Sheep Grazing for Cover Crop Termination: Grazing Field Pea and Yellow Sweetclover Cover Crops in a Winter Wheat System

Jasmine Westbrook,
Craig Carr, Patrick Hastfield, Perry Miller, Fabian Menalled
Montana State University

Problem
Cover crops are commonly used in cropping systems, where they are planted between primary crops. Cover crops provide numerous benefits to the agricultural ecosystem including...
- Competing with weeds
- Protecting soil surface
- Improving soil health
- Conserving water
- Nitrogen fixation

-BUT cover crops need to be terminated and conventional approaches, tillage or herbicides, can be environmentally and economically unsustainable.

Proposed Solution
Legumes make good cover crops because they add soil nitrogen. Legumes also have high protein (Pea: 16 to 18% CP; Clover: 19-21% CP) and digestibility (Pea: 36 – 86%; Clover: 63%)...

Grazing to terminate cover crops could turn an expense into an asset

Objectives and Methods
• Compare grazing to conventional termination methods
• Compare the effects of two grazing treatments, low stocking density continuous and high stocking density rotational
- Cover crop termination
  – Pea: 23 sheep acre⁻¹ continuous, 93 sheep acre⁻¹ rotational
  – Clover: 18 sheep acre⁻¹ continuous, 72 sheep acre⁻¹ rotational
- Wheather live weight gains
- Winter wheat
• Compare cover crops
  – Field pea (Pisum sativum), 2013
  – Yellow sweetclover (Melilotus officinalis), 2014

Field Pea 2013
- Annual
- Production averaged 2,800 lbs acre⁻¹

Yellow Sweetclover 2014
- Biennial in second year of growth
- Production varied < 3,000 to > 5,000 lbs acre⁻¹ by plot

Results

No difference in wheat yield between any of the termination methods.

Grazing was not an effective method for yellow sweetclover termination. Clover required multiple tillage passes to terminate and left more bare ground than pea.

Further research is needed to develop an approach to terminating yellow sweetclover with grazing.

The Bottom Line
We were able to successfully terminate field pea using sheep, generate sheep gains, and maintain soil cover.

Yellow sweetclover was not easily terminated with sheep, and was difficult to terminate with tillage.

Grazing has the potential for effective cover crop termination, sheep weight gains, and wheat yields but results may vary with cover crop species.