

# Soil Amendments, Manure vs. Compost

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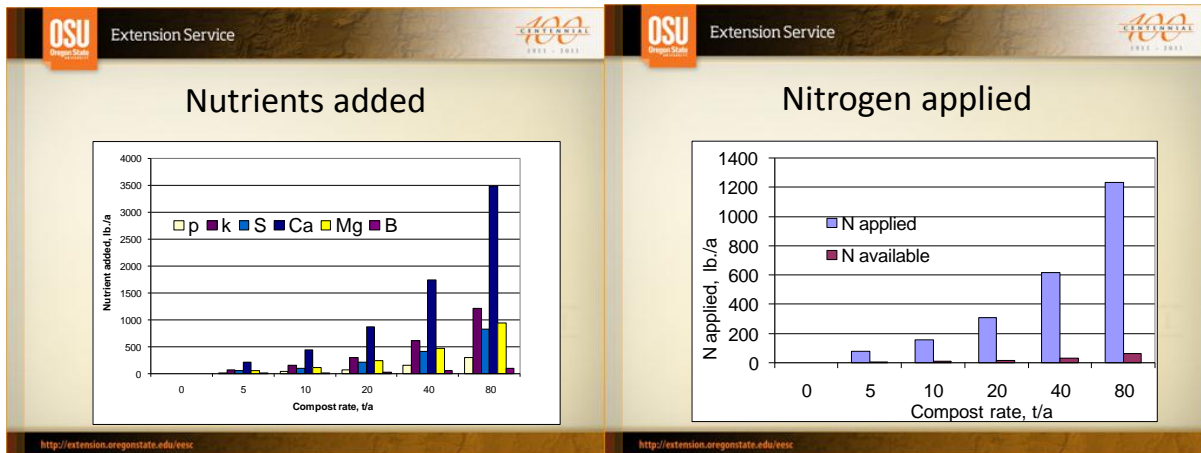
Manure is much more like fertilizer than is compost when nitrogen or sulfur is needed.



Soil amendments can have long term (15-20 years) impact on the soil.



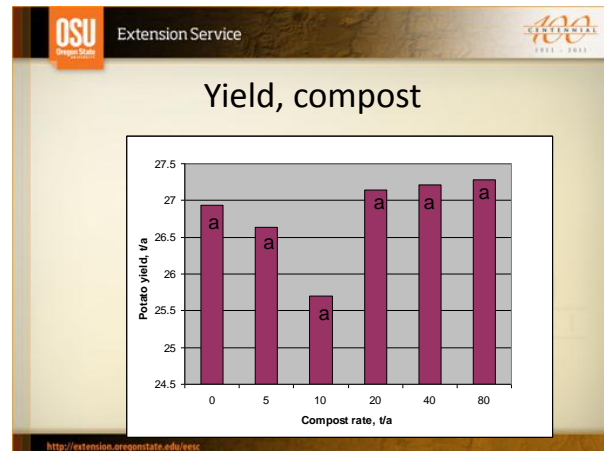
A compost trial conducted at Terra Poma Farms in Hermiston Oregon.



Total nutrients added vs. nutrients available. Total N added is over 1400 lb/a at the 80 t/a compost but less than 100 lb available N per acre. Sulfur would behave similar to N. Phosphorous and potassium would be available at application. To supply all nitrogen needs with compost, P and K would have to be grossly over applied.

### Nitrogen - Compost

- Very little N is plant available from compost
- Phosphorous and potassium are available at application
- System gets way out of balance if use compost as N source



Yield for compost treatments did not significantly vary for Atlantic potato dug in June.

OSU Oregon State Extension Service

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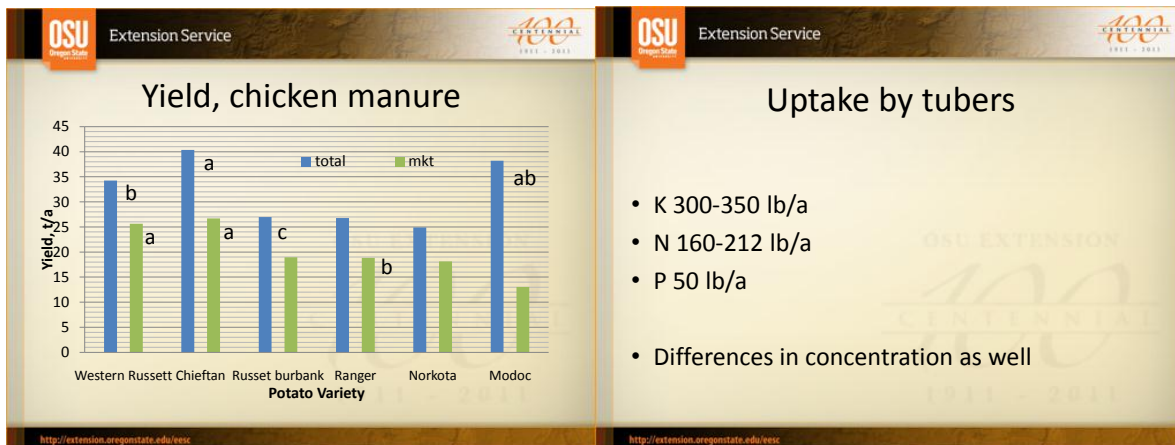
### Nitrogen availability for first year

Type	Available N (% of total)
Dairy (dry stack)	20 to 40
Separated dairy solids	0 to 20
Broiler litter	40 to 70
Horse	0 to 20

Source: Fertilizing with Manure, PNW Ext Publ 533

<http://extension.oregonstate.edu/esc>

Unlike compost which is a long term soil amendment, manure nitrogen is largely available in the first year. Cow manure would have roughly 50% of the nitrogen applied in the first year. Even with 50% availability of the nitrogen in manure P and K would still be over applied.



Chicken manure has 75% nitrogen availability the first year. The results from an organic nitrogen trial where 6 t/a chicken manure was applied to 6 different potato cultivars. Uptake between cultivars of K, N and P were similar.

**Conventional N**

- Soluble at application
- Can see in a soil test
- Immediately available at application
- Not true with manure and compost
  - PSNT
  - Incubation N
  - History

**Cumulative available N from a manure source**

Year 1: [Purple] [Yellow]      [Purple] = available N

2: [Purple] [Yellow] + [Purple] [Yellow]

3: [Purple] [Yellow] + [Purple] [Yellow] + [Purple] [Yellow]

4: [Purple] [Yellow] + [Purple] [Yellow] + [Purple] [Yellow] + [Purple] [Yellow]

5: [Purple] [Yellow] + [Purple] [Yellow] + [Purple] [Yellow] + [Purple] [Yellow] + [Purple] [Yellow]

Conventional N is soluble and available at application and does not need to be kept track of year to year because 100% is released the first year. For manure and composts N availability must take into account previous years applications. This nitrogen is not seen in a soil test and needs to be accepted based on application history.

**Moral**

- Higher N manures generally quicker to decompose and release N to plant
  - Blood meal
  - Chicken manure
- More decomposed the product is the longer it lasts in soil and slower its release will be.
  - Compost
  - Some bio-solids

**Other issues with manure and compost**

- Scab
- Food safety

The more N in a manure or compost the more that is generally available for potato growth in the first year and the less that will carry over into subsequent years. Other issues may drive manure and compost use such as food safety and the potential for scab.

## ORGANIC FERTILIZER CALCULATOR

<http://smallfarms.oregonstate.edu>

### Sample calculations

- How much of this fertilizer should I apply?
- How do these two fertilizers compare?
- What's the cheapest source of available N, P, K, etc.?
- Does this program match my fertilizer recommendation?



The organic fertilizer calculator located at the above web address is an excellent tool to help you figure out the nitrogen available from a given amendment as well as the cost you are paying for a pound of nitrogen.