

# Observations on Growing Potatoes Organically

Mel Henninger - Extension Specialist in Vegetable Crops  
NJAES - Rutgers University

## Treatments

1. Conventional Bare Ground
2. Organic Bare Ground
3. Organic Leaf Mulch
4. Organic Black Plastic + Leaf Mulch between rows.

The seed potatoes were cut and suberized for 5 days @ 55°F and 95% Relative Humidity after which they were returned to 40°F until planting on April 25<sup>th</sup>. No other seed-piece treatment was used on any of the treatments.

### 1. Conventional Bare Ground Treatment

- 4/24 - 800 #/A of 15-0-15 / A pre-plant and dish-in
- 4/25 - planting 36" rows & 9" in the row  
+ 8 oz/A of Platimiun + .42 fl oz/1000 ft of row of Ridomil Gold sprayed over seed-pieces as they were covered.
- 5/01 – Prowl 2 pts/A + Metribuzin 75DF @ 5.7 oz/A
- 5/15 - 100 #/A of Nitrogen as 45-0-0 and cultivated in
- 6/09 – Hilled and sprayed with  
Metribuzin 75DF @ 5.7 oz/A + Dual Magnum@ 1.6 pts/A
- 6/16 - Foliar Spray with Provado 1.6 @ 3.75 oz/A
- 7/24 - Foliar Spray with Baythoid @ 6 fl oz/A + SpinTor @ 6fl oz/A

All Organic Treatments -- 4/24 9600 #/A chicken compost dish-in.

### 2. Organic Bare Ground no Mulch

- 4/24 - 9600 #/A chicken compost dish-in.
- 4/25 - Planting
- 5/07 - Drag off with a spike tooth harrow no potatoes showing.
- 5/15 - Cultivate and drag off potatoes are breaking
- 5/22 and 6/02 – Cultivate
- 6/09 - Hilled
- 6/17 and 7/11 - Hand weeded.
- 8/06 - Harvested, Washed, and Graded

## Observations on Growing Potatoes Organically

### 3. Organic Bare Ground with Leaf Mulch

- 4/24 - 9600 #/A chicken compost dish-in.
- 4/25 - Planting
- 5/07 - Drag off with a spike tooth harrow no potatoes showing.
- 5/15 - Cultivate, drag off, hill & spread leaf mulch, potatoes are breaking
  - Two manure spreader loads 5/15 and two more 5/30 per plot
  - Spread Leaves before potato break
- 6/17 - More leaf mulch & hand weeded.
- 8/27 - Harvested
- 8/28 - Washed, and Graded

### 4. Organic Black Plastic with Leaf Mulch

- 4/24 - 9600 #/A chicken compost dish-in
- 4/25 - Planting - double row on the plastic
- 5/07 - First potatoes to emerge
- 5/15 - Cultivate middles, must potatoes up
- 5/28 - Cultivate and spread leaf mulch
- 6/17 - More leaf mulch & hand weeded
- 8/27 - Harvested
- 8/28 - Washed, and Graded

#### First Problem: Weeds

- Weeds this size (1" tall) are too big for dragging off
- Dragging off, cultivating, or weeding twice a week to keep weeds from starting
- Recreational Tillage

#### Next Problem: Bugs

- - Colorado Potato Beetle
  - Hand Picked Adults until larva hatched
  - Entrust @ 3 oz/A (max rate) = \$65/A
    - Works on the larva (Excellent control)
    - Three sprays 6/05, 6/12, and 6/25
- - Potato Leaf Hopper
  - PyGanic 5.0 EC @ 1 pt/A = \$46/A
    - 6/05, 6/12, 6/19, 6/25, 7/01, 7/10, & 7/16
    - Killed Leaf Hoppers but reintroduction rate was too high

## Observations on Growing Potatoes Organically

### Observations with Drip Irrigation

- Installed it after Hilling in Mid of June except tr 4 Black Plastic
- It worked well in all treatments except Conventional Bare Ground.

There something was drilling whole into the tape.

- Kept the surface dry less grass until rain of 7/04.
- Needed tape on every row.

#### Blazer Russet

Treatment	Total cwt/A	Mark. cwt/A	Spec. Grav.	% Over		% Culls
				1 7/8	2 1/2	
Conventional	457a	376a	1.069a	93ab	47a	12b
Bare Ground	200b	159b	1.063b	92b	29b	13b
Leaf Mulch	412a	376a	1.066ab	95a	47a	4a
Black Plastic	189-	156-	1.065-	93-	44-	11-
CV	16	16				

#### Superior

Conventional	406a	378a	1.062b	98a	63a	5a
Bare Ground	187b	171b	1.062b	96a	48a	4a
Leaf Mulch	399a	382a	1.070a	98a	59a	2a
Black Plastic	246-	217-	1.059-	94-	45-	6-
CV	17	16				

#### Dark Red Norland

Conventional	440a	387a	1.052a	96a	59a	8a
Bare Ground	148c	126c	1.050a	91b	24c	5ab
Leaf Mulch	313b	294b	1.053a	96a	38b	2b
Black Plastic	183-	152-	1.058-	82-	20-	3-
CV	16	15				

#### King Harry

Conventional	538a	457a	1.071a	95b	53a	11a
Bare Ground	186c	169b	1.072a	94b	35b	5b
Leaf Mulch	477b	455a	1.077a	97a	59a	2b
Black Plastic	255-	233-	1.074-	96-	54-	5-
CV	9	12				

#### Katahdin

Conventional	414a	369a	1.059a	97a	78a	8a
Bare Ground	145c	133c	1.057a	97a	67b	5b
Leaf Mulch	304b	286b	1.061a	95a	55c	1c
Black Plastic	208-	195-	1.062-	96-	54-	3-
CV	17	19				

## Observations on Growing Potatoes Organically

Yukon Gold						
Conventional	409a	367a	1.068a	97a	73a	7a
Bare Ground	135c	115c	1.066a	92b	38c	6a
Leaf Mulch	255b	239b	1.069a	95a	51b	2b
Black Plastic	206-	187-	1.066-	95-	50-	5-
CV	19	18				

The same letter after the treatments indicate no significant difference among the means. The black plastic treatment was not analyzed.

### Final Observations

#### - Yields:

- The conventional treatment had the highest marketable yield with Katahdin, Dark Red Norland, and Yukon Gold.
- The leaf mulch treatment had the same marketable yield as conventional with Blazer Russet, Superior, and King Harry.
- The black plastic was disappointing but it may be due to harvesting problems.
- The bare ground organic treatment had the lowest yield with each variety.

- Size was good except organic bare ground

- Tuber Appearance

- Blazer Russet and King Harry each had a big improvement in tuber appearance with leaf mulch; fewer knobs and misshapen

- All varieties except Superior had significantly less culls in the leaf mulch as compared to the conventional

- The leaf mulch was a big problem on the harvester. It took twice as long to harvest.

- Drip tape was removed before harvest.

- The plastic when over the harvester with little problem.

- The leaves, drip, and plastic may have been less of a problem with a regular digger.

- There was no late blight problem in 2008 which saved a lot of fungicide sprays.

## **Observations on Growing Potatoes Organically**

- As a research plot and on your farm if part is organic and part is conventional, it was very time consuming. We spend 263 hours extra on the organic area.

- Cleaning Equipment
- Pulling Weeds
- Picking CPB
- Spreading Leaves
- Record Keeping
- Planting through the Black Plastic

- The largest increase in costs were the insecticides, drip, plastic, and labor.  
- Is it worth the increase in cost? If you have the market that will pay!!