INTRODUCTION

• A well-designed double-cropping system can result in significant savings from intensive use of the land and fertilizer carried over from previous crops (Wesley, 1999; Smith, et al., 2010).

• The green pea-canola cropping system can:
  ▪ provide additional annual farm income (Heggenstaller et al., 2008)
  ▪ protect the soil from wind erosion through vulnerable periods with crop coverage
  ▪ produce canola seed in the subsequent year for biodiesel and high-protein meal
  ▪ prevent the decline of soil health while enhancing soil conditions for the succeeding crop (Schillinger et al., 2010)

HYPOTHESES/OBJECTIVES

We hypothesized that N requirement of biennial canola can be reduced following green pea; the double-cropping system may result in improved productivity and overall profitability. Objectives were:

1. Quantify the N and S requirements of biennial canola under the double-crop scenario.
2. Assess canola forage quality
3. Assess the effect of canola forage harvest on final canola seed yield
4. Estimate the marginal benefit of the double crop system.

METHODS

A study was initiated in the spring of 2012 at Paterson, WA. The experiment included green pea-biennial canola cropping sequences with the canola phase arranged in a split plot design.

• Treatments in the canola phase were simulated canola grazing & "no grazing" in the main plot, and a 3 x 3 factorial combination of three N fertilizer rates (0, 100, 200 lbs/A) and three S fertilizer rates (0, 30, and 60 lbs/A) in the subplots.

• Biennial canola was planted in late August, harvested for forage in mid Oct., and for seed yield in the following year at the end of June.

• Microplots were set using ¹⁵N enriched pea residue and ¹⁵N labeled urea for selected treatments.

• Canola regrowth following a 4” cut.. Pretty good regrowth in 2012 but not in 2013

RESULTS

• Average green pea (shelled) yield was 6.5 ton/A and 3.5 in 2012 and 2013.

• Poor establishment reduced the yield to 900 lb/A in 2013. S effect was not significant.

• Feed quality of biennial canola was comparable to values reported in other works (e.g. http://www.agron.missouri.edu/ipm/engleman/engleman/biennial_canola_hay_and_silage_factsheet.php).

• Nitrogen fertilizer had significant influence on forage quality.

• Protein, ADF, and DMD%.

• Green pea was planted in late April and harvested at the end of June.

REFERENCES


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