

## On Fermentation

By Henning Sehmsdorf, Ph.D.  
Adjunct Professor, Huxley College of the Environment

*I like to define (or rather, describe) fermentation in terms of the living processes that occur on the farm, i.e. the processes by which living cells obtain energy through the breakdown of carbohydrates (glucose, sugar molecules, etc.) in aerobic or anaerobic environments.*

*For instance, in human and animal tissue energy is obtained by metabolizing fuel glucose (food/feed) to water and carbon dioxide in the presence of oxygen. In the garbage can putrifying organisms break down food wastes by obtaining energy in near-anaerobic conditions (the lid is on the can!) In the open air compost nitrifiers and denitrifiers dance the same dance of breaking down carbon (plant/animal wastes) by ingesting nitrogen. In the cheddar cheese we made yesterday bacteria digest carbon molecules (protein, which is a form of nitrogen) anaerobically in the process popularly known as aging that gives the cheese its character and flavor. In the sourdough rye bread the yeast organisms in the starter digest the carbon molecules in flour; beer and molasses to enhance grain digestability and, again, to deepen flavor. In the sauerkraut or autolized fish or meat, the same process serves to nullify putrefaction and, once again, to deepen flavor.*

*In this sense all fermentation is a form of digestion. In as much as these processes occur in all living systems, the whole farm can be described as an organ of fermentation or digestion, of which the compost, the garbage can, animal and human digestive systems and tissues, the aging cheese, the fermenting bread dough, sauerkraut, Quark, fish or meat, are just functional sub-sets of the larger organism.*

*In the "whole farm organism" of a biodynamic farm these processes are recognized and deliberately foregrounded and supported by nutrient and energy cycling, making and spraying BD preparations, composting, diverse fermentation activities, cover cropping, and on.*

*The announcement for last year's fermentation workshop shows this (see [www.sshomestead.org](http://www.sshomestead.org))*