Increasing Sustainability of Livestock Production of the Northern Great Plains

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Increasing sustainability of livestock production in the Northern Great Plains has significant implications for the agricultural sector in the focus region. Crop and beef cattle producers are experiencing historically high commodity prices for cattle, calves, and fed cattle, while grain and oilseed prices have trended significantly lower. Research in this project evaluates integration of crop and beef cattle systems to identify the complementing holistic potential that may exist. Paralleling the actual research is a focus on education for existing producers through farmer-cooperator projects, educational events for high school and undergraduate students, and an international Turkish research scientist connection. Public awareness of alternative production methodologies is increasing as evidenced by agronomic programing awareness across the entire agricultural sector and attendance at the 2012-2014 Beef Cattle and Forage Field Days held at the Dickinson Research Extension Center Ranch Headquarters. The field days are designed as workshops for a cross section of stakeholders including farmers and ranchers, research personnel, local, state and federal agency representatives who may or may not be actively raising cattle and crops, but have a focused interest in non-traditional production methods. Program topics include project data summary presentations and tours of the integrated diverse cropping and beef cattle systems being studied, and presentations and tours of producer-cooperator projects that are grazing cover crops and utilizing unharvested corn for extensive backgrounding. The field day/workshops are practical sessions focusing on soil health, and the mechanics of upgrading and attaining soil health benchmarks using the pillars of soil health that include minimal soil disturbance with no-till seeding and planting, crop diversity using cool and warm season broadleaf and grass crops, including cover crops in the crop rotation, maintaining a living root in the soil as long as possible, keeping soil surface residue, and the inclusion of livestock grazing.

Publications that have been generated from the research include the following:

Senturklu, S., D. G. Landblom, R. Maddock, and S. Paisley. 2014. Consequence of perennial and annual forage grazing systems before feedlot entry on yearling steer grazing and feedlot performance, carcass measurements, meat evaluation, and system net return. *Proc. West. Sec. Am. Soc. Anim. Sci. Vol. 65:106-110.*

S. Senturklu, D.G. Landblom, R. Maddock, and S. Paisley. 2014. Evaluation of two yearling grazing systems before feedlot entry. Univ. Wyoming Agric. Exp. Station, 2014 Field Day Bulletin, SAREC Section, pp. 93-94.

Senturklu, S., D. G. Landblom, G.A. Perry and T. Petry. 2015. Effect of Frame Score on Growth, Fertility, and Economics. *Asian Australas. J. Anim. Sci. Vol. 28(1):69-78; HTTP//dx.doi.org/ 10.5713/ajas.13.0833.*

Publications in this 2014 Dickinson Research Extension Center Annual Report:

Şentürklü, S. and D. G. Landblom. Effect of grazing cover crops, stockpiled improved grass, and crop residues on cow wintering performance, economics, and calving rate. In the 2014 DREC Annual Report.

Şentürklü S., D.G. Landblom, R.J. Maddock, and S.I. Paisley. The combined effect of beef cattle frame score and forage grazing sequence on yearling steer grazing and feedlot performance, carcass trait measurements, and systems economics. In the 2014 DREC Annual Report.

Cihacek, L., D. Landblom, S. Şentürklü, and E. Brevik. Seasonal soil nitrogen mineralization within an integrated crop and livestock system. In the 2014 DREC Annual Report.

Field Day and Invited Presentations:
Beef Cattle & Forage Field Day, August 27, 2014, DREC Ranch Headquarters, Section 19, and Derrick Dukart Farm

Vo-Ag Student Workshop, September 15, 2014, DREC Ranch Headquarters and Section 19

Growing Beef with Forages, November 5, 2014, Lucas and Jolene Hoff Farm, Richardton, ND

Grazing Annual Forages, Cover Crops & residues to Improve Your Bottom Line. Presented at the Growing Beef with Forages, November 5, 2014, Lucas and Jolene Hoff Farm, Richardton, ND

Soil fertility, Cropping Systems, and Beef Production with Forages. Presented at the NRCS Little Beaver Conservation District, SOIL HEALTH WORKSHOP, Baker, MT

Alternative and Co-Product Feeds for Supplementation. Presented at the NRCS Little Beaver Conservation District, SOIL HEALTH WORKSHOP, Baker, MT