



Water productivity in Africa

Improving crops, seeds and soils

Partners with Nature

Together with growers and in partnership with nature, we work to make agriculture and horticulture healthier, safer, more productive and resilient



Ed Moerman Koppert Biological Systems



Why I like to work at Koppert?

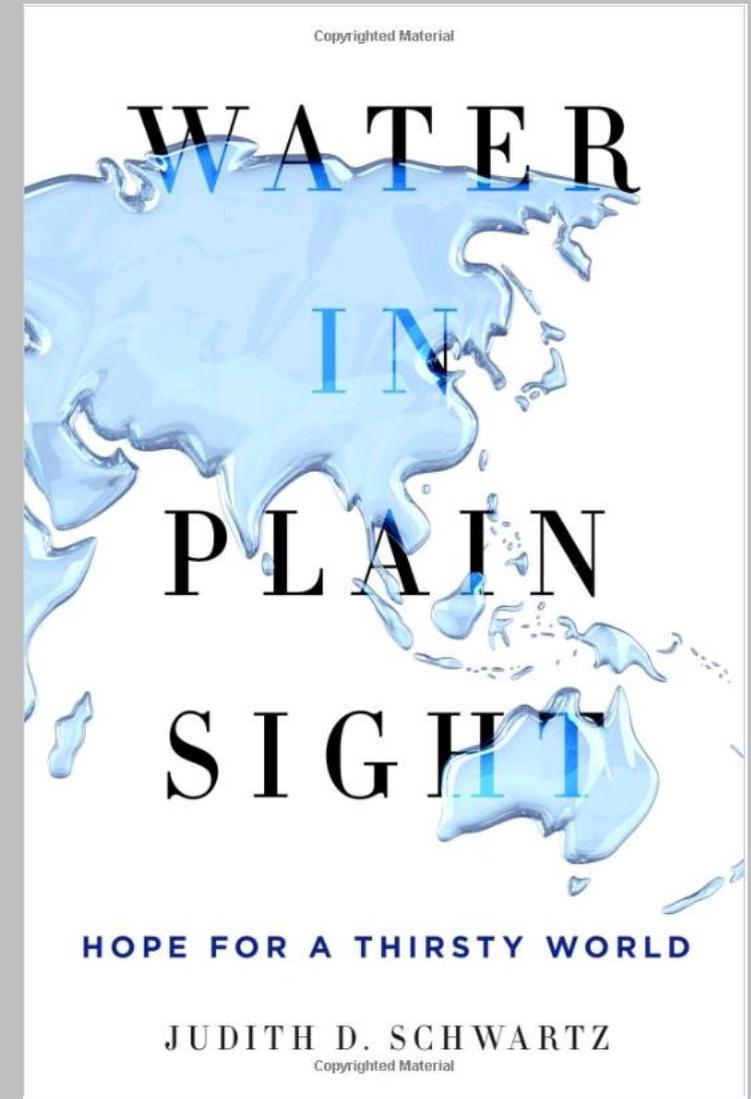
- Admire the Power of Nature/Biodiversity
- Value system approach
- Measure to understand, evaluate & learn
- Knowledge: share = multiply
- Contribute to sustainability



Water scarcity is on everyone's mind. Long taken for granted, water availability has entered the realm of economics, politics, and people's food and lifestyle choices. But as anxiety mounts - even as a swath of California farmland has been left fallow and extremist groups worldwide exploit the desperation of people losing livelihoods to desertification - many are finding new routes to water security with key implications for food access, economic resilience, and climate change.

Water does not perish, nor require millions of years to form as do fossil fuels. However, water is always on the move. In this timely, important book, Judith D. Schwartz presents a refreshing perspective on water that transcends zero-sum thinking. By allying with the water cycle, we can revive lush, productive landscapes. Like the river in rural Zimbabwe that, thanks to restorative grazing, now flows miles further than in living memory. Or the food forest of oranges, pomegranates, and native fruit-bearing plants in Tucson, grown through harvesting urban wastewater. Or the mini-oasis in West Texas nourished by dew.

Animated by stories from around the globe, *Water In Plain Sight* is an inspiring reminder that fixing the future of our drying planet involves understanding what makes natural systems thrive



EXAMPLES: IMPROVING CROPS, SEEDS AND SOILS



Improve root growth and -branching, plant health & -growth

Trichoderma harzianum T22



Bacillus spp

Trichoderma spp





Improve moisture and nutrient uptake yield and plant resilience with Panoramix

- *Trichoderma*
- *Bacillus*
- *Mycorrhiza*

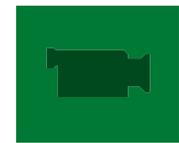




Improving Soils: protect and boost life in the soil with integrated approach

- minimize tillage
- keep soil surface covered (mulch/plants)
- reduce erosion; ensure crop rotation
- increase Soil Organic Matter Content:
 - compost
 - ripened manure
 - **Vidi Funda**
- balance mineral nutrition; avoid excess of nitrogen fertilization

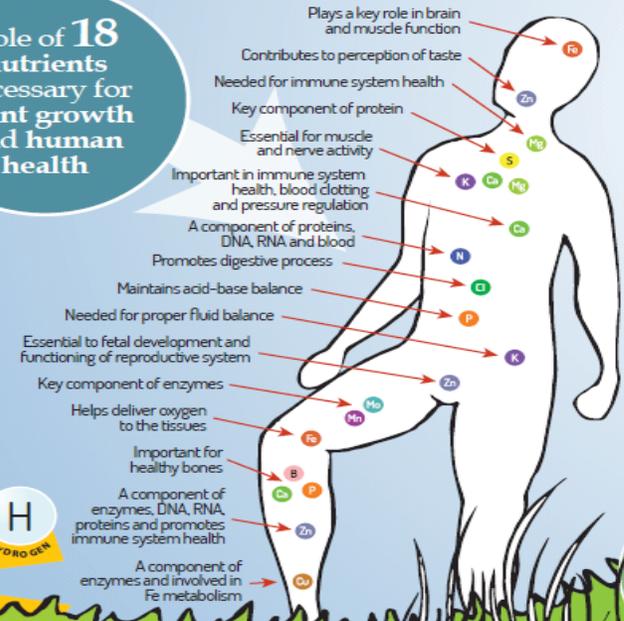
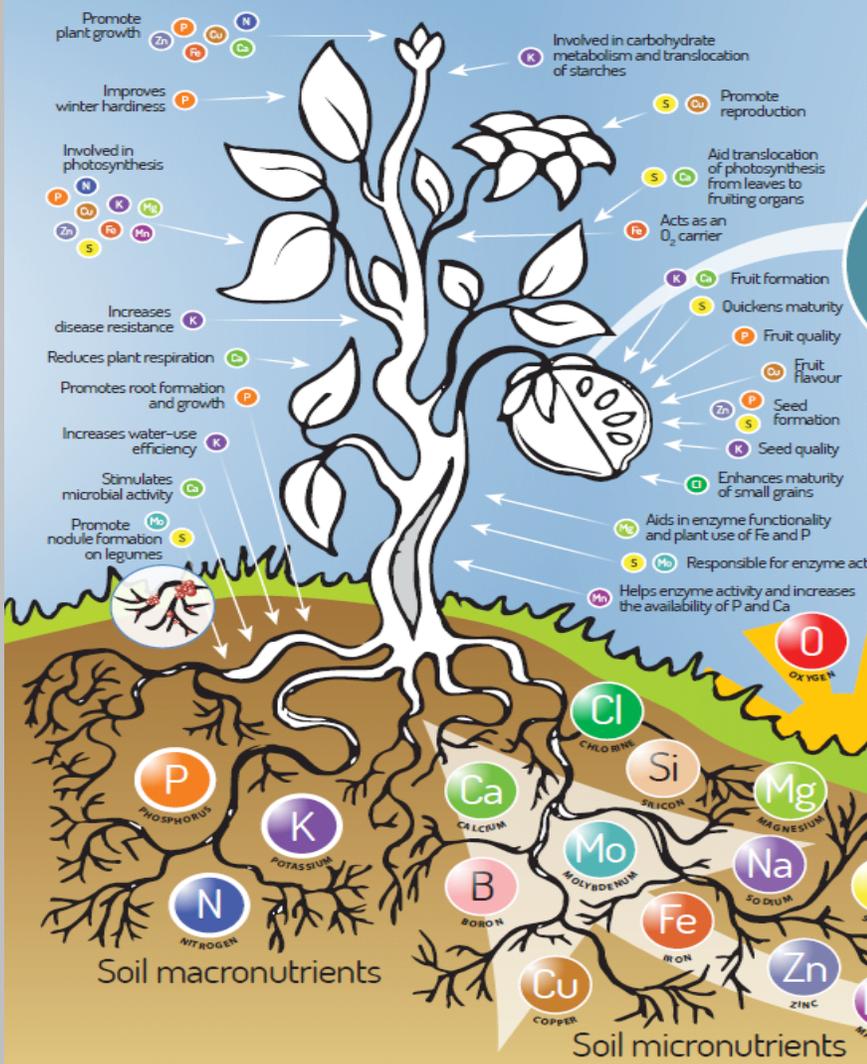




2015
International
Year of Soils
fao.org/soils-2015

Soil the foundation of nutrition

Role of 18 nutrients necessary for plant growth and human health



Soil degradation leads to the loss of soil micro and macronutrients

Nutrient-poor soils are unable to produce healthy food with all the necessary nutrients for a healthy person

Over 2 billion people suffer from micronutrient deficiencies



Sustainable soil management for healthy soils, healthy food and healthy people



Food and Agriculture Organization of the United Nations



With the financial support of the Russian Federation

Healthy soils for a healthy life

6FAO 2015 - 8CZ756/17/215



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- balance mineral nutrition; avoid excess of nitrogen fertilization
- good plant growth feeds **soil food web** via exudates from the roots



GOOD PLANT GROWTH FEEDS SOIL FOOD WEB



Functions soil food web

- Constructors

- bacteria build soil crumb structure
- earthworms create tunnels for water infiltration

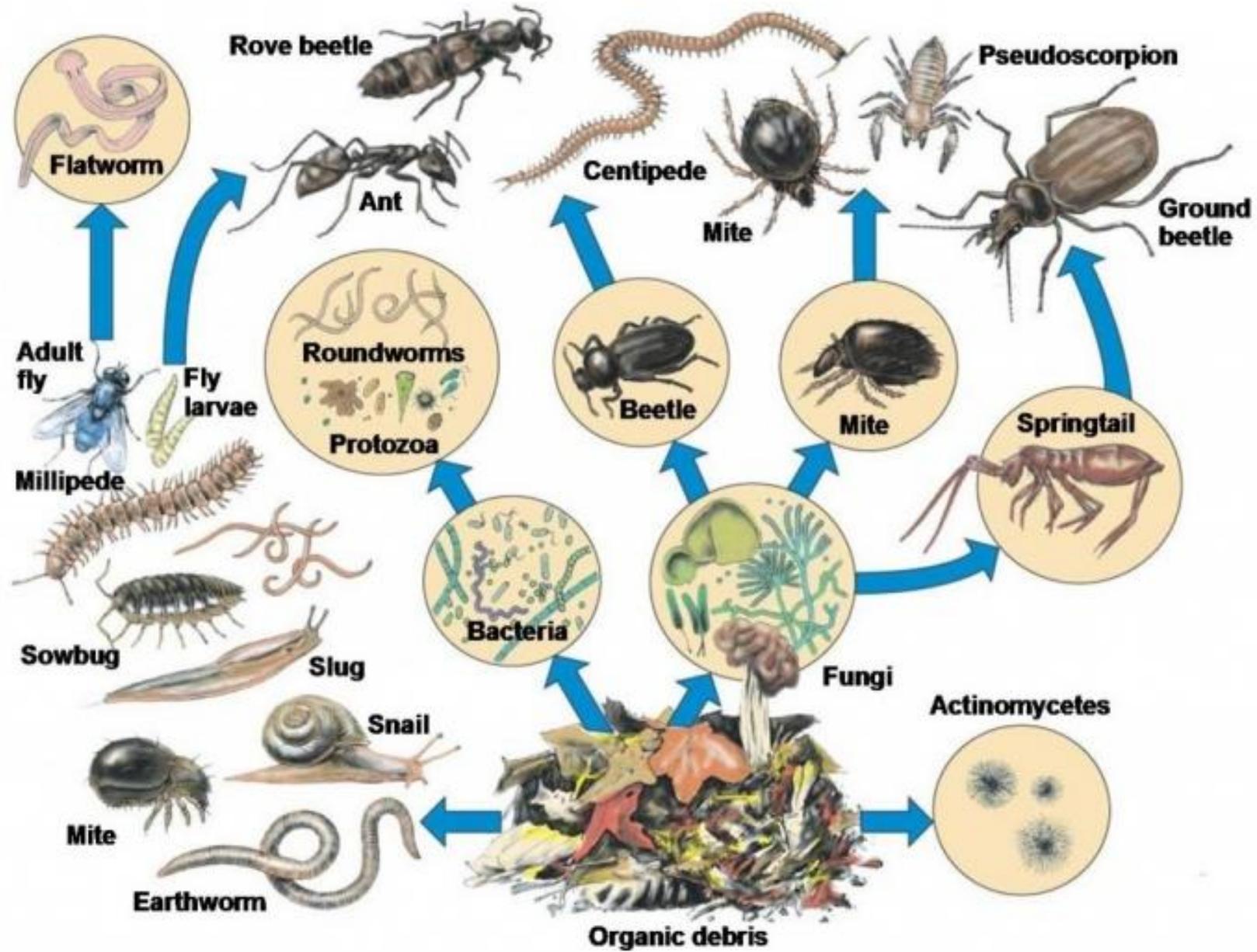
- Cleaners – detoxify

- Incubators – spread beneficial organisms

- Chemists – provide plant nutrition

- Communicators – of alarm signals

- Extenders – increase effective root space





Microbes can enhance **water productivity** by:

- enhancing plant root growth
- increasing nutrient availability
- neutralizing toxic compounds in the soil
- making plants more resistant to abiotic stress

through improving crops, seeds and soils

