

## **Flushing and Breeding Ewes on Stockpiled Pasture: 3 Year Summary**

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The use of fall stockpiled pasture has been studied at the New Liskeard Research Station in various trials since 1993. During the period 1998 to 2001, a trial was conducted to compare the weight gain, body condition score, and reproductive performance of ewes flushed and bred on fall stockpiled pasture or on a conventional hay-grain ration fed indoors. This article summarizes the animal performance results of that trial.

### **Methods:**

Three pastures, each 4 acres in size, were established in 1997. One was sown to pure tall fescue (variety Courtenay), one was sown to tall fescue- trefoil (variety Leo), and one was sown to tall fescue - white clover (variety Alice). In 1998, 1999, and 2000, the pastures were either grazed or cut for silage in June, then rested until late July/early August, when they were mob grazed by sheep to a height of approximately 5 cm. Following the summer grazing, the pastures were left untouched until the ewe flushing period began in early October.

Each pasture type had one group of ewes and a fourth group of ewes was fed indoors on a balanced ration of dry hay and whole barley. All groups of ewes had free-choice access to salt and sheep mineral, as well as clean water. The same group of ewes were used for the three years of the trial, but the assignment of ewes to pasture vs. barn feeding were randomized each year. The ewes were all the same age and of similar genotype. The main breeds represented in the ewes were Dorsett, Rideau Arcott, and Suffolk. The ewes all lambed in June, 1998 at about 12 months of age. Thus, during the trial they had their 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> lambings. Ewes were weighed and body condition scored (BCS) at the start of the trial and every 4 weeks thereafter.

In each of the three years, the ewes grazed or were fed dry hay in a single group during September (after the previous lamb crop was weaned). In early October, the ewes were randomly allocated to the 4 treatments. The first 4 weeks of the trial was considered the flushing period, while the second four weeks was considered the breeding period. Two rams were introduced to each group at the start of the breeding period (early November). When the stockpiled forage was gone or the snow was judged too deep for grazing, the ewes were all brought into the barn and housed with the barn-fed group. This entire group was fed the same ration over the winter and all lambed as a group in March and April. Thus, only the feeding regime during the flushing and breeding period varied between the pastured ewes and the barn-fed ewes.

### **Results:**

#### i) Number of ewes open:

The number of ewes on the trial was varied based on the amount of grass available in late September (Table 1). The goal was to obtain a stocking rate that would allow the ewes to remain on pasture for at least 8 weeks. This was achieved in 1998 and 1999, with sheep remaining on

pasture until mid-December (10-11 weeks) in 1999. In 2000, the number of ewes was set at only 16 for each pasture group due to poor regrowth following the summer grazing, which was done later than the previous 2 years. Several of the ewes used in 2000 had unintentionally been bred in August and thus the numbers shown in Table 1 are less than the 16 ewes that actually grazed the pasture. In 2000, significant snowfall and short pasture combined to end the grazing in mid-November. The breeding success for all groups was very good in all 3 years (Table 1). Only in 1999, when the ewes developed orf during the breeding period, did any ewes fail to conceive.

**Table 1. Number of ewes on trial each year and number of open ewes each year: 1998 to 2000.**

Group	Number of ewes on trial			Number of open ewes		
	1998	1999	2000	1998	1999	2000
A (Barn)	18	22	24	0	1	0
B (Grass)	18	22	14	0	1	0
C (Grass-Trefoil)	18	22	15	0	0	0
D Grass-White Clover	18	22	13	0	2	0

ii) Ewe weight change and BCS:

Ewes in all treatments gained weight rapidly during the flushing period (Table 2). This is normal when sheep are moved from dry hay or poor grazing to a lush fall pasture. During the breeding period in November, weight gains were positive for all treatments in 1998 and 2000, but were negative for the grass-trefoil and grass-clover treatments in 1999. Two factors may have caused this; first, the stocking rate was highest in 1999 and it is possible that pasture allowance was below maintenance levels for a period of time, secondly, the pastured ewes developed orf during the breeding period and some ewes reduced their grazing activity until the mouth lesions had healed.

**Table 2. Weight gain of ewes (grams/hd/day) fed indoors or on pasture during the flushing period (October) and the breeding period (November): 1998 to 2000.**

Group	Flushing Period (October)				Breeding Period (November)			
	1998	1999	2000	Ave.	1998	1999	2000	Ave.
A (Barn)	375	254	148	259	166	35	54	85
B (Grass)	485	300	217	334	150	26	96	91
C (Grass-Trefoil)	540	287	301	376	131	-36	59	51
D Grass-White Clover	572	257	286	372	126	-101	51	25

Data on body condition score was generally similar, with the exception that negative condition scores were recorded in 2000 for the pasture groups but not the barn fed group (Table 3). Overall changes in BCS were small however and are within the normal variability for a subjective measurement such as BCS.

**Table 3. Change in body condition score of ewes fed indoors or on pasture during the flushing period (October) and the breeding period (November): 1998 to 2000.**

Group	Flushing Period (October)				Breeding Period (November)			
	1998	1999	2000	Ave.	1998	1999	2000	Ave.
<b>A (Barn)</b>	0	0.6	0.4	0.3	0.3	0.1	0.1	0.2
<b>B (Grass)</b>	0.2	0.0	0.7	0.3	0.1	0.5	-0.1	0.2
<b>C (Grass-Trefoil)</b>	0.2	0.1	0.7	0.3	0.2	0.3	-0.1	0.1
<b>D Grass-White Clover</b>	0.3	0.2	0.9	0.5	0.2	0.1	-0.3	0.0

iii) Lambing percentage and median lambing date:

The overall lambing percentage was quite high for all groups and years, never falling below 200% (Table 4). This suggests that the nutrition the ewes received from the pasture treatments was adequate for flushing and breeding and in fact equivalent to that of the barn-fed group. While the 3 year average for lambing percentage is somewhat higher for the pasture treatments than the barn-fed group, the difference is not statistically significant. The number of days from ram introduction until half of the ewes had lambed tended to be lower for the barn fed group than the pasture groups (Table 4). This indicates that the ewes in the barn group were bred and conceived sooner than the pastured ewes. The trend was most apparent in 1998 and 2000.

**Table 4. Lambing percentage and days from start of breeding until first lambing occurred: 1998 to 2000.**

Group	Lambing percentage				Days until ½ of ewes lambed			
	1998	1999	2000	Ave.	1998	1999	2000	Ave.
<b>A (Barn)</b>	200	214	216	210	147	153	151	150
<b>B (Grass)</b>	239	227	200	222	152	153	157	154
<b>C (Grass-Trefoil)</b>	200	250	225	225	156	154	153	154
<b>D Grass-White Clover</b>	222	232	226	227	155	156	156	156

iv) Number of days until lambing and duration of lambing:

The number of days from the start of breeding until the first ewe lambed was generally lower in the barn-fed group, with the first ewe lambing 142 to 144 days after the rams were introduced. This contrasts with the 150 days for the first lambing to occur in the grass-trefoil group in 2000. The lambing duration (days from the first ewe lambing until the last ewe lambed) was inconsistent over years (Table 4). In 1999 the duration was lower in the barn-fed group but this likely related to the orf problem described above, which affected mainly the pastured ewes. In 2000, lambing duration was slightly higher for the barn group as compared to the grass and grass-trefoil groups, but lower than the grass-clover group. The grass-clover group had a single ewe that lambed 18 days after all other ewes had lambed, thus a very long lambing duration was recorded.

**Table 5. Days from start of breeding until first lambing occurred and lambing duration (days from first lambing until last lambing): 1998 to 2000.**

Group	Days until 1 <sup>st</sup> lambing				Lambing Duration (days)			
	1998	1999	2000	Ave.	1998	1999	2000	Ave.
A (Barn)	144	142	143	143	16	18	16	16
B (Grass)	146	148	150	148	14	23	12	16
C (Grass-Trefoil)	148	142	147	146	20	28	13	20
D Grass-White Clover	146	144	144	145	16	22	35*	24

\* excluding a single outlier, this point would be 17 days and the ave. would be 18 days.

**Discussion:**

Since the breeding period was during November, it might have been expected that ewes outdoors would not perform as well as those fed stored feed indoors. However, animal performance, as measured by weight gain, BCS, and conception and subsequent lambing rates was not different between ewes flushed and bred outdoors on a pasture diet as compared to similar ewes housed indoors and fed a balanced ration of hay and barley. Similarly, the frequency of open ewes was very low on the pastured group, totalling 3 out of 162 ewes over the 3 years (1.9% open) and 1 out of 62 ewes on the barn-fed group (1.6% open). This data suggests that all sheep producers, whether annual lambing or accelerated, could benefit financially from using stockpiled pasture if they are breeding ewes at least as late as mid-November. The feed cost per day on pasture is generally considered to be about 50% of stored feed, but this does not account for the costs of manure handling and building costs associated with housed ewes, so the financial advantage for stockpiled grazing is likely greater.

The data indicates that housed ewes seemed to breed earlier after the introduction of rams, although the effect was not consistent over years. It is possible that this finding is an artifact related to a teaser effect when the housed ewes were brought into the barn from pasture. A brief

exposure to rams in the barn could have acted to synchronize the ewes so they bred earlier. However, in two of three years the lambing duration was similar between housed and pastured ewes, indicating that the pastured groups lambed in a tight group, even though they did not breed as early after the rams were introduced. In any case, the vast majority of ewes appeared to have conceived in the first cycle of breeding, which is the goal that should be targeted.

Differences between the three pasture treatments were small and not consistent. Data (see separate report) indicated that the legume content decreased over time so that by 2000, all three pastures were overwhelmingly grass-based. Thus, we would not anticipate a pasture effect when pasture composition was relatively similar. It is encouraging that the ewes performed so well on a tall fescue-based pasture. Tall fescue is agronomically an excellent grass species and studies at New Liskeard have shown that it retains its nutritional value quite well in the fall. However, it is not especially palatable and sheep will usually select other grasses if given a choice. However, this trial indicates that sheep will adapt to the fescue and perform well on it. While we do not have comparable data from other grass species, anecdotal evidence suggests that other grasses, if managed properly, should give similar results.

**Conclusions:**

Stockpiled pasture is an excellent source of nutrition for flushing and breeding ewes in October and November. One can expect equivalent or superior ewe weight gain, BCS, and lambing percentage from ewes flushed and bred on good stockpiled pasture as compared to housed ewes on stored feed. A significant cost savings can be realized from this practice with no negative effect on lamb production or ewe re-breeding. The use of stockpiled pasture should be seriously considered for flocks where breeding is normally done during October or November.