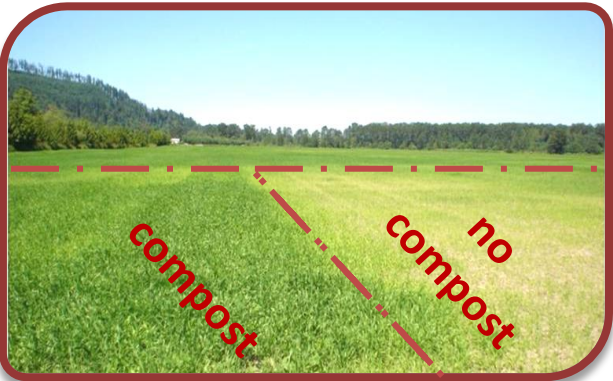


Typical NPK Values for Common Manures and Composts	Total N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Bulk density
	(lbs. per ton as-is)			(lbs per cu. yd)
Uncomposted Poultry Manure <sup>4</sup>	37	58	47	1400
Composted Poultry Manure <sup>5</sup>	17	39	23	-
Composted Green Waste & Food Scraps <sup>6</sup>	13	4	6	1200
Composted Dairy Manure <sup>5</sup>	12	12	26	-
Uncomposted Horse Manure <sup>4</sup>	9	6	16	1400
Separated Dairy Manure / Solids <sup>4</sup>	5	2	3	1100

**Table 1.** Typical macro-nutrient breakdowns for various manures and composted feed stocks. Values are approximations; actual nutrient content will vary. It is highly recommended that any manure or compost be tested for nutrient levels to determine proper rates prior to application.

The process of composting stabilizes nutrients. Available N in compost is generally in slow release forms, providing smaller amounts of nutrients over a longer period of time. Uncomposted manures have relatively higher N values, but also have a greater potential to infiltrate and pollute water systems.

*Studies on composted manure in a dryland wheat fallow system show that the Economically Optimal Rate (EOR)\* for application peaks around 15 dry tons per acre. The compost application increased yields for a minimum of three years.<sup>2</sup>*



**Figure 2.** Triticale in Snohomish WA (2011). Left compost amended, right unamended.

### For more information on compost visit the following resources online:

[puyallup.wsu.edu/soilmgmt/Composts.htm](http://puyallup.wsu.edu/soilmgmt/Composts.htm)

[csanr.wsu.edu](http://csanr.wsu.edu)

[compostingcouncil.org](http://compostingcouncil.org)

[compost.css.cornell.edu](http://compost.css.cornell.edu)

\*For assistance determining application rates consult the references listed or call your local Extension office or Conservation District.

To find out more and for information about the **On-Farm Compost Education Field Day** visit us online at [snohomish.wsu.edu](http://snohomish.wsu.edu) or contact the Compost Outreach Coordinator [nicholasr.steele@wsu.edu](mailto:nicholasr.steele@wsu.edu), (425) 338-6026

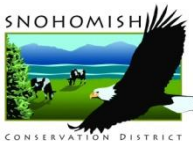
### References

- Alexander, R. 2005. AAPFCO Soil Amendment/ Compost Uniform Product Claim published by R. Alexander Associates, Inc. Apex, NC, for the US Compost Council.
- Compost Rates for Optimum Yield in Organic Crop Production. 2011. *Crops & Soils Magazine*, July-August 2011, pp 27-32.
- US EPA. 2010. Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures, 2010, pg 5.
- Bary, A. et al. 2004. Fertilizing with Manure. Washington State University Extension, Farming West of the Cascades series. PNW0533.
- Rosen, C and Bierman, P. 2005. Using Manure and Compost as Nutrient Sources for Fruit and Vegetable Crops, University of Minnesota, pub number M1192.
- Cedar Grove Composting, Compost Quality Assurance Program 2012. Sample ID, EV N20 1/11/2012. Tests performed by Soil Control Laboratories, Watsonville, CA.

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SNOHOMISH COUNTY EXTENSION



**Snohomish County**

*Extension programs and employment are available to all without discrimination. Evidence of noncompliance may be reported through your local Extension office. This resource is intended for educational purposes only. The development of this material is grant funded by Snohomish County, awarded in partnership between Washington State University Extension, Snohomish County, Snohomish Conservation District, and Cedar Grove Composting, Inc.*

## Compost in Agriculture

### Closing the Loop: Facts for Agricultural Compost Application.



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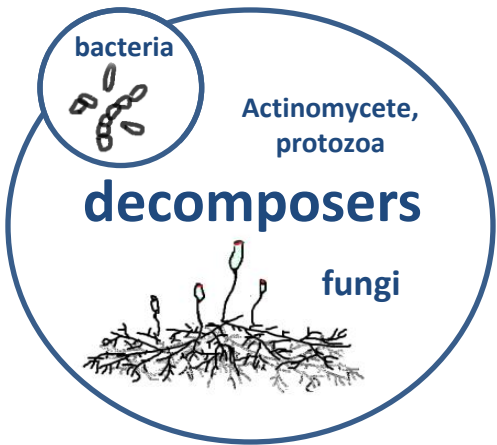
SNOHOMISH COUNTY EXTENSION

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Andrew Corbin , Ph.D. and Nicholas Steele



**Compost is** a product of the naturally occurring process of organic matter decomposition, and is primarily made up of organic material and humus.

While humans manipulate the composting process, fungi, bacteria, and other organisms are responsible for breaking down biological materials into more useable forms.



Many gardeners, farmers, and commercial composting facilities utilize and adapt this natural process, simultaneously generating a beneficial soil amendment and diverting resources from traditional waste streams.

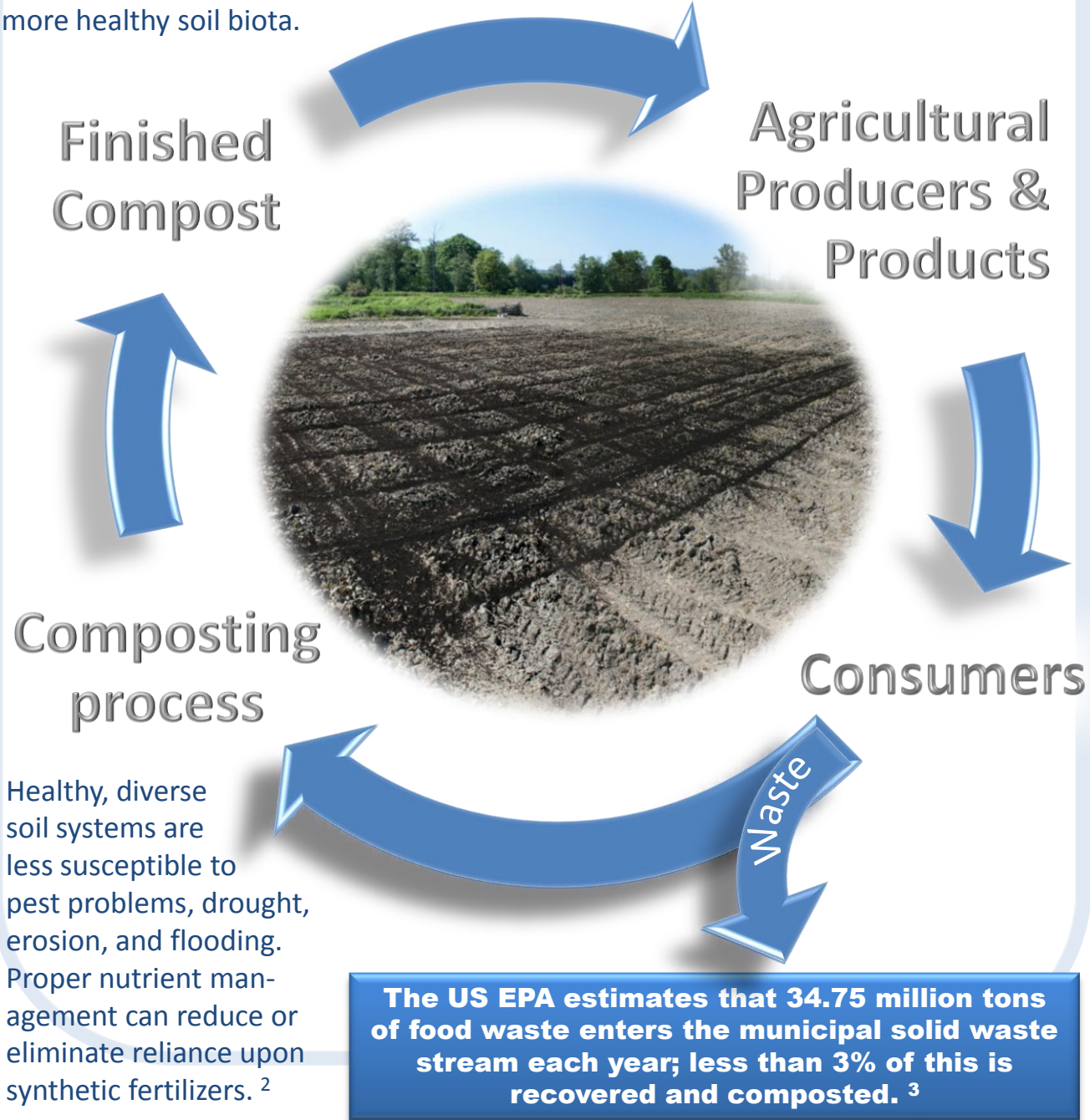
Nearly every farm generates some form of unused biological material. These byproducts of production can provide an avenue for replenishing soil fertility.

Potential compost feedstocks include:

- Manure
- Crop discards
- Bedding
- Livestock mortalities
- Chaff
- Slaughter remnants
- Prunings
- Unmarketable produce
- Woody debris
- Food scraps

Compost applications benefit farmers by improving soil structure, water holding capacity, and the plant rooting environment, as well as encouraging a more healthy soil biota.

With continued use, compost amended soil can become rich in organic matter, plant available nutrients, and beneficial soil microorganisms. <sup>2</sup>



Healthy, diverse soil systems are less susceptible to pest problems, drought, erosion, and flooding. Proper nutrient management can reduce or eliminate reliance upon synthetic fertilizers. <sup>2</sup>

**The US EPA estimates that 34.75 million tons of food waste enters the municipal solid waste stream each year; less than 3% of this is recovered and composted. <sup>3</sup>**

- Compost has been documented to: <sup>1</sup>
- Supply macro and micro nutrients
  - Improve soil structure and porosity
  - Improve cation exchange capacity
  - Buffer soil pH
  - Manage nutrients and soil toxins
  - Stimulate vigorous root growth
  - Increase soil microbial activity
  - Contain humus
  - Reduce erosion
  - Increase yield <sup>2</sup>

- In **heavy clay soils**, adding compost will:
- Reduce bulk density
  - Increase moisture infiltration
- In **light sandy soils**, adding compost will:
- Improve moisture holding capacity
  - Reduce nutrient leaching



**Figure 1. Pumpkins in Puget silty clay loam in Snohomish WA (2011). Left row compost amended, right row unamended.**

Preliminary data indicate a yield increase of 20% in the soil amended with 20 dry tons per acre green waste compost as compared to unamended soil (Corbin and Fixen, 2012 unpublished).