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259 Non-traditional beef heifer management effect on synchronized fixed-time AI and delayed feedlot entry of non-pregnant heifers. Songul Senturklu¹, Douglas G. Landblom², Lauren L. Hanna³, Byron Parman³, George A. Perry⁴, Steve Paisley⁵, ¹Canakkale Onsekiz Mart University, ²North Dakota State University Dickinson Research Extension Center, ³North Dakota State University, ⁴Texas A&M AgriLife Research, ⁵University of Wyoming

Abstract: Beef heifer reproduction management at the NDSU Dickinson Research Extension Center is evaluating non-traditional production management procedures. Using a synchronized fixed-time AI procedure, drylot control heifers with cleanup bulls (DLOT) were compared to two fixed-time grazing protocols without cleanup bulls. Treatments: 1) Drylot Control (DLOT) with clean-up bulls, 2) Grazing within a diverse annual forage cropping system (IAF – no clean-up bulls), and 3) Grazing native range (NR – no clean-up bulls). For finishing of non-pregnant heifers, following an 85-day pregnancy determination the heifers were transferred to the University of Wyoming (SAREC) feedlot and grid marketed in the meat at the Cargill Meat Solutions, packing plant, Ft. Morgan, CO. The MIXED procedure of SAS was used for data analysis. Abstracts for years 1 and 2 of the study have been previously reported. For year-3, grazing days for the CTL, IAF, and NR were 101-, 150-, and 150-days, respectively, and synchronized pregnancy rates were 50.0, 56.0, and 50.0%, respectively. CTL cleanup bulls added 15.6% for total pregnancy of 65.6%. Grazing ADG was greater for IAF heifers (0.84 kg, P=0.001) compared to the CTL and NR (0.63, 0.64 kg), respectively. Non-pregnant CTL, IAF, and NR feedlot heifer performance for start weight (CTL 448, IAF 487, NR 474 kg, P=0.07), end weight (CTL 650, IAF 646, NR 670 kg, P=0.58), gain (CTL 201.4, IAF 158.8, NR 195.9 kg, P=0.11), and ADG (CTL 2.05, IAF 1.62, NR 2.0 kg, P=0.11) did not differ. Daily DM feed intake was greater for CTL (19.9 kg) compared to IAF 16.7 and NR 17.8 kg (P=0.015); however, G:F did not differ (CTL 0.1034, IAF 0.0970, NR 0.1124 kg, P=0.37). Daily feed cost for CTL, IAF, and NR was 4.03, 3.41, and \$3.61/d, respectively. Total feed and yardage cost per heifer was highest for the CTL \$437.77, lowest for the IAF \$377.35, and NR was intermediate at \$396.93/heifer (P=0.025). HCW (CTL 375, IAF 372, NR 381 kg, P=0.73) and dressing percent (CTL 60.25, IAF 60.07, NR 59.31%, P=0.38) did not differ. Carcass marbling score (P=0.75), USDA YG (P=0.35), quality grade

Table 1: Production variables assessed in *Mycoplasma hyopneumoniae* endemically infected and control flows.

Flow	Variable mean (±SD)							
	Percent mortality [%]	Total medicine cost per pig [\$]	ADFI [lbs]	Gain to feed [lbs]	Substandard sales [%]	Average carcass wt. [lbs]	ADG live [lbs]	Days first market [days]
A*	6.55 (0.059)	2.05 (1.283)	5.22 (0.379)	0.36 (0.024)	3.46 (0.029)	161.21 (26.566)	1.89 (0.165)	87.23 (14.825)
B	2.59 (0.010)	1.09 (0.637)	5.43 (0.370)	0.38 (0.017)	2.11 (0.010)	166.32 (10.139)	2.04 (0.138)	87.74 (10.223)
C	2.95 (0.024)	0.97 (0.631)	5.29 (0.452)	0.37 (0.019)	1.71 (0.008)	165.20 (12.337)	1.98 (0.142)	88.76 (11.585)

*Flow positive for *Mycoplasma hyopneumoniae*.

(100% Choice or better, $P=1.0$), and gross carcass value ($P=0.60$) did not differ. Economically, non-pregnant CTL system heifers that did not settle to clean-up bulls had the highest net return after accounting for expenses of \$1,313.26, compared to \$900.91 for the integrated system and \$1,041.64 for the native range system. Reduced net return for the IAF was due to farming, feedlot feed and yardage, and freight. Similarly, the NR system net return was reduced due to feedlot feed and yardage as well as freight to the feedlot and packing plant, but no farming. Each system has advantages and disadvantages depending on a particular ranches' infrastructure and available labor.

Keywords: heifer, reproduction management, system economics