

Organic Systems Vegetable Trial 2008 Plot Treatments and Yields

Entry Point 1: Main crop was Delicata winter squash

Organic Delicata squash seed was planted in 50 cell flats in a certified organic greenhouse on 5/16. Trap crop organic Dark Green Zucchini had been planted the same way a week earlier. The trap crop plants were transplanted to the field on 5/30, and the main crop Delicata on 6/5-6. System 1 was transplanted into black plastic and the others into pre-made furrows. All were watered in by hand right away, as it was quite dry. The trap crop was sprayed with Pyganic 1.4 EC and Cidetrak D (a feeding stimulant) using a backpack sprayer on 6/9. Pyganic 1.4 EC + Surround (a repellent) was sprayed on the main crop the next day. All plots were irrigated on June 12 with about 1" of water. Both trap and main crop plants were sprayed again on June 20, the trap crop with Entrust + Cidetrak D and the main crop with Pyganic 1.4EC + Surround. The trap crop was tilled under on 7/11 and 7/16. Data harvest was on 9/17-19, and the crop was removed from the field by 9/22.

1.1 System 1 (squash, no fall cover crop)

Winter Squash	Total Yield (lb/acre)	Percent Marketable
Delicata	6302	70
Spring Cover Crop	(lb/acre)	
Rye	7400	
Fall cover crop	(dry lb/acre)	
none	-	

Rye covered the plots over winter. This was rotary mowed on 5/29 and moldboard plowed the next day. The stand was very heavy. Plots were disced twice on 6/4, and plastic was laid the next day. The area between the plastic was cultivated on 6/27, wadding up some rye residue, then again on 7/17. Hand hoeing along the plastic edges was done on 7/30. Otherwise the crop was grown as above. Plastic was removed around 10/10. No fall cover crop was planted.

1.2 System 2 (squash followed by oats and Austrian winter peas)

Winter Squash	Total Yield (lb/acre)	Percent Marketable
Delicata	10157	76
Spring Cover Crop	(dry lb/acre)	
Wheat	2944	
Hairy Vetch	2146	
Fall cover crop	(dry lb/acre)	
Keuka oats	- (minimal)	-
Austrian winter peas	- (minimal)	-

Wheat plus hairy vetch covered the plots over winter. This was rotary mowed on 5/29 and moldboard plowed the next day. Areas between rows were cultivated on 6/19 and 6/30. The straddled rows (and middles) were cultivated on 7/16. Hand hoeing around the plants was done on 6/25 and 7/18. Otherwise the crop was grown as above. After harvest, plots were moldboard plowed and disced on 10/6, and drilled with Keuka oats at 104 lb/acre the same day. The next day they were drilled with Austrian winter peas at 124 lb/acre (this is about 4-5 weeks after the accepted optimal planting date for these).

1.3 System 3 (squash followed by late rye)

Winter Squash	Total Yield (lb/acre)	Percent Marketable
Delicata	12750	86
Spring cover crop	(dry lb/acre)	
Medium red clover (+ buckwheat)	1759 (+1000)	
Fall cover crop	(dry lb/acre)	
Rye	0 est.	-

Medium red clover covered the plots over winter. This was shallowly rotovated on 5/5. Plots were disced twice on 6/4, then transplanted as above. Areas between rows were cultivated on 6/19 and 6/30. The straddled rows (and middles) were cultivated on 7/16. Hand hoeing around the plants was done on 6/25 and 7/11, and large weeds were hand-rogued on 8/13 and 8/29. Otherwise the crop was grown as above. After harvest, plots were moldboard plowed and disced on 10/6 then springtooth harrowed on 10/20 and 11/3. After removing large chickweed clumps by hand, rye was broadcast at 120 lb/acre and rolled in with a cultimulcher (tines up) on 11/3.

1.4 System 4 (ridge till squash followed by oats and Austrian winter peas)

Winter Squash	Total Yield (lb/acre)	Percent Marketable
Delicata	7113	80
Spring Cover Crop	(dry lb/acre)	
Hairy vetch (+ fall oats)	2144 (fall oats 2307)	
Fall cover crop	(dry lb/acre)	
Keuka oats	- (minimal)	-
Austrian winter peas	- (minimal)	-

Hairy vetch and dead oats covered the plots over winter. This was rotary mowed on 5/29 and ridges were scraped on 6/5. Areas between rows were ridged on 6/30. They were scraped again on 7/17, with some damage to the plants. Hand hoeing around the plants was done on 6/25 and 7/21. Otherwise the crop was grown as above. After harvest, plots were mowed and cultivated on 9/26, wadding up trash and weeds. They were then shallowly rotovated on 10/1, and drilled with Keuka oats at 104 lb/acre on 10/6. The next day they were drilled with Austrian winter

peas at 124 lb/acre (this is about 4-5 weeks after the accepted optimal planting date for these) and re-ridged.

Entry Point 2: Main crop was early potatoes

Potatoes were planted by hand on 5/12-14 after marking rows at 30” apart with two small “furrower” shovels mounted on a toolbar. They were cut by hand and placed 9-10” apart. Planted seed was covered with hilling discs mounted on an Allis Chalmers G tractor the same day. Potatoes emerged slowly due to cool, dry weather. They were irrigated once on 6/12. The rows were tineweeded on 5/21 and 5/27, though few potatoes were up. First cultivation was 6/12, second 6/23. Potatoes were hilled on 7/3. They were sprayed for Colorado potato beetles on 7/8 with a mixture of Pyganic 1.4 EC (1 pt/A) and Entrust (2 oz/ A), which worked well. A second spray was applied on 7/29 with a mixture of Pyganic (1 pt/A) + Champion fixed copper (2#/A) to control PLH and foliar diseases. The last spray was with Champion (2#/A) only on 8/14. The plants began to die down about a week later. They were mowed off on about 8/21 and data harvest was on 8/27. Potatoes were harvested with a two-row digger and removed from the field by 9/5.

2.1 System 1 (early potatoes followed by rye)

Potato	Total Yield (lb/acre)	Marketable Yield (lb/acre)
Yukon Gold	22,600	13,200
Spring cover crop	(dry lb/acre)	
Rye	365	
Fall cover crop	(dry lb/acre)	
Rye	-	

There was a rye cover crop on the plots over winter, planted late the previous fall. This was moldboard plowed and disced on 5/1. Fessenden compost was spread at 11.6 tons/acre (fresh weight) on 5/7, then disced in the next day. The rest of the potato management was as above. Plots were disced on 10/6, then drilled to rye @ 120 lb/A the next day. This made a good stand by late fall.

2.2 System 2 (early potatoes followed by wheat and hairy vetch)

Potato	Total Yield (lb/acre)	Marketable Yield (lb/acre)
Yukon Gold	31,700	20,300
Spring cover crop	(dry lb/acre)	
Red clover (+ buckwheat)	1957 (+1500)	
Fall cover crop	(dry lb/acre)	
Fredrick wheat	-	
Hairy vetch	-	

There was a good cover crop of red clover on these plots in the spring. This was moldboard plowed on 5/1. Fessenden compost was spread at 5.8 tons/acre on 5/7, then disced in the next day. The rest of the potato management was as above. Plots were **disced?** on 9/8, then drilled to Fredrick wheat @c.130 lb/A and hairy vetch @ 40 lb/acre. This made a good stand by fall.

2.3 System 3 (cover crops, fallow)

Spring cover crop	(dry lb/acre)
Rye	4000 est.
Summer/Fall cover crop	
Buckwheat	1500 est.
Red clover	n/a

These plots were in rye, planted late the previous fall after a rye/hairy vetch mixture had been disced under due to too much chickweed. The rye was flail mowed on 6/9 and 7/25, then moldboard plowed and disced on 7/28. Buckwheat was broadcast @ 100 lb/A with a hand-spinner on 7/30 and rolled in with a cultimulcher used with its tines set 3-4" deep. Inoculated red clover was broadcast @ 20 lb/A the same day, and rolled in with the cultimulcher, tines up. These grew well. The buckwheat was flail mowed on ~9/4, and the clover allowed to grow. The clover put on good growth by late fall.

2.4 System 4 (ridge till potato, then oats and hairy vetch)

Potato	Total Yield (lb/acre)	Marketable Yield (lb/acre)
Yukon Gold	23,700	11,900
Spring Cover Crop	(dry lb/acre)	
Dead oats and peas	(4184 oats, 206 peas)	
Fall cover crop	(dry lb/acre)	
Keuka oats	1500 est	
Hairy vetch	-	

A layer of dead field peas and oats covered the ridged plots all winter. These were scraped off the ridges on 5/6 and 5.8 tons/A of compost was spread on 5/7. The rest of the potato management was as above. The ridges were destroyed during harvest, but remade on 9/8 in the same locations by ridging up with a potato hiller, after drilling Keuka oats @ 104 lb/A and hairy vetch @ 40 lb/A.

EP 1

System	Delicata Winter Squash, (total lb per acre)	Delicata Winter Squash, (marketable lb per acre)	Legume preseason cover crop (dry lb per acre)	Non-legume preseason cover crop (dry lb per acre)
1	6302	4392	0	7404
2	10157	7718	2146	2944
3	12750	11002	1759	1000 est
4	7713	5712	2144	1

EP 2

System	Yukon Gold potato (total lb per acre)	Yukon Gold potato (marketable lb per acre)	Legume preseason cover crop (dry lb per acre)	Non-legume preseason cover crop (dry lb per acre)
1	22600	13200	-	365
2	31700	20300	1957	1500 est
3	-	-	-	4000 est
4	23700	11900	206	4184