

HOW TO PRODUCE GOOD FOODS FROM SOIL

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Goals



Questions



Solutions

GOALS

- Increasing productions (foods) for community
- While keeping soil and environment healthy long time from agricultural activities

QUESTIONS

- What are good soils to produce good foods?
- How to minimize bad impact to environment from agricultural activities?

GOOD SOIL SHOULD HAVE

1. Good nutrient contents
2. Good organic matter content (~15 %)
3. Good soil texture (about 40 % silt, 40 % sand, 20 % clay)
4. Good soil pore space (less compaction) (~50 %)
5. Good water holding capacity of soil (~40 %)
6. Good drainage of surface soil
7. Cover crops
8. No weeds

AGRICULTURAL ACTIVITIES (CULTIVATION)

1. Change natural ecosystem
2. Use up materials (nutrients, water, minerals) in soil
3. Make soil weak

So appropriate care of soil is very important to keep soil health from long term agricultural activities.

WE NEED TO KNOW SOIL CONDITIONS

1. Soil sampling to test soil chemical characteristics
2. Quick field measurements of soil and plants
3. Build database for further analysis

MEASUREMENTS OF SOIL CONDITIONS

1. Put stakes for sampling points
2. Recording GPS coordinates of sampling points
3. Take soil samples for chemical analysis
4. Soil texture test (Ribbon method)
5. Soil infiltration test to test soil compaction
6. Plant leaf NDVI measurement to check plant healthiness using GreenSeeker
7. Quick Soil pH measurement to check soil nutrient availabilities

DATA MANAGEMENT AND MAPPING USING GIS

1. Put all information in Excel file
 1. GPS coordinates
 2. NDVI values
 3. Soil infiltration rate
 4. Soil texture
 5. Soil pH values
2. Make maps using QGIS
3. Upload data into Google Map to track sampling points in field

SOLUTIONS

- Appropriate managements of food production fields based on accumulated database are required.
 1. Soil managements
 2. Plant managements
 3. Cropping system managements

APPROPRIATE SOIL MANAGEMENTS

1. Soil test periodically
2. Add organic matter/biochar
3. Control surface soil erosion (run-off by water/wind)
4. Cover crops
5. Residue covers (mulching)
6. No-till / Conservation tillage