DRAFT Common Organic Garden inputs with notes on ecological impact and carbon footprint

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Organic gardeners very aware of the origins food they're eating but often turn a blind eye to the origins of the inputs they put on to their food gardens (fertilizers, soil amendments, mulch). For our gardens to truly be sustainable our inputs need to be derived from sustainable sources, the closer to home the better.

Product	Used for	Origin and distance	Sustainable?	Other notes
Rock Phosphate	Phosphorus	Mined, predominately Morocco	Nonrenewable	Concern about global depletion. http://permaculturenews.org/2009/01/14/phosphorus-matters/ http://www.organicgardening.com/learn-and-grow/peak-phosphorus
Peat moss	Absorbent component in potting soil	Bogs principally West Siberian Lowland, the Hudson Bay Lowland	Nonrenewable takes 10,000 years to form	Damages bog ecosystems http://www.organicgardening.com/learn-and-grow/questioning-peat-moss?page=0,0
Greensand	Potassium	Mined, predominantly New Jersey	Nonrenewable	Damaging coastal ecosystems unless sustainably harvested
Bone and Blood meal	Nitrogen and phosphorus	Slaughterhouse waste product	Renewable	Any concerns about animal welfare and environmental impact of meat industry would apply. Small scale, locally sourced probably OK
Bat guano	Nitrogen and others	Caves, various domestic and international locations	Renewable but slow	Damages bats and cave ecosystems, unless sustainably harvested http://www.defendersblog.org/2011/06/conservation-in-action-harvesting-bat-guano/
Gypsum	Calcium and sulfur, adjusting PH, adjusting salinity	Mined, Europe and Iran biggest producers	Nonrenewable but abundant	Used in drywall and other plasters, maybe could be recycled from construction debris?
Epsom salt	Magnesium and sulfur	Mined and synthetically made	Nonrenewable but abundant	
Fish emulsion	Nitrogen	Fish industry waste product, mostly northern coastal areas	Renewable	Concern about overfishing
Kelp meal	micronutrients	Coastal areas	Renewable	Can contain contaminants
Cottonseed meal	Nitrogen	Cotton processing throughout country	Renewable	Look for organic. Conventional cotton GMO and heavily sprayed w chemicals
Local animal manures	Nitrogen	Local waste product	Renewable, abundant	Pros and cons of different manures (horse, cow, chicken, rabbit, goat)
Homemade compost	NPK and micronutrients	Local waste product	Renewable, abundant	Great potential for capturing nutrients city-wide. Adds to soil water holding capacity
Worm castings	NPK and micronutrients	Homemade or purchased from local producer	Renewable, abundant	
Alfalfa	Nitrogen and trace minerals	Grown at home or purchased from organic local farmer	Renewable, abundant	Great for mulch, balancing compost, excellent in compost teas
Urine	NPK	Local waste product	Renewable, abundant	http://permaculturenews.org/2011/11/27/urine-closing-the-npk-loop/
Human feces	NPK	Local waste product	Renewable, abundant	http://permaculturenews.org/2013/03/01/recycling-animal-and-human-dung-is-the-key-to-sustainable-farming/

How bad is it?
"… a global production peak of phosphate rock is estimated to occur around 2033. While this may seem in the distant future, there are currently no alternatives on the market today that could replace phosphate rock on any significant scale. New infrastructure and institutional arrangements required could take decades to develop.

While all the world's farmers require access to phosphorus fertilizers, the major phosphate rock reserves are under the control of a small number of countries including China, Morocco and the US. China recently imposed a 135% export tariff on phosphate rock essentially preventing any from leaving the country. Reserves in the U.S. are calculated to be depleted within 30 years. Morocco currently occupies Western Sahara and its massive phosphate rock reserves, contrary to UN resolutions." – *Western Sahara Resource Watch*

http://permaculturenews.org/2009/01/14/phosphorus-matters/

Are purchased organic amendments necessary?
Most gardens don't need supplemental Potassium or Phosphorus and deficiencies can be mitigated with addition of organic matter. Nuestra Tierra which has never added mineral amendment has high and very high potassium and phosphorus. "Phosphorus levels are adequate in the majority of Colorado gardens. Deficiencies are most likely to occur in new gardens where the organic matter content is low and in soils with a high pH (7.8 to 8.3)."

"Excessive phosphorus fertilizer can aggravate iron and zinc deficiencies and increase soil salt content. When phosphorus is applied, but not needed, it can kill off the symbiotic mycorrhizal-forming fungi required by the plant and reduce the vegetables' ability to absorb iron and other micronutrients. Excess soil phosphorus also shuts down the plant's ability to produce phytochelates, organic molecules produced by roots to increase its iron uptake."

http://www.ext.colostate.edu/mg/gardennotes/711.html

How does nutrient profile of local, sustainable inputs compare to purchased inputs?

Typical home compost NPK is 2-1-1, Nuestra Tierra compost was tested at 1.4-.5-1. Compost is a sufficient and balanced fertilizer that also adds microorganisms and soil water holding capacity. Many plants we can grow or salvage for compost are extremely high in nitrogen and other nutrients. Pursulane N=4.5, vegetables N=2.5, coffee grounds N=2 they can be turned directly into garden soil. Leguminous cover crops like clover and alfalfa typically N=3-4.

Urine and feces can be safely composted to close the nutrient cycle and add significant fertilizer for food production.
Humanure average NPK 5.5- 4- 2

Resources for humanure composting:

http://humanurehandbook.com/

http://permaculturenews.org/2011/11/27/urine-closing-the-npk-loop/

http://www.ecosanres.org/pdf_files/ESR2010-1-PracticalGuidanceOnTheUseOfUrineInCropProduction.pdf