Determination of Plant Health by their Magnetic Emanation and its Improvement with EM

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Abstract
Visual mineral deficiencies, mineral balances and their proportions in plants are well known. Latent deficiencies are not easily found out even though they are important to plant health, which is sometimes misunderstood, especially referring to diseases and pests. All materials, from minerals to animals and man, have their magnetic emanations with their own shape and color. Why plants should not have them too? Men's magnetic fields change strongly according to health, mood and psychological conditions. Thus, it was supposed that plants also could reveal their health conditions. Magnetic fields were photographed against a high frequency electric field which visualizes them. Experiments were made with cucumber, tomato, lettuce, field beans, weeds, sunflower, grass, rice and fruit trees, and also with cattle hair. Big differences appeared between sick and healthy plants and cows. In rich soil with enough organic matter there was always better plant health when applying EM.

Introduction

Several authors published books with color prints showing deficiency or excess symptoms of mineral nutrients in plants as Bear (1941), Wallace (1961), Primavesi & Primavesi (1965), Malavolta et al (1974) and Bergmann (1983). Even so, most deficiencies are latent and cannot be seen. When 15 percent plants on a field show symptoms, the lack of some mineral nutrients is already very serious.

On the other hand, mineral nutrients are not independent but are, in a very subtle balance with the others, as shown by Homes (1963) Bussler (1966, 1972). There exists a balance between anions and cations, macro and micro nutrients, and also between macro nutrients or micro nutrients, existing a very subtle interaction.

Every material has its magnetic emanation, from minerals to plants, animals and men. An interaction between plant nutrition and its magnetic field was assumed. Magnetic emanations can be visualized when photographed against a high frequency electric field (Kirlian and Valentine l968). It is well known that in human beings, very strong changes appear according to health, nutritional state, mood and psychological conditions. The same could be expected from plants.

Experiments made with plant leaves showed a stronger reaction of cut leaves than those kept on the plant.

Experiments and Results

It is supposed that real healthy plants cannot be parasited, that is, when they can build up all substances, they are genetically able. But when one substance cannot be utilized, because of the lack of a catalyzer, which generally is an enzyme activated by a mineral, this unutilized substance will circulate in the plant sap, offering, itself to another that can use it when the plant is attacked by parasites. Parasited plants, consequently, must always be deficient in some mineral. Sometimes it is a common microelement, sometimes only a very infinite trace of some mineral. As all parasites are programmed by their enzymes, they cannot feed upon a substance their enzyme cannot digest.

Cucumber

The first experiment was made with cucumber:

a) A healthy one, treated with EM (Higa, 1989)
b) A badly infested one with lice (aphids).

The healthy plant had a normal shape and a fine red color. They parasitised plant, emanated very weak energy, as shown by the blue color, loosing a lot of energy. The question was: does plant loose energy because it is parasited or could parasites attack the plant because it looses energy and cannot defend them ?

Tomato

Other observations were made with tomatoes:

a) With evident Phytophthora in an organic plantation.

b) Plants treated conventionally with NPK and pesticides sprayed over the plants every day.

The two magnetic fields were nearly identical. The parasite was controlled by the pesticide, but the plant was as sick as the one that had no treatment.

Gladiolus

In Gladiolus, it was still more striking:

a) Plants treated with compost, raw phosphate and EM foliar application

b) Plants from a conventional field fertilized with NPK and daily sprays of pesticides.

The organic plants were healthy and produced bigger flowers than the conventionally treated plants. They seemed healthy whilst receiving pesticides. The magnetic emanation, in the organic case, showed a normal, well shaped leaf. In the conventional case, the plant leaf lost energy in gushes and when it did not receive pesticides during two days, rust appeared on the leaves. Plants were badly sick, protected against parasites by strong pesticides.

Lettuce

In young lettuce plants, different sprayings should speed up growth:

1) Pure water

2) weed juice 1:20

3) residues of biodigestor enriched by trace elements 1:20, EM 1:1000 and Skrill (desalinized sea water) at 1.8 percent.

In this case, the only normal magnetic field was that of the residues of biodigestor, probably because the soil was poor in micro nutrients. Even the plants grew faster with weed juice.

Maize

The first test with maize was made with different nitrogen fertilizers:

a) ammonium sulfate

b) FYM compost

c) Bokashi.

It was admitted that organic nitrogen would have no harmful effect on plants. But the magnetic field showed that nitrogen, in whatever form applied, could not warrant plant health without balancing it with copper. In compost and green manure there may be some copper but it does not seem to be enough. Synthetic nitrogen produced the most bizarre magnetic field. On our farm, FYM compost was not enough. Probably because cattle was selected for our soils and grassland, whilst plant hybrids or even varieties from outside are not. FYM cannot contain others nutrients as the cows get from the grassland with their fodder. Plants that received Bokashi had a more compact magnetic field but showed clearly copper deficiency. When copper was added, shape improved but only with EM it could be normalized.

In other experiments with maize: a garden soil was added with:

a) phosphorous: 200 kg/ha super phosphate

b) zinc: 15 kg/ha zinc sulfate.

P showed a slight toxicity and Zn induced a copper deficiency which, even EM, could not correct. The leaves showed a very low level of energy.

In another experiment, maize was planted with:

a) conventionally with NPK (300 kg/ha)

b) with green manure (8 t/ha) and grounded basalt (200 kg/ha)

c) the former treatment plus EM to the leaves (sprayed with a solution 1:1000).

Conventional treatment lets the maize lose energy. The organic-treated maize leaves showed a magnetic field with strong magnetic restriction. When EM was applied, the magnetic field turned normal, indicating a healthy plant.

Field beans

Experiments were made in a well treated organic soil somewhat deficient in boron, With excess of one fertilizer, it was attempted to induce the lack of another. The treatments were:

a) Control
b) Conventional with NPK (800 kg/ha)
c) Phosphorous (500 kg super phosphate/ha)
d) Zinc sulfate (25 kg/ha)
e) Nitrogen excess (800 kg/ha ammonium sulfate)
f) Boron (50kg/ha boric acid)

Field beans protected by defensives showed a strange irregular magnetic field with very little energy, as suggested by the blue color. Surprisingly, P excess showed a slight toxicity which did not happen with zinc excess. Nitrogen induced readily copper deficiency, accompanied by its heavy energy loss, different from K deficiency where energy is lost along the veins as well as molybdenum deficiency where energy is lost on the borders.

The high boron application induced no potassium deficiency and showed no toxicity, probably because the soil was poor in boron but not so poor in potassium. But it induced a slight zinc deficiency (yellow patches) probably, because the soil was poor in this element like all "cerrado" soils.

Agarathum conyzoid (weed)

As *Agarathum* is a common weed but easily attacked by Oidium, an experiment was made:

a) Without organic matter but with EM (to the soil 1:200)
b) 4 t/ha of green manure and EM
c) 8 t/ha of green manure and EM.

Without organic matter, but with EM, *Agarathum* showed nearly only the passive blue energy. It is understood that EM increases the metabolism of plants but if there s nothing to metabolize, plant conditions worsen.

With 4 t/ha of green manure, still 70 percent of the leaf showed the passive energy and only with 8 t/ha of green manure and EM, *Agarathum* had a normal leaf shape and active energy.

Nutritive Solutions

Sunflower

Nutritive solution was considered complete. As sunflower is a plant that requires a high level of boron, the experiment was conducted with omission of B and gradual higher levels.

With low boron level, plants were attacked by Oidium. With rising B levels, it seemed that other nutrients were unbalanced and with a high boron level (20 mg L^{-1}), boron toxicity appeared.

Unfortunately, it must be verified that this nutrient solution was not considered complete by the sunflower or other dicotyledonous plants.

Grass

It could be observed that old leaves lost their energy. *Bracchiaria* with omission of S showed the upper extremity of the leaf blue. This is a very weak energy whilst completely nourished plants showed a normal leaf shape and energy picture.

Rice

It was one of the plants which preferred the nutritive solution. By omitting iron (Fe) and its successive addition, magnetic field changed. With 0.5 mg/L of Fe, leaves are still deficient. With 1.25 mg Fe, leaf had its normal shape and energy, but with an excess of 2.50 mg/Fe/L the leaf showed a strong toxicity probably because of the unbalance of Mn.

Guava

None of the dicotyledonous plants in nutritive solution with omission of one nutrient showed a single deficiency. They were always partially masked by other deficiencies which also appeared. Thus, we never could be very sure if it was really the pattern of the deficiency induced.

In boron deficient leaves, there always appears a strong decrease of active energy (blue instead of red) and also black patches arose, which in human magnetic fields would indicate a very strong stress. But there are also yellow spots typical of zinc deficiency. The only possible conclusion was that the nutritive solution was not what guava needed.

Orange tree

With strong copper deficiency appearing in the magnetic field, the black spots cannot be exactly explained, but probably are because of a fungi infestation.

Mandarim orange tree

Sulphur deficiency is dominant.

Cattle

In cattle also, Kirlian photo can be employed by using the hairs which, as known, may indicate nutrient deficiencies. Here it should be verified if the appearance of bots (*Dermatobia* cyaneiventris) could be recognized in hair tests.

- Cows which never bad bots
- Cows which sometimes had bots but, at this moment, had none
- Cows always badly infested by bots, needing treatment.

Samples of hair a) showed a normal, round, magnetic field, red and blue like in humans; b) some needles appeared in the blue part of the field; c) from cows always infested, a bunch of needles burst out of the white center through he blue space. This shows that even for cattle the magnetic field may reveal something about its health. Probably other problems or diseases can be detected.

Conclusions

- Magnetic field of cut plant leaves is different according to their nutrition and health.
- Nutritive solutions, which are considered complete by specialists, are not always considered perfect by plants. Especially dicotyledonous plants may show different deficiency symptoms even in the complete solution.
- Pesticides do not heal plants or nourish them better. They only kill the parasites and avoid their future settlement. Plants remain sick and badly nourished.
- FYM compost with plant residues on farms with poor soils, are also deficient in minerals. This means that this compost is not sufficient to nourish hybrids and varieties coming from other places.
- EM has a positive effect on plant nutrition and health: (a) in soils not too poor in nutrients and organic matter, (b) when plants are adapted to these soils and (c) when the deficient minerals and EM are applied (Higa, 1996).

Magnetic fields of plant leaves and cattle hair may give good information about health and correct treatment. They permit us to evaluate the technology employed.

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