Experiences with artificial insemination in goats

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ABSTRACT

The necessity to identify and utilize superior fibre producing goats has led to the demand for artificial breeding techniques to be developed within New Zealand. Particular emphasis has been placed on cervical insemination by Ambreed as it is seen as the most cost efficient method, especially at a commercial level.

Bucks have been selected on individual fleece data and stood on licensed artificial insemination centres at Cambridge and Kaiapoi. A total of 50 bucks have been trained for semen collection, with the training period varying from 5 minutes to 2 weeks. Collection from some individuals began as early as December, and continued until August. All semen used was frozen in a Tris-based egg yolk/glycerol diluent. Semen quality has been determined by post-freeze motility using a 2 sec photomicroscopic technique.

Training courses lasting for 3 d have been held to instruct both visiting technicians and owner/operator type inseminators. In combination with Ambreed technicians operating directly from the Cambridge Centre, approximately 15,000 goats were inseminated during the 1987 autumn period. Kidding data are currently being analysed and indications of pregnancy rate from non-return rates are currently in the 50 - 55% range.

Keywords Synchronization, heat detection.

INTRODUCTION

The past 3 years have seen many goat artificial insemination (A.I.) programmes completed on a national basis. Some of which have yielded poor results and others very acceptable results. The better results have invariably been achieved in the better managed flocks. The objective for all parties involved should be to obtain 100% kids born to does programmed. Variations of the recommended programme have accounted for the majority of poor results and improvements to the original recommendations have assisted in gaining acceptable results for cervical A.I.

PLANNING A PROGRAMME

The main points which must be considered when planning a programme should be:

1. Animal health and condition.
2. Animals should be flushed for 3 to 4 weeks before A.I.
3. Freedom from stress at all times.
4. Main breeding season probably between February and May.

PREPARATION FOR A.I.

Synchronization of does for A.I. can be achieved either by natural or artificial means. We have been involved in 5 programmes which have utilized synchrony with teaser bucks. This system has proven both very effective and cost efficient. For best results physical separation of does and all bucks for some 6 to 8 weeks before mating is necessary. It is difficult to establish how large a distance should be recommended but suggestions to date indicate a minimum of 500 m in a position *down wind* of the does.

HEAT DETECTION

Upon introduction of the teaser bucks to the A.I. mob, activity will be triggered within 48 h. It is not practical to inseminate on this heat but to wait until the following heat which should be detected after day 5. It is optional whether or not harnasses need to be fitted to teasers for the first 5 d, but if fitted, an indication of response will be evident. Raddle colour should give maximum synchrony effect and most does will be inseminated by day 14. We have found by using yellow raddle first that most other colours cover successfully in subsequent changes. It is also of assistance, when working with dark coloured ferals to apply a small strip of white acrylic paint from hip to hip.

TABLE 1 Regime used with cervical insemination following naturally induced heat.

Separation period	Harnessed teaser bucks in mob (1:20 ratio)		
	Day 1	Day 6	Day 16
6 - 8 weeks Bucks minimum 500 m *downwind* of does	Introduce teasers	Start A.I. Twice daily at heat detection	Majority A.I. completed

TABLE 2 Results of cervical insemination following naturally induced heat.

Area	No. in mob	No. inseminated	No. kidded	Kidded / Inseminated (%)	No. kids born	Kids born / Does kidding (%)	Kids born / Does inseminated (%)
South Auckland	60	53	28	53	43	153	81
King Country	40	38	26	68	40	153	105
Hawkes Bay	55	51	24	47	40	166	78
Waikato	84	77	39	51	54	138	70
Auckland	89	86	53	62	74	139	86
Overall	328	305	170	56	251	148	82

A.I. TIMING

From day 6 when A.I. begins heat detection should be twice daily at about 0800 h and 1600 h. Those animals detected at the 0800 h drafting should be inseminated at about 1700 h on the same day. Does detected at the afternoon drafting should be inseminated at about 0900 h the following day. Does should be kept with teaser bucks at all times before and after A.I. A period of 16 d should be maintained before entire follow up bucks are introduced. In any A.I. programme it has been firmly established that to record pregnancy by non-return to entire bucks is both inaccurate and unproductive. The stress of repeated yarding and handling can cause losses of pregnancy and is therefore not advised.

CERVICAL – NATURAL HEATS

The regime used is outlined in Table 1 with results using the regime shown in Table 2.

USE OF INTRAVAGINAL DEVICES

If a more accurate or tight synchrony is required the use of intravaginal devices is recommended, such as controlled internal drug releasers (CIDR) or sponges. Within these programmes 2 options exist.

1. Synchronise and inseminate immediately after withdrawal of device.
2. Synchronise and wait until next natural heat. Approximately 18 to 24 d.

With the first option it is possible to include the use of pregnant mare serum gonadotrophin (PMSG) to stimulate multiple ovulation which will assist kidding rate. Much discussion has developed over the past 2 years as to what level and when PMSG should be administered. We suggest a 200 iu intramuscular injection 48 h before withdrawal of CIDR or sponge will attain the most desirable results.

CERVICAL – SYNCHRONISED

The regime used is outlined in Table 3 with results comparing natural and synchronised heats given in Table 4.

INTRAUTERINE – LAPROSCOPE

For best results with intrauterine A.I. synchrony is similar to the above with administration of PMSG 48

TABLE 4 Effect of method of heat synchrony on kidding performance.

Method	No inseminated	No kidded	Kidded inseminated (%)
Natural	308	170	56
Intravaginal device			
At withdrawal	3344	1698	51
Next heat	210	118	56

TABLE 3 Regime used with cervical insemination following synchronised heat.

Harnessed teaser buck in mob (1:20 ratio)					
Day 1	Day 10	Day 25	Day 27	Day 29	Day 47-53
Introduce teasers	Insert CIDR into marked does	Inject 200iu PMSG (if required)	Remove CIDR Change teaser raddle colour	Start A.I. 24 - 60h after CIDR withdrawal	Start A.I. if using next natural heat after synchrony

TABLE 5 Regime used with intrauterine insemination following synchronised heat.

Harnessed teaser bucks in mob (1:20) ratio				
Day 1	Day 10	Day 25	Day 27	Day 29
Introduce teasers	Insert CIDR into marked does	Inject 200iu PMSG	Remove CIDR Change teaser raddle colour	Inseminate 48h after CIDR withdrawal into either marked does or all does inseminating marked does first.

h before withdrawal and insemination of all or marked does approximately 48 h after withdrawal. The regime used is outlined in Table 5.

CONCLUSION

Most of the A.I. work carried out to date has included synchrony by use of either CIDRs or sponges and inseminating 24 to 60 h after withdrawal. It is our opinion that a slightly lower pregnancy rate will be attained using this regime than if using either natural heats or inseminating on the next heat after withdrawal of synchrony devices. While we have yet to do a direct comparison in a controlled situation individual results indicate this to be the case.

With all A.I. programmes flock management will have a large effect on results. Short cuts will result in poor results and a subsequent reduction in confidence in caprine A.I.

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