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 AVAILABLE. THE MORE DIGESTED ORGANIC MATTER (HUMUS) THAT IS PRESENT, THE GREATER THE AVAILABILITY FROM PARTICLE TO PARTICLE TO SOIL SOLUTION, TO ROOT AREA. THERE EXISTS "A DYNAMIC EQUILIBRIUM" BECAUSE OF IT PHOSPHATE PARTICLES DO NOT MIGRATE MUCH, BUT UNDER UNFAVORABLE CONDITIONS THEY CAN BE PRECIPITATED AND LAY, 'IN POSITION', BUT INERT.

THE NATURAL BALANCE DECIDES HOW MUCH IS AVAILABLE OR TIED DOWN

PHOSPHATES ARE ALSO CONTAINED IN MANURES AND COMPOSITS

ACID SOILS ALLOW BETTER AVAILABILITY
ALKALINE SOILS FAVOR UNAVAILABILITY

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 TYPING DOWN RESULT.

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

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, THENPLANTS CAN ONLY LIVE FROM THE MINERAL COMPOUNDS CONTAINED IN THE SOIL SOLUTION, AND THE MINERAL FERTILIZER THEORY APPLIES.

E.E. PFEIFFER - 1961
THE BIO-DYNAMIC VERSUS THE MINERAL CONCEPT OF AVAILABILITY

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NITROGEN

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WARMTH

THE ENERGIES PLUS "LIFE"

UNDER THE INFLUENCE OF LIGHT, I.E. LIGHT ENERGY CONVERTED INTO CHEMICAL ENERGY, THE PLANT ABSORBS CARBON DIOXIDE OXYGEN WATER DIRECTLY FROM THE AIR. THESE ARE THE PLANT FOOD MATERIALS WHICH PROVIDE 90.95% OF THE PLANT MASS.

AIR

CO₂ N O₂ H₂O

SOL

A POROUS SURFACE FACILITATES INTERACTION

Drought Resistance Increased Soil Life


COMPLEX ORGANIC COMPOUNDS AND SIMPLE SALTS ARE FORMED AND STORED IN HUMUS

NITROGEN RESERVE

STORED IN LIVING ORGANISMS AND IN ORGANIC MATTER

THE BIOCHEMICAL PROCESS TAKES PLACE IN A SLOW, CONTROLLABLE ORGANIC MATTER.

THIS PROCESS IS REVERSIBLE AND RETURNS UNUSED MATERIAL TO THE RESERVE AS LONG AS THE HUMUS BALANCE IS MAINTAINED.

GROW NITROGEN

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 BIO-DYNAMIC 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.

LIGHT

THE MATERIALS:

OXYGEN, HYDROGEN,

NITROGEN, CARBON DIOXIDE

THE BODY BUILDERS. WATER IS THE MEDIATOR

EXCESS NO₃ IN PLANT TISSUE TOXIC TO ANIMALS. SOMETIMES MORE PROTEIN (%), BUT LESS NUTRITIOUS VALUE BECAUSE OF UNFAVORABLE AMINO ACID BALANCE.

EXCESS FORCED ABSORPTION CAUSES LUSH GREEN

NOISE IN THE AIR IS INERT AND HAS TO PASS THROUGH THE SOIL AND NITROGEN FIXING ORGANISMS IN THE SOIL TO BE ACTIVATED AND CONVERTED INTO ACCEPTABLE MATERIAL.

OR, TREMENDOUS ELECTRICAL ENERGIES ARE EMPLOYED TO CONVERT NITROGEN INTO USEFUL FORMS. THESE ENERGIES EXIST IN LIGHTNING OR ARTIFICIALLY IN FACTORIES.

EXCESS FORCED ABSORPTION CAUSES LUSH GREEN

INERT

NO3 CACKED CRUSTED

MINERAL SOILS

Losses into Air

But More Water in Tissue

DECREASED SOIL LIFE

N

WASHED OUT, PARTIAL LOSS OF AMMONIA AND AMMONIUM SALTS

Nitrogen in the air is inert and has to pass through the soil and nitrogen fixing organisms in the soil to be activated and converted into acceptable material. Or, tremendous electrical energies are employed to convert nitrogen into useful forms. These energies exist in lightning or artificially in factories.

EXCESS FORCED ABSORPTION CAUSES LUSH GREEN

INERT

NO₃ CACKED CRUSTED

MINERAL SOILS

Losses into Air

But More Water in Tissue

DECREASED SOIL LIFE

N

NITROGEN IN THE AIR IS INERT AND HAS TO PASS THROUGH THE SOIL AND NITROGEN FIXING ORGANISMS IN THE SOIL TO BE ACTIVATED AND CONVERTED INTO ACCEPTABLE MATERIAL.

KIND PROJECTS TAKING PLACE IN A SLOW, CONTROLLABLE ORGANIC MATTER.

THIS PROCESS IS REVERSIBLE AND RETURNS UNUSED MATERIAL TO THE RESERVE AS LONG AS THE HUMUS BALANCE IS MAINTAINED.

GROW NITROGEN

EXCESS NOT UTILIZED AND LOST

CONTAMINATION OF GROUNDWATER WITH NH₃ FROM MANURE, SLUDGE, OR NO₃ FROM EXCESS IN DEEP WELL WATER

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

E.E. PFEIFFER - 1961
THE BIO-DYNAMIC VERSUS THE MINERAL CONCEPT OF AVAILABILITY

--- POT ASH ---

MAKE THE PLANTS GROW
THIS IS A LIVING PROCESS

LIGHT

WARMTH

AIR

WATER

THE ABSORPTION OF NUTRIENTS FROM THE SOIL IS AN ACTIVE SELECTIVE PROCESS

MOISTURE, WARMTH

ALERTION, FOOD FOR SOIL LIFE CONTROL

THE ABSOLUTE

WATER SOLUBLE POTTASHE

IMMEDIATELY ABSORBED BY FEEDER ROOTS

Part Of The Excess Pottash
Enters The Roots And Causes Physiological Disturbance Of The Plant Metabolism

THE EASILY SOLUBLE NUTRIENTS ARE FORCED INTO THE PLANT DISTURBING ITS BALANCE

SOIL WITH LESS THAN 2% O.M.

THE ACTIVATION OF POTTASHE IS MADE POSSIBLE BECAUSE OF SOIL LIFE, HUMUS, ORGANIC ACIDS FROM MICRO ORGANISMS AND ROOT EXCRETIONS.

MAKE AVAILABLE BY ION EXCHANGE IN PRESENCE OF HUMUS

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. POTTASHE IS ALWAYS "READY" IN A STAND-BY POSITION.

NO WASTE — NO EXCESS

THE EXCESS CONSUMPTION OF WATER SOLUBLE POTTASHE 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 POTTASHE.

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

IN A MINERALIZED SOIL, DEFICIENT IN HUMUS AND SOIL LIFE, THERE IS ONLY THE ALTERNATIVE BETWEEN WATER SOLUBLE LEACHING AND/OR INACTIVATION. NO NATURAL BALANCE EXISTS.

THE DOWNWARD MOVEMENT IS RARELY EVER REVERSIBLE. THEREFORE, MORE AND MORE FERTILIZER IS NEEDED.

EXCESS WATER SOLUBLE POTTASHE IS WASHED OUT, LEACHES AWAY AND IS LOST

EVEN RAW MANURE INCREASES LEACHING.

THE ONLY PROTECTION: TO BUILD UP SOIL WITH COMPOSTED, B.D. ACTIVATED ORGANIC MATTER.

SOIL STORAGE & RESERVE UP TO 40-50,000 Lbs/acre

RESERVE: Pottashe, Mineral Rock And Organic Tissues

AVOID POTTASHE FROM FERTILIZER

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

E.L. PFIEFFER — 1961