

THE EFFECT OF MELATONIN IMPLANTS ON SEASONAL REPRODUCTIVE AND ANTLER CYCLES OF RED DEER STAGS

J.R. Webster, J.M. Suttie, I.D. Corson and L.D. Staples\*

Invermay Agricultural Centre, Private Bag, Mosgiel, New Zealand

\*Gene Link Australia Ltd., Level 12, 222 Kingsway, South Melbourne, Victoria.

Red deer stags (n=24) were randomly allocated to four treatment groups. Two groups of stags were treated with constant release melatonin implants (Gene Link, Australia), from either November to February (EM) or December to February (LM). One untreated control group remained with the melatonin treated animals (CC) and the other control group was isolated (RC). Body weight, neck girth, testes size and antler status were monitored monthly.

The melatonin treatments advanced seasonal changes normally associated with a decreasing daily photoperiod during autumn, such as antler cleaning, body weight gain and loss, development of neck musculature and increase in testes size.

Melatonin treatment ceased when the February implants became depleted in mid-march. Shortly after this, testes size regressed rapidly to reach a low in June and antlers were cast in EM and LM stags. From June to November, EM and LM stags underwent a second cycle of antler growth and reproductive development and decline. During this period CC and RC stags followed the normal pattern of gradual reproductive regression and cast their antlers in September. This out-of-season cycle of the treated stags appeared to be initiated around the time of the winter solstice and was more pronounced in the EM group than the LM group.

All groups of stags had become reproductively synchronised at next breeding season in March.

The difference between EM and LM groups suggests that either the onset of treatments (Dec vs Nov) or the duration of treatments (5 vs 4 months) was critical in determining the pattern of reproductive response up to 4 months after treatments had ended.