



**BIODYNAMIC
ASSOCIATION**

BIODYNAMIC PRINCIPLES & PRACTICES

www.biodynamics.com

Biodynamics is a holistic, ecological, and ethical approach to farming, gardening, food, and nutrition. Biodynamics is rooted in the work of philosopher and scientist Dr. Rudolf Steiner, whose 1924 lectures to farmers opened a new way to integrate scientific understanding with a recognition of spirit in nature.¹ Biodynamics has continued to develop and evolve since the 1920s through the collaboration of many farmers and researchers. Around the world, biodynamics is alive in thousands of thriving gardens, farms, vineyards, ranches, and orchards. The principles and practices of biodynamics can be applied anywhere food is grown, with thoughtful adaptation to scale, landscape, climate, and culture.

A Biodynamic Farm Is a Living Organism

Each biodynamic farm or garden is an integrated, whole, living organism. This organism is made up of many interdependent elements: fields, forests, plants, animals, soils, compost, people, and the spirit of the place. Biodynamic farmers and gardeners work to nurture and harmonize these elements, managing them in a holistic and dynamic way to support the health and vitality of the whole. Biodynamic practitioners also endeavor to listen to the land, to sense what may want to emerge through it, and to develop and evolve their farm as a unique individuality.



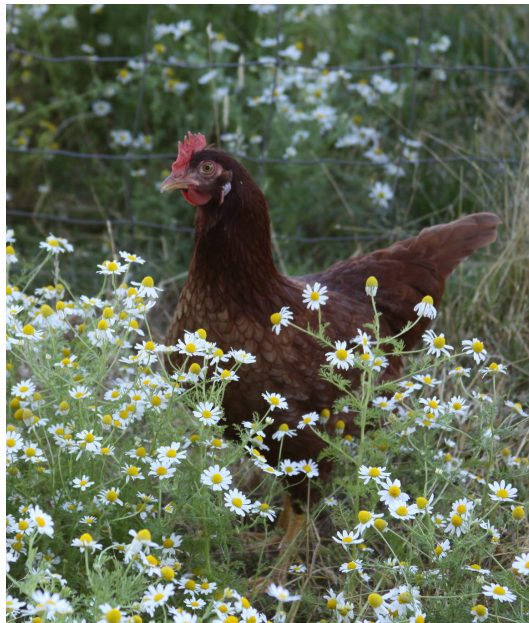
Biodynamics Cultivates Biodiversity

Biodynamic farms and gardens are inspired by the biodiversity of natural ecosystems and the uniqueness of each landscape. Annual and perennial vegetables, herbs, flowers, berries, fruits, nuts, grains, pasture, forage, native plants, and pollinator hedgerows can all contribute to plant diversity, amplifying the health and resilience of the farm organism. Diversity in domestic animals is also beneficial, as each animal species brings a different relationship to the land and unique quality of manure. The diversity of plant and animal life can be developed over time, starting with a few primary crops and one or two species of animals (even as small as earthworms or honeybees), and adding more species as the farm organism matures.



Biodynamics Brings Plants and Animals Together

Natural ecosystems include both plants and animals, which work together to fill complementary roles in the web of life. Many conventional and organic farms only grow crops or only raise livestock, which may be more efficient by some measures, but creates imbalances such as nutrient deficiency (if only growing plants) or pollution from excess manure (if only raising animals). Biodynamic farms and gardens work to bring plants, animals, and soil together through living, conscious relationships, so that they each support and balance the whole.



Biodynamics Generates On-Farm Fertility

Biodynamic plants are grown in the ground in living soil, which provides a quality of health and nutrition not possible with chemical fertilizers or hydroponic growing. Biodynamic farms aspire to generate their own fertility through composting, integrating animals, cover cropping, and crop rotation. Composting brings animal manures, plant material, and soil into healthy relationship and transforms them into a potent source of strength and fertility for the farm organism. Integrating a diversity of animals helps cycle nutrients and provides manures that nurture the soil. Cover crops also contribute to on-farm fertility, adding plant diversity and bringing life and sensitivity to the soil through oxygen and nitrogen. Crop rotation helps balance the needs of each crop and enables a diversity of creative expression in the soil. Together, these practices reduce or eliminate the need for imported fertilizers and enable the farm to move toward equilibrium and resilience.

Compost is Enlivened with Biodynamic Preparations

Biodynamic compost is enhanced and enlivened through the use of six preparations made from yarrow, chamomile, stinging nettle, oak bark, dandelion, and valerian.² Each of these medicinal herbs is transformed through a unique process that brings it into relationship with the animal kingdom, the earth, and the cycle of the year. Bringing these elements together magnifies their healing qualities, fosters the growth of beneficial bacteria and fungi, and creates powerfully concentrated substances to guide the development of the compost. A small quantity of each preparation is added to the compost pile just after it is built, and again after it is turned. Biodynamic preparations strengthen the quality of the compost by stabilizing nitrogen³ and other nutrients, multiplying microbial diversity,⁴ and bringing more sensitivity to the composting process. Biodynamic compost helps attune the soil to the whole farm organism and wider influences while increasing soil life⁵ and stable organic matter.^{4,6} Biodynamic compost also brings more carbon into the living realm, helping to restore balance to the climate.



Biodynamic Farmers Cultivate Awareness

Biodynamic agriculture invites us to develop a conscious and creative conversation with nature. By observing, sensing, and listening to the land, we develop intimate relationships with our unique farm organisms and expand our capacities for perception, reflection, and imagination. Biodynamics is not a fixed recipe or prescription. Cultivating awareness strengthens our ability to work creatively with the dynamics of the land and wider bioregion, and to bring the vibrancy of the farm organism to full expression.

Biodynamic Sprays Enhance Soil and Plant Health

In addition to the compost preparations, several biodynamic preparations are applied as potentized liquid sprays to bring healing, vitality, and sensitivity to the farm and garden.⁷ Horn manure enhances the life of the soil and the relationship between soil and plants,^{8,9,10} and is made from cow manure buried inside a cow horn during the winter months. Horn silica increases plant immunity,¹¹ strengthens photosynthesis, enhances ripening, and is prepared from ground quartz crystals buried in a cow horn over the summer months. Horsetail tea helps prevent fungal diseases and balances the watery element in plants and soil. Together, the biodynamic spray and compost preparations bring plants into a dynamic relationship with soil, water, air, warmth, and cosmos to help them develop in a healthy and balanced way, access the full spectrum of nutrients they need, and become more resilient to pests, diseases, and extreme climate conditions.¹²



Biodynamics Supports Integrity and Diversity in Seeds and Breeds

Biodynamic farmers and gardeners favor heirloom, open-pollinated, and non-GMO seeds and heritage breeds of animals. Biodynamic farms work toward generating seed and animal stocks from within the farm, incorporating selection and breeding into farm activities when possible in order to develop unique, locally-adapted, and sensitized plants and animals with excellent nutrition and flavor, and resistance to pests and diseases. As in other aspects of biodynamics, earthly and cosmic influences are considered in developing plants and animals that can thrive in current conditions and contribute to the health of the farm and community.

Biodynamics Treats Animals with Respect

Biodynamic farmers care for domestic animals in ways that support their inherent health and the full expression of their nature. Animals are given feed that is appropriate for their digestive systems and are never fed animal by-products. Calves, lambs, and kids are raised on the milk of the herd, not milk replacer. Chickens keep their beaks and cows keep their horns, as each part of the animal serves an important natural function. All animals have access to the outdoors and free range forage, along with plenty of space to move around freely.



Biodynamics Works in Rhythm with Earth and Cosmos

Biodynamic farmers and gardeners observe the rhythms and cycles of the earth, sun, moon, stars, and planets and seek to understand the subtle ways that the environment and wider cosmos influence the growth and development of plants and animals. Biodynamic calendars support this awareness and understanding by providing detailed astronomical information and indications of optimal times for sowing, transplanting, cultivating, harvesting, and using the biodynamic preparations.



Biodynamics Approaches Pests and Diseases Holistically

Biodynamics focuses on creating the conditions for optimal soil, plant, and animal health, providing balanced nutrition and supporting healthy immunity. When farms and gardens incorporate a robust diversity of plants and animals and create habitat for natural predators, pests and diseases have few places to thrive. When a disease or pest presents itself, it is often pointing to an imbalance in the farm organism, and can be seen as nature's way of trying to correct the imbalance. In the case of an outbreak, biological controls can be used, but a biodynamic farmer also tries to discern the underlying imbalance and find ways to adjust management practices to bring the farm organism to greater health.

Biodynamic Certification Upholds Agricultural Integrity

The Demeter Biodynamic® Standard for certification was established in 1928 and is managed worldwide by Demeter International. Over 5,000 farms encompassing more than 400,000 acres are certified in 60 countries around the globe. Biodynamic certification in the United States is managed by Demeter USA (www.demeter-usa.org) and uses the USDA organic standard as a foundation with additional requirements. Beyond organic certification, the Demeter Biodynamic Farm Standard requires that the whole farm, and not just a specific crop, is certified; crops and livestock are integrated and animals are treated humanely; imported fertility is kept to a minimum; the biodynamic preparations are regularly applied; at least 50% of livestock feed is grown on farm; at least 10% of the total farm acreage is set aside for biodiversity; and the farm upholds standards of social responsibility.



Biodynamics Contributes to Social and Economic Health

Biodynamic farmers are motivated by a desire to meet the real needs of people and the Earth, which often extends beyond growing food. Most biodynamic initiatives seek to embody triple bottom line approaches (ecological, social, and economic sustainability), taking inspiration from Steiner's insights into social, economic, and spiritual life, as well as agriculture. Community supported agriculture (CSA), was pioneered by biodynamic farmers, and many biodynamic practitioners work in creative partnerships with other farms and with schools, medical and wellness facilities, restaurants, hotels, homes for social therapy, and other organizations. Biodynamics is both a radical concept of regenerative agriculture and a potent movement for new thinking and practices in all aspects of life connected to food and land.

Biodynamics Offers Regenerative Solutions for the Future

Biodynamics is a conscious, participatory, and responsible way of farming and being in the world, which brings healing to soil, plants, animals, people, and planet. Each unique and self-sustaining farm organism contributes generously to the ecological, economic, social, and spiritual vitality of its surrounding community, and the whole living Earth. Through biodynamics, we can access new capacities in human creativity to sense and respond to the needs of the Earth, and unfold new solutions in a living and dynamic way.

¹ Steiner, R. 1993. *Agriculture: Spiritual Foundations for Renewal of Agriculture*. Biodynamic Association.

² The biodynamic compost preparations are also referred to by the numbers 502 (yarrow), 503 (chamomile), 504 (stinging nettle), 505 (oak bark), 506 (dandelion), and 507 (valerian).

³ Carpenter-Boggs, L., Reganold, J.P., Kennedy, A.C. 2000. Effects of biodynamic preparations on compost development. *Biological Agriculture and Horticulture* 17:313–328.

⁴ Maeder, P., Fließbach, A., Dubois, D., Gunst, L., Fried, P., Niggli, U. 2002. Soil fertility and biodiversity in organic farming. *Science* 296:1694–1697.

⁵ Zaller, J. G., Köpke, U. 2004. Effects of traditional and biodynamic farmyard manure amendments on yields, soil chemical, biochemical and biological properties in a long-term field experiment. *Biology and Fertility of Soils* 40:222–229.

⁶ Raupp, J. 2001. Manure fertilization for soil organic matter maintenance and its effects upon crops and the environment, evaluated in a long-term trial. In: Rees, R.M.; Ball, B.C.; Campbell, C.D. and Watson, C.A., editors. *Sustainable Management of Soil Organic Matter*. CABI Publishing, p. 301–308.

⁷ The biodynamic spray preparations are also referred to by the numbers 500 (horn manure), 501 (horn silica), and 508 (horsetail or equisetum).

⁸ Reganold, J. P., Palmer, A. S., Lockhart, J. C., Macgregor, A. N. 1993. Soil quality and financial performance of biodynamic and conventional farms in New Zealand. *Science* 260:344–349.

⁹ Spaccini, R., Mazzei, P., Squartini, A., Giannattasio, M., Piccolo, A. 2012. Molecular properties of a fermented manure preparation used as a field spray in biodynamic agriculture. *Environmental Science and Pollution Research* 19:4214–4225.

¹⁰ Giannattasio, M., Vendramin, E., Fornasier, F., Albherghini, S., Zanardo, M., Stellin, F., et al. 2013. Microbiological Features and Bioactivity of a Fermented Manure Product (Preparation 500) Used in Biodynamic Agriculture. *Journal of Microbiology and Biotechnology* 23(5):644–651.

¹¹ Fauteux, F., Remus-Borel, W., Menzies, J. G., Belanger, R. R. 2005. Silicon and plant disease resistance against pathogenic fungi. *FEMS Microbiology Letters* 249:1–6.

¹² Fritz, J. 2014. Results of scientific trials. In: Hurter, U., editor. *Agriculture for the Future: Biodynamic Agriculture today*. 90 years since Koberwitz. Verlag Am Goetheanum. p. 201–214.



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