“Innovative Cover Crop Management Strategies”

By Jeff Moyer
Farm Director
Written in 1942

“Healthy Soil = Healthy Food = Healthy People”

J.I. Rodale
Soils of the organic systems have a more active soil biological community
→ higher levels of glomalin (a glycoprotein that acts like ‘glue’, binding organic matter to mineral particles),
→ greater populations of mycorrhizae (a fungus that forms a symbiotic relationship with its host plant:
  the fungus receives carbohydrates from the plant, which in return gains access to water and nutrients).

This leads to improved soil structure and enhanced carbon sequestration.
Cover Crops

- Soil cover (reduces erosion)
- Builds soil organic matter
- Deliver key nutrients (Legumes - N)
- Conserves (recycles) nutrients
- Nutrient source for soil microbes
- Weed suppression
- Breaks pest cycles
- Reduces compaction
- Increases soil aggregation
- Increases infiltration
- Improves water holding capacity
- Improves aeration
- Reduces soil crusting
Crop Rotation Protocols

- By Plant Type
- To Build Pest Resistance
- To Improve Soil
- To Make More Money
- To Enhance Biodiversity
Tillage has it’s Drawbacks
Tillage Opens the System Up to Damage
Several Secondary Tillages
We Can Mulch Out Annual Weeds In The Garden
Past - equipment to kill cover crops

- Culti-packer
- Stalk chopper
- Flail mower
Tools That Make it Possible
Corn

PLOW TILL
- PLOW
- DISC
- PACK
- PLANT
- ROTARY HOE
- ROTARY HOE
- CULTIVATE
- CULTIVATE
- HARVEST
- (143 Bu/A)

NO-TILL
- ROLL/PLANT
- HARVEST
- (160 Bu/A)

A two step organic production system Plant and Harvest!
Cover Crops

The Key To A Successful Weed Program

Crimson Clover  Hairy Vetch/Rye  Hairy Vetch
Average Biomass (lbs/A) of Cover Crop Mixtures: 2003 Corn Cover Crop Trial

Biomass (Lbs/Acre)

Cover Crop Treatment & Date Collected

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Planter Modifications

Additional Weight
130 lb per row

Cast Iron Closing Wheels
Mis-Planted Seed
Residue Slicer

- The Residue Slicer is used in combination with the I&J Mfg Cover Crop Roller to plant organic corn, beans, and other crops into heavy cover crop, no-till conditions.
- Can be used for non-organic, no-till using less chemicals, or in extremely heavy residue conditions without installing row cleaners.
- The Residue Slicer is compatible with John Deere 7000-7200-1750 planters.

- With enough down spring pressure, a straight blade, in combination with the rubber wheels to hold the heavy residue, will make a clean cut. Without the rubber wheels, the residue may hair-pin into the seed trench.
- The Residue Slicer will also work well under general no-till conditions, with little or no residue.
2006 Pre-harvest No-Till Corn Plant Population

Field 60, The Rodale Institute, Berks Co., PA

2006 preharvest No-till Corn plant population

Seed tag origin of Hairy Vetch

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Cover from Mechanical Kill
2010 Soybean Research Plots
Treatment #14 Planted May 23$^{rd}$ w/o Shark Teeth

Cover Crop Removed

Yield 17 Bu/A

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Treatment #11 Planted June 1st w/Shark Teeth

Yield 38 Bu/A
Treatment #2 Planted May 23rd w/Shark Teeth

Yield 59 Bu/A
Effects of planting and termination date on cereal rye biomass

(Penn State University, Rock Springs, PA; Aroostook cereal rye)

Increasing seeding rate did not increase cereal rye biomass

However, it did decrease weed biomass

Increasing seeding rate did not increase cereal rye biomass

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Increasing seeding rate did not increase cereal rye biomass
6 weeks after rolling
Sorghum Sudan Grass
No-Till Pumpkins into Rye – Long Island, NY
No-Till Grain Drill
Horse Drawn & Pull Type
Roller/Crimper for Raised Beds
The Concept is Scale Neutral
Clove Oil: Application
Thank You!

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