million-hog factory farms, is bound to collapse of its own economic and environmental weight. When it does, the folks

Logsdon calls "cottage farmers" will be waiting in the wings. These are people who decide to go into farming, whether they have any farm background or not. They do it on a small scale, as independently as possible of the debt-and-interest economy that has bankrupted so many conventional farmers.

Logsdon supports his argument for cottage farming with plenty of real-life success stories, complete with bushel-per-acre yields and net profit dollar figures. Logsdon's books are the sort that should make agribusiness types nervous, for Logsdon confronts them on their own territory: money. Logsdon defines the bottom line in terms not of profit but of profitability—the return per dollar of investment. By this measure, small-scale, diversified cottage farms win hands down.

Witty and concrete, Logsdon has obvious fun turning the conventional economic wisdom on its head. Yet woven through his anecdotes are profound insights. When he asks an Amish farmer to do a cent-by-cent calculation of his farming expenses, he discovers that the Amishman has been counting his own labor on the farm as a profit, not a cost.

This is the kind of thinking that would serve any cottage farmer well. To help cottage farmers on their journey, and to enlighten, educate and entertain everyone else, Logsdon has written *The Contrary Farmer*, which is equal parts nature writing, philosophy and farming advice. While Logsdon is an eloquent nature writer and an astute social critic, he is also a practical fellow, as handy with a field cultivator as with a field guide. Logsdon or his farming friends have tried out every one of the farming



practices he recommends. Logsdon and his wife, Carol, grow nearly all of their own food, plus surplus for market, on a mere thirty-two acres—in fact, on quite a bit less than that, since they cede nearly half their land to nature in the form of wetland and woodland. Of course, these also serve human needs, providing everything from wood for heat to cattail rhizomes for the dinner plate—Logsdon claims they're delicious.

From these specifics certain broad themes keep emerging that make universal sense: maximize diversity; use crops and animals for multiple purposes; see your farm as a complex ecosystem; see nature as your ally and learn from it; let nature do the work. Use technology appropriately; fix things yourself, for as Logsdon says "more cottage farms fail because of ignorance of mechanical arts than for any other reason." Buy and sell (or barter) with local individuals and businesses; and enjoy your family and neighbors and the community life that cottage farming both encourages and requires.

This last is a point that Logsdon drives home again and again. Sustainable agriculture will not happen in a vacuum: if our farms are to be transformed, a parallel transformation must take place in our communities to nurture those farms. Conversely, sustainable farms help to foster stronger communities. Nowhere is this two-way dependence more clearly demonstrated than in Amish country, where Logsdon has traveled and learned much. Four of the sixteen chapters in *At Nature's Pace* concern the Amish, and illustrative descriptions of specific Amish farms and communities appear throughout both books. For Logsdon, the Amish provide more than quaint images for glossy coffee-table books. They offer consummately practical models of sustainability.

Yet, as Logsdon shows, the Amish are merely doing things pretty much the way everybody did in the days before we became slaves to our own technology. Take Logsdon's description of corn husking.

Before the industrial revolution, corn shocks were hauled in good weather to the barn, and then in harsh winter, the young people went from farm to farm in the evenings making a party out of the husking. The person who husked a red ear—and there were many red ears in the days before standardized hybrid corn—got to kiss his or her sweetheart. This was a cultural, even cultured, way of making work pleasant. It was replaced by a farmer husking corn alone in a cold December field, day after day—a misery, one he was driven to when technology made communal work impossible and obsolete...

It's not that technology is all bad. While Logsdon scoffs at the modern suburbanite "who rides an \$8,000 power mower around a postage stamp lawn on Saturday morning and then tries to jog off the fat on Saturday afternoon," he loves buying old machinery at farm sales and tinkering with it to get it in good working order. He is as much at ease with his fifty-horsepower tractor as with his two-horse team. What distinguishes Logsdon from modern agribusinessmen is his value system: the purpose of technology should not be the highest possible production of a narrow range of commodities, but rather the overall health and vitality of family, community and nature.

By the same token, when we consider economics, values that can't be neatly and precisely calculated should count as much as those that can. Thus, in his chapter on pastures (*The Contrary Farmer*), Logsdon not only gives technical advice on how to manage pastures, but celebrates their social value as part of the profit:

When the children are small, and eventually the grandchildren, some of the happiest days on the farm are spent sledging down pasture hills. Meadows are also the best places to fly a kite. Once I outfitted a group of children with makeshift butterfly nets, and watching them skip over the meadow was even more delightful than watching fireflies sparkling above the grass in the dusks of July. In April, before the ball diamond uptown dries off, our softball team uses the biggest meadow as a practice field. My son and son-in-law also use it as a golf driving range. These values should go on the cottage farmer's computer spread sheet, but how?

If these two books leave you hungry for more, at the end of *The Contrary Farmer* there is a descriptive bibliography of "books the Contrary Farmer treasures." Here Logsdon reveals, among other things, that it was one of Wendell Berry's books that inspired him to return to his homeland and to farming. There is no doubt in my mind that Logsdon's own books will inspire more people to do the same.

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*Ghost Settlement on the Prairie:  
A Biography of Thurman, Kansas*

by Joseph V. Hickey

Lawrence, KS: University Press of Kansas, 1995

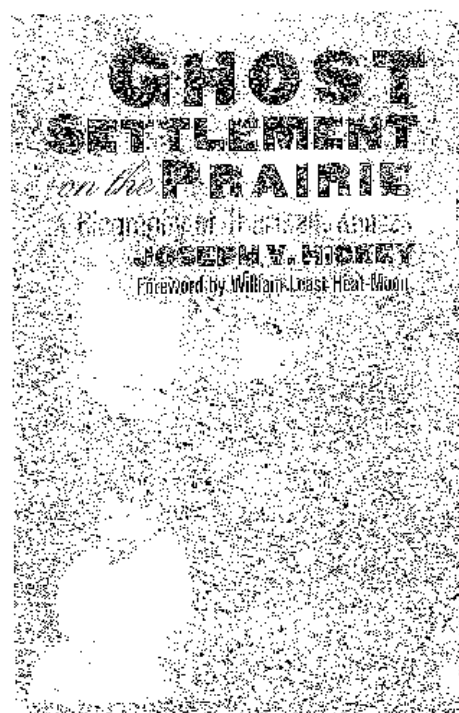
*Reviewed by Jean E. Anderson*

This is my idea of an excellent book. Far more successfully than William Least Heat-Moon's better known *PrairieErth*, Joseph Hickey's *Ghost Settlement on the Prairie* provides a "deep map" exploration of one corner of Chase County, Kansas. Hickey immerses the reader in a full spectrum of factual realities, details all the pertinent influences, events, and circumstances in a balanced and useful manner, and conveys the authentic spirit that was Thurman. In the process, the concept of a "settlement" becomes clear and meaningful. We are given the opportunity to ponder the values that make life worthwhile and to seriously consider what we can do to live according to those values. Through Hickey, the people of Thurman inspire us to envision new ways to begin living out our ideals.

In these closing years of the twentieth century, when the pace of life has sped up to a frenzy that nearly precludes comprehension, we are in great need of insight into our past. Works such as this book can assist us in making more reasonable choices for our future. A professor of Anthropology at nearby Emporia State University, Hickey has used his training and experience as an ethnographer in an eighteen-year study of Thurman, one example of a "settlement." The settlement, not even a village and scarcely more than a loose collection of rural neighbors, was one of the most prevalent forms of community which helped shape our nation during the nineteenth century. This form of community has disappeared almost without a trace, as it was not much recognized as a social entity even when it existed.

The settlement of Thurman evolved, and then dissolved, in the beautiful Flint Hills area east and south of the town of Matfield Green. "Thurman was...one of thousands of nineteenth- and early twentieth-century settlements whose lives began with the establishment of small, fourth-class post offices," Hickey writes (p. 12). It officially came into existence in 1874 and officially ceased to exist in 1944. In that seventy years, the span of a single human lifetime, more than one hundred families were at various times part of Thurman's life.

Although they defy easy description...[coming] from diverse educational, economic, social and religious backgrounds [and] despite being poor and having to cope with radical change, members of this heteroge-



neous group found a way to build settlements that were both economically productive and socially satisfying to most residents... [W]hat is most remarkable is that ordinary entrepreneurs and their neighbors made the settlement work for so many, against very long odds, and for such a long period of time. (p. 22)

Hickey gives us a faithful record of the settlement of Thurman, and explores the tension between individual economic improvement and concern for neighbors and community:

[I]f any form of nineteenth century social organization approached Thomas Jefferson's republican ideal of the free and autonomous community, it was the settlement. In many settlements, Thurman included, this pattern seems to have contributed to a collective sense of empowerment, a shared belief that no one was better than anyone else, nor were others' opinions necessarily superior to one's own. This attitude in turn encouraged a willingness among a large number of men and women to participate in the common life and to become actively involved in decisions of every type... at every stage in settlement history. (pp. 14 - 15)

This book explores the settlement form of social organization... and details how the social forces set in motion by a powerful ethos of individualism, the machinations of

large-scale capitalist entrepreneurs, and a Darwinian struggle between Thurman stock-raisers and local cattle barons and other Flint Hills ranchers for the land ultimately led to Thurman's demise and to the moribund state of Matfield Green, which now teeters on the brink of collapse. (p. xv)

Hickey calls the farmers of Thurman "ordinary entrepreneurs," distinguishing them from the more celebrated but less ordinary large-scale entrepreneurs who had the means to rise above their neighbors:

For the most part,... the people who called Thurman home long enough to participate in and to influence its public life were farmers of modest means. Chronically deficient in money, their version of the role of entrepreneur by necessity diverged somewhat from the "social ideal of economic individualism" which held that the individual farmer and his family were preeminent and would accept no social constraints on their economic freedoms. Instead, most ordinary entrepreneurs found it necessary to seek economic success and autonomy in a milieu that required extensive cooperation and sharing of resources. Even more so in Thurman's time than today, managing the family farm required not only the skillful use of scarce money, but also of "social credit," or reputation, which farmers and their families acquired or expended through their actions in the community and through other social resources or "social capital." (pp. 15 - 16)

Some – those people I call ordinary entrepreneurs – managed to beat the odds and combine these factors to create a successful adaptation that benefited them and, given the nature of social capital, quite often their kin, friends, and neighbors.

The story of how these ordinary men and women accomplished these feats makes Thurman's past more than a local or a county history, with flattering family histories, quaint pioneer anecdotes, and familiar tales of pioneer grit and virtue. Instead... the Thurman example is meant to serve as history in microcosm: an examination of the process of frontier settlement by ordinary people and their special role in the transition from small scale farming and cattle rearing to modern agribusiness. (p. 19)

Following the tradition of anthropology

and its humanistic emphasis on grass roots and on people's everyday lives, I seek to acknowledge and celebrate the struggles of ordinary men and women, admit their deficiencies and failures, and honor their small accomplishments. It is my belief that their settlements and the familiar democratic virtues that Thurman's ordinary entrepreneurs espoused – respect for human dignity, frugality, honesty, moderation, and equality – serve as the foundation, hope, and inspiration for the future. (p. 22)

I feel that these words of the author especially point to the importance of this book. His study has meaning not just to those of us who want so very much to find a good way to continue to live in the Flint Hills, but to people everywhere who face similar challenges. We need to discover and create ways of living that satisfy our needs for both physical existence – food and comfort; and spiritual connectedness – relationships with people, places, and purposes that give significance, value and genuine security to life.

Hickey makes a comment in his preface which describes a feeling I have experienced myself:

Early in my investigations the environment seemed so vast and mysterious that I was unable to focus on any central issue, and during the early years of the study, I often felt that my thought processes stopped each time I entered Chase County [emphasis added]... I was lost in this miasma until I got to know Ray. More than any other person or event, Ray Johnson convinced me that despite the hardships and frustrations, Thurman's story needed to be told. Ray himself was the proof. I believe that any rural community that could produce a ninety-year-old man who was interested in virtually every subject, cared deeply about others, always placed their needs above his, and loved people in general and children in particular held answers to questions that all of us need to know. (p. xviii)

Perhaps it's because this comes so close to describing my own father, who was raised in two such Flint Hills settlements, that I would prefer to see Ray Johnson's name, rather than that of William Least Heat-Moon (who contributed a Foreword) featured on the cover. Something like "Primary Contributor, Ray Johnson, Indigene, without whose assistance, encouragement, and friendship this book could not have been written," seems only appropriate.

## Germ Plasm Study of Eastern Gamagrass as a Perennial Grain

David Roy Henretty

### Abstract

At The Land Institute, the eastern gamagrass breeding program is designed to develop a synthetic variety to be used for perennial polyculture research and on-farm trials. The objective of my research project was to select superior genotypes to establish a new breeding population. Five isolation plots, containing genotypes with similar traits, were established in 1993. In 1994 and 1995, each plant in each isolation plot was measured for MDMV rating and seed yield. Superior genotypes were selected by identifying the top 10% yielding genotypes in each of plots 1, 2 and 3 for either 1994 or 1995, or for both years that also had a mean 1994-1995 MDMV rating of  $\leq 0.20$ . Using these criteria, 11 genotypes were identified and seeds from these superior genotypes will be used to establish a new breeding population in 1996.

### Introduction

Eastern gamagrass (*Tripsacum dactyloides*), a relative of corn (*Zea mays*, L.), is a warm-season bunchgrass that shows considerable promise as a perennial grain (Carlton 1989, Wright et al. 1983). As such, it would be a component of prairie-like polycultures that exhibit such sustainable features as reduced soil erosion, a solar energy supply, internal supply of nutrients, and biological management of weeds, insect pests, and plant diseases (Soule and Piper 1992). Native to the grasslands of the central and southern Great Plains, gamagrass is a nutritious and productive forage due to its high-quality seed, which is about 30% protein and 7% fat (Bargman et al. 1989), and large seed size. Ground seed has baking properties similar to those of cornmeal, making gamagrass a potential grain for human consumption. In central Kansas, flowering begins in May and seed harvest occurs in July and August. Most plants produce seed in their second year of growth, then annually thereafter. Currently, the major limitation to eastern gamagrass as a grain crop is low seed yield (~100 kg/ha), which is due in part to the structure of the normal inflorescence. Only a small proportion of the head is dedicated to seed production. Each of the isolation plots includes 20 genotypes that express the gynomonoecious form of eastern gamagrass. This is a mutant sex form in which most of the florets are female and produce seed (Dewald et al. 1985). We are hoping that advantageous gynomonoecious traits will be included in normal genotypes to produce high-yielding individuals.

The objective of the eastern gamagrass breeding program is to develop a synthetic variety to be used at The Land Institute and at other sites for perennial polyculture research. We have selected for such agronomically-desirable traits as high seed yield, ease of harvest, shatter resistance, disease resistance,

winter hardiness, and dwarf stature (Rabinovich 1994). The genotypes in this project came from earlier selections of wild populations and collections of previously developed lines (Bergman 1993). By using polycross nurseries to allow cross-pollination among numerous high-yielding genotypes, we intend to select for desirable traits while maintaining a level of genetic diversity within the breeding population. The objective of this research project was to identify superior eastern gamagrass genotypes to serve as our new breeding population at The Land Institute, based on the 1994 and 1995 results for seed yield and MDMV (Maize Dwarf Mosaic Virus) rating.

### Materials and Methods

In 1993, promising genotypes with similar traits were identified from bulk collections established at The Land Institute as early as 1988 (Bergman 1993) and planted into five isolation plots (Table 1). Isolation plot 1 contained 29 genotypes that were selected for high seed yield from our 1988 biculture planting. Isolation plot 2 contained 36 genotypes that represent the top 10% yielding plants from our 1989 nursery. Isolation plot 3 contained genotypes from the 1988 biculture and 1989 nursery that were selected for their resistance to MDMV. Isolation plot 4 contained genotypes from the Kerr Center in Oklahoma that were selected for vigorous growth, large size, disease resistance, loss of seed dormancy, and winter hardiness. These plants are tetraploid and probably will constitute a variety in their own right. Isolation plot 5 contained genotypes from our 1990 nursery that were selected for dwarf stature. Plot 5 genotypes will be important to our breeding program in the future. MDMV rating and seed yield were recorded for each plant in the isolation plots for 1994 and 1995. These data were used to identify superior genotypes.

Table 1. Selection criteria and sources for eastern gamagrass isolation plots established in 1993.	Isolation Plot	Selection Criteria	Source	No. of normal genotypes per plot
	1	Top high yielding individuals	1988 biculture of Illinois bundleflower and eastern gamagrass	29
	2	Top plants from the 10% highest yielding families	1989 planting from collected seed	36
	3	Resistance to MDMV virus over time	1989 planted from collected seed and 1988 biculture	35
	4	Vigorous growth, large size, disease resistance, loss of seed dormancy and winter hardiness	Tetraploid plants from Kerr Center in Poteau, OK selected for forage	31
	5	Visually rated for dwarf stature (a trait that could improve harvestability and seed yield by converting more of the plant's energy into seed production relative to vegetative biomass)	Dwarf selections from our nursery collection: the 1990 planting	6

The gamagrass isolation plots were established on a level Cozad silt loam soil in 1993. The plots were spaced 100 m from each other to avoid pollen contamination. Plots ranged in size from 15 x 17 m to 17 x 17 m. A 1 m border of each plot was not harvested. Plots contained from 255 to 289 individual plants, representing from 6 to 36 genotypes, including 20 genotypes expressing the gynomonocious form of gamagrass.

In May, all plants were rated on a scale of 0 to 7 for MDMV symptoms. A rating of 0 represented no symptoms of the virus, 1 to 3 represented mild infection, 4 to 5 moderate infection, and 6 to 7 severe infection (Davis 1991).

The entire female spikelets on each tiller were hand-harvested, then allowed to dry for a minimum of three weeks before being weighed. Harvest began in mid-July, when most of the terminal tillers had started to lose their male flowers, and was completed by late August. Each plot was harvested three times to collect the later-emerging lateral tillers.

The criteria we used to identify superior genotypes for establishing a new breeding population were the top 10% seed yielding genotypes in each of plots 1-3 for either 1994 or 1995, or for both years, that also had a mean 1994-1995 MDMV rating of  $\leq 0.20$ . We took representatives from each plot to account for environmental variability between plots. Using these criteria, we identified 11 superior genotypes (Table 2). All 11 genotypes are normal eastern gamagrass plants; the role of the gynomonocious genotypes in the plots was to contribute beneficial genes.

The weights in this table are of uncleaned seeds. Actual seed weight would be 25-30% of the figures in the table. While we wanted to use only the genotypes with superior traits, we did not want to narrow the gene pool to the extent that it would limit future options. Since the plants with these genotypes were in their third year of growth, they would have shown MDMV symptoms if they were indeed infected. A low MDMV rating for at least 1994 and 1995 indicates strong resistance to MDMV and would therefore be a very desirable trait that we would want to include in our new breeding population.

Table 2. Eleven Gamagrass genotypes selected as top 10% seed yielders from each isolation plot and mean MDMV rating $\leq 0.20$ .	Genotype	Mean 94-95 Yield (g/plant)	Mean 94-95 MDMV rating
	6	47.03	0.10
	12	55.04	0.20
	17	49.80	0.20
	34	66.76	0.20
	35	53.59	0.00
	47	60.72	0.00
	48	77.12	0.00
	71	45.34	0.00
	132	67.56	0.00
	150	56.94	0.10
	159	43.78	0.00
	Mean	56.70	0.07

## Results and Discussion

There are at least three genotypes from each of the three isolation plots included in the 11 genotypes, so the original traits that were being selected for are represented. Two of the more stellar genotypes are 48 and 132 which have good seed yield and apparent resistance to MDMV. We will use the 11 superior genotypes to establish a bulk nursery which will serve as our new breeding population.

Our eastern gamagrass breeding program will continue at The Land Institute until an adequate synthetic variety is developed. We consider the traits expressed by the 11 superior genotypes as evidence that the program has been successful so far.

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# Density of a Specialist Insect, *Anomoea flavokansiensis*, in Perennial Polycultures

Karen Andersen

## Abstract

We observed densities of *Anomoea flavokansiensis*, a specialist beetle that feeds on Illinois bundleflower, to examine whether perennial polycultures can manage their own insect pests. The results were compared with those of previous years to look at the effects of time on insect management in perennial systems. Beetles were censused in monocultures, two-species mixtures, and three-species mixtures at two sites. Treatment effects were observed at both sites. In 1995, insect density was generally higher in monocultures at Site 1, and peaked sequentially in mono-, tri-, and bicultures at Site 2. The results suggest that perennial polycultures are successful at reducing insect pests and that this effect can for more than one year.

## Introduction

The Natural Systems Agriculture research program of The Land Institute seeks to develop a new form of grain agriculture based upon ecological principles operating within natural plant communities. Some of the beneficial characteristics of natural communities include a vegetative cover which slows soil loss, dominant perennial species adapted to local climate and soils, an exclusively solar source of energy, internal recycling of nutrients, regulation of local hydrological processes, and regulation of native herbivores and diseases (Soule and Piper 1992, Altieri 1994). One of the objectives of the research program is to develop a sustainable agriculture based on perennial grains and modeled on the prairie ecosystem. Two relevant questions are 1) Can an agriculture based on mixtures of perennial grains successfully manage insects, and 2) How does time affect the ability of these mixtures to do so?

Relative to the monocultures which typify contemporary U.S. agriculture, diverse agroecosystems (polycultures) have been shown oftentimes to reduce pest populations (Risch et al. 1983). Chemical or physical barriers in polycultures can reduce the ability of specialist insects, i.e., those that feed on only one or a few host species, to find and utilize their host plants. In addition, populations of natural enemies may be more abundant in diversified systems, thus lowering pest insect densities (Root 1973).

Within a set of ongoing perennial polyculture research plots, now in their fifth year, we examined the density of a specialist herbivore, *Anomoea flavokansiensis* Moldenke (Coleoptera: Chrysomelidae), on a native perennial legume, *Desmanthus illinoensis* (Michaux) Macmillan, as a model for investigating insect/host-plant dynamics in perennial systems. In addition, we examined the 1995 data in light of the previous four years to study the effects of time on insect density in these plots.

## Materials and Methods

### Description of species and research plots

From late June to early August, young leaves and flowers of Illinois bundleflower are fed upon by *Anomoea flavokansiensis*. Although the beetle is reported to feed on other species in the Leguminosae (Moldenke 1970), locally we have found it only on Illinois bundleflower. Its development from egg to adult takes from one to two years (Erber 1990). After mating on bundleflower the beetle lays its eggs within a fecal pellet, which is then dropped to the ground and collected by ants. The ants carry the fecal pellets to their nest where the eggs hatch. The larvae then develop underground until they emerge as adults (Vern Stiefel, personal communication).

The perennial polyculture research plots comprise monocultures and mixtures of three perennial grain candidates. Illinois bundleflower (*Desmanthus illinoensis*) is a nitrogen-fixing legume native to the Great Plains, ranging northward to

Minnesota, east to Florida and as far west as New Mexico. In previous studies, its yield has been as high as 197 g m<sup>-2</sup> (Piper 1993). Eastern gamagrass (*Tripsacum dactyloides*) is a large warm-season bunchgrass with a range from southeastern United States and the Great Plains southward to Bolivia and Paraguay. Wildrye (*Leymus racemosus*) is a rhizomatous cool-season grass native to southeastern Europe and western Asia. It is planted in the western United States to stabilize sandy soils.

This study was established in March 1991 at two sites at The Land Institute. Site 1 is located at the Sunshine Farm on a level Cozad silt loam, previously in continuous wheat until 1990, when it was planted to alfalfa. Site 2 is a south-facing, eroded hillside with Kipson-Clime Complex soil. It was planted to native grasses in 1982, but had been continually cropped prior to that time. Site 2 is located approximately 2.5 km east of Site 1.

There are three cropping system treatments, each replicated three times at each site: Illinois bundleflower monoculture, a biculture of bundleflower/gamagrass, and a triculture of bundleflower, gamagrass, and wildrye. Plots are 7.32 by 9.75 m, with plants 0.75 m apart within rows and rows 0.91 m apart. The outer two rows were left as borders to minimize edge effects. Canopy closure was complete by the second year.

### Procedures

Beetles were censused three times weekly on Illinois bundleflower, from the time of their emergence in late June until their numbers declined in early August. Censuses were conducted between 0700 and 0830. Beetle mating, ant activity, and such characteristics as temperature and precipitation at time of censusing were also noted.

## Results

In the first three years of the study (1991-1993), insect densities at both sites were very low (<1 per plant) and there were no treatment effects. In 1994, peak insect density per plant was 16 at Site 1 and 24 at Site 2, much higher than in previous years. Also, treatment effects occurred at both sites, with monocultures displaying more insects per plant than bi- and tricultures (Figure 1). In 1995, average beetle densities were again < 1 per plant at both sites (Figure 2). At Site 1, insects were generally denser in monocultures than in bi- and tricultures. At Site 2, monocultures had higher beetle densities than polycultures early in the season, but this effect disappeared by early July. Beetles appeared to peak sequentially in mono-, tri-, then bicultures.

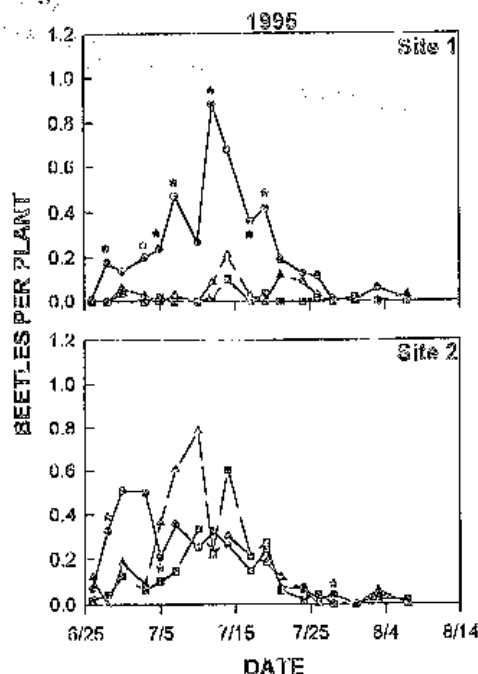
During the past five years, there have been wet years and dry years and these precipitation differences may have influenced beetle densities. For example, after an extremely wet year in 1993, late-season small mammal populations increased greatly at site 1. Illinois bundleflower plants in the polyculture plots were disproportionately damaged by mammal grazing in winter, leaving more healthy plants in the monoculture plots.

## Discussion

Whereas beetle density in 1994 was many times higher than in the previous three years of the study, in 1995 the average densities again dropped to below 1 beetle per plant. These year-to-year population fluctuations may be due to the natural life cycle of the beetle or the ant, or they may be triggered by environmental stimuli. Though average insect densities were once again  $< 1$  per plant in 1995, treatment effects on beetle density remained. This result augments other research demonstrating the effectiveness of plant biodiversity in managing specialist insects in agroecosystems (Altieri 1994). What our results add to previous findings is the demonstration of this phenomenon in a perennial system. Lower insect density in diverse plots is most likely attributable to the increased difficulty of locating host plants in polyculture (Risch et al. 1983). At Site 1, hispid cotton rat (*Sigmodon hispidus*) damage to Illinois bundleflower over the winter of 1993-1994 might have affected the results by attracting beetles to the monocultures in which a higher percentage of large plants survived the damage. The apparent shift in peak beetle densities from monocultures to tri- and bicultures at Site 2 in 1995 might have been due to the comparative ease with which monocultures are located and colonized relative to polycultures, in which there might be a time-lag before peak densities are reached.

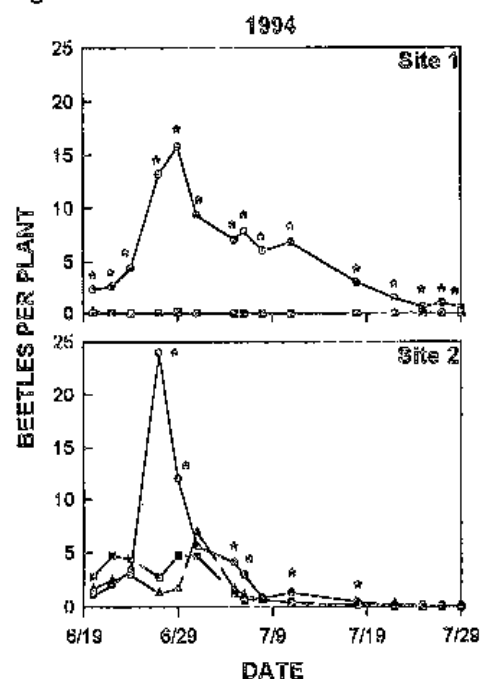
Evidence of a treatment effect in the fifth year of this study is encouraging since a potential problem facing an agriculture based on perennials might be the increased colonization and establishment of resident insect populations and the loss of the benefits of polyculture with time. Whereas crop rotations in annual systems can be used to manage insects, weeds, and disease by interfering with the pests' natural life cycles, perenni-

Figure 2



Seasonal *A. flavokansiensis* density (adults per *D. illinoensis* plant) within three plant diversity treatments at two experimental sites in 1995. Symbols as in Figure 1.

Figure 1



Seasonal *A. flavokansiensis* density (adults per *D. illinoensis* plant) within three plant diversity treatments at two experimental sites in 1994. Asterisks denote dates on which there were differences among treatments ( $p < 0.05$ , ANOVA, Student-Neuman-Keuls Test). Key:  $\circ$ , monoculture;  $\blacksquare$ , two-species mixture;  $\blacktriangle$ , three-species mixture.

al systems offer a less-disturbed habitat that is more stable and predictable and in which pest populations might be expected to build up over time.

With continuation of the perennial polyculture research it will be interesting to note whether beetle populations experience another "boom" as in 1994, and what the causes of this phenomenon might be. In addition, the effects of time on the efficacy of insect management in perennial grain mixtures will be interesting to observe.

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# Perennial Polyculture as an Assembled Plant Community

Tina Ray

## Abstract

This study investigates how initial diversity affects the establishment of perennial grain polycultures through the process of community assembly and how plant species composition changes over time. Four treatments were used: 4, 8, 12, or 16 species planted, with four replicates each for a total of 16 plots. Four perennial grain candidates were used in all the plots: eastern gamagrass, Illinois bundleflower, mammoth wildrye, and Maximilian sunflower. Half the plots will be reseeded with any species that fail to establish. Percentage cover was calculated for all species in 1994 and 1995. Cover by perennials increased with initial diversity of treatment. In all treatments, percentage cover by perennials increased from 1994 to 1995. Percentage cover by annuals dropped for all treatments except treatment I. Diversity increased with initial treatment diversity. Planted species increased from 14.9% cover in 1994 to 40% cover in 1995. Results indicate that there is a trend across the treatments towards more diverse plant communities.

## Introduction

The Land Institute is seeking to develop an alternative type of grain agriculture based on perennial polycultures. By mimicking the prairie ecosystem, perennial polycultures can display such properties as disease and pest management and legume supplied nitrogen, which should reduce fertilizer and pesticide inputs. Use of perennial plants reduces risk of soil erosion through less tillage and more permanent ground cover.

Once established, a perennial polyculture would probably require less management than conventional, annual crops, but establishment is probably not as simple as just planting the desired species. Experiences of restoration ecologists indicate that it may be necessary to create a "history" in order to create a plant community that is diverse as well as persistent (Lockwood and Pimm, *unpublished*). Natural communities develop over time and most will eventually reach a state that is fairly persistent (i.e., requiring little intervention) in terms of species composition. However, this state is the product of a sequence of events, during which species come and go, each contributing in some way to the final structure or creating conditions that enable subsequent species to persist.

This ongoing study is addressing the questions of how initial species diversity affects the process of community assembly and how plant species composition changes with time. By identifying trends in changes within the communities we hope to discover repeatable methods for establishing persistent perennial grain polycultures.

## Materials and Methods

The study uses four treatments. Plots were sown with 4, 8, 12, or 16 species with four replicates of each treatment (Table 1). In early 1996, half of the plots will be reseeded with any planted species that were not sampled in summer 1995. Four species are included in all the plots: eastern gamagrass, mammoth wildrye, Illinois bundleflower, and Maximilian sunflower. They represent four major functional groups found on the prairie: warm season grasses, cool season grasses, legumes, and composites (Piper 1995). These four species were selected for their potential as perennial grains and have been studied in

previous experiments at The Land Institute (Piper et al., 1991). Other perennial species from the four functional groups were used to vary the diversity of the plots. Sources of seed were Land Institute plots harvested in 1992 and 1993, the Kansas Plant Materials Center in Manhattan, and commercial suppliers. To achieve a constant seeding density within species across the plots, plots were seeded at 25% of the rate recommended to establish a solid stand.

In March 1994, sixteen plots were laid out, 16 x 16 m, and spaced a minimum of 3.7 m apart to prevent seed exchange among plots. The site is on Longford silt loam with a slope of 3 to 7%. In fall 1993, the site was plowed, and then in spring 1994, it was disked and harrowed before planting. Seed was broadcast by hand in all the plots in late March 1994. The plots were raked after seeding to help settle the seeds in the soil. In March 1995, all the plots were burned to discourage annuals and woody species and to favor herbaceous perennials.

The plots were first sampled in late July 1994 and again in late July 1995. July was chosen for sampling because at that time there is an overlap between early and late summer species and diversity is greatest. Twelve 0.75 x 0.75 m sample frames were used in each plot. Quadrats were distributed systematically throughout each plot. A one meter border area in each plot was not sampled in order to avoid edge effects. Species composition and relative abundance were estimated using cover classes as follows: 1=0-5%, 2=6-25%, 3=26-50%, 4=51-75%, 5=76-95%, and 6=96-100% cover (Daubenmire 1959). Median values were substituted for each cover class (1=2.5%, 2=15%, etc.), and averages calculated for each species. Using these numbers, other values were derived, including diversity (number of species) and evenness, which measures how equally different species are represented (a value of 0 to 1). For analysis, species were categorized by functional group, life history (annual vs. perennial), life form (herbaceous vs. woody), and origin (planted vs. non-planted).

Soil samples were taken in October to characterize the soils at the site. Four 1 meter core samples were made in each plot, and divided into depth increments of 0-30 cm, 30-60cm, and 60-100cm.

Table 1. Species composition of four diversity treatments	C4 grasses	C3 grasses	Legumes	Composites
I	eastern gamagrass	mammoth wildrye	Illinois bundleflower	Maximilian sunflower
II	eastern gamagrass perennial sorghum	mammoth wildrye blue wildrye	Illinois bundleflower purple prairie clover	Maximilian sunflower ashy sunflower
III	eastern gamagrass perennial sorghum switchgrass	mammoth wildrye blue wildrye intermediate wheatgrass	Illinois bundleflower purple prairie clover bird's foot trefoil	Maximilian sunflower ashy sunflower grayhead coneflower
IV	eastern gamagrass perennial sorghum switchgrass sand lovegrass	mammoth wildrye blue wildrye intermediate wheatgrass western wheatgrass	Illinois bundleflower purple prairie clover bird's foot trefoil leadplant	Maximilian sunflower ashy sunflower grayhead coneflower Kansas gayfeather

Table 2. Percentage cover for annuals and perennials for each treatment.		Annuals		Perennials	
		1994	1995	1994	1995
I		108.4	112.6a	45.9	63.6b
II		124.0	94.1ab	53.1	68.2b
III		112.6	92.1ab	61.9	91.8a
IV		118.3	61.1b	56.6	106.9a

Within a column, means with the same superscript do not differ at  $p < 0.05$  (ANOVA, S-N-K test).

## Results

### Treatment Differences

Percentage cover by annuals decreased in all treatments except I (Table 2). In 1995, in treatment IV, annuals were in the minority at 61.1% cover vs. perennials at 106.9% cover. In addition, percentage cover of perennials increased for all treatments.

In both years, diversity increased with initial treatment diversity. Evenness tended to increase with diversity of initial treatment, but not significantly (Table 3).

### Year Differences

Eighty-three species were sampled across all the plots in 1995, compared with 68 species in 1994. There was a nearly three-fold increase in cover of planted species from 1994 to 1995 (Table 4). There was a slight decrease in cover of non-planted species.

This year, the four main planted species still did not have very large representation in the plots. Data on Maximilian sunflower, which had a cover of 0.8% in 1994 and 9.6% in 1995, suggests that representation by this species may be increasing.

There have been some changes among dominant species across the plots. Green foxtail had the greatest mean cover in 1994 but was ninth in 1995. Annual sunflower, which had the tenth highest cover in 1994, was fourth in 1995.

Several species will be reseeded in spring 1996 in the "reseed" plots. Mammoth wildrye (*Leymus racemosus*), Kansas gayfeather (*Liatris pycnostachya*), and western wheatgrass (*Agropyron smithii*), were not sampled in any of the plots in July 1995. Blue wildrye (*Elymus glaucus*) will be needed to be reseeded in one plot.

## Discussion

After two years of sampling, certain trends are already becoming apparent. There has been a shift towards more diverse plant communities among the plots, particularly in those plots with greater initial diversity. Perennials have increased, both in total cover, and in proportion to annuals. This is consistent with expectations, since perennials with their stored nutrients and their emphasis on root growth during establishment have an advantage after the first year. Somewhat related is the increase in coverage by planted species vs. non-planted species, since all the planted species are perennials. These changes indicate that a "shaking down" is taking place. Plants unable to establish in the initial weedy environment may encounter more favorable conditions at a later stage. We know that the sequence of introduction can affect the final species composition (Drake 1991). By reseeding half the plots where necessary, we hope to provide opportunities for species to enter the community at several stages during assembly.

An additional set of community assembly plots is being prepared for planting in Spring 1996. The design and methods

Table 4. Percentage cover for planted and non-planted species averaged across treatments (n=16).		1994	1995
		Planted	Non-planted
		14.9	40.0
		149.9	132.7

Table 5. Percentage cover for major species averaged across treatments (n=16).	Species	Mean % cover	
		1994	1995
	Green foxtail ( <i>Setaria viridis</i> )	33.2	6.9***
	Bindweed ( <i>Convolvulus arvensis</i> )	27.3	25.8
	Toothed Spurge ( <i>Euphorbia dentata</i> )	21.7	4.0***
	Yellow foxtail ( <i>Setaria glauca</i> )	21.4	19.4
	Crabgrass ( <i>Digitaria sanguinalis</i> )	17.3	12.6
	Hybrid perennial sorghum <sup>1</sup>	8.8	5.2**
	Buffalo bur ( <i>Solanum rostratum</i> )	8.5	0.2***
	Alfalfa ( <i>Medicago sativa</i> )	6.2	4.6
	Bird's foot trefoil ( <i>Lotus corniculatus</i> ) <sup>2</sup>	5.1	11.0
	Annual sunflower ( <i>Helianthus annuus</i> )	5.0	15.3
	Grayhead coneflower ( <i>Ratibida pinnata</i> ) <sup>2</sup>	4.1	17.0***
	Wood sorrel ( <i>Oxalis</i> sp.)	1.9	4.0***
	Intermediate wheatgrass ( <i>Agropyron intermedium</i> ) <sup>2</sup>	1.5	10.8**
	Ragweed ( <i>Ambrosia artemisiifolia</i> )	1.1	17.5**
	Mullein ( <i>Coryza canadensis</i> )	1.1	8.7**
	Illinois bundleflower	1.1	0.7
	Maximilian sunflower	0.8	9.6***
	Eastern gamagrass	0.2	0.6*
	Ashy sunflower ( <i>H. mollis</i> )	0.2	2.8***
	Mammoth wildrye	0.0	0.0

<sup>1</sup> mean percentage cover calculated for treatments II, III, IV

<sup>2</sup> mean percentage cover calculated for treatments III, and IV

\*\*\*  $P < 0.001$

for the study will be nearly identical to the one established in 1994, except for two factors: location and year. Also, another warm season grass, *Sporobolus heterolepis*, will replace *Sorghum bicolor* x *S. halepense*. This will allow the assessment of potential confounding factors of site and establishment year on patterns observed.

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Table 3. Richness, evenness, and total cover for vegetation within four diversity treatments in 1994 and 1995 (n=16 plots).	Treatment	Richness		Evenness		% Cover	
		1994	1995	1994	1995	1994	1995
	I	24.8 <sup>b</sup>	30.2 <sup>b</sup>	0.599	0.624	155	176
	II	26.2 <sup>ab</sup>	34.0 <sup>b</sup>	0.660	0.651	177	162
	III	31.2 <sup>ab</sup>	39.5 <sup>a</sup>	0.662	0.698	175	184
	IV	32.5 <sup>a</sup>	40.5 <sup>a</sup>	0.695	0.728	175	168

Within a column, means with the same superscript do not differ at  $p < 0.05$  (ANOVA, S-N-K test).



# Species Composition within Broadcast-Seeded Polycultures

Tina Ray

## Abstract

This ongoing study is investigating broadcast-seeded plant communities to identify trends and patterns that may help determine how to establish diverse, persistent, high-yielding perennial polycultures. Three species were sown: eastern gamagrass, Illinois bundleflower, and maximilian sunflower. Four accessions of eastern gamagrass and three accessions of Illinois bundleflower, and two different seeding rates were used to create 12 treatments. No weed control was attempted. Percentage cover was measured each year for three years. There has been considerable turnover in species and a trend towards greater representation by perennial species.

## Introduction

The Land Institute is trying to develop a perennial polyculture agriculture modeled after the prairie. In imitating the prairie, this polyculture ought to possess some of the prairie's innate qualities, making it resistant to pests and disease, less susceptible to drought and erosion, and providing its own fertility. The prairie is a complex ecosystem, and attempting to duplicate the interactions and relationships is likely to be a complicated process.

We have had difficulty establishing perennial polycultures that are diverse and persistent. In some cases, species have disappeared from the plots. This suggests that establishment of such polycultures is not as simple as just planting the desired species. In nature, plant communities go through a series of successional stages. A bare field is colonized by weedy annuals which gradually give way to herbaceous perennials. By mimicking this historical process, we hope to find new methods for establishing perennial polycultures.

This experiment was initially developed for use in plant breeding studies to compare the performance of various accessions of eastern gamagrass and Illinois bundleflower when grown in polyculture with minimal management (Katcher 1993). It is also useful as a study of the process of community assembly to a persistent perennial polyculture. Several questions are being addressed: How is plant cover changing, particularly annuals vs. perennials? What are the dominant species and how have they changed over three years? Can a perennial polyculture manage weeds? Has seed yield changed? We hope to identify trends that may allow us to predict the future progression of these and other similar broadcast seeded polycultures. In the future, we will examine whether certain treatments give rise to perennial polycultures sooner than others.

## Materials and Methods

Three species were sown in the plots: eastern gamagrass (*Tripsacum dactyloides*), Illinois bundleflower (*Desmanthus illinoensis*), and Maximilian sunflower (*Helianthus maximilianii*). These three species are perennials, native to the prairie, that show promise as grains.

Four different eastern gamagrass accessions and three accessions of bundleflower were used to create six seed mixtures. Maximilian sunflower seeding rate was the same for all mixtures. Each seed mixture was used in two different seeding ratios, forming 12 treatments (Table 1) with two replicates for a total of 24 plots, 6 x 7m each (Katcher 1993).

The plots are located on a Kipson-Cline soil complex in an area that had previously been planted in alfalfa. Plots were planted on 12 June 1993 by broadcast seeding and were mowed in spring 1994 and 1995.

In late summer (September 1993 and August 1994 and 1995), vegetation was sampled within a 3 x 5 m area in the center of each plot. Two 0.75 x 0.75 m quadrats were placed randomly in each plot, and percentage cover was assessed for each species using the following cover classes: 1=0-5%, 2=6-25%, 3=26-50%, 4=51-75%, 5=76-95%, 6=96-100% cover.

## Results

Total cover has increased with time (Table 2). Perennials have represented an increasing proportion of the vegetation each year, with percentage cover increasing nearly seven-fold from 1993 to 1995. Percentage cover by annuals has remained relatively constant with time.

Illinois bundleflower and Maximilian sunflower cover have increased each year (Table 3). Eastern gamagrass cover has increased less dramatically. Among annual weeds, green foxtail (*Setaria viridis*) dropped in percentage cover during the three years, whereas Japanese brome (*Bromus japonicus*) cover increased.

Across all plots, Illinois bundleflower seed yield was higher in 1995 than in 1994 (19.2 vs. 1.4 g m<sup>-2</sup>,  $p < 0.01$ ,  $t$  test). There were no differences among treatments.

In 1993, treatment 1 had significantly higher Illinois bundleflower cover, and treatment 12 had significantly higher eastern gamagrass cover. There were no other significant treatment differences during the three years.

Table 1. The six seed mixtures and two species ratios used in this study.	Seed mixture	Species ratio <sup>1</sup>	Gamagrass selection <sup>2</sup>	Bundleflower selection <sup>3</sup>
	1	1	TF yield	318
	2	2	TF yield	318
	3	1	BC yield	318
	4	2	BC yield	318
	5	1	TA yield	318
	6	2	TA yield	318
	7	1	VR	318
	8	2	VR	318
	9	1	BC yield	1131/1143
	10	2	BC yield	1131/1143
	11	1	BC yield	interspecific hybrid
	12	2	BC yield	interspecific hybrid

<sup>1</sup>Species ratio 1=40% C<sub>4</sub> grass, 30% legume, 30% composite; species ratio 2=80% C<sub>4</sub> grass, 10% legume, 10% composite

<sup>2</sup>TF yield=high yield from monoculture germplasm; BC yield=high-yielding in EGG/bundleflower biculture; TA yield=high yield from monoculture germplasm; VR=virus resistant

<sup>3</sup>318=high yield; 1131/1143=large seed and shatter resistant mix; interspecific hybrid=Desmanthus illinoensis X D. leptolobus

Table 2.		1993	1994	1995
Mean percentage cover for annuals, perennials, and all species in three years (n=24).	Annuals	72.8	60.9	73.5
	Perennials	20.7	72.1	137.4
	Total	93.9	133.1	211.3

**Table 3.**  
Mean percentage cover  
for the ten most  
predominant species  
and three perennial  
grains for  
1993-1995 (n=24).

Species	Mean % cover		
	1993	1994	1995
Green foxtail ( <i>Setaria viridis</i> )	46.0	25.6	6.5
Eyebane ( <i>Euphorbia maculata</i> )	15.4	0.1	0.5
Illinois bundleflower ( <i>Desmanthus illinoensis</i> )	8.5	22.4	41.9
Windmill grass ( <i>Chloris verticillata</i> )	4.2	12.5	13.5
Bindweed ( <i>Convolvulus arvensis</i> )	3.9	9.1	19.2
Witchgrass ( <i>Panicum capillare</i> )	3.0	0.3	1.6
Prairie cupgrass ( <i>Eriochloa contracta</i> )	2.7	0.0	0.0
Eastern gamagrass ( <i>Tripsacum dactyloides</i> )	2.0	10.5	8.4
Prickly lettuce ( <i>Lactuca serriola</i> )	0.6	5.1	3.2
Alfalfa ( <i>Medicago sativa</i> )	0.5	4.9	11.0
Muletail ( <i>Coryza canadensis</i> )	0.0	24.9	4.6
Tumblegrass ( <i>Schedonnadrus paniculatus</i> )	0.0	4.6	18.1
Smooth brome ( <i>Bromus inermis</i> )	0.0	4.2	10.2
Maximilian sunflower ( <i>Helianthus maximiliani</i> )	0.0	0.4	4.1
Japanese brome ( <i>Bromus japonicus</i> )	0.0	3.7	52.9

## Discussion

With three years of data, some trends are becoming clear. There has been some turnover of species and a trend towards a predominantly perennial plant community.

Total percentage cover has more than doubled over three years. Most of this increase is due to greater representation by perennials. Because perennials devote most of their energy and resources to underground development during establishment, we expect them eventually to have an advantage over annuals.

Whereas Maximilian sunflower and Illinois bundleflower have tended to increase, eastern gamagrass cover did not increase from 1994 to 1995. This may have been due to our confusing it with Purpletop (*Tridens flavus*), which is difficult to distinguish from young eastern gamagrass when no inflorescence is present.

Green foxtail, an annual warm-season grass, declined in percentage cover, which is consistent with our observations of greater dominance by perennials. However, Japanese brome, an annual cool-season grass, exhibited a greater representation this year. This could be due to the large amounts of rainfall in spring 1995, which seemed to favor cool-season grasses.

If we consider overall patterns, the plots seem to be managing (i.e., gradually reducing) weedy species. Although the treatments show no significant differences now, we plan to continue to monitor them for differences in composition or trends in the future. Our three years of data show a clear process of assembly and a turnover of species in these plots.

## Literature Cited

Katcher, J. 1993. Establishment of a broadcast seeded perennial polyculture. The Land Institute Research Report 10:26-32.

## President Clinton names Terry Evans to the National Council on the Arts

The President announced his intent to nominate Terry Evans to the Arts Council on February 2, 1996. Terry is a member of The Land Institute's board and our Arts Associate. Her photographs are part of the permanent collection at the Museum of Modern Art in New York, the National Museum of American Art, Smithsonian Institute, and the San Francisco Museum of Modern Art.

The National Council on the Arts advises the Chair of the National Endowment for the Arts on policies, programs and procedures for carrying out the agency's functions. The Council also recommends to the President individuals and organizations to receive the National Medal of Arts for outstanding contributions to the arts in America.

## Please join us for the Prairie Festival May 24-26, 1996.

This is The Land Institute's 20th anniversary so the Festival theme is "The Marriage of Ecology and Agriculture: The Next 20 years." Among our guests will be Wendell Berry, Kathleen Merrigan, Conn Nugent, Linda Hasselstrom, and Sir Albert Howard (invited). Once again, the food will be Kansas grown and organic as we can make it. Mark your calendars.

## Working with our Friends

Matthew Logan

Those of us fortunate enough to attend Angus Wright's 1995 Prairie Festival talk heard something very special. With eloquence and emotion, Angus reminded us of the perils as well as the possibilities of "becoming native." We learned about the duty of reciprocity, of paying one's debts; and about the dangers of parochialism. Angus concluded his remarks by suggesting that we need both the "universal concern and generous love" of the wanderer as well as the native's "specific, pagan love of our own place and our own people."

Where does The Land Institute fit into this framework? Our Natural Systems Agriculture research is concerned with establishing basic scientific principles—universal "truths"—that can be applied in virtually any agricultural landscape. We experiment with Eastern gamagrass, Illinois bundle-flower, and mammoth wildrye because they allow us to get at fundamental biological questions. Because we look for core principles, we believe the implications are global, thereby extending the significance of our inquiries beyond the narrow ecological confines of our central Kansas location.

The Land Institute works close to home, too. We participate in the local Smoky Hill Graziers organization as well as assisting the Tallgrass Beef marketing cooperative near Matfield Green. We cooperate with the Salina Art Center and Salina Parks Department in a program to teach schoolchildren about "art in the environment." We work with the Heartland Network to promote sustainable agriculture in Kansas, and will hold a Field Day on the Sunshine Farm this August to increase our exposure and expand the dialogue about alternatives among farmers in the area.

This combination of global and local perspectives provides depth to our mission without sacrificing practical relevance. One by-product of the diversity of our interests is the diversity of our supporters. Friends of The Land like you represent the wide spectrum of people concerned about the future of the environment, agriculture, and our communities. Our Friends come from all fifty states and thirteen foreign countries: from Albania to Abilene, the Philippines to Philadelphia.

As you might imagine, this can create logistical challenges. How can we best communicate in a timely and cost-effective manner with each of you without sacrificing the ideals of the organization? Obviously, the *Land Report* is our primary means of exploring in depth the issues that concern us. We also use "direct mail" to keep you abreast of the latest advances in our work. Many of you have received our letters this past autumn. Your outpouring of support has been overwhelming. For this I am grateful. I am also grateful for your comments. Many of you pointed out with pride bordering on indignation that your contribution this year was to *remain*, not to "*become* a Friend" as the letter erroneously prompted. A large number of you also shared the names of friends and colleagues who you thought would have an interest in The Land Institute.

Most importantly, you have also told us about your own work, about the things that you are doing every day close to home to make a difference. For all this I say "thank you." Your generosity makes the work of The Land Institute possible. The work you're doing in your own communities makes it matter.

Matthew Logan is Land  
Institute Director of  
Development

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