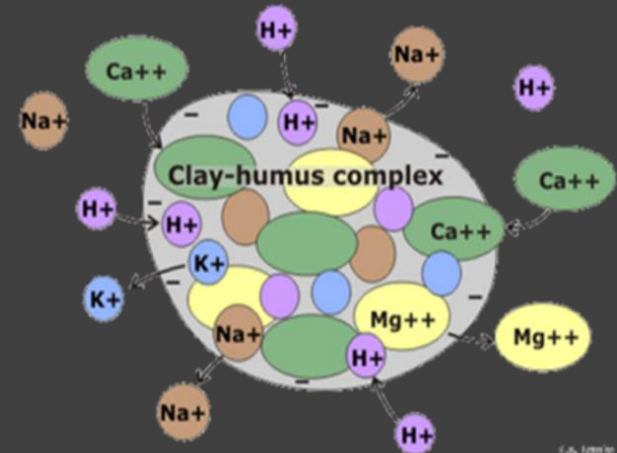


Soil Stewardship

“You cannot escape the responsibility of tomorrow by evading it today.”

Abraham Lincoln



Degraded soils cost farmers billions annually

Yet soil care often remains a relatively low priority

“I think there was a perception that if you want to no till and you stopped the soil erosion, the soil would regenerate or restore itself,” David Lobb (Ontario Farmer).

<https://www.manitobacooperator.ca/crops/degraded-soils-cost-farmers-billions-annually/>



Soil sampling is **essential** in getting the **balance of soil nutrients right**.



Soil Sampling

A relatively simple task?

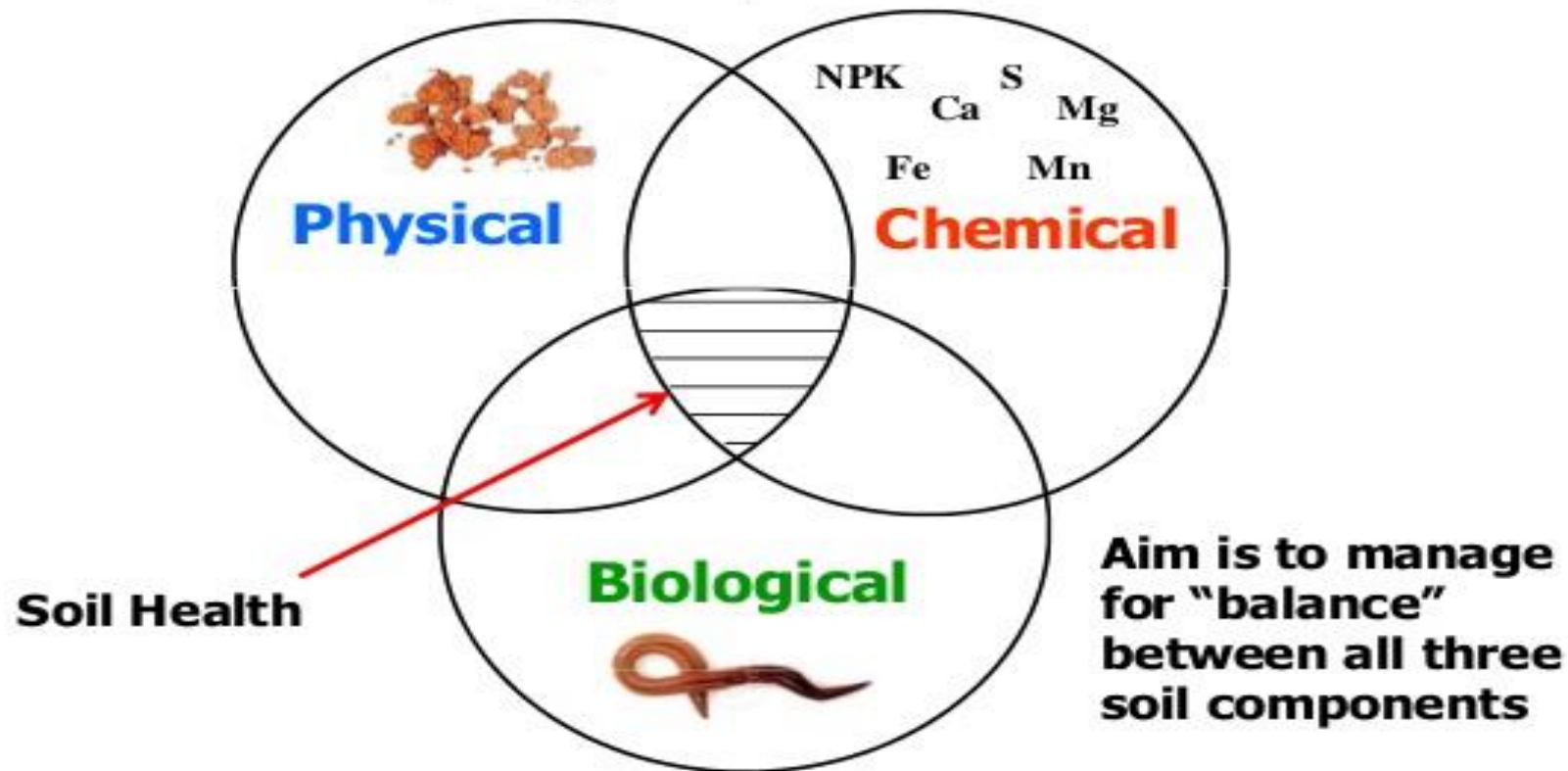


when you consider the variability that likely exists within a field because of inherent soil formation factors and past production practices, **the collection of a representative soil sample becomes more of a challenge**

**How do we measure
Soil Health?**



Soil quality is the capacity of a soil to function (in a farm or ecosystem) and thereby sustain productivity, maintain environmental quality, and promote plant and animal health



Tools

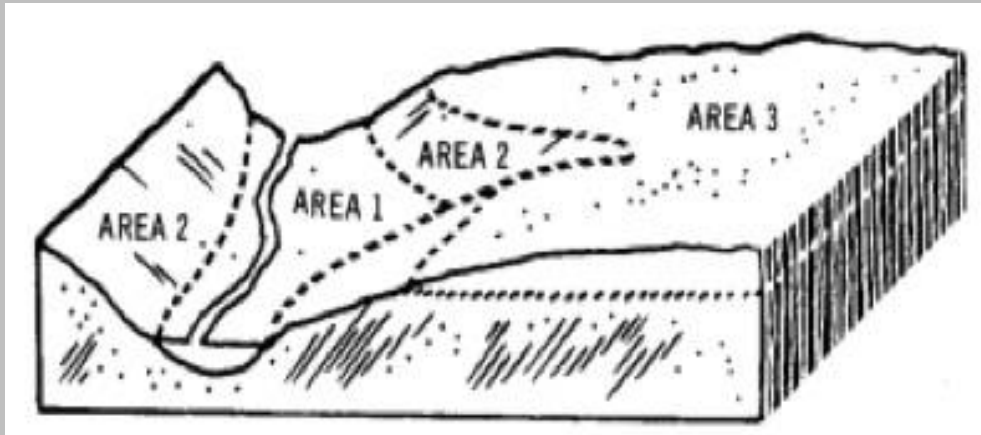


12/5/2017

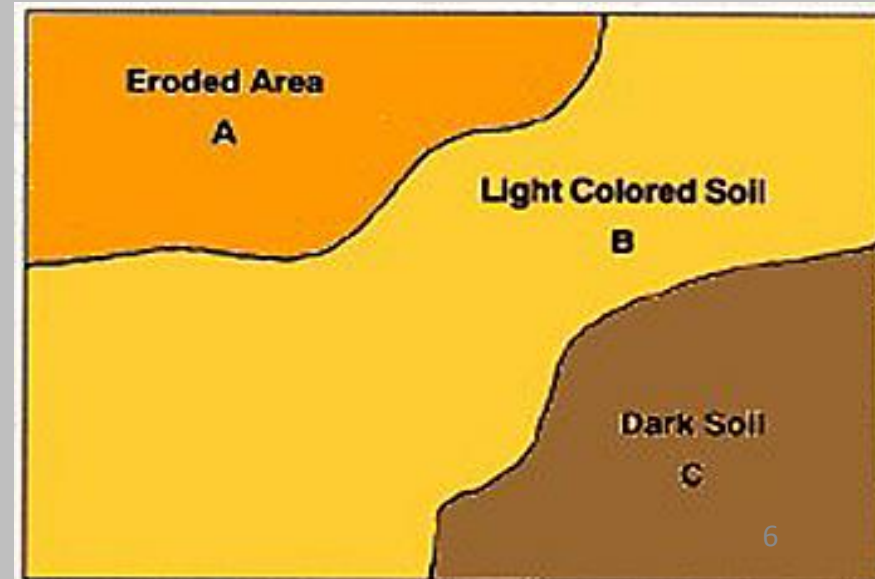
Sampling Plan

Before heading to the field, be sure you have your objectives clearly in mind.
What do you want to learn?

Management zones
Yield maps
Topography
Soil type
Soil color



Unusual spots obvious by plant growth and/or visual soil color/texture differences should be collected as a separate composite sample from other areas.



Soil sample depths

What depths to sample?

Normally in most areas of the country, samples are taken from the 6-8" top sample

A six-inch depth is suggested for routine tests of pH, organic matter, phosphorus (P), potassium (K), and zinc (Zn).

** Winter wheat gets about 70% of water and nutrients from the top 24 inches of the soil

Stratified layers: Which ones?

Sample for stratified layers:

- 0-3 inches or plow layer
- 3-6 inches
- 6-12 inches
- 1 foot increments

Soil Test Labs

- Use a “certified” lab that incorporates a QA/QC program
- For annual sample comparisons, use the same lab
- Sample same time of the year for comparing year-year results

A study from the University of Kentucky found that soil values will vary seasonally, and that they tended to be lowest in the fall.

You are making purchasing decisions of \$100,000's based on a few soil sample results.



North American Laboratory Proficiency Program is administered by the Soil Science Society of America (www.naptprogram.org) and certifies labs



Soil pH

(measure of the acidity or alkalinity of the soil)

Soil pH affects the:

- availability of nutrients
- soil structure and porosity
- herbicide activity
- micro-organisms
- and plant diseases

Low soil pH may have toxic levels of **iron, manganese, and aluminum** and are subject to more diseases and less beneficial bacteria

- **Macro**-nutrients tend to be less available in **low pH** soils
- **Micro**-nutrients tend to be less available in **high pH** soils



In field soil diagnostic tool

- Identify problem areas in fields
- Collect soil core
- Use a soil pH meter to make instant field checks.
- Check soil column inch by inch
- Observe stratified layers
- Record soil pH results







4.1 pH

No-Vegetation Area		Vegetation Area	
1"	4.1	1"	5.7
2"	5.1	2"	4.9
3"	5.4	3"	5.0
4"	5.4	4"	5.1
5"	5.2	5"	5.3

5.7 pH



597

Seed Row pH	
1 inch	-
2 inch	-
3 inch	-
4 inch	-
5 inch	-
6 inch	-

Seed Row pH	
1 inch	-
2 inch	-
3 inch	-
4 inch	-
5 inch	-
6 inch	-

Questions