

Evaluation of Winter Annual Cover Crop Combinations in Rotation before Watermelon, Cantaloupe & Tomatoes

Berks County, 2006-07

Aimee & John Good, Quiet Creek Farm

Ron Hoover, On-Farm Research Coordinator

Dave Wilson, The Rodale Institute

Michele Gauger, On-Farm Research Assistant/PASA

This research was funded by a USDA special grant and a Northeast Sustainable Agriculture Research & Education (SARE) Partnership Grant

Rationale

Visits with numerous farmers in Pennsylvania have revealed much opportunity for increasing the frequency of cover crop planting and intensity of the management of the same cover crops. While many producers incorporate cover crops into production systems, there is still important education to be done concerning the management of these valuable crops. Improved management of cover crops may result in large impacts on weed population dynamics, soil quality, yield of cash crops and ultimately farm sustainability.

Some areas for improving cover crop management include increasing seeding rates, optimizing the time of seeding and selecting better performing species, especially legumes. Thicker stands of cover crop should improve weed control through increased shading of emerging weeds. Greater cover crop yields will also contribute to more rapid increases in soil organic matter and improvements in soil fertility.

Objective

To compare three combinations of winter annual cover crops for increases in cover crop biomass and yield of subsequent cash crops; in this case watermelons, cantaloupes and tomatoes.

Site Conditions

Cooperator:

Aimee & John Good

Location:

Fogelsville, Berks County

Soil type:

Silt loam

Previous crop:

Mixed vegetable crops

Fertilizer

None

Planting Date:

September 21, 2006 (all cover crops)

Seeding Rate:

Treatment 1: Rye (90.5lbs/ac), Hairy Vetch (32.8 lbs/ac)

Treatment 2: Rye (90.5lbs/ac), Hairy Vetch (26 lbs/ac), Red Clover (10.85 lbs/ac)

Treatment 3: Rye (90.5lbs/ac), Austrian winter pea (53.8 lbs/ac), Crimson clover (12 lbs/ac)

Tillage:

Disced twice with heavy disc to incorporate mixed vegetable crop residues

Harvest date:

TBA Spring 2007

Methods

The field site was previously in mixed vegetable crops and was disced with a heavy disk on September 21, 2006 to ensure incorporation of the remaining vegetable crop residues. All cover crops were also planted on September 21, 2006 with a John Deere 450 grain drill (17 drops), 10 foot wide (2 passes per treatment plot). Each plot measures approximately 20 feet wide (north to south) and 177 feet long (east to west). The cover crop combinations were planted in 20 foot wide passes per each replication across the field in an east-west direction. The above three cover crop treatments were replicated four times.

Results Thus Far

This trial will be followed through the 2007 growing season, with spring incorporation of the cover crops. The covers will be followed by planting of watermelon and cantaloupes in two successions (early & late) and tomatoes.

Subsamples of aboveground biomass will be taken in each treatment plot to determine yields. The cash crops will also be monitored and yield data collected.

Plot Plan		
20 ft. wide plots	Cover Crop Treatment 2	Rye, Hairy Vetch, Red Clover
20 ft.	Cover Crop Treatment 3	Rye, Austrian Winter Pea, Crimson Clover
20 ft.	Cover Crop Treatment 1	Rye & Hairy Vetch
20 ft.	Cover Crop Treatment 2	Rye, Hairy Vetch, Red Clover
20 ft.	Cover Crop Treatment 1	Rye & Hairy Vetch
20 ft.	Cover Crop Treatment 3	Rye, Austrian Winter Pea, Crimson Clover
20 ft.	Cover Crop Treatment 1	Rye & Hairy Vetch
20 ft.	Cover Crop Treatment 3	Rye, Austrian Winter Pea, Crimson Clover
20 ft.	Cover Crop Treatment 2	Rye, Hairy Vetch, Red Clover
20 ft.	Cover Crop Treatment 3	Rye, Austrian Winter Pea, Crimson Clover
20 ft.	Cover Crop Treatment 2	Rye, Hairy Vetch, Red Clover
20 ft.	Cover Crop Treatment 1	Rye & Hairy Vetch
	Field 105	Field 106
	Field 105-106 Combined	