

Fertility of Alpine goats following oestrus synchronisation with CIDR and artificial insemination with cryopreserved semen

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Outline



Introduction

- Hypotheses and Objectives
- Material and Methods
 - CRSAD farm
 - Experimental design
 - Semen analysis
 - Statistical analyses
- Results and Discussion
- Conclusions and Perspectives



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Goat Milk Shortage

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In recent years, an increase in the numbers of dairy goat producers and goats/farm has resulted in a greater quantity of goat milk in Quebec.

However, when we look closely, we can see that the number of litres of milk produced/goat is decreasing!







Goat Milk Shortage

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Moreover, producers are not able to deliver sufficient milk to satisfy the demand of the transformers in Quebec.

Solution: Artificial insemination with semen from genetically superior bucks will improve herd productivity.





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Establishing oestrus synchronization and artificial insemination protocols using semen from genetically superior bucks will improve milk productivity of the Canadian goat herd.





Long Term Hypothesis



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Study Objectives



- 1. Evaluate the efficacy of oestrus synchronization using CIDRs and artificial insemination using cryopreserved French semen with Canadian goats.
- 2. Evaluate the quality of cryopreserved semen from geneticallydesirable bucks from France.
- 3. Develop expertise in caprine assisted reproductive technologies in Canada.





CRSAD Experimental Farm



- Alpine goats
- Milk production: 810 kg milk/goat/year
- Photoperiod

January 1 - 16L:8D March 15 - 8L:16D









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Experimental Design



<u>Spring 2008</u>



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Trt 1: **CIDR** + **AI**

Oestrus was synchronized with CIDR and females were artificially inseminated

Trt 2: **NAT** + **AI**

Females were artificially inseminated at natural oestrus (no synchronization)

Trt 3: CIDR + Buck

Oestrus was synchronized with CIDR and bred with a buck





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- 5 different French bucks (A, B, C, D, E)
- Analyses were performed at immediately after thawing and 3 h after thawing and incubation at XXXX
 - Motility

Semen Analysis

- Progressive motility
- Viability
- Spontaneous acrosome reactions





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- Completely randomized design
- SAS Contrast procedure for treatments
 - NAT+AI vs CIDR+AI

Statistical Analyses

- CIDR+AI vs CIDR+Buck
- SAS Mixed procedure for semen analysis





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Fertility Outcome: Kidding Rates







Explanation of Fertility Results



NAT + AI: 25%

- Heat detection
- Time of insemination

CIDR + AI: 63%

- Comparable to those obtained in France
- Genetic improvement (CIDR + Buck: 100 %)





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Semen Analysis: Sperm Motility







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40 a a 35 0 h: Pr > F **0.0009** ab 30 Pr > 0.05 Percentage (%) 25 3 h: Pr > F **0.0328** b 20 Pr > 0.1b b b 15 ab 10 ab a 5 0 С D А В С А В Е D Е 0 h after thawing 3 h after thawing

Semen Analysis: Progressive Motility





• Conclusions and Perspectives 80 0 h: Pr > F = 0.279870 60 $3 \text{ h: } \text{Pr} > \text{F} \quad 0.2556$ Pourcentage (%) 50 40 30 20 10 0 Е А Е С В С D А В D 3 h after thawing 0 h after thawing





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Semen Analysis: Sperm Viability

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Semen Analysis: Spontaneous Acrosome Reactions







Conclusions and Perspectives



Conclusion: Objectives

- 1. Evaluate the efficacy of oestrus synchronization using CIDRs and artificial insemination using cryopreserved French semen with Canadian goats.
 - Good results obtained with CIDR+AI
- 2. Evaluate the quality of cryopreserved semen from genetically-desirable bucks from France.
 - Motility, progressive motility, viability and spontaneous acrosome reactions
- 3. Develop expertise in caprine assisted reproductive technologies in Canada.
 - ➤ In progress...





Introduction

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Material and Methods

Conclusions and Perspectives

Results and Discussion

CIDR – Synchronization Protocol

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