Producing and Scavenging Nitrogen with Cover Crops

Dave Robison, Forage and Cover Crop Agronomist
Legacy Seeds

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Placed 450+ Cover Crop Plots in 6 states in 2009-2013

Producing Nitrogen with Cover Crops

- Several Legumes make very good cover crops
- How much N can they produce?
- …"*<u>it depends</u>*"

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Inoculating legumes is vital

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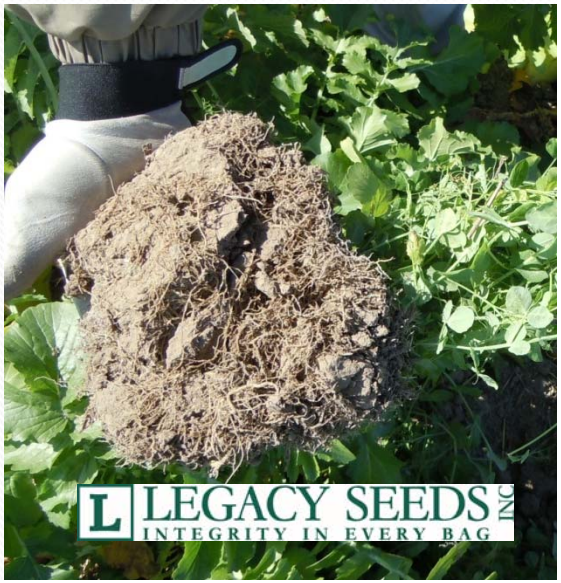
Austrian Winter Peas

Disadvantages

- Best to be incorporated
- Generally Winterkills
- Needs at least 5-6 weeks growth for best results
- Only one grazing/harvest can be expected

Advantages

- Can produce 70-135#/acre N
- Generally Winterkills
- Easy to kill with herbicides



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Crimson Clover

Disadvantages

- Will possibly winterkill

Advantages

- Can produce up to 140 units of N/acre within 90 days following wheat
- Earthworm "Heaven"
- Easy to kill

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Photo courtesy of Dave Chance
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Field Peas

Disadvantages

- Won't grow as late in season as Austrian Winter Peas
- Will not normally overwinter North of I-70

Advantages

- Can produce 60-120# N/ac
- Will not normally overwinter North of I-70
- Makes excellent forage
- Very good short-term cover
- Good for weed control

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Cowpea

Disadvantages

- Needs warm soil
- Needs good moisture
- Seed Cost
- Seems to be more reliable South of I-70
- Cannot harvest grain like soybeans

Advantages

- Can produce 60-120 # N/ac
- More reliable in summer than soybeans for nitrogen production

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Medium Red Clover

Disadvantages

- May get too tall in wheat and affect harvest

Advantages

- Can produce 75-200# N
- Good root system-soil builder
- Easy to frost seed into wheat
- Often least cost cover crop
- Easily killed
- Excellent for forage

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Alsike Clover

Disadvantages

- Seed Cost is generally higher than Medium Red Clover
- Not as good of forage as some other clovers

Advantages

- Can produce 60-125# N/Ac
- Lower growing in wheat than Medium Red or Mammoth Red Clover
- Does very well in wetter soils

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Berseem Clover

Disadvantages

- Short growing cycle
- Dies at 30-32 degrees
- Seed Cost ~ $50/acre

Advantages

- Can produce 100-125# N/ac in 60 days
- Possibly use between wheat and other fall crop
- Good soil builder
- Excellent for green manure
- Significant forage produced

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Yellow Blossom Sweetclover

Disadvantages

- Known to be a host to soybean cyst nematode

Advantages

- Can produces 100-200# N/ac
- Biennial
- Top legume for hot weather forage growth
- Good soil builder
- Easy to frost seed into wheat

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Hairy Vetch

Disadvantages

- Hard Seed
- Most reliable south of I-70
- Not as quick to grow in autumn as many clovers
- Seed Cost

Advantages

- Can produce 100-200# N/ac
- Very Good soil builder
- Most of N is produced in the top growth

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Chickling Vetch

Disadvantages

- Seed Cost generally higher than many clovers
- Plant 2-3" deep
- Plant 50#/ac

Advantages

- Can produce 60-200# N/ac
- Good soil builder
- Very good for forage
- >50% of N is reportedly available for following crop

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Sunn Hemp

- Can produce up to 120# N/acre
- Summer Legume
- Plant 9 weeks before killing frost
- Somewhat expensive most years

Photo courtesy of Keith Burns

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Legumes – Warm Season

- Mung Beans
  - Hard to find – used for sprouting
  - Smaller seed size (8,000/lb)

- Excellent heat and drought tolerance
- Excellent nitrogen fixers
- Can be hayed or grazed
- "Peanut" inoculant

GREENCOVER SEED
COVER CROPS FORAGES

Nitrogen Scavengers

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Radishes and peas…and dairy manure

Turnips are excellent scavengers of Nitrogen
and excellent soil builders
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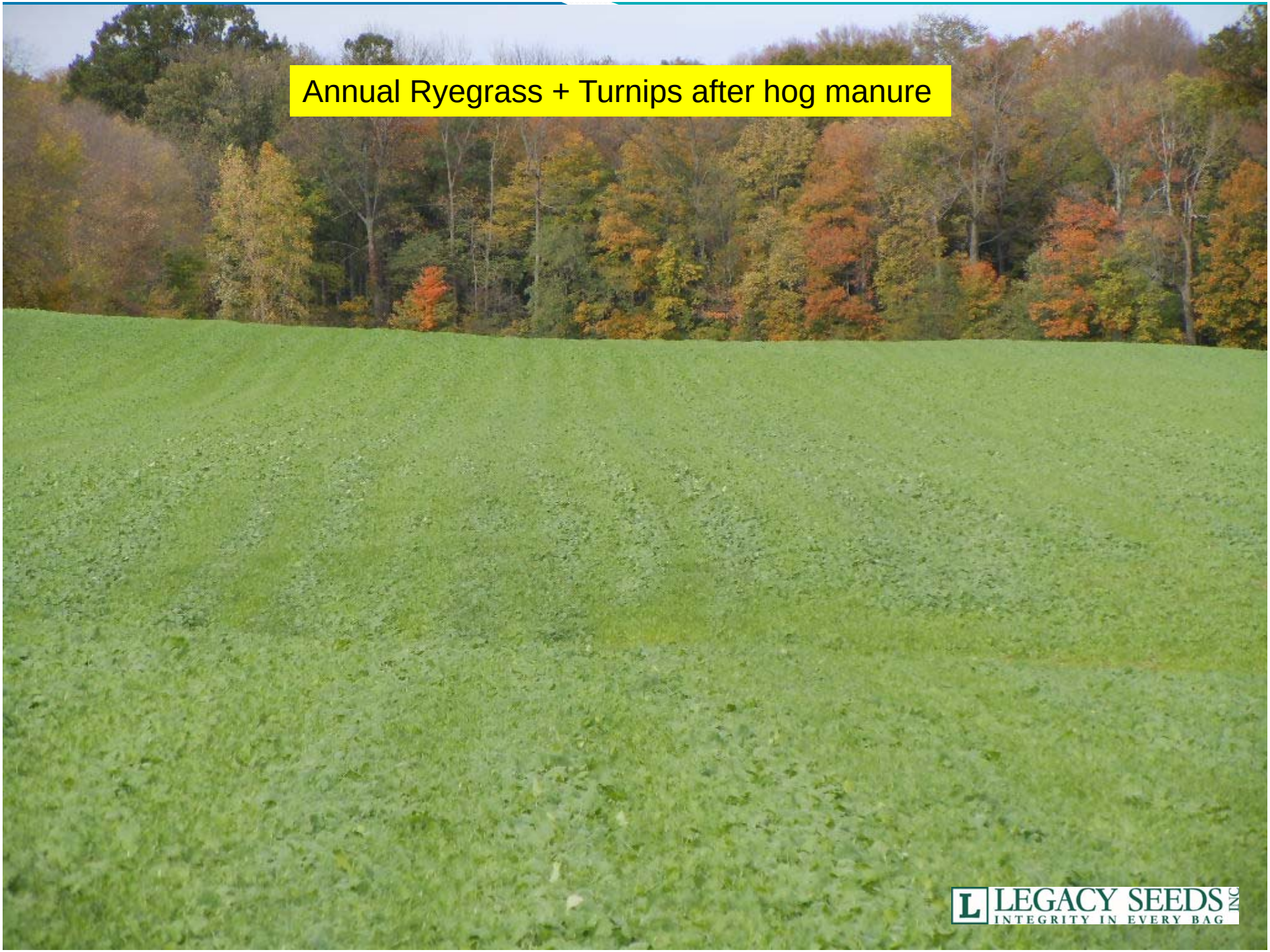
Annual Ryegrass + Turnips after hog manure
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Radishes can uptake significant N

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Cover Crops Sequester Nutrients

Radish (planted with Rye w/ manure)

Tops 130# N/ac

Tubers + 95# N/ac

Total = 225# N/ac

Radish (planted with Oats w/ manure)

Tops 82# N/ac

Tubers + 86# N/ac

Total = 168# N/ac

Ohio Data on Nitrogen sequestered by Radishes – fall 2010

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Summer Annual Grasses – Scavenges 200+ Units N

- Planted after wheat for cattle silage
- 62" in 31 days after planting
- Harvested 4.5 DM/ac in 2010 (2 cuts)
- High quality feed
- Excellent soil builder

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Crimson Clover produces tremendous amounts of N
and Radishes make great nutrient storage vessels.

Annual Ryegrass

Disadvantages

- May be difficult to kill
- Many varieties rarely live through the winter

Advantages

- New Winterhardy varieties are available
- Deep and fibrous root mass
- Excellent scavenger of N
- Works well with aerial application
- Excellent for forage
- Plant early Aug – early Sept.

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Winter Rye (Cereal Rye)

Disadvantages

- May "get away from you" in the spring and become difficult to kill

Advantages

- Can be planted later than any cover crops with greatest opportunity to succeed
- Works well with aerial application
- Good rooting depth
- Excellent winterhardiness
- Scavenges N

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Hallelujah – New RMA ruling provides a BIG boost for cover crop users and Agriculture

BY DAVE, ON DECEMBER 1ST, 2011

The Risk Management Agency ruled today to change their policy on cover crop usage and cash crops that follow cover crops. In a previous post I reported some limitations that the RMA had on following cover crops (cover crops could not be headed out, could not be harvested before planting cash crop, etc…).

This good news was . . . → Read More: **Hallelujah – New RMA ruling provides a BIG boost for cover crop users and Agriculture**

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When to apply cover crops into soybeans

BY DAVE, ON NOVEMBER 30TH, 2011

For some time I have promoted aerial applying cover crops into standing cash crops. We have a pretty definitive maturity set for corn when it comes to aerial application.

But there is some question of when to fly cover crops into soybeans. The range of discussion on this topic usually goes from 50% yellow leaf to

CATEGORIES

- Cover Crop Benefits (28)
  - Breaking Up Compaction (10)
    - Cover Crop Roots (10)
  - Fall Grazing (1)
    - Grazing Cover Crops (1)
  - Higher Yields (13)
    - Nitrogen from Cover Crops (8)
    - Planting Radish with Wheat (1)
  - Lower Inputs (4)
  - Manure management (2)
    - Slurry Seeding Cover Crops (1)
  - Soil Improvement (9)
    - Cover Crops and Earthworms (5)
  - Weed Suppression (2)
- Cover Crop Challenges

Thanks!

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