Aerated Static Pile vs. In-Vessel Composting

When I speak, I often say, “There is no bad compost and no bad composting method”. I say this to generally support all/any composting. I even introduce my competitors & their methods.

That doesn’t mean there are not good, better, better again and possibly the “best” methods. Or said differently, “less good” methods do exist.

Anaerobic composting can be described as the least desirable method. This is especially true when the process releases gases (like CH4) into the atmosphere as those gases are very damaging greenhouse gases. Even when gases are captured as an energy source there are many blackmarks surrounding anaerobic composting but that is a bigger discussion. Note, many “turned pile” composting situations are periodically anaerobic due to the difficult and therefore infrequent turning of the piles.

The ASP method is often aerobic and anaerobic *at the same time*. Again, it is better than doing nothing, but it is far from the “best” method. ASP stands for “aerated static pile”. The simplest “pile” is often a “windrow” on open ground. Sometimes on naked earth without any hard surface below it and without any roof or cover above it. While ASP composting is “good” ***compared to doing nothing***, it has many “bad” attributes as well. These include:

1. If ASP is on open ground, nutrients can leach out of the pile and into our public waterways. Especially if it is left uncovered.
2. Rodents and other “bad actors” are difficult to impossible to keep out of the pile.
3. The cone shaped piles waste floorspace and have a poor surface-to-volume ratio. Those are operational problems, but there are also technical issues as well.
4. ASP are difficult to uniformly aerate. This is because piles are stable when laying in their natural angle of repose. “Stable” when the sides will not “slip” further toward horizonal. This generally means there is a “peak” in the middle and less thickness gradually on either side. This means on the ground, under the pile, where aeration is applied, there is a gradient of pounds per square inch pressure which is highest in the middle, below the peak.
5. Air delivered under the pile will escape via the path of least resistance, usually to the sides. This means pockets within the static pile will be anaerobic while other areas will have excessive volumes of air applied. *Both are far from ideal.*

The poor uniformity of aeration is easy to understand and easy to see. The illustration below explains it. Advanced oxygen meters can measure it, or simple smoke tests can illustrate it to the human eye. For these reasons I remain a fan of in-vessel composting over ASP and other methods.

In the illustration below both the ASP method and the in-vessel method are illustrated, and a list of the contrasting attributes is provided.

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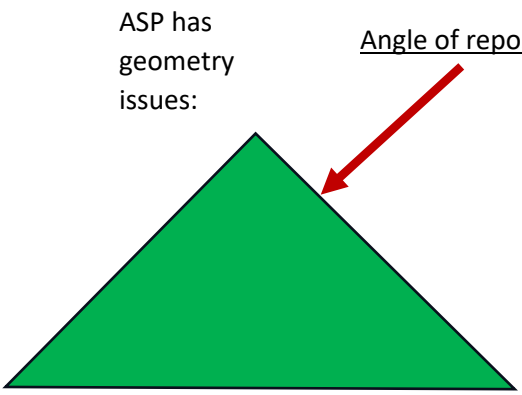
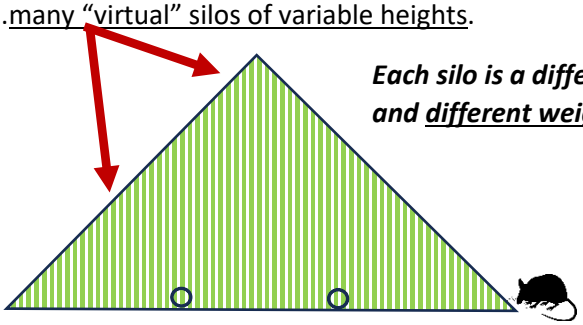
ASP has geometry issues:



Angle of repose creates…

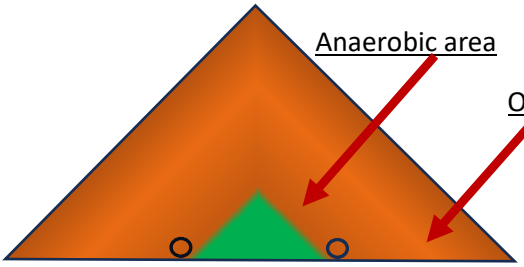
…many "virtual" silos of variable heights.



Each silo is a different height and <u>different weight</u>.

Low PSI High PSI Low PSI

(PSI=pounds/square inch)



Anaerobic area

Over-aerated area

In-vessel Composting

- Air flow is vertical
- Air flow is uniform
- Air flow is laminar in pattern
- Organics are off the ground
- Organics are covered & secured
- Rodents cannot reach organics
- The elements are not allowed to influence the contents
- "Volume" of material per square foot is improved as it is "cubic" in geometry.