Seasonal Forage Productivity and Quality of Dual Purpose Winter Canola and Wheat in the Southern High Plains

Sangu Angadi* Sultan Begna, and Mike Stamm

Agricultural Science Center at Clovis, New Mexico State University, Clovis, NM and Dep. of Agronomy, Kansas State University, Manhattan, KS

Introduction

- Declining Ogallala aquifer in the Southern High Plains need water efficient alternative forage crops to feed large dairy and beef industries in the region.
- Winter canola (WC) is very well adopted to the region and produces acceptable crop yields with relatively less water.
- It also offers a number of rotational benefits including weed control. Adds crop diversity to the predominant cereal based cropping systems of the region.
- Unlike winter wheat (WW), most of the fall foliage produced by WC is killed by freezing temperatures in the winter (Fig 1).
- Opportunity exists to use WC as a dual purpose crop like winter wheat and utilize most of the fall growth.

Objectives

- To compare seasonal patterns of forage productivity and quality of diverse winter canola cultivars with wheat under limited irrigation.

Materials and Methods

Location: Agricultural Science Center at Clovis, NM
Planting Date: Sept 5, 2012 (canola) and Sept 12, 2012 (wheat)
Fertilizer: 50 : 25 : 0 and 7.7 N-P2O5-K2O and Sulfur lb ac⁻¹

Treatments:
- Canola Cultivars: Griffin (KSU) Simulated Grazing (Harvest) Treatments
  1. November End (Fall freeze)
  2. Mid February
  3. Mid March
  4. Mid April
  5. November End & Mid April
  6. No Harvest (Control)
- Wheat Cultivar: TAM-111
- TAM-113 (year 2 onward)

Design: Split Plot (4 Reps)
Irrigation: Center pivot irrigation (Target 300 mm)
Forage quality: NIR Analysis (Ward lab)

Results

- Mean Relative Feed Quality (RFQ) of WC was 40 to 134% higher than WW suggesting better intake potential and digestibility of WC than WW forage.
- Nitrate content of WC forage was much higher compared to WW, indicating some concern of feeding only WC forage (negative point).
- In general, winter survival was not affected by forage harvest.
- However in 2013-14 season, regrowth from April or from multi-cut treatment did not survive severe hailstorm in early June. Other forage harvest treatments (bigger regrowth) survived. In contrast, WW was completely destroyed by hailstorm.
- Simulated grazing decreased WC grain productivity. Grazing time seems to have an effect (data not presented).

Conclusions

- Two year results indicated that winter canola can produce similar or higher forage biomass compared to winter wheat.
- Forage quality of winter canola was much superior to wheat.
- Information on actual grazing or silaging and on crop recovery are needed.
- Winter killed fall growth has some role in spring canola regrowth. Therefore, timing of forage harvest is important.
- With rotational benefit and dual purpose potential, winter canola can be a good alternative crop for the region under deficit irrigation management.
- The trial is being repeated in 2014-15 season.

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