

# Remineralize the Earth

... better soil, better food, and a better planet.

III Congresso Brasileiro de Rochagem, November 8 - 11, 2016, Pelotas/Rio Grande do Sul, Brazil

## Remineralization is a Paradigm Shift: From Scarcity to Abundance

## A Blueprint for a New Earth

Remineralization utilizes finely ground rock dust and seabased minerals to restore soils and forests, produce higher yields and more nutritious food, and store carbon in soils to stabilize the climate.



## Remineralization is a Paradigm Shift: From Scarcity to Abundance Impacting Health and Healthcare



#### **Nutrient Density**

On average, you would need to eat 5 apples a day to equal the same nutrition as 1 apple in 1965.

*Now imagine* producing as much as 2-4 times the increased yields for agriculture **while at the same time** enhancing the nutrient quality of the food we eat.

**Source:** Changes in USDA Food Composition Data for 43 Garden Crops, 1950 to 1999 Donald R. Davis, PhD, FACN, Melvin D. Epp, PhD and Hugh D. Riordan, MD

## Remineralization is a Paradigm Shift: From Scarcity to Abundance



Glacial rock dust produced **65 bushels** of corn per acre, compared to **25 bushels** per acre from other local farms – with no irrigation.



Increases in nutrients compared with the same type of corn grown with chemical fertilizers nearby.

**Source:** John D. Hamaker, co-author with Don Weaver, *The Survival of Civilization* Michigan, 1976-1977

We facilitate a worldwide movement that brings together gardeners and farmers, scientists and policymakers and the public to create better soils, better food and a better planet.



## Local Projects: Educational Models, Community Projects, and Research



#### **RTE's Online Social Community**

#### **University of Massachusetts**

#### **New Harmony Farm CSA**



http://remineralize.ning.com/groups

Professor Stephen Herbert, with Brix Meter indicating nutrient density. Dr. Thomas Goreau, weighing the harvest to get the yield.

**International Projects** 



**CUSAN - Cuba Delegation** 



Monserrat's Volcanic Ash in Barbuda



Heifer International - Sahel region, Senegal



Bahia Research Project -- UnB, dryGrow Foundation, RTE

## **Using Local Sources of Rock Dust in Cuba**



Basalts, Granites, Sedimentary rocks are locally available. A small portable rock crusher is currently being developed that is ideal for community stakeholder projects.



Small portable biodiesel rock grinder ideal for community stakeholder projects

## We Need to Remineralize on a Larger Scale

Remineralization of the world's soils and forests will dramatically increase carbon sequestration and is crucial to stabilizing the climate.

## We Need to Remineralize on a Larger Scale

Create Food Security in the Tropics Remineralize Deltas – De-acidify the Oceans

> The University of Copenhagen in Denmark has embarked on a 3-year project in Greenland to study glacial mud use for remineralizing depleted soils and creating food security in the tropical regions.

**Greenland glacial mud** 

## **A Need for Convergence**



Grassroots Movement

# Remineralize Othe Earth

**Commercial Activity** 

International Projects
Research Projects
Research Database
Advocate for Agroforestry Model
Portable Rock Crushers



## Our research database online is dedicated solely to remineralization.



**Figure 5.** Calcium content of soils in this study as a log-log function of nearest distance to the coast in the sudden oak death-affected regions of California. Best-fit line of the data is a power law function (see equation). R is the regression coefficient; probability (p)  $\leq$  .001 (\*\*\*).

Table 1. Summary	statistics of th	e chemical	constituents in	soil samples	from sites of un
healthy trees in Ca	lifornia.				

Variable	Mean	Median	Std Dev	Units	Ν
Al	24.3	5.3	41.7	(ppm)	70
В	0.6	0.4	0.4	(ppm)	119
Ca	1389.0	1201.5	758.7	(ppm)	136
CEC	14.4	12.4	6.6	(meq/100g)	120
Cu	1.6	1.2	1.7	(ppm)	123
Fe	75.4	68.5	78.6	(ppm)	123
K	207.1	180.6	125.0	(ppm)	124
Mg	451.9	363.6	321.9	(ppm)	124
Mn	14.8	11.5	12.9	(ppm)	123
Na	56.3	34.7	86.3	(ppm)	124
NO <sub>3</sub> -N	11.0	5.7	21.2	(ppm)	120
Org. Matter	4.8	4.2	3.4	(%)	120
Р	28.4	13.5	34.0	(ppm)	132
pH	5.8	5.7	0.6		136
SO,-S	21.6	7.0	66.8	(ppm)	117
Sol. Salts	0.6	0.4	0.9	(mmhos/cm)	117
Zn	6.5	2.7	9.4	(ppm)	123

Byrophites and soil acidification effects on trees: the case on sudden oak death. Lee F. Klinger

#### Saving dying oaks using rock dust



## Learning More – Keeping In Touch

## **Geotherapy Book**



#### **Geotherapy Blog**

Explore RTE's Geotherapy Book and Blog Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO2 Increase is a guide to policy-making and practical steps to restore severely damaged ecosystems.

It contains new research studies with comprehensive data showing the benefits of rock dust and biochar.



Soil: The Foundation of Mineral Nutrition and Optimal Health



Restoring CO2 to Safe Levels to Avoid Severe Climate Change Impacts



Review of Geotherapy Preface: Profiles of Richard Grantham



**United Nations** Framework Convention on Climate Change

## **Partners Moving Forward**

#### Research

Agrogeologists Agronomists; Soil Scientists University Agricultural Researchers United States Geologic Survey Dept. of Interior

#### **Industry and**

#### Technology

Mining and Aggregates Soil and Ag Amendments Manufacturers and Distributors Biofuels and Biochar Manufacturers Biofuels technology developers Transport and Logistics Finance

#### **Policy**

International Development Agencies United States Department of State (USAID) United Nations



## **World Recognition for Remineralization** Major Art Installation

#### Glacial Rock Flour Garden, Palace of Versaille Olafur Eliasson. 2016

Photo courtesy: Anders Sune Berg. neugerriemschneider, Berlin; Tanya Bonakdar Gallery, New York © 2016 Olafur Eliasson.

# Thank you!







#### **CONTACT US**

#### **Remineralize the Earth**

Joanna Campe Founder and Executive Director jcampe@remineralize.org

V. Miranda Chase Director–Research Database Vmiranda.chase@gmail.com

www.remineralize.org







