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Cooling Off on Duty



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A New Breed Is Born

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After five years of blending breeds, testing up to three thousand ewes over a period of twenty years and investing a few million dollars, finally a new breed of sheep emerges from Quebec. The DLS taking its name from the first letters of the three breeds involved in its creation (Dorset, Leicester and Suffolk) got its official birth certificate this year when the Canadian Sheep Breeders' Association accepted it as a bona fide breed. The Association appointed a committee to examine the existing population at La Pocatière and to select the foundation sheep which became eligible for registration. Many breeders who had acquired DLS sheep recently, had their sheep examined and certified at the same time. So the breed has already been propagated throughout the Quebec sheep industry.

What makes the DLS sheep different is its exceptional duration of the breeding season. While ewes and rams from other Canadian breeds enjoy pasture and the warm weather during the summer and are practically inactive sexually, DLS rams would be chasing ewes all over the place and matings during what is called the "dead season" would result in lambings at the appropriate time for the Christmas,

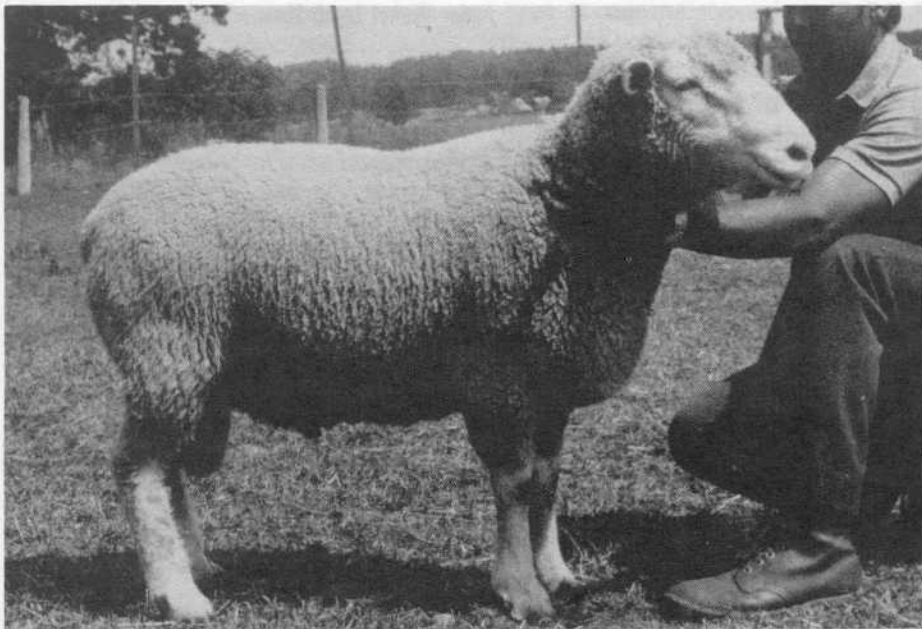
then the Easter lamb market and subsequently hitting the lamb season of high returns. This, of course, did not occur by chance but rather after a deliberate mixing of breeds and careful selection for over 20 years.

Twenty-five years ago when the sheep industry was experiencing its worst free fall and when the number of sheep on farms was declining at an alarming rate, Dr. Camille Bernard, then, a scientist at the Lennoxville Research Station, had the idea of developing a new breed which would have the ability to mate at any time of the year, so more lambings per year can be achieved yielding higher overall ewe productivity. This renewed profitability could stimulate breeders to go back to sheep farming. Of course, there are many artificial means to increase productivity in ewes and overcome the anoestrous period. Hormone treatments and light control are two such means but the effort required and cost involved in applying these means may be prohibitive for breeders trying hard to balance their budget. The cheapest alternative has been to build in the capacity to breed out-of-season.

The choice of breeds was limited twenty-five years ago when the project was planned. In those days, prolific breeds such as the Romanov and Finn-sheep were not even heard of, so improving productivity had to be done with existing known breeds. The Border Leicester was then considered the most prolific breed, it was also chosen for its good milking and mothering ability. Suffolk was chosen because of its growth rate and carcass quality. A breed was needed to combine these attributes with length of breeding season. The Dorset from Australia which has a very long breeding season was chosen and a sample of 24 pregnant ewes was imported.

From the very beginning, sheep breeders in Quebec collaborated in the development of the DLS sheep. Dorset rams were provided to Suffolk and Leicester breeders in the neighborhood of Lennoxville in order to produce DL and DS lambs which were later bought back. For 4 years (1966 to 1970) DL rams were mated to DS ewes and DS rams to DL ewes. The resulting lambs, the first generation of DLS rams and ewes were mated to each other starting in 1967 to produce the second generation. Until 1985 up to seven generations of selection were completed which involved 2,850 ewes.

The ability to mate during the summer was the main criterium for selection because the main objective was to develop a breed with a long breeding season. The ewes and rams were put in mating pens from the first day of June to the last day of October. Lambing started in late October for the ewes which had a long breeding season and extended to March for those with a short one. Each ewe was given two years of production and according to their date of lambing were assigned a "date of lambing index" which measured the number of days between lambing date and January first. A ewe lambing before January first was given a positive index while those lambing after January first were given a negative index. The sum of the two indices gave the total date of lambing index. Rams to be used for mating were those born to ewes with the highest index. The best 50% of the ewes according to that index were kept to produce a third lambing. That meant that there was a direct selection on the males and an indirect selection on the females. The flock was maintained at about 500 ewes, 200 lambing for the first, 200 ewes for the second and 100 for the third time. Each year 200 ewe lambs were kept for replace-



A typical DLS ram.

ment, 100 to replace those culled after a second lambing (low index) and 100 for those that lambed for a third time.

During the early generations of selection no attention was paid to the phenotypic appearance of the animals; so animals with horns or colored fleece were tested for their merit for early mating. However, in the later generations, an important consideration was placed on the appearance of the animals, so that those which did not correspond to the "DLS type" were eliminated. As a result, DLS sheep acquired a distinctive appearance, different from that of the three ancestral breeds.

DLS sheep are completely white and hornless; a few pigmented spots on the nose or mouth can be tolerated. The head is medium in size with a tendency to be relatively wide between the ears. The face is clear of wool. The eyes are prominent, bright and clear of wool. The ears are erected, covered with short hair and free from pigmentation. The neck is medium in length and width, and carries the head high. It is strongly set on shoulders and has no wrinkles. The shoulders are broad and full. The back is straight and wide. The belly is straight on underline and in most animals covered with wool. The wool from DLS sheep is of medium grade and since little selection was made for wool quality, there is still great variation among animals in fibre and fleece characteristics. Mature ewes weigh between 60 and 70 kg with some weighing up to 80 kg. Mature rams weigh between 85 and 105 kg.

During the course of development of DLS sheep many studies were conducted to evaluate different aspects of their performance. Some of the major results are summarized in Table 1. The DLS sheep is highly fertile and moderately prolific. Prolificacy at La Pocatière averaged between 1.2 to 1.5 lambs depending on parity, but in some studies DLS averaged in excess of 1.8 lambs and data from some breeders put the average prolificacy of DLS in excess of 2 lambs born per ewe.

The strongest attribute of DLS sheep is their length of the breeding season. Studies indicated that between 7 and 10% of the ewes continue cycling throughout the entire year without showing signs of summer anoestrous. Those which experience summer anoestrous are sexually inactive on average for only 133 days, so they can breed for almost 8 months of the year. Of course, a wide variation among ewes still exists in the length of the breeding season. One must keep in mind that the selection which has

Table 1
Reproductive performance of DLS sheep

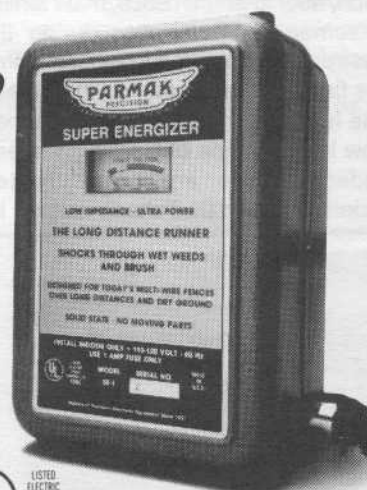
| Trait studied | Year of study | Performance |
|---|---------------|------------------|
| Length of breeding season | 1974 | 226 days |
| | 1982 | 203 days |
| 1986 | 222 days | |
| Length of season of ovarian activity | 1986 | 225 days |
| Fertility | 1975 | 89% |
| | 1983 | 98% |
| | 1988 | 86% |
| | 1989 | 87% |
| | 1980 | 1.51 |
| Ovulation rate | 1988 | 1.8 |
| | 1983 | 1.23 |
| No. of lambs born (weaned) | 1988 | 1.44 |
| | 1989 | 1.8 (1.5) |
| Age at puberty (weight) | 1989 | 1.4 |
| Age at first lambing | 1975 | 202 days (32 kg) |
| Avg. date of lambing (high group-low group) | 1980 | 396 days |
| Date of lambing | 1982 | 1 Dec.-3 Jan. |
| Date of first heat | 1983 | 22 December |
| | 1982 | 19 August |
| | 1986 | 20 September |
| | 1989 | 23 August |

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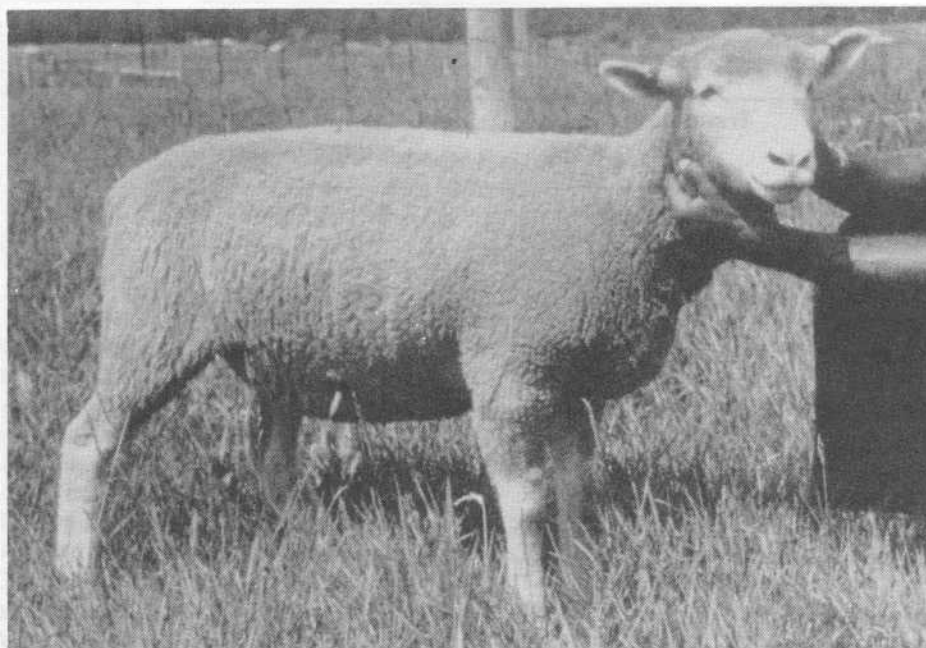
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A typical DLS yearling.

been applied was to identify the ewes with the longest breeding season and subsequently multiply their progeny.

Studies on different aspects of productivity of DLS sheep were carried out throughout the years, which included the evaluation of carcass quality, wool production, fiber characteristics, male fertility and semen characteristics during the anoestrous season among others. Some of the findings are presented in Table 2.

The future of the DLS breed of sheep is now in the hands of Canadian sheep breeders. There are presently ten breeders who own DLS sheep and are in-

involved in maintaining pure and multiplying the breed. Many others are using the DLS in a crossbreeding program with prolific breeds. After the registration of the breed, the flock at La Pocatière will be sold to breeders interested in maintaining the nucleus herd. Those are the ones who would supply the others with elite animals. The responsibility of preserving and improving the DLS for the generations to come rest on their shoulders.

For more information on the DLS sheep and the means to acquire them, the readers are encouraged to contact the author.

Table 2
Production traits of DLS sheep

| Trait studied | Year of study | Performance |
|-------------------------------|---------------|--------------------|
| Lamb birth weight | 1980 | 4.1 kg |
| | 1985 | 4.5 kg |
| | 1988 | 4.2 kg |
| | 1989 | 3.6 kg |
| Lamb 50 d weight | 1985 | 18.4 kg |
| Lamb 70 d weight | 1988 | 22.6 kg |
| Lamb 50 d weight | 1989 | 18.7 kg |
| Greasy fleece weight | 1977 | 3.6 kg |
| Fibre diameter | 1977 | 38 μ |
| Fibre length | 1977 | 15 cm |
| Fleece weight first shearing | 1987 | 2.27 kg |
| Fleece weight second shearing | 1987 | 2.40 kg |
| Fleece weight 3-5 shearing | 1987 | 2.70 kg |
| Staple length | 1987 | 12 cm |
| Fibre diameter | 1987 | 26 μ |
| Age at 43 kg slaughter weight | 1985 | 264 days |
| Area of eye muscle | 1985 | 12 cm ² |
| Back fat thickness | 1985 | 3.2 cm |

Sheep Industry Leadership School Participants Selected

The 1990 National Sheep Industry Leadership School, sponsored by the National Lamb Feeders Association, was held in Sioux Falls, South Dakota, July 15-18. This year's school featured many national issues facing sheep producers. Among the topics covered were the roles of the national organizations, producer education, legislative concerns, animal rights movement, lamb and wool marketing, sheep health concerns, genetic improvement programs, leadership skills, managing range and farm flock ewe operations and current lamb feeding operations. The participants also toured a lamb packing plant, pelt processing plant, sheep AI facilities, vaccine manufacturing company, lamb feedlot and numerous sheep operations.

Participants selected to participate in this year's school were: Bruce Ashenbrenner, Monroe, OR; Dana Barclay, Grand Ledge, MI; Bill Blaha, Wadena, MN; David Buss, Hunter, OK; Michael Carpenter, Mt. Crawford, VA; Robin Craker, Reedsburg, WI; Joy Crouch, Eureka, IL; Teri Erk, Newell, SD; Brad Feldmann, Meadow Grove, NE; Bill Glass, Airville, PA; Rebecca Hernandez, Caldwell, ID; Brent Knight, Hamer, ID; William Kruesi, Wallingford, VT; Meg Linman-Sawyer, Buffalo, MO; Polly A. Lower, Bourbon, IN; Robert Mertz, Manhattan, KS; Michael Paul, Sac City, IA; Burton Pfliger, Center, ND; Mary Rauschenberg, Woodbine, MD; William Reppert, Pender, NE; Warren Schwab, Jr., Brighton, CO; James Steen, Carthage, MO; Bernarr Treat, Roswell, NM; P. Eric Whittington, Baltimore, OH; Max Winders, Minneapolis, MN.

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