

Your cover crop options in Wisconsin

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Short-term vs. long-term benefits

Short-term benefits

- Erosion control (grasses)
- N supply (legumes)
- Reduce N losses
- Weed suppression

Long-term benefits

- Increase or maintenance of mineralizable N
- Increase or maintenance of soil organic matter
- Reduction in soil erosion
- **Sustainability**

Cover crop categories

- Cool-season vs. Warm-season
- Grass vs. Legume
- Annual vs. Perennial

Cover Crop Chart

GROWTH CYCLE	RELATIVE WATER USE	PLANT ARCHITECTURE
A = Annual	= Low	♈ = Upright
B = Biennial	= Medium	✱ = Upright-Spreading
P = Perennial	= High	≈ = Prostrate

Cool Season							Warm Season		
Grass		Broadleaf						Grass	
A Barley ♈								A Pearl millet ♈	
A Oat ♈	A Phacelia ♈						A Amaranth ♈	A Foxtail millet ♈	
A/P Ryegrass ♈	A Flax ♈			Legumes			A Buckwheat ♈	A Proso millet ♈	
A Wheat ♈	A Spinach ✱	B Turnip ✱	A Field pea ♈	A Berseem clover ♈	A/P Medic ✱	A Chickpea ✱	A Sunflower ♈	A Sudan grass ♈	
A Cereal rye ♈	A Kale ✱	A Radish ✱	A Lentil ✱	B/P Red clover ♈	P Birdsfoot trefoil ≈	A Cowpea ✱	A Safflower ♈	A Teff ♈	
A Triticale ♈	A/B Canola ✱	B Beet ✱	A Lupin ♈	P White clover ♈	P Sainfoin ♈	A Soybean ✱	A Squash ≈	A Grain sorghum ♈	
A Annual fescue ♈	A/P Mustard ✱	A/B Carrot ✱	A/B Vetch ≈	A/B Sweetclover ♈	P Alfalfa ♈	A Mung bean ✱	P Chicory ✱	A Corn ♈	

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Additional Information

Cereal Rye

(aka winter rye, grain rye)

- Cool-season, annual

Benefits:

- Scavenge excess N (up to 60% reduction in N loss)
- Erosion control
- Inexpensive, easy to control

Disadvantages:

- Does not release N in synchrony with N uptake of corn
- Need to kill early

Other annual grasses

Annual Ryegrass

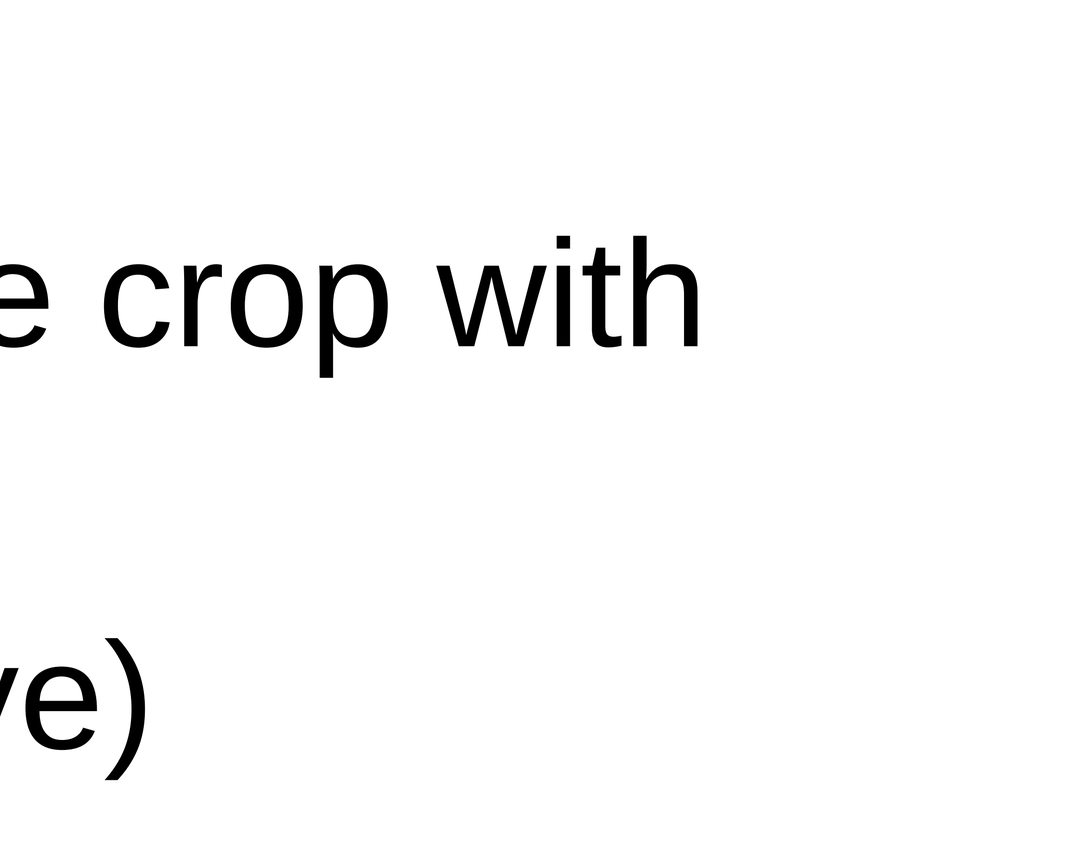
- Also called Italian Ryegrass
- Will it survive the winter in WI?

Oats

- Winterkills
- An excellent nurse crop with legumes

Triticale (wheat X rye)

Wheat


B. Anderson, Univ. Nebraska

Red Clover

- Short-lived perennial

Benefits

- Source of nitrogen
- Fits into crop rotation with winter wheat (post harvest or frost seeding)
- Spring planted before short-season vegetable crops

Disadvantages

- Legumes do not grow as fast as grasses
- Slightly less N credit compared to alfalfa

Other legumes

- Berseem clover
  - Fast-growing, shorter root depth
- Crimson clover
- Sweet clover
- Alfalfa
- Hairy vetch
  - Potentially greater N value, but harder to control/manage
  - Benefits have been shown in WI
- Field pea
  - Disease issues?

Table 9.5. Green manure nitrogen credits.

Crop	< 6" growth	> 6" growth
	——— lb N/a to credit ———	
Alfalfa	40	60–100 [a]
Clover, red	40	50–80 [a]
Clover, sweet	40	80–120 [a]
Vetch	40	40–90 [a,b]

[a] Use the upper end of the range for spring seeded green manures that are plowed under the following spring. Use the lower end of the range for fall seedings.

[b] If top growth is more than 12 inches before tillage credit 110–160 lb N/a.

Brassicas

- Oilseed Radish/Forage Radish
  - Bio-tillage – taproot penetrates through compacted layers
  - Winterkills
  - Scavenger of N
- Mustard
- Rapeseed
- Turnip

Where do cover crops fit in your system?

- After corn silage harvest
- After vegetable harvest
- After winter wheat harvest
- Frost-seeded into winter wheat
- Spring-seeded prior to short-season vegetable crops
- Living mulch system
  - Suppression of cover crops while cash crop is growing