

The Northwest Experiment Station of the University of Minnesota • Crookston, MN 56716

Sunflower Seeds Supply High Energy In Dairy Rations

by George Marx

Many dairymen are considering or are already feeding whole sunflower seed to lactating dairy cows. The sunflower seed is a unique type of food product and contains high levels of several nutrients that are required by the producing cow. The concentration of energy in the form of oil or fat is particularly useful to cows in early lactation. Feeding the dairy cow has become more complex because of increasing productivity. With limited space in the rumen, it becomes more of a problem to adequately provide all the necessary nutrients for maintenance, growth, carrying a fetus and high milk production.

There are some precautions that need to be observed in feeding a material high in fat. Too much fat can cause digestive problems and upset rumen fermentation. The rule of thumb is to keep the total diet intake of fat below 5 to 6% of the ration. In determining the amount of sunflower seed to add to the ration, it is important to consider the fat in other ingredients. If no other fat source such as cottonseed, canola seed, full fat soybean or animal fat is being fed, we can generally recommend feeding 3 to 5 lbs of whole oil-type sunflower seed daily/cow. Another recommendation is not to exceed 15% of the grain mix fed. Usually feeding sunflower screenings lowers the fat content from an average 42% to below 30% in the material. If feeding the confectionery-type sunflower, the fat content may be reduced by half, allowing one to feed a high level in the diet.

Presently, the high-producing group dairy ration at the Northwest Experiment Station contains 5.5% oil-type sunflower seed in the total mixed ration dry matter. This amounts to approximately 3 lbs daily/cow. In a previous cooperative experiment with North Dakota State University, we fed 4 lbs daily/cow with excellent results in the high group. Most of the energy in sunflower seed is derived from the high fat content and is the reason for the high TDN content which ranges from 95 to 105% in the seed. Also, protein content ranges from 18 to 21% and acid detergent fiber (ADF) ranges from 24 to 30%. Neutral detergent fiber (NDF) averages 40%. Calcium, phosphorus and magnesium contents are 0.3, 0.6 and 0.4% respectively.

Favorable economics are another reason for the increase in the use of sunflower seed for feed. High prices,

combined with the high cost of transportation of cottonseed to this area, has many dairymen replacing cottonseed with sunflower seed. Also, cottonseed has half the oil content (20% total) of sunflower seed and is worth less as an energy feed.

We are also receiving more inquiries on feeding whole canola seed as a source of energy and protein. Canola seed contains 38% fat and 20% protein, but has a low ADF (11%) content. Our recommendation for feeding canola seed is to follow the same guidelines as feeding whole sunflower seed for dairy cows. In a recent study in Alberta, Canada, canola seed had no deleterious effects on milk production or milk composition when dairy cows were fed at 6.6% of the total ration dry matter. Also, the research conducted at Washington State indicates favorable results with feeding canola seed to high producing dairy cattle.



This archival publication may not reflect current scientific knowledge or recommendations.
Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>.

Smith's Comments



Thanks to the extraordinary efforts of the Station's farm and maintenance crews, the last essential item of the fall season was completed on Friday night just before Mother Nature unleashed the winter season upon us. Overall the 1991 growing season was a mixed bag for crop production on the Station. For the first time since 1987, adequate tonnage of alfalfa haylage was harvested to meet the needs of the animal research projects. Actually a surplus exists which forced piling corn silage on the ground for the first time since 1977. Wheat and barley yields were below 1990 production and the Station's 10-year average, but corn yields were the second highest in the Station's history.

Sugarbeet yield was 16.0 ton per acre, a major improvement over the past three years and much better than most anticipated on September 1. My annual friendly wager on the overall sugarbeet yield with Rob Heggie, who has major responsibility for the Station's sugarbeet production, was again a success. By bringing this up in my article, maybe Rob will have guilt pangs and pay off for the first time in four years.

Construction of a new building to house the Soils and Pesticide/Water quality research programs was completed in October. This building will relieve the crowded conditions that exist in the current plant sciences building. In addition, a 60 x 120 ft storage building was constructed. For the first time in the 96-year history of the Station, all research, farm and maintenance equipment will be stored under a roof and not in a snowbank during the winter months.

Reorganization, reallocation and budget deficits have been the items of discussion and anguish for the University of Minnesota system in 1991. The programs at the Station have been impacted and the effects

may be felt for years to come. The Board of Regents of the University will soon vote on a budget and reorganization package submitted by President Hasselmo. Once the results of that package are firm, and their effects on the Station known, I will let you know about them. One thing is a "given" however: Your individual and combined support, through the various organizations to which you belong, is needed if the University's programs and benefits to the people of Minnesota are to remain strong and viable.

The start of the winter education meetings are upon us. The annual Beef Cattle Day is December 3 and Northwest Dairy Day is January 8.

Seasons greetings from the staff of the Northwest Experiment Station.

Kuznia Joins Staff



Rita Kuznia joined the Northwest Experiment Station staff on May 1 as a Research Specialist on the Plant

Pathology project. She is working on the soilborne fungi that cause seedling and root rot diseases of sugarbeet. Rita is no stranger to the Valley or to Minnesota agriculture. In 1981 she was a crop pest management scout for the Extension Service in Crookston and from 1982-1989 worked as a crop consultant in the Waseca, MN area.

Rita attended the University of Minnesota where she earned a BS degree in agronomy and plant health technology (1981) and is currently completing a Masters degree in plant pathology.

Rita and her husband, Joe, reside near Fertile with their family of five cats and one dog.

CALENDAR OF EVENTS 1991-1992

Beef Cattle Day
December 3

Northwest Dairy Day
January 8

Small Grains Institute
February 11 & 12

RRV Winter Shows
February 14 - 19

International
Sugarbeet Growers
Institute
March 18 & 19

Crops and Soils Day
July 15

You are invited to the

24th Annual BEEF CATTLE DAY

Northwest Experiment Station
University of Minnesota
Crookston, Minnesota

Tuesday, December 3, 1991

Harvey Windels - Animal Scientist, Northwest Experiment Station, Crookston
Hugh Chester-Jones - Animal Scientist, Southern Experiment Station, Waseca
Pete Anderson - Ext. Animal Sci., Beef Nutrition & Management, U of M, St. Paul
Richard Epley - Ext. Animal Sci., Meats, U of M, St. Paul
Allan Harris - Ext. Ag Marketing Spec., West Central Experiment Station, Morris
Larry Johnson - Veterinarian, Red Lake Falls Veterinary Clinic
Forrest Giannonatti - Ranch Manager, Mentor Ranch, Inc., Mentor, MN

- 9:30 a.m. Registration and Coffee, Ag Research Center Auditorium
 Registration cost \$10 (Covers lunch, handouts and Beef Cattle
 Research Report)
- 10:00 Marketing Strategies for Large Frame Cross Calves on a Finishing
 Diet - Dr. Harvey Windels
- 10:15 Specifics of Holstein Steer Management
 Dr. Hugh Chester-Jones
- 11:00 Matching Protein Nutrition to Cattle Type
 Dr. Pete Anderson
- 11:45 "Give Me Low-Fat Beef - and Give Me Taste"
 Dr. Richard Epley
- 12:30 p.m. Lunch - Food Service Building - \$5.00
- 1:30 University of Minnesota Beef Cattle Research Highlights
 Dr. Pete Anderson
- 2:00 Update on the Meat Export Federation
 Dr. Allan Harris
- 2:30 Panel Discussion on Strategies for Starting Cattle on Feed
 program speakers, Dr. Larry Johnson and Forrest Giannonatti
- 3:00 Adjourn
- Coffee and/or view our Cattle Facilities and Cattle on Trial

Sponsored By:

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Protect Our Environment

by Bobby Holder

Contrary to the generally accepted disposal methods for petroleum products, there is a proven and accepted (by some) method of disposing of these products on agricultural land and allowing the soil microbes time to break them down. It is simply a matter of determining the assimilative capacity of a particular soil for that product and keeping your application rates below that level.

Petroleum oils are complex mixtures of hydrocarbons with relatively small amounts of impurities or contaminants (if one wishes to call them that) such as nitrogen, sulfur and certain metals. The large ratio of carbon to essential microbial nutrients (N,S,P, etc.) has a definite impact on a soil system and must be accounted for in the land application of these products. Amendments of the soils with a hydrophilic waste such as an oil product causes a change in the physical, chemical and biological processes of a soil system. These changes sometimes can be managed in such a way as to actually improve the soil conditions.

A few months after oil application, the microbial degradation of oils usually leads to improved physical and chemical conditions assuming the soils assimilative capacity for the oil has not been exceeded. One study reported an increase in water-stable aggregates from 13% to 65% after degradation of spent motor oil. For soil physical

properties, long-term beneficial effects are the result of biological activity decomposing the applied oil. However, in the short term (2-8 weeks), certain soil physical properties can be adversely changed by oil additives.

What is the "down side" to applications of oil products to land? A major problem occurs when the soil's assimilative capacity is exceeded. Such an occurrence is the result of oil spills or leaking underground storage tanks.

To put the problem into perspective, a single quart of oil is enough to pollute 250,000 gallons of water. One part per million parts (ppm) is detectable to taste and smell. Average estimates indicate that almost a quarter of a million gallons of used oil find their way into our lakes and rivers each year. As one publication pointed out, this is 22 times more oil than the Exxon Valdez spill in Alaska; - remember how upset the nation was over this incident.

Before any oil product is applied to the land a thorough analysis of the product should be made. Some oil products may contain metals such as cadmium, lead, or selenium, which can be toxic to livestock and humans. Some crops grown on this land can concentrate certain metals and can be shown to be toxic if consumed.

NEW TELEPHONE SYSTEM

If you have called the Northwest Experiment in the last month, you reached the Automated Telephone Attendant. If you have a rotary phone, you have to wait for the operator to answer. If you have a touch tone phone, enter the extension number. If you don't know the extension, enter "1" and enter the name of the person you are calling, last name first.

Listed below are extension numbers for staff of the Northwest Experiment Station:

Larry Smith	462
P. Malme	462
J. Solheim	464
B. Heppner - Bus. Off.	465
George Marx	466
John Wiersma	467
Carol Windels	468
Harvey Windels	469
A. Burke - Bus. Off.	470
Soils Bldg.	472
Plant Path. Lab.	473
Dairy Barn	474
North Farm - Sugarbeets	475
D. Kopecky - Farm Shop	476
E. Carlson - Farm Shop	477
M. Jacobson	478
Gary McVey	479
Sheep Barn	480
North Farm - Agronomy	482
T. Cymbaluk - Weather	483
Bobby Holder	487



Happy Holidays!

from the Staff & Superintendent of the Northwest Experiment Station

Good Summer For Vegetable Growing

by Gary McVey

"An excellent summer for growing vegetables" would be an apt description of the '91 season. Even growers without supplemental irrigation were able to harvest fair yields of vegetables. There were relatively dry periods throughout the season, but the dry micro climate did tend to suppress the spread of some crop diseases.

The tomato, pepper, cucumber and melon varieties produced good yields of high quality product. The Celebrity and Roma tomato varieties deserve special mention. The Celebrity produced a round, reddish-pink, firm fruit excellent for slicing and for use in sandwiches and salads. The Roma is the oblong, Italian type of tomato commonly used commercially to produce tomato paste. The Roma is quite well suited for salad making as it does not bleed and discolor a lettuce-base salad. It will travel well, mixed, to a picnic and make a fine presentation.

The Beef Eater, Beef Steak and Whopper, produced well, but tended to be uneven in size and quality. But the individual fruits were large. The Manitoba and Sheyenne varieties suffer from blight, but for canning they are still important due to their high set of fruits, ripening ability and good yields.

The slicing cucumber varieties we planted were Ultraslicer, and Trailblazer. Both were excellent yielders of high quality slicers. By the way, all of our vegetables except the sweet corn received supplemental irrigation.

As an example of yield, consider that on July 19, 55 slicers weighing collectively over 35 lbs were harvested from six plants and on the 25th another 26 slicers weighing over 20 lbs were harvested. Twenty-three slicers were picked prior to the 19th and many more after the 25th of July. That totals 104 slicers in a 17-day period. Remember these plants were on plastic mulch with

drip irrigation and the plants were never made to cope with high levels of environmental stress. More about stress later.

This year the Vilmorin Seed Company, a French company with a sales office in Maryland, furnished us with seeds for several of the varieties of lettuces, snap beans, melons and peppers they offer in the US. The Predi F1 and Vidi F1, sweet peppers produced excellent large peppers. Yesterday, I noted a full page advertisement in the "Vegetable Grower" for these two pepper varieties. One must assume they are doing well across the US. The Predi F1 should turn an intense bright red, but the season ended before many turned red.

The NWES muskmelon varietal trials have included many excellent producers. Again the Pulsar, Superstar, Rising Star, Starship, Goldstar and Allstar varieties (the "Stars" are from Harris-Moran Seed Co.) performed well. Two western types, Hi-Line and Mission, from Asgrow Seed Co. were good tasting September producers. All of the melons are transplanted on plastic mulch about Memorial Day weekend and receive water by drip irrigation. Also, they received liquid fertilizer applications as needed.

We've had a few watermelon selections each year, but this year we had some new (to NWES) varieties including King of Hearts (seedless) and Sangria and Paradise. The King of Hearts was delicious. I took a King of Hearts to a family reunion in Pennsylvania (it travels well - not first class) in September and received rave reviews from my wife's relatives.

The French muskmelon varieties tended to be less sweet than the US varieties. The Bredor and Relor varieties were acceptable. The honeydew types from the French Company were late season producers with one having excellent taste,

appearance and weight (5-7 lbs).

This year we planted five sugary sweet corn and 17 sugar enhanced, sweet gene and super sweet corn varieties. Of the sweet varieties, the Sweetie 70 and the Honey and Pearl were excellent in taste and appearance. We'll try 20-30 varieties next year and perhaps you can win a seat on our tasting panel (Drs. Smith and McVey) and judge them for yourself.

Our main NWES focus in horticulture is the commercial vegetable production area with emphasis on broccoli, cabbage and cauliflower. The cauliflower production area will receive more research effort especially aimed at selecting varieties that have seedling vigor under field conditions. Cabbage and broccoli seedlings are robust compared to cauliflower. Also, we have received funding from the NWMIF and AURI to evaluate systems of producing broccoli with low chemical input. This low residue product will be used for baby food preparation and for special diets. In northwest Minnesota, the fledgling commercial vegetable industry is poised for expansion if a national marketing strategy is developed with a sufficient number of producers actively supplying the product. We have the high yielding varieties of vegetables adapted to the area. The production scheme works well and harvest labor problems will subside as acres of product are increased.

The NWES has established a strawberry cultivar trial in cooperation with the Horticulture Dept., U of M, St. Paul. The trial includes 22 named and numbered varieties. The late summer raspberry crop was excellent this year. Next year yield data will be taken from the recently established trial.

Many more trials, observations and treatments are taking place in horticulture at the NWES. Plan to attend one of our tours next summer or informational sessions this coming winter and spring. Further data about the varietal trials will be available after the first of the year.



Meet the Staff. . .

During the past 17 years, all of the research scientists have been introduced to our readers. However, the support of the Civil Service and Bargaining Unit employees is very important to the operation of the Station. In this issue we feature the **Meat Animal Department**.

The **Meat Animal Department**, better known around the Station as **Beef and Sheep**, is composed of three full time employees.

John Otterness, a farm animal attendant, was born and raised southeast of Rochester, Minnesota. He graduated from Spring Grove High School and attended UMC, graduating in 1985 with an AAS degree. John started at the NWES in a part time position in 1976 and was hired full time in January, 1987. John is the lead worker and is responsible for the operation of the grain and feed handling center and oversees the preparation and ordering of feedstuffs for beef, sheep and dairy.

John commutes from Gently. John and his wife, Julie have three children; Sam, age 5, Kaysie, age 4 and Jessica, 5 months.

In his leisure time, John lifts weights and plays softball. He says he likes to hunt, but hasn't had time for it lately.

Troy Gullekson is an assistant farm animal attendant. Troy originally started at the Station in June 1988 in the dairy department. Through a layoff, resignation and relocation, Troy was reassigned to the Meat Animal Department in August 1990.

Troy was born and raised by Fertile, Minnesota and graduated from Fertile-Beltrami High School. Troy commutes from Fertile each day. Before joining the NWES staff, Troy was a self-employed farmer, a machinist at Dee, Inc, and a construction worker for Schipper Construction of Fargo.

Troy and his wife, Michelle, have two children, Timothy, age 2 1/2 and Alyssa, five months.

When asked about hobbies, Troy said he liked farming, hunting and woodworking.

Mike Danielson was born and raised at Gonvick, Minnesota, where he attended school before joining the Army for three years. After his tour with the Army, Mike attended Kirkwood Community College in Cedar Rapids, Iowa and received his license as a waste water treatment operator. Mike also attended Bemidji State University and UMC where he received his AAS degree in 1982.

Mike started working for the Ag Division in 1982 and transferred to the beef and sheep department in January 1991.

Mike and his wife, Diane, and their family live in rural Thief River Falls and Mike commutes daily.

Mike's hobbies include fishing and hunting. He especially like the challenge of bow and arrow hunting. Mike proudly said his 15 and 16 year old sons had already been successful with bow and arrow this year.

Troy, Mike and John are responsible for the care and feeding of hundreds of baby lambs and their mothers each year. For about 9 months of each year, they are also responsible for the care and feeding of 100+ beef animals. This crew is under the supervision of Dr. Harvey Windels and they do an outstanding job for the Northwest Experiment Station



Pictured left to right are Troy Gullekson, Mike Danielson and John Otterness

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University of Minnesota
Crookston, MN 56716-5001

The Northwest Experiment Station News
Patti Malme, Associate Editor

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