



Jerry Faulring

Soil Loss from a Field Production Nursery

The most important sustainability concern for a field production nursery relates to the loss of soil through the sale of plants.

Soil loss from shipping root balls equals approximately 250 tons per acre, about 13 tandem dump truck loads. The average will vary for individual nurseries based on many different practices. To put this in perspective, USDA allows that 6 tons of soil loss per year from wind and water erosion is acceptable

for general agriculture. If a typical nursery grower turns the inventory every 6 years, the operation would be within bounds by selling just 36 tons of soil per rotation. Nurseries are also subject to additional soil loss from erosion.

Soil loss has been substantially ignored by growers. This is understood by realizing replacement soil of quality is rarely available and the cost of its acquisition and field distribution is prohibitively expensive.

Many growers have attempted to replace soil through high tonnage cover crops when enough land is available to fallow acreage. Some have sourced soil for distribution but this is often on a 'when available' basis. Others have amended production soils with organic matter. This is very useful because there is a short-term increase in soil volume while also enhancing soil health dramatically over the long term. Many other benefits accrue from the organic



1,000 pound root balls remove a large amount of soil from the nursery



Left: Dalecarlia Water Treatment Plant, Washington, DC
By AgnosticPreachersKid - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=6026048>

Below left: Silt being dewatered

Below right: Treatment plant silt after processing and waiting for removal



amendment including increased water holding capacity and reduced or eliminated need for additional fertilizer.

Several years ago, Steve Black, Raemelton Farm, and I were approached to consider amending our soil with river silt (silt). Steve began using silt soon after but I chose to wait and see what might go wrong. As it turned out no negative production issues have arisen. At the time, many farmers had started broadcasting silt as a topdressing for a variety of traditional agricultural crops. River silt contains enough nutrition from organic matter to justify the effort while reducing traditional fertilizer applications. We did our research and soil testing to the extent that it was shown to be a useful amendment with no

potential detrimental effects to our plants. Soil testing consistently shows the silt to be about 20% organic matter, 80% mineral and no deleterious components. The significant factor is the high mineral content. The mineral constituent is a near permeant addition to the soil profile and an aid in replenishing soil lost to root ball sales. Please note, I keep referring to the sale of root balls which also have the added feature of having a plant included. This plant is actually a part of the weight calculation. Therefore, the actual volume of soil and its weight skews the discussion and would be the subject of another article. We did some research on this many years ago in cooperation with Maryland Extension.

What is silt? Water treatment

plants fill huge holding tanks with water to begin the process of producing potable water; in this case water is sourced from rivers. The holding tanks are treated with a flocculating agent causing suspended solids to settle to the bottom of the tank. Eventually the holding tanks require cleaning. The silt is made to be fluid and pumped to a dewatering press. The finished product is dense, wet, and really sticky.

At Waverly, we have been amending our soil with approximately 120 tons of organic matter per acre from farm produced compost of horse manure and wood chips since 2004. This is done each time we plant a new crop. Last fall we began receiving silt to further

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amend the compost. We now blend approximately 60% organic matter and 40% silt by volume. The silt is blended just prior to field spreading. To do so earlier would negatively impact composting of the organic matter.

Our delivery system still delivers the same volume of material

per acre reducing the amount of organic matter compared to previous practice which I believe is very important to the overall production system. As we do not apply any synthetic fertilizer, our nutritional needs will be somewhat reduced. Time will tell if overall plant health and vigor are compromised. On the other hand,

replacing more soil is critically important long term and is the ultimate goal. We will be able to devise a method of increasing the organic amendment if needed.

All of the amendments are delivered to us free of freight and material charge. Previous analysis shows the total nutrition requirement over a period of up to 8-10 years is taken care of in the planting year. Of course, the entire system costs money to produce the compost, blend it with silt and distribute it to the field. I estimate that our cost is roughly similar to using synthetic fertilizer alone for 5-10 years in a rotation but expensed entirely in the first year of a new planting.

Finally, the soil is not actually lost. It simply moves to a different location. 🌱



Combination of composted horse manure, wood chips and river silt spread on a new planting bed at Waverly Farm

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