

Cover Crop Comparison

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Objective

To compare several annual cover crops following winter wheat and preceding corn. Cover crops to be evaluated by biomass accumulation, nitrogen contribution, and effect on no-till corn yield.

Background

Cooperator: OARDC Hoytville Research Farm

County: Wood

Previous Crop: Wheat

Methods

Wheat stubble was mowed after harvest. On 8/7/97, cover crops were drilled no-till at the following rates: Flyer soybeans -- 100 lbs/acre, oilseed radish -- 10 lbs/acre, cowpea -- 60 lbs/acre, Austrian winter pea -- 60 lbs/acre. A check with no cover crop was included. Treatments were randomized and replicated three times. Biomass was measured 9/29/97 before killing frost by removing above ground cover crop growth in one square foot and drying the material at 180 degrees F for 48 hours. On 6/17/98, pre-sidedress nitrate soil levels were measured. All inputs remained constant over treatments.

Results

Cover Crop	Biomass Accumulation (grams/ft. ²)	Soil Nitrate (ppm)	Yield (bu/A)
Winter Pea	3.0 A	14.5 A	197.6 A
Soybeans	8.0 AB	20.0 BC	192.8 A
No Cover	--	21.0 B	185.8 A
CowPea	2.0 A	17.0 D	185.3 A
Oilseed Radish	18.7 B	18.0 CD	161.0 B
LSD (0.05)	12.06	2.15	17.9

Treatment means followed by the same letter are not significantly different at P = 0.05

Summary and Notes

Cover crops preceding corn planting did not significantly improve corn yields compared to no cover crop. Oilseed radish significantly reduced corn yields compared to the other cover crops. In this test, the cost of cover crops did not show an economic return since yields were not increased.

Biomass accumulation was greatest in oilseed radish, which would improve soil organic matter and compete well with weeds. Soybean biomass was also significantly better than cowpea or

winter pea. Volunteer wheat was very competitive to cover crop growth and may have restricted performance.

Soil nitrate results did not show an advantage to cover crops. Due to no-till planting and natural winterkill of the cover crops, potential nitrate contributions were limited.

Flyer soybeans appear to be the best choice for a late summer seeded cover crop in this study. In all three measured areas (biomass, soil nitrate, and yield), soybean cover crop was significantly better. A precaution against using soybeans as a cover crop is the potential risk for disease and increased numbers of soybean cyst nematodes in infested fields.

Earlier planting of cover crops immediately after wheat harvest and control of volunteer wheat may improve the performance of late summer planted cover crops. The amount of nitrogen contribution from cover crops is difficult to predict and may not become available until after corn sidedress time (mid-June). Soil moisture and temperature greatly affect nitrogen release from an organic source. The soil quality benefits of cover crops were not measured.

For additional information, contact:

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