AN INVESTIGATION INTO THE MECHANISMS INVOLVED IN THE DEPRESSION OF OVULATION RATES IN EWES GRAZING OESTROGENIC LUCERNE

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

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A B S T R A C T

The reproductive performance of 123 Romney and Border Leicester x Romney ewes was compared after they grazed oestrogenic lucerne or non-oestrogenic ryegrass/clover pasture.

To synchronize oestrus prior to the experimental treatment, progestagen-impregnated intravaginal sponges were inserted in all ewes for 14 days. In Experiment I, which involved 42 Romney and Border Leicester x Romney ewes, the animals grazed treatment pastures for one complete oestrous cycle. Blood samples were taken at intervals throughout the cycle and luteinizing hormone concentrations were determined. Ovulation rates and the numbers of follicles present on the surface of the ovaries were recorded at laparotomy, three days post-oestrus.

In Experiment II, which involved 81 Romney ewes, oestrogenic lucerne or non-oestrogenic ryegrass/clover pasture was grazed for a complete oestrous cycle, or treatments were interchanged in mid-cycle. All ewes were slaughtered three days post-oestrus and their reproductive tracts were recovered and individually identified. Ovulation rates and the numbers of follicles on the surface of the ovaries were recorded. After sectioning the ovaries, all follicles of a diameter greater than 2.0mm were recorded. Sections of tissue from the vagina, cervix, uterus and fallopian tubes of each ewe were mounted, stained with haematoxylin and eosin, and the height of their epithelial cells measured.

The ingestion of oestrogenic lucerne for one complete oestrous cycle depressed ovulation rates by 29 percent (0.67 ovulations per ewe) in Experiment I and by 22 percent (0.40 ovulations per ewe) in Experiment II. The ingestion of oestrogenic lucerne for part of the oestrous cycle,

depressed ovulation rates only if it was consumed for the latter half of the cycle.

Oestrogenic lucerne did not significantly influence the secretion of luteinizing hormone over the pre-ovulatory period, or at any other stage of the oestrous cycle.

There were no significant differences in the total numbers of ovarian follicles present, in the numbers of follicles on the surface of the ovaries, or in the numbers of large follicles (with a diameter of greater than 3.5mm) present, between the treatment groups.

The ingestion of oestrogenic lucerne did not increase significantly, the height of epithelial cells in genital tract tissue, when compared with that in ewes grazing non-oestrogenic ryegrass/clover pasture. Similarly, there was no significant difference in uterine weights. This is in contrast to published data where lucerne is fed to speyed ewes.

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PREFACE

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