





## Director's Column

by Erv Oelke

On May 10, Secretary of Agriculture, Dan Glickman, released the Administration's 1995 Farm Bill - Guidance of Administration. This the Administration's view of what the 1995 Farm Bill should consist of and includes information on programs for commodity and marketing, rural development, conservation and environment, food and nutrition, research, education and economics and food safety. The Senate and House have not yet developed their versions of the 1995 Farm Bill.

The theme of the Administration's 1995 Farm Bill is to allow farmers more choice in the kinds of crops they grow and should lead to more diversity in agriculture. They hope to increase expansion of planting flexibility and simplify farm programs.

The Administration is also focusing on rural development since rural America, once primarily agriculture, is now more economically diverse. Rural America now includes 83 percent of our land and 21 percent of the people. Many rural areas lag behind their urban counterparts relative to new economic opportunities.

The Administration is committed to reinvigorating rural America. They have proposed several programs with financial resources targeted to areas of greatest need. They will include rural performance partnership initiatives, improving rural information infrastructure, improving housing and water quality and developing business activity for rural America.

In the conservation and environmental arena, they are suggesting that programs in these areas be extended, made simpler and more workable for agriculture. They suggest reauthorization of CRP through the year 2000 for the most environmentally sensitive lands.

In research, education and economics, the Administration seeks to develop a better coordinated, more powerful research and extension

agenda for American consumers and American agriculture. In food safety, the federal government must continue to ensure consumers a safe, as well as wholesome food supply. They believe consumers need a system that ensures the safest possible food, regardless of origin. U.S. producers and processors need a system that ensures that U.S. products are welcome in both domestic and world markets.

CAPAP believes that allowing more flexibility in crop choices would be a good policy for farmers. We will

continue to provide the best information we can to farmers on alternatives. In addition, we continue to help in idea generation, feasibility evaluation and short and long-term research and development projects on alternatives, thus fulfilling the mission of CAPAP.

**"There are no limits on our future if we don't put limits on our people."**

- Jack Kemp

---

## Reindeer Owners and Breeders Association Tom Scheib, Corresponding Secretary

Historically, reindeer have been raised as a herding type activity in the harsh, barren lands north of the Arctic Circle. Circumstances in the "lower 48" generally require raising the animals in a fenced, closed, "farm environment", necessitating new standards and husbandry principals.

The Reindeer Owners and Breeders Association (ROBA) was formed in 1991 by fourteen reindeer owners, mainly from the midwest, looking to support each other in the difficult husbandry, marketing and regulatory environment that existed at the time. ROBA currently represents about 200 reindeer owners in forty states and Canadian provinces that provide animals for breeding stock, meat, exhibition and agricultural by-products. Our members are owners, veterinarians, governmental, research and educational institution personnel.

ROBA helps breeders develop their markets, overcome misperceptions about reindeer, and operates a registry for reindeer. Members have invested their own time and funds with little help, if any, and in many cases, much discouragement, by various state and federal governmental agencies. Minnesota and Michigan are two examples where the Department of Agriculture has been very helpful and supportive in developing rules and regulations impacting the industry. ROBA is assisting members in drafting uniform state regulations and in coordinating other rules at the federal level. Like other organizations in the cervid industry, ROBA believes healthy, lean, organic reindeer and cervid meat is a viable alternative for the consumer.

ROBA maintains that stringent testing procedures are necessary for brucella suis biovar 4 eradication and certification in farmed reindeer herds and is working with other cervid industry groups, USDA, APHIS, the U.S. Animal Health Association, and numerous university research partners, including the University of Alaska, Fairbanks, to develop valid tests and procedures to achieve this goal.

For further information, contact ROBA, 155 County Road 6, Finland, MN 55603.

---



## Range Chickens (cont. from page 1)

with the “big boys”. Everybody knows that you have to be big to cash in on the “economies of size” that the experts say you need to survive. On our farm we don’t accept this as gospel. Yes, there are economies to size but we believe that if we can buy the majority of our inputs in truck load quantities then we have captured the lions share of the possible economies of scale. We buy our corn and soybean meal in load lots and feel that we can buy these at prices close to what the large corporate farms would pay.

### **Rather than worry about capturing the last dollar of saving in some of our small inputs, we try to capitalize on what we call the “economies of being small”.**

Rather than worry about capturing the last dollar of saving in some of our small inputs, we try to capitalize on what we call the “economies of being small”. This is a concept long forgotten in corporate America where it is always assumed that big is better. I have heard estimates that the average food product in the U.S. travels 2000 miles from farm to consumer. The average truck hauls about 50,000 pounds at a cost of \$1.50 per mile so, on average, transportation of food in America adds \$.06 per pound. At our farm we feel that we can really capitalize on this economy of being small because our birds are raised, produced, and the majority sold on the farm so we have little transportation costs.

Another area where we can save more is in the area of labor. The majority of our labor is family and we have substantial savings in insurance and benefits as well as being very productive. Being as productive as industry standards is a key factor in small scale processing. This really sounds impossible because there is no way we can afford to mechanize to the level of corporate processors. But the small processor has the advantage of not having to support all the levels of management that are typical in larger organizations.

### **We have researched the corporate records of the major players in the poultry industry and we find that we can process as many birds per employee per day as the industry standard.**

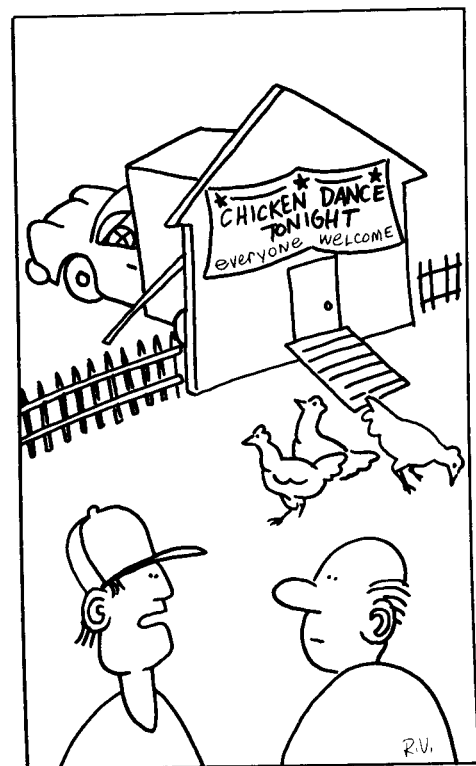
We have researched the corporate records of the major players in the poultry industry and we find that we can process as many birds per employee per day as the industry standard. The trick is that in a small operation, I can process birds at the same time I manage and plan. But the large operations have literally thousands of people in management supervision, and sales who never touch a bird but draw the highest salaries. This fact really helps level the playing field between large and small players.

The third area of savings is in advertising and marketing. We direct market our chickens and avoid all costs of jobbers, wholesalers, and retailers. Advertising can be a major expense for the corporation trying to control the market for a product in the whole country.

An example of exorbitant advertising and marketing costs is the breakfast food industry. According to figures presented by a guest on the Phil Donahue’s television show, the big four corporations that control the breakfast food industry spend about 37.5% of the retail cost of cereal on advertising. While this is an extreme example, it is common for companies to spend 7% of revenue for advertising. By stressing quality and direct marketing with a lot of free word-of-mouth advertising, we are able to market our products with only about 1% of revenue spent on advertising. Add all the economies of being small together and we find that we can be profitable as a family farm doing our own processing and marketing.

### **By stressing quality and direct marketing with a lot of free word-of-mouth advertising, we are able to market our products with only about 1% of revenue spent on advertising.**

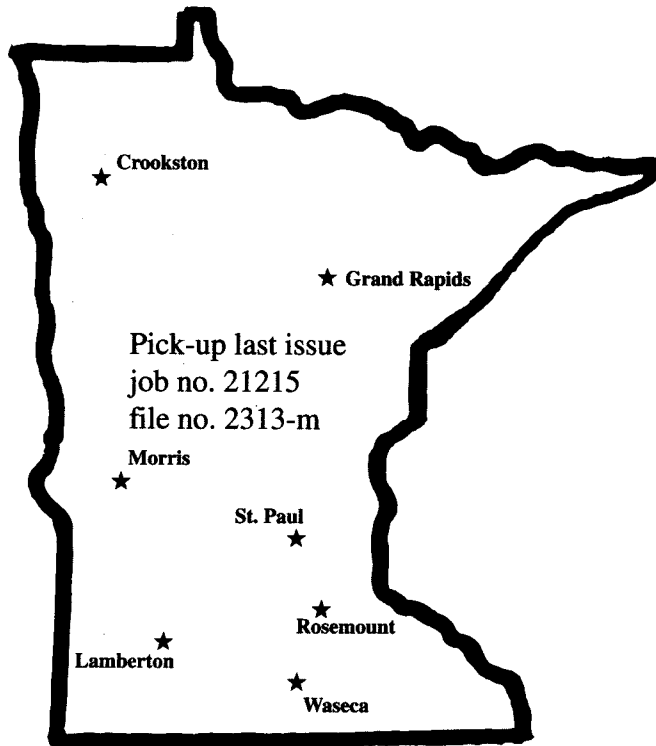
Now when I look at larger corporate farmers and processors, I don’t look in awe at their operations — I find myself thinking about all of their expenses and wondering how they can survive without our “economies of being small”.



IT'S MY NEW SELF-LOADING SYSTEM.



## Minnesota Agricultural Experiment Stations News



### ROSEMOUNT

The "Plant Pathology Farm", Rosemount Agricultural Experiment Station, is a unique and valuable site for diverse disease research. Currently, approximately 150 acres are in field plot research and another 200 acres are in rotation in preparation for plot research. Crops in these plots range from potatoes to poplars. The "Plant Pathology Farm" is skillfully managed by Mr. James Rowe and his assistants, Kimmon and James Karelis.

I have worked with potato virus Y and with potato leafroll virus. Virus-infective aphids were safely released into research plots to test for virus resistance in potato breeding lines developed by Dr. Florian Lauer, Horticulture. There is no commercial potato acreage close to Rosemount and these viruses do not attack corn or soybeans.

For similar reasons, Dr. Neil Anderson, Head of the Department of Plant Pathology, has annually planted a late blight nursery at Rosemount for many years. Late blight is a destructive disease of potatoes and Dr. Anderson screens for resistance to this disease in potato breeding lines from the program of Dr. Lauer.

The Alfalfa Project, USDA Plant Research Unit, has tested alfalfa lines for resistance to both fungal and bacterial wilt at Rosemount for 43 years. Dr. Debbie Samac, who heads pathology research on alfalfa, relates that these tests require large contiguous plots, 1-2 acres in size, and that these

pathogens be limited to the test site. The proximity to St. Paul is important and Rosemount accommodates these requirements.

In small grains pathology, Dr. Ruth Dill-Mackey, our newest member of the Plant Pathology faculty, uses Rosemount advantageously for her research on wheat and barley diseases. This site permits her to make frequent inoculations of wheat and barley with rust pathogens and to closely observe these plots as the diseases progress. Also, this site is removed from significant commercial wheat and barley that could make testing of important individual races of these rust pathogens difficult.

Dr. Ward Stienstra, Plant Pathology Extension, tests the performance of corn and soybean seed treatments in no-till plots at Rosemount. He also tests the performance of soybean cyst resistant soybeans at Rosemount which has been soybean cyst-free as compared to infested sites at other locations. This is an example where freedom from a "pest" makes Rosemount a valuable test site.

Dr. David MacDonald, Nematologist, has used rotation plots of barley, corn, oat, soybean and wheat established at Rosemount in 1959 to study the effects of these different crop hosts and cultural practices affecting nematode populations.

Rosemount is also the site for an active "forest pathology" program. Unique aspen disease research has been carried on at the "Plant Pathology Farm" for over 30 years. Drs. Neil Anderson and Mike Ostry, U.S. Forest Service, planted superior aspen clones that appeared to have resistance to the destructive Hypoxylon canker disease. Aspen, or poplar as it is sometimes called, is a primary source of fiber for pulp and chipboard plants. They found that certain aspen clones had resistance to Hypoxylon and also had superior growth traits. One clone, called "Pike Bay", is now being increased, and has been patented. This research revealed that infection of trees followed wounds and galls made by the Saperda beetle.

This "thumb-nail sketch" of some plant pathology research at Rosemount indicates the importance of this location to our diverse projects. As urbanization of the Twin Cities continues, the "Plant Pathology Farm" becomes more important to us. The advantages include isolation from commercial acreages of certain crops, proximity to St. Paul and adequate space to do field-scale experiments.

Dr. Ernest E. Bantari  
Dept. of Plant Pathology

---

**"Confidence, like art, never comes from having all the answers; it comes from being open to all the questions."**

—Earl Gary Stevens

---



## WEST CENTRAL, Morris

Field studies were started at Morris in the early 1970's to show the benefit of manure for crop production and the effect of heavy applications on the environment. Three new studies have been initiated at Morris since 1992 to develop improved methods to use animal manure so that manure use efficiency is increased and probability of nitrogen and phosphorus losses to the environment is decreased.

The first of these were headed by Mike Schmitt, Extension Scientist, St. Paul. Morris was one of seven locations where liquid manure (dairy or swine) was applied at 3000-4000 gallons/acre by three methods (surface broadcast, vertical knife, and horizontal sweep;) for corn production. The manure rate applied was sufficient to supply nitrogen to the crop at a rate less than required for optimum yield. Soil inorganic N (nitrate-N and ammonium-N) was measured at the 1-leaf and 4-leaf stages and at maturity. In general, at both leaf stages the highest levels of inorganic-N to the 2-foot soil depth were found with horizontal sweep injection, lesser levels with the vertical knife, and the least with surface broadcast. At maturity, no differences were observed between application methods. The horizontal sweep resulted in the highest grain yield when data was combined from all N responding sites (5 of 7 sites) and both injection systems were superior to broadcast application.

Two other manure studies are underway and will be completed in 1995. Both of these are partially funded by the Minnesota Legislature as recommended by the Legislative Commission on Minnesota Resources and the Agricultural Utilization and Research Institute. The first of these studies was initiated (by graduate student Daniel Ginting and Extension Soils Specialist John Moncreif) to evaluate the effect of different tillage practices following manure application on runoff losses. The tillage practices being evaluated on a 12 percent slope are fall moldboard plowing and ridge till. One half the tillage plots had a single application of solid beef manure. Analysis and collection of data is still underway. Preliminary observations show that erosive losses of sediment and phosphorus were much less with ridge till than with moldboard plowing. The application of manure decreased runoff, sediment and total phosphorus losses. Ridge tillage is not the complete answer in that losses of phosphorus with this tillage system during the spring thaw were much higher than with moldboard plowing. At this time of year, most of the phosphorus is coming from the plant residues on and above the soil surface, not from the soil.

The second study involves the use of many soil and plant measurements to predict "manure N availability" following surface injection of liquid dairy and swine manures. The purpose was to develop techniques to assess the need for

additional nitrogen fertilizer on manured fields both in the year of application and in subsequent residual years. This project, initiated by WCES Soil Scientist Sam Evans has cooperators from the University of Minnesota, St. Paul, and the USDA-ARS Soil Research Laboratory, Morris. Manure was applied at four rates, two of which exceeded the required amount for the immediate crop. It appears there is a good relation between nitrate-N level in the soil to a 2-foot depth, either at emergence or at the 6-leaf stage, and final corn yield. Plant measurements, such as the greenness of the leaves with a leaf chlorophyll meter, show some promise.

## SOUTHWEST, Lamberton

The Southwest Experiment Station has been actively conducting research in site specific farming, sometimes called precision farming, since the late 1980's. Site-specific farming is a rapidly emerging farm management system that seeks to optimize management on small portions of a field according to specific site conditions. Technological advancements have provided agriculture with tools enabling sophisticated, "precision" management, for example: computer software and hardware linked to electronic controllers, global positioning systems, geographical information systems, variable rate fertilizer, herbicide and seeding equipment, and real-time field condition assessment tools. Crop management systems that incorporate and optimize the use of this new technology, however, lag far behind the capabilities of the current technology.

One research goal is to provide farmers with the agronomic information and knowledge required to apply site-specific farm management. Southwest Experiment Station soil scientist Dave Huggins is cooperating with several scientists in the Department of Soil, Water, and Climate including Pierre Robert, Gary Malzer, and John Lamb, to assess site-specific management practices. Current research areas include: nitrogen rate, timing, and nitrification inhibitor management by soil condition; performance of a variable tillage implement; on the go yield monitoring; accuracy and precision of global positioning systems; and evaluation of real time measurements of soil water content using an electric conductivity meter. This research will contribute to the development of decision support systems that are firmly based on agronomic principles and provide the knowledge required to properly apply technological advancements in site-specific farming.

by Dave Huggins, Soil Scientist



## Organizations (cont. from page 1)

### **The Minnesota Buffalo Association** **Don Solwald, President**

The American lunch box no doubt accommodated buffalo meat shortly after history's first hunter trudged across the land bridge from Siberia. Subsequently, it became vital to the survival of plains inhabitants, both native and immigrant. Now, after a century's absence, it is again the center of ever increasing popularity in America's culinary marketplace.

An authentic element of our western heritage, the buffalo will perhaps always be viewed with a certain romantic nostalgia. But whether it is that association, a growing nutritional awareness among consumers, or the product's traditional acceptance as an alternative to domestic meat selections, buffalo meat sales have accounted for an estimated three-fold increase in the collective state herd over the past five years.

Few farm commodities lend themselves to producer control into the marketing chain. Typically, farmers have been limited to production with an array of processors, brokers, etc. providing all other services. But recent trends in buffalo are towards individual and cooperative enterprises that allow greater participation in market activities. The practice also benefits small producers by generating a constant supply from a pool of producers too small to do so independently.

Several years ago Minnesota buffalo raisers joined together to form an association. Its primary purpose was to assist in resolving market issues. In addition, it serves as a clearinghouse to disseminate information, represents member's interests in appropriate forums, and is tasked to preserve the bison as the remarkable native species it is.

Further information can be obtained by contacting the Minnesota Buffalo Association, 16243 County Road 9, Dover, MN 55929.

### **The Minnesota Deer Farmers Association** **Peter Bingham, President**

The Minnesota Deer Farmers Association is dedicated to the promotion of deer farming as an agricultural enterprise and serves its members through educational programs, publications and by providing leadership in setting and maintaining quality standards. The association has a representative member on the Minnesota Department of Agriculture's Cervidae Advisory Committee working to promote the Minnesota deer farming industry.

The Minnesota Deer Farmers Association is also a branch of the North American Deer Farmers Association. The national organization provides the state organization and its members with a 24-hour animal health line, herd insurance, and an annual conference and exhibit. Resource list includes books videos and other sources of information about deer farming

and its management. They also published "New Roundup Update" a monthly publication of articles and information. In addition, they publish "The North American Deer Farmer", a quarterly publication that includes in-depth articles and research related to deer farming.

They also provide the NADeFA Deer Registry which verifies the type and ancestry of the deer in the herds with DNA certified pedigree using markers exclusive to the NADeFA Registry. They also have Breeders and Producers Lists, a service to members listing breeders by species, velvet production and venison to provide to potential buyers. An important aspect of membership is the willingness of members to share their experiences and expertise in solving problems.

Deer farming is an agricultural pursuit with the end production for consumption and sale. Deer have been farmed throughout the world for thousands of years. Only recently has the commercial production of venison captured widespread public attention.

For more information, contact Peter Bingham, President, Minnesota Deer Farmers Association, Rt 1, Box 262, Randall, MN 56475; (612) 749-2197.

### **Minnesota Elk Breeders Association** **Cliff Mulder, President**

The Minnesota Elk Breeders Association (MEBA) is a non-profit organization founded in December, 1992, to promote and protect the elk ranching industry in the State of Minnesota and increase the public's awareness of the real and aesthetic pleasures involved with the breeding, raising, viewing and consuming elk. At the first organizational meeting approximately 25 people signed up for membership and it has grown to over 90 members in two years time.

When joining MEBA, you receive a list of members and their addresses so that you can call or visit some of the elk farms. They are a very friendly group of folks and will be proud to show you their animals and facilities.

You are encouraged to join our association either as an active or associate member. As a member, you will receive the periodical newsletters, notices of upcoming meetings and other activities such as our annual select elk sale. This select sale is where members can bring only their top stock which has been approved by a committee.

The Minnesota Elk Breeders Association is very excited about the elk farming industry now and in the future. After investigating the many possibilities, you too may want to "raise the legend!"

For more information, contact Cliff Mulder at (507) 825-3575 or write to Key Zebarth, MEBA, 17822 County Road 8, NW, Brandon, MN 56315; (612) 834-4064



## **Emu Association of Minnesota** **Kirk Roetman**

The Emu Association of Minnesota (EAM) was first formed by a group of emu ranchers interested in sharing information and supporting the emu industry by pooling resources and energies. It started with only 15 members in April of 1993 and now has approximately 50 members and is growing all the time.

The association is a state affiliate of the American Emu Association (AEA). The AEA is the largest ratite association in the world with membership approaching 6,000 members. Working together, the associations support marketing and research projects to help support and promote the emu industry.

EAM's main function is to support the emu ranchers in the state with seminars, meetings, newsletters and other means to promote the industry within the state. We conduct at least two main seminars a year and hold membership meetings. Also, the association is a conduit to get information about the emu industry to its members. The exchange of information and networking to help each other is the backbone which helps us grow and ensure the success of the industry.

We also have a booth at the State Fair and will be represented at the Alternative Livestock Conference this July. Members are encouraged to utilize the state's booth and supplies to promote emus at local county fairs and farm shows through the year.

The emu industry is alive, well and growing in Minnesota. For more information, call Kirk Roetman at (612) 439-8690 or Marcia Huddleston at (218) 342-2116.

## **North Central Chapter of the American Ostrich Association** **Neil Zwack, Chapter President**

The North Central Chapter of the American Ostrich Association (NCC/AOA) was the first organization of ratite producers in the upper midwest. It was formed by a few entrepreneurs who had a vision and a need to band together to survive in the infancy of the ostrich industry. The NCC/AOA has gone through the usual growing pains to now having some eighty members and providing a multitude of services for its membership.

We are an affiliate of the American Ostrich Association, which has approximately 1,000 members and is recognized worldwide as the leader in the this industry. The funding and support provided to the national organization from local chapters like ourselves drive an enormous research, promotion and public education effort.

The NCC/AOA is membership driven and conducts its business through a committee system where its members

can all work together. We hold two seminars per year where internationally know ostrich experts give us the latest research information and our own member producers give us tips and methods they have found successful in raising birds. Additionally, we hold regular membership meetings, produce an informative newsletter, raise and provide grant money for research, produce brochures and education materials and provide a code of ethics under which we conduct business. We work with state legislatures and were very instrumental in getting ostrich and other ratites classified as livestock in both Minnesota and Wisconsin. We sponsor booths (with live birds) at Farm Expos in Minnesota and Wisconsin and have a extremely successful live bird booth at the Minnesota State Fair.

For more information, contact Neil Zwack, Chapter President at (612) 675-3759 or write NCC/AOA, 2173 Hudson Road, Box 103, St. Paul, MN 55119; (612) 293-5058.

## **Minnesota State Rabbit Breeders Association** **Rene Goedderz, President**

The Minnesota State Rabbit Breeders Association (MSRBA) is an organization of over 400 members dedicated to the promotion of all aspects of the rabbit industry. MSRBA publishes a bulletin every other month, which affords the membership the opportunity to share information and advertise.

With the numerous different rabbit breeds available to individuals, the rabbit is very appealing as an alternative livestock choice. Individuals are afforded the opportunity to choose a rabbit breed that is right for them, be it the "Commercial Meat Type", the "Fancy Exhibition Type", or possibly the multi purpose rabbit such as the Angora. The Angora can be utilized as a wool producer, a meat source, or for exhibition. Whatever breed is preferred by an individual, most rabbits can be maintained in relatively minimal space and require a smaller monetary investment than larger livestock. Rabbits can be raised comfortably in a backyard environment as well as a large commercial rabbitry.

Rabbit meat is very low in fat and cholesterol. Rabbits are capable of producing a top quality, healthy meat that is compatible and competitive with other livestock. In any case, the rabbit is an exceptional alternative livestock option.

For more information, contact Rene Goedderz, MSRBA, 3490 Nelson Road, NE, Brainerd, MN 56401; (218) 764-3141.



## Department Highlight Agronomy and Plant Genetics

### Steering Committee Representative - Dr. Craig Sheaffer

The faculty in the Department of Agronomy and Plant Genetics are involved in a diversity of research activities, many of which involve alternative crops, alternative crop production strategies, or new uses for widely grown crops. An example of these activities is a bio-control agent for Canada Thistle. Canada thistle is a serious perennial weed in Minnesota crops and Dr. Donald Wyse and Dr. David Johnson, a plant pathologist, have identified a bacterial pathogen of weeds and developed a new spray application procedure which has provided good control of Canada thistle in corn and soybeans.

There are two major efforts on development of smother crops for suppression of weeds in row crops. Smother plants are seeded with row crops and are used in place of herbicides. Smother crops provide weed control by competing for light, water and other limiting resources. They reduce herbicide use and also protect the soil from wind and water erosion. Dr. Wyse and Dr. Nancy Ehlke are cooperating in development of dwarf-Brassica as a smother plant for soybean and corn. In another project, Drs. Sheaffer and Barnes are attempting to develop annual Medicago spp. (annual medics) as smother crops. Annual medics are related to alfalfa except that they are true annuals and will die after one season. Annual medics can also fix atmospheric nitrogen for subsequent crops in rotation. Both research projects have made progress in development of the smother crop system, but have found that environmental conditions can have a major influence on the success of the smother crop.

Projects involving Drs. Burnsides, Wyse, and Orf are developing soybean varieties which possess greater competitiveness with weeds. Such soybeans would depend less on herbicides for weed control.

We are continuing our research on alternative crops which have potential for commercial success. For example, Dr. Ervin Oelke is conducting field research on canola. Canola produces an oil which is low in saturated fats. Dr. Oelke is also on the Northern Canola Council which was organized for developing a regional canola education and research program. In addition, we have an active breeding program led by Dr. Nancy Ehlke to develop new varieties of Kura clover, cicer milkvetch, perennial ryegrass and birdsfoot trefoil, all which have potential to improve the efficiency of forage production.

Drs. Barnes, Jung, Sheaffer, Martin, and Oelke are involved in the team effort with CAPAP to develop alfalfa as a biofuel for electricity production. The integration of alfalfa biomass into corn-soybean cropping systems has potential to increase the sustainability of agriculture in the region. Specifically, we are looking at developing improved alfalfa varieties for biomass, an evaluation of feeding value of leaf fractions, and development of rapid methods, such as near infrared reflectance spectroscopy (NIRS), for determining quality of leaf and stem fractions.

Dr. Donald Rasmusson, barley breeder, led a team of researchers (Drs. Simmons and Sheaffer) in releasing the first barley variety specifically developed for use as a companion crop for alfalfa establishment. 'Royal' is a semidwarf barley which has greater leafiness and forage quality than standard malting type varieties and most other small grains. A new dwarf oat variety, 'Pal', for use in companion cropping was released by Dr. Deon Stuthman, leader of the oat project. Pal has better forage quality than taller oat varieties and is less prone to lodging.

#### Steering Committee

David Biesboer, Plant Biology

Charlie Blinn, Forest Resources

Bill Breene, Food Science and Nutrition

Dave Davis, Horticultural Science

Alfredo DiCostanzo, Animal Science

Dick Levins, Agricultural and Applied Economics

Dick Meronuck, Plant Pathology

Dave Noetzel, Entomology

Mike Schmitt, Soil Science

Craig Sheaffer, Agronomy and Plant Genetics

Bill Wilcke, Agricultural Engineering

#### Director

Erv Oelke, Agronomy and Plant Genetics

BioOptions Editor, Judy Day

Administrator, Chris Hanson

Staff Writer, Bethany Davidson

Annual subscription to BioOptions (4 issues/year) for only \$8 U.S. or \$10 outside U.S.

**The Center for Alternative Plant and Animal Products (CAPAP), University of Minnesota**

340 Alderman Hall, 1970 Folwell Ave., St. Paul, MN 55108 phone: (612) 624-4217 fax: 624-4941



# ELK (Wapiti)

Elk is second largest species of the Cervidae (deer) family and is native to North America. Wapiti, the scientifically preferred name, is derived from a Shawnee word apparently in reference to the white rump.

In North America, four surviving subspecies are currently recognized. They are the Roosevelt elk (*C. e. rossevelti*), the largest elk subspecies, which is native to the coastal forest area from northern California to Vancouver Island; the Tule elk (*C. e. nannodes*) a small subspecies found in an arid sagebrush area of California; the Rocky Mountain elk which has the widest distribution and is most abundant; and the Manitoba or prairie elk (*C. e. manitobensis*) which is native to Canada. Because of its wider availability, the Rocky Mountain elk predominates on game farms.

Elk bulls mature at 6-7 years, average 800 to 1,100, and stand 5'-5'6" at the shoulder. Cows mature at 3-4 years of age, average 600 to 700 pounds, stand 4' to 5' at the shoulders, and do not grow antlers.

The normal production life span is 18 to 25 years for bulls and 20 to 25 years for females. Elk are hardy livestock with natural immunity to most diseases. Although elk can contract normal bovine diseases such as tuberculosis, they are not prone to do so.

## HISTORY

Since 1900, Yellowstone National Park has provided stock for reintroductions in the United States and western Canada, but the major growth in modern elk farming began in the 1950's with the sale of surplus animals from Yellowstone to private individuals.

In the early 1970's there were still only a handful of elk ranchers across North America but by 1990, there were approximately 600 farmers farming one

or more domestic elk in North America. Today, the North American Elk Breeders Association, founded in 1990, has over 800 members.

## USES

Elk are very versatile. Elk is one of the few species which you can raise and have regular income from both male and female animals.

Besides breeding stock, the male elk produce velvet antler. Velvet refers to the early stage of antler growth when the blood supply to the antler is located on the outside of the antler giving it a velvet-like appearance. Among mammals, the antler is the only organ that is fully regenerated, and it is the only organ composed of bone to be regenerated by any vertebrate.

In the Orient, velvet has been used as a medicinal product for over 2,000 years. Velvet is also becoming increasingly popular in North America where it is used to treat arthritis and for energy and general well-being.

Velvet preparations administered to experimental animals have stimulated growth rates, reduced blood pressure, lowered blood cholesterol, hastened recovery from anemia, liver damage and trauma, and reportedly retarded aging<sup>a</sup>. Clinical trials also show that velvet may give relief from stress-induced fatigue<sup>a</sup>.

Bulls produce antlers every year that, if not harvested, will naturally fall off in March and begin to regrow shortly afterward. Velvet antler is surgically removed in May or June, with no harm to the animals, with the exact time of removal depending upon age of the bull and when antler regrowth begins.

Removing velvet antler for maximum profit requires careful timing. Velvet from bulls two to three years old is harvested from 60-63 days from the time the old antlers are dropped; four years old

it is harvested at 65 days and 5-6 year olds are harvested at 70-75 days.

An average two-year-old will grow approximately 6 lbs of velvet. Generally, bulls increase velvet yields every year. A mature bull (7-8 years old) should produce 20 to 30 pounds of Grade A velvet. Once harvested, the velvet is frozen and sold to buyers or the farmer can process and market the velvet themselves. The price for velvet has ranged in recent years from \$30-120 per pound depending on size and quality.

Other uses of the antlers include trophy mounts, carvings, light fixtures, jewelry, belt buckles, and furniture made from harvested hard or cast off antlers.

Another elk product is the meat. Because elk do not marinate fat, their meat is lean, finely grained and lower in cholesterol than almost any other on the market. Dressing percentages and cutability are generally higher than cattle, about 60% of live weight, due to the elk's relatively fine bone structure and greater proportion of meat. Elk meat has less fat than deer or chicken and one-seventh the fat of lean roast beef.

## FEEDING

Elk are predominately grazers. A variety of grasses and legumes makes the best pasture. Elk will eat most upland grasses and legumes, will consume grains and can consume up to 20% of their diet in browse. The nutritional requirements of cows and bulls are slightly different.

Efficient grazers and browsers, two to three elk cows and their calves can be raised on the same amount of land required for one beef cow and her calf. Elk metabolism slows in the winter reducing the amount of feed needed to sustain the animals and increases in the spring, enabling elk to quickly add weight as grazing improves.

## PRODUCTIVITY

Most 18 month old females will cycle if they weigh 450 pounds or more. Bulls are capable of breeding at two years of age. The bull/cow breeding ratio for a mature bull is approximately 1:20.

The gestation period for elk is approximately 260 days and they normally breed in September or October with the calves born in June. Calving problems are generally rare and are usually related to cows being overweight.

Seasonal reproductive changes are most striking in the male. The most obvious is development of antlers which are used to establish dominance and breeding privileges during the rut. Also in preparation for rutting battles, the neck swells because of massive development of the muscles, giving the rutting stag a distinctive appearance<sup>a</sup>.

The rut is the period of maximum reproductive activity. The time of onset varies slightly depending on the nutritional state of the animals, but is generally from August to October. Bulls compete for dominance through bugling, sparring and chasing would-be competitors away (injuries are rare).

Rutting bulls spend little time feeding and a mature bull may lose as much as 20% of his body weight in 6 weeks. After the rut, it is important that bulls receive enough good quality feed to help them recover some of this lost weight before the onset of winter.

## FACILITIES AND HANDLING

Elk adapt well to every climate and require no special shelter, however, the overall facilities plan should include fencing, paddocks, races (alleys between paddocks), gates, yards, handling area and chutes.

Perimeter and paddock fencing should be at least 8 feet high and constructed with high tensile wire netting. Netting with smaller spaces should be used on the bottom of the fence to prevent calves from escaping and predators from getting in.

Alleyway walls should be solid and a minimum of eight and preferably ten feet high. Gates and alleyways are used to move the animals and a solid enclosed area will make the animals easier to handle and reduce chances of injury to the animals and the handler.

Elk are not necessarily aggressive, but their superior size and strength should be respected. Elk will use their antlers, feet and teeth against humans and other animals if they feel threatened or to assert dominance.

## ECONOMICS/MARKETING

Depending upon the design and labor costs, it will cost about \$10,000 to construct a 10 acre fence, install gates, and build a handling facility. You should also have 20 to 60 acres of good pasture land for grazing.

Breeding stock prices for purebred registered elk average \$7,000 for a cow, \$4,000 for heifer calves, \$2,500 for a young bull calf (to 2 years old) and \$4,000 or more for a mature bull depending upon size and genetics.

Studies show that the feed required to produce one pound of beef produces 1.4 pounds of elk meat, and the fact that elk are hardy livestock with natural immunity to most diseases helps to keep production costs low.

There are several options to consider after deciding to enter the elk business including private ownership and shared farming arrangements between investors and landowners. As with any new enterprise, you should examine your available resources, visit established operations and review the available information before making your decision.

With the continuing demand for breeding stock and the growing markets for velvet and elk venison you may decide that raising the legend is the right alternative animal enterprise for you.

By B. Davidson<sup>1</sup>, Cheryl Kruckeberg<sup>2</sup>

<sup>1</sup> CAPAP

<sup>2</sup> Kruckeberg's Game Farm

Rt. 2, Box 310

Blooming Prairie, MN 55917

## REFERENCES

<sup>a</sup> Haigh, J.C. and R.J. Hudson. 1993. Farming Wapiti and Red Deer. Mosby: Toronto.

Renecker, L.A. 1992. Game Farm Management. Agroborealis v. 24 (1).

Sell, R. 1993. Elk. NDSU Extension Service. Alternative Agriculture Series, Number 5.

Various. Raise the Legend. Minnesota Elk Breeders Assn.

**For further information contact the Center or:**

Minnesota Elk Breeders Association

Kaye Zebarth

17822 Cty Rd 8 NW

Brandon MN 56315

North American Elk Breeders Assn. (NAEBA)

7301 NW Tiffany Springs Rd

Suite #1104

Kansas City MO 64153

(816) 746-5700; FAX (816) 746-1822

# UNIVERSITY OF MINNESOTA

*Twin Cities Campus*

*Centre for Alternative Plant and Animal Products  
College of Agriculture*

*340 Alderman Hall  
1970 Folwell Avenue  
St. Paul, MN 555108  
612-625-5747  
612-624-4217*

## Note from the Editor

Thanks to all of you who subscribed to BioOptions for the first time or renewed your annual subscription. The Center distributes information from researchers, industry, producers, farmers and interested individuals providing the most up-to-date information on issues facing agriculture today. We continue to need the support of all of our readers. Send the name of someone you think would be interested in BioOptions and we will be happy to send them a complimentary copy.

Remember your friends and colleagues by sending a **BioOptions** gift subscription. Give the gift that lasts all year long.

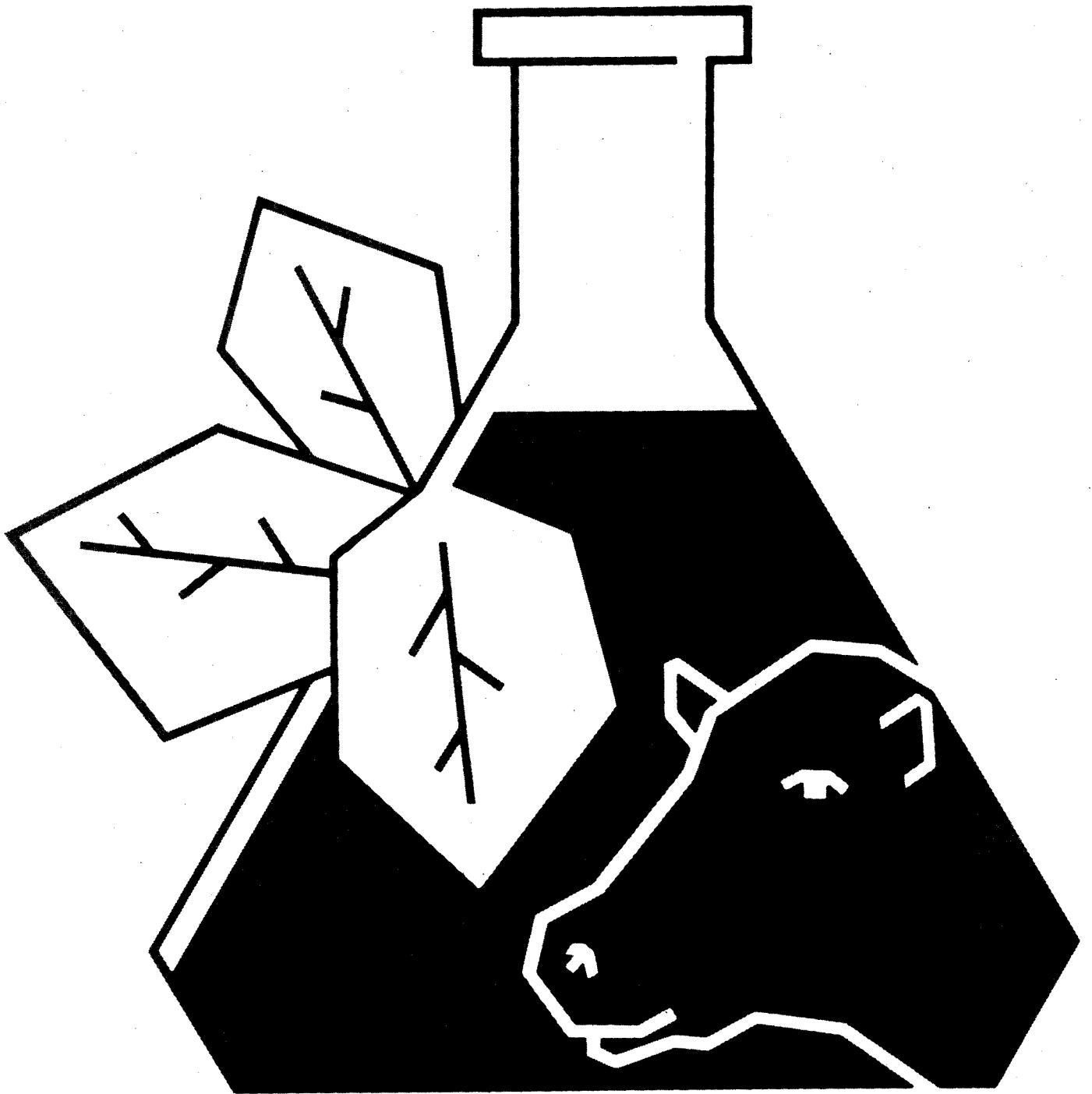
## Subscription Form - BioOptions

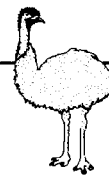
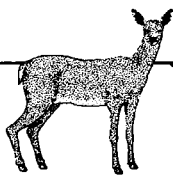
Please send me a subscription to BioOptions for 1995. I have enclosed my tax deductible donation of \$8.00 (\$10.00 outside U.S.) which entitles me to receive a year of BioOptions or my supporting contribution of \$20.00 which entitles me to receive BioOptions, a copy of your publication *Alternative Agricultural Opportunities*: A bibliography listing over 1500 publications on file in the Center.

**Send my subscription to:** Name \_\_\_\_\_  
Business \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Specific Interest \_\_\_\_\_

**Send a gift subscription to:** Name \_\_\_\_\_  
Business \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Specific Interest \_\_\_\_\_

**Send form and check or money order payable to University of Minnesota to:**  
Center for Alternative Plant and Animal Products, University of Minnesota  
340 Alderman Hall, 1970 Folwell Avenue, St. Paul, MN 55108



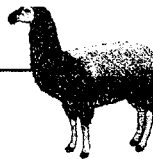


# Alternative Livestock Conference

## July 27-29, 1995

### University of Minnesota

### St. Paul Campus



#### Conference Agenda includes:

- ◆ Alternative livestock production
- ◆ Health and nutrition
- ◆ Housing
- ◆ Economics and marketing
- ◆ Value-added products

#### Conference will provide:

- ✓ Practical information
- ✓ Networking opportunities with other producers
- ✓ Information for the beginner as well as the established producer
- ✓ Live animals brought in for show and demonstration
- ✓ Displays of production and support services
- ✓ Complete conference proceedings

#### Animals to be covered:

Alpaca, Bees, Bison, Free Range Chickens, Deer, Elk, Emu, Geese, Goats, Llama, Ostrich, Rabbits, Reindeer

#### Lodging:

A block of rooms has been booked at hotels in Roseville near the St. Paul Campus. You may reserve your room now by calling one of the properties listed below:

- Days Inn**..... 612-636-6730  
Rate is \$37 + tax (double) **Ask for Cori**
- Ramada Inn** (formerly Holiday Inn)..... 612-636-4567  
Rate is \$48 + tax (double) **Ask for Arline**

#### Conference is cosponsored by:

- Agricultural Utilization Research Institute (AURI)
- Minnesota Department of Agriculture (MDA)
- University of Minnesota (U of MN)
- Center for Alternative Plant and Animal Products
- Extension Special Programs

#### Note:

A final program will be sent (after June 1, 1995) to all who send in the request form below.

If you're interested in receiving a copy of the brochure for this conference, you may do so by:

**1** Filling out the card to your right, cutting it out on the dotted lines and sending to:

Judy Sunvold  
Alternative Livestock Conf.  
405 Coffey Hall  
University of Minnesota  
St. Paul MN 55108-6068

or

**2** Fax to: 612-624-0737.

If you need further information, please contact Judy Sunvold at 800-367-5363 or 612-625-2636.

#### Alternative Livestock Conference Brochure Request Form:

Please put me on your mailing list. I understand that by returning this card I will receive a copy of the finalized schedule and registration form for the Alternative Livestock Conference.

#### Please Print

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip +4 \_\_\_\_\_

Phone # (\_\_\_\_) \_\_\_\_\_ Fax# (\_\_\_\_) \_\_\_\_\_

#### Please put my friend on your list also:

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip +4 \_\_\_\_\_

Phone # (\_\_\_\_) \_\_\_\_\_ Fax# (\_\_\_\_) \_\_\_\_\_



**Management Strategies** (cont. from page 1)

In a livestock breeding enterprise, feed costs make up to 60% of total costs. Therefore, a small change in feeding programs can greatly affect production costs. Producers are encouraged to evaluate current feeding programs. In ruminant species, maximization of forage harvest by the animal is preferred over machine harvest of forages for hand-feeding. In cold climates, where winter housing is required, some forage harvest and hand-feeding is necessary during the coldest, snowiest periods.

Therefore, producers must hone their pasture management skills to rely on pastures for as long as possible. Strategies to achieve this are early spring and late winter grazing on stockpiled pasture, management intensive grazing, or gleaning of crop fields. Data from research with beef cows demonstrate that when cows are in good condition in November, winter feed costs average between \$14 and \$84/cow/year less than those of thin or average condition cows. When formulating winter diets, producers are strongly encouraged to evaluate forage nutrient content, nutrient requirements of their livestock and to supplement with protein, vitamins and minerals when necessary.

Implications of poor nutritional management are reduced fertility, low milk yield and lighter weaning weights. Table 1 demonstrates the relationship between weaning weight and fertility on effective weaning weight (weaning weight/female exposed).

Genetic decisions impact nutrient requirements of livestock, growth potential and weaning weight. In many alternative livestock enterprises, breeding costs are relatively high because of the limited supply of breeding stock. Therefore, producers must strive to meet the nutrient requirements of their livestock to permit full expression of their growth potential (i.e., to obtain the weaning weight expected for a given genetic line). However, over-feeding of the breeding female does not increase production and impacts feed costs negatively.

Table 1. Calculated effective weaning weights per female exposed.

Weaning %	Average weaning weight all weanlings, lb							
	25	50	75	100	200	300	400	500
	-----Effective weaning weight, lb-----							
60	15	30	45	60	120	180	240	300
65	16	33	49	65	130	195	260	325
70	18	35	53	70	140	210	280	350
75	19	38	56	75	150	225	300	375
80	20	40	60	80	160	240	320	400
85	21	43	64	85	170	255	340	425
90	23	45	68	90	180	270	360	450
95	24	48	71	95	190	285	380	475
100	25	50	75	100	200	300	400	500
105	26	53	79	105	210	315	420	525
110	28	55	83	110	220	330	440	550
115	29	58	86	115	230	345	460	575

Health programming permits livestock producers to fully reap the benefits of their nutrition and genetics programs. Livestock diseases can be chronic or acute. Acute diseases (caused by bacteria, parasites or virus) can kill an animal or an entire herd in a short outbreak. Producers must work with their veterinarian to implement a bacterial, viral and parasitic disease prevention program. Veterinary and medicine costs are small compared to the potential production losses that occur when disease outbreaks kill one or more animals.

Chronic diseases are caused by exposure to virus, bacteria, parasites or conditions that affect digestion or metabolism. Although chronic diseases may not kill animals readily, their impact will reduce feed utilization and cause infertility and poor body weight gains. Again, producers must work with their veterinarian to implement a health program.

Table 1 was generated using various weaning weights (a function of nutrition and genetics), weaning percentages (a function of nutrition, fertility and health programming) to incorporate effects of nutrition, genetics and health programming into productivity of alternative livestock enterprises. At low weaning weights, high fertility is required to improve production per female exposed. However, this table does not take into consideration the cost of keeping a breeding female. Therefore, Table 2 was generated to include annual brood female maintenance costs (feed, breeding, health costs plus other direct and indirect costs) and weaning percentages. Cost/weanling is the same whether annual maintenance cost/brood female is \$300 and weaning (cont. on page 11).



percentage is 60 or annual maintenance cost/brood female is \$350 and weaning percentage is 70. Therefore, 10 units weaning percentage are required to offset \$50 annual maintenance cost. Alternative livestock enterprises with high annual maintenance costs/female must strive to improve nutrition, fertility and health programs constantly.

Table 2. Influence of weaning percentage on cost/weanling

Weaning %	Annual maintenance cost/brood female													
	200	250	300	350	400	450	500	550	600	650	700	750	800	
	-----Cost/weanling, \$/hd-----													
60	333	417	500	583	667	750	833	917	1,000	1,083	1,167	1,250	1,333	
70	286	357	429	500	571	643	714	786	857	929	1,000	1,071	1,143	
80	250	313	375	438	500	563	625	688	750	813	875	938	1,000	
90	222	278	333	389	444	500	556	611	667	722	778	833	889	
100	200	250	300	350	400	450	500	550	600	650	700	750	800	
110	182	227	273	318	364	409	455	500	545	591	636	682	727	
120	167	208	250	292	333	375	417	458	500	542	583	625	667	

## International Lupin Conference

Scientists from throughout the world will be gathering May 11-16, 1996 for the 8th International Lupin Conference at the Asilomar Conference Center near Monterey, California. The conference is being organized by the International Lupin Association and is co-sponsored by the Department of Agronomy and Range Science at the University of California, Davis and the North American Lupin Association.

A full agenda is planned for the conference, with three days of symposia scheduled in the mornings. Afternoons will be devoted to concurrent contributed papers and poster sessions in one of the following categories: agronomy, genetics, alkaloid chemistry, ecology, and utilization of lupin.

"Lupin is grown in many countries throughout the world," said UC Davis Agronomist Dan Putnam. "Although acreage is currently small, it has the potential to become more extensively cultivated as an important protein crop." In Australia, for instance, lupin cultivation grew from zero to 1.4 million hectares (about 3.5 million acres) in just the last 20 years. Of the 190 species of lupin worldwide, 120 occur in California. The conference is an exciting opportunity to foster cross disciplinary discussion.

The scientists convening at Asilomar in 1996 will report on a number of topics of interest to scientists and growers alike -- new crop development, human and animal food uses, nitrogen fixation, ecological importance, as well as the agronomic aspects of lupin.

Asilomar is a rustic conference center located in the dunes near the historic city of Monterey, about 100 miles south of San Francisco. Travel to Asilomar is possible through the international airports at either San Francisco or San Jose. The registration fee is \$250 if received by April 10, 1996. Housing at Asilomar starts at \$48 per day which includes all standard meals. For further information or registration materials, write to Conference & Events (lupin), University of California, Davis, CA 95616-8766; (916) 757-3331, FAX (916) 757-7943 or by email at jcbarnes@ucdavis.edu.

Detailed information about lupin is presented in the "Lupin Production and Utilization Guide". This full color 1993 Center publication was published with help from the Agricultural Utilization Research Institute and is available from the Center for \$10.



## CENTER PROJECTS

### Promoting the Benefits of Economic Diversity in Rural America

#### Minnesota Agri-Power Project

The Minnesota Agri-Power Project (MAP) is a public-private partnership formed to develop and implement sustainable biomass energy production on a commercial scale. The partnership is headed by the Minnesota Valley Alfalfa Producers (MnVAP), the majority owner. MnVAP is a cooperative of alfalfa producers that will supply, under contract, the alfalfa feedstock for the proposed alfalfa processing facility. The primary site under consideration by the Board of Directors of MnVAP for the alfalfa processing plant is the Granite Falls Industrial Park, Granite Falls, MN.

MnVAP is joined in this effort by Westinghouse Electric Corporation, Tampella Power Corporation, and Stone and Webster. The team has submitted a proposal to the U.S. Department of Energy which requests federal cost sharing for the establishment of the new highly efficient conversion technology that will convert alfalfa stem fuel into electricity. The team is currently developing a bid to Northern States Power that is expected to result in a long term power purchase agreement with the utility.

The Center has led efforts to strengthen and maintain the high level of public support that this project has generated. Public support is justified by the potential long term and far reaching benefits that the successful demonstration of commercial biomass energy production system based on a renewable agricultural feedstock will provide. The University has outlined a plan to provide R&D support for the project to improve system efficiency and profitability. University of Minnesota support for the MAP project is expected to exceed \$3 million dollars over the next several years. The Minnesota Departments of Agriculture and of Natural Resources and other state agencies have also committed support for the MAP project. The Agricultural Utilization Research Institute (AURI) will play a key role in evaluating a wide range of potential value-added alfalfa products that will be produced. AURI is a key Minnesota resource that is in large part responsible for the flourish of activity in agriculture based economic development in the state.

For more information on the MAP project or to become a member or associate member of the MnVAP cooperative contact MnVAP at (612) 564-4511 ext. 138.

#### Woody Agriculture

Woody Agriculture is a long term effort to promote the use of woody plants in agricultural systems. Many different woody plants have the potential to provide both economic and environmental benefits to the farm. Contact the Center for more information on how you can be part of the diversification of agriculture to include woody crops.

#### Alternative Livestock Conference

This issue of BioOptions is largely dedicated to opportunities to diversify your production base through the inclusion of livestock on your farm. Livestock provide the original value-added opportunity for processing feed grains into higher value commodities. Because of the wide range of opportunities in alternative livestock production, we are offering producers a chance to learn about many different options at one time.

The Alternative Livestock Conference, July 27-29th, at the St. Paul Campus of the University of Minnesota is that opportunity. The Conference will provide in-depth information on the production and marketing of alpaca, bees, bison, free range chickens, deer, elk, emu, geese, goats, llama, ostrich, rabbits, reindeer, and more. Classes run concurrently, so you will need to get a schedule and sit down to plan your overall educational experience.

As a conference participant, you may choose to take in several basic sessions to get a first hand report from real live producers on what it takes to be a deer farmer, a rabbit farmer, a chicken rancher, or to find out what it is like to "Raise the Legend". Alternatively, you may already know what type of livestock you are interested in and wish to focus your educational experience on say, bison or ostrich. In that case, you could sign up for two days of nothing but the very best information from the top experts in that field from all over the world.

This conference was designed by people already in the business. We asked what they needed and they told us. Presentations by operating farmers and panel discussions with people in the industry will make this event an unforgettable and rewarding experience. We have limited space for this conference and early registration is recommended. The first thing you need to do is to get on the conference mailing list. Do this by filling out the ALC Brochure Request Form on page 9 of this issue of BioOptions and we'll see you in July.

#### Manure Processing

Nutrient removal/concentration, gasification (a thermal process), anaerobic and aerobic digestion (biological processes), and composting are examples of technologies that may add value to livestock waste.

The Center is interested in working with livestock producers and technology experts to identify appropriate technologies for specific situations that are beneficial alternatives to land applications of manure. If you would like to participate in this project, give us a call.





## NEWS BRIEFS

**The National Wildflower Research Center (NWRC)** founded in 1982 by Lady Bird Johnson and located in Austin, Texas has a new home. The facility features a 42-acre native plant botanical garden, visitor's gallery and North America's largest rainwater collection and harvesting system. NWRC is a national nonprofit environmental organization dedicated to the preservation and reestablishment of native plants. Contact: NWRC, 2600 FM 973 North, Austin, TX 78725-4201.

**Citrus acid helps you cut chemicals.** Recent on-farm research from Idaho shows mixing just one-quarter to one-half cup of citric acid per 100 gallons of water can give you the optimum pH for cutting pesticide rates, without any hassle. To buy citric acid, contact: Van Waters and Rogers, P.O. Box 3398, Portland OR 97208. To learn more about the study, contact: Larry J. Smith, Univ. of Idaho, 1239 Idaho St., Lewiston, ID 83501.

**Canola Fill-Up** - the alternative fuel of the future for mass transportation could be biodiesel (OMNI, Feb. 1995). This efficient, renewable and relatively emission-free replacement fuel for diesel-powered vehicles is made from vegetable oils such as canola, soybean, sunflower, or rapeseed oil. A mixture of 20 percent biodiesel and 80 percent petroleum diesel has performed well in over seven million miles of tests on buses and other vehicles in the U.S.

**Overseas Market Expands for Minnesota-Grown Specialty Foods** (James Walsh, Star Tribune). The Japanese alone pay more than \$1.4 billion a year for organic food, and the market has grown 80 percent a year over the past five years. Minnesota, which boasts 150,000 acres of organically certified cropland, is working hard to court those buyers and whet their appetites for everything from organic honey to organic beer.

**Broccoli is America's new favorite vegetable** according to a 1994 survey conducted by Land O' Lakes. Broccoli was the first choice of most respondents and women were more likely than men to choose this healthy veggie. Men's favorite? Sweet corn, which ranked number two overall.

**Natural Weed Wacker** - Drs. David Johnson and Donald Wyse, in four years of field trials, found that apical chlorosis stunts the growth of a variety of thistles, ragweed, horseweed and prickly lettuce, without hurting crops. Field trials are continuing and the product, developed in conjunction with Mycogen Corp., will be available as early as 1997. To stay informed, contact: Mycogen, 5451 Oberlin Drive, San Diego, CA 92121; (619) 453-8030.

**Earth-friendliness begins in your own backyard.** If we all reduced the size of our lawns by 10 percent, the effects on the environment would be dramatic. Consider these facts: According to studies at Yale, lawns take up 23 million acres. Food gardens, by contrast, use 1.5 million acres, and a fair percentage of them are managed organically. The average suburban lawn is deluged with 10 times as many chemical pesticides per acre as farmland. Americans spend \$25 billion every year on their lawn.

**Ten Top Vegetables** - The annual Gallup Survey of Gardening conducted for the National Gardening Association ranks vegetables according to their popularity and here are the results: tomato, sweet pepper, green beans, cucumber, onion, lettuce, carrot, radish, squash and peas.

**Looking for value-added:** dried fruit products are lucrative for resale, easy to use, and cut down on labor. For free information, contact: Atwater Foods, Inc., 10190 Route 18, Lyndonville, NY 14098; 1(800) 836-3972.

**Celebrating and Saving our Seas:** 97 percent of all the water on earth is found in our oceans; 58 percent of our imports come by sea; and nearly 3.1 million pounds of trash - glass, plastic, cigarette butts, six-pack holders - were collected from American oceanfronts last year. The Smithsonian Institution created a landmark exhibit that will tour America over the next four years. It is designed to portray, and heighten public awareness of the critical need for ocean conservation.

**Food science majors have their "pick of jobs,"** says Purdue Ag Dean Victor Lechtenberg. For the past eight years, there have been more jobs than grads from their food science curriculum. Other hot areas include microbiology, environmental science, marketing and landscape architecture, as the types of jobs available to ag grads continue to change with new technology.

**Freeload threatens midwest song birds** (AP). The American midwest has become a disaster area for migrant songbirds and paradise for a feathered freeloader who tricks other birds into raising its young. A recent study shows that migrant songbird populations are in steep decline in the midwest. Cowbirds, the most important culprits, are successful because most of the forests in the midwest are in small plots in strips along highways or beside farm fields. The problem could be corrected by establishing a network of forests no smaller than 20,000 acres.

**Tree facts:** Trees absorb many of the chlorofluorocarbons that destroy the ozone layer surrounding the planet. Trees provide shade for our homes and businesses, reducing the need for fans and air conditioners as much as 40 percent. Trees fertilize the land and prevent soil erosion by holding it together with their root systems. The Pacific yew has been found to contain taxol, an anti-cancer compound.



## INFORMATION DESK

One of the Center's most important functions is to provide information. We receive requests daily on a wide variety of subjects. We encourage you to write or call us with questions of your own. We maintain a library on alternative crops and animals and will be happy to send you copies of articles (10 cents/page).

**There are several discussion groups on the internet** that may be of interest to alternative agricultural enterprises: **Vegetables**

almanac@es USDA.gov - send the one line message - subscribe veg-prod-mg name; and substitute your real name for the word "name".

**Emu-Ratite:**

emu-ratite@magic.yournet.com with message subscribe emu-ratite your name.

**Mushroomss**

fungus-request@teleport.com with message subscribe fungus your name.

**Goats**

listproc@listproc.wsu.edu-the command to subscribe is subscribe Goats your name. (Ag Opportunities, March/ April, 1995)

**The Center has a new hydroponic information packet** available at a cost of \$3. **Emu, Ostrich (\$4) and Elk (\$3) information packets** are available.

**Did you know:**

- \* That saltwater sport fishing contributes nearly \$15 billion a year to our gross national product.
- \* The U.S. has only 6 percent of the world's population, but consumes 35 percent of the world's energy.
- \* The percentage of people living on farms has declined significantly, from 20% in 1945 to less than 2% in 1993.
- \* Americans consume about a pound of garlic per capita annually, or about 255 million pounds.

**How to Get Information from the USDA** is a useful guide with direct phone numbers and addresses for the USDA. Call (202) 720-2791.

**A special thanks** to Richard Vogt for all the wonderful cartoons he has drawn for BioOptions. He can be contacted at Art Services, 306 N. 8th, Olivia, MN 56277.

The University of Minnesota, including the Minnesota Extension Service, is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, veteran status, or sexual orientation.

## Alternative Livestock Conference

### Registration Fees

3-day registration (includes breakfast on Friday and lunches on Thursday and Friday and a copy of proceedings)

In advance (due by July 14, 1995)	\$130.00
At door	\$150.00
Saturday only registration	\$ 25.00

### Trade Show Booth Rental Information

Exhibit space will be located in the Earle Brown Center and the Livestock Arena on the St. Paul Campus of the University of Minnesota, to accommodate most requests for exhibit space. A booth includes one conference registration, one draped table, a sign and two chairs.

Costs for the booth:

- 6' x 10' booth for **all three days** for \$330
- 6' x 10' booth for **Saturday only** for \$150
- Additional tables at \$20 each

Space will be assigned on a first-come, first-served basis. No refunds given, if booth space is canceled after June 30, 1995. Refunds will take 4-6 weeks. Booths will be assigned after July 10, 1995. Booth space is not guaranteed without full payment. If you would like further information, please contact Judy Sunvold at 1 (800) 367-5363 or (612) 625-2636.



## Publications

**Center for Rural Affairs** publishes dozens of helpful brochures and booklets on a variety of farming topics. Request a publication list from: Center for Rural Affairs, P.O. Box 736, Hartington, NE 68739; (402) 254-6893.

**The Herbal Connection** is a bimonthly newsletter with in-depth articles on both marketing and production, lots of herbal and business tips to improve your operation, the fresh cut herb price report for 18 terminal markets, new herbal books, calendar of events, new products, and more. Cost is \$38 per year. Contact: The Herbal Connection, P.O. Box 245, Silver Spring, PA 17575.

**Rabbit Production**, a sixth edition book that fills the needs of both the experienced rabbit raiser and the beginner. Topics include care and management of rabbits, and marketing of different products, including Angora wool, rex fur and meat. Cost is \$26.95. Contact: Country Store Books, Box 6025, Suite 57, Columbia, MO 65205.

**Sweet Basil: The Culinary Classic and Direct Marketing for Small Farmers** are available. Cost is \$10 each. Contact: Sheila Whitley, NC AT&T State University, POB 21928, Greensboro, NC 27420; (910) 334-7050.

**The Grass is Greener: Dairy Graziers Tell Their Story** features sixteen dairy farmers from Wisconsin and Minnesota talking about the strategies and challenges of converting their conventional dairy systems to pasture-based ones. They reveal the positive impacts pasturing has had on their land, cows, family and personal lives. Cost is \$5, plus \$2.50 shipping. Contact: WRDC, 125 Brookwood Dr. Mount Horeb, WI 53572; (608) 437-5971.

**1995 New York State Vegetable Conference Proceedings** are available from the New York State Vegetable Growers Association. Price is \$14. Contact: NYS Vegetable Growers Assn., P.O. Box 4256, Ithaca, NY 14852-4256.

**Proceedings of the International Conference on Jojoba and its Uses and the 1994 International Conference on New Industrial Crops and Products** report the latest status of Jojoba and other new industrial crops and products from around the world. Cost is \$125 plus \$5 shipping. Contact: International Flora Technologies, Ltd., 2295 South Coconino Dr., Apache Junction, AZ 85220; (602) 983-7909.

**The Mushroom Growers' Newsletter** is an 8 page monthly by Jerry Haugen & Trish Morton-Smith. Send \$3 for a sample issue or \$24 for 12 monthly issues. Contact: Mushroom Growers Newsletter, P.O. Box 5065, Klamath Falls, OR 97601.

**Herbs and Bees** are the latest factsheets from the USDA Office for Small-Scale Agriculture. Contact: Bud Kerr, Ag Box 2244, OSSA (Factsheets), Washington, DC 20250-2244; (202) 720-5245.

**Shiitake Mushroom** is a new free ten page fact sheet that covers production, economics and marketing of shiitakes grown on logs in an outdoor operation. Contact: Kerr Center, P.O. Box 588, Poteau, OK 74953; (918) 647-9123.

**Growing Great Garlic: The Definitive Guide For Organic Gardeners and Small Farmers** is a 213 page guide written by a small-scale farmer who makes his living growing over 200 strains of garlic. Information ranges from selecting strains to planting and harvesting. Also contains good sections on processing, storing and marketing. Cost is \$13. Contact: Good Earth Publications, P.O. Box 898, Shelburne, VT 05482; (802) 425-3201.

**Specialty Meats Directory: Your Direct Link to Minnesota's Livestock Farmers and Meat Processors** is a 36-page booklet that lists producers of almost every meat product. Contact: Minnesota Department of Agriculture, Marketing Div., 90 W. Plate Blvd., St. Paul, MN 55107.

**Proceedings of the 1994 Putting Small Acreage to Work Seminar** is a 68 page publication providing ideas for alternative enterprises and marketing strategies. Also a 13-page bibliography of information concerning small farming operations. Cost is \$15. Contact: Diane Duewer, Sangamon/Menard Ext. Unit, P.O. Box 8467, Springfield, IL 62791-8467; (217) 782-4617.

**The Alternative Field Crops Manual** is an award winning publication. The 3 ring binder with over 50 crops provides information on the production of many minor or new field crops, some of which may be considered alternatives to traditional farm crops. Cost is \$45. Contact: CAPAP, 342 Alderman Hall, 1970 Folwell Ave., St. Paul, MN 55108

**National Organic Directory, 1994 edition** is a reference guide for organic farmers and wholesalers, and others interested in getting into the organic business. Cost is \$34.95 plus \$5 shipping. Contact: Community Alliance with Family Farmers, P.O. Box 464, Davis, CA 95617; (800) 852-3832.

**Herbal Green Pages** is a source book of 5,000 herb related businesses, associations, publications, and educational programs. Contact: The Herbal Connection, P.O. Box 245, Silver Spring, PA 17575; (717) 393-3295.

**MN Crop News** is a year-round newsletter from the Crops System Team of the Minnesota Extension Service. Contains timely information on crop production written for farmers and ag professionals. Cost is \$20 for 25 issues. Contact: Deb Baden-Drange, Dept. of Plant Pathology, 495 Borlaug Hall, St. Paul, MN 55108-6030; (612) 625-6290.

**Tips on Growing & Marketing Hanging Baskets and Tips on Growing Bedding Plants** are available. The cost is \$23 and \$27 respectively plus \$5 shipping. Contact: O.F.A. Services, Inc., 2130 Stella Court, Suite 200, Columbus, OH 43215-1033; (614) 487-1117, FAX (614) 487-1216.



**CALENDAR OF EVENTS** - Notify the Center of events of interest and we will publish that information for you.

**June 9, 1995 - New Direction in Biotechnology with France and Quebec** Madison, Wisconsin. Contact: LeGroupe Biotech; (608) 262-4077, FAX (608) 265-3892.

**June 24-28, 1995 - Aquaculture Expo VIII/Aquaculture in the Mid-Atlantic Conference** Washington, DC. Contact: Carroll Trosclair; 1-800-527-7631.

**June 28-30, 1995 - International Alternative Fuels Conference and Trade Show** Milwaukee, Wisconsin. Contact: Bridges Public Relations and Marketing Group, Milwaukee, WI; (800) 447-5088.

**July 4-7, 1995 - Ninth International Rapeseed Congress** Cambridge, England. Contact: Denis Kimber, 44 Church Street, Haslingfield, Cambridge, CB3 7JE, United Kingdom; FAX 44-223-870-445.

**July 5-9, 1995 - National American Emu Association Convention** Las Vegas, Nevada. Contact: Dottie Mullikin; (417) 833-3959.

**July 8-12, 1995 - Ohio International Floral Short Course** Cincinnati, Ohio. Contact: Ohio Florists Assn., 2130 Stella Court, Suite 200, Columbus, OH 43215-1033; (614) 487-1117.

**July 10-11, 1995 - Industrialization of Heartland Agriculture: Challenges, Opportunities, Consequences, Alternatives.** Minneapolis, Minnesota. Contact: Dept. of Agricultural Economics, P.O. Box 5437, NDSU, Fargo ND 58105-5437; (701) 231-8642.

**July 27-29, 1995 - Alternative Livestock Conference** St. Paul, Minnesota. Contact CAPAP, Univ. of MN, 342 Alderman Hall, 1970 Folwell Ave. St. Paul, MN 55108; (612) 624-4217.

**August 21-24, 1995 - Second Biomass Conference of the Americas: Energy, Environment, Agriculture, and Industry** Portland Oregon. Contact: Dori Nielsen, NREL, 1617 Cole Blvd., Golden, CO 80401-3393; (303) 275-4350.

**August 27-30, 1995 - International Symposium on Medicinal and Aromatic Plants** Amherst, Massachusetts. Contact: Lyle Craker, Dept. of Plant and Soil Sciences, Univ. of MA, Amherst, MA 01003; (413) 545-2347.

**October 22-25, 1995 - Third New Crops Symposium** Indianapolis, Indiana. Contact: Jules Janick, Indiana Center for New Crops and Plant Products, Purdue Univ., 1165 Hort. Bldg., West Lafayette, IN 47907-1165.

**May 11-16, 1996 - 8th International Lupin Conference** Monterey, California. Contact: Conference & Event Services (lupin), University of California, Davis, CA 95616-8766; (916) 757-3331, FAX (916) 757-7943, email at jcbarnes@ucdavis.edu.

Center for Alternative Plant and Animal Products  
(CAPAP), University of Minnesota  
340 Alderman Hall  
1970 Folwell Ave.  
St. Paul, MN 55108

Non-Profit Org.  
U.S. Postage  
**PAID**  
Permit No. 155  
Minneapolis, MN

JUN 09 1995

~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~