

USE OF MELATONIN TO OVERCOME SEASONAL CONSTRAINTS  
ON REPRODUCTIVE PERFORMANCE OF ANGORA GOATS

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In southern Australia Angora does are mated from February to May and kid from July to October. Kid mortality is high in winter because of cold stress and predation, and spring born kids grow slowly after weaning in early summer as pasture quality declines rapidly. Studies in 1984/85 and 1986/87 were undertaken with the aim of developing reliable methods of early mating of Angora does using melatonin.

At Boort (Vic. Lat. 38°08'S) in 1984, does (mean liveweight 43.1 kg) were randomly allocated to three treatments each with two replicates. All does were fed 100 g/day of commercial sheep pellets at 1600 h for 3 weeks prior to joining on 31.12.84. Treatments were: C - control; F - fed pellets containing 2 mg melatonin/100 g which maintained plasma melatonin levels at 65% of night-time levels; and PI - received two prototype melatonin implants 10 days apart which maintained plasma melatonin levels above night-time levels for 20 days. In 1986, does were allocated on liveweight (mean 44.1 kg) to two treatments each with three replicates and joined from 16.12.86. Treatments were: G - control; and R - received a subcutaneous melatonin implant (Regulin Gene Link Australia Ltd.) which maintained plasma melatonin levels above night-time levels for 4 weeks prior to joining. In both years, does were isolated from bucks for 6 weeks prior to joining. Oestrous pattern, pregnancy mid-term (ultra sound) and kidding % were recorded.

Table 1 Conception pattern and foetal % of mature Angora does mated at Boort in 1984 and 1986

| Treatment |    | Cumulative % conceiving by day: |    |                 |                 |                 |                 | <u>Foetuses/100 does</u> |                  |
|-----------|----|---------------------------------|----|-----------------|-----------------|-----------------|-----------------|--------------------------|------------------|
|           |    | N                               | 14 | 28              | 42              | 56              | 63              | pregnant                 | mated            |
| 1984      | C  | 108                             | 5  | 56              | 74              | 81              | 84              | 144                      | 122              |
|           | F  | 107                             | 2  | 52              | 72              | 79              | 82              | 147                      | 126              |
|           | PI | 109                             | 4  | 63              | 72              | 78              | 78              | 149                      | 125              |
| 1986*     | G  | 104                             | 0  | 8 <sup>a</sup>  | 57 <sup>a</sup> | 63 <sup>a</sup> | 71 <sup>a</sup> | 146 <sup>a</sup>         | 104 <sup>a</sup> |
|           | R  | 69                              | 4  | 62 <sup>b</sup> | 72 <sup>a</sup> | 82 <sup>b</sup> | 88 <sup>b</sup> | 164 <sup>a</sup>         | 145 <sup>b</sup> |

\* Within columns in 1986 a ≠ b (P<0.05)

In 1984, there was no advance in the breeding season or in kid production when feeding melatonin or using the prototype implant. In 1986 one R replicate (n=34) was excluded from the results as the buck died from natural causes prior to day 28. Mean conception day for R was advanced by 10 days. Foetal % of R increased by 41% due to a 17% decrease (P<0.01) in the number of non pregnant does and a 20% increase (P<0.01) in does bearing multiples. Kid survival did not differ. Kid production increased by 36 kids/100 does or Regulin treated does.

Regulin treatment of Angora does in November 1986 provided a practical method of obtaining a defined early joining with a substantial increase in kid production.

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