

# MIDWEST BIO-SYSTEMS' NEWSLETTER

February 2005

## Subject: Loader vs. Turner Composting

### **The Issue:**

- Probably the most common form of composting in America is loader composting. The common rationale for loader composting is, "I won't need to pay for a turner." If volumes are extremely low (e.g. 100 cubic yards per year), then loader composting is probably sufficient. But with volumes in the high hundreds or thousands of yards, using a loader is probably false economics.

### **Education:**

- Many loader composters use out-dated composting paradigms. When training books and manuals were written 12-25 years ago by composting pioneers, turners were not as sophisticated as they are now for the functions they achieve.
- Microbiologists measure compost quality differently now from how they did two decades ago. High quality compost is no longer measured by what has been eliminated during the composting process (or what is absent from the finished product). While these measurements are still essential, now high quality compost will be concerned with enumeration, species diversity, and aerobic to anaerobic ratio.
- Current compost testing goals cannot be consistently achieved with a loader.

### **Loader Limitations:**

- Loaders are not designed for composting. They are designed to lift, move, and dump. A turner is designed for composting.
- Mixing and blending of feedstocks, an essential for high quality, cannot be consistently achieved with a loader. With a good turner, perimeter materials are moved to the middle and center materials move to the perimeter. Multiple interaction and contact between various feedstocks can be achieved.
- Watering requires two workers with a loader (unless only the outside of the row is watered), while with a turner each particle can be watered as it passes over the drum and moisture is therefore equalized throughout the windrow (not mud here and dust there). Inoculants can also be applied evenly throughout a windrow, which is critical to their successful functioning.
- Loaders cannot achieve consistent aeration throughout the row. Well designed turners facilitate oxygen and carbon dioxide exchange as that is their main function.
- Composters using loaders often perform only the "5 turns in 15 days" EPA minimum, because turning with a loader is so time consuming. Regular turning based on CO<sub>2</sub> levels and other daily tests is as much as 4 times faster with a turner.
- Space requirements are much greater with a loader because compost cycles take from 3 to 8 times as much time to complete their composting cycle. A good turner enables the composter to remove and market stabilized and mature compost and begin new windrows.
- Uniformity is an issue with loaders because not all materials have received the same water, temperature, aeration, and blending treatments. Consistent and predictable results throughout the row are achievable with a good turner.

### **The Economics:**

- Turning with an equal number of times with a loader will require quadruple the labor of a turner and even more than that if a separate water truck is used.
- Watering trucks cost far more than a water wagon pulled behind a turner. The water wagon also provides far greater efficiency of water application in the windrow.
- Hourly costs of operation for a loader exceed those of an Aeromaster pull-type turner.
- The dollar value of the finished compost can be significantly greater from a turner because of the compost's quality, consistency, and predictability.