IMPACT

University of Idaho Extension

Blaine County, 208.788.5585, Fax: 208.788.5587
302 First Avenue South, Hailey, ID 83333

High-desert Idaho producers adopt cover crops

The Situation

Cover crops are a crop planted with, or in rotation with, cash crops as a sustainable agriculture practice. The benefits of cover crops for Idaho producers may include the following:

- Lower nitrogen fertilizer costs
- Higher soil organic matter
- Nutrient scavenging (roots scavenge and recycle nutrients and prevent nutrient leaching)
- Less topsoil loss due to wind erosion
- Greater weed/insect control
- Production of a dual-purpose alternative forage
- Conserving soil moisture

Cover crops are targeted to producers throughout the U.S. to mitigate soil nutrient loss. With the success of cover crops to minimize nutrient run-off, a national goal supported by USDA and EPA is set to reach 20 million acres of planted cover crops by 2020. However, cover crop adoption has primarily been targeted to producers in the eastern U.S., leaving a lack of research-based information on cover crop use in high-desert environments. University of Idaho Extension helped Idaho producers adopt cover crops to conserve soil and water resources and contribute to the cover crop national goal.

Our Response

University of Idaho Extension Educators and Specialists tested cover crops to develop species recommendations and best management practices for Idaho producers. The cover crop research was conducted over two growing seasons on three replicated research plots, two on-farm trials and one UI research center (Figure 1). Researchers tested cover crops for soil nitrogen benefits, winter survival, yield, and forage quality. As a result, the research identified optimal cover crop species and mixtures that provide environmental and economical benefits in high-desert farming systems.

Figure 1. Cover crop test plots, Kimberly R&E Center.

Program Outcomes

The cover crop research demonstrated 12 cover crop species, grouped into nitrogen-fixing (ex. Austrian winter pea, arvika pea), grass/grains, (ex. triticale, sorghum Sudangrass), and brassicas (ex. daikon radish, canola), that can be planted alone or in a mix to obtain multiple agronomic benefits. For example, a cover crop mix of canola, triticale, Austrian winter peas, and vetch helps to scavenge nutrients, increase organic matter, fix nitrogen, and control weeds.

Cover crops offer an organic source of nitrogen for both conventional and organic producers. The tested

University of Idaho, U.S. Department of Agriculture, and Idaho counties cooperating.
To enrich education through diversity, the University of Idaho is an equal opportunity/affirmative action employer and educational institution.

Idaho cover crops contributed between 16-75 lbs per acre of plant available nitrogen in the spring following a fall planting. A legume and triticale mix contributed the most nitrogen to cash crops (ex. hairy vetch/triticale, Austrian winter peas/triticale, and arvika pea/triticale). The Idaho cover crop research identified the ability for tested brassica species to scavenge nutrients from the soil profile. A canola and triticale mix scavenged 260 lbs/acre of nitrogen after 55 days of fall growth. This nutrient scavenging protects water resources by minimizing nutrient run-off.

The research was published and presented throughout Idaho and increased grower adoption. In winter of 2014, the Idaho cover crop research was presented at four UI Extension Cereal Schools in eastern Idaho where 332 participating producers were surveyed on current use and future adoption of cover crops. Currently, 16% of producers at the cereal schools use cover crops. After presenting Idaho cover crop research, 48-79% are willing to adopt cover crops with one-third of these producers planning to adopt by the 2015 growing season. The participating producers indicated they would adopt cover crops to achieve multiple management goals, such as to minimize soil wind erosion loss, supplement soil organic matter and nitrogen levels, and scavenge soil nutrients. If one-third of the participants implemented cover crops by 2015, an estimated 94,500 acres of cover crops would be planted in eastern Idaho.

The Future

Extension Educators partnered with NRCS and two Soil Conservation districts to further increase cover crop adoption in Idaho. The research team planted cover crops at eight on-farm demonstration sites, ranging from 2 to 15 acres, throughout the Magic Valley (Figure 2). By having satellite sites across southern Idaho, non-participating producers are able to critically evaluate how the multi-species cover crops perform under a wide range of soil types, irrigation systems, and climate. Through the use of satellite sites, Idaho cover crop adoption will continue to increase and contribute to the national goal of 20 million acres of planted cover crops by 2020.

Figure 2. Cooperator in Magic Valley experimenting with daikon radish to reduce soil compaction. Grower says, "Our whole livelihood is the dirt. Our self-interest is always in improving the soil. Our goal is that by fall the soil is in better shape than it was in the spring."

FOR MORE INFORMATION

Lauren Hunter, Extension Educator
University of Idaho Extension, Blaine County
302 First Avenue South
Hailey, ID 83333
Phone: 208.788.5585
Fax: 208.788.5587
E-mail: lhunter@uidaho.edu

Amber Moore, Soils Specialist
University of Idaho Extension
Twin Falls R&E Center
315 Falls Avenue East
Twin Falls, ID 83301
Phone: 208.736.3629
Fax: 208.736.0843
E-mail: amberm@uidaho.edu

Steve Hines, Extension Educator
University of Idaho Extension, Jerome County
600 2nd Avenue West
Jerome, ID 83338
Phone: 208.324.7578
Fax: 208.324.7562
E-mail: shines@uidaho.edu

7-14lhunter-crops.pub
6/14