



Humate-based VITA-Technologies of soil remediation, water purification and yield increase

Using Carbonovit[®] (CEC=4500) to optimize Desert into Fertile Land



Dr. Vladimir Vasilenko (Dr.Humate)



“Vita” (Life) Technologies

- Our mission is to turn a desert to an oasis by employing the most efficient and proven way!





Benefits of Vita-Technology

1. **Ecological sound, scientifically proven technology utilizing humates and their cost effective derivatives, lignin, cellulose and mineral nutritional elements**
2. **Adaptable - can operate from polluted and salted water**
3. **Fast acting, reliable, and extremely cost effective**
4. **Absolutely organic and safe (Free from dangerous chemicals or synthetic products)**
5. **Versatility – operatable under any condition**

U-MATE INTERNATIONAL, INC

- **Our Customer** – Our goal is to form long term mutually beneficial relationships with our customers.
- **Our Business** – Our agriculture and remediation unit can offer innovative technologies with continuous research and development in the search for the optimal solution to a cleaner world.
- **Our People** – With a dedicated research and development arm it is assured that the solutions we offer are cutting edge and well suited in today’s evolving market.
- **Our Practice** – At U-MATE INTERNATIONAL, INC we believe that protecting our people, the community, and the environment is of vital importance. Our people and culture are attributed to our core values of “**Safety, Responsibility, Integrity and Transparency**”. That is more than our pledge it is “*Our Promise*” to you.





Vladimir Vasilenko (Dr.Humate)



*“For years biological scientist Vladimir Vasilenko has been working on an intriguing proposition that could save lives in the world's polluted inner cities.” —
By Olivia Ward , “TORONTO STAR”*

- Dr. Vasilenko is head of Research and Development at U-MATE
- Dr. Vasilenko is the world’s authority in sustainable development organic agriculture and humic substances.
- He has multiple patents and created several technologies for the agricultural and food industries through his 27 years of research and development.
- Dr. Vladimir Vasilenko is the creator of formulas of patented agricultural products distributed by retail giants in USA (Wal-Mart / Kmart) and Canada (Home Depot).

First World Conference on the Organic Seed

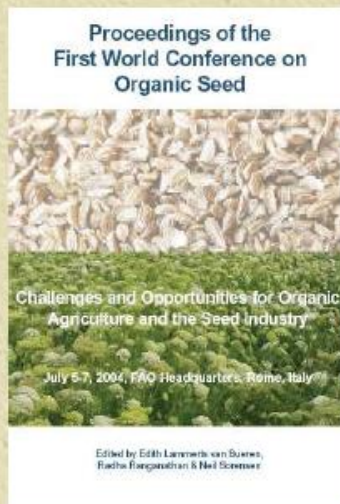
(July 5-7, 2004, FAO of the United Nations, Headquarters in Rome, ITALY)

Dr. Vladimir Vasilenko- The presentation of organic seed enhancement technology:

The Proceedings, P.168



Food and Agriculture Organization of the United Nations- FAO





Environmental Revolution

- **Restructuring the global economy according to the principles of ecology represents the greatest investment opportunity in history.**
- **In scale, the Environmental Revolution is comparable to the Agricultural and Industrial Revolutions that preceded it.**
- **The “Carbonovit” Global Initiative of Dr. Vladimir Vasilenko provides one of the major “driving force” for this Environmental Revolution!**



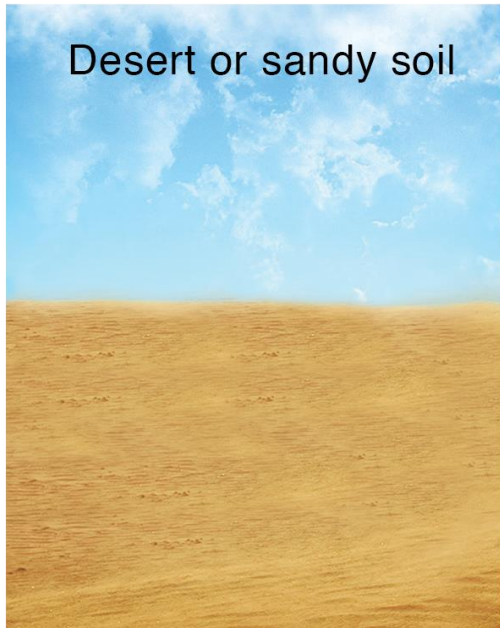
Vita Carbon Technology

- There are many techniques currently available for making a man made oasis in a desert.
- Only VITA-CARBON Technology offers the **best and most efficient** way of transformation of deserts to fertile land.
- Employs humic substances (humates) and organic materials providing an integral approach to sustainable development

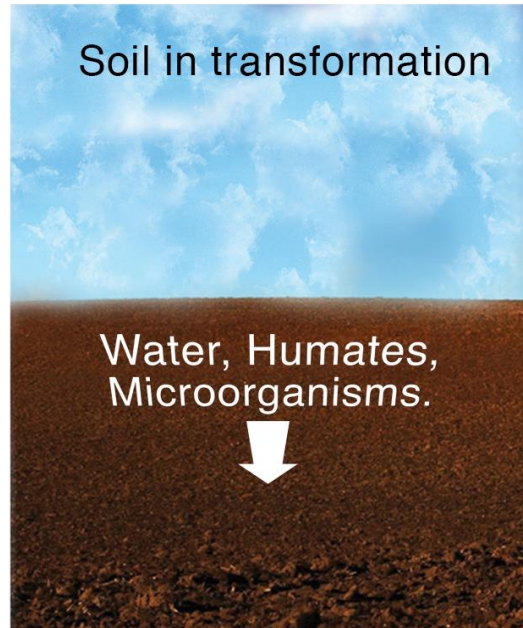


Three Stages of Vita- Technologies

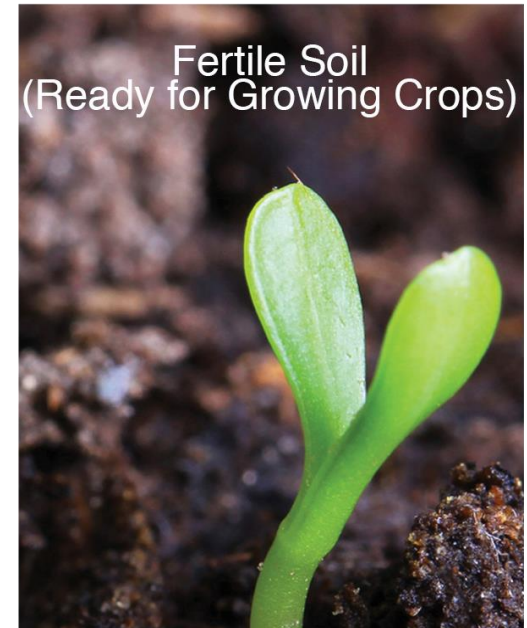
Step one



Step Two



Step Three



+ VITA-Carbon products added



Processing, Fermenting, Ripening.



Step One: Transformation

- Transformation of sand into fertile soil
- Addition of Humates, Carbonovit[®], Humate-Coated Fertilizers, lignin and Vita Carbon products





Humates and the Environment

- Humic substances (humic and fulvic acids and their salts) exist in all environments including soils, groundwater, streams, rivers, estuaries, and oceans.
- They are reactive and are important participants in many geo-chemical reactions and processes.
- The R&D development at GROW takes Humates to the next generation with Carbonovit[®]

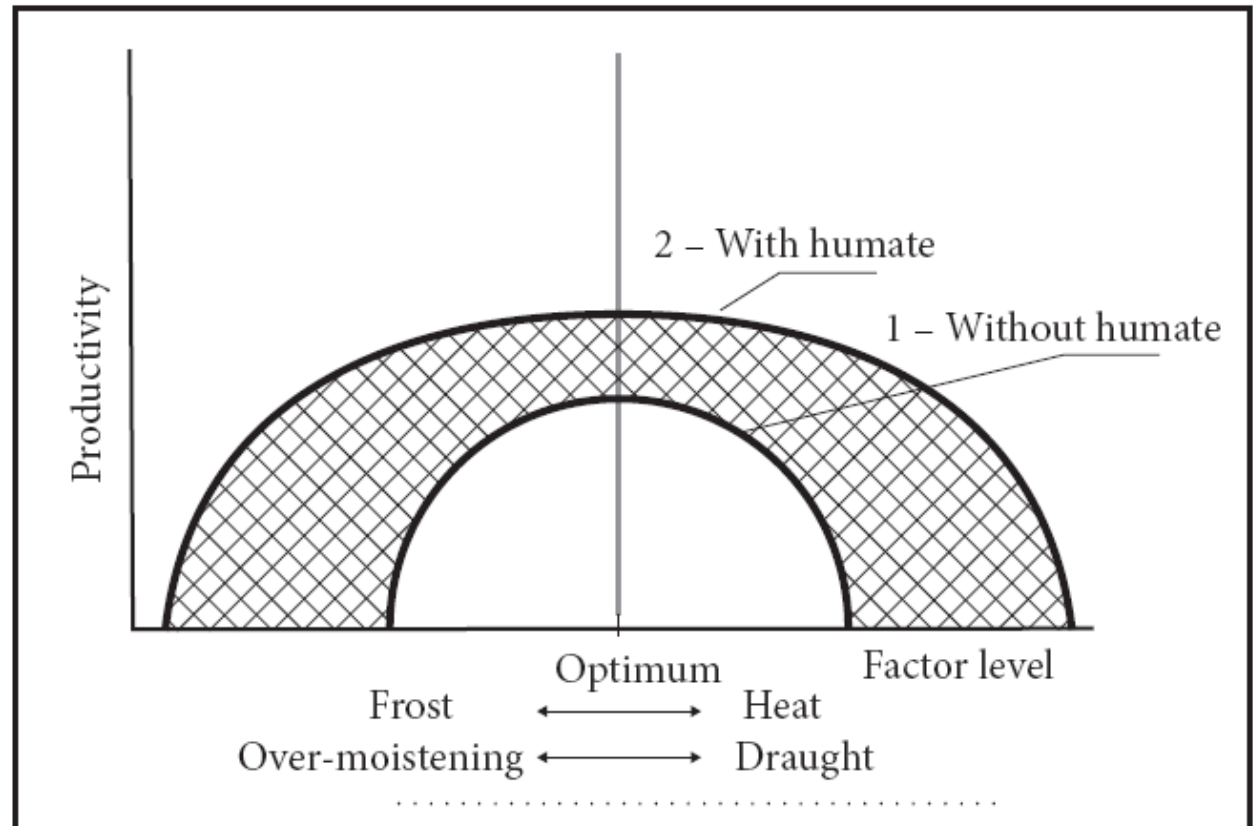




Plant Resistance

- Humate Influence on Plant Resistance to factors and stresses.

The influence of humic substances on productivity depends on the level of impact of stresses
(V.Bogoslovskiy, B.Levinskiy, 2006)



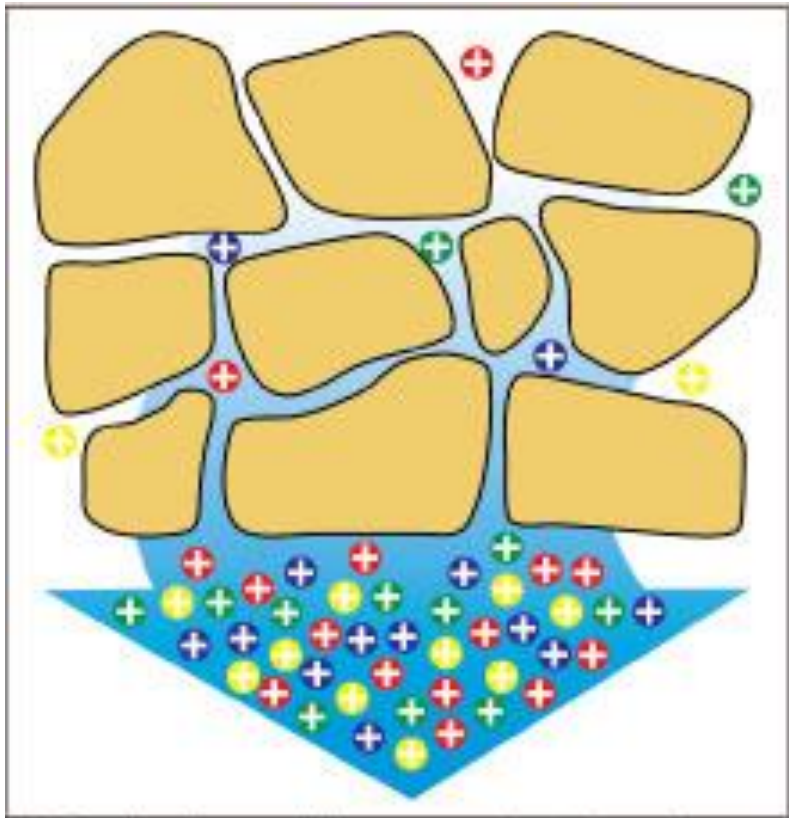
Cation Exchange Capacity (CEC)

- The nutrient storage capacity of a soil is measured as Cation Exchange Capacity (CEC) on a soil test.
- CEC is the maximum quantity of total cations that a soil is capable of holding and available for exchange with the soil solution.
- CEC is used as a quantifiable measure of fertility, nutrient retention capacity and the capacity to protect groundwater from contamination.
- Light sandy soil has CER of 5 cmol+/kg. (High risk of nutrient loss through leaching).
 - Humic acid CEC of 450 cmol+/kg
 - Fulvic acid CEC of 1000 cmol+/kg (optimal soil)
- Additional R&D at GROW to increase CEC to the next level!

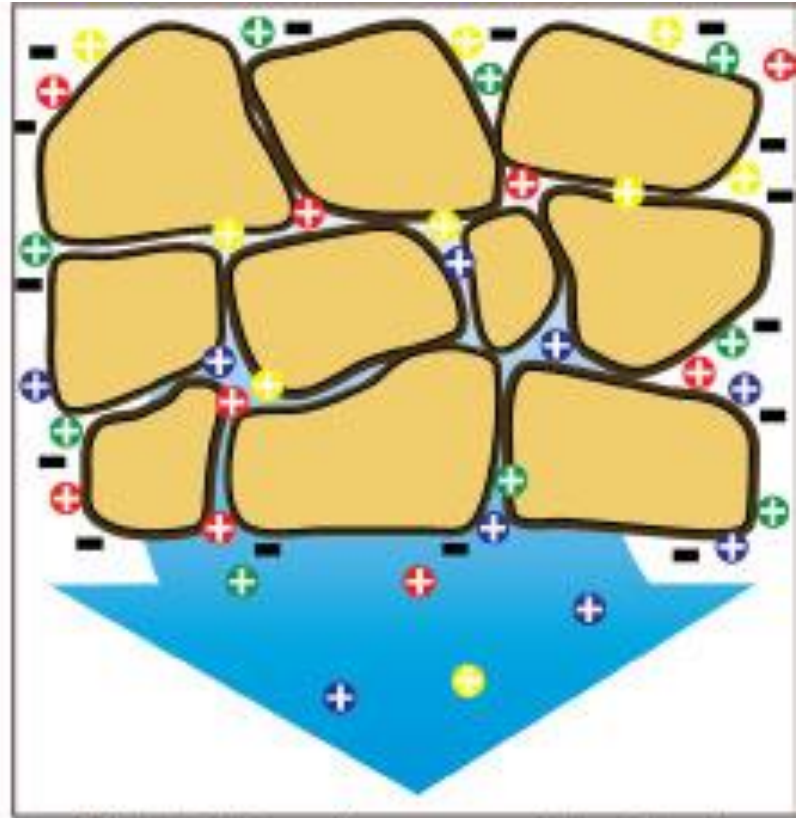




CEC and Humates Effect on Soil



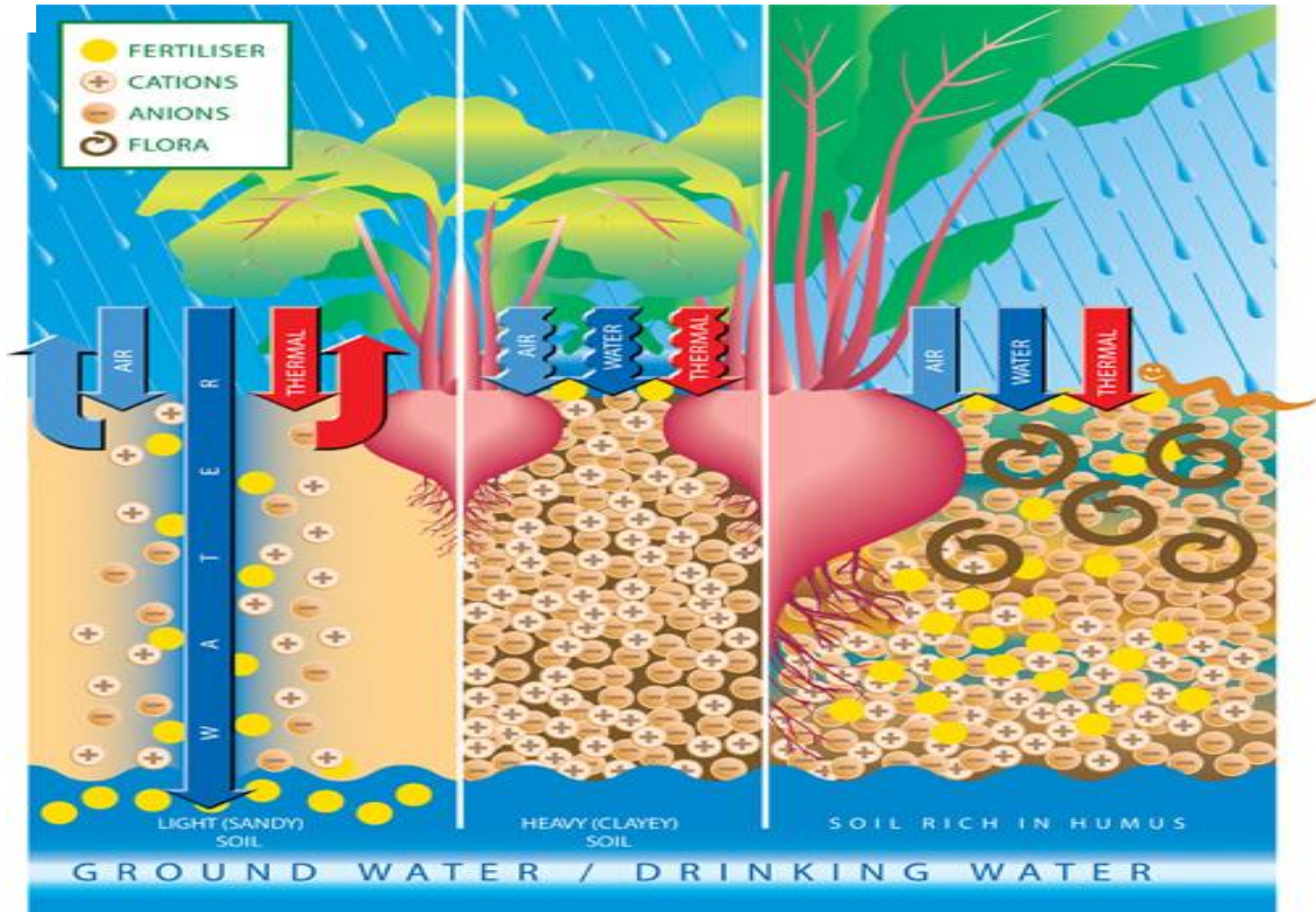
Sandy soils poor in humus can't retain nutrients.



Effect of cation exchange capacity to soils with the addition of humic acid.



Humic Acid Effect on Soil





Carbonovit[®]

- Developed by the R&D at GROW. Can ensure the highest possible CEC of soils.

- **Carbonovit[®] CEC of 4500**

- Unique among organic products for agricultural usage
- Carbonovit[®] utilizes Biochar[®] which is high in organic carbon and is largely resistant to decomposition
- Biochar[®] is formed by relatively low temperature pyrolysis < 500° C.
- This achieves maximum surface area yet retains biological oils.

Benefits of Carbonovit[®]

- Carbonovit[®] is the Universal Soil Amendment that can help to grow plant with 50% reduced fertilization.
- Carbonovit[®] provides all the essentials of what the soil needs, making it healthier and introducing trace minerals needed for good plant nutrition.

Benefits include:

- (1) Stimulates flowering (increases number of buds) and the root system;
- (2) Improves yields, fruit set and fruit quality;
- (3) Increases natural resistance to insect and fungal attack;
- (4) Improves tolerance to heat, drought and frost conditions;
- (5) Optimises balanced plant nutrition with a full range of trace elements and minerals



Field Trails of Carbonovit[®]

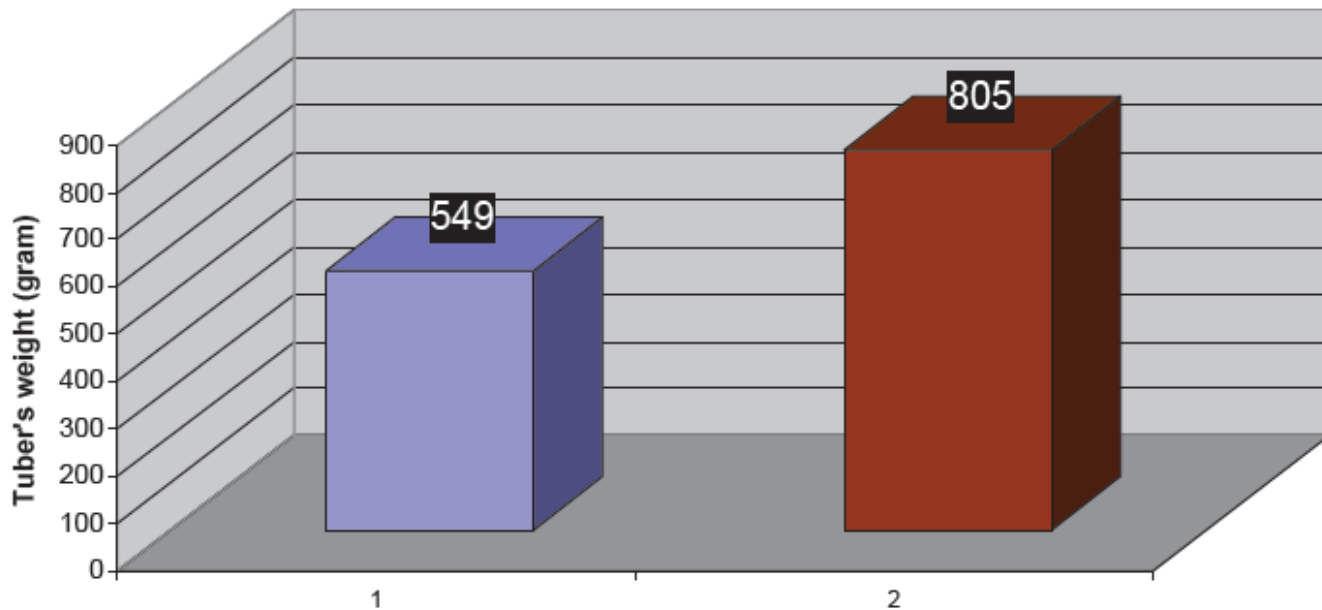
- Field trials using Biochar[®] have been conducted on potatoes in 2013.
- The Carbonovit[®] included charcoal and a source of humic acid ([derived from the R&D at U-MATE](#)).
- The application of Carbonovit[®] resulted in increase the yield of *Russet Burbank potato grown of 147%*
- The application of Carbonovit[®] increased both number of tubers per plant and average weight (biomass) of each tuber.



Field Trails of Carbonovit[®]

- Carbonovit[®] increased the yield by 147%

Average total weight of potato tubers per a plant



Carbonovit[®] Trial Use in America

- Growing watermelon in dry condition in Nevada (USA) with 4 weeks of drought, severe heat and no irrigation.

No Carbonovit[®] - plants are dead or weak



With Carbonovit[®] - plants are alive and healthy!

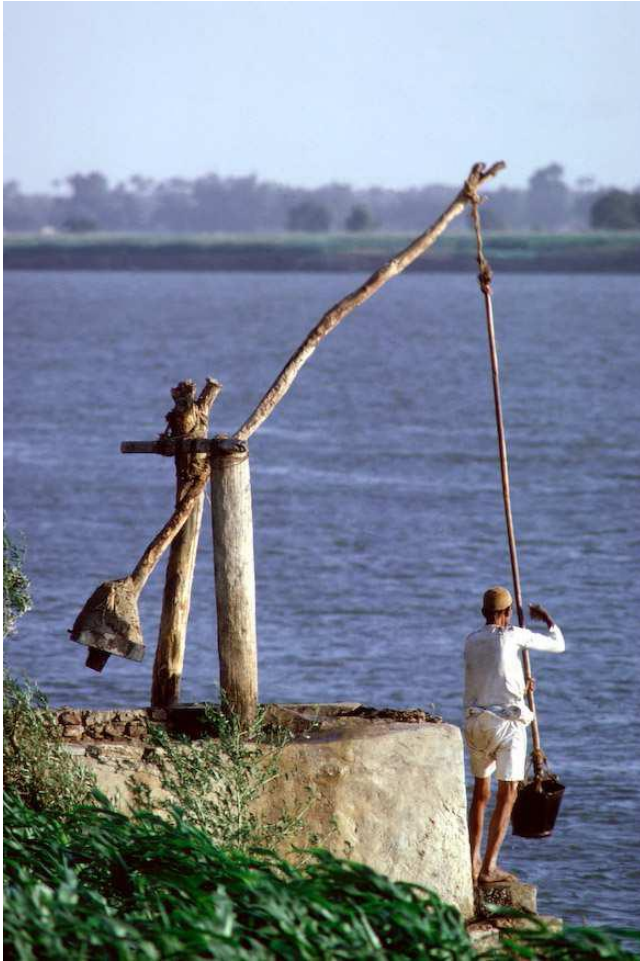




How Carbonovit[®] Works?

- Acts like a sponge to soak up water, hold and slowly release it to soil at the optimal time.
- Vital in drought prone areas and/or soils of low organic matter.
- Acts as a storehouse absorbing nutrient ions for exchange to soil biology.
- Provides habitat and refuge for soil microbes by stimulating the phosphate solubilising bacteria.
- Provides additional phosphorus to plants

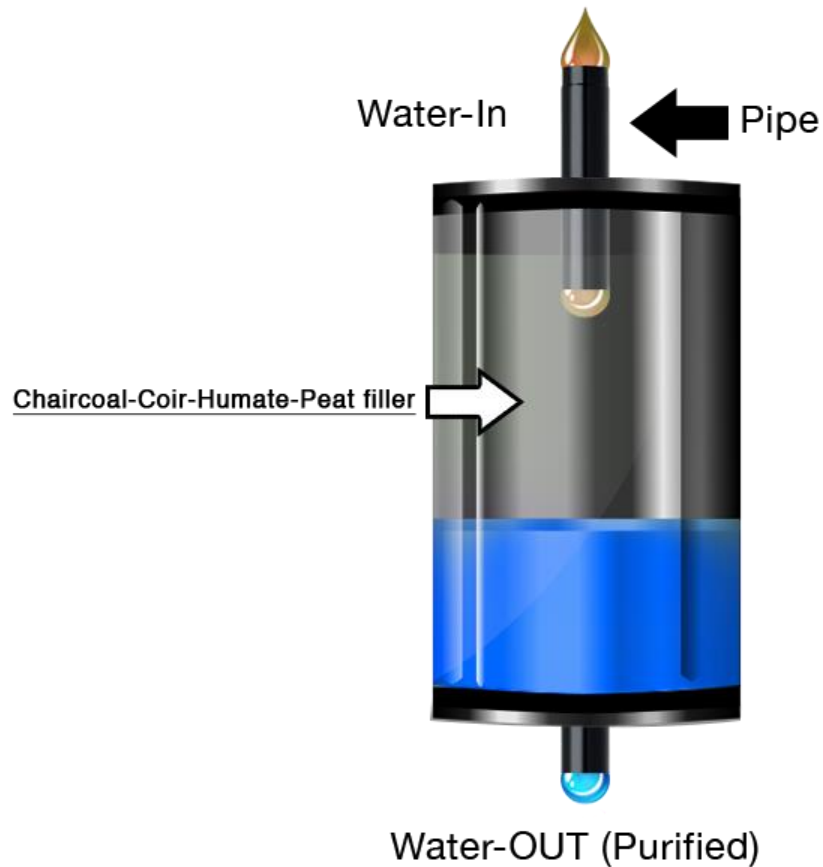
Vita Technology – Water Purification



- Water helps to turn sand to fertile soil.
- Soil makes water fresh and healthy for consumption and growth.



Energy Saving Water Solution



Optimization of Water

Vitabeam Technology to reduce waste of water



**1 Developing world
Water purification**
Meeting World Health
Organisation (WHO)
standards



**2 Produce
Fruits/Vegetables:**
- prolonge life
- kill contaminants



**3 Developed world
Water purification**
- Upgrade grey water
legionella protection
- Simplify water
management

VITABEAM technology
Use of sunlight, UV and
Near Infrared light

1

2

3

**Reduce Waste
at
lower cost
and
low or no
greenhouse
gas emissions**





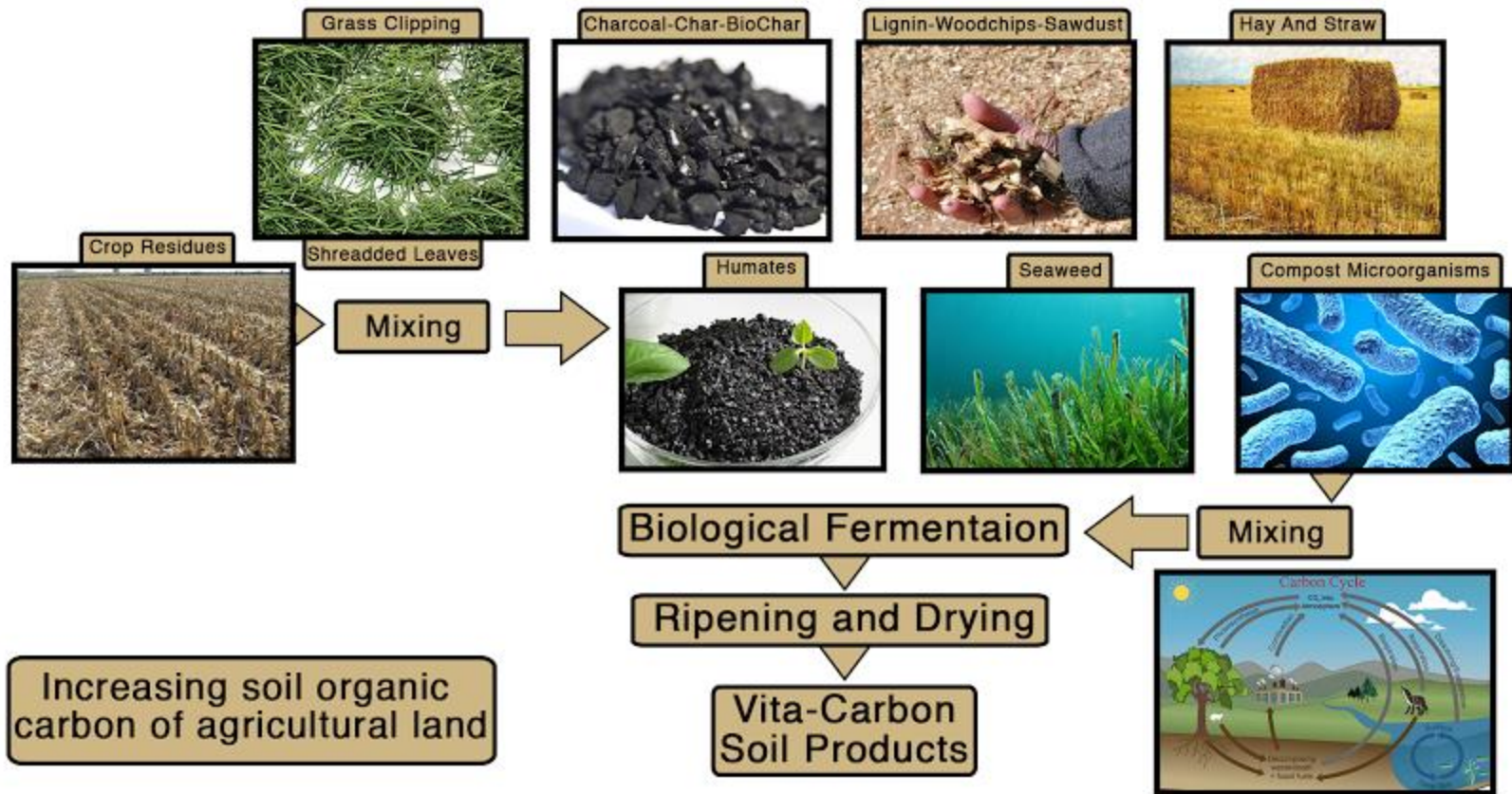
Humates Vs. Carbonovit[®]

- Research at GROW takes Humate utilization to a next evolution.
- Addition of Humates can hold up to 10 x more water than soil.
- Carbonovit[®] can hold 10 x more water than Humates.
- **Result is a 100 x higher water retention!**



- Created from common and widely available ingredients with the formulation developed by Dr. V. Vasilenko

“Building Blocks” of Vita-Carbon Soil Products



Desert Soil and Carbonovit[®]

- Carbonovit[®] will maximize the water holding capacity of the desert soil.
- CEC of desert soil 1 - 2 cmol+/kg

**CEC of desert soil + Carbonovit[®]
4500 cmol+/kg**

Our Solution

- At U-MATE we are developing various forms of Carbonovit which can be produced quickly “on the field” .
- **The result, a desert can be turned into fertile land!**



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