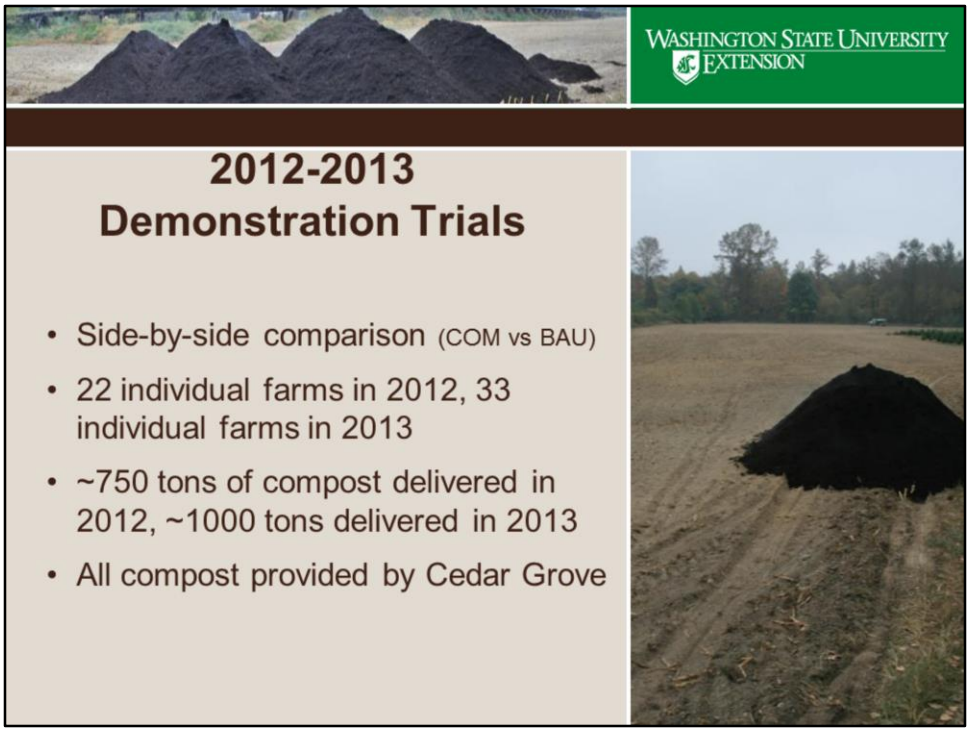
WASHINGTON STATE UNIVERSITY EXTENSION

Compost Demonstration Trials

On-going observations 2013-2015

WSU Compost Outreach Project



The WSU Compost in Agriculture project is 2 tiered with research trials and demonstration trials. For these years, both research and demonstration trials compared the growers business as usual to the BAU plus compost. Research trials are more time intensive with experimental site design, soil tests, and yield data collection. Demonstration trials are more hands-off. Most information is collected via observation and photo/video documentation Soil test and yield data are up to grower. Farmers share their observations and experience with the compost through surveys and correspondence.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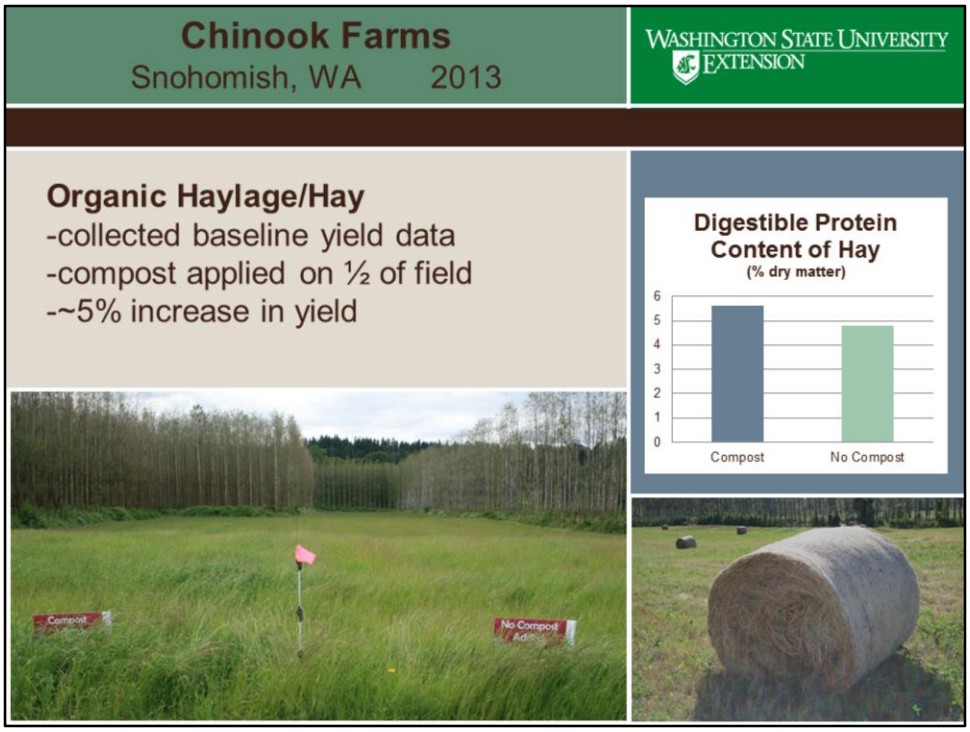
Long's Landscaping and Nursery, Snohomish WA
2012 used compost as a mulch material
• Saw 2x root growth between Jun-Nov 2012
BAU
COM

Explain BAU

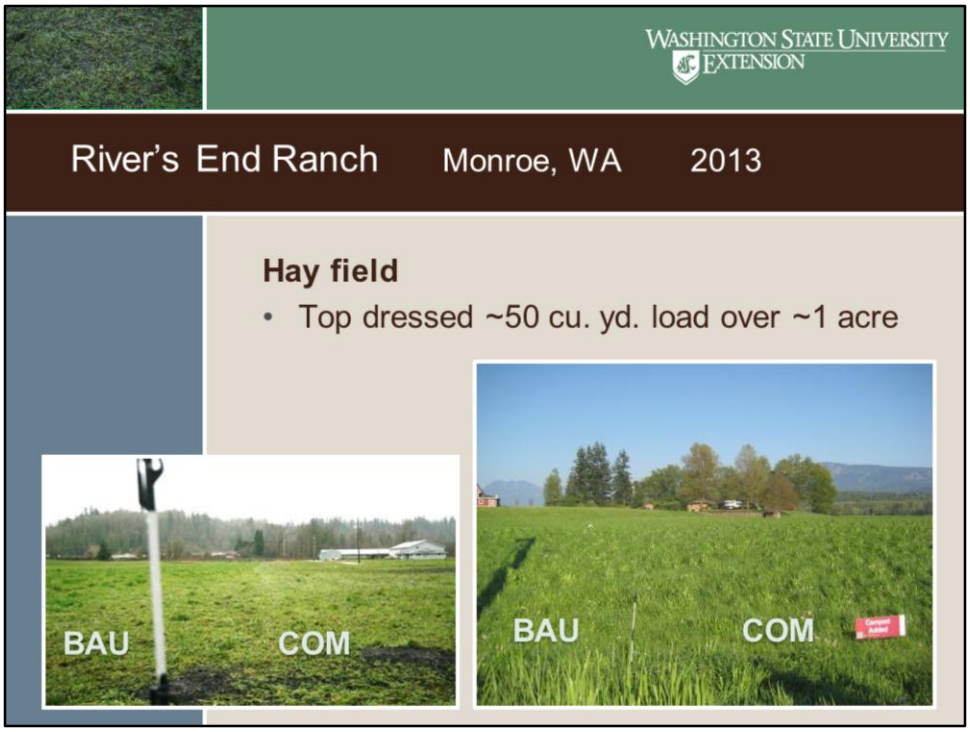
Farmer is interested in using compost because a significant amount of soil is moved off site with every tree. In 2013, he applied the ~50 cu yds over a 12000 sq ft area or 181 cu yds/acre or ~108 tons/acre.

Setting up their own experimental trial to determine if compost will help buffer their low pH
Compost treatment: ½ with lime ½ without
Remaining grass: lime with no compost

Results: Grass in the trial plot was thicker and taller than surrounding areas and the clover thrived. Before the surrounding (BAU) grass was able to catch up, the rain flattened the grass in the COM area, so it was more difficult to harvest. The ground treated with lime was difficult to perceive any differences.



- Measured out two equal sized plots, each plot was ~1.3 acres
- Took baseline yield before compost application (compost plot, prior to compost application=11% more yield than BAU). Plot had all be treated with 100 cu yds of chicken manure.
- Applied compost at a rate of ~50 cu yds/acre on ½ of plot
- Grass in compost treatment appeared taller and thicker that BAU, 2nd cutting yield was 15.5% higher in compost treatment.
- Took forage samples to compare COM hay to BAU hay, higher protein content in compost treatment



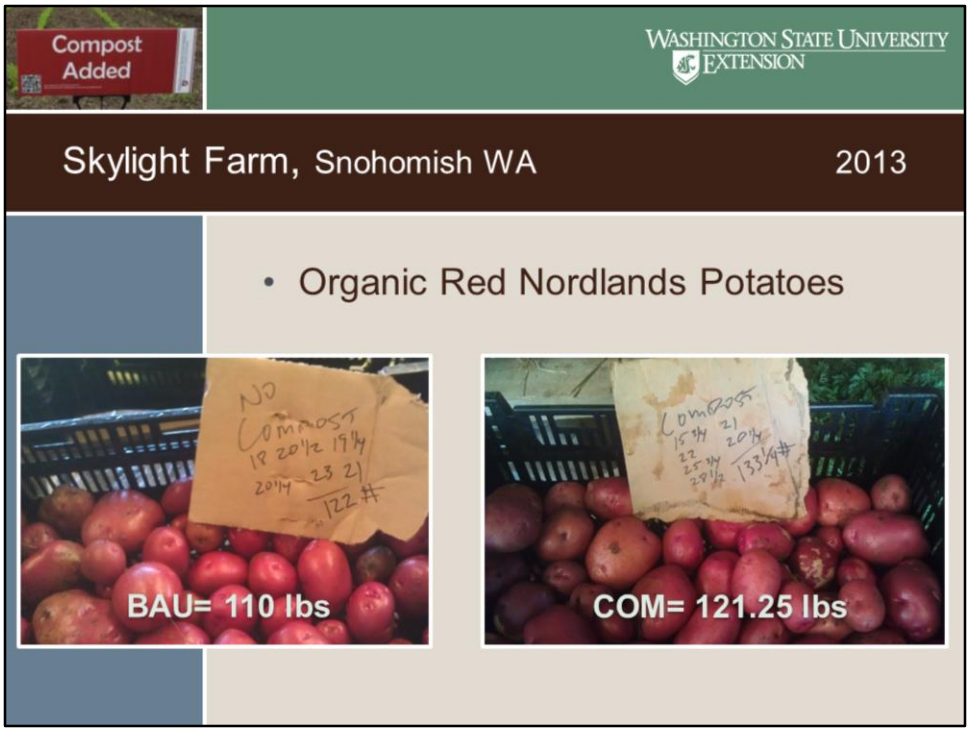
Compost spread in early March. Second picture was taken in May. Orchard and Rye grass. No observable difference in grass height.

Additional Hay trials: Results were mixed, one farmers saw a noticeable increase in crop height during the first and second cutting. One farmer, who also applied chicken manure, saw no noticeable difference in crop height.

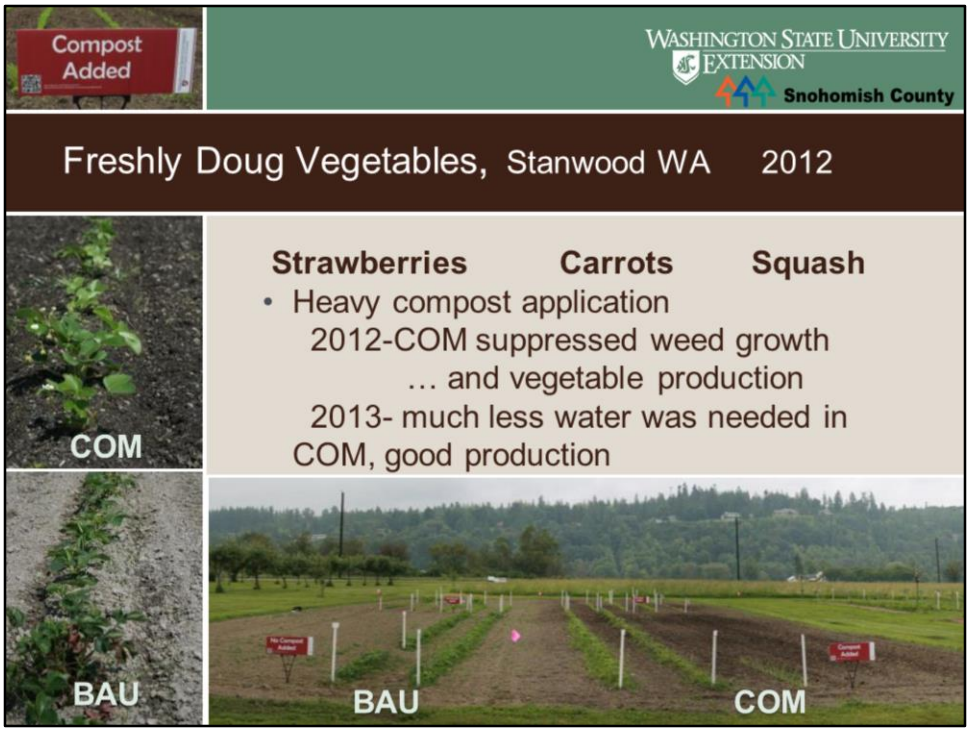
- **Cover Crop -** (buckwheat, rye vetch, oats)

1/4-1/2" top dressing with compost, saw 3ft increase in height of cover crop where compost was applied.

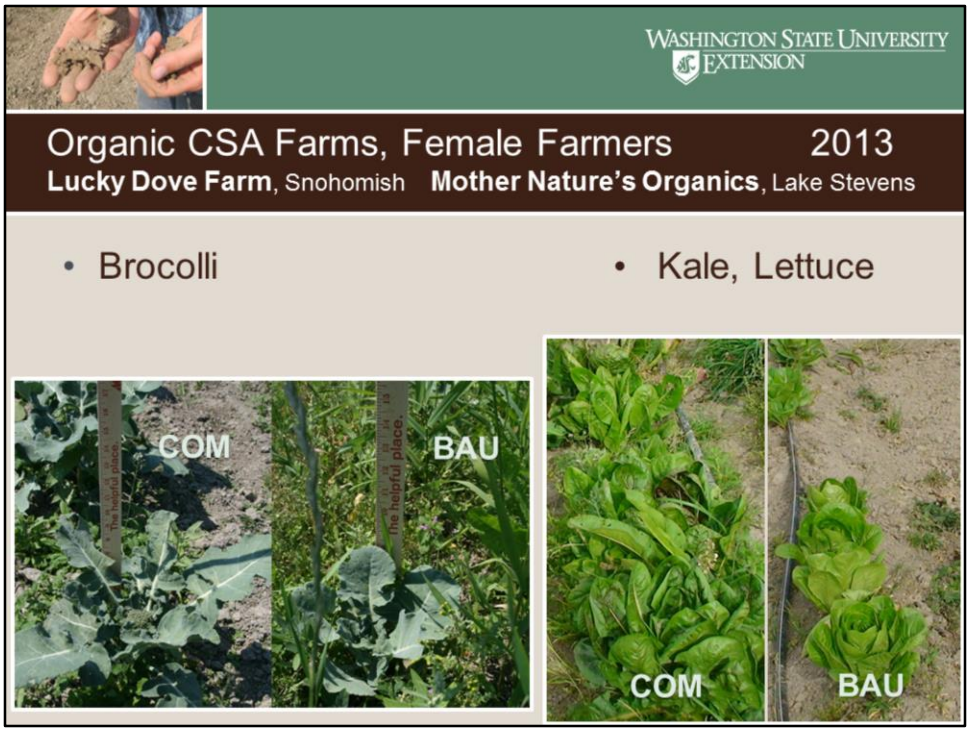
Applied 50 cu yds on ½ acre. He didn't see enough positive results on his crops and soils to justify the labor and fuel costs needed to spread compost. He uses commercial fertilizer, manure, and cover crops to maintain fertility. Potential benefits could be increased water retention in the soil for water intensive crops like potatoes.



We dug up 50 row feet of the compost red nordlands and no compost red norlands. 121 1/4 # with compost, 110 w/o. (Weights in photos include 12 # of tare)."



High rate compost application caused Nitrogen to be immobilized (microbes and crops competing for N from compost). This grower is excited to see the results this year (2013), following the high rate application in 2012. This year in 2013, all her plants did well, weed suppression was good, potatoes needed less water. Soil was much lighter and fluffier.



Broccoli (Castle Dome and Gypsy)- Compost plants were transplanted three weeks later than BAU, plants caught up and grew larger and yielded slightly more broccoli. Kale and Lettuce – significantly larger plants, more yield

Lost some plants to root rot in the previous years.
Difficult to tell the difference between compost treated and no compost raspberries.
Nick is interested in using compost in the future but not buying it because the labor cost was so high already when he applied it by hand.

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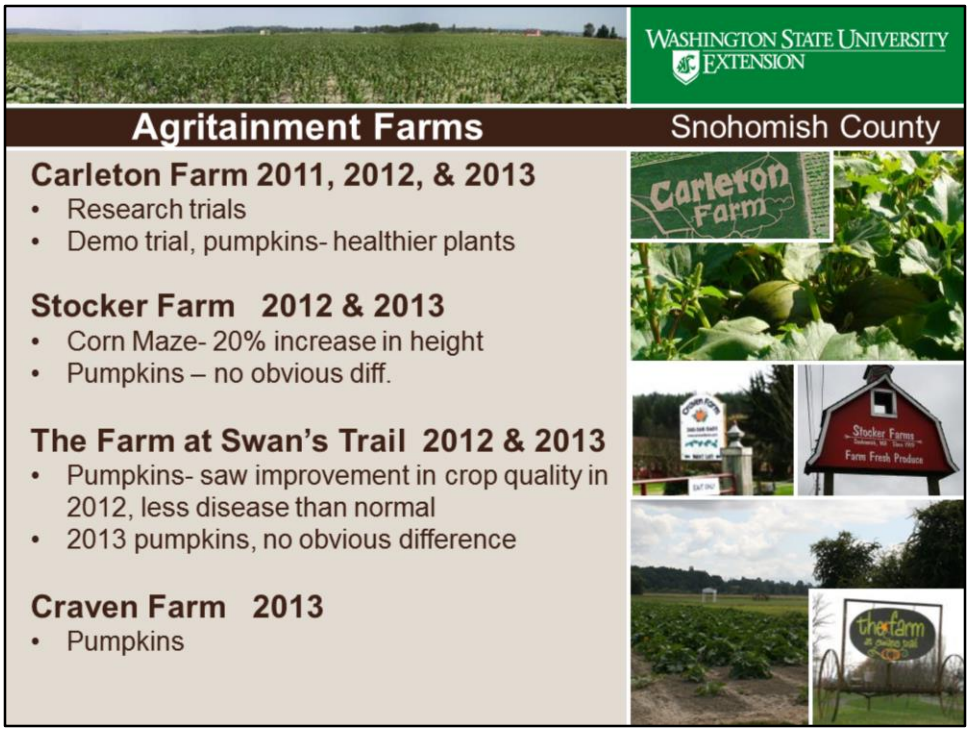
Swinging R Ranch Monroe, WA 2013

Blueberries

- Top dressed 25 year old plants, 2” compost around base of plants



Carleton- participated in research trials 2011-2015, also participated in a demonstration trial in 2013 & 2015 on pumpkins. Crop seems healthier and greener with less powdery mildew.
Stocker- The data wasn't replicated but the program coordinator in 2012 took ten subsamples per side (psuedoreplication) corn was much taller. In 2013, pumpkins show no obvious difference in compost treatment, but he did apply a different compost product on a separate pumpkin field and pumpkins plants look healthier with higher yield.
Ben- Plants pumpkins there every year, usually marginal with disease. In 2012, Ben saw less disease than previous years. In relation to other years it was good. Pumpkin were large in size and were some of his best. In 2013, compost seemed to be woodier than the previous year, no obvious difference in pumpkins in the compost treated plot.
Craven Farm- tried compost on pumpkins in 2013, he anticipated the compost would improve production, but correspondence is needed to confirm result.

The WSU Compost in Agriculture project is 2 tiered with research trials and demonstration trials. Demonstration trials do not include replications for statistical analysis, but are purposed to provide farmers first hand experience using compost and evaluating the benefits. Most information is collected via observation and photo/video documentation. Soil test and yield data are up to grower. Farmers share their observations and experience with the compost through surveys and correspondence.

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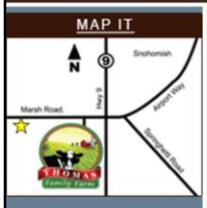
Thomas Family Farm, sweet corn



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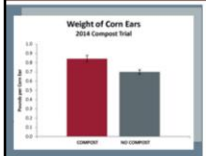

Data was collected by WSU Snohomish County Extension staff, with 12 random corn stalks sampled in the Compost and No Compost treatments.* Corn ears were removed and weighed, revealing that **compost increased the sweet corn ear weight by 20%!**

*cannot be considered statistically relevant..

Compost was applied in a thick layer, almost 2.5 inches thick. **The compost increased the organic matter in the soil by 15%**, added slow-release nutrients, and contributed to soil quality.

In June and July, the corn stalks were almost 1.5 ft. taller in the compost treatment!

8/22/14

WASHINGTON STATE UNIVERSITY EXTENSION

Mother Nature's Organics/ Be Well Farm

COMPOST NO COMPOST

Compost applied at a rate of ~40dry tons/acre or ~1".
Be Well Farm
Lake Stevens, WA

7/15/14

Compost on Herbs

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Calendula

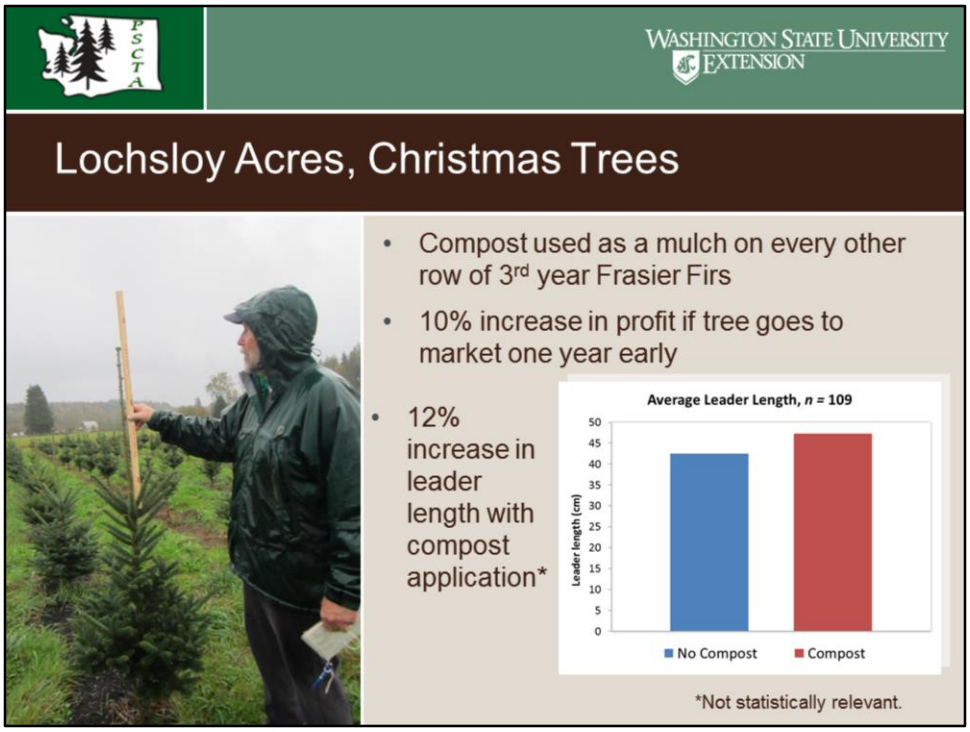
Compost applied ~2" on top and incorporated.
Urban Farm Naturals
Arlington, WA
8/14/14

Fenugreek

Compost applied as top dress ~1" on top.

Harvest View Gardens
Stanwood, WA

5/8/14



New to the program this year are demonstration trials at three Christmas Tree farms (Lochsloy Acres, Red Rooster Ranch, and Alan Acres), all members of the Puget Sound Christmas Tree Association.

Challenges these growers have experienced include soil saturation, soil pH, weeds, rodents. For each of the three Xmas tree trials, compost was added into the planting holes for new seedlings (~1/3 cu ft), or applied as a mulch. Mike (pictured here) and Sheila applied compost as a mulch on every other row of 3 yr old Frasier Fir trees at a rate of .3 cu ft per planting spot (about 6' long x 2' wide). They are measuring the length of tree leaders and counting the number of buds on leaders. Mike and Sheila measured the leaders on each of 109 Frasier fir trees (56 Compost, 53 No Compost). They also counted the buds on each leader. Buds per 1 ft of leader growth and buds on the tree whorl were approximately equal between the treatments.

Compost on Basil

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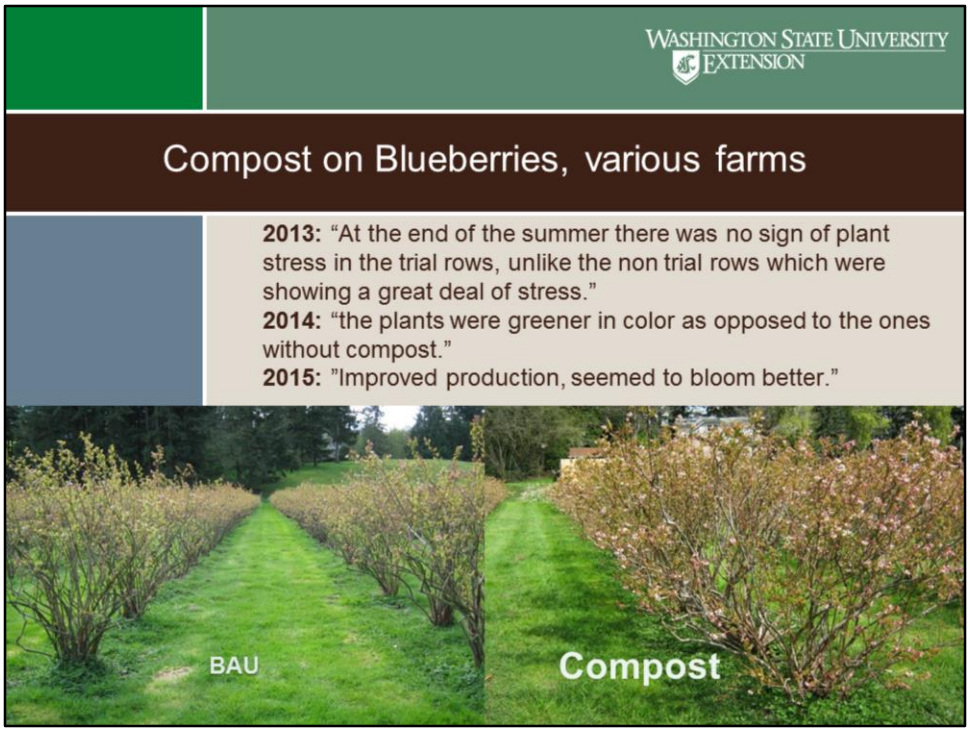
9/10/14

Gypsy Rows, Arlington WA and Be Well Farm, Lake Stevens. Basil in compost remained compact and productive, while no-compost basil bolted



Explain BAU= (Business as Usual)

Suggestion: "While there are a diverse array of crops and farm types in the demonstration trials, these next few slides highlight some of the results we have observed"

- We do not collect scientific data on the trials, we monitor the trials with photos and collect farmer feedback through surveys

Blueberries app rate: 2-3" mulch on top

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Bryant Blueberry Farm: Compost applied as mulch for two years in a row

7/18/13- First season after first compost application, compost applied in April. Sawdust on both rows. (Chandler Blueberries)

WASHINGTON STATE UNIVERSITY EXTENSION

Bryant Blueberry Farm: Compost applied as mulch for two years in a row

6/9/2014 – after second compost application (applied in April 2014) up to 6" of compost applied as mulch

Farmer observations: Increased plant growth, less stress on plants in middle of the summer. Larger root balls in compost area.

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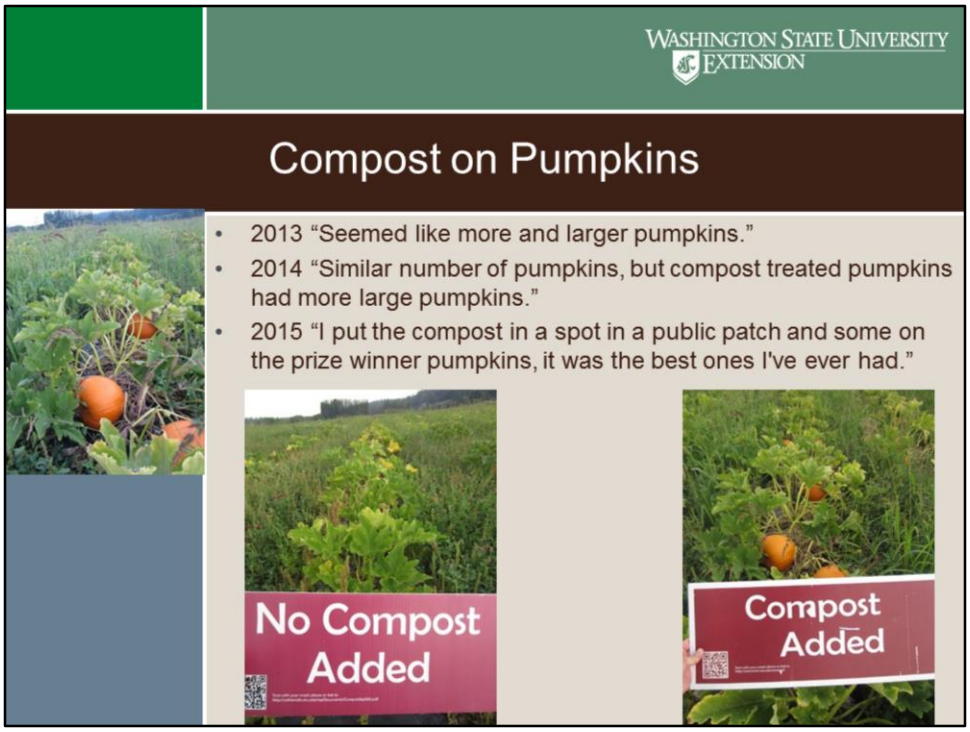
2015 Demonstration Trials

- Side-by-side comparison
- 49 trials in 2015
- Continued funding from WSDA & King County, + SnoCo Solid Waste
- 1069.15 tons /2011.75 cu yds of compost delivered
- Compost provided by Cedar Grove, Bailey Compost, and Lenz Enterprises

Top-dress/mulch application most effective
Optional info: In 2014, frasier firs at Lochsloy Acres saw ~10% in length of leaders in the compost treatment. ~100 trees sampled, ½ compost ½ no compost . *Not statistically relevant.



Compost has consistently shown positive results with pumpkin crops, through research and demonstration trials.
App rate~ 50 cu yds/acre

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Sweet Peppers 2015

- 1-2” of compost tilled 6” into soil
- Applied using loading tractor to distribute compost, then tilled in.

2015 demonstration trial on sweet peppers 7/24/15

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Compost on Sweet Peppers

"the plants did respond nicely, there was better leaf color, and better fruit set." – Oct 2015

Caruso Farm, Sweet Pepper Trial

Sunday Lake Urban Garden and Game Farm, Stanwood WA