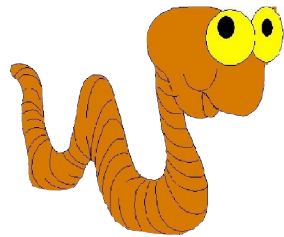


मिट्टी की कहानी मिट्टी की ज़ुबानी

MITTI KI KAHANI, MITTI KI ZUBANI



Sultan Ahmed Ismail, Ph.D, D.Sc.,
teacher, soil biologist & ecologist, Chennai, India



SOIL

2014





top soil

that's why agroforestry is important

what is



**IS SOIL
NON-LIVING MINERAL MATTER OR A LIVING “ORGANISM”**

KNOW SOIL

=

KNOW FOOD



2015

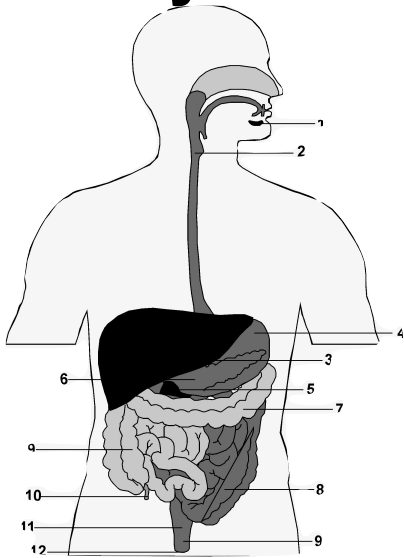
International
Year of Soils

a decade gone
no progress

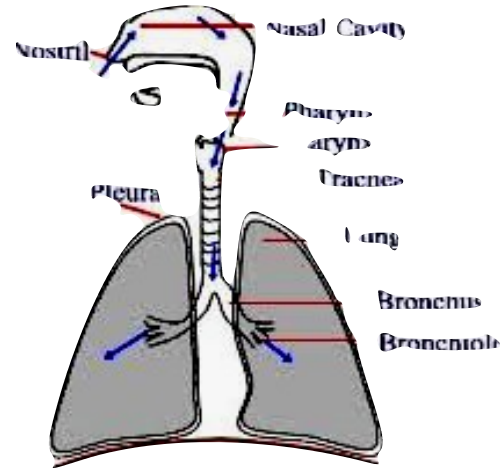
**IS SOIL
NON-LIVING MINERAL MATTER?
OR
A LIVING “ORGANISM”?**

**“a logical discussion”
personal view based on
my research in soils since 1979**

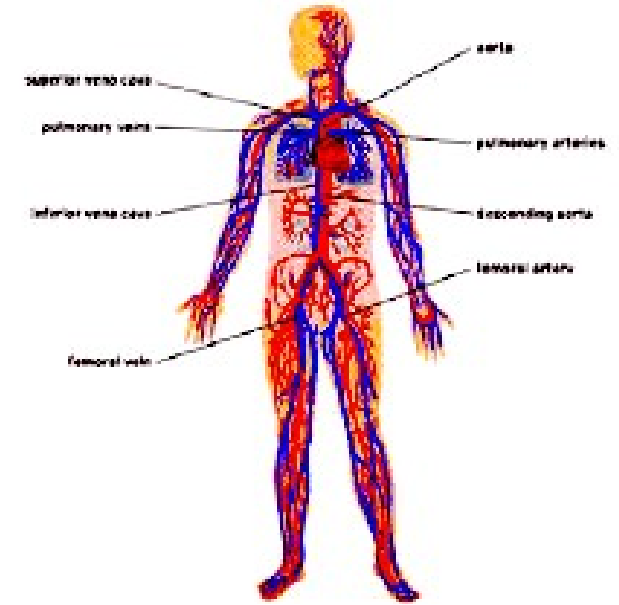
digestive system



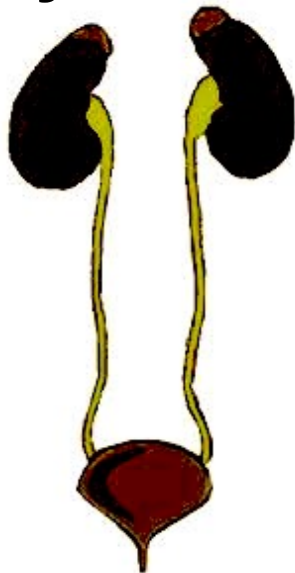
respiratory system



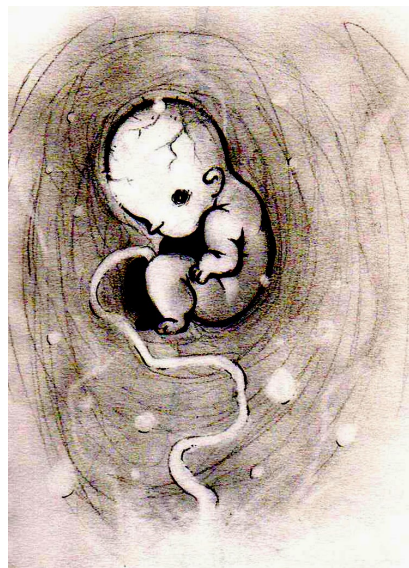
circulatory system



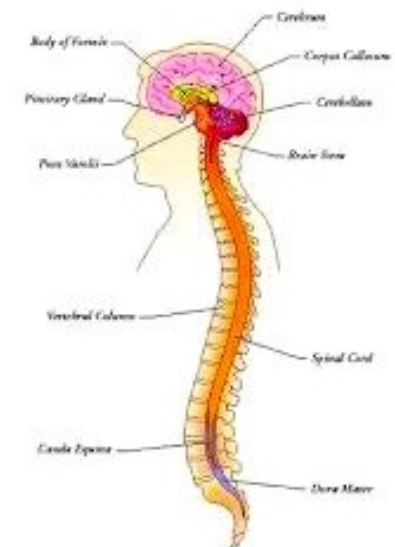
excretory system



reproductive system



nervous system



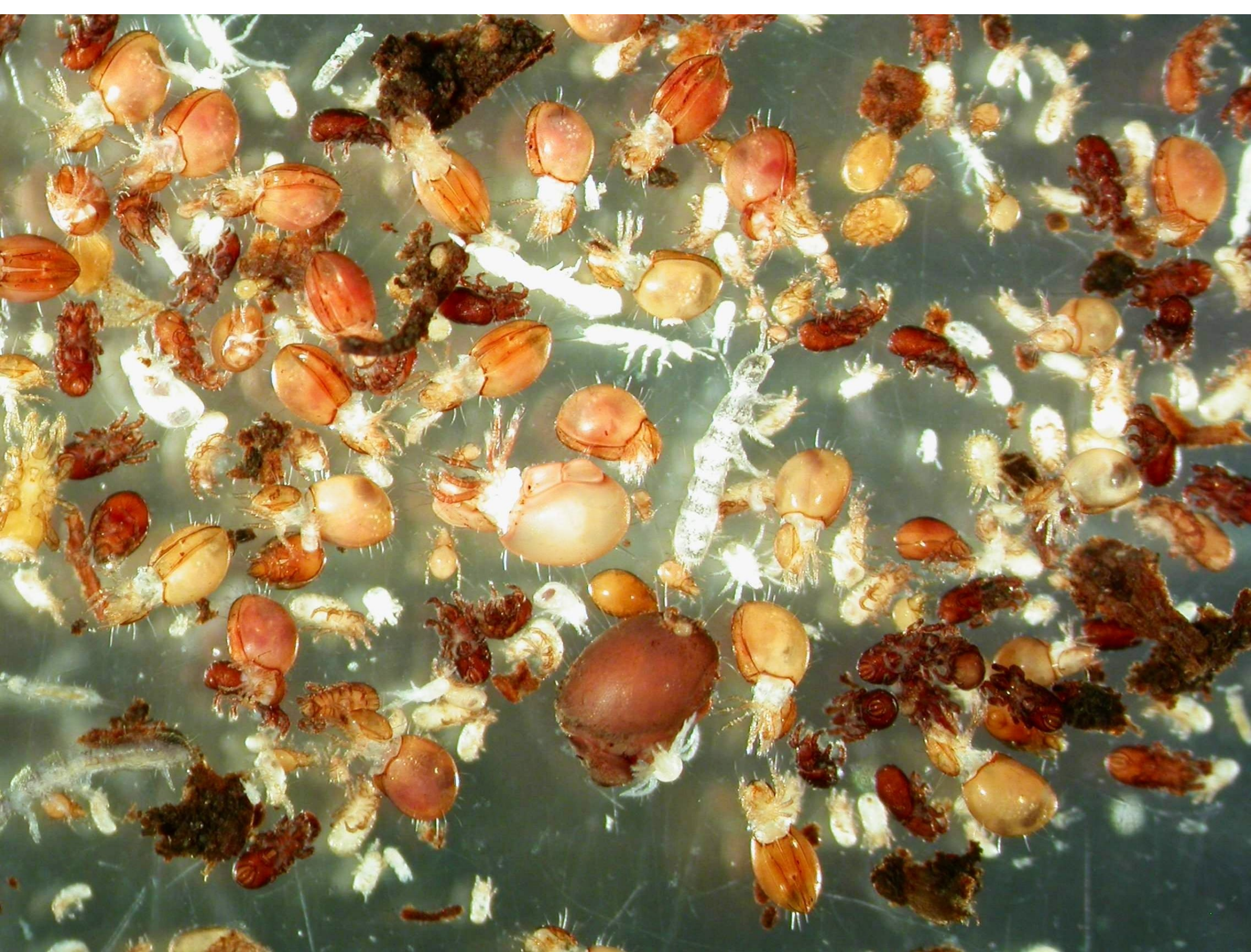
SOIL

SOIL HAS A BRAIN

when you burry, soil
decomposes all nature originated products
except seeds which it germinates



SOIL



SOIL BIOTA

Viruses

kill bacteria causing release of body fluids

Bacteria

chemical factories, convert wastes to nutrients

Fungi

convert woody substances to digestable compounds

Amoebae

prey on bacteria and fungi

Nematodes

hunt on amoebae, attack roots, eat fungi

Arthropods

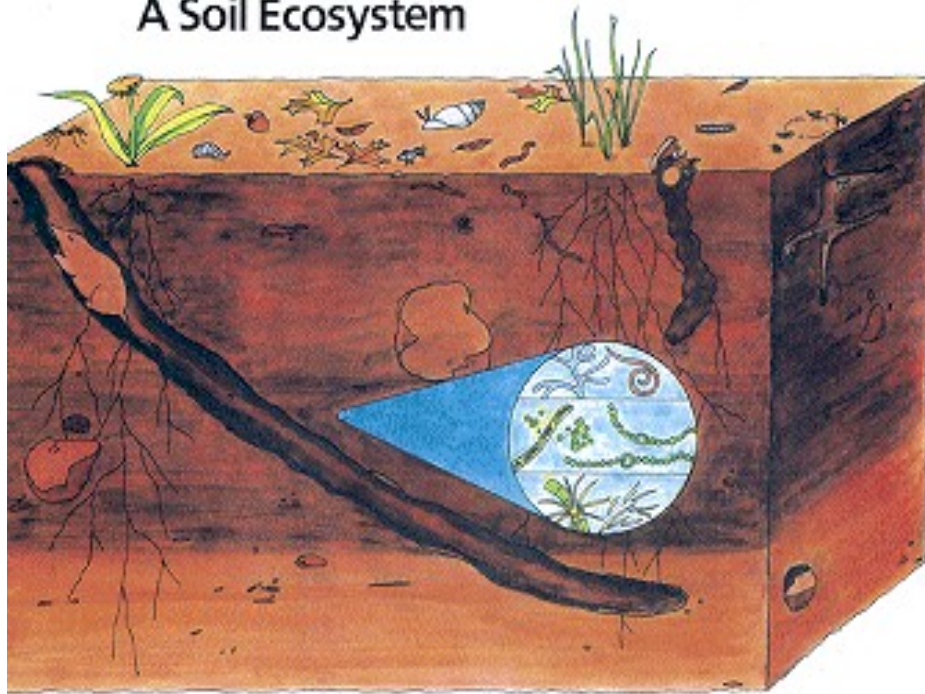
(collembolans, mites, etc) eat all of above

Earthworms

eat soil & leaf litter, drilospheres, bury litter



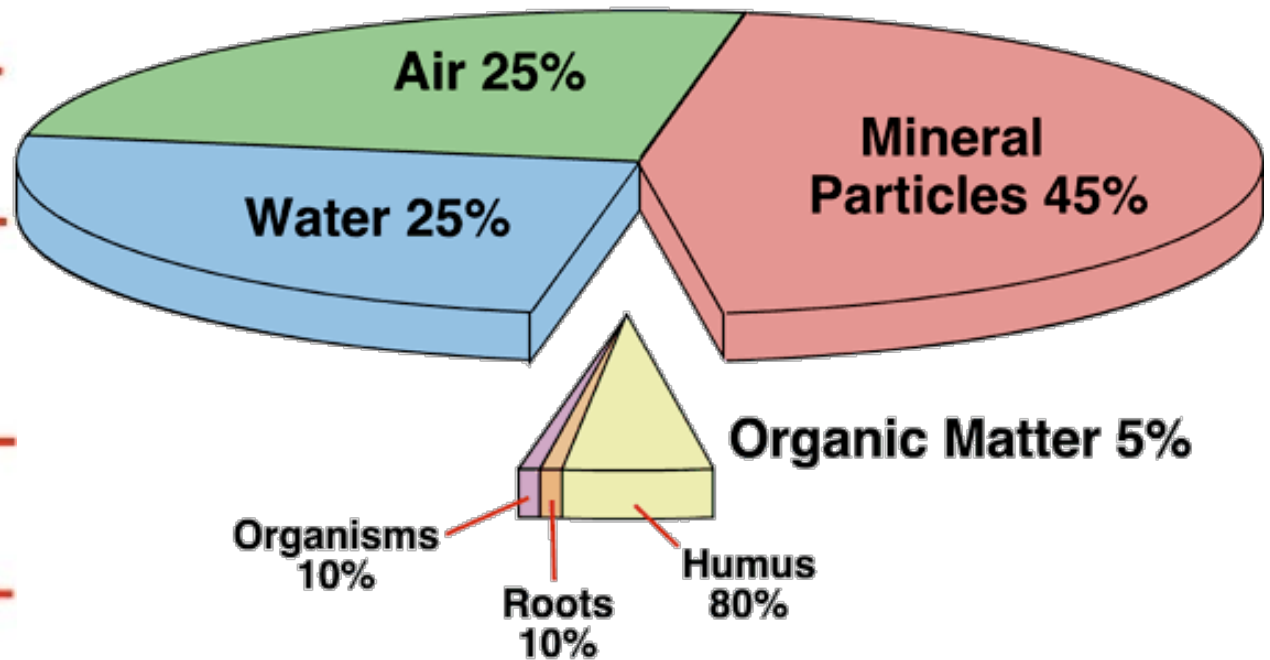
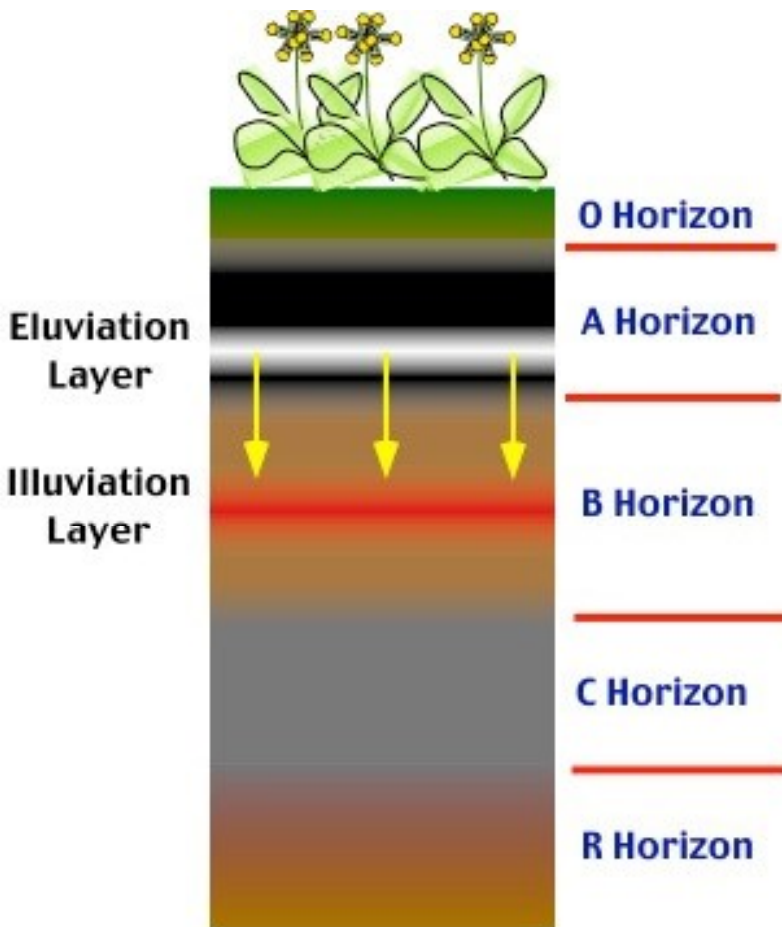
A Soil Ecosystem



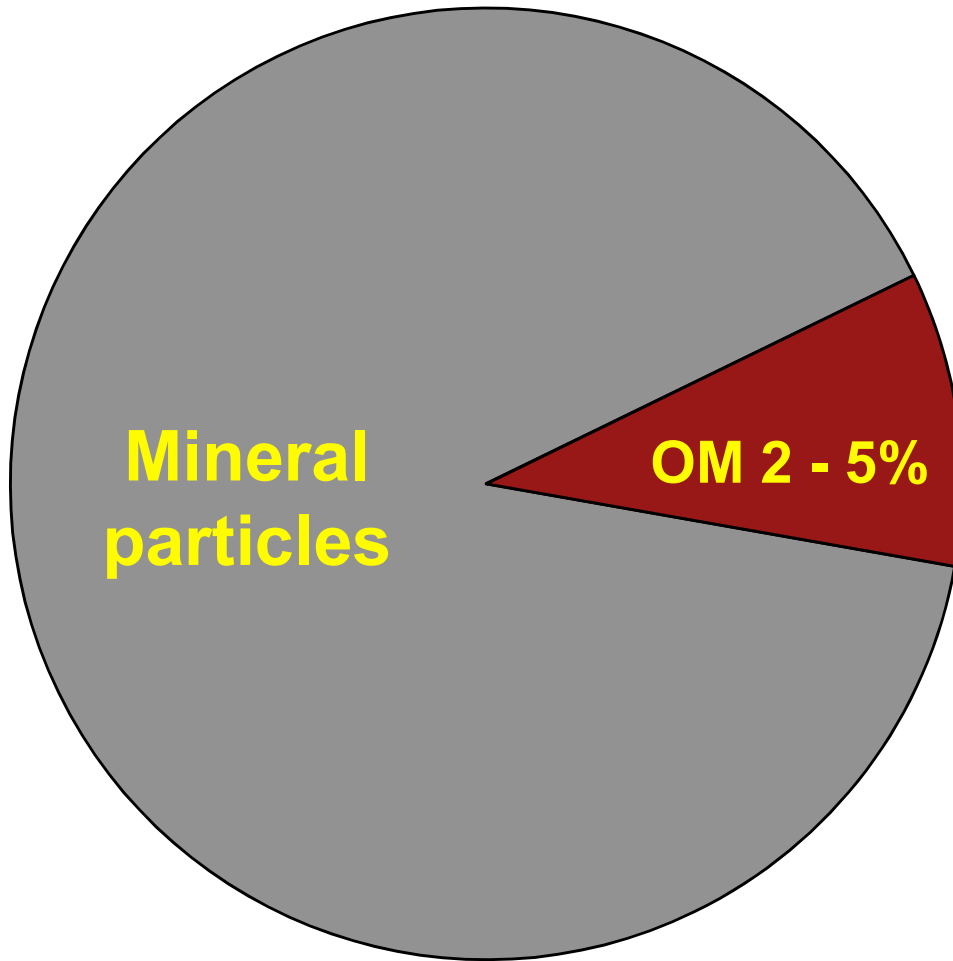
Earthworms



Termites

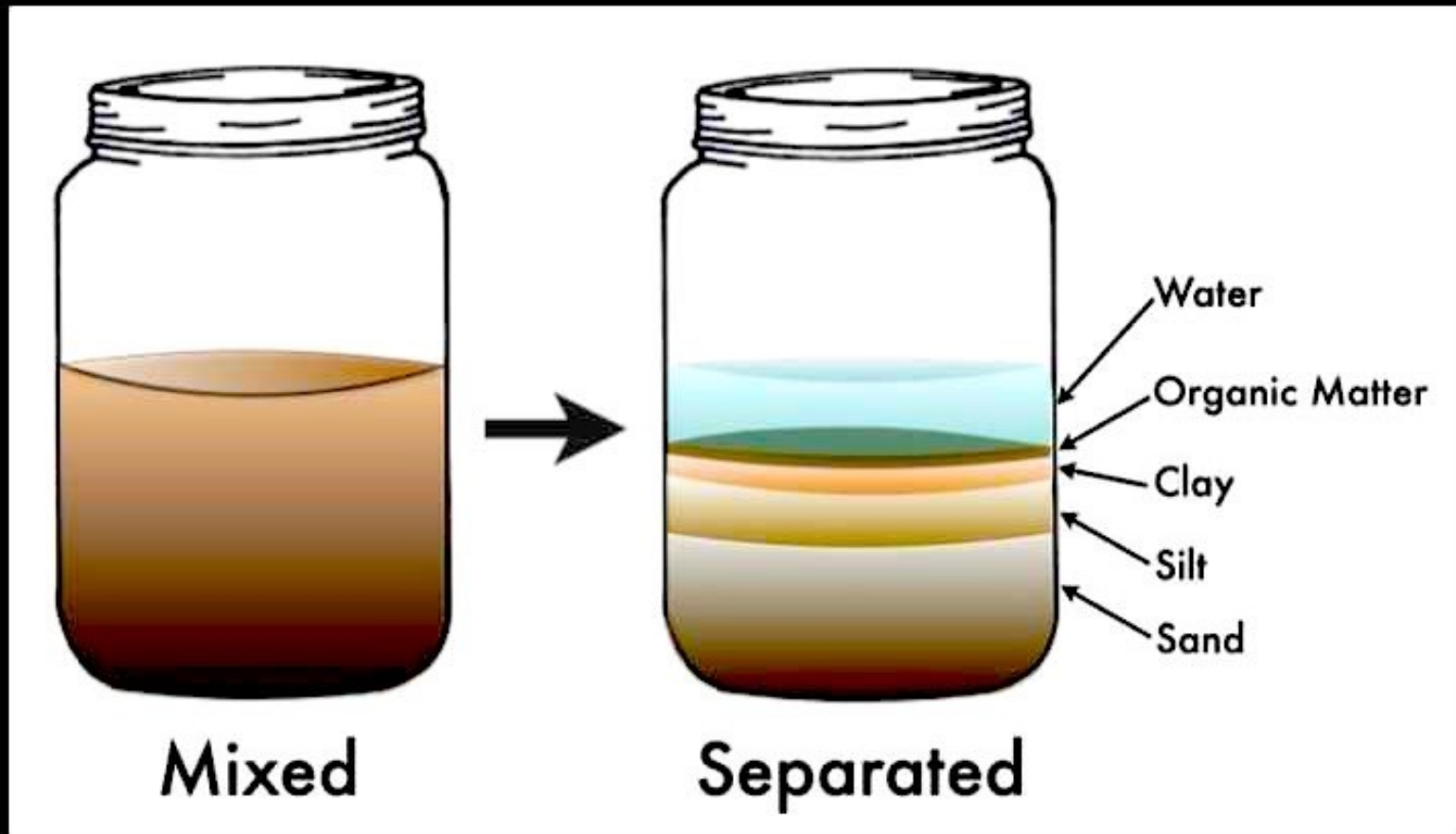


Soil



Soil organic matter
presently
national average 0.15%

The Jar Soil Test



Pinch of soil
To test
Sand
Loam
Clay

**cowdung on soil
is bioindicator of soil health**



SOIL
is the source of life
&
we are
KILLING IT

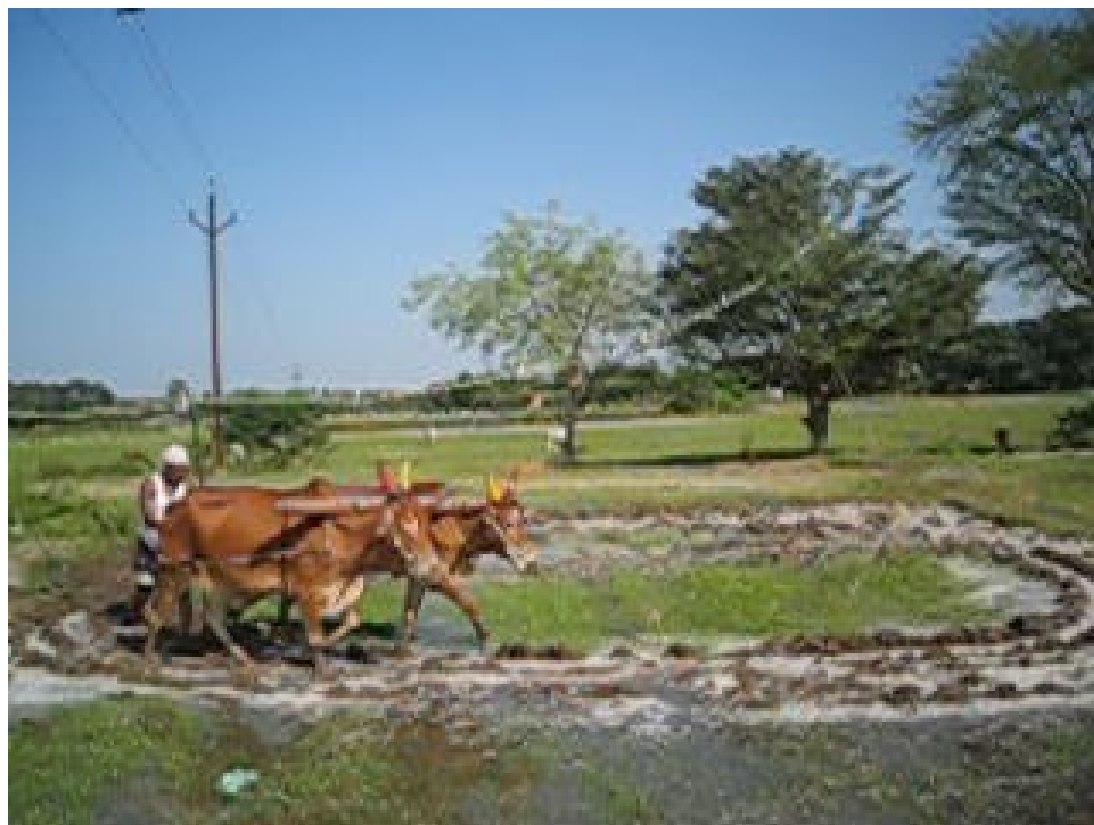
green cover 33%
casuarina & teak



miyawaki forest

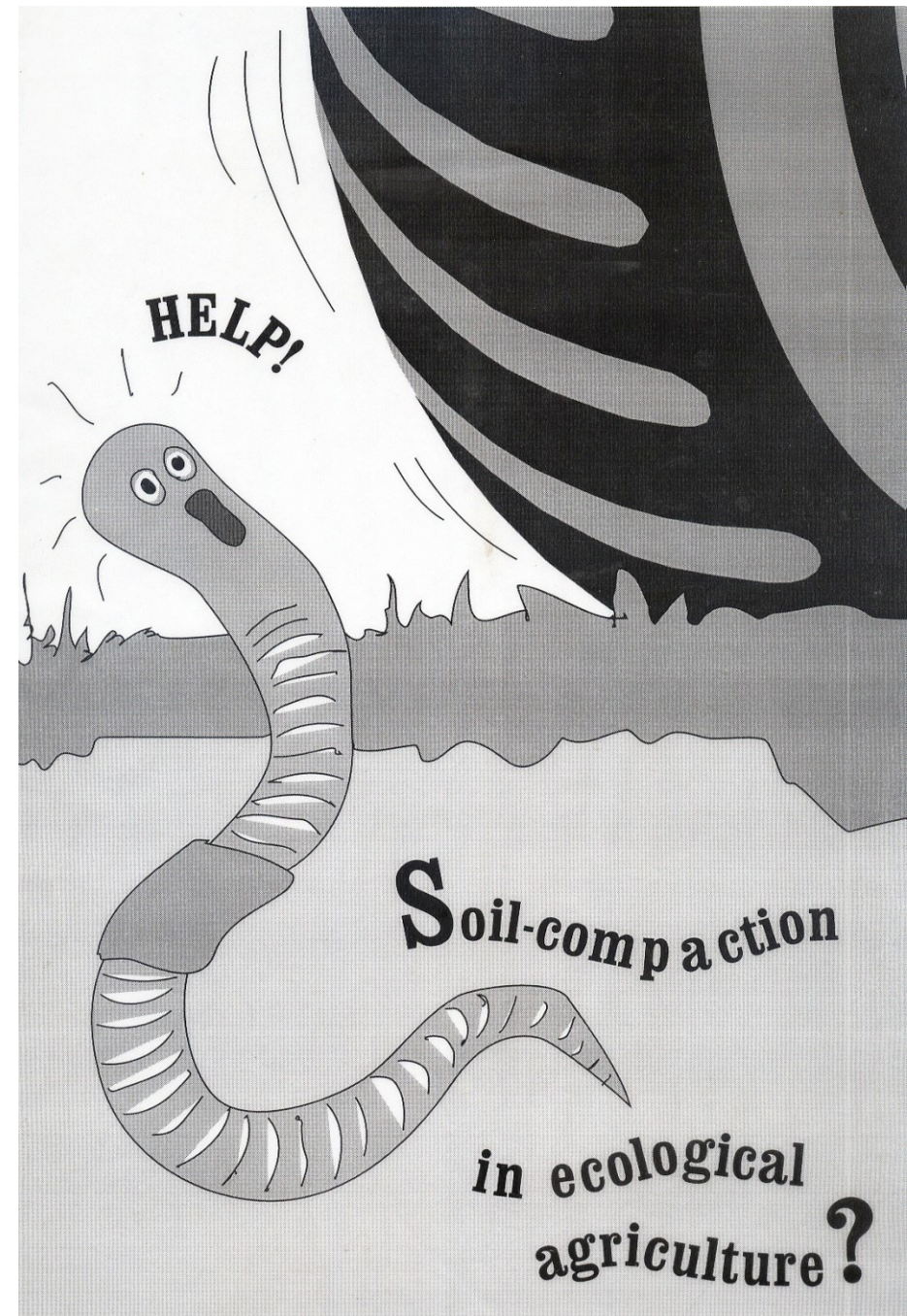
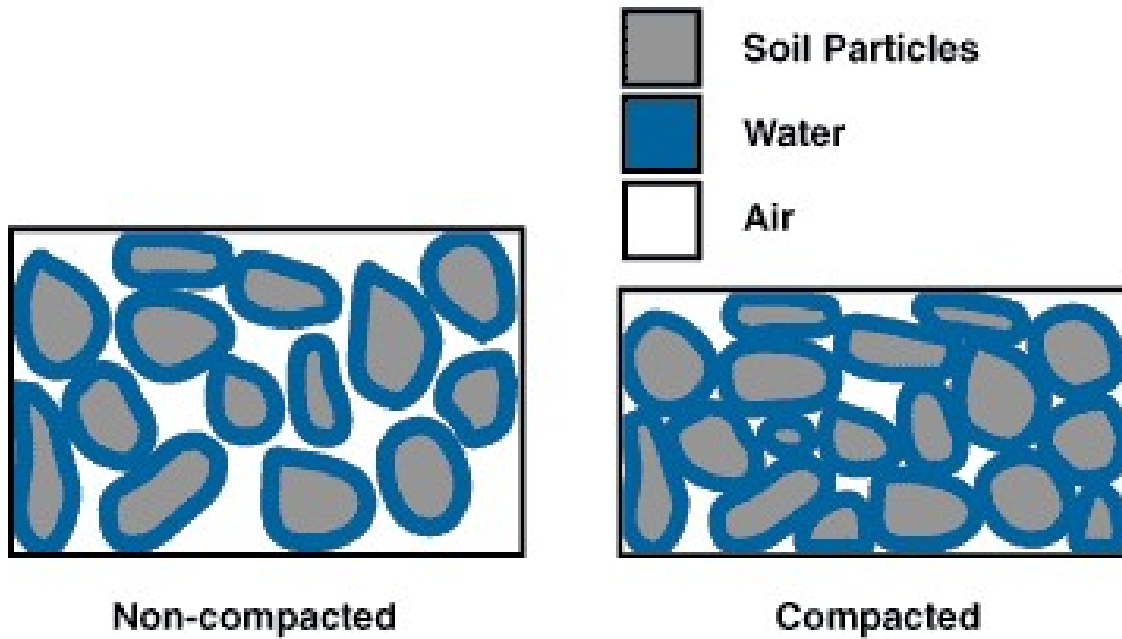


syzygium
jambolanum

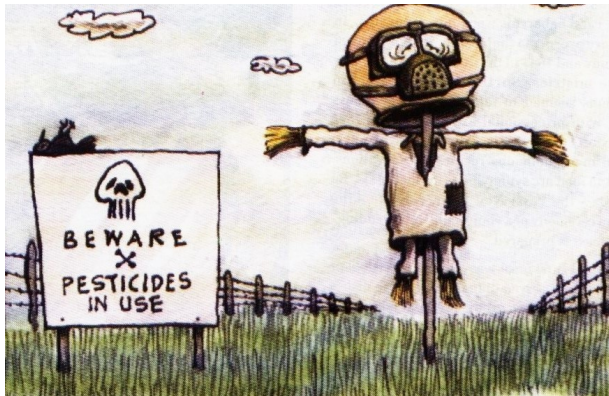


a presentation by
Sultan Ismail

part of the system



soil fertility



Vs

soil health



A nutrient depleted soil
cannot produce food that
contains those macro and
micronutrients necessary
for human health



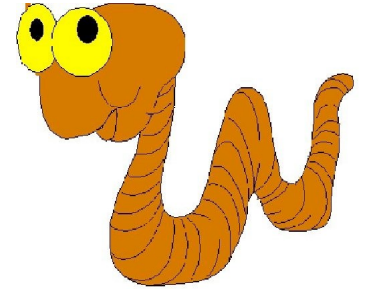
nutrient depleted soil

fortified food



vermitech

the science of
earthworm biotechnology

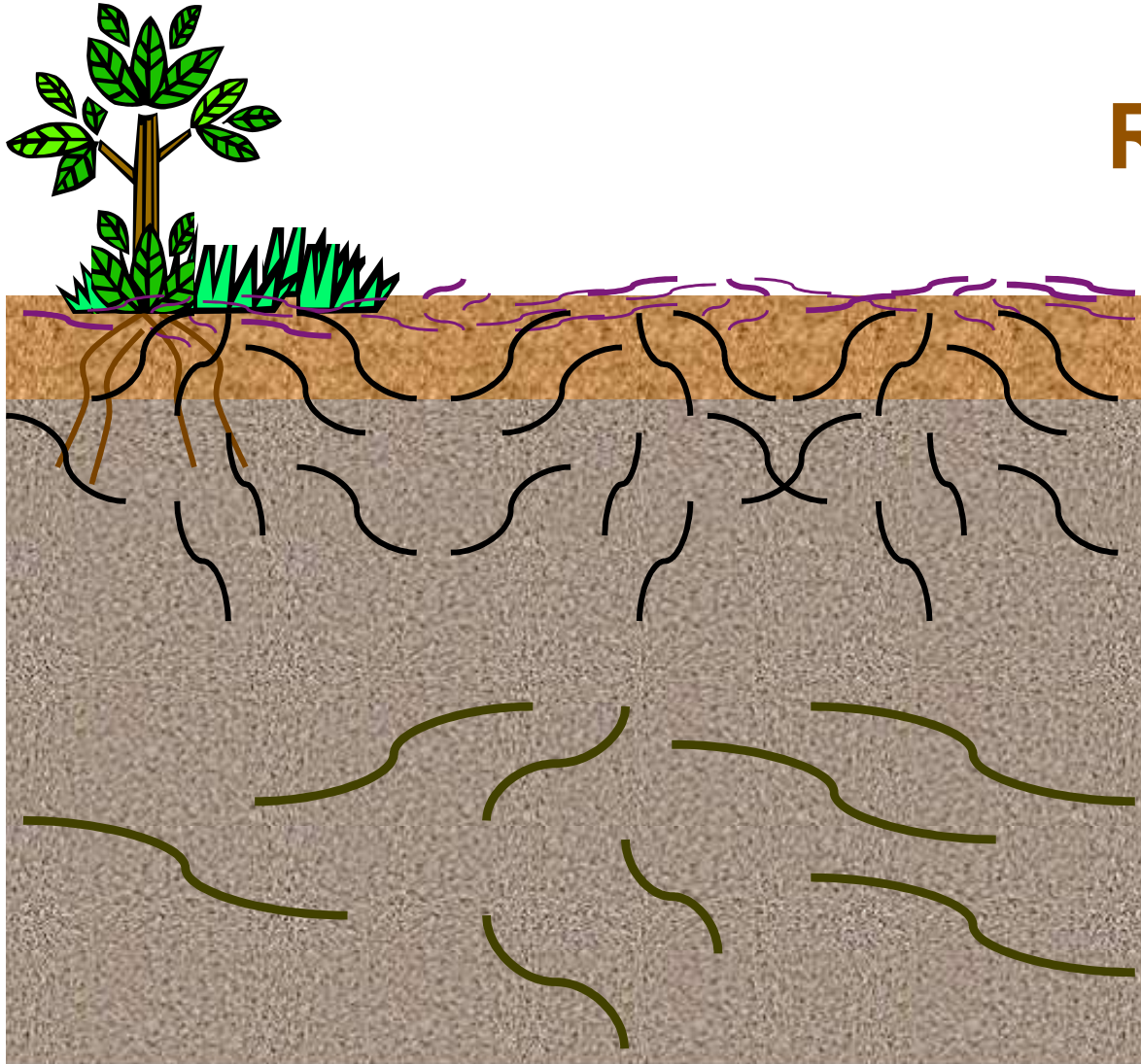


earthworm is the pulse of the soil,
healthier the pulse healthier the soil

...Sultan Ahmed Ismail

Earthworms

the SOIL RESTAURANT



Epigeic

Perionyx excavatus

Anecic

Lampito mauritii

Endogeic

Octochaetona thurstoni

the best endemic earthworms



a presentation by
Sultan Ismail



Perionyx excavatus: epigeic



Lampito mauritii: anecic



Octochaetona thurstoni: endogeic



Earthworm Octochaetona serrata



Perionyx excavatus



Eisenia fetida



Eudrilus eugeniae



vermicomposting is easy





BIODUNG



PRE-DIGESTION





diluted cattle dung





a presentation by
Sultan Ismail





steam





coarse sieve



fine sieve



a presentation by
Sultan Ismail

Ranjit De Silva, Sri Lanka, 1990

Gliricidia



You see some lovely fish and you want to take it live home....



... and they died. you wish to take home after 3 days
but no fridge or ice... only cooking materials with you...



and now it is dried fish..... why did it not decompose?



Excess salt in food?



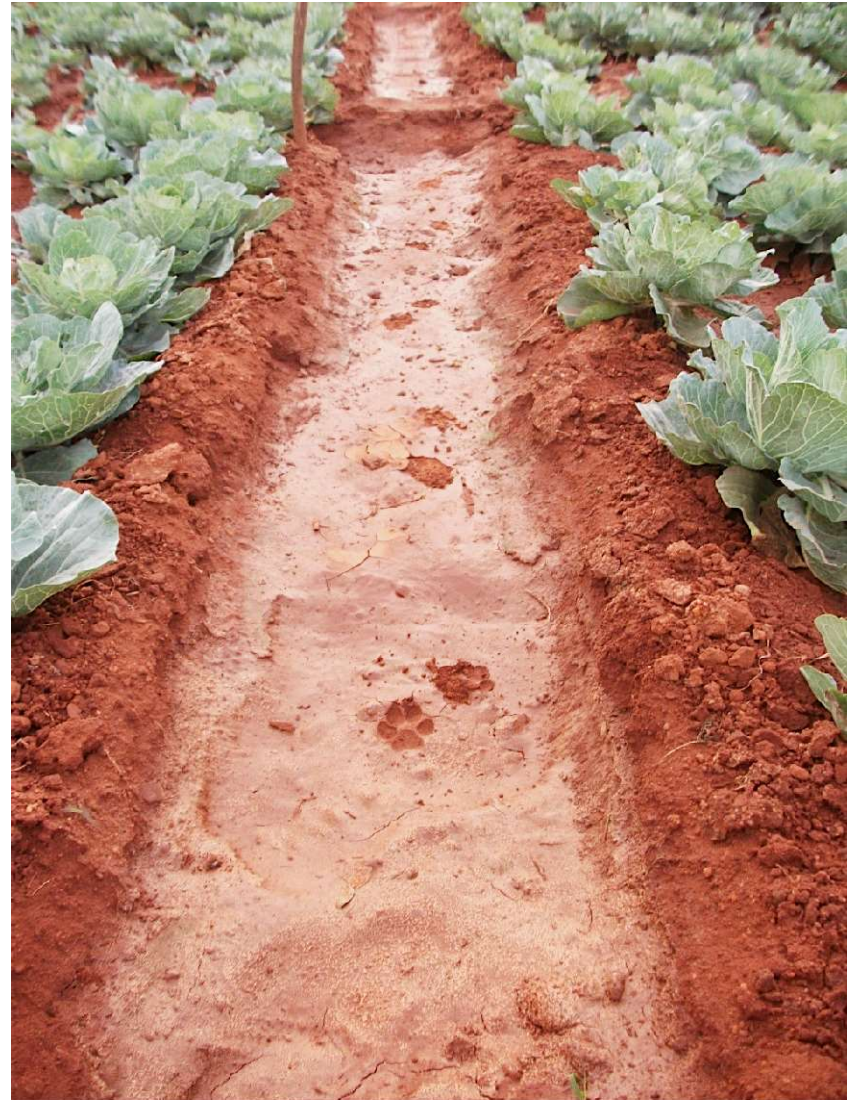
Thirst... need water



Chemical field



Organic field

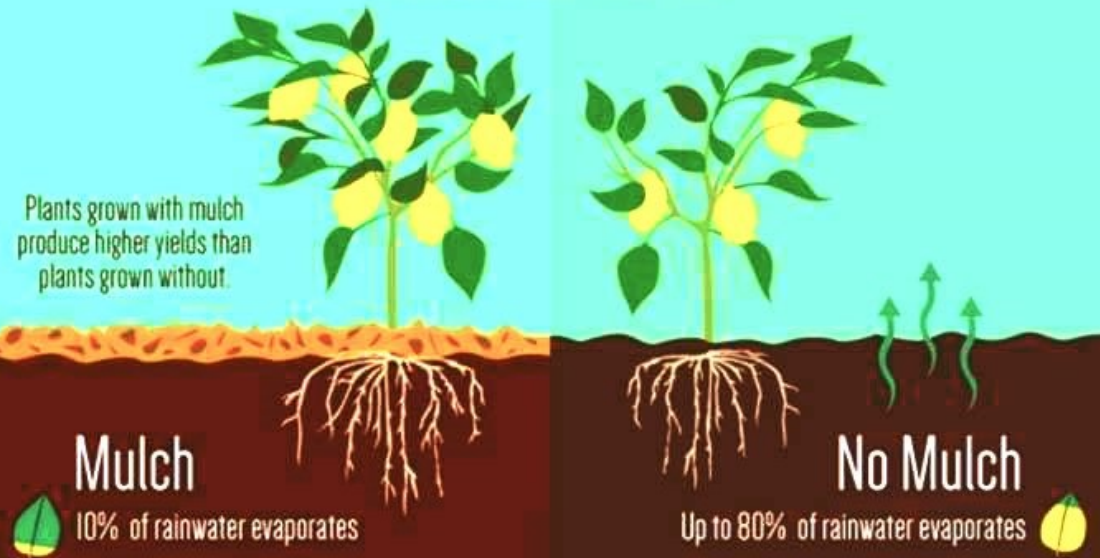


Mulch Much?

Mulch vs. No Mulch

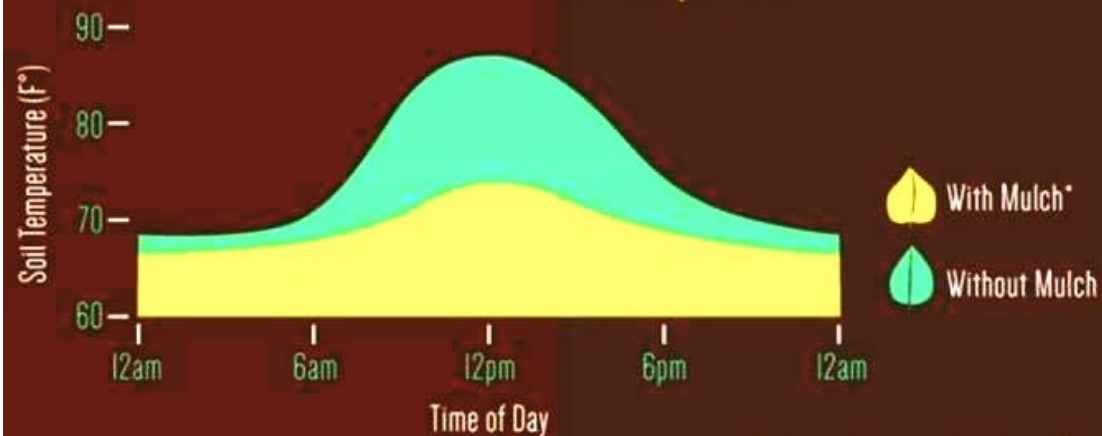
Moisture Retention and Yields

Plants grown with mulch produce higher yields than plants grown without.

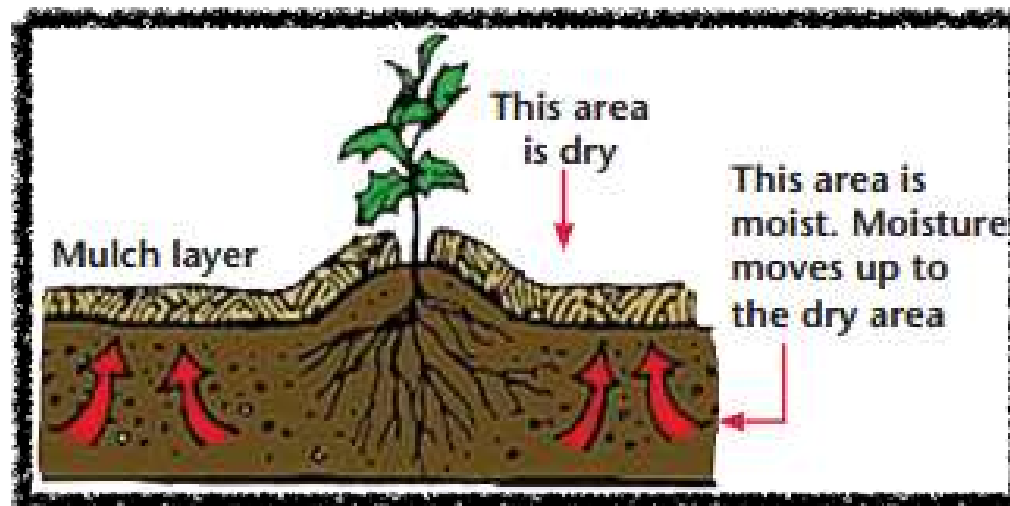


Mulch Keeps Your Soil Cool

How Mulch Affects Soil Temperature

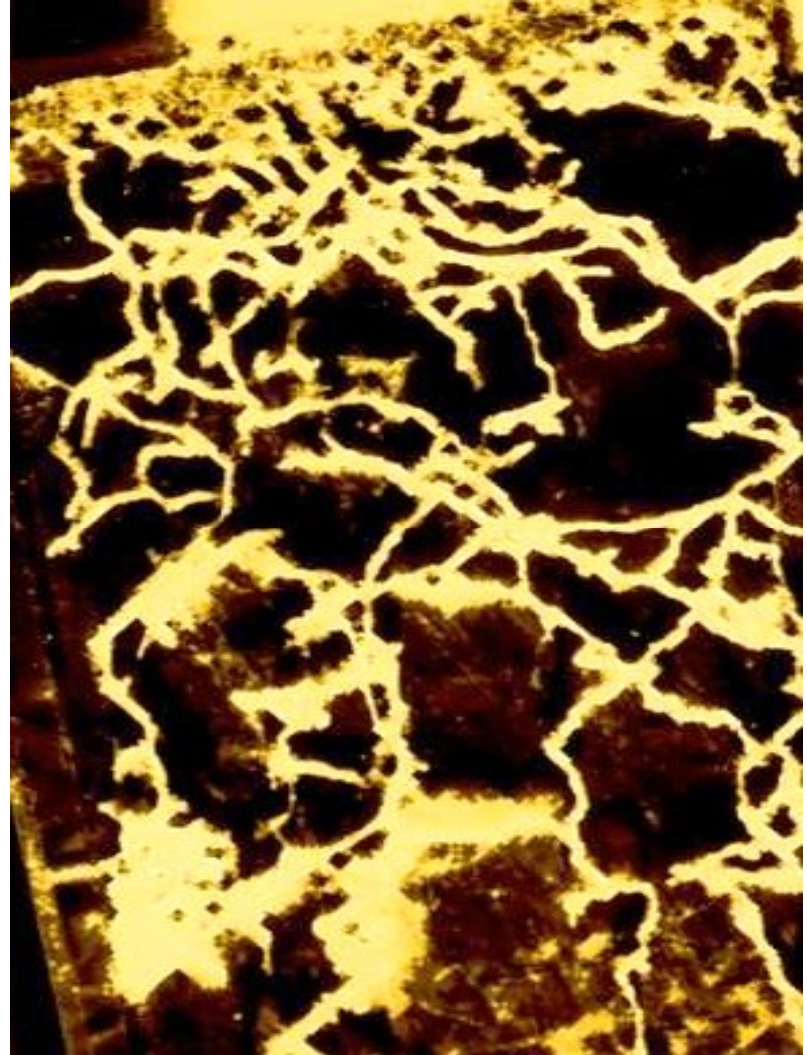


*Study used grass mulch at 4 tons/acre



mulch

earthworm burrows



vermiwash



Panchagavya



Dr Natarajan, Kodumudi

Urine

Milk

Ghee

Curd

Dung



Panchagavya

- **Biogas slurry or cow dung** **5 kg**
- **Cow's urine** **3 litres**
- **Cow's milk** **2 litres**
- **Curd from cow's milk** **2 litres**
- **Ghee from cow's butter** **1 litres**
- **Sugarcane juice** **3 litres**
- **Tender coconut water** **3 litres**
- **Banana** **12 numbers**

First mix cow dung with ghee and small quantity of cow's urine. Leave this for 3 days. place this in a broad mouthed mud pot and add the remaining ingredients. Mix well by hand and close with cloth and keep in shade. Daily shake pot well. In about 15-25 days panchagavya will be ready.

FARMER'S EFFECTIVE MICROORGANISM (FEM)

Ingredients

Pumpkin

Banana

Papaya

Jaggery

Non-chlorinated water

Quantity

3 kg

1 kg

3 kg

3 kg

10 litres



PREPARATION :

Cut the vegetables into small pieces. Transfer these pieces into a clean plastic container. Mix jaggery in 10 litres of non chlorinated water till it dissolves well and add the eggs to it. Mix all the contents. Close the container with air tight lid. Open lid after 10 days to release the air. Mix well again. Keep the set up closed for 30 - 45 days.

FISH AMINO

INGREDIENTS :

1. Fish waste
2. Native jaggery
3. Clay pot
4. Water

PREPARATION:

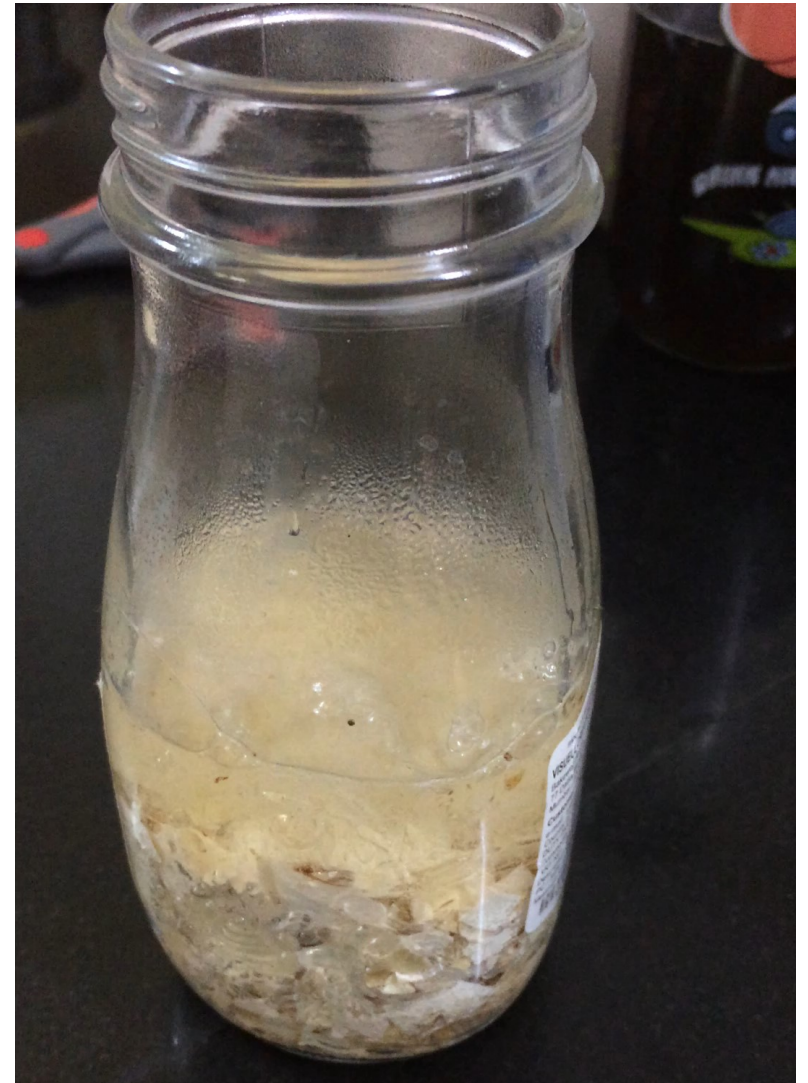
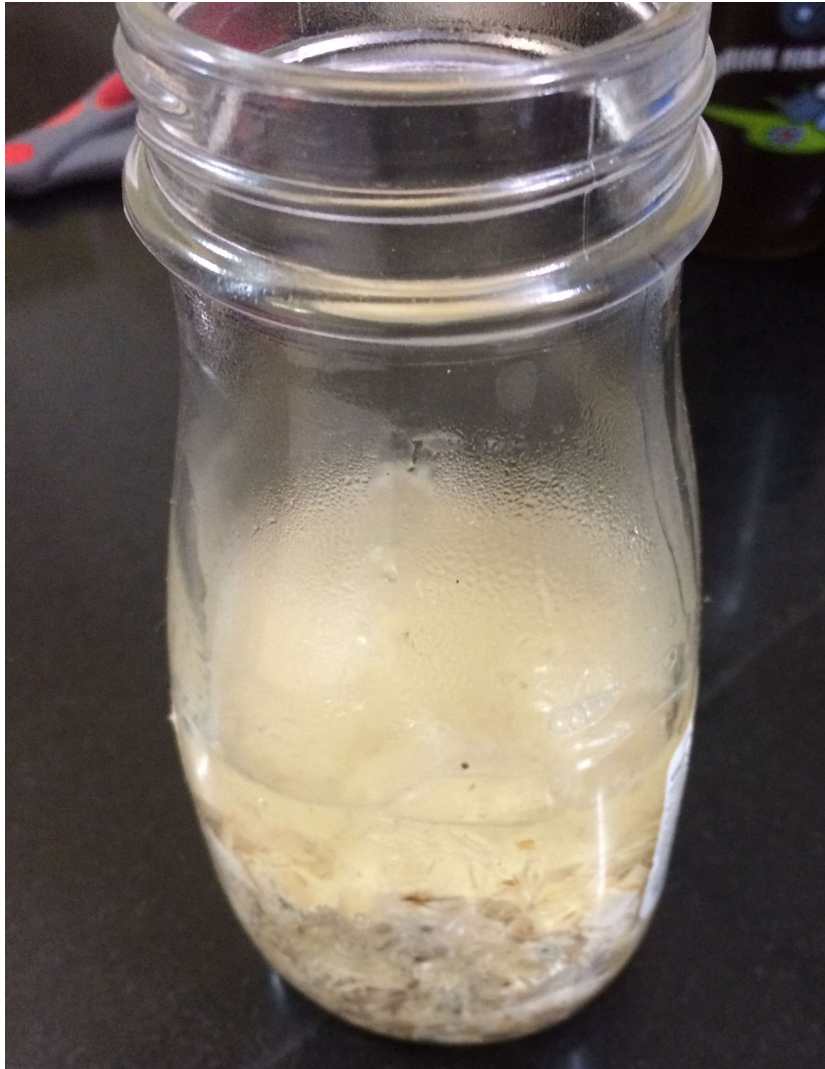
Take a clean clay pot of 10 litres capacity add fish waste and powdered native jaggery and mix well. Fill with about five litres of water and stir well. Tie the mouth of the pot with a cotton cloth to prevent the entry of flies. Mix the pot every day by whirling the contents. After 2 to 3 weeks decant the liquid and use it as a organic liquid foliar spray.



Banana Peels soaked in water



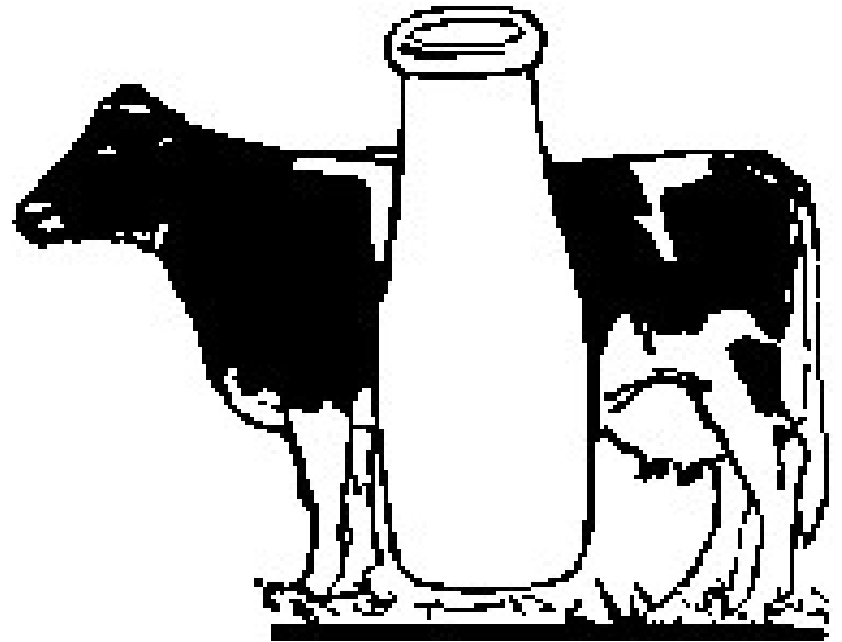
Egg Shells with Vinegar



Impact of GMOs On soils?

The Milk Machine

Impact of hormones on soils?



recombinant Bovine Growth Hormone (rBGH) to make them produce more milk.

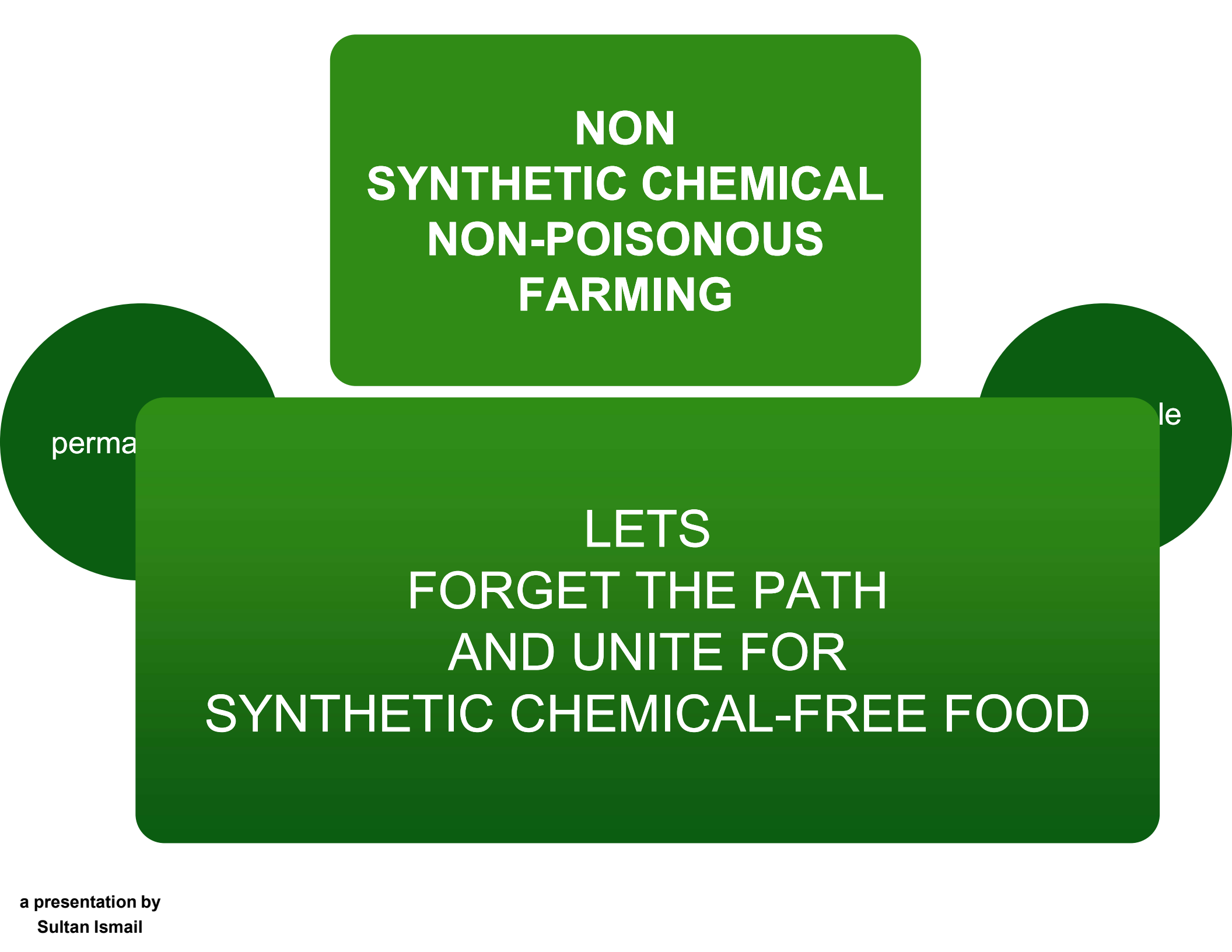
Impact of Pesticides On soils?

who is the greatest scientist on the farm





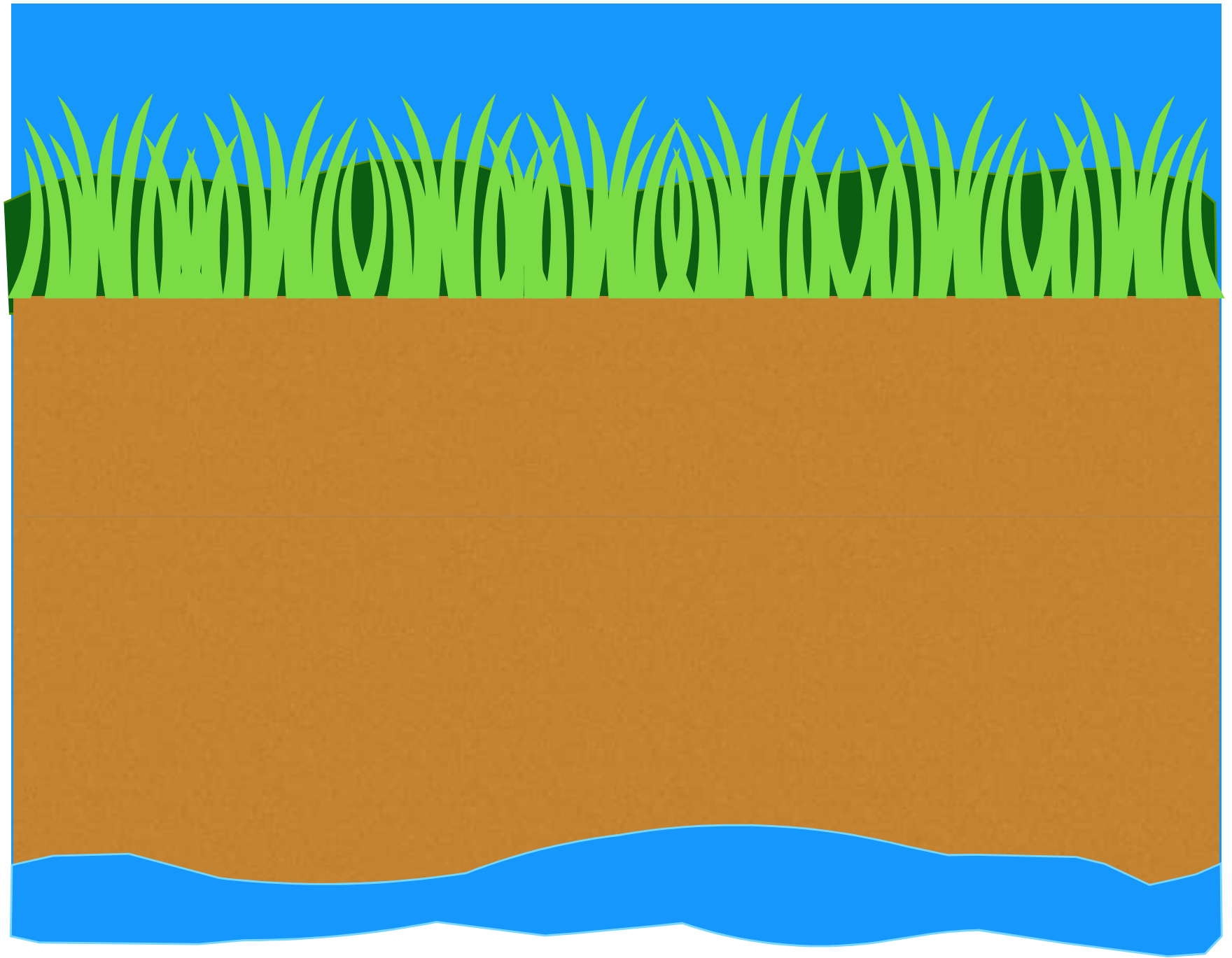


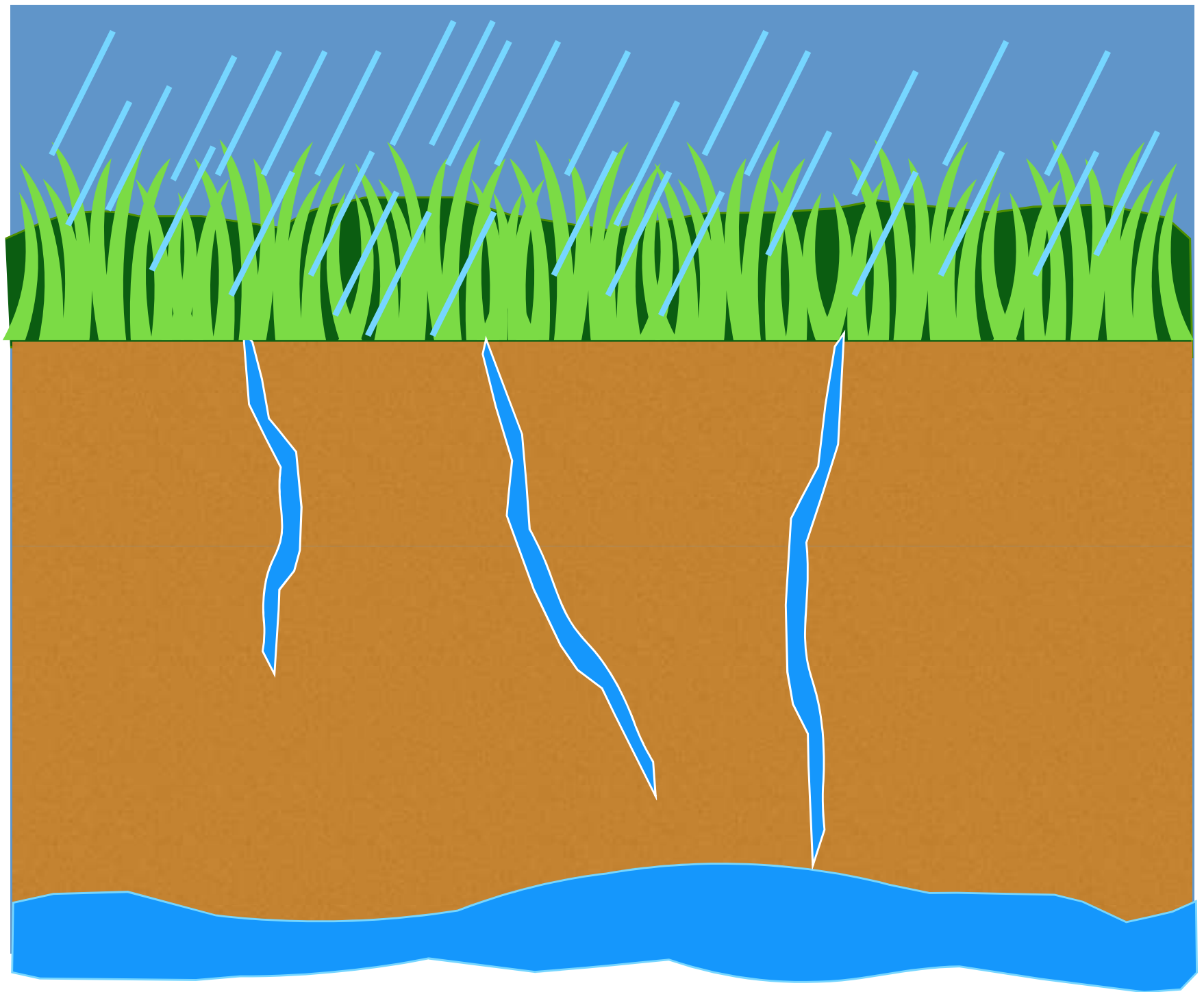


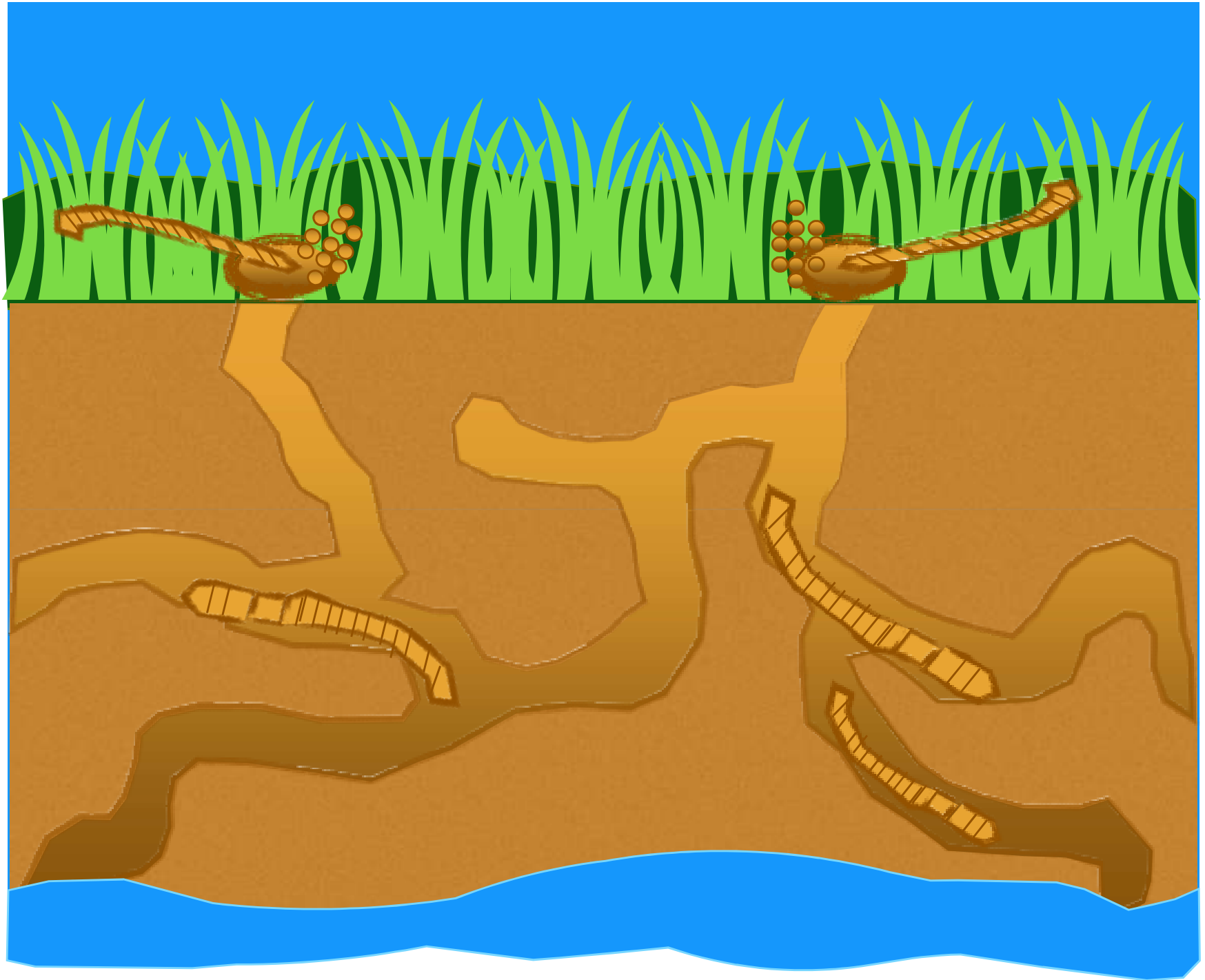
**NON
SYNTHETIC CHEMICAL
NON-POISONOUS
FARMING**

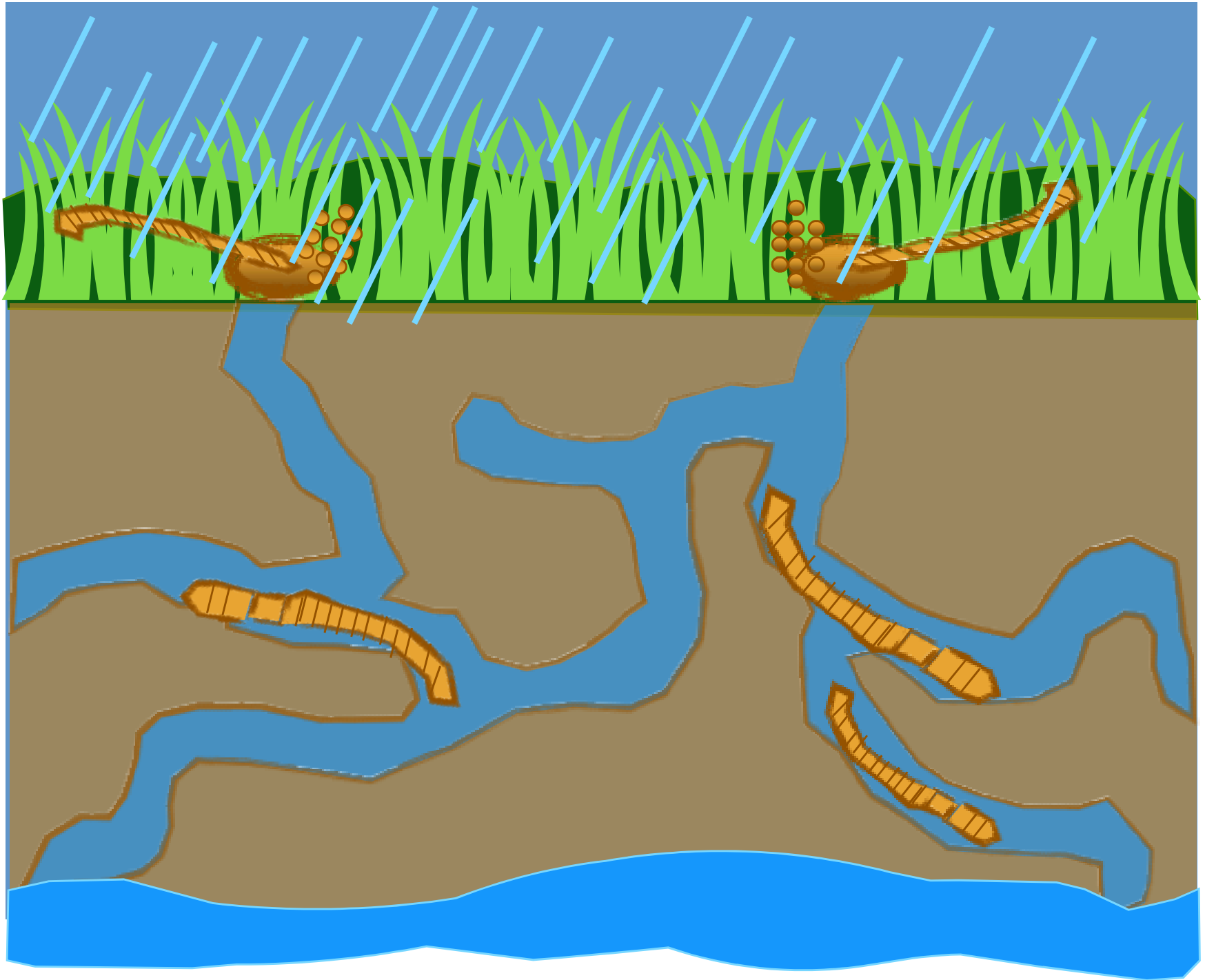
**LETS
FORGET THE PATH
AND UNITE FOR
SYNTHETIC CHEMICAL-FREE FOOD**

reworm the world









H E A R T

HEART is where the **EARTH** is

soil speaks

कोइ एहसान
ना करो मुझपे
तो एहसान
होगा
करना ही हो
एहसान
तो मुझे जीने
दो।

Do not not show
any favour to me,
Would be the
greatest favour
you would show-
If at all you wish
to show favour,
Allow me to live

کوئ احسان نہ
کرو مجھ پہ
تو احسان ہوگا
کرنا ہی ہو
احسان
تو مجھے جینے
دو




All
the Best



thank



you

sultanismail@gmail.com