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**Comparison of enzyme-immunoassay of oestrone sulphate in milk with rectal palpation, ultrasonography and farmers' observation for pregnancy diagnosis in seasonal dairy herds in New Zealand**

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for the degree of  
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## **Abstract**

A total of 2139 cows in six commercial, spring-calving New Zealand dairy herds were examined for pregnancy by enzyme-immunoassay of oestrone sulphate in milk, rectal palpation and real-time ultrasonography at 137 to 180 days after the start of mating. The gold standard was based on calving records, observed events such as abortion, or examination of the reproductive tract after slaughter. Sensitivity was 81.8%, 100.0% and 99.9%, and specificity was 81.0%, 91.4% and 90.9% for oestrone sulphate, rectal palpation and ultrasonography, respectively. Oestrone sulphate sensitivity increased in a linear fashion with advancing stage of gestation and reached 96.8% for cows at least 120 days pregnant. Sensitivity and specificity of oestrone sulphate were significantly lower than those of the other two methods were significant ( $p=0.0001$ ).

In seven additional herds with a total of 967 animals, a pregnancy diagnosis was obtained by oestrone sulphate and farmers' observation. Sensitivity and specificity for these two methods were significantly different at 85.4% vs. 98.6% ( $p=0.0001$ ), and 80.4% vs. 66.7% ( $p<0.002$ ), respectively. The sensitivity of oestrone sulphate increased and the specificity of farmers' observation decreased with advancing stage of pregnancy.

Using a partial farm budget, the cost of pregnancy diagnosis by oestrone sulphate was established as NZ\$ 6.54 per cow compared to NZ\$ 4.34 for rectal palpation and NZ\$ 4.60 for ultrasonography. Compared to farmers' observation, oestrone sulphate was more expensive at NZ\$ 6.63 vs. NZ\$ 6.53 per cow.

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