

COMPLEMENTARY GRAZING SYSTEMS FOR COW-CALF PRODUCTION

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ABSTRACT

A multi-year study is evaluating characteristics of dryland cow-calf production systems in the Texas Panhandle. Systems evaluated are range-only (RO), range plus a wheat-fallow-grain sorghum-forage sorghum rotation (RROT), and range plus wheat and forage sorghum cropped continuously (RCONT). RO forage is native short grass prairie rangeland. RROT forages include rangeland as in RO, along with dryland cropland maintained in a wheat-fallow- grain sorghum-forage sorghum rotation since 1998. RCONT includes rangeland as in RO, combined with separate plots of continuously cropped dryland wheat and forage sorghum. British-cross cows or cow-calf pairs are stocked on each forage system as feed production dictates. Rangeland is stocked as required to provide sustainable range condition using accepted range management principles. RROT and RCONT cropland is grazed by stocker cattle when forage quantity and quality is typically sufficient to support economical gains. Cows or cow-calf pairs utilize RROT and RCONT crops as supplementary grazing and when stocker grazing is not justified. Rangeland supported 12.8 Animal Unit Days (AUD) per acre during 2004 and 12.7 AUD per acre in 2005. RROT sorghum-sudan grazed by cows supported 67.8 AUD per acre in 2004 and 48.5 AUD per acre in 2005. RCONT sorghum-sudan grazed by cows provided 35.2 AUD per acre in 2004 and 36.5 AUD per acre in 2005. RROT wheat grazed by cows in 2005 provided 61.35 AUD per acre. RCONT wheat grazed by cows in 2005 provided 35.6 AUD per acre. RCONT wheat also supported 83 pounds of stocker gain per acre in 2005.

SUMMARY

Indicators related to the Ogallala aquifer suggest a future reduction in irrigated acreage in the Texas Panhandle. Transition to dryland agricultural production systems therefore justifies study. Dryland grain production is economically risky due to precipitation risk. Dryland forage crop systems are also unpredictable, as precipitation may be insufficient to produce yields that justify stocker grazing or haying. Use of the cow-calf enterprise to harvest low-yielding and/or lower quality forages provides an alternative system. Cow-calf production has been profitable during recent years but is also susceptible to drought risk. Complementary dryland forage systems that utilize multiple forages (range, crop, warm season, cool season) with both cow-calf and stocker enterprises may provide a means of efficiently harvesting forages while reducing risks. Few studies of complementary cow-calf production systems have been conducted in the Texas Panhandle. The objectives of this study are to determine characteristics of three dryland cow-calf production systems in the Texas Panhandle.

Three dryland forage production systems for cow-calf operations are being evaluated with the following treatments: Range plus a crop rotation of wheat, grain sorghum, sorghum-sudan, fallow (RROT), and range plus wheat and sorghum-sudan planted continuously (RCONT). A

range-only (RO) system serves as a control treatment. British-cross cows and cow-calf pairs were randomly allotted to the three treatment groups. RROT forages include rangeland and 228 acres of dryland cropland maintained in rotation since 1998. RCONT includes rangeland and 100 acres each of continuously cropped dryland wheat and sorghum-sudan. Rangeland is rotationally-grazed native short-grass prairie. British cross cows or cow-calf pairs were stocked on each system as forage production dictated. Crossbred steers were grazed on each system when adequate forage was available. Rangeland was stocked as required to sustain range condition using accepted range management principles (take half-leave half). All cattle were weighed at the beginning and end of grazing periods on cropland. Cows and cow-calf pairs were weighed at least quarterly when on rangeland in order to maintain accurate animal unit estimates.

Rangeland supported 12.8 animal unit days (AUD) of grazing per acre from January 1 through October 15, 2004. Rangeland supported 19,043 AUD of grazing, and 12.7 AUD per acre during calendar year 2005. Stocking decisions were based on forage estimates made from representative clipped plots taken during the fall of 2004 and throughout 2005. A range land stocking rate of approximately 12 – 14.5 AUD per acre is typical for the region.

RROT sorghum-sudan grazed by cow-calf pairs provided 67.8 AUD's per acre in 2004. British cross cow-calf pairs were grazed on RROT sorghum-sudan plots beginning July 19, 2005 and removed September 5, 2005. Sorghum-sudan plots provided 2,764 AUD of grazing, and 48.5 AUD per acre. RCONT sorghum-sudan provided 2,740 AUD and 36.53 AUD per acre for cows. RCONT sorghum-sudan also supported 4,530 lbs of stocker cattle gain and 90.6 lbs of gain per acre. RROT grain sorghum residue was grazed by cow-calf pairs beginning October 3, 2005. Grain sorghum residue provided 2,164 AUD of grazing and 39.3 AUD per acre.

Wheat planted during October 2004 was grazed in March-May 2005. RCONT wheat supported 83 lbs of gain per acre. In addition, RCONT wheat supported 1,780 AUD and 35.6 AUD per acre during cow-calf grazing, and produced 45,090 lbs of hay and 1,803 lbs of hay per acre. RROT wheat was grazed by cow-calf pairs and provided 3,497 AUD of grazing and 61.35 AUD per acre. Wheat was planted on RROT and RCONT plots on September 2, 2005 at the rate of 35 lb per acre. RROT wheat supported total gains of 888 lbs and gain of 16.1 lbs per acre between November 10, 2005 and January 6, 2006. Wheat planted on RCONT cropland did not produce enough forage for grazing.

RCONT sorghum-sudan supported 136.9 lbs of gain per acre (stocker grazing) in 2004. Total RCONT cropland supported 22.6 AUD per acre, plus 43.41 lbs of gain per acre along with 225 lb of hay per acre. Calves were weaned from all three cattle groups on October 3, 2005. Average weaning weights for RO, RROT, and RCONT groups were 620, 595, and 664 lbs respectively.

Cow-calf production in complementary forage systems may provide useful management options to producers, and may especially be a useful tool for managing precipitation risk. The results presented here are from the first two years of a study designed to evaluate characteristics of such complementary systems. Means for range land, forage production, and animal performance are within typical ranges. Additional data collection and analysis is needed to properly evaluate the

risk-reduction potential of complementary cow-calf systems, and to develop decision aids for optimum combinations of forage type and livestock in dryland systems.