

# Introduction to Biodynamic Agriculture



**BIODYNAMIC**  
ASSOCIATION

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Recall a moment in your  
life when you felt deeply  
connected to land...









Monan's Rill, California













Mendocino Organics, California

Photo by Paula Gaska





Community Garden in Chicago, Illinois

Photo by Anne Hammersky



















Biodynamic  
Principles and  
Practices





Galloway, Ewing. "Early 20th-century image of a tractor ploughing an alfalfa field." 1921. Wikimedia Foundation.





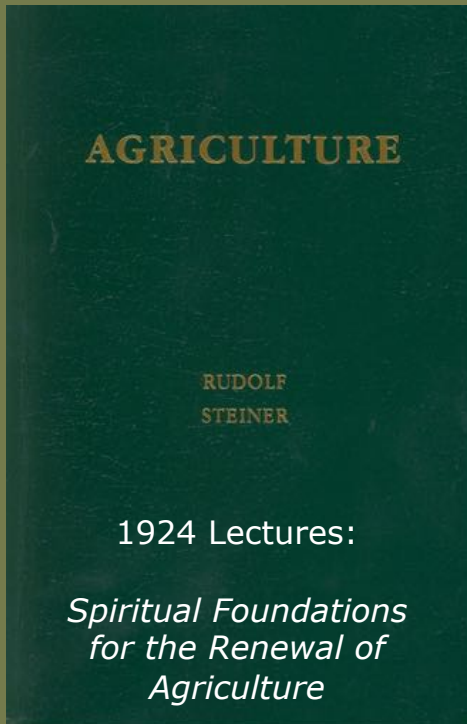
Rudolf Steiner



Ehrenfried Pfeiffer



Biodynamic researchers in Colima, Mexico



Biodynamic Association of Northern California meeting at Fulcrum Farm









A Biodynamic  
Farm is a Living  
Organism





Filigreen Farm, California

Biodynamics Brings  
Plants and Animals  
Together















Hawthorne Valley Farm, New York

Photo by Laurie Rhodes





Hawthorne Valley Farm, New York

Photo by Laurie Rhodes

Biodynamics Cultivates  
Biodiversity





Goodfoot Farm, Oregon





Goodfoot Farm, Oregon



Biodynamics Generates  
On-Farm Fertility







The Succulent Garden, New Mexico

Photo by Broken Banjo





Turtle Creek Gardens, Wisconsin





Turtle Creek Gardens, Wisconsin





Meadowlark Hearth Biodynamic Seed Initiative, Nebraska



Compost is Enlivened  
with Biodynamic  
Preparations

biodynamic compost  
preparations







Biodynamic Compost Preparations: Yarrow (502)





Biodynamic Compost Preparations: Chamomile (503)





Biodynamic Compost Preparations: Nettle (504)





Biodynamic Compost Preparations: Oak Bark (505)





Biodynamic Compost Preparations: Dandelion (506)





Biodynamic Compost Preparations: Valerian (507)



Yarrow  
(502)

Chamomile  
(503)

Nettle  
(504)

Oak  
Bark  
(505)

Dandelion  
(506)

Valerian  
(507)







Mendocino Organics, California

Photo by Paula Gaska





Biodynamic preparations strengthen the quality of the compost by stabilizing nitrogen<sup>1</sup> and other nutrients, multiplying microbial diversity,<sup>2</sup> and bringing more sensitivity to the composting process.

1. Carpenter-Boggs, L., Reganold, J.P., Kennedy, A.C. 2000. Effects of biodynamic preparations on compost development. *Biological Agriculture and Horticulture* 17:313–328.
2. Maeder, P., Fließbach, A., Dubois, D., Gunst, L., Fried, P., Niggli, U. 2002. Soil fertility and biodiversity in organic farming. *Science* 296:1694-1697.



Biodynamic compost helps attune the soil to the whole farm organism and wider influences while increasing soil life<sup>1</sup> and stable organic matter.<sup>2</sup>



1. 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.
2. 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





Biodynamic compost brings more carbon into the living realm,  
helping to restore balance to the climate.

*Biodynamic Sprays*  
Enhance Soil and Plant  
Health





Biodynamic Horn Manure Preparation (500)



# Horn manure enhances the life of the soil and the relationship between soil and plants

1. 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.
2. 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.
3. Giannattasio, M., Vendramin, E., Fornasier, F., Alberghini, 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.





Biodynamic Horn Silica Preparation (501)



Frey Vineyards, California

Horn silica increases plant immunity,<sup>1</sup> strengthens photosynthesis, and enhances ripening

1. 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.



horn  
manure  
(500)

compost preparations

barrel  
compost

horn  
silica  
(501)

equisetum  
(508)



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.



1. 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.



Biodynamic Farmers  
Cultivate Awareness



Open Field Farm, California



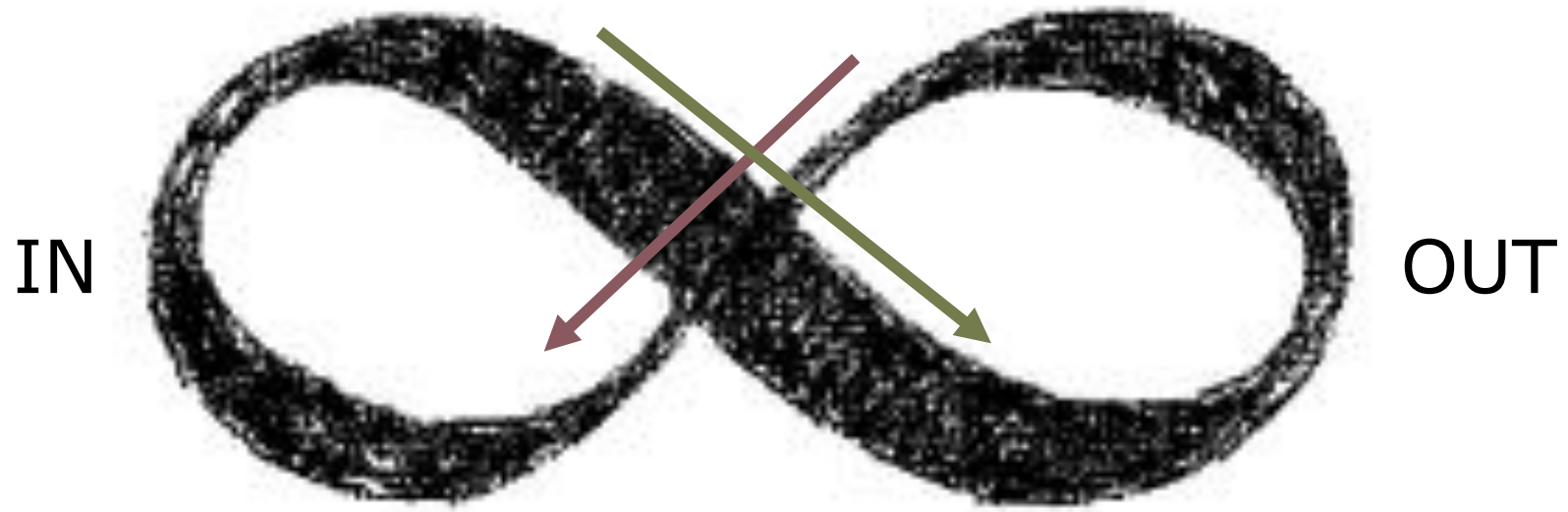


Mt. Hood Organic Farm, Oregon

Biodynamics Works in  
Rhythm with Earth and  
Cosmos





















NIGHT



DAY







FRUIT/SEED

FLOWER

LEAF

ROOT







EARTH

ROOT



WATER

LEAF



AIR

FLOWER



FIRE

FRUIT/  
SEED

MERCURY 1-4 ♄  
 4-24 ♄  
 24-31 ♄

VENUS 1-8 ♀  
 8-11 ♀

MARS 11 ♀

JUPITER 11 ♃

SATURN ♄

URANUS ♃ (R 1-6)

NEPTUNE ♆

PLUTO ♇

# January 2019

Virtue of the Month: COURAGE BECOMES THE POWER TO REDEEM  
 Its Opposite: TIMIDITY, ANXIETY

Calendar of the Soul Verses 39-41

DATE	☉ IN ZODIAC	☽	PLANETS				CONJUNCTIONS, OPPOSITIONS, & EVENTS	AM												PM												WORK NOTES
			♃	♄	♅	♆		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
1 TUE	♈	♋					♄♂ <sup>17</sup> ♃♂ <sup>17</sup>	Flower																								
2 WED	♈	♋♄ <sup>18</sup>					♄♂ <sup>18</sup>																									
3 THUR	♈	♋					♄♂ <sup>19</sup>																									
4 FRI	♈	♋♄ <sup>19</sup>					♄♂ <sup>19</sup> ♃♂ <sup>19</sup> ♃♂ <sup>19</sup>	Leaf } Leaf																								
5 SAT	♈	♋	☉				♄♂ <sup>20</sup> ♃♂ <sup>20</sup>	Fr																								
6 SUN	♈	♋			♄		♄♂ <sup>21</sup> ♃♂ <sup>21</sup>	Fruit																								
7 MON	♈	♋♄ <sup>22</sup>						Fr																								
8 TUE	♈	♋					♄♂ <sup>23</sup>	Root																								
9 WED	♈	♋♄ <sup>24</sup>						Root																								
10 THUR	♈	♋					♄♂ <sup>25</sup>	Flower																								
11 FRI	♈	♋♄ <sup>26</sup>					♄♂ <sup>26</sup>	Flower																								
12 SAT	♈	♋					♄♂ <sup>27</sup>	Leaf																								
13 SUN	♈	♋					♄♂ <sup>28</sup>	Leaf																								
14 MON	♈	♋♄ <sup>29</sup>					♄♂ <sup>29</sup>	Leaf																								
15 TUE	♈	♋						Fruit																								
16 WED	♈	♋♄ <sup>30</sup>						Fruit																								
17 THUR	♈	♋					♄♂ <sup>31</sup> ♃♂ <sup>31</sup>	Root																								
18 FRI	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup> ♃♂ <sup>31</sup>	R ( Leaf ) Root																								
19 SAT	♈	♋					♄♂ <sup>31</sup>	Flower																								
20 SUN	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup> ♃♂ <sup>31</sup>	Flower																								
21 MON	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup> ♃♂ <sup>31</sup>																									
22 TUE	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup>	Fruit																								
23 WED	♈	♋					♄♂ <sup>31</sup>	Fruit																								
24 THUR	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup>	Fruit																								
25 FRI	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup>	Root ( Leaf ) Root																								
26 SAT	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup>	Root																								
27 SUN	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup>	Root																								
28 MON	♈	♋					♄♂ <sup>31</sup>	Flower																								
29 TUE	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup>	Flower																								
30 WED	♈	♋					♄♂ <sup>31</sup>	Leaf																								
31 THUR	♈	♋♄ <sup>31</sup>					♄♂ <sup>31</sup>	Leaf																								



Biodynamics  
Approaches Pests and  
Diseases Holistically







Goodfoot Farm, Oregon





Winter Green Farm, Oregon





Pueblo of Tesuque, New Mexico

Photo by Broken Banjo





Cucumber beetles and western corn rootworm adults

Photo by UW Madison Agricultural Research Station



Biodynamics Supports  
Integrity and Diversity  
in Seeds and Breeds



Perennial Roots Farm, Virginia





Biodynamic Seed Garden at Rudolf Steiner College, California





Perennial Roots Farm, Virginia



Biodynamics Treats  
Animals with Respect



Temple-Wilton Community Farm, New Hampshire





Perennial Roots Farm, Virginia

Photo by Natalie McGill





Photo by Blaire Ladd



Biodynamic Certification  
Upholds Agricultural Integrity



- International standard for Biodynamic farms and products, created in 1928
- Over 5,000 farms certified with 420,000 acres worldwide
- 1,500+ Biodynamic farms in Germany
- 100+ certified farms in Austria, Australia, France, Great Britain, India, Italy, Nepal, The Netherlands, Sri Lanka, Switzerland, Tunisia, Turkey and United States

source: [www.demeter.net/statistics](http://www.demeter.net/statistics)





# DEMETER BIODYNAMIC FARM STANDARD

1. Biological Diversity
2. Generating Fertility on the Farm
3. The Biodynamic preparations and wider connections
4. Generating disease, insect and weed control on the farm
5. Integration of livestock
6. On-farm water and waterway conservation
7. Gentle post harvesting and handling

## USDA National Organic Program

- permits imported organic fertilizers and pesticides
- allows for organic feed imported to the farm from anywhere in the world
- is crop focused and allows for a designated parcel to be certified

## Demeter Biodynamic Certification

- reduces imported materials by addressing its needs from within the farming system
- requires 50% of livestock feed be grown on farm
- is farm focused and requires that the whole farm be certified
- requires a biodiversity set-aside of ten percent of the total farm acreage

source: [www.demeter-usa.org/downloads/Organic-vs-Biodynamic.pdf](http://www.demeter-usa.org/downloads/Organic-vs-Biodynamic.pdf)



Biodynamics  
Contributes to Social  
and Economic Health



First Light Farm, California

Photo by Janae Lloyd





Camphill Village Minnesota





Summerfield Waldorf School and Farm, California





The Pfeiffer Center, New York



# Questions?





# Delve Deeper Into Biodynamics

TODAY at EcoFarm

**Biodynamic Animal Husbandry, Cows to Compost**

1:30-3pm in Toyon

**Biodynamic Mixer**

8-9:30pm in Heather





BIODYNAMIC  
ASSOCIATION

# BIODYNAMIC PRINCIPLES & PRACTICES

[www.biodynamics.com](http://www.biodynamics.com)

Biodynamics is a holistic, ecological, and ethical approach to farming, gardening, food, and nutrition. Biodynamics is based on the work of philosopher and scientist Dr. Rudolf Steiner, and has been developed through the collaboration of many farmers and researchers since 1924. 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 farm or garden is an integrated, whole, living organism. This organism is made up of many interdependent elements: fields, forests, plants, animals, soils, compost, and people. 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.

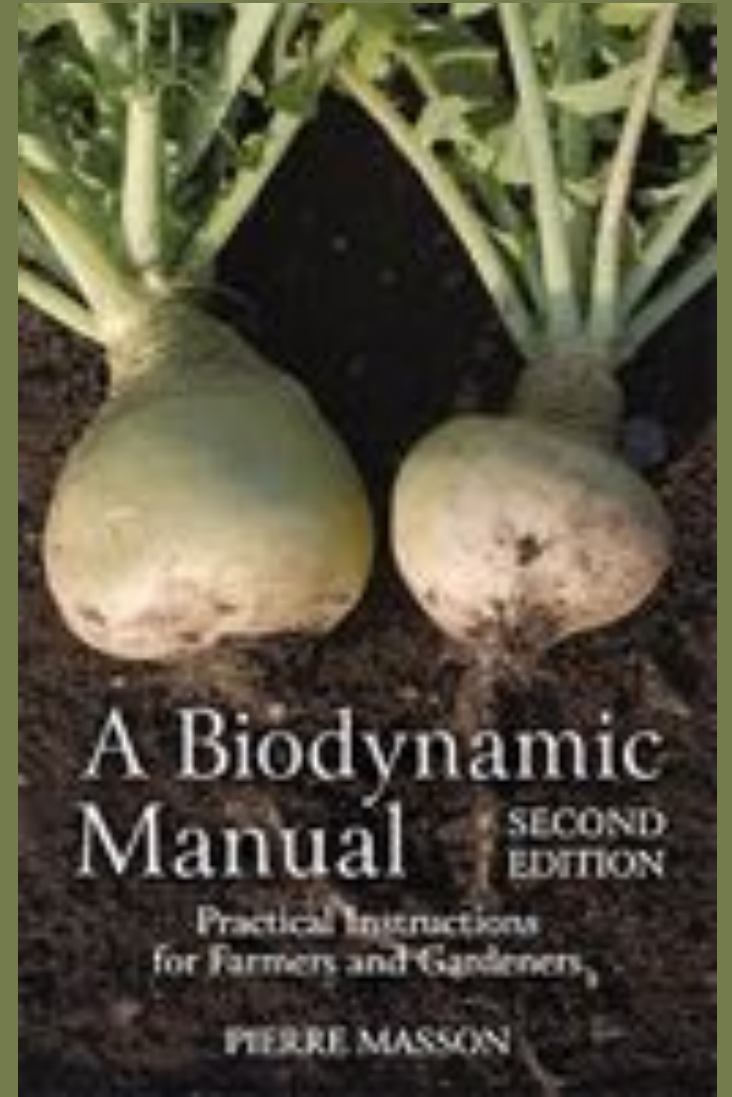
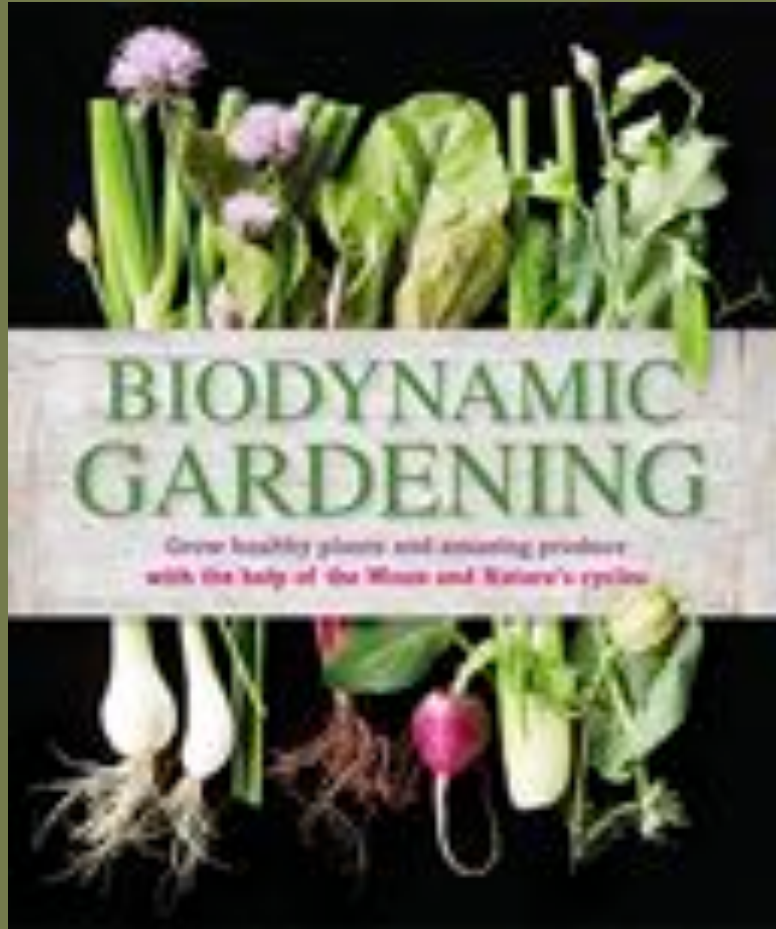
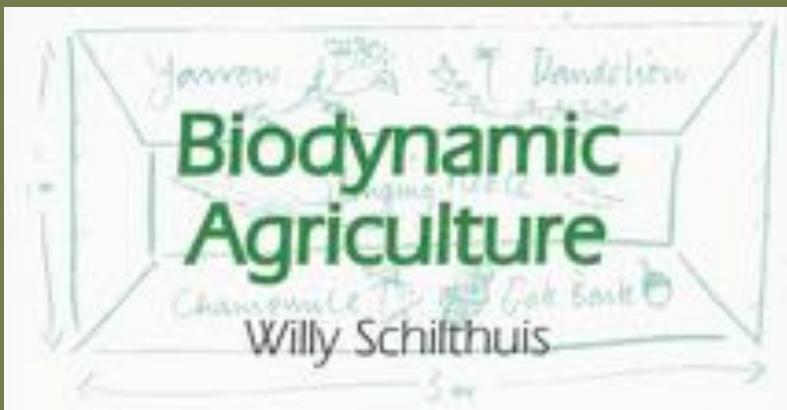


## Biodynamics Cultivates Biodiversity

Biodynamic farms and gardens mimic the biodiversity of natural ecosystems, amplifying the health and resilience of the farm organism. Annual and perennial vegetables, herbs, flowers, berries, fruits, nuts, grains, pasture, forage, native plants, and pollinator hedgerows can all contribute to plant diversity. Diversity in livestock 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 livestock (even as small as earthworms or honeybees), and adding more species as the farm organism matures.



[www.biodynamics.com/biodynamic-principles-and-practices](http://www.biodynamics.com/biodynamic-principles-and-practices)



<https://www.biodynamics.com/what-is-biodynamics>





BIODYNAMIC  
ASSOCIATION

Biodynamics

Education

Community

JOIN OR RENEW

DONATE

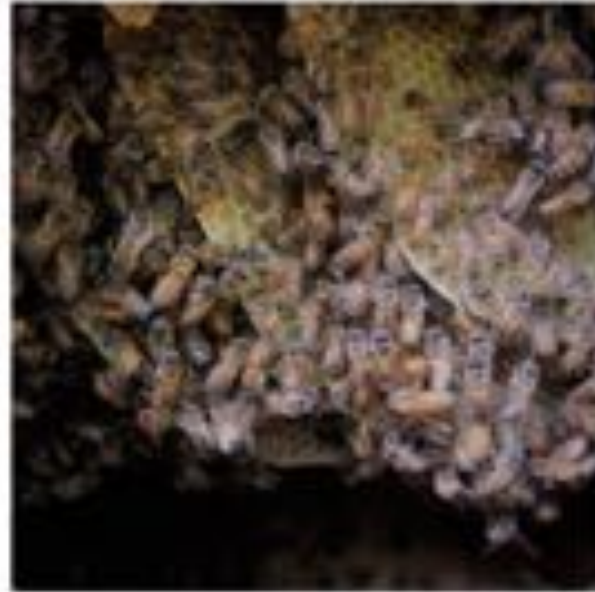
E-NEWS



Growing and Using  
Medicinal Herbs for  
People and Pollinators

January 29

*with Deb Soule*



The Life of the  
Honeybees: Between  
Light and Darkness

February 7

*with Alex Tuchman*



A Biodynamic  
Understanding of  
Trees

March 7

*with Joseph Murray*

[www.biodynamics.com/webinars](http://www.biodynamics.com/webinars)



## **BIODYNAMIC FARMER FOUNDATION YEAR**

On-farm training and mentoring combined with a cohesive, integrated, and interactive learning curriculum bring biodynamics to life.

Applications due February 13 for  
2019-20 cohort

[www.biodynamics.com/farmer-training](http://www.biodynamics.com/farmer-training)



# BDANC

BIODYNAMIC ASSOCIATION  
OF NORTHERN CALIFORNIA

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## SEASONAL MEETINGS



[www.bdanc.org](http://www.bdanc.org)



2019 North American  
**BIODYNAMIC  
CONFERENCE**  
Lake George, NY

November 20 - 24

[www.biodynamics.com/conference](http://www.biodynamics.com/conference)



Biodynamics Offers  
Regenerative Solutions for  
the Future



Open Field Farm, California









Fulcrum Farm, California



What are you taking with  
you from this session?



**BIODYNAMIC  
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