

ABSTRACTS
AMERICAN SOCIETY OF ANIMAL SCIENCE
WESTERN SECTION
June 19–21, 2002
Fort Collins, Colorado
*** Author Presenting Paper**

PASTURES AND FORAGES

72 Comparison of techniques and grinding size to estimate digestibility of forage base ruminant diets.

D. Damiran*¹, T. DelCurto¹, D.W. Bohnert¹, G.D. Pulsipher¹, and S. Findholt²,
¹Oregon State University, Union, ²Oregon Department of
Fish & Wildlife, La Grande.

The objectives of the following experiments were to evaluate DM and NDF digestibility estimates for the following techniques; Daisy// *in vitro*, .lter bag *in situ* preceded by 48 h pepsin treatment, Tilley and Terry two stage *in vitro*, with *in vivo* digestibility. In addition, effects due to sample size (0.25 vs 0.50 g) and Wiley mill grind size (1mm vs 2mm) were also evaluated. In Exp. 1, 15 forage plants (.ve grasses, .ve forbs, four shrubs, and lichen) from mixed conifer rangelands were used to evaluate digestion estimation techniques. Sample ranges for CP, ADF, and NDF were 2.7 to 14.5%, 5.3 to 53.9%, and 24.6 to 81.1%, respectively. Compared to IVDMD, *in situ* overestimated (P < 0.05) DMD by 58, 128, 148, and 164 g/kg and the Daisy// technique overestimated (P < 0.01) DMD by 155, 172, 162, and 236 g/kg for grasses, forbs, shrubs, and lichens respectively. In Exp. 2, Fescue hay samples were used to compare the above techniques to *in vivo* digestibility. *In situ* DMD (653 g/kg), Daisy// DMD (689 g/kg), and IVDMD (583g/kg) values were higher (P < 0.01) than *in vivo* DMD (500 g/kg) values. In contrast, *in situ* NDF digestibility did not differ (P = 0.13) from *in vivo* NDF digestibility. However, Daisy// NDF digestibility (0.25 g sample size) was greater (P < 0.01) than *in vivo* NDF digestibility. In Exp. 3, two grasses, forbs, shrubs, and lichen were used to evaluate the interaction of Wiley mill grind size (1 vs 2 mm) and digestibility technique. For grass hay, Daisy// DM (688 g/kg) and NDF (500 g/kg) and *in situ* DM (713 g/kg) and NDF (510 g/kg) digestibilities were higher (P < 0.05) and IVDMD (526 g/kg) was lower (P < 0.05) compared to *in vivo* DM (624 g/kg) and NDF (572 g/kg) digestibility. In contrast, straw IVDMD (324 g/kg), Daisy// DM (404 g/kg) and NDF (283 g/kg) and *in situ* DM (409 g/kg) and NDF (272 g/kg) digestibilities were lower (P < 0.01) compared to *in vivo* DM (501 g/kg) and NDF (574 g/kg) digestibility. Daisy// and *in situ* digestibility estimates were greater (P < 0.01) for grass hay milled at 1 mm vs 2mm, and for straw samples all technique estimates were higher (P < 0.01) for 1mm. For the Daisy// and *in situ* techniques, using a 250 mg sample resulted in higher (P < 0.05) estimates of digestibility than a 500 mg sample. In summary, .lter bag methods failed to accurately estimate digestion as compared to *in vivo* and traditional *in vitro* techniques.

Key Words: Ruminant, Digestion Techniques, Forages