

SUSTAINABLE FARMING

Quarterly



Vol. 1 No. 1 December, 1989

Newsletter encourages information exchange

Welcome to the first issue of the *Sustainable Farming Quarterly*, a newsletter of a USDA-funded Low-Input Sustainable Agriculture project called "Options for Reducing Inputs in the Cereal and Legume Growing Regions of the Northwest."

The *Sustainable Farming Quarterly* (SFQ) is part of an effort to find information and make it available to everyone who's interested in sustainable agriculture. Three more issues have been funded and will be published in February, May and August. The future of the *Sustainable Farming Quarterly* beyond that depends on funding and reader interest.

After two issues, the editor of the SFQ will ask readers

if they are finding the publication useful. We welcome comments and ideas from readers.

Sustainable Farming Quarterly is being sent to Extension Service and SCS offices, media, farm organizations and farmers interested in low-input sustainable agriculture. We encourage readers to reproduce the information in their own newsletters and other mailings. Please credit the *Sustainable Farming Quarterly*.

Anyone who wants to be on the *Sustainable Farming Quarterly* mailing list can do so by contacting the Alternative Energy Resources Organization, 44 N. Last Chance Gulch, Helena, MT 59601. The phone number is (406) 443-7272. **SFQ**

"New" agriculture responds to threats of resources depletion, contamination

Farming has always been a gamble, but the familiar risks of weather, pests and a roller-coaster market have of late been overshadowed by public concerns about environmental impacts of current agricultural practices.

In response to both the economic and environmental problems facing farm communities, Congress has funded a program to try to find answers. The effort has been dubbed the Low-Input Sustainable Agriculture (LISA) program.

"Sustainable" refers to the concern about the long-term viability of the current agriculture as it affects profitability, environmental quality, and the health of rural communities, according to David Granatstein, regional project coordinator. Sustainability is a goal or a concept

towards which agriculture might move, and is best viewed as a relative term.

Congress allocated \$3.9 million in 1988 and another \$4.5 million in 1989 for the program. The grant process has been intensely competitive, with more than 400 proposals evaluated in 1988. Grants have been awarded to universities, private organizations and farmers, with proposals that include a partnership of all three receiving highest priority.

The Low-Input Sustainable Agriculture program is split into four regions with guidelines specific to each. The Western region is administered by the University of California. Readers interested in

(More NEW AGRICULTURE, page 2)

Labels, acronyms aren't perfect but sometimes we need them anyway...

When one tries to come up with a descriptive, all-encompassing, accurate, title for an agricultural research project, the addage "you can't win" comes into play.

Such is the case with the Low-Input Sustainable Agriculture program, which apparently is getting a bad name in some circles because it's misunderstood.

But the program, like all projects, has to have a name. Is LISA a good one for the project? "Probably not," says Dr. Dave Bezdicsek of WSU, principal investigator for the regional LISA project.

(More LABELS, page 3)

'New' agriculture, from page 1

applying for grants may contact Dr. David Schlegel, U of C, 300 Lakeside Drive, 6th Floor, Oakland, CA 94612-3560.

The Low-Input Sustainable Agriculture program will foster the sharing of historical and current research data and hands-on farmer experience relating to sustainable agriculture. It specifically emphasizes farmer involvement and more on-farm experimentation.

In 1988, the College of Agriculture and Home Economics at Washington State University, in collaboration with the land-grant universities in Oregon, Idaho, Montana, Wyoming, and Utah, was awarded a LISA grant of \$208,000. Also included are the USDA Agricultural Research Service and two private organizations dedicated to sustainable agriculture — the Alternative Energy Resources Organization (AERO), Helena, Mont., and the Progressive Farmers of the Inland Northwest (PFIN), Walla Walla, Wash.

The project is based at WSU in Pullman, and is targeted toward the non-irrigated cereal/legume

cropping systems common to the six-state area. Its title is "Options for Reducing Inputs in the Cereal and Legume Growing Regions of the Northwest," hereafter referred to as the Dryland Cereals LISA project.

Dr. Dave Bezdicsek, principal investigator for the project, describes three objectives:

- **To develop a comprehensive information base on options for reducing external and non-renewable inputs.** The information is being drawn from existing literature, unpublished sources, and innovative farms. For example, data from 55 years of cropping system plots at Pendleton, Ore., are being summarized for the first time.

A regional legume nursery project with 18 locations is analyzing its results on the adaptability of grain/legumes in the region. In order to help to avoid "re-inventing the wheel," historical research from Wyoming, eastern Montana, the Palouse Prairie region of eastern Washington and northern Idaho is being evaluated for knowledge on cropping alternatives.

- **To disseminate the information.** The information is being entered on computer databases, which can be used to search for specific information.

The *Sustainable Farming Quarterly* is designed to give an overview of the resources available in the region that can help producers, researchers and other interested persons look at farming alternatives, and to highlight promising options and introduce innovative farmers using them.

- **To identify constraints that limit farmers' ability to apply alternatives, and to conduct research needed to remove these constraints and enhance agriculture's sustainability.**

A key strategy, according to Granatstein, will be to find out what alternative practices growers are trying, and how well they are working. Given the geographic and climatic diversity of the region, adaptation of ideas to each individual farm remains critical. "Each farm has the potential to be a mini experiment station," says Granatstein. "We can quicken the development of alternative practices by making use of farmer experience and observations."

Much research has been done over the years on practices such as crop rotation, green manures, legume nitrogen fixation, and soil testing. More recent efforts have looked at biological control of pests, tillage options, and improving soil tilth. Both time-tested strategies and new innovations need to be blended into a farm system that works toward both profitable agriculture and ecological sensitivity.

One measure of success for such a system might be its ability to create more solutions, rather than more problems. For example, crop rotation in the Corn Belt increases yield potential, reduces nitrogen fertilizer needs, eliminates root-worm insecticides, and spreads out labor and equipment requirements. In contrast, use of insecticides succeeded in controlling targeted pests but have also contributed to secondary pest outbreaks, insect resistance to pesticides, environmental contamination and increased farmer and farmworker exposure.

The Dryland Cereals LISA project currently is funded through June 1990 and a renewal will be sought. Options include research on specific problem areas identified, developing extensive on-farm experimentation, and more educational materials. Anyone interested in the project can contact David Granatstein at (509) 335-3491. **SFQ**

The *Sustainable Farming Quarterly* is a publication of the Dryland Cereals LISA project based at Washington State University, Pullman. The publisher is the Alternative Energy Resources Organization, 44 N. Last Chance Gulch, Helena MT. (406) 443-7272.

Copyright 1989 by The Alternative Energy Resources Organization.

Staff: Sally K. Hilander, editor/writer. Project Coordinator: David Granatstein, Washington State University. Extension liaison: Dr. Allen Bjergo, Montana State University/Extension Service.

Photo credits: Nancy Matheson and Sally K. Hilander.

Evaluative comments, ideas for articles and questions should be forwarded to AERO, 44 N. Last Chance Gulch, Helena, MT 59601. (406) 443-7272.

LISA project responds to regional diversity

In the Northwest, for example, moisture determines if agriculture succeeds

Sustainability in agriculture is different in each region. It will mean something entirely different for Montana than it does for Iowa—or Honduras.

In the dryland cereal/legume region of the Northwest, moisture is the key factor that controls agricultural production. Practices that enhance moisture conservation in the farming system will enhance productivity and sustainability.

LABELS, from page 1

The low-input portion of LISA is often interpreted as "do nothing agriculture" or some form of subsistence agriculture, he explained. However, the purpose of the program is quite the contrary.

"Low-input" is intended to reflect the desire of many farmers to reduce their purchased production inputs (fertilizers, herbicides and insecticides)—both to cut costs and to reduce environmental degradation. To achieve this, an increase in management skills and labor may substitute for purchased inputs.

A reduction of one input will normally require an increase in another, such as, reducing a nitrogen fertilizer rate by adopting more intensive soil testing and a split application. Therefore, input substitution more accurately describes the situation than reduced input or low-input. **SFQ**

To identify the most viable moisture conserving practices which also reduce or substitute purchased non-renewable inputs, researchers and agencies cooperating with the Dryland Cereals LISA project are not only initiating new research activities but also conducting extensive literature searches of long-forgotten written materials.

A search of all the Experiment Station bulletins in Washington and Idaho dating back to "day one" has been completed to review historic agronomic research in the region. Numerous long-term studies were conducted in the past, but virtually all were dropped during the 1950's. "The whole landscape of agriculture changed at that time," commented David Granatstein, coordinator of the regional Dryland Cereals LISA program.

Experiment station records in Montana and Wyoming are currently being searched for older

rotation studies and legume research. One 38-year study of cereal/legume rotations has been found in Montana.

Several similar studies have been unearthed in Wyoming. "This information will be extremely helpful in examining production options and alternative systems," Granatstein said. "Some interpretation will be necessary as current wheat varieties are markedly different from those used in the studies, and soil conditions have deteriorated in many areas due to erosion, loss of organic matter, and acidification or salinization."

Lentil, pea, chick pea and faba bean genotypes have been evaluated at 20 northwestern locations for the past eight years. These data are being analyzed to identify the most promising genotype environment combinations, thus giving farmers in some areas a potential alternative crop. **SFQ**

Myths about sustainable agriculture

Many myths color public opinion about sustainable farming. Here are a few of them, with responses to rebut them, from Charles Francis, a University of Nebraska extension agronomist. Francis delivered these comments at the 1989 Farming for Profit and Stewardship conference.

Myth: Farmers would find it difficult to go cold turkey, eliminating use of purchased inputs all at once.

Response: Farmers are able to make changes slowly, trying out new ideas a few at a time.

Myth: Yields are reduced when we reduce chemical inputs.

Response: Many low-input growers have yields equal to, or in some cases exceeding, conventional growers.

Myth: Low-input farming means a low level of management.

Response: Management skills are more important than ever. This is a modern system of farming, not a return to pre-scientific practices.

"Friendly" computer data accessible to everyone

Even those who can't communicate directly with a machine can ask it questions

Farmers can get access to practical, usable information on sustainable farming systems as a result of two projects here in the northwest region. The information will be widely accessible by personal computer on economical "user friendly" public domain software.

That means anyone with an IBM compatible personal computer (PC) — or Macintosh owners with the equipment to convert IBM data — will be able to receive information right on the screen. Extension Service offices in Utah and Washington already support PC systems that can access information for anyone who wants to use them to obtain LISA information.

But the same vital information on sustainable agriculture also will be easily available to those who've never touched a computer keyboard and never want to.

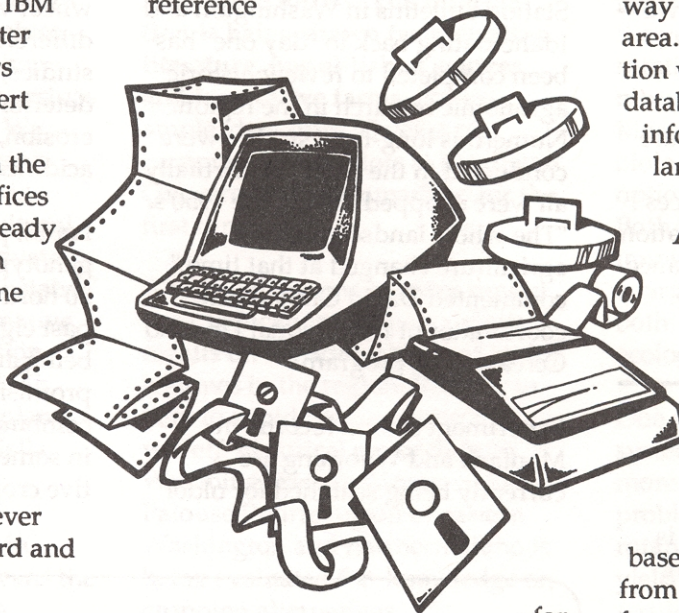
The Dryland Cereals LISA Project:

The system works like this: Suppose a producer is interested in ways to improve soil structure and reduce the fertilizer bill. He or she writes WSU and requests data on the practicality of using sweet clover as a nitrogen source for wheat. A simple search of "sweet clover" would reveal sources of information on that topic.

Already, project coordinator David Granatstein has entered over 700 citations on the data base. "We have identified and located information that is normally very hard to find," he said. For example, Extension bulletins dating back to the 1890s have been searched because some farming practices used before

the advent of agrichemicals are being reevaluated.

The database, called PC File, which Granatstein describes as "a very simple, straightforward database to work with," is housed at Washington State University in Pullman. Entries include standard citation data, the location of the reference



future retrieval, key words including at least one from a standard generalized set, a list of data tables and figures, and where feasible, an abstract or synopsis of the material.

Those who own computers and expect to use the database often may want to purchase the PC File program and user's manual, which retails for about \$50, Granatstein said. Once they own that, they will have access to data files, which are being continually expanded.

Granatstein is hopeful that a western, perhaps even national, database will be available down the road that this one can be tied into.

In order to effectively use the information in a region as diverse

as the Northwest, a system of geographic indexing is necessary, Granatstein explained. To meet this need, an agroclimatic zone classification for the dryland areas of Idaho, Oregon, and Washington has been completed by a researcher at the Pendleton, Ore., experiment station. A similar effort is under way in Montana for the dryland area. In the future, this classification will be incorporated into the database to help users identify information that fits their particular needs.

AERO's Northern Rockies & Plains Project:

A sustainable agriculture data base completed recently by the Alternative Energy Resources Organization (AERO) in Helena, Mont., complements the WSU data

base. The database was compiled from an extensive survey of 188 farmers using alternative practices in the Northern Rockies of the U.S. and prairie provinces of Canada describing the practices they are using. This information has been entered into a Macintosh computer database (on HyperCard), and searches can be done to answer grower questions.

The database includes information on how successful certain sustainable farming practices were in achieving one or more of 15 farm goals, how long producers actually have used the practice and producer narratives on their operations. For more information on that particular database, contact AERO. **SFQ**

CALENDAR

Land stewardship is the heart and soul of "sustainable agriculture"

December 16: "Farmers/Consumers: Making the Connection," is the theme of the Organic Certification Association of Montana's (OCAM) Annual meeting, 10:00 a.m. at the First Christian Church, 311 Power, Helena, Mont. Call LouAnn Crowley (406) 549-5626 or write OCAM, P.O. Box 871, Helena, MT 59624 for details.

January 23: The Southwest Montana Agricultural Business Incubator's Buckwheat Conference, Montana Department of Agriculture, Helena. For information, write to SMABI, P.O. Box 305, Dillon, MT 59725, or call (406) 683-5581.

"Farming for Profit and Stewardship" 1990 Tri-State Symposiums:

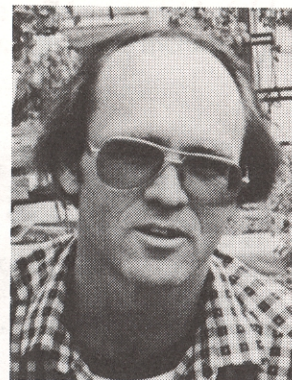
February 15: East Cascades Dryland Conference, Ramada Inn, Lewiston, Idaho. For information, write Don Harter, 223 Morrill Hall, University of Idaho, Moscow, ID 83843, or call (208) 885-6358.

March 2-3: West Cascades Conference, Red Lion Inn, Quay, Vancouver, WA. For information, write to Sustainable Ag Conference, Marion County Extension, Office, 3180 Center St. NE, Salem, OR 97310 or call (503) 588-5301.

"Sustainable agriculture" has become a catch-phrase with definitions as multiple and diverse as the people concerned with its practice. But everyone seems to agree that "sustainable agriculture" is intimately connected with the notion of land stewardship. And all the definitions reflect a heartfelt respect for the land. Here is a sampling:

"Sustainability is to have the soil in better shape and the land more productive 50 years from now. This farm was broken out of sod before 1920 and it's been degenerating ever since. The goal is to stop this degeneration and build it back up." — David Oien, grain and livestock operator, Conrad, Mont.

"A sustainable agriculture is one that, over the long term, enhances environmental quality and the resource base on which agriculture depends; provides for basic human food and fiber needs, is economically viable and enhances the quality of life for farmers and society as a whole." — The American Society of Agronomy, Madison, Wisc.



David Oien

"It's sustaining the fertility of the soil with the lowest possible (chemical) input, and still getting a positive economic return." — Alice Berner, small grains farmer, AERO board member.



Alice Berner

"Agricultural ecology is based on the premise that the short-term, mainly economic focus of food production must be redirected toward long-term management systems, systems based on cycles and interactions found in natural systems." — Stephen Gliessman, professor of agroecology, University of California, Santa Cruz.

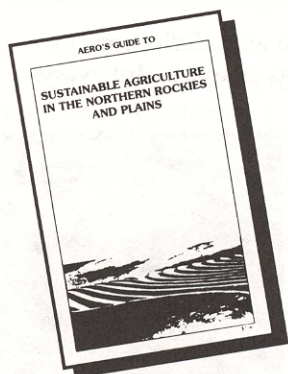
"Sustainability is being self-sufficient as much as possible, but still realistic. This is 1989. Other people need to make a living too, and when I buy from them, that's money in someone else's pocket. Sustainability also is putting as much back on the land as we get out, and not leaving it in worse shape than we found it in." — Kathleen Woldtvedt, small grains farmer, Oilmont, Mont.



Kathleen Woldtvedt

"Ultimately, sustainable agriculture is an ongoing process within which farmers work to improve and refine their relationship with the land, leaving both better off from the exchange" — David Granatstein, Reshaping the Bottom Line.

RESOURCES



AERO's Guide to Sustainable Agriculture in the Northern Rockies and Plains

AERO's Guide to Sustainable Agriculture in the Northern Rockies and Plains is available for \$7 postpaid from the Alternative Energy Resources Org., 44 N. Last Chance Gulch, Helena, MT 59601. Says Dr. Jim Sims, cropping systems agronomist, Montana Agricultural Experiment Station: "Every farmer and rancher in the Northern Rockies

region looking for ways to improve their bottom line, their resources, and the environment needs to read this." The publication was edited by Nancy Matheson, agricultural coordinator for AERO.

"Farming for Profit and Stewardship"

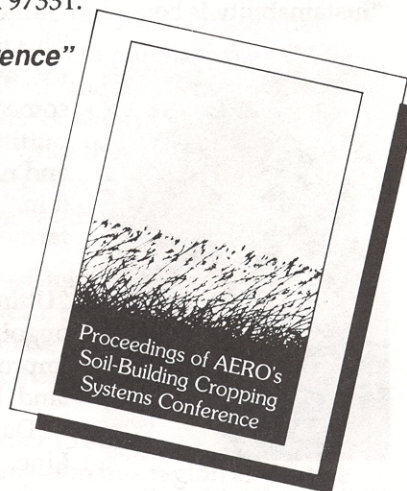
About 175 growers, research and extension personnel, and industry and agency representatives attended a conference titled "Farming for Profit and Stewardship: Sustainable Agriculture in the Pacific Northwest," in Post Falls, Idaho, March 2-3, 1989. Evaluations indicated that most people gained a clearer understanding of the concept of sustainability, most had their expectations met or exceeded, and virtually all expressed a desire to come together again. Some participants requested that more farmers be presenters next time, to emphasize the delivery of practical information. Proceedings from the event are being transcribed, and will be mailed to all conference registrants. Both video and audio tapes are available for loan. For information, write to David Granatstein, Department of Agronomy and Soils, Washington State University, Pullman, WA 99164-6420.

Long-term soil management in eastern Oregon

More than 50 years of continuous rotation plot research at Pendleton, Ore., have been analyzed and summarized in a report for farmers. "Long-Term Management Effects on Soil Productivity and Crop Yield in Semi-Arid Regions of Eastern Oregon" is expected to be released in December. Bulletin 675 will be available from Printing Dept., Mailing Services Bldg. IND B-226, Oregon State University, Corvallis, OR 97331.

"Soil-Building Cropping Systems Conference"

Proceedings of the Alternative Energy Resources Organization's Soil-Building Cropping Systems Conference held last December in Lewistown, Mont., are available for \$9.95 postpaid from AERO, 44 N. Last Chance Gulch, Helena, MT 59601. The publication, edited by Sally K. Hilander, introduces various crop rotations using legumes and other green manures, as well as cover, forage and specialty crops. Also included are the names and addresses of key resource people.



RESEARCH

The Dryland Cereals LISA project cooperators have initiated several studies to further the understanding of sustainable farming. Results from these efforts will help researchers in the region identify priority study areas and develop a regional strategy for carrying out the work.

Utah

A set of long-term grain/legume rotational plots were established in May of 1989 at the Greenville Station in Utah.

Wyoming

A study of the adaptability and performance of small- and large-seeded legumes was established in Archer, Wyo., in May of 1988. Spring barley was planted on the plots the following year.

Montana

Montana cooperators planted legume nurseries of 20 species at seven locations in the state. They also are examining management systems of forage legumes for hay and green manure.

Idaho

Two field studies have been initiated to examine economic optimization of nitrogen fertilizer, as well as a study of intensive soil catena fertilizer management.

Oregon

Researchers at Pendleton are investigating the biological differences of soils in the long-term rotation plots for the first time.

Washington

Studies were initiated to demonstrate the benefits of managing smaller "land units" based on field landscape and soil properties.

Summer farm tours fostered vital exchange of ideas

Over 200 producers and non-farmers got to see diversified, soil-building cropping systems firsthand in a successful series of eight Montana farm tours conducted by the Alternative Energy Resources Organization (AERO) last summer.

AERO is a private, non-profit membership organization based in Helena, Mont., and dedicated to promoting rural community development, sustainable agriculture, and use of renewable energy in the Northern Rockies and Plains.

The purpose of the tours was to expose producers to a variety of soil-building cropping systems and ideas, and to facilitate the exchange of practical information among farmers, ranchers, researchers, extension agents and SCS staff.

While some farms on the tours had complex cropping systems that had been in place many seasons, other farms had very simple systems. Often the visiting farmers left with the feeling that they could easily replicate some of what they had just witnessed. As one farmer put it, "I want to see a few farmers doing something smart, then I'll be inspired."

Three themes emerged: soil health, weed management and interseeding or cover cropping with legumes. "Over and over, farm tour attendees recognized the importance of, and enormous lack of information and understanding about healthy soil," said Nancy Matheson, AERO's Agriculture Project coordinator. In discussions held at the tours, attendees cited a need for:

- Credible research results on the wide variety of microbiological and mineral soil amendments on the market today.
- More accurate and meaningful soil tests and interpretations.

diverse small grain/hay/livestock operation. He interseeds native grasses or alfalfa with no till barley, oats, or winter wheat in an effort to reclaim pasture. Gould does not emphasize maximum yield of the grain crop. His goals include



Tour of the Gould Farm

- Better information and education on weeds, including non-chemical control methods, life cycles, responses to different soils and nutrients, and the benefits of weeds as indicators of soil problems or nutrient deficiencies.

Interseeding of legumes with traditional crash grain crops was the cropping strategy that seemed to draw the most interest. The interseeding of two crops, most often a grain with a legume, provides greater flexibility in farming and ranching operations, especially when combined with livestock. One farm which exemplified some of the benefits of interseeding was that of Gregory Gould of Ulm, Montana. Gregory has a very

achieving more diversity and flexibility in his cropping pattern, rebuilding organic matter in the soil, and improving pasture quality. No-till is important in Gould's operation. "Many farmers and ranchers give up in the second or third year when no-till crops often show heavy stress. The payoff comes after that third year," Gould said.

AERO was careful not to present the farms as the final answer. "These are not model farms," said Nancy Matheson. "These are just farmers who are trying some things and who are willing to let their neighbors come take a closer look."

For more information on the tour series, call AERO, (406) 443-7272.

The Progressive Farmers of the Inland Northwest sponsored a farm tour near Moscow, Idaho, last summer. PFIN is a new grower group interested in sustainable agriculture and on-farm testing in the dryland regions of eastern Washington, northern Idaho, and north central Oregon. For information, contact PFIN, Route 4, Box 236, Walla Walla, WA 99362.

PROFILE

**Bud Barta, Rt. 2, #2241,
Lewistown, MT 59457.
(406) 538-8397**

Lewistown, Mont., native Bud Barta is like other grain farmers who are moving cautiously but steadily toward cropping systems that depend less on external non-renewable inputs.

Barta, who farms on the Judith River in central Montana, is most concerned about water contamination from conventional farming practices. He's also very familiar with the difficulties of changing those practices. For example, controlling leafy spurge along the Judith River remains a formidable challenge for Barta.

Barta is serious about changing the way he farms the land and he has become an on-farm researcher, experimenter, innovator.

Barta raises wheat and barley as well as dozens of alternative crops

such as herbs, peas, grasses, black medic for seed, quinoa, and sweet clover — with varying success. He also has experimented with incorporating weeds such as cheat grass into the soil as green manures.

Barta's favorite green manure crop is sweet clover. Not only is it a good fertilizer crop, Barta says, but he's noticed a drastic reduction in weeds — particularly Canada thistle — after he grew clover. He's found that harvesting sweet clover is like harvesting an herbicide crop too." In addition, Barta has harvested clover as hay, and he's harvested the clover hay for seed.

In the spring of 1988, Barta began a four-year study, in conjunction with a state weed specialist and the County Extension Service, to determine how well sweet clover controls Canada thistle. It seems to work equally well whether he plows it under for a green manure or cuts it for hay.

Barta also has found a successful non-chemical alternative for controlling cheat grass — simple crop rotations. "By using a barley-fallow-winter wheat rotation, I get

good control of weeds with short seed life," he said. "I didn't know cheat grass was so easy to control with rotations."

Barta is excited about the potential of black medic as a specialty crop and green manure. He's a partner in Timeless Seeds, four Montana farmers who are growing the medic in four different climates. He and partners are pursuing three potential markets: green manure crop or fallow crop, as a cover for reclamation and revegetation of areas that have been mined, logged, or dammed; and as a sprout for eating. A cousin of alfalfa, black medic has a slightly different, sweeter flavor. By growing the black medic in four climatically different areas, the partners can usually be assured of a good harvest despite droughts, hail, grasshoppers, and other variables.

Black medic is superior to sweet clover, Barta said, because it doesn't dry the soil as deeply. He believes he can plant a grain crop following medic because it has replenished the soil without drying it out. In contrast, he finds it necessary to fallow the year after clover production. **SFQ**

SUSTAINABLE FARMING
Quarterly



**44 North Last Chance Gulch
Helena, MT 59601
(406) 443-7272**

Non-Profit
Organization
U.S. Postage
PAID

Helena, MT
Permit No. 213

