

COSMO – EARTHLY ECOLOGY AND GREEN MANURE

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To be read in conjunction with viewing the DVD of same name

Nature challenges farmers with new problems in one way or other almost continuously, and the farmer has to be an artist and decide how to cope with the situation.

Worldwide soils suffer increasing compaction. In the Volga region the top meter soil volume has been measured to have reduced by 30%. The most important component of biologically active soil, air, has therewith reduced. Destructive cultivation methods and increasingly heavier machinery are a major reason, adding to earlier damaging effects on soil biology caused by circumnavigating the purpose of worms and microbes through supplying already water soluble fertilisers (see lectures: “*Bio-Dynamics Agriculture of the Future*”, “*FIBL Lecture 2004*”, and “*IFOAM Conference Address September 2005*”) and the effect of chemicals.

In cultivation, soil should principally be “broken”, not “cut” – as with a mouldboard plough or disc – to cause lumpy shining surfaces which harden up quickly and become impervious to air and water and therewith hinder biological activity even **within cultivated soil**. Neither should soil be chopped into little rock chips or dusted by a rotary hoe, which, once moisture gets to the soil, cakes-over the top, hindering air intake. Such implements year by year increasingly compact soil.

Soil should be “broken” at the natural joints occurring in the lumps built by worms and microbes, which, on account of colloidal humus content, retain open pores able to take in water and air.

In Ukraine the compaction problem is recognised. And, relative to original soil quality, all soils where western style agriculture prevails are devastatingly compacted as demonstrated in our literature “*Bio-Dynamics Agriculture of the Future*”.

There is no single soil cultivation implement suitable to all requirements. Even the dangerous rotary hoe can be useful, i.e. in judicial surface destruction of a dense grass matt prior to cultivation for cropping. However, considering the current compaction problem, the implement shown in the “Cosmo-Earthly Ecology and Green Manure DVD” is very important. It also serves controlled intensive green manuring.

Today ecology is much discussed, often pertaining to preservation of trees, water, floods – enormous problems additional to soil compaction. Increasing flood levels surpassing century old high markings on the Danube disturb. In a visible stream about one tenth of the water associated with the particular river system should be evident, the remainder being held in vast catchment areas and associated flats extending hundreds of kilometres with a vein system, gradually supplying the river. Due to compaction most of the rainwater does not penetrate and floods the surface, discharging into the overburdened stream. An orchard near the Po river was agi-drained in each row, one meter deep, because of wetness. The drains have not discharged water because soil compaction hindered water penetration to the drainage pipes.

But, such ecological problems hardly touch the foundation of ecology.

Ecology starts with the leaf – the only physical organ on Earth which produces new physical substance. Cosmic Sun Energy enters the leaf and is united with CO₂ taken from the air and transpiration water. Carbon and the finest, nutritious plant substances are formed. This all happens in the leaf since time immemorial. Anything combustible, not just wood, also oil, gas and coal (which we abuse unsustainably) originated in the leaf.

The leaf is the Cosmo-Earthly foundation of ecology. And, as detailed in the quoted literature – because of unnatural salt content – many plants, even trees are at present unable to fully absorb the appropriate Sun Energy.

The 2006 wide ranging Europe visit, inclusive of the Carpathian Mountains and extending to Eastern Ukraine, revealed not only critically sick pine trees akin to the worst seen in the Black Forest, but also affected deciduous trees. Pictures taken on large Australian Bio-Dynamic farms show – compared with conventional neighbours – a slow re-enlivening of trees. Trees, the giants of nature, die only slowly, and so is the re-enlivening process a slow one.

In order to re-establish a full Cosmo-Earthly ecology the situation has to be recognised. Plants have to be granted natural existence, so that relevant Sun Energy can be incorporated.

Where plants for green manuring are so grown that Sun Energy is fully absorbed, the green manure provides the fullest nutritious richness (via humus) for new production – as originally provided in Creation.

The DVD shows green manuring at Agrilatina, an approximately 250 hectare market garden south of Rome. When I initially visited there it was June. Green manuring for the 30 hectare glass-house was in preparation, which traditionally consisted of one plant – mustard. I suggested that at least 20 plant species be sown in the green manure. Today Agrilatina rotationally green manures the total acreage annually. Winter green manure of 30 plant varieties is shown on the DVD. The much taller Summer green manure consists of about 90 different plants.

We may question scientific methodicity – in this particular case, chemistry – regarding **quality** of, for instance, Phosphate in each of the 30 plants, and we may arrive at a limitation of chemical methodicity. Chemical analysis can only indicate that Phosphate in plant A exists and to establish the quantity, and, that Phosphate is likewise present in other plants. The chemical analysis can not examine **qualitative** differences.

This method of chemical analysis draws substances from plants, aligning these proportionally to an established chemical system-structure, without paying attention to the original plant organization, totality or functionality.

Chemistry builds a somewhat hypothetical system, according to which, currently determinable substances (vitamins and minor elements were discovered during my lifetime) are considered

“equal” – even if synthesised – and then suggests their application as medicines, food, or food and agricultural supplements. Extensive research is required.

A comparison with a Symphony Orchestra may be useful. 50 instruments are requested to sound C sharp. The methodicity of physics can measure the exactness of frequencies. The tones are provided by a violin; a flute; a cello; an oboe; a trumpet. What **qualitative** richness, which escapes the methodicity of physics. Plants are of similar richness and differentness. So may be their “components”. Examination is required on how such plant richness acts in human consumption or enrichens soil as green manure.

The conventional **q u a n t i t a t i v e** concept (similar to the hypothetical “structures” of chemistry) that determinable quantities of NPK have to be added to soil has contributed to the prevailing problems of soil and plant health. Farmers, conventional or organic, have been misled regarding quantities of imported NPK applications, or regarding quantitative assessment of green manure as “additional material”.

It could be (we are convinced of it, and the DVD results so demonstrate) that the richness of the orchestra of plants, fully absorbing Cosmic Sun Energy, provides far more to soil than the chemically traceable quantity of all known matter contained in the green manure, when assessed as singular and dead particles.

A further, not methodically examined, fixation of scientific methodicity, which all who have undergone a similar education firmly believe in, is: that the NPK leaving the farm as product has to be replaced by importation of NPK – disregarding the pious wish of all organic regulations referring to “closed” farm production units, as existed with natural peasant farms 80 years ago before “organic” came into vogue.

Agrilatina, and many Bio-Dynamic farms in Phosphate impoverished Australia, have for years or decades imported nothing – or only a small quantity of an element as a “medicine” – i.e. have functioned as closed units.

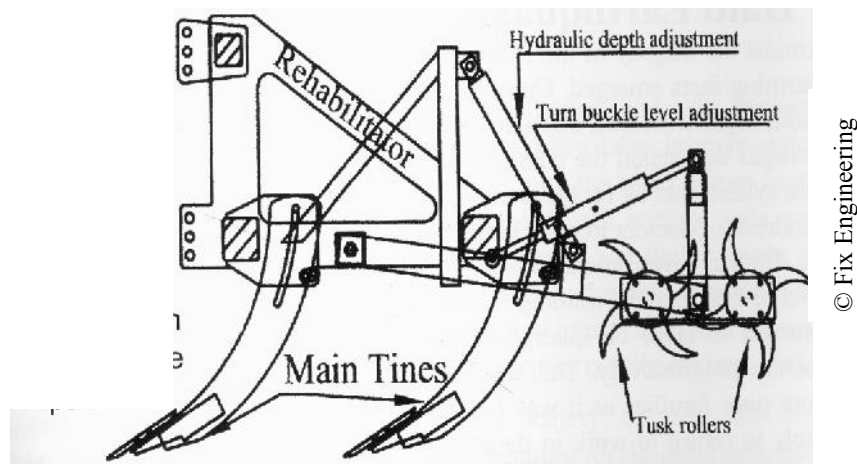
The Agrilatina production comprises of 30 different salads and vegetables filling three semi-trailers per day for nine production months.

The 30 green manure species visible on the DVD indicate to the experienced eye: brilliant health; typical Bio-Dynamic upper plant expression; and the “glow green” indicative of fullest absorption of Cosmic Sun Energy. New physical substance, accumulated in the leaf, enrichens the soil. Recycled material does not have to be imported.

This opens a new ecological vista. Truly **n a t u r a l** plants, not force filled with salt through water soluble fertilisers of conventional or organic origins and therefore absorbing inadequate Sun Energy, can again sufficiently enrichen soil from outside of Earth. – Obviously, such is also financially rewarding.

Important with the green manure shown on the DVD is how this plant volume is worked into the ground. Where soils are badly compacted special attention has to be given to the most important

soil ingredient for biological soils, and that is a i r. The implement used here is based on very long forward reaching, therefore easily penetrating and easily drawn rippers, as designed by us 50 years ago See “Ripping” lecture as foreword to *Bio-dynamic Introductory Lectures Vol 1*. In most regions of Australia a devastating drought is in its ninth, and so far worst year, which has stifled soil biology even on Biodynamic farms. Soil inactivity acts similarly, if not the same, as compaction. The implement used – as all soil cultivation should – move no faster than a horse walks, to allow time for the “breaking” of soil. It loosens and aerates to 50 cm depth without bringing up subsoil, and self propelled tynd rollers, behind the rippers, further “break” up the top **gently**.



Conventionally, with or without prior mulching, a large, heavy and weighted disc would have to be employed or the disc would “ride” on the volume of green matter. The danger would be that thick clumps of the plant matter would be buried under soil and become, first silage, and then, a sticky mess, poisoning soil.

A reliable system to mix green matter into soil had to be found. After various trials, including the spade machine with cutting spades replaced by forks, proved insufficient, whereas the rollers with 20cm spikes, shown on the DVD, perform reliably. A co-working of Italian and Australian techniques to meet the requirements.

To provide adequate incorporation of the green manure, 50cm of soil is necessary. The DVD shows how controlled the green matter is worked in. No clumps. The implement is initially used, as shown, twice, followed by an application of prepared 500, i.e. 500 including the six biodynamic compost preparations. A deep Sheet Composting activity results. The area has to be kept suitably moist. (Sheet composting techniques as demonstrated here, or performed on pastures by rotating stock and harrowing manure after each grazing, evolved in Australia.) Because of the deep composting action it has proven more effective than traditional compost applications, which are not worked in deeply so roots tend to stay on top.

At Agrilatina the ripping implement is used only with the green manure. Subsequent cash crops require only shallow cultivation with very light machinery not shown in this DVD (see photos end of “*FIBL Lecture 2004*”). Depending on requirements for early crops, traditional compost may be applied to later crops. Agrilatina runs 100 cattle all year outside, as in Australia, to

supply manure for compost mixed with home grown straw ex-grain cropping. Ten 100m long heaps are made annually.

At my first visit to Agrilatina the soil was a run-out yellow-faded orange sand, which has turned to chocolate loam. The soil is cultivated four to five times per year – a huge demand on soil. Three or even four cash crops; one to two green manures; yet the soil is continuing to improve. The enormous production depends mainly on the input of the Cosmo-Terrestrial green manure.

When first invited to Agrilatina, I suggested 20 species for green manure, followed, after sowing, by watering to a 10 cm penetration, and to spray prepared 500 out with knapsacks – to avoid tractor wheel compaction. The plants would germinate to 2 to 3cm. Again water a second time to 10cm depth; the plants would grow to 8 to 10cm. Then to water to 1 metre depth, and to apply no further water.

We distinguish between the older, mainly vertical, brown water-intake roots; and the white, Sun Warmth activated roots, which feed from humus colloids and which also, through exudation, help in preparing for new humus development (refer to earlier quoted lectures). 500, as often demonstrated, stimulates a greater development of white feeder hair roots compared to where water soluble fertilisers have been applied.

These white roots follow the receding water and after six weeks the soil is permeated by the white roots to one meter depth and the soil begins to turn browner.

After cultivating in the Australian dry-land conditions it is important to stabilise the deeply ripped area with the white hair roots encouraged by prepared 500.