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Prepare Cows to Benefit From Higher Calf Prices Expected in 1999

Dan Brown, Assistant Animal Scientist

With higher calf prices forecasted for 1999, now is the time to place emphasis on developing a breeding program which will provide you with a highly marketable product: heavy weight, uniform calves. For each 20 day delay in breeding an average of 54 lbs is lost in calf weaning weight. These later calves are also split off at the markets resulting in smaller, lower priced groups. So, key aspects of a program should minimize the calving period length, take advantage of the best genetics available and fit within the resources available including labor and management.

A breeding soundness exam for all bulls selected to use for the year will help eliminate the loss of many dollars come calf selling time. Superior genetics and crossbreeding programs based on bull selection will add weight to feeders and increase the ability to raise replacement heifers. Much attention is put on the male side of a breeding program and often overlooked is what can be done with your cow herd to prepare for a shorter calving period that will enable the utilization of the best genetics.

Proper cow nutrition is essential. Keeping cows in a body condition score of 5 or greater will help ensure the success of any breeding program. Weight gain after calving, which can be difficult to achieve, is not as essential for cows which calved at a score of 5 or greater. Nutritional requirements are well established and implemented by producers.

Angus at NCES

Artificial Insemination increases the accessibility to better genetics for most producers; but has not been adopted due to labor and technical requirements. Estrus synchronization programs help alleviate these obstacles but have been criticized because of lack of response by the cow or estrous low in fertility. The length of calving (and breeding) seasons in many beef operations are rather long, averaging 60 to 100 days. As a result, many cows in the herd (sometimes in excess of 50%) are not cycling at the beginning of the breeding season; initial estrous synchronization (ES) programs were developed for cycling cows causing the poor response to synchronization. Estrous synchronization systems that induce a fertile estrus in postpartum suckled cows such as MGA or norgestomet will induce ovulation in anestrus cows; however, fertility has been highly variable when breeding occurs on the estrus following progestin removal. There have been ES systems developed that show potential to be effective in cyclic and anestrus postpartum cows with less variability in fertility allowing producers to utilize AI and tighten up their breeding and calving period.

Two years of evaluating ES programs at North Central Experiment Station show advantages to two newer Norgestomet based programs. Four treatments tested were: 1) GnRH-Nor- $PGF_{2\alpha}$ - an injection of 100 mcg of gonadatropin releasing hormone and a 6 mg norgestomet implant; a 25 mg prostaglandin injection follows implant removal, 2) Nor-E2 - a 6 mg Norgestomet implant and 1 mg estradiol injection 30 hours after implant removal, 3) $PGF_{2\alpha}$ - a 2 shot prostaglandin injection and 4) SBM - Syncro-Mate-B® program.

The following table illustrates the time line for implementing these programs.

GnRH-Nor-PGF_{2a}					Implant & GnRH						Remove Implant & PGF_{2a}		
Nor-E2					Implant						Remove Implant & E2		
PGF_{2a}	Inject PGF_{2a}										Inject PGF_{2a}		
SMB		Inject & Implant									Remove Implant		
	12	11	10	9	8	7	6	5	4	3	2	1	0 Breeding 1-4 days

Days Pre-Breeding

Results of the four systems used in two groups of cows; one group averaging 50 days postpartum and the other group averaging only 38 days postpartum are shown in Table 1. (See Page 4)

them to earn a living on the "farm land" they have sold to poor but honest settlers with families to support. And the federal policy which permits misinformed people to homestead such land, is false and should be rigorously condemned.

The Morris law provided that 225,000 acres of the 600,000 acres on the Chippewa Reservation about Cass Lake be held as a forest reserve, allowing however almost complete removal of the pine. The objections urged, therefore, are founded largely on the supposed bad effect of preventing settlement on this land. These depend for their validity upon the character of the land reserved—for no fair-minded person will, after thorough investigation, dispute the facts set forth above.

The cutting of all but 5 percent of the pine on this land will destroy the scenery on the area cut, but it will create the most favorable conditions for a second growth of Norway pine. Should the possibilities of the reserve be developed to the utmost it will make this section a continuous producer of lumber 50 to 100 years from now, with no doubt of a ready market. But this dim and distant benefit pales besides the prospect of an immediate advantage of great significance, the foundation for which lies in the so-called "Park" clause of the Morris Bill. Under this clause, besides certain islands in Cass and Leech Lakes, ten sections of pine land have been set aside for the public.

The park stands as a monument to the most beautiful of eastern pines. Ten sections out of the 1,000 sections on the reservations, or about 1 percent of the area, —3 percent including the islands and points specified, with their allotments is the modest area of this park, yet it is worth as much to the locality as if it were ten times as large. We in northern Minnesota have yet to learn the tremendous volume of the summer tourist business, the underlying sentiment of which goes deep into the heart springs of humanity—the longing for fresh air, freedom, and nature.

Does any sane man doubt the truth of these assertions? It is confidently predicted that the park, small as it is, will prove a source of permanent revenue and prosperity to the region.

■ NCES UPCOMING EVENTS ■

- **Small Grain Field Day at NCES South Farm on Harris Town Rd - Wednesday, July 22 at 10:00 am**
- **Wild Rice Field Day at NCES - Thursday, July 30 at 9:00 am**
- **Horticulture Day at NCES - Wednesday, September 2, 2:00-6:00 pm**
- **Beef/Forage Day at NCES South Farm on Harris Town Rd - Thursday, September 3 (No time yet)**

More details to follow in our July Quarterly

Research on Diseases of Cultivated Wild Rice

Robert Nyvall, Professor • Andi Moffit, Research Associate• Laura Wagner, Laboratory Technician

Our research the last few years has raised as many questions as it has answered. One of the major focuses of our work has been to determine the overwintering or survival site of the fungus called *Bipolaris oryzae* that causes fungal brown spot, the most serious disease of rice. This has proven to be a much more difficult problem to research than we originally thought. Most of our preconceived notions proved to be wrong and the further we got into the research the harder it became to answer our original question of where the fungus overwintered. We originally thought the fungus overwintered on residue and grasses growing on the dikes. In fact, this is correct but the actual isolation or finding of the fungus proved to be extremely difficult. Our conclusion is the fungus overwinters on residue but only in very select or special areas. The fungus does not survive when in contact with the soil or when a field is flooded. Most survival occurs on infested residue that remains above the surface of the soil. Similarly, survival in grasses was found to be a very special case. Our evidence show survival only occurs on reed canary grass, not on timothy or quack grass—grasses that are also abundantly present on dikes. Additionally, survival is very uncommon on reed canary grass and appears to occur only on grass that has undergone stress. Reed canary grass tends to like wet or damp soil; therefore, stressed plants are those that are growing under drought or drier conditions. If we were to design a perfect place for the fungus to overwinter, we would place infested wild rice straw in a dry place such as a bale. Our ultimate goal is to use this information to control the fungus at its site of overwintering. We think this research information will help us to achieve this goal.

Some other surprising results were fungal brown spot does not begin to be a serious disease until the wild rice plants are flowering. Previously, it was thought that all the leaf spots that occurred from the time of the floating leaves until plant maturity were symptoms of fungal brown spot. Our research showed that these spots on the floating leaves are a secondary symptom of another disease called stem rot caused by an entirely different fungus. Additionally the lesions on the first and subsequent aerial leaves are a hodge-podge of symptoms caused by several other fungi of which we were formerly unaware. Part of our future research is to determine the importance of these newly found fungi. Fungal brown spot symptoms begin to appear as the plants begin to flower with disease symptoms increasing in incidence and severity until harvest time. One of the major ramifications of this finding is fungicides used to control fungal brown spot may have been improperly applied. Therefore, disease control measures may not have yielded the maximum results with resulting loss in yield and unnecessary expense. An additional surprise was the fungus called *Nakatea sigmoidea* that causes stem rot and the spots on the floating leaves, may actually increase on the floating leaves that have been mechanically thinned. The possible consequence of this is disease may actually increase due to thinning.

Our future research will concentrate on the interaction of fertility, fungicides and disease. This work will be done in cooperation with Dr. Paul Bloom of the Soils Department. Preliminary results indicate that disease is greatly reduced with additional applications of nitrogen fertilizers. Further research will concentrate on the effect of thinning on disease and the overall role of the unknown diseases in the disease syndrome of cultivated wild rice.

The Unpopular Findings and Predictions of an Early NCES Scientist

Howard Hoganson, Forester

Herman H. Chapman became superintendent of our station 100 years ago this spring. He was a member of the first graduating class of the University of Minnesota School of Forestry in 1897. He was instrumental in helping to establish the Minnesota National Forest. Our station's Chapman Plantation is a landmark to his pioneering research efforts in reforestation.

In the summer of 1903, the sixth year of his work, Chapman decided that it was up to him as a public servant to declare certain economic facts regarding the development of proper use for lands in northern Minnesota, regardless of the personal effect it might have on his own reputation. These facts, as Chapman understood it, were that most of the soils of northeastern Minnesota should be used for forestry, not agriculture. It was a foregone conclusion at that stage of economic thought in the region that such ideas would be regarded as a betrayal of the purpose of the station. The logging industry had just passed its peak of production and logging companies had development associations whose duty it was to boom the community by bringing settlers into the surrounding cut over lands. Each town could see itself as a center of a prosperous agricultural community. According to Chapman, "The heartless exploitation of would-be settlers by land speculators was one reason for his decision."

A paper was presented in 1903 by Chapman at the summer meeting of the American Forestry Association at Minneapolis and copies were sent to the press of northern Minnesota. Chapman felt that this declaration should terminate his connection with the station, in order that the personal attack which would follow would not hamper the work of the station itself. The attack was fully up to expectation. Personal acquaintances of Chapman characterized the situation by saying "Chapman is right but he's a damned fool." As Chapman later wrote, "The University never questioned his right to make these statements which were carefully worded and conservative, nor did they ever initiate that they would like his resignation or transfer." Professor Chapman resigned in 1904 and went on to serve forty years on the forestry faculty at Yale University where he became a highly distinguished researcher. He served as President of the Society of American Foresters and was one of the first members elected to the honorary grade of Fellow. He received an Honorary Doctor of Science degree from the University of Minnesota in 1947. The following are a few excerpts of his presentation in 1903 which left its mark in northern Minnesota. It was Chapman's first public effort in behalf of forestry. A reprint of the article, in it entirety, can be found in the November 1940 issue of the Journal of Forestry in which the editor describes it as "a splendid example of true prophecy and of an undaunted courage."

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Excerpts from: **THE INFLUENCE OF THE CHIPPEWA FOREST RESERVE** by Herman H. Chapman, 1903.

The Morris Bill has set aside 225,000 acres of land in the Chippewa Reservation for a forest reserve. The questions raised as to the advisability of such action hinge largely on a single point—is the land agricultural or not? The writer does not claim absolute authority on this point, but having been engaged since 1898 in studying the subject in connection with the work of the State Experimental Farm at Grand Rapids, he may safely hazard an opinion, which may be taken as being free from prejudice, and perhaps as worthy of acceptance as that of those whose opinions might be influenced by their personal interest.

Agricultural land is land the quality or location of which is such that the farmers can clear and operate it, with profit, i.e., make a living on it. What kind of soil must he have in order that his presence and activity may be a benefit and not a detriment to the community?

H. H. Chapman, Superintendent 1898-1904

This cannot be decided off hand. The main source of error comes from considering transient conditions as permanent conditions. A sandy soil, newly cleared and given plenty of moisture, will produce the most astonishing crops of grain, grass, and especially of garden vegetables. This same soil, cropped for a few years, may soon fall below the point of profitable production of field crops. Sand, if it receives abundant supplies of manure and water, produces abundantly, for the processes of soil disintegration and the circulation of air and water in the soil are rapid on account of its loose texture, and if the source of fertility is supplied artificially, it is rapidly made available for the plant. These conditions apply to a vegetable garden near town, which usually receives fertilizers, and it is a great error to judge the productiveness of a region by the size and quality of vegetables grown on these sandy gardens.

Newly cleared sandy land is extremely fertile for the timber and brush do not exhaust it. And a certain amount of accumulated fertility exists which on the exposure of the soil by clearing and breaking is made available and used up rapidly. If then, the system of farming is such that artificial fertilizers may be had in abundance, the lands may be kept in a productive condition. Thus, land close to a town may, by its locality be considered agricultural even if it is sandy.

There is very little land in Northeastern Minnesota, with the exception of certain areas of stiff cold clay, that is not sandy, and to condemn the whole of such a vast area because of the presence of sand would be an economic absurdity. But to claim that all of this sandy area can be profitably farmed is an absurdity just as palpable.

What, then, is to be the standard by which the permanent agricultural quality of land not near to markets is to be judged? Long, abundant, and sometimes bitter experience points out the wisdom of accepting the evidence of Nature—the same evidence which our ancestors, before the days of lumbering, regarded as conclusive—the kind and quality of the virgin timber growing upon the land. Where jack or Norway are found in pure stand, without poplar or other hardwoods, or white pine, it is an almost infallible indication of the presence of a sandy subsoil, and of unfitness for permanent farm land. This statement is so far reaching and so apt to arouse vigorous opposition that it should not rest on the mere assertion. Neither will experience in Minnesota count for much, because of the comparatively short time such soils have been cultivated. But in Michigan and Wisconsin this is no new problem and the evidence is all one way. The farmer who settles on jack or Norway pine soil spends his accumulated savings, goes broke, and pulls out sooner or later, leaving his improvements behind to tempt some other unfortunate to repeat the experiment.

The throbbing activity of a land boom and an influx of settlers into a hitherto undeveloped community may for a time avert this result, but with the resumption of settled conditions, crop failures and discouragement soon force the facts to the front. For those who sneer at this statement, I could wish no worse fate than to condemn

News from North Central

David L. Rabas, Head

After a false start in February, spring has finally arrived. February 1998 average temperature was 18.8 degrees warmer than the long term average according to Art Elling, weather observer at the USDA Forest Sciences Laboratory. This made February the warmest on record at this location. March finished 4.5 degrees above average, but temperatures on March 10 and 11 reached -7 degrees. These very low temperatures and the lack of snow cover caused serious concern about the survival of perennial plants, including alfalfa, and some less winter hardy forage grasses. We won't be able to assess the extent of injury to perennials until early May. If injury has occurred we will get some information out on strategies to reduce these losses.

March and April were very busy months at our station. Several of our staff were involved in outreach meetings throughout our state. Research planning and a visit from Associate Dean Phil Larsen from our College kept us busy in March. April found us involved in the process of interviewing candidates for our beef cow/calf research faculty position. The Aspen/Larch Genetics Co-op also was involved in a search for a forester to lead the Hybrid Aspen/Larch Research Project. We are hopeful that both of these faculty positions can be filled soon.

I received with mixed emotions an announcement that Gary Wyckoff, who has served as Director for the Aspen/Larch Genetics Co-op, will leave his position in May to accept a position with Mead Corporation-Publishing Paper Division. Mead is a large pulp and paper producer with plants at several U.S. locations. Gary will be working out of their Escanaba, Michigan location as a research forester. I say "mixed emotions" because I will miss Gary as a friend and co-worker, but also recognize the tremendous professional opportunity this new position presents to him. His long history with the Aspen/Larch Genetics Co-op and his knowledge of the Co-op's operations and research program leave a large gap to fill in the Co-op's future

As I write, the state legislature is voting on the University's Capital Bonding Bill. Included in the bill is $300,000 to provide additional office and program space at our station and to make the meeting room office and other facilities at our station more accessible to physically challenged persons. I want to thank our Station Advisory Committee and the many friends of North Central for their support of our station capital bonding bill and also the total bonding bill for the University of Minnesota. Your communication with your area legislators was most helpful. As funds become available and the planning process is completed for the building addition at NCES, I will keep our readers aware of the opportunities this facility will provide to area residents as an access to the teaching, research and outreach programs of the University of Minnesota. The new building will provide opportunities to receive and send, for credit and noncredit courses, and enhance collaboration between the University and the other educational partners in the state. ■ ■ ■ ■

Continued from page 1.....

Table 1. Response to estrus synchronization systems

Response	Estrous Synchronization System GnRH-Nor- $PGF_{2\alpha}$ (n=22)	Nor-E2 (n=22)	$PGF_{2\alpha}$ (n=23)	SMB (n=22)
Ave Days Postpartum	52	50	47	49
Cycling before, %	22.7	22.7	21.7	18.2
Cycling after, %	86.4	95.5	73.9	50.0
Estrus, %	54.5	54.5	26.1	36.4
Pg to Synch. Estrus%	31.8	36.4	17.4	27.3
Total Preg., %	86.4	86.4	86.9	86.4
	(n=14)	(n=13)		
Ave Days Postpartum	38	38		
Cycling before, %	57.2	30.8		
Cycling after, %	92.8	100		
Estrus, %	92.8	92.3		
Pg to Synch. Estrus %	42.8	92.3		
Total Preg., %	85.7	76.9		

The number of cows cycling was determined by blood progesterone analysis and is a better evaluation of the effectiveness of these programs in synchronizing cattle since it eliminates errors in heat detection. Using this method shows a very favorable response in synchronizing cattle using the two Norgestomet systems even in early postpartum cows. Total pregnant percent covers a 37 day period with clean-up bull exposure for the last 30 days. The two alternative estrous synchronization treatments using norgestomet were effective in inducing and/or synchronizing estrus in postpartum cows. Conception rate to AI at the synchronized estrus was comparable to established ES systems, and fertility was good within the 37 d breeding season. Increasing the efficacy of ES programs should facilitate adoption of artificial insemination into many beef cattle operations. Breeders unable to incorporate AI into their program can still benefit from the early breeding advantage of norgestomet based systems on late calving cows. A program which prepares your cows for early, concentrated breeding coupled with superior genetics of AI bulls, carefully selected herd sires and clean-up bulls should position you to take full advantage of the expected higher prices of the cow/calf industry.

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