

Effect of field pea-based creep feed on intake, digestibility, ruminal fermentation, and performance by nursing calves grazing native range in western North Dakota¹

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Two experiments evaluated digestive and performance effects of field pea-based creep feed in nursing calf diets. In Exp.1, eight nursing steer calves (145 ± 27 kg initial BW) with ruminal cannulas were used to evaluate effects of supplementation and advancing season on dietary composition, intake, digestion, and ruminal fermentation characteristics. Treatments were unsupplemented control (CON) and field pea-based creep (SUP; 19.1% CP, DM basis) fed at 0.45% BW (DM basis) daily. Calves grazed native range with their dams from early July through early November. Periods were 24 d long and occurred in July (JUL), August (AUG), September (SEP), and October (OCT). Experiment 2 used 80 crossbred nursing calves, 48 calves in yr 1 and 32 calves in yr 2 (yr 1 = 144 ± 24 kg; yr 2 = 121 ± 20 kg initial BW), to evaluate effects of field pea-based creep on calf performance. Treatments included unsupplemented control (CON); field pea-based creep feeds containing either 8% (LS); or 16% (HS) salt; and soybean meal/field pea-based creep containing (as-fed basis) 16% salt (HIPRO). Masticate samples from SUP calves in Exp.1 had greater CP ($P = 0.05$) than those from CON calves. Forage CP and ADIN decreased linearly with advancing season ($P = 0.01$ and 0.03 , respectively). In vitro OM digestibility of diet masticate decreased from JUL to OCT ($P < 0.01$; 58.5 to 41.3%). Forage intake did not differ ($P = 0.33$) between treatments but increased linearly with advancing season (1.67, 1.90, 3.12, 3.38 kg/d for JUL, AUG, SEP, and OCT, respectively; $P < 0.01$). Milk intake (percentage of BW) did not differ ($P = 0.56$) between CON and SUP calves but decreased linearly ($P < 0.01$) with advancing season. Supplemented calves had greater ($P = 0.03$) total intake (g/kg of BW; forage + milk + creep) compared with CON calves. Treatment did not affect ($P < 0.30$) rate of in situ disappearance of forage or creep. Forage DM, CP, and creep DM disappearance rate decreased linearly ($P = 0.02$) with advancing season. Supplementation decreased ($P = 0.05$) ruminal pH, whereas ruminal ammonia and VFA concentrations were greater ($P = 0.02$) in SUP calves. In Exp. 2, creep-fed calves had greater ADG and final BW than CON calves ($P < 0.01$). Calves offered HS tended ($P = 0.07$) to have increased gain efficiency above CON than LS calves. Field peas can be used as an ingredient in creep feed to increase calf weight gain without negatively affecting ruminal fermentation and digestion.

Key Words: Digestibility • Field Pea • Forage • Intake • Nursing Calves • Ruminal Fermentation

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