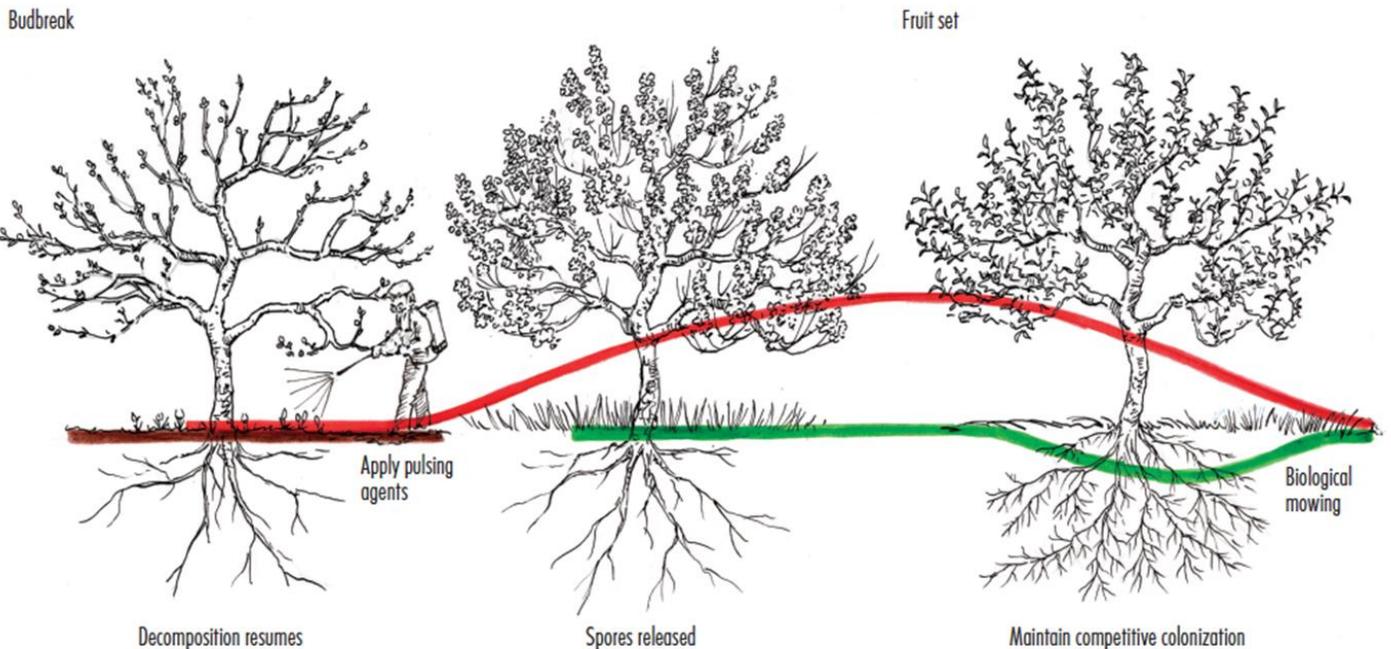


The Fungal Curve

by Michael Phillips

The growth cycle of feeder roots reveals the best timing for a number of orchard tasks. In a nutshell, the apple tree experiences two flushes of root growth that follows on the heels of observable green tissue growth above ground. The "**spring flush**" corresponds with soils warming up and the garnering of nutrients for fruit development and the formation of next year's flower buds. The "**fall flush**" kicks off terminal bud set, the expansion of the tree's permanent root system, and the all-critical storage of nutrients in bark tissues for spring.

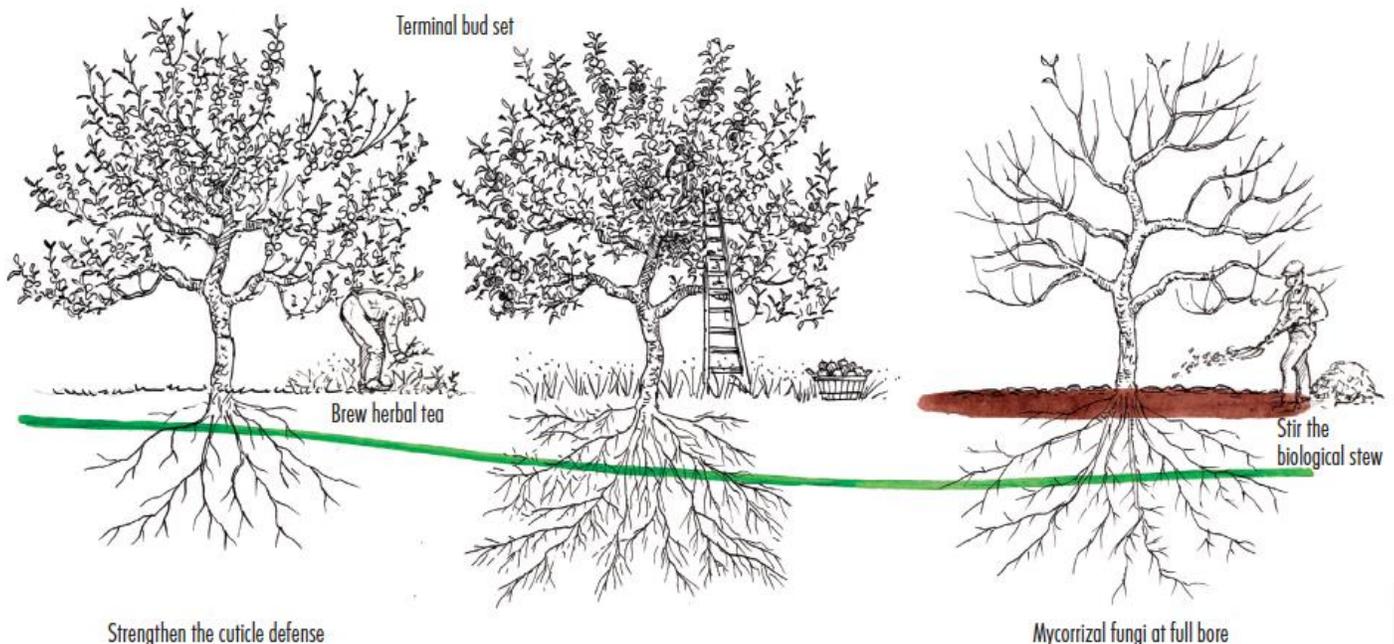
Those wonderful drawings by Elayne Sears in **The Holistic Orchard** show this convergence of root action with fungal happenings. I find *The Fungal Curve* to be incredibly helpful in visualizing the timing of orchard tasks to what's really going on with feeder roots and fungal allies alike.



Bioactivity of numerous decomposers on the orchard floor is represented by the color brown - many of our practices aimed at reducing fungal disease inoculum in the understory are really about

supporting the decomposers, which includes numerous species of beneficial fungi.

We address our fungal fears when we consider the red portion of the curve. Biodynamic orchardist Hugh Williams rightfully calls this space the "fungal zone" when describing how fungal disease spores arise from the ground surface to infect tender apple tissues. The primary infection period for diseases like apple scab, rust, and an assortment of rots corresponds perfectly with this red curve. Beneficial fungi and bacteria also arise and establish on the foliar surface during this outreach time of the "fungal being". The successful employ of biological reinforcement, induced systemic resistance, and minimal sulfur (on susceptible varieties) in holistic disease management all tie in directly to distinguishing our allies from pathogens.



The intricate interactions of the soil food web are what make animated life above the ground possible. The green portion of the fungal curve amounts to celebrating and abetting the role of mycorrhizal fungi in the orchard ecosystem. The flush of feeder roots is trumped a hundred times over by the hypha reach of these symbiotic fungi. Nutrient balance for fruit trees very much depends on the health of this life-supporting relationship.