Observations on Growing Potatoes Organically

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Treatments
1. Conventional Bare Ground
2. Organic Bare Ground
3. Organic Leaf Mulch

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 25th. 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 Platimiu+ .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
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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
   -- 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
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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.

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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!!