The objective of this study was to determine the effects of differing forage to concentrate ratios (F:C) and corn dry distillers grain with solubles (DDGS) inclusion rates on chewing behavior, rumen pH, and rumen fill in precision-fed dairy heifer rations. A split plot design with F:C as whole plot and DDGS inclusion level as sub-plot was administered in a 4-period (19 d) 4 × 4 Latin square. Eight rumen cannulated Holstein heifers (12.5 ± 0.5 mo and 344 ± 15 kg, age and BW respectively) housed in individual stalls were allocated to 2 F:C (50:50 LF or 75:25 HF; DM basis) and to a sequence of DDGS inclusion (0, 7, 14 and 21%; DM basis). Forage was a mix of 50% corn silage and 50% grass hay (DM basis). Diets were fed to provide equal amounts of nutrients to allow 800 g/d BW gain and fed 1X/d. Chewing behavior was visually monitored for 48 h at 5-min intervals. Rumen contents were sampled at –2, 0, 2, 4, 6, 8, 10, 12, and 20 h after feeding for pH determination. Total rumen evacuation was performed at –2 and 5 h after feeding. Statistical analysis was conducted using the MIXED procedure of SAS. DMI linearly decreased as DDGS increased (6.61 to 6.11 ± 0.09 kg/d; P < 0.01). No differences were found for rumen pH. Time spent eating tended to be longer for HF (151 vs. 112 ± 14 min/d; P = 0.09) and was not different for DDGS inclusion. Ruminating time did not differ by F:C but linearly increased as DDGS increased (421 to 450 ± 15 min/d; P = 0.03). Total chewing time tended to be longer for HF (593 vs. 516 ± 28 min/d; P = 0.10) and to increase linearly as DDGS increased (553 to 579 ± 23 min/d; P = 0.09). Wet rumen digesta weight (46.6 vs. 37.6 ± 2.2 kg; P = 0.03) and volume (51.5 vs. 41.5 ± 2.5 L; P = 0.03) were greater for HF. Total chewing time increased by the addition of DDGS and higher F:C. DDGS influenced ruminating time with no effect on eating time while F:C affected eating time. Higher F:C increased rumen digesta weight and volume. F:C or DDGS levels in the ration did not affect rumen pH.

**Key words:** heifer, chewing, dry distillers grain with solubles