

## SHEEP NUTRITION

# Does Vitamin B supplementation improve ewe productivity?

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### Introduction

The average production of sheep farms in Québec has not improved in the last 20 years. The annual flock productivity (1.45 lambs weaned/ewe/year) evaluated in a survey done in 1985 by the Ministère de l'agriculture, des pêcheries et de l'alimentation du Québec (MAPAQ) is equal to estimate by the Fédération des producteurs d'agneaux et moutons du Québec in a management survey in 2002 (1.47 lambs weaned/ewe/year). Sheep producers and specialists agree that to ensure survival and development of the industry it is essential to improve ewe productivity. One of the main aspects of ewe productivity is the prolificacy of the ewes used on commercial farms.

### Folic acid and productivity

In the last 20 years, hormone treatment protocols have been developed to improve ewe fertility and prolificacy. However, the use of hormones in animal production is

now frowned upon by consumers. Therefore, it is important to explore alternative methods of increasing the number of lambs born, and the manipulation of nutrition is certainly one of them.

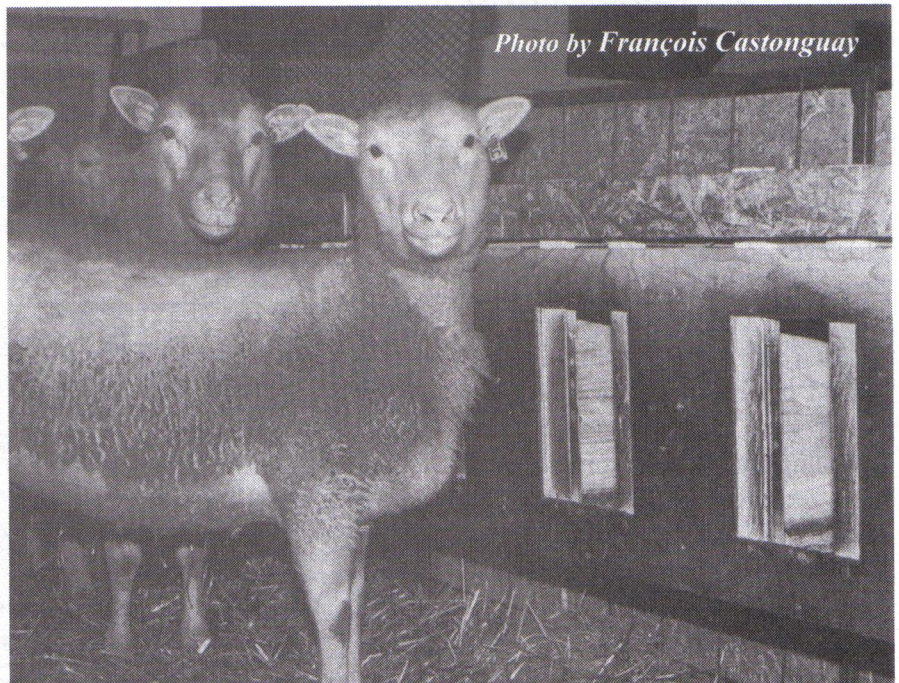
Studies conducted with swine have shown that supplementing feed with folic acid (a B-complex vitamin) during pregnancy increases the number of piglets born. This increase is attributed to a decrease in embryonic mortality. In sheep, embryonic mortality is a major cause of litter size reduction. It is estimated that 20%-40% of fertilized eggs are lost during the first weeks of

pregnancy.

Previous research studies have shown that folic acid supplementation of ewes will increase the blood level of that vitamin. The objective of this study was to evaluate the impact on ewe productivity of supplementing their ration with folic acid in early gestation. We compared the effect of folic acid in prolific and non-prolific ewes, both within the normal breeding season and in out-of-season breeding.

### On farm trials

Two trials were done during the breeding season. On farm A, 38 non-prolific Dorset ewes and 39 prolific



*Photo by François Castonguay*

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½Dorset-½Finnsheep prolific ewes were used. The feeding treatments started three weeks before mating and ended 30 days later. Half of the ewes (control group) received a regular commercial concentrate (250 g/ewe, twice a day) and the other half were fed the commercial concentrate supplemented with folic acid (250 g of concentrate/ewe + 105 mg folic acid/ewe served as top dressing, twice a day). The protocol was repeated on farm B with 80 Dorset ewes.

In the out-of-season breeding period, the same protocol used within the breeding season was repeated on three farms: the first had 80 Dorset ewes (farm A), the second had 78 Dorset ewes (farm B) and the third had 57 prolific ½Romanov ewes (farm C). In this part of the study, folic acid was incorporated into the concentrate at the feed plant.

During all trials, blood samples

were taken to establish concentrations of many metabolites, and different parameters related to ewe productivity were noted.

#### Did it work?

The blood sample analysis demonstrates that folic acid supplementation (by top dressing or addition in the concentrate during manufacturing) significantly increased all biologically active forms of folic acid in the blood. However, this increase in folic acid had no impact on ovulation rate, fertility, embryonic mortality, litter size or litter weight at birth. These results were confirmed both within the normal breeding season and in the out-of-season breeding group, and with both breed types (prolific and non-prolific).

#### Conclusion

Our experiments on folic acid supplementation have not

demonstrated any practical reason to increase the level of folic acid in the ewe diet. Further experiments may be needed to evaluate other protocols, such as a longer treatment period and/or higher levels of the vitamin.

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