NRCS: Cover Crop Technical Note
http://www.id.nrcs.usda.gov/technical/agronomy.html

TECHNICAL NOTE
USDA - Natural Resources Conservation Service
Maho and Washington

Cover Crops
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NRCS / EQIP
In 2011 NRCS added an organic cover crop component to the payment schedule. When producers use organic seeds, cost were found to be about 60% higher than conventional seed sources.

Cost include: Seed, planting, related tillage expenses

2011 EQIP Payment Schedule:
Regular Cover Crop - $30/Acre
Organic: Nitrogen, Cover Crop - $92/Acre
Organic: Erosion, Cover Crop - $68/Acre

Yellowstone Soil Conservation District (St. Anthony, Idaho)
Farmers use cover crops to help reduce soil erosion on wheat-potato rotations. SCD / NRCS St. Anthony field office conducted a cover crop farm tour.

Idaho NRCS funds cover crop research through the University of Idaho (UI): Adapting the Oregon State University (OSU) Cover Crop Calculator for Idaho Growing Conditions
Amber Moore (UI Soils Specialist), Glenn Shewmaker (UI Forage Specialist), Christi Falen (UI Extension Educator), and Lauren Hunter (UI Extension Educator)

Three-Year Project Objectives:
1) Conduct incubation studies to monitor and determine plant available nitrogen (% PAN) released over a 70 day period from a variety of leguminous and non-leguminous crops in a Portneuf silt loam from the UI Kimberly R&E Center
2) Conduct incubation studies to monitor and determine PAN released over a 70 day period from a variety of leguminous and non-leguminous crops on specific soil types from individual growers’ fields throughout southern Idaho.
3) Use % N data collected from plant tissue and PAN data collected from incubation studies to adjust the OSU Cover Crop calculator to reflect Idaho conditions
4) Create and post UI cover crop calculator online for quick and easy access
5) Develop recommendations for adjustments to the Idaho OnePlan cover crop management software, based on our findings.

Calibrating the OSU Cover Crop Calculator with Idaho Cover Crops
- Hairy vetch, Austrian winter pea, and daikon radish from NRCS demonstration plots in Aberdeen, Idaho, winter wheat from UI grain study in Kimberly, Idaho, and red clover from UI forage study in Kimberly, Idaho.

- Plant tissue mixed in with Portneuf silt loam and incubated for 70 days, following protocol used for OSU cover crop calculator incubation studies (Sullivan et al., 2011).

- Red Clover (spring harvested)  
  Winter Wheat (spring harvested)  
  Hairy Vetch (spring harvested)  
  Daikon Radish (fall harvested)  
  Austrian Winter Pea (spring harvested)

Validation of the New Idaho Cover Crop Calculator with Cooperators’ Cover Crops
- Cover crop tissue and soil samples collected from three locations in South-Central and South-Western Idaho
- Organic: Nitrogen, Cover Crop - $92/Acre
- Organic: Erosion, Cover Crop - $68/Acre

- Austrian Pea and Winter Wheat, Shoshone, Idaho
  Austrian Pea and Triticale, Buhl, Idaho
  Austrian Pea and Oats, Meridian, Idaho

Incubation Study to Develop Relationship Between Tissue Concentration of Nitrogen and Plant Available N (PAN)
- Soil samples extracted from 1-foot depth, to simulate maximum plow down depth
- Approximately 500 g of dry soil mixed with 25 g plant tissue (wet basis)
- Moisture maintained at 80% field capacity through bi-weekly watering events
- Tissue sub-samples analyzed for total N, prior to incubation
- Soils and tissue mixture incubated in Ziploc freezer bags, with straw inserted to allow for aeration, as described by Sullivan et al. (2011)
- Incubated soils sampled and analyzed bi-weekly for NH₄-N and NO₃-N concentration
- Data from year 1 incubation is currently being analyzed. Year 2 incubation will follow in 2012, and year 3 incubation will follow in 2013 (if needed).

References

Summary
Our challenge is to integrate cover crops into traditional crop rotations to expand crop diversity and lead to improved soil health. Being able to more accurately estimate mineralization rates for cover crops in Idaho will help producers’ better plan nutrient budgets. We are looking at ways to inter-seed cover crops into existing crops to gain GDD’s after harvest. Sorghum and pearl millet provided the largest biomass, but vetch, turnips and rapeseed offered higher quality forages or cover crops with more N. Future work needs to evaluate late seeded cover crops and how mixtures of cover crops can improve soil health.