

Air -- the Classical element that represents the gas state of substances. See Four Elements

Allelopaths -- chemicals that are toxic to competitor plants. For example, the walnut tree has an inhibiting effect on any nearby vegetation.

Apogee (Ag) -- the time when the moon is most distant, tends to create bolting in vegetables, but may be good for seed crops.

Archetype -- a primary patterning upon which manifestation organises itself. In our context, the archetype is viewed as a pattern that comes from the cosmos. Locally developed modifications on the basic pattern provide the diversity of life forms, as for example, when leaves modify to produce flower petals.

Ascending -- When the moon is in a high sign, like Taurus, the upper parts are more vital; and when in a low sign, like Scorpio, the bottom parts are more vital. Old timers tried to graft trees when the signs were ascending.

Astral, astrality, astral body -- The Astral Body imbues the physical and life form with sensation and movement. Commonly called the sense body, the Astral enables the living forms to experience their environment through taste, smell, touch and sound. From this sensation, the entity can then determine whether it feels good to be at that point or not. There is an 'animal' intelligence carried by the Astral, which responds to stimuli - Does it feel good or not? The Astral body is also necessary for waking and sleeping to take place. The Astral is associated with the element of Air and light. Its hallmarks in the animal kingdom are the degree of sensitivity and movement the animal possesses as well as the ability to internalize the breathing, the formation of true organs and their reactions to light.

Barrel Compost -- Maria Thun's preparation of highly developed compost. It can be applied as a field spray to distribute the effects of the compost preparations. See Biodynamic Materials.

Biodynamic materials -- specific preparations made from herbs and other substances, used to encourage vital forces in plants and in the soil. See table.

Summary of BD Materials

Preparation Number	Material	Unit Size	Procedure	Effects
500	Horn Manure	1 oz. sufficient for 1 acre	Stir for 1 hour	Promotes roots, stimulates soil, encourages lush growth, aids germination.
501	Horn Silica	1 gram sufficient for 1 acre	Stir for 1 hour	Promotes photosynthesis, flowers and fruits, aids flavor, color, aroma, keeping quality.
--	Horn Clay	5 gm sufficient for 1 acre	Stir for 1 hour	Mediates between growth poles, promotes balance
502 to 507	Compost Preps	1 oz each for 10-15 T compost	Insert into pile, sprinkle diluted valerian over pile	Builds digestive and formative properties of soil when compost is added
--	Pfeiffer Compost Starter	1 oz. sufficient for whole season, add in small amounts	Sprinkle in warmed water, let incubate for 20 minutes	Adds vital forces to compost, enhances digestive ability of soil
BC	Barrel Compost	1 oz sufficient for 1 acre	Stir for 1 hour	Adds vital forces, enhances digestive ability of soil
508	Equisetum	1 oz in 1 quart	Make boiled tea, dilute 1:10, may stir 20 minutes	Prevents fungus, toughens plant tissues

Bode's Law -- the distribution of the planets from the sun, based on resonance nodes as the original cloud of matter condensed to form the solar system. These resonance patterns mean that the orbits of the planets are related as integer ratios.

Bound -- describing life force that has been assimilated into the ecological chain of life. See Life Force.

C:N ratio -- The ratio of Carbon to Nitrogen is important for developing compost. Ideally, the compost materials should start at a ratio of about 25 or 30 to 1. Materials that are low in nitrogen, like sawdust a ratio of about 500 to 1 need to be balanced with higher nitrogen materials, like blood meal with a ratio of about 5 to 1.

Calcium -- (1) the substance or mineral, typically found as limestone (2) the Earth-related growth force, as opposed to the Silica, or Cosmic related growth force. See Silica. The Calcium force provides horizontal expansion; it fills out or produces bulk in plants.

Cation Exchange Capacity (CEC) -- a measure of the soil's ability to hold mineral nutrients. For an ideally balanced soil, the CEC is distributed as calcium 60-75%, magnesium 6-12% (these two totaling 80%), 3-5% for potassium, trace elements and hydrogen. Calcium and magnesium are nutrients that act in opposition to each other, yet the plant needs both. The ideal ratio is about 7 parts calcium to one part magnesium.

Center -- systems of all sorts are defined in terms of their boundaries. Biodynamics recognizes that there is a continual and dynamic interchange between the center and the periphery that creates the identity of living systems.

Chi -- universal life energy. See Life force.

Clay -- Chemically, clay consists of aluminum silicate compounds with varying amounts of potassium. Clay serves as a mediator between the Calcium and Silica forces. Clay governs the ebb and flow of sap; it conducts the silica forces developed in the earth, upward for plant development.

Cloche -- the French word for bell, referring to the bell shaped jars originally used by farmers to cover tender plants. Now it means many types of structures that can be put over an entire row or bed.

Colloid -- a substance, often gelatinous or mucilaginous, consisting of suspended particles too small for resolution with a microscope.

Companion Plants -- plants that enjoy being located together, perhaps due to synergistic or symbiotic exchange of substances. In contrast, some plants are known to produce allelopaths, chemicals that are toxic to competitor plants.

Compost Preps -- a set of herbal preparations used to enhance the digestive and growth properties of compost. See Biodynamic Materials

Conceptual model -- a mental construct that helps us understand a problem or observation. Testing a model involves checking that it is consistent with other knowledge and experience, but primarily that it lead to practical and testable results.

Contracting -- see Dynamic Plant Processes

Cosmic -- coming from the outside universe, the periphery as far as the solar system is concerned. Associated with Air and Light, as contrasted to Earthly influences. Cosmic Ego comes from the outer universe, Cosmic Astrality comes from the stars of the zodiac, Cosmic Ether flows to the Earth from the periphery, entering at the sunward spin, most strongly at the equator.

Cover crops -- crops that provide extra organic matter to the soil. The trick is that the soil must be active enough, and you need to allow enough time for their plant residues to breakdown and be digested by soil organisms.

Crop rotation -- grow a plant species to prepare the soil for the next species. The general rotation plan is to put on a heavy amount of compost and then grow a heavy feeder crop, such as cabbage, corn, squash or tomatoes. Then grow a soil improver crop, such as legumes. Then follow with light feeders, such as root crops. One can finish with a weed fallow or a green manure crop or a bee pasture crop. This follows the general plan: follow roots with fruiting vegetables, follow with leaf vegetables, then annual flowers. This plan allows the soil to experience a variety of formative forces.

Deep ecology -- recognizes the intrinsic value of all living beings and views humans as just one particular strand in the web of life.

Descending -- When the moon is in a high sign, like Taurus, the upper parts are more vital; and when in a low sign, like Scorpio, the bottom parts are more vital. Descending signs are a good time for transplanting or pruning.

Determinism -- the belief that events will follow specific, known laws. If we know the initial conditions and the physical laws, we can predict exactly where the system will be at a future time. For example, if the marksman knows precisely the

angle and velocity of his bullet, he knows it's trajectory and exactly where it will hit.

Dissipative structures -- "open" systems, with energy is passing through, can capture that energy to temporarily assemble an ordered structure. The interesting thing is that under these open and conditions, it is the natural event for systems to self-organize and turn their undifferentiated chaos into some sort of ordered structure. It is even possible for that structure to refine and evolve and develop an increasing level of complexity.

Dynamic-- A focus on the moving or changing processes, as opposed to a focus on static "snapshots" of the event. The "dynamic" part of the biodynamics takes a broader perspective to enhance metaphysical aspects (the life forces) and natural rhythms (such as planting seeds during certain lunar phases).

Dynamic accumulators -- plants that accumulate specific mineral nutrients. These plants can add important minerals to the compost mixture.

Dynamic Plant Processes-- the parts of plants can be viewed as focusing on specific processes. The root structure accumulates nutrients and stores food substances in a contracting process. In contrast, the flower structures dissipate energy and substance in fragrance, color, pollen and fruit. This is a sublimation process. In the middle, are the leaves and stem. These structures not only provide food substance from sunlight, but they also transport to both the upper and lower structures in a process of mediation.

Earth -- (1) our planet (2) soil, the ground beneath our feet (3) the source of local, outward seeking forces, as opposed to Cosmic forces entering from the periphery.

Earthly substance -- calcium as a mineral nutrient, substance as opposed to the related Earthly or calcium forces.

Ecliptic -- the line across the zodiac along which the sun moves. The name arises because an eclipse of the sun can happen only when a planet crosses this line and if it happens to pass in front of the sun while doing so. The inner planets (Moon, Venus, Mercury) are those that can from an eclipse. The outer planets (Mars, Jupiter, Saturn) orbit outside the Earth and do not pass in front of the sun.

Ego -- The Ego imbues the sensitive life form with intelligence and individuality. Distinct from dream consciousness (which is astral), Ego intelligence is related to processes of thought and deduction, remembering and forgetting. These enable its recipient to consciously determine action and response. Once the response has been determined, the Ego imparts the degree of commitment by which the action

is carried out. This action creates body heat, indicating the Ego's relationship to the element of Fire and the Warmth ether. Humans are the only kingdom that internalizes this body. We have self-consciousness and free choice. In the other kingdoms of nature, the Ego still works from outside, as a collective function or group soul. Do not confuse with "ego" in the sense of a lower self as in "egotistical". This Ego provides that individuality that makes each of us a unique human being.

Entropy -- the amount of disorder in a system. Thermodynamics states that entropy should increase in a system. A practical example is that all energy eventually dissipates as heat, its highest entropy state. But open systems have found a loophole. Some of the energy passing through a system can be borrowed to organize the system. Under these conditions, entropy in the sub-system decreases, although that is balanced by higher entropy elsewhere outside the sub-system.

Equisetum -- common horsetail or "scouring rush". Its skin is covered with sharp little scales composed of silica, making it a good biological source of an otherwise insoluble mineral. Equisetum tea pushes back on watery, moon-like forces, thereby toughening plant tissues. The tea is a good remedy for aphids or fungus that attack overly lush plant growth.

Ether -- a general term for life-force. There are four types, corresponding to the four Classical Elements, which are associated with specific types of formative forces.

Ether	Formative Force	Chemical Element
Warmth	Cosmic Silica	Hydrogen
Light	Terrestrial Silica	Nitrogen
Tone	Cosmic Calcium	Oxygen
Life	Terrestrial Calcium	Carbon

Etheric body -- The Etheric body is the set of organizing forces that give a specific form, the 'spiritual' body that imbues life and the capacity to grow and develop into all living forms, chi in Eastern philosophy. It comes from the Earth and has the capacity to create growth. It drives or energizes the movement of fluids in general. When the Etheric body leaves a living entity, death occurs. See also Four Elements. The four life forces are associated with the different stages of living beings. Glen Atkinson points out that the life forces organize into pairs of

complementary poles. If we want to expand the etheric part of a plant, it will push back the astral part. So we need to be aware of balancing both poles to preserve a harmonious balance.

Field Spray -- Distribution of the Biodynamic Preparations by means of spraying potentized water over the soil and around the plants. Horn Manure, Horn Clay and Barrel Compost are applied to the soil toward evening. Horn Silica is sprayed into the surrounding air in early morning.

Fire -- the classical element that represents plasma or very energetic substance. See Four Elements.

Formative forces -- the various patterns or life forces that influence the form or shape taken by living beings.

Four Elements -- matter can exist as solid, liquid or gas. Biodynamics adds a fourth form -- plasma or a highly energized, very diffuse form of gas. These four states correspond to what the ancients knew as earth, water, air and fire and those categories are still a convenient way to think about their properties. These states of matter correspond to similar states of the life force (ether).

Four Kingdoms -- the four categories of living beings: mineral, plant, animal, human. The first level of living things is that of plants. Mineral things may possess a physical substance, but plants go a step further in having life force. In biodynamics, this life force is called "ether". Animals go another step further -- not only do they have the life force, but they also have a nervous system. The nervous system processes the experiences and builds up emotions and memories. This creates another level that biodynamics calls the "astral". Finally, there is the human being. We add yet another level with self-consciousness. In biodynamics, this level is called "ego" or "spirit". For those kingdoms that have not internalized these higher levels, the levels still exist, but they are outside the kingdom, existing in the environment or at the World level. Thus, for example, the astral life of plants takes place outside the plant, in the soil and surroundings.

Physical Element	Spiritual Body
Fire	Ego
Air	Astral
Water	Etheric
Earth	Physical

Free -- describing life force that is still loose in the environment and has not yet been assimilated into the ecology. See Life-force

Gaia hypothesis -- the hypothesis that the Earth, on some level, behaves as if it were a single living organism.

Geocentric -- an astronomy system that treats the Earth as the center of the universe. It requires developing a complicated system to explain the observed planetary movements and has been discarded by science. However, this system matches the perception that the heavenly bodies appear to be moving around us. Hence, it is still useful to communicate the direct perceptions.

Gravity -- the force that draws matter to the center. In the solar system, gravitational attraction holds the planets in their orbits around the sun

Hollow point -- in perspective geometry, a point formed by converging tangent lines from the periphery. It serves as a model for Cosmic forces coming in from the outside.

Horn Clay -- see Biodynamic Materials.

Horn Manure-- see Biodynamic Materials.

Horn Silica-- see Biodynamic Materials.

Imaginative Perception -- the process of explaining observations with imaginative images. These effectively present a gestalt that may be better for holistic understanding than verbal discourse. The gardener who clings to the mechanistic paradigm will be tempted to see the soil, the plant and the animals as machines. Biodynamics stresses living thoughts to understand living systems. Biodynamic practitioners enjoy personalizing the growth influences as if they were living creatures in order to emphasize the vitality of the life force. Hence, they may discuss the life forces as gnomes, dwarves, sylphs, undines.

K -- potassium, a soil nutrient important for root development.

Let-It-Rot Tea -- a term to describe a tea popularized by Maria Thun. She adds offensive pests, such as bindweed or slugs, to a bucket of water and lets the mixture rot. The liquid can then be sprayed on the soil and inhibits further growth of the pest.

Levity -- the opposite or counter force to gravity. It represents the forces streaming in from the periphery.

Liebig's Law of the Minimum -- statement that crops fail because a single key nutrient is lacking. The analogy is that of a barrel with staves broken at different

lengths; the barrel will only hold water up to the shortest stave. Adding, say potash, would not help if the deficiency were in nitrogen.

Life -- The life force or ether associated the Classical element Earth, the solid state of matter and the physical body. See Life Force. The term "Life" is applied to the life force associated with physical substances, because this level of life force creates the distinction between the living and non-living worlds.

Life force (ether)-- the fundamental chi or force that distinguishes living beings from non-living. There are four stages that correspond to the Four Elements in the physical world and also to the Four Levels of spiritual bodies. The life force is also distinguished by the degree to which it has been incorporated into life-web of the ecosystem. Forces may exist in the outer World, but not yet have been captured into living beings -- these are called free (or living). Or the forces can be captured and incorporated into living organisms -- these are called bound (or dead). Once the forces have been bound, they can be passed along to other organisms higher up the food chain.

State of Matter	Classical Name	Type of Life Force (Ether)
Solid	Earth	Life
Liquid	Water	Sound/ Tone/Chemical
Gas	Air	Light
Plasma	Fire	Warmth

Light -- The life force or ether associated the Classical element Air, the gas state of matter and the astral spiritual body. See Life force.

Liquid Manure -- a slurry of manure in water used as a fertilizer. The mixture is usually allowed to ferment or "digest" before application and the biodynamic materials can be used to improve the digestion process.

Lunar Rhythms. Living organisms, with so much internal water, respond to the moon in a similar way as the tides. The most important effect is the response to the waxing and waning moon. In general, the full moon helps to draw water into plants. Thus, germination of seeds is most rapid at the full moon. So the best time to plant is in the second quarter or just before the full moon. Root crops or transplanting can be done in the third quarter. The fourth quarter is a rest period, best for weeding and other chores.

Maria Thun -- gardener with extensive biodynamic experience. She developed the Barrel Compost preparation and worked out the relationships of the Moon to zodiac sign. This astrological method is the basis for the Stella Natura calendar.

Mediation -- see Dynamic Plant Processes

Meta-language -- a shared system of symbols used to express and communicate fine and detailed observations about the workings of nature.

Moon signs-- the Moon creates influences based on what part of the zodiac it happens to be in. Fire signs help plants that fruit, air signs those that flower, water signs are good for leafy plants and earth signs for root crops. Leo is a fruit sign that is especially beneficial to seed crops.

Mycorrhizal fungi -- certain fungi form symbiotic relations with the roots of plants. The roots get supplemental moisture and nutrients from the mycorrhizal fungi, while the fungi get plant sugars from the roots. The mycorrhizal fungi take very little from the root in comparison to what the root gets so the relationship is highly beneficial. Together these make for an extremely effective network delivering nutrients back and forth to each other.

N -- nitrogen, the important nutrient substance for leaf growth. Nitrogen is also associated with animal life as the carrier of the astral body.

Negentropy -- order, the opposite of Entropy.

Nettle tea -- a useful plant food made from soaking nettles in water. Nettle has a high nitrogen content itself and helps harmonize plants that are not assimilating fertilizer nutrients appropriately.

Nodes -- the points where a planet's path crosses the solar ecliptic. The nodes of the Moon's path are considered times to avoid seed planting.

Outer Planets -- Mars, Jupiter and Saturn are located further from Earth than the Sun. These are associated with forces that work over long cycles, such as maintaining the form of the species in the fruit and seed. These forces are carried into the Earth with warmth, light and silica. They are then released during the next growing season, to be used for plant development

P -- phosphorus, the plant nutrient important for developing flowers and seeds.

Paradigm -- a constellation of concepts, values, techniques, etc. shared by the scientific community. These shared concepts are used not just by scientists, but also throughout society as a way to think about problems and solutions. The influence is so subtle that we often don't realize how our expectations are colored

by the prevailing concepts. For example, the Victorians were enamored of their industrial revolution and structured their thinking around the model of railroads, mass production and heavy industry. In our time, the rise of the computer has brought a new paradigm -- some would tend to formulate all problems and observations as information theory.

Pattern -- a system of order. The pattern often appears to have been communicated or influenced from the outside.

Perigee (Pg), when the moon is closest to the earth, plantings tend to be more subject to pests and mildew -- too much water influence. In general, it is better to avoid planting on both Ag, Pg and the nodes when the moon passes the path of the ecliptic.

Periphery -- the outside, as opposed to the center. In biodynamics, the source of Cosmic forces that come to the Earth.

Pfeiffer Compost Starter -- see Biodynamic Materials

pH -- measure of the amount of acidity. A pH of 7 is neutral; lower is more acid; higher is more alkaline.

Phyllotaxy -- the name for the way leaves are arranged around the stem. Leaves can be opposite each other, or place halfway around the stem for the next leaf. Or they can be in threes, a third of the way around the stem to the next leaf. For the blackberry you go twice around the stem to arrive at the fifth leaf; this is a ratio of $2/5$. In other plants, ratios occur such as $3/8$, $5/13$, $8/21$, $13/34$ etc.

Physical -- the body associated with solid matter, enlivened by Life category of life force. See Four Elements.

Polarity -- the observation that forces align with opposing but complementary poles.

Projective geometry -- a method of analytic geometry that emphasizes perspective based on the focal point. The important observation is that equally valid geometry systems can be based on either a system radiating out from the center or coming in from the periphery. This serves as a model for natural forces that can be of both kinds, radiating outward or streaming inward.

Reductionism -- analytical approach that tries to break a problem down into manageable portions. In so doing, it may leave out important components of the overall situation. In some cases, it is not possible to understand the behavior of the whole from merely the properties of its parts.

Retrograde -- movement of the planets in a backward direction. The planets generally move around the sun in the same direction but sometimes, as the Earth catches up in its orbit to other planets, the planets appear to reverse direction.

Self-organizing -- the principle of open systems. When there is a flow of energy through the system, the system is able to use some of that energy to organize itself, an apparent violation of entropy.

Silica -- (1) the chemical element, Si, an important nutrient for plants, but one that is not in short supply in soils. (2) the Cosmic-related growth force, as opposed to the Calcium, or Earth-related growth force. See Calcium. Silica works in a cycle. The sand in the soil draws in forces with the warmth and light of summer. These are held in the silica crystals of earth until the following spring. Then, with the help of clay, they radiate up again. They link with the archetype (Ego) of the seed and move up through the stem to the fruit. Once the new seed is nurtured by the summer sun, it falls to Earth and repeats the cycle.

Soil Food Web -- soil is actually a complex ecology or food web, with many symbiotic life forms contributing to its structure and fertility.

Solid point (sun point) -- in projective geometry, a point that serves as a center for outwardly radiating forces, as distinguished from a Hollow Point that serves as a model for inwardly streaming forces from the periphery. See Projective Geometry.

Spirit -- the seed or pattern of universal life force that enters into living beings. Spiritual bodies are those not usually visible (etheric, astral and ego) that influence the physical form. Spirit does not mean any specific religious belief but is a practical term for the unseen forces.

Stella Natura -- brand name of a calendar based on the zodiac interpretations of Maria Thun.

Sublimation -- see Dynamic Plant Processes

Teleology -- the assertion that the causal agent is purposeful, that there is a purpose and design in nature. Conventional science has a problem with such an assertion because it contradicts the assumption of neutral objectivity.

Terrestrial -- relating to the Earth, as opposed to the Cosmos. The Calcium and Silica growth forces have complementary poles organized according to whether the forces have been assimilated into the ecosystem (bound or Terrestrial) or are still in the process of being loose in the environment (free or Cosmic).

Tone, chemical -- the life force or ether associated with the Water element, the liquid state of substances and the Etheric spiritual body. See Life force.

Tree Paste -- a paste applied in the winter to tree trunks to encourage the earth-like aspects of the trunk and bark, made from cow manure and clay. See BD Preparations.

Warmth -- the life force or ether associated with the Fire element, the plasma state of substances and the Ego spiritual body. See life force.

Water -- (1) the classical element that represents the liquid state of substances. See Four Elements. (2) the compound water, used to distribute some of the BD preparations. A process of rhythmic stirring is used to potentize the water in a way similar to homeopathic medicine.

World -- The Spiritual Bodies of the Earth. The Sun at the center of the solar system becomes the World Ego with the World Astral planets circling. The life body of the Earth makes it possible for living beings to exist; within the atmosphere is the necessary concentration of warmth, forces and elements. World Ego emanates from the Sun, World Astral forces from the planets, World Etheric forces are maintained within the atmosphere, the World Physical body is the Earth itself.

Zodiac -- the regions of the sky through which the Sun and planets move. Different regions of the sky provide different pattern effects, so that the combination of the sun, moon or planets with a certain portion of the sky emphasizes different aspects of growth and change. Maria Thun interprets these effects according to the elements of the zodiac signs: Fire signs help plants that fruit, air signs those that flower, water signs are good for leafy plants and earth signs for root crops. Leo is a fruit sign that is especially beneficial to seed crops