Specific Cover Crops – What fits your operation?

Dave Robison, Agronomist
The CISCO Companies

CISCO had 100+ Cover Crop Plots in 4 states in 2009/2011

What fits after WHEAT?

- The “tool box” is wide open!
  - For forage production
  - For nutrient sequestration
  - For nitrogen production
  - For building soil organic matter
  - Etc...etc...etc...
- CAUTION...DO NOT plant too early
  - Early August works best!

Pro-Max® Hybrid BMR Sudangrass

- 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

Drill in after wheat... Early Aug - Early Sept

N-Vest® Cover Crops

- Standard N-Vest® Mixes
  - Groundbreaker Mix
  - Crimson Cover-All Mix
  - Soil Builder Brand Annual Ryegrass Blend
  - NutriBuilder Mix
  - Forager Mix
- University and farmer tested and designed
Pea + Radish Mixture
• Austrian Winter Peas + GroundHog™ Radish
• 35#/acre

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
• Produces 60-120#/acre N
• Generally Winterkills
• Easy to kill with herbicides

Cover Crop Radishes
Disadvantages
• Should not be sown too early in the summer – potential reseeding
• May not be sown too late (need at least 6-7 weeks growth for best results)
• Hard seed may come up in spring
• Smell at spring thaw

Advantages
• Potentially deep penetrating large tuber
• Enhances soil percolation
• Usually reduces soil compaction
• Earthworm “Heaven”
• Voracious scavenger of nutrients
• Good for Grazing

Austrian Winter Peas and Radish in Mixture...30” tall peas

Peas/Chickling Vetch/Radish
3/8/2011 – Bowling Green, OH

Taken from field of Groundbreaker Mix near Ashland, OH
GroundHog™ Radish with Crimson Clover

Crimson Clover + Radish Mixture

Crimson Clover - 2

Advantages
- Works very well as a companion to Radishes, Annual Ryegrass, etc...
- Deep and fibrous root system (21” deep in Fulton County, IN sp 2010)

Disadvantages
- VNS or older varieties will possibly winterkill
- Some hard seed

Crimson Clover

Disadvantages
- Can produce up to 140 units of N/acre within 90 days following wheat
- Earthworm “Heaven”
- Easy to kill
- Excellent new (early and more winterhardy) varieties are available (limited supply)

Advantages
- Produces 75-100# N
- Good root system-soil builder
- Easy to frost seed into wheat
- Often least cost cover crop
- Easily killed
- Excellent for forage

Medium Red Clover

Disadvantages
- May get too tall in wheat and affect harvest

Advantages
- Produces 75-100# N
- Good root system-soil builder
- Easy to frost seed into wheat
- Often least cost cover crop
- Easily killed
- Excellent for forage
**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 – Mid Sept.

**Harvest/Kill Annual Ryegrass early**

- Kill before jointing
- Be ready for 2nd spray
- Harvest before heads appear for best forage

**Forager Mix after wheat**

Oats, Rye, and Turnips for Grazing

- 1 Bu Cereal Rye + 1-1/2 bu oats + 5# Appin Turnips
- Can yield as much as 5 ton/acre
- Cattle have gained 3.5#/head per day on this mix in central Illinois (Ed Ballard’s on-farm data)
- Graze stalks + this mix = priceless!

- This mixture has worked VERY well for Iowa and Nebraska producers over the past 10 years! (Aerial applied into corn)

**Winter Rye (Cereal Rye)**

**Disadvantages**
- May have allelopathic characteristics
- 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
Winter Rye (Cereal Rye)

**Advantages**
- Excellent for winter/spring grazing
- Excellent for spring haylage
- May have allelopathic characteristics (improved weed control)

Other popular combinations

- **Oats and Radish**
  - 2bu Oats + 5# Radish
  - Dies over winter
  - Very good cover
  - Great for controlling winter annuals
  - Great for holding/scavenging nutrients

Oats/Oilseed Radish Spring 2010

- GroundHog Radish and oats mixed together helped Rulon Farms gain 9 bu./acre in corn yield the following year.

Oats

**Disadvantages**
- Bin run oats will have weed seed in them
- Winterkills

**Advantages**
- Scavenges N
- Deep and fibrous root mass
- Works well with aerial application
- Excellent for forage
- Winterkills

Root Density of Grass Cover Crops

- Winter Rye: less dense
- Annual Ryegrass: greater root density
Oats in Ingham County, MI plot
April 2010

Other cover crop options –
**Winter Barley**
- Makes excellent feed or haylage
- Up to 2 weeks earlier harvest than wheat
- Less N needed for top crop
- Excellent scavenger of N
- More tolerant of low fertility
- Less winterhardy than rye

Valor Winter Barley
- Short-Awned Winter Barley (less harvesting/feeding issues)
- Early maturing
- High yielding for grain and forage
- Top choice for dairy and hog producers

Seed Cost Matters
- There are “no good deals” on “Cheap” Seed...
- Especially not on ARG, Radishes, Turnips, Hairy Vetch, etc...
- VNS (often times) ≠ Very Nice Seed!

No good deals on cheap seed...

Farmer “saved” 5¢/# on cheap seed (50¢/acre) (left) and now has a “disaster” on his hands! Good radishes on right cost a bit more but have the tubers farmers want.
What about inter-seeding into Corn and Soybeans

• Many of the above products work for this too!

Very little top growth does not mean very little root growth.

• Four inch tall Annual Ryegrass with 21” deep roots
• 15” deep radish roots that had 2” tall tops and a “pencil” sized tuber
• 12” deep crimson clover roots under a 2” tall top (with many nodules)
• 35” deep roots on oats that had 20-25” tall top growth (prevented planting situation planted in early September)
• 30” deep roots on radishes that had 20-25” tall top growth and 2-3” diameter tubers (prevented planting situation planted in early September)
• 12” deep roots under 18” tall Austrian Winter Peas (planted in late August after wheat)
• 20” deep cereal rye roots with 6” tall top growth (planted in late August after wheat)

What cover crops are best for aerial application?

• Cereal grains (Oats/Cereal Rye/Wheat/Triticale)
• Annual Ryegrass
• Clovers
• Brassicas (Radishes/Turnips/Kale/Rape)
• Hairy Vetch

What cover crops to avoid when aerial applying

• Cowpea
• Austrian Winter Peas
• Field Peas
• Buckwheat
• Mustards – (it will work but you’d better NOT get any on the neighbors!)
• Summer Annual grasses (Sorghum-Sudangrass/Sudangrass/Teffgrass)

But there is a right way (and a wrong way) with aerial application!

~900 acres flown on in Lake County, IN 2010 – no skips!
Flown on in 4 hours
AgriFlite and CISCO Seeds field testing—getting it right!

Seed captured and measured—then the flight pattern determined

Seed unloads into the plane in less than 60 seconds!

A beautiful stand flown into corn

Photo from Joe Nester

Seed loads into the chopper in several minutes
Aerial applied in central Indiana – Robison farms, Greenwood, IN

This is the proper time to apply cover crops into corn

This is WAY too early!

The proper time to fly into Soybeans (30’s and 15’s) – 7’s need to be more mature
Application too early on Soybeans

30” rows vs. 7” rows

Sunlight makes a BIG difference

Annual Ryegrass not flown on properly

Excellent coverage is important

Corn harvest with Covers growing large at harvest!
Aerial applied Cereal Rye – Spring 2009…
even and beautiful stand

Tips to remember
• Timing of application is critical to success
• “Be Patient—but Be Ready” is a good attitude to have
• Actual coverage is very important
  – These are NOT “sprinkle crops”
• Establishment systems still need more refining
• Research products, cc fertility needs
• Research aerial applicators…don’t just look at $/ac
• Try some cover crops!

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