

The Northwest Experiment Station *News*



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Sheep Research Update

by Harvey Windels, Animal Scientist

Three new sheep projects have been initiated this past year plus continuation of a cooperative project on seasonality of breeding. One project involves the determination of energy requirement of ewes nursing triplets. In this study, ewes rearing triplets are compared to ewes rearing twins with both groups fed at 90, 100, 110, and 120% of the NRC minimum energy requirement of ewes nursing twins. The 16 ewes rearing triplets and 16 ewes rearing twins in this year's trial were of $\frac{1}{4}$ Finn $\frac{1}{2}$ Suffolk $\frac{1}{4}$ Targhee breeding and 3 to 5 years of age. The 32 ewes were penned and fed individually for the first 3 weeks after lambing and then were group fed by treatment and type of rearing from 3 to 8 weeks (i.e. 4 pens of triplets and 4 pens of twins). The diet was 50:50 ground corn and alfalfa haylage on a dry matter basis. Milk yields were taken by suckle-weigh-suckle-weigh method at 1, .2, and 3

weeks after birth. The results of the first year are being summarized and will be reported at the Annual Northwest Experiment Station **Sheep Day on November 2, 1989.**

The ewes used in the above study were from a population of 200 ewes of the same breed type which this spring dropped an average of 2.53 lambs per ewe, the highest lamb drop obtained here to date for ewes of this breed type. The 200 ewes had 91 sets of triplets, 10 sets of quads and 1 set of quintts (pictured). They weaned an average of exactly 2.0 lambs per ewe. Lambs in excess of what a ewe could raise are sold as bottle lambs. Although not all ewes can raise triplets, there is a need to know more about the nutritional requirements and management in order to get a greater percentage of ewes to raise triplets. An additional

twelve ewes of this group raised triplets but did not fit into the trial because of condition score, size, etc.

A second study is on the feedlot lamb rectal prolapse problem. Three factors often implicated as a cause of rectal prolapse are being studied. They are (1) short docked tail vs long dock; (2) female vs male; and (3) shearing vs not shearing lambs fed in summer months. The lambs in this trial were February born, early weaned (8 weeks), $\frac{3}{4}$ Suffolk breeding and full fed to appetite once daily a complete mixed diet of 80% ground corn and 20% alfalfa haylage on a dry matter basis. The first trial which involved 256 lambs was conducted in the spring and summer of 1988. The results showed a nonsignificant level of prolapses with only 2 short-tailed females showing prolapse. Shearing significantly improved the average daily gain and feed efficiency of males but had no effect on females. Intact males gained significantly faster (.97 vs .70 lb/day) than females and were more efficient (3.86 vs 4.86 lb feed/100 lb gain, respectively). This spring and summer a second trial was conducted utilizing 320 head of lambs with the same background as those used in the first trial. Considerably more rectal prolapses occurred this year. The rate of gain and feed efficiency are being summarized and all results will be reported at **Sheep Day.**

A third study to determine more precisely the energy requirement of highly productive ewes during the "dry period" from weaning to breeding is being initiated. In this study, Polypay ewes will be fed 80, 95, 110 and 125% of the NRC minimum requirement for digestible energy for the "dry period" stage of production. The ewes will enter the study upon weaning their lambs at about 15 months of age.

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Seven-year old $\frac{1}{4}$ Finn- $\frac{1}{2}$ Suffolk- $\frac{1}{4}$ Targhee ewe with her litter of five lambs weighing 36 pounds.

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Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>.

Smith's Comments



Full scale sugarbeet harvest began today, which for me at least, signals the beginning of fall. The timely rains needed to produce normal yields of sugarbeets, potatoes, corn, and beans failed to materialize and sub-par yields are currently being experienced for the second year in a row in the immediate area around the Station. All the weather prognosticators who said, "there's never been two droughts in a row" have faded into the woodwork. Just in case one can be found the "tar and feathers" are still handy.

While the majority of the crop, soil and plant pathology research is conducted on the Station proper, numerous off-Station locations are needed to duplicate trials,

provide different environments or cropping systems, or to ensure the existence of various pathogens being studied. In 1989 over 20 research trials were conducted on 10 sites away from the Station. These sites ranged from Stephen in northern Minnesota to as far south as Renville. Cooperators in 1989 included Bruce Hamnes, Stephen; Mike Gasper, Crookston; Ken Hove, Fosston; John Seeger and Harold Kjos, Mahnomon; Tom Anderson, Barnesville; Alex Lamb, Hector; Dan Elliot and Mike Schejken, Sacred Heart and the Southern Minnesota Beet Sugar Cooperative, Renville. Without the assistance of this year's cooperators and to those who have helped in the past, research data needed to help solve the problem facing Minnesota's agriculture producers would be delayed or lost. To all involved, a sincere thank you.

The Calendar of Events lists the various Livestock Days that will be held in the upcoming months. Take these opportunities to visit the Station and attend the educational programs as well as view the recently completed milking parlor in the dairy research and education center and the new grain and feed handling facility which serves all livestock species.

Bigger Named Asst. Director for Development



Sam Bigger has recently joined the staff of the Northwest Experiment Station on a part time basis as Assistant Director for Development.

Sam was born in North Dakota and raised at Frazee. After spending several years with the US Air Force, he decided to attend North Dakota State University. Sam has held a variety of jobs including vo ag instructor, farm manager, assistant

county extension agent, county extension director and instructor at UMC. Sam and Norma and their family have lived in the Crookston area since 1965.

Sam is well known in northwest Minnesota having been the West Polk County Extension Director for 23 years. Sam has also been involved in the Red River Valley Winter Shows, Greenbush Sheep Days, Beef Cattlemen's Institute, Sugarbeet Growers Institute, as well as many other local, state and national organizations.

As Asst. Director for Development, Sam will be working with Allan Larson and Blake Crosby from the External Relations Department of the University of Minnesota, Crookston.

Welcome to the Northwest Experiment Station staff, Sam.

CALENDAR OF EVENTS

BEEF CATTLEMEN'S INSTITUTE
Oct. 26

SHEEP DAY
Nov. 2

BEEF DAY
Dec. 5

DAIRY DAY
Jan. 10, 1990

RRV WINTER SHOWS
Feb. 16-22

**INTERNATIONAL SUGARBEET
INSTITUTE & MACHINERY SHOW**
Mar. 14-15

(Sheep Research Cont.)

Eighty-five Polypay ewe lambs were purchased in 1988 for this trial and bred for March lambing. They all lambed and had a lamb drop of 175% and a weaning rate of 149%. The Polypay breed makeup is 1/4 Finn, 1/4 Dorset, 1/4 Targhee and 1/4 Rambouillet. Seventy-five more ewes will be added to the trial in 1990.

The second year of an early breeding cooperative study with Dr. Jon Wheaton, University of Minnesota, St. Paul involved 48 ewes (24, 1/4 Finn - 1/2 Suffolk - 1/4 Targhee and 24, 1/2 Finn - 1/2 Targhee) that lambed in January. This study involved 4 treatments: 1) control, 2) melatonin implants, 3) synchronization with progesterone releasing pessaries (CIDR) 4 (melatonin implants plus synchronization with CIDR devices. Melatonin is a substance normally produced by sheep in response to shorter day length and is thought to be important in signaling the onset of the breeding season. In this study 50-day melatonin ear implants (second year) tended to shorten the interval from ram introduction to conception compared to the control whereas 36-day melatonin ear implants (first year) had little effect. The CIDR device has worked well in these two trials to break the seasonal anestrus of ewes and synchronize them. For all four treatments, conception rates and lambing rates of 1.8 or more born per ewe exposed have been very good considering the early breeding date (first week of August). More detailed results will be presented at **Sheep Day** as well as the progress of a third trial in this study.



Beef Cattlemen's Institute

Red River Valley Winter Shows, Crookston, Minnesota
Thursday, October 26, 1989

2:00 - 3:00 p.m. Registration and Coffee

2:00 - 6:30 p.m. Visit the Trade Show display

2:00 - 4:00 p.m. Mini-sessions:

Handling Equipment, Pelvic Measurement/Calving Ease, and Health Problems

- Dr. Larry Johnson, Red Lake Falls Veterinary Clinic

Computer Aided Management Decisions

- Bill Penning, MN Extension Service

- Steve Taylor, NW Stockmen's Assn.

Forage Testing

- Howard Person, MN Extension Service

Beef in Your Diet

- Barb Oseth, MN Extension Service

Cholesterol Screening - \$5.00

- Polk County Nursing Service

Theme: Expected Progeny Difference (EPD) - Future or Fad for Sire Selection???

4:00 Presiding: Gary Purath, NW Stockmen's Assn.

4:15 **Livestock Theft - Prevention/Recovery**

- Jack Chase North Dakota State Brand Inspector

4:30 **Feeder Cattle Demonstration**

- Commentary by Lee Ebson, Central Livestock/Farmers Union Marketing
Profitability Commentary by Bill Penning and Steve Taylor

6:00 **BEEF DINNER**

7:00 **What's Changed in the Nutritive Value of Beef (With Comments on Tonight's Dinner)**

- Dianne Phillips, Minnesota Beef Council

7:20 **The Latest Programs Being Funded by Your Beef Check-Off Dollars**

- Dianne Phillips

7:30 **EPD Concept - Future or Fad??**

- Keith Vandervelde, American Breeder Services

8:00 Adjourn

By Product of Gasohol Production is Utilized as Dairy Feed

by George D. Marx

A relatively new by-product, barley dried distillers grain (BDDG), was utilized at the Northwest Experiment Station for feeding young growing dairy animals. This by-product is obtained in the production of alcohol or ethanol. Traditionally corn, rye and sorghum were the grains of choice for alcohol production but the availability and lower cost of barley in the northern states has made it competitive as a source of carbohydrate for fermentation. Several production facilities in this area of the country have utilized some barley in recent years for the commercial production of alcohol (e.g. gasohol).

Studies have been conducted over the years on the value of corn DDG but little has been published on the use of the barley DDG for livestock. Montana State University and North Dakota State University have the only published data on BDDG of which I am aware, and have studied this by-product quite recently. In the production of alcohol, the starch is utilized from the grain, but the fiber components and most of the protein remain in the by-product (BDDG). The by-product is produced as wet distillers grains (60-80% moisture) but is normally dried to preserve the feed value and to facilitate transportation of the product.

The objectives of this study were to determine the value of BDDG as a feed replacement and protein supplement for young dairy calves and finishing Holstein steers for market. Nutritional values of the BDDG were determined and the performance of the animals was evaluated for pre-weaned, weaned and for growing dairy beef animals.

Nutrient analysis of the BDDG resulted in 28.2% crude protein, 17.9% crude fiber, 2.9% crude fat, and had an estimated TDN value of 72.5%. The experimental calf grain starter ration contained 30% BDDG along with equal parts corn barley balanced with soybean meal to 17% protein. The control starter ration also contained equal parts corn and barley but contained higher amounts of soybean meal to replace the protein provided by the BDDG and to make both

rations isonitrogenous. Weaned calves were also fed alfalfa haylage to appetite. The experimental dairy beef ration contained 10 lbs of BDDG to replace the 10 lbs of barley in the control ration. Corn silage was fed as the only forage and urea was utilized to make the rations isonitrogenous.

Performance of the 36 pre-weaned calves fed for a four-week period resulted in similar average daily gains of 0.53 lb for those fed BDDG and 0.57 lb for the controls. The 54 weaned calves fed for a 16-week period had an average daily gain of 1.80 lb for those fed BDDG and 1.71 lbs for the control calves. Feed intakes of experimentals and control were similar. Health problems were minimal for both groups and not abnormal.

The Holstein steers fed the BDDG resulted in an average daily gain of 0.1 lb higher than the controls (2.66 vs 2.55) but was not statistically significant. Forage intake (corn silage) was slightly higher on the BDDG group resulting in similar feed efficiencies (feed to grain

ratio). Carcass characteristics were not different and virtually identical in the two groups. The carcass traits collected were cold carcass weight, marbling score, kidney-heart-pelvic fat, maturity score, rib eye area, fat cover, yield score and carcass grade.

In these three feeding trials, BDDG performed as well as standard control rations of equal protein content. BDDG was a less expensive source of protein than soybean meal in the diet and did not affect feed consumption, health, body condition, growth or daily weight gains of animals.

The results of these studies were presented in August, 1989 at the joint annual research meeting of the American Dairy Science Association and American Society of Animal Science held at the University of Kentucky, Lexington.



The new dairy research/teaching facility provides practical training for many students including some international visitors. Pictured are two U of M graduate students, Mustafa Imir and Hasan Yamam from Turkey, who spent three weeks at the Northwest Experiment Station learning modern dairy techniques and skills.

Wildlife and CRP in Northwest Minnesota

by W. Dan Svedarsky, Natural Resources Department

The signing of the 1985 Farm Bill and its Conservation Reserve Program (CRP) signaled a dramatic potential boost to wildlife which utilize farmlands. A substantial portion of cropland acres have been enrolled in the CRP in northwest Minnesota (Table 1) and we may already be seeing a positive response by certain wildlife populations. Perhaps as much as 50% of the CRP acreage in Kittson, Roseau, Lake of the Woods, Marshall, Beltrami, Pennington and Red Lake Counties lies within the sharp-tailed grouse range and is partially responsible for the 4% increase noted in census numbers this spring. Portions of Polk, Norman, Mahnomen and Clay Counties (Table 1) occur within the prairie chicken range and a 30% increase was noted in a Polk County study area. This is in spite of red fox numbers being quite high which impacts nesting prairie grouse (sharptails and prairie chickens) and waterfowl. Hungarian partridge numbers also appear to have increased in northwest Minnesota and we would expect that certain grassland songbird species would be up as well.

Can we expect wildlife numbers to continue to increase throughout the 10-year duration of the program? Let's consider how prairie grouse and other species are using the cover and how the cover will change.

Most CRP acres have been planted to grass-legume mixtures, usually smooth brome and alfalfa. In years 1 and 2 these covers were probably used more as brood cover than nesting cover since hens tend to nest in areas where they were successful in hatching chicks the previous year. They also nest in cover which has been idled for 2-3 years. CRP acres next to high quality nesting habitat would be ideally situated for brood use. Newly-planted cover tends to be rather open at ground level allowing easy movement for chicks while still providing good overhead cover from predators and sun. Insects, the primary food source of chicks, tend to be abundant in these plantings. In fact, certain species were recently overabundant in the case of two-stripe and red-legged grasshoppers due to 2 consecutive dry seasons. While spraying was justified to control adjacent cropland in many areas

this last summer, it did reduce the insect food base and may have negatively impacted upland game bird production.

After CRP acres are two growing seasons old, they should become good nesting cover for most grassland nesters but they could be too dense for optimum brood cover. A rotation system of mowing, say 10% of the CRP field, would probably enhance brood use but this is not allowed under current CRP management guidelines unless emergency forage harvesting is declared as in 1988. That year, 90% of a field was hayed except for 16½ ft. strips which probably increased nest losses the following year. Early nesters choose residual cover and, since predators tend to hunt "edges", the chances of finding nests in these strips would be increased. This provision was later modified to allow the 10% to be left in a block. Some management system may be in order to maintain good brood cover as well as rejuvenate nest cover which tends to become flattened after 5 years or so of growth.

Waterfowl are also benefitting from CRP nesting cover and the wetland reclamation being coordinated by U.S. Fish and Wildlife Service biologists. While back-to-back dry years have been disastrous for waterfowl production, it has

presented ideal conditions for wetland restoration and "when the rains come", conditions should be greatly improved for the returning breeding ducks. However, the response in duck numbers will not be immediate due to the depressed number of breeders which will have to build back up.

Wildlife biologists and other land managers are currently assessing the wildlife use of CRP cover in order to suggest possible management modifications and are also looking ahead to the time when the 10-year contracts will expire. Will all of the CRP acres be brought back into production to re-enact the same commodity surplus and erosion problems which initially justified the program? The program will have cost taxpayers an average of about \$500 per acre or an overall cost of over \$20 billion. A January meeting at the University of Minnesota, Crookston kicked off a series of regional forums addressing the topic of "Land use after CRP". A summary of the ideas generated at those meetings will be available soon to help guide citizens and policy planners to design future Farm Bills to ensure adequate protection of soil and water sources, a healthy farm economy, and hopefully, maintain the enhanced wildlife populations which will be present as a result of 10 years of the CRP.

Table 1. Total cropland and acres enrolled in CRP in northwest Minnesota as of July 7, 1989. (Source ASCS, USDA).

| County | Total Cropland | Acres in CRP |
|-------------------|----------------|--------------|
| Kittson | 464,452 | 116,113 |
| Roseau | 519,472 | 129,868 |
| Lake of the Woods | 77,840 | 19,460 |
| Marshall | 797,236 | 199,309 |
| Beltrami | 88,026 | 22,007 |
| Pennington* | 311,149 | 77,787 |
| Red Lake* | 215,017 | 53,754 |
| East Polk | 292,754 | 73,189 |
| West Polk | 699,945 | 174,986 |
| Clearwater | 81,455 | 20,364 |
| Norman | 473,051 | 118,263 |
| Mahnomen | 150,992 | 37,748 |
| Clay | 549,962 | 137,491 |
| Becker | 88,026 | 22,007 |

* Counties with approximately 25% of cropland enrolled and no longer accepting bids.



Meet the Staff...

During the past 16 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 running of the Experiment Station. Beginning with this issue, we will feature each of the various departments at the Experiment Station and the people that make up these departments.

The **Maintenance Department** is responsible for all maintenance and construction on the Experiment Station side of the campus and the North Agronomy Farm.

This crew is headed by **Earl Carlson**, General Maintenance Supervisor. Earl joined the Northwest School and Experiment Station in 1964. At that time, Earl and Christine and their family lived on the University campus. General maintenance and construction grew rapidly during college development and Earl was put in charge of all Experiment Station needs to shift the load from the Central Plant Services Department. Earl has seen changes to nearly every building on the Experiment Station, but perhaps the biggest changes have come with the building of the new dairy research/teaching facility, the new grain and feed handling facility, and the demolition of the horse barn and the old elevator.

Earl received the first annual Northwest Experiment Station Employee of the Year Award. Earl and Christine have two children and five grandchildren.

Paul Schultz is a Maintenance and Operations Mechanic on the maintenance crew. Paul is originally from North Dakota, but has lived in Crookston since 1968. Paul's previous work experience includes meat cutting and self-employed building contractor. Paul joined the Station staff in 1981. Paul and his wife, Marion, have two children, Brad and Dana. Paul's hobbies include fishing, hunting, bowling, painting, carpentry and upholstery.

Tim Danielson is also a Maintenance and Operations Mechanic on the

maintenance crew. Tim was born and raised at Gonvick, Minnesota. Tim's previous work experience include heavy construction, building trades and welding for the pipeline. Tim and his wife, Cheryl, moved to Crookston in 1983. They are the parents of three-year old Chelsey. Tim's hobbies include camping, fishing and hunting.

Between Earl, Paul and Tim they can fix or build almost anything anyone on the Experiment Station requests. Thanks for a job well done.



Earl Carlson, Paul Schultz and Tim Danielson prepare to work on a silo unloader which is one of the many maintenance projects at the Experiment Station.

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