### THE BIO-DYNAMIC VERSUS THE MINERAL CONCEPT OF AVAILABILITY

# — PHOSPHATES —

PHOSPHATES ARE PRECIPITATED IN MEASURABLE AMOUNTS WITH SNOW AND WINTER RAIN



#### THE SITUATION IN ORGANIC

"LIVING" SOILS:

PHOSPHATE COMPOUNDS ARE DISPERSED IN THE SOIL IN LIVING AND DEAD ORGANIC MATTER, ORGANIC AND INORGANIC ACIDS CAN RENDER THEM

ORGANIC AND INORGANIC ACIDS CAN RENDER (HEM

AVAILABLE, THE MORE DIGESTED ORGANIC MATTER (HUMUS) THAT IS PRESENT

THE GREATER THE AVAILABILITY FROM PARTICLE TO PARTICLE, TO

RESERVE

AND

STORAGE

SOIL SOLUTION, TO ROOT AREA: THERE EXISTS

" A DYNAMIC EQUILIBRIUM "

PHOSPHATES ARE

ALSO CONTAINED

IN MANURES AND

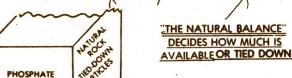
COMPOSTS

BECAUSE OF IT, PHOSPHATE PARTICLES DO NOT MIGRATE-MUCH.

**BUT UNDER UNFAVORABLE CONDITIONS THEY** 

CAN BE PRECIPITATED AND LAY,"IN POSITION",

BUTINERT.



ONLY 2-10% REMAIN AVAILABLE.
THE RESTBECOMES UNAVAILABLE
AND IS TIED DOWN. WITH
CONTINUED UNFAVORABLE
CONDITIONS IT WILL REMAIN TIED
DOWN AND WILL BE EVT. LOST



THE SITUATION IN MINERALIZED "DEAD" SOILS:

THE SOIL BALANCE DECIDES
HOW MUCH WILL REMAIN AVAILABLE
AND NOT THE AMOUNT OF
APPLICATION. THE MORE THAT
HAS BEEN APPLIED. THE BETTER
THE CHANCES OF TYING DOWN
RESULT.

ACID SOILS ALLOW BETTER AVAILABILITY
ALKALINE SOILS FAVOR UNAVAILABILITY

IN EXCESSIVELY PHOSPHATE FERTILIZED SOILS, LARGE DEPOSITS
OF PHOSPHATE HAVE BEEN BUILDING UP, WHICH CAN BE
UTILIZED WITH THE "BIOLOGICAL ACTIVATION" OF THE SOIL

WITH BIOLOGICAL ACTIVATION AND MAINTENANCE OF SOIL BALANCE, NATURAL RESOURCES ARE UTILIZED AND ONLY THE ACTUAL REMOVAL BY WAY OF CROPS, NEEDS TO BE COVERED.

IF THE BIOLOGICAL ACTIVATION IS NOT DONE AND THE SOIL BALANCE IS NOT MAINTAINED, THEN PLANTS CAN ONLY LIVE FROM THE MINERAL COMPOUNDS CONTAINED IN THE SOIL SOLUTION, AND THE MINERAL FERTILIZER THEORY APPLIES.

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## — NITROGEN —

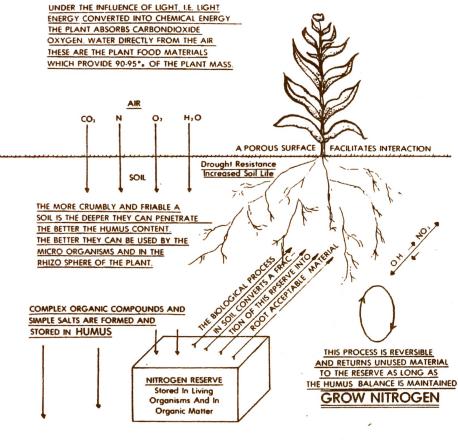
WARMTH

LIGHT

AIR — WATER

THE MATERIALS: OXYGEN, HYDROGEN,

NITROGEN, CARBONDIOXIDE. THE BODY BUILDERS. WATER IS THE MEDIATOR



THE ENERGIES PLUS "LIFE"

AT 2% ORGANIC MATTER - THE ORGANIC NITROGEN RESERVE CAN BE 2000 LBS/ACRE AT 3% ORGANIC MATTER — THE ORGANIC NITROGEN RESERVE CAN BE 3000 LBS/ACRE AT 4% ORGANIC MATTER - THE ORGANIC NITROGEN RESERVE CAN BE 4000 LBS/ACRE BUT IN BIODYNAMIC SOILS WE HAVE OFTEN FOUND TWO AND THREE TIMES AS MUCH. THIS IS POSSIBLE BECAUSE OF THE ACTIVATION OF THE LIVING PROCESS.

> BASIC IDEA: FEED THE SOIL - LIFE AND SOIL WILL FEED THE PLANT.

EXCESS NO. IN PLANT TISSUE NITROGEN IN THE AIR IS INERT AND HAS TO PASS TOXIC TO ANIMALS. SOMETIMES THROUGH THE SOIL AND NITROGEN. FIXING ORGANISMS MORE PROTEIN (%), BUT LESS IN THE SOIL TO BE ACTIVATED AND CONVERTED **NUTRITIOUS VALUE BECAUSE** INTO ACCEPTABLE MATERIAL OF UNFAVORABLE AMINO ACID OR: TREMENDOUS ELECTRICAL ENERGIES ARE EMPLOYED TO CONVERT NITROGEN INTO USEFUL FORMS. THESE ENERGIES EXIST IN LIGHTNING OR ARTIFICIALLY IN FACTORIES, **SCATTERED** AND/OR LOSSES INTO EXCESS FORCED UNTREATED ABSORPTION CAUSES MANURE NO<sub>1</sub> LUSH GREEN NH<sub>3</sub> CAKED CRUSTED MINERAL SOILS: BUT MORE WATER NO: Drought and Aeration IN TISSUE Ammonia WASHED OUT. **DECREASED SOIL Ammonium Sulfate** PARTIAL LOSS OF **Ammonium Nitrates** AMMONIA AND **QUICK RELEASE INCREASES ACID AMMONIUM SALTS** NO LASTING EFFECT REACTION OF SOIL EACH YEAR YOU NEED MORE COMPACTION AND UNFAVORABLE REACTIONS IN MINERALIZED SOIL CAUSE HORIZONS AND HARDPAN, MUCH OF THE EXCESS FERTILIZER CAN BE FOUND HERE - INACCESSIBLE TO ROOTS **EXCESS NOT UTILIZED AND** CONTAMINATION OF GROUNDWATER WITH NH, FROM MANURE SLUDGE LOST OR NO. FROM EXCESS IN DEEP **BUY NITROGEN** WELL WATER

> THESE UNFAVORABLE CONDITIONS PREVAIL BELOW 1.5% ORGANIC MATTER IN MINERALIZED SOILS

> > VIRGIN SOIL: TODAY'S SOIL

4 To 6% Organic Matter U.S. Average 1.5%

BASIC IDEA: FEED THE PLANT DIRECTLY AND USE THE SOIL AS A VEHICLE ONLY TO CARRY NUTRIENT SOLUTION,

#### THE BIO-DYNAMIC

**VERSUS** 

### THE MINERAL CONCEPT OF AVAILABILITY

## —POT ASH—

LIGHT

WARMTH

**AIR** 

WATER

MAKE THE PLANTS GROW THIS IS A LIVING PROCESS THE EXCESS CONSUMPTION OF WATER **SOLUBLE POTASH PRODUCES TOXIC EFFECTS IN ANIMALS FEEDING ON** SUCH PLANTS, MILK FROM COWS THUS FED DOES NOT MAKE CHEESE! **SUCH PLANTS CONTAIN 4-6 TIMES** THE NORMAL AMOUNT OF POTASH.

FLESHY, DARK GREEN LEAVES WITH A METALLIC LUSTRE INDICATE THE POTASH EXCESS.

THE EASILY SOLUBLE NUTRIENTS ARE FORCED Part Of The Excess Potash Enters The Roots And Causes Physiological

Disturbance Of The Plant Metabolism

INTO THE PLANT DISTURBING ITS BALANCE

IN A MINERALIZED SOIL, DEFICIENT IN HUMUS AND SOIL LIFE, THERE IS ONLY THE ALTERNATIVE BETWEEN WATER SOLUTE

Potash From Fertilizer THE DOWNWARD MOVEMENT IS RARELY EVER REVERSIBLE, THEREFORE, MORE AND

LEACHING AND/OR INACTIVATION. NO NATURAL BALANCE EXISTS.

MORE FERTILIZER IS

SOIL WITH LESS

THAN 2% O.M.

NEEDED.

**EXCESS WATER SOLUBLE** POTASH IS WASHED OUT. LEACHES AWAY AND IS

WATER SOLUBLE

IN EXCESS

UNAVAILABLE POTASH IS LOCKED UP. FERTILIZER IS TIED DOWN. NATURAL ROCK SOURCES REMAIN UNAVAIL

EVEN RAW MANURE INCREASES LEACHING THE ONLY PROTECTION: TO BUILD UP SOIL WITH COMPOSTED, B.D. ACTIVATED ORGANIC MATTER.

THE ABSORBTION OF NUTRIENTS FROM THE SOIL IS AN ACTIVE SELECTIVE PROCESS MOISTURE, WARMTH, AERATION, FOOD FOR SOIL LIFE CONTROL SOIL WITH BETTER THE BALANCE THAN 2% O.M. WATER SOLUBLE POTASH Immediately Absorbed By Feeder Roots THE ACTIVATION OF POTASH IS MADE POSSIBLE BECAUSE OF SOIL LIFE, HUMUS, ORGANIC ACIDS FROM MICRO ORGANISMS AND ROOT Avail. 200-400 **EXCRETIONS.** 

> MADE AVAILABLE BY ION EXCHANGE IN PRESENCE OF HUMUS - Or -

SOIL STORAGE RESERVE UP TO 40-50,000 ba/ocre

Reserve:

Potosh,

Tissues

Minerals Rock

And Organic

TIED DOWN, UNAVAILABLE, WHEN HUMUS AND SOIL LIFE IS ABSENT. RESULTS: INACTIVATION

LIVING HUMUS or DEAD ORGANIC MATTER DECIDE THE ISSUE

A NATURAL DYNAMIC BALANCE IS ESTABLISHED - MOVING UPWARDS OR DOWNWARDS - ACCORDING TO **CONDITIONS. POTASH IS ALWAYS** "READY" IN A STAND-BY POSITION

NO WASTE - NO EXCESS