

BIO - DYNAMICS

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Bio-Dynamic Farming and Gardening

Bio-dynamic farming and gardening looks upon the soil as upon a living organism and regards the maintenance and furtherance of soil life as fundamentally essential in order to preserve the soil's fertility for generations instead of obtaining a certain number of cash crops and then giving up work on the land because of its exhaustion. The maintenance of soil life is vital also in order to protect the soil from erosion and to create, improve and augment the humus content. This will result in a fine, crumbly structure and provide the necessary organic colloids. In addition it will grow a superior quality of products, which will mean better feeding for livestock and better food for human beings.

The nearer a soil is to the neutral state the better possibility it has for humus production. Increasing acidity deteriorates the humus.

The better a soil is protected against the bleaching and drying effects of the sun's rays, the better the humus is preserved.

The better a soil is aerated, the more soil life is developed and the more humus produced.

The more a soil is protected against dry and water-consuming winds, the better the humus production is maintained and hard-crust formation as well as loss of water avoided.

Each kind of plant develops its own type of humus through its roots and leaves which fall and decompose around it. Crops either consume, maintain or produce humus.

Mixed cultures are apt to preserve the fertility of the ground on account of certain beneficial effects from plant to plant, through mutual protection, through plant hormones and the kind of humus developed. The old-fashioned gardener obtains a black earth in his garden which a farmer never could produce in his fields.

The loss of humus must be replaced by humus. Soil life must be stimulated by means of organic decomposed material in the striving towards the state of neutral colloidal humus.

Soil improvement is obtained by proper humus management, e. g., by the application of sufficient organic manure and compost in the best possible state of fermentation, also by proper crop rotation, by proper working of the soil, by protective measures such as wind protection, cover crops, green manure, diversified crops rather than mono-cultures, etc., and mixed cultures so that plants aid and support each other.

Proper humus management is based on farm manure and compost as the most valuable fertilizers. They contain organic matter on which the soil bacteria and earthworms can feed and then revitalize the soil. They contain colloids which absorb moisture and mineral solutions in the ground, form a crumbly structure and eliminate the danger of erosion.

Farmyard manure usually loses 50% of its nitrogen content from the day it is produced until it is plowed under. The careful storage of manure in heaps covered with earth, as taught by the bio-dynamic method, avoids this loss almost entirely. Organic matter has not yet reached the state of neutral colloidal humus. Complicated fermentation processes must first take place in the manure heap. The final result is either badly smelling decay with loss of nitrogen and break down to ammonia and carbonic acid or a transformation into neutral colloidal humus. The bio-dynamic method produces the right fermentation. Certain bio-dynamic preparations are inserted into the manure heaps in order to speed and direct fermentation and preserve the original manure values. This fermentation is usually completed in from 2 to 5 months.

The same principles apply to compost materials. When collecting and piling up such materials one obtains an additional source of organic fertilizer. Everything which is apt to decompose can be used, as leaves, grass cuttings, weeds, old rotten hay, corn stalks, garbage, pond cleanings, road scrapings, slaughterhouse refuse, bone, hoof and horn meal, wool, etc. These materials are piled up in alternate layers, interlayered with earth and a thin coating of quick lime and treated with the bio-dynamic preparations. The bio-dynamic literature describes this process clearly. The fermented compost material is especially good for the improvement of lawns, pastures, flower beds, vegetable gardens, shrubbery, alfalfa, clover, etc. If properly done the fermentation of compost material into humus takes place in about 4 to 12 months, according to climatic conditions.

Experience has shown that on a 100-acre farm with an annual manure production of 150-200 tons of manure about 100-120 tons of waste material in addition could be collected and composted.

Proper crop rotation is essential in order to preserve the fertility of the soil. The general rule is that soil-exhausting crops such as corn, potatoes and mangels in the fields and cabbage, cauliflower, etc., in the garden alternate with soil-restoring crops such as all plants of the leguminous family—peas, beans, clover, alfalfa, etc. Furthermore, deep rooting crops have to alternate with shallow rooting ones, crops which require manure with those that do without it. A carefully thought out crop rotation is the opposite to monoculture which in the long run completely exhausts the soil. The crop rotation plan must be made in accordance with soil—climatic—and market conditions and has, therefore, to be worked out individually for each case including farms, flower and vegetable gardens.

Proper working of the soil consists mainly of knowledge of the right time and right depth of plowing, of harrowing, disking, cultipacking, rolling, etc. Much skill and experience are needed. A cultipacker applied at the right time, at the beginning of dry weather, can preserve the moisture for a long

period. Deep plowing of too wet a soil can ruin a field for many years. Only thoughtful experience combined with investigations, such as the taking of soil profiles, enable maximum efficiency in soil treatment.

Protective measures and mixed cultures require individual study of each case. The book, "Bio-Dynamic Farming and Gardening" by Dr. E. Pfeiffer, is of inestimable value for working out these problems.

The bio-dynamic preparations are made mainly of certain medicinal herbs, which together with animal organs have undergone a long process of fermentation in order to enrich them in growth-stimulating substances (growth hormones). They react like yeast in dough, i. e., they speed and direct fermentation toward the desired neutral colloidal humus. A manure heap treated with the preparations usually contains 10 times more bacteria than the same kind of manure untreated.

Soil given properly prepared manure or compost transmits sturdy, health-giving qualities to all crops with beneficent results for men and animals. This is an achievement that is unanimously recognized by those who use these methods and that manifests itself very quickly.

For practical reasons the preparations are numbered 500 - 508. Numbers 502 - 507 are applied to the manure and compost. They are inoculated in minute quantities. They have no manuring effect, the sole purpose being to direct the fermentation of any kind of organic matter toward humus.

The preparations 500 and 501 are sprayed, diluted in water, directly on the land. Number 500 stimulates the humus formation in the ground and the growth of fine hair roots. Number 501 stimulates the assimilation of carbonic acid by the green leaf and the growth of the entire plant. Number 500 is applied mainly in the fall and the spring before clearing or after plowing and sowing. Number 501 in May and June on the green leaves. There is no secret about the preparations. The originator desired that they should be made available to every farmer anywhere and that they should not be commercialized. For this latter reason the formulas are not published. The Bio-Dynamic Farming and Gardening Associations in different countries act as Trustees in accordance with the wishes of the inventor. To farmers or gardeners, who are members of the American Association at Kimberton Farms, R. R. 2, Phoenixville, Pennsylvania, the preparations are given at cost price. However, a first set of preparations, together with instructions, may be had on trial, also by non-members of the Association, if guarantee is given that they will be used strictly in accordance with the instructions, as otherwise the full benefit of them will not be obtained.

Bio-dynamic farms and gardens rank very high. The gradual improvement of soil increases the drought resistance as well as the resistance against diseases.

Through the proper piling up and preparation of compost and manure heaps faster fermentation and less nitrogen loss will be achieved. In properly prepared manure heaps, for instance, the nitrogen loss is only about 5% as compared with about 50% under the old way of handling the manure.

As to the size of farms or gardens suitable for application of the bio-dynamic methods, small holders' gardens of 30x30 feet as well as large estates

of several thousand acres have successfully applied these methods. A special detailed plan has been worked out for small holders' gardens in order to enable them to produce about 400 to 500 lbs. of vegetables yearly on a 30 x 30 foot lot. For larger holdings individual advice should be given in each case.

The fundamental principles for bio-dynamic farming and gardening were established by the late Dr. Rudolf Steiner, an Austrian philosopher and scientist, who spent all his life in research and investigations of the forces that regulate life and growth. A small group of farmers in Europe and the Bio-Chemical Research Laboratory at the Goetheanum, Dornach, Switzerland worked for years to bring these principles into practical application for farming and gardening. This preparatory period covered the years 1922 - 1930. Afterwards the application of bio-dynamic methods have been rapidly spreading out on the European continent and in England and America, New Zealand, North Africa, etc. At the present time there are more than 2000 farmers and gardeners strictly adhering to these principles.

The question as to whether or not the application of the bio-dynamic method is expensive must be answered by saying that it depends upon the way in which it is applied. Diligent and careful practice will here quickly make for efficiency, which will also be increased by the new interest in the work awakened by these methods. There are no extra direct costs except the small expense for the preparations. Very little additional time is needed for the proper handling of manure than for the untidy and careless handling thereof. The collecting and piling up of compost materials involve some labor, but the time spent is highly rewarded by the results obtained. The strict application of the bio-dynamic principles on a farm is calculated to mean from 1/25 to 1/33 of the time spent on work in the fields. Skill in management can easily make up for this apparent loss of time.

The Bio-Dynamic Farming and Gardening Association is a non-profit organization in order to propagate the bio-dynamic methods in the U. S. A. The Association gives advice as to soil improvement, farm and garden management, compost and manure treatment. The Association also follows all recent experiences made in this field and makes them available to its members. A periodical, "Bio-Dynamics," is especially dedicated to this purpose. There is also extensive bio-dynamic literature.

Kimberton Farms and its Agricultural School are being developed as a demonstration center for the bio-dynamic methods of farming and gardening.

Anyone who wishes to get the benefit of the Association's collaboration should first make a careful study of the literature. If he then becomes convinced that these methods should be applied on his property, he must be determined to start proper handling and treatment of manure and compost, as described in the bio-dynamic literature. The Association will help with advice to be asked for on any of the regular Questionnaires which may be had upon request. It is merely a waste of time and money to start only out of curiosity without firm intention to carry through. Furthermore, if the methods are improperly applied, the unsatisfactory results will be ascribed to them instead of to the carelessness and/or lack of understanding of the user.

Information centers and demonstration farms and gardens will gradually be established in various parts of the U. S. A.

The Questionnaires are made out in four sections.

- A—General: Covering the topographical description of the property; type of soil; soil analysis; soil structure; drainage, etc.; climatic conditions in vicinity.
- B—Farms: Acreage; type of farming; crops; fertilizers; pastures; weeds; soil manipulation; livestock—diseases and feeding; manure and compost supply.
- C—Garden: Layout and use; crops; seeds; fertilizers; lawns; cultivation; hedges; weeds; pests; greenhouse and other cultures.
- D—Orchard: Size; varieties of trees; other crops; diseases and pests; sprays; cultivation; cover crops, etc.

If the Questionnaire is carefully answered it will enable the Association to give a general biological survey of the land and to advise as to the steps that should be taken for the introduction of the bio-dynamic methods and for the general improvement of the soil.

An analysis based on the Questionnaire will cost \$5.00 for non-members of the Bio-Dynamic Farming and Gardening Association and \$2.00 for members. If in addition thereto certain detailed work, such as a complete crop rotation plan, soil studies, etc., should be requested, charges will be made covering the cost of such work. It is the practice of the Association that a first visit to a property, in order to introduce the bio-dynamic methods, is made free of charge outside of the traveling expenses.

Since there are such great distances to cover in this country and so few information centers yet established this Questionnaire should be of great help to persons living too far away to obtain such visits.

The headquarters of the Bio-Dynamic Farming and Gardening Association is located at Kimberton Farms, R. R. 2, Phoenixville, Pennsylvania.

Literature:

The following books and publications can be obtained through the Anthroposophic Press, Inc., 225 West 57th Street, New York City.

"Bio-Dynamic Farming and Gardening," by E. Pfeiffer.

Essential to anyone who wishes to seriously study and apply these methods. Price \$1.50 paper bound, \$2.00 cloth bound.

"Practical Guide to the Use of the Bio-Dynamic Preparations," by E. Pfeiffer.

Gives many details on making manure and compost heaps and of treating an orchard. Price \$1.20.

"The Garden of God: A Retrospect and an Outlook," by E. Pfeiffer.

A biological study of utmost interest in our days. Price 20 cents.

- "Does Bread Nourish," by E. Pfeiffer. Deals with a vital problem related to human health and social activities. Price 15 cents.
- "New Methods in Agriculture and Their Effects on Foodstuffs," by E. Pfeiffer. Another appeal to humanity to produce and demand healthgiving agricultural products. Price 20 cents.
- "Bio-Dynamics," a quarterly periodical under Dr. E. Pfeiffer's direction, furthering soil conservation and fertility aiming at improvement in nutrition and health. Price 25 cents per copy. Subscription \$1.00 per year through the Bio-Dynamic Farming and Gardening Association, Kimberton Farms, R. R. 2, Phoenixville, Pennsylvania.
- "News Sheet of the Bio-Dynamic Method of Agriculture" Nos. 1 to 11. Shows the introduction and development of the Bio-Dynamic methods in England during the years 1936 - 1941, with many very important articles. Price 20 cents per copy.
- "The Compost Heap," by L. L. Binnie. Another detailed pamphlet with instructions on this great means to revive the soil. Price 15 cents.
- "The New Biology and Its Bearing Upon Farming," by H. Poppelbaum. Of great interest to the student of these ever present problems for proper agriculture. Price 20 cents.
- "Look to the Land," by Lord Northbourne and "Famine in England," by Viscount Lymington, both books giving clear pictures of the pressing need on the British Isles for such agricultural methods as those championed by the Bio-Dynamic Farming and Gardening Associations. Price \$1.75 and \$1.00 respectively.
- "Rural Roads to Security," by Rt. Rev. Msgr. Luigi G. Ligutti, LL.D. and Rev. John C. Rawe, S.J., LL.M. Demonstrates in a forceful way the deep relationship between sane agricultural methods and sound social conditions. Price \$3.00.