

Whole Cycle Tuesday

Key Takeaway

Skipping or shortening the curing phase can result in “hot” compost that continues decomposing after application—potentially robbing plants of nitrogen or introducing immature organic acids. Proper curing ensures the compost is stable, mature and safe for use in gardens, landscaping, and soil reclamation.

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"The environment is where we all meet; where we all have a mutual interest; it is the one thing all of us share." — Lady Bird Johnson

The Role of Mesophilic Microbes in Compost Curing

When composting organic materials, much attention is given to the high-temperature, or thermophilic, phase—where intense microbial activity drives rapid decomposition and pathogen destruction. But an equally important and often overlooked stage follows: the curing phase, dominated by mesophilic microbes. This phase is critical for transforming active compost into a stable, mature, and beneficial soil amendment.

After the compost pile cools from the thermophilic range (above 113°F), mesophilic microorganisms—which thrive between 68°F and 104°F—return to center stage. These bacteria, fungi, and actinomycetes slowly finish the job of decomposition, breaking down more complex organic compounds such as lignin, cellulose, and residual fats that survived the heat. Their work stabilizes the compost, balances nutrients, and reduces phytotoxic compounds that could harm plants.

During curing, the microbial community diversifies and re-establishes a balanced ecosystem. Actinomycetes, known for their earthy aroma, are particularly active and play a key role in humus formation.

Fungi contribute by decomposing woody material and tough fibers, while bacteria fine-tune nutrient cycling, converting nitrogen into stable organic forms less prone to loss.

In short, mesophilic microbes bring the composting process full circle. They transform raw waste, once teeming with heat-loving decomposers, into a nutrient-rich, biologically active product that supports healthy soils and sustainable growth.

Summary:

- The **thermophilic phase** (113–160°F) drives rapid decomposition and sanitization.
- The **mesophilic phase** before and after is where fine-tuning and stabilization occur, largely due to fungi and actinomycetes.
- A balanced temperature progression allows all these microbial groups to play their essential roles in turning organic waste into mature, stable compost.

