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**TRANSCERVICAL ARTIFICIAL INSEMINATION  
OF ROMNEY EWES**

A thesis presented in partial fulfilment of the  
requirements for the degree of Master of Agricultural Science  
in Animal Science at Massey University

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1996

## ABSTRACT

Poff, G. J. 1996. *Transcervical artificial insemination of Romney ewes*. M.Agr.Sc thesis, Massey University, Palmerston North, New Zealand, 84 pp.

Transcervical AI was attempted in 178 mixed age Romney ewes. AI was performed between 48 and 52 h after synchronisation of oestrus with progesterone impregnated CIDRs. Fresh or frozen-thawed semen was used and each insemination dose contained approximately 100 million spermatozoa. Half of these ewes were treated prior to AI with clenbuterol hydrochloride (Panipart<sub>TM</sub>) in an attempt to cause cervical softening to allow insertion of an inseminating pipette through the cervix. Reproductive tracts were recovered from 32 ewes in which transcervical insemination was achieved. After flushing each tract the spermatozoa were counted from the cervix and from the left uterine segment.

94% of ewes showed oestrus within 48 h of CIDR withdrawal. Variation in time of onset of oestrus prior to AI did not affect conception rate ( $P>0.05$ ). The conception rate based on non-return to oestrus was 34%. A greater percentage of ewes conceived to insemination with fresh semen (42%) than that for frozen-thawed (24%) ( $P<0.05$ ). Clenbuterol did not affect depth of cervical penetration but it did reduce bleeding at the cervical os observed at AI ( $P<0.01$ ). Parity/age of ewe significantly affected depth of cervical penetration ( $P<0.001$ ) and the time taken to inseminate ( $P<0.01$ ), with few two tooth ewes successfully transcervically inseminated (76% were vaginally inseminated). Sperm numbers were significantly higher in the cervixes of ewes that were inseminated with fresh rather than frozen-thawed semen ( $P<0.05$ ). Numbers of spermatozoa recovered were low in comparison to similar studies and were related to the extent of cervical damage (recorded at dissection of reproductive tracts). Uterine sperm counts were significantly lower ( $P<0.05$ ) for those ewes where cervical damage was observed.

The depth of insemination was estimated at the time of AI, and full cervical penetration was recorded in 68% of the mature ewes. However examination of the ewe cervixes at dissection suggested that this figure was misleading. Anatomical evidence suggested

that the inseminating needle had frequently lodged in the cervical wall and successful passage had not been achieved. Therefore it was likely that semen was deposited frequently in areas of damaged cervical tissue which would have been detrimental to survival of spermatozoa. This was probably the main reason for the low sperm numbers in the reproductive tracts and consequently the low conception rate. For those ewes where full cervical penetration was recorded at AI, only 28% conceived.

**Dedication:**

I dedicate this work to my two sons,  
**Jeremy and John Paul.**

## Acknowledgements

I am grateful for the direction given by my supervisors, Associate Professor Maurice McDonald and Mr Tim Harvey in the planning and conduct of this experimental work and in the preparation of this manuscript. Their expertise, perspective and enthusiasm was most valuable.

Special thanks to Dr Patrick Morel for the time he contributed to the statistical analyses.

The technical advice, training and assistance given by Dr Muhammad Anwar in relation to the sperm transport study was greatly appreciated.

Mr Ronald Poos made a significant contribution to the running of the experiment. He was responsible for ram training and semen collection. He also assisted with data recording and the AI programme. I thank Dr John Campbell and Mr Tim Harcombe for help with the AI programme.

I thank Mr Kerry Kilmister and Mr Mike Hogan for assistance with collection of ewe reproductive tracts. I also thank Mike for management of the experimental animals.

My appreciation is extended to Miss Yvette Cottam for preparation of graphs, Miss Margaret Scott from the physiology laboratory for technical guidance, and Professor Dorian Garrick for statistical advice. Many thanks to other members of the Animal Science Department at Massey University for their help.

I am grateful to family and friends for their help and encouragement. I especially thank my wife Colette for her understanding and support, and for typing and formatting this thesis. I am grateful to Mrs Sally Hollaway for proof reading the bulk of this thesis.

I thank the C. Alma Baker Trust for providing financial assistance for the running of this experiment.

Acknowledgement is made to the New Zealand Ovine Sire Referencing Scheme for supplying the frozen ram semen.

## TABLE OF CONTENTS

Abstract .....	ii
Dedication .....	iv
Acknowledgements .....	v
List of tables .....	xi
List of figures .....	xiii
List of appendices .....	xiv
List of abbreviations .....	xv
<b>Chapter I: Introduction .....</b>	<b>1</b>
<b>Chapter II: Review of literature .....</b>	<b>3</b>
1. The development of transcervical artificial insemination .....	3
1.1 Artificial insemination technique .....	3
1.2 Animal restraint and equipment .....	5
2. Factors affecting cervical penetration .....	6
2.1 Anatomy of the cervix .....	6
2.2 Cervical softening .....	7
2.3 Other factors affecting cervical penetration .....	9
3. Factors affecting fertility to artificial insemination .....	9
3.1 Timing of artificial insemination .....	9
3.2 Numbers of spermatozoa inseminated and site of uterine deposition .....	10
3.3 Depth of semen insemination .....	11
3.4 Embryonic mortality .....	11
3.5 <i>Postpartum</i> interval prior to transcervical AI .....	12
4. Transport of spermatozoa in the reproductive tract .....	12



4.1	The dynamics of sperm transport . . . . .	12
4.2	Measurement of sperm transport . . . . .	14
4.3	Sperm loss factors . . . . .	14
4.4	The effect of fresh or frozen-thawed semen on fertility . . . . .	15
4.5	The effect of oestrogen and progestagens on sperm transport . . . . .	17
4.6	The effect of sympathomimetic compounds on uterine motility . . . . .	18
5.	The purpose and scope of the investigation . . . . .	19
<b>Chapter III: Materials and Methods . . . . .</b>		<b>21</b>
1.	Experimental design and animal management . . . . .	21
2.	Synchronisation and oestrous detection . . . . .	22
3.	Semen . . . . .	22
3.1	Collection and examination of fresh semen . . . . .	22
3.2	Fresh semen dilution . . . . .	23
3.3	Frozen semen . . . . .	23
4.	Artificial insemination . . . . .	24
4.1	Technique . . . . .	24
4.2	Semen handling . . . . .	29
5.	Pregnancy data . . . . .	29
6.	<i>Postmortem</i> examinations and counts of spermatozoa . . . . .	30
6.1	Ewe reproductions tract: removal, dissection and flushing . . . . .	30
6.2	Counting of spermatozoa . . . . .	33
7.	Analyses of data . . . . .	34
<b>Chapter IV: Results . . . . .</b>		<b>36</b>
1.	The onset of oestrus . . . . .	36

2. Condition of the cervical os .....	38
3. Factors affecting conception rate to artificial insemination .....	39
3.1 Operator effect .....	40
3.2 Sire effect .....	40
3.3 Type of semen .....	40
3.4 The use of clenbuterol .....	41
3.5 The effect of depth of insemination .....	42
3.6 The effect of bleeding on conception rate .....	43
3.7 Time taken to perform AI .....	43
4. Factors affecting the presence of bleeding after artificial insemination .....	44
5. Factors affecting the depth of insemination .....	45
5.1 Age of ewe .....	45
5.2 Condition of the cervix .....	46
6. Factors affecting time taken to inseminate .....	48
7. Spermatozoa transport following transcervical artificial insemination .....	49
7.1 The effect of type of semen .....	49
7.2 The effect of clenbuterol .....	51
7.3 The effect of cervical damage .....	52
7.4 The effect of day of AI .....	54
<b>Chapter V: Discussion .....</b>	<b>56</b>
1. Measurement of Conception Rate .....	56
2. Sire .....	56
3. Sperm transport and survival .....	57
4. Transcervical artificial insemination of maiden two tooth ewes .....	59
5. Depth of artificial insemination .....	60
6. Cervical Damage .....	62

	x
7. Clenbuterol administration . . . . .	63
8. Onset of oestrus . . . . .	65
9. Condition of cervix . . . . .	66
10. Operator . . . . .	66
11. Time taken to inseminate . . . . .	66
<b>Conclusions</b> . . . . .	<b>67</b>
<b>Appendices</b> . . . . .	<b>70</b>
<b>References</b> . . . . .	<b>77</b>

**LIST OF TABLES**

<b>Table</b>		<b>Page</b>
<b>1</b>	Results of experiments on transcervical insemination of ewes . . . . .	5
<b>2</b>	Studies of spermatozoa transport in the ewe examined <i>postmortem</i> . . . . .	16
<b>3</b>	Models that describe statistically significant relationships . . . . .	35
<b>4</b>	The effect of age of ewe on condition of cervix . . . . .	38
<b>5</b>	Comparison of non-return and scan data . . . . .	39
<b>6</b>	The effect of AI with fresh or frozen-thawed semen on conception rate . . . . .	41
<b>7</b>	The effect of clenbuterol on conception rate following AI . . . . .	41
<b>8</b>	The effect of depth of insemination on conception rate . . . . .	42
<b>9</b>	The effect of bleeding at the cervical os after AI on conception rate . . . . .	43
<b>10</b>	The effect of time taken to inseminate on conception rate . . . . .	44
<b>11</b>	The effect of clenbuterol on the number (%) of ewes with bleeding at the cervical os after AI . . . . .	45
<b>12</b>	The effect of age of ewe on depth of insemination . . . . .	46
<b>13</b>	The effect of condition of cervix on depth of insemination . . . . .	47

14	Time taken for insemination relative to age of ewe . . . . .	48
15	The effect of insemination with fresh or frozen-thawed semen on numbers of spermatozoa recovered from the ewe reproductive tract . . . . .	50
16	The effect of clenbuterol administration prior to AI on numbers of spermatozoa recovered from the reproductive tract of the ewe . . . . .	51
17	The effect of cervical damage on numbers of spermatozoa recovered from ewe reproductive tracts . . . . .	53
18	The effect of day of artificial insemination on numbers of spermatozoa recovered from the ewe reproductive tract . . . . .	54

#### **Appendix tables**

19	The effect of condition of cervix on conception rate . . . . .	70
20	The effect of depth of AI on conception rate . . . . .	71
21	Bleeding at the cervical os recorded at insemination . . . . .	72
22	Assessment and dilution of fresh semen for insemination . . . . .	73
23	Numbers of spermatozoa recovered, cervical damage and ovarian structures . . . . .	74

## LIST OF FIGURES

<b>Figure</b>	<b>Page</b>
<b>1</b> Equipment for transcervical artificial insemination <b>a.</b> Unmodified insemination needle (a), modified needle (b), modified needle - not used in this experiment (c) . . . . .	25
<b>b.</b> Cassou insemination gun (a) and Bozemann forceps (b) . . . . .	25
 <b>2</b> Transcervical artificial insemination	
<b>a.</b> Transcervical artificial insemination - the handles of the forceps displaced from the speculum to allow visualisation of the cervical os and insertion of the inseminating needle . . . . .	26
<b>b.</b> Transcervical artificial insemination - cervical traction applied via forceps to assist penetration of the cervix with the inseminating    needle .	26
 <b>3</b> Ewe reproductive tract	
<b>a.</b> Ewe reproductive tract with ligatures. Uterotubal junctions (a), cranial cervix (b), caudal cervix (c) . . . . .	31
<b>b.</b> Ewe reproductive tract dissected. Uterine tubes (a), uterus (b), cervix (c) . . . . .	31
 <b>4</b> Dissected cervices	
<b>a.</b> Dissected cervix of ewe 410/89 with prominent area of haemorrhage in the cranial part . . . . .	32
<b>b.</b> Dissected cervix of ewe 500/89 with evidence of haemorrhage in tissue surrounding the cervical os . . . . .	32
 <b>5</b> The effect of day of AI on interval from CIDR withdrawal to detection of oestrus . . . . .	37
 <b>6</b> The effect of interval from CIDR withdrawal to detection of oestrus on conception rate . . . . .	37

**LIST OF APPENDICES**

<b>Appendix</b>	<b>Page</b>
<b>I</b> The number of ewes conceiving (%) that were recorded in initial categories for condition of cervix, depth of AI, and bleeding at the cervical os . . . . .	70
<b>II</b> Assessment and dilution of fresh semen for insemination . . . . .	73
<b>III</b> Numbers of spermatozoa recovered, cervical damage and ovarian structures . . . . .	74

## LIST OF ABBREVIATIONS

The following abbreviations have been used in the text without prior definition:

### Units:

°C	degree Celsius
h	hour(s)
iu	international units
USP	United States Pharmacopoeia
kg	kilogram(s)
mg	milligram(s)
µg	microgram(s)
ml	millilitre(s)
%	per cent

### Others:

CIDR(S)	Controlled internal drug release device(s)
SE	Standard error