

Figure 1 Past and Present Approaches to Soil Fertility

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| PAST VIEW | EMERGING VIEW |
| Soil is basis to support plants; nutrients and minerals must be added and balanced according to limiting factors and crop removal | Soils function as self-structuring systems; biology regulates crop growth, delivery of nutrients and soil physical integrity |
| LAB TOOLS SUPPORTING THE VIEW | |
| SOIL CHEMICAL ANALYSIS Short-term chemical extractions; calibration of soil liquid extracts to relative crop yield; balancing extracted soil mineral levels; precision grid nutrient mapping | SOIL HEALTH TEST Soil CO ₂ respiration, soil earthworm counts, bacteria and fungi mass, soil organic matter; water soluble carbon, humus amino-N |
| Actions/Results of Applying this approach | |
| Increased use of mineral supplementation; high costs of nutrient-mineral inputs; lower net profit of yield; increased digitalization of fertilization; increased soil compaction; salinization; loss of organic matter; decrease in soil biology; unreliability of collapse of yields | Reduced expenditure on fertilizers; less nitrate-leaching; increased carbon sequestration; increased use of soil building inter-crops; inclusion of animals due to positive soil effects; reduction in soil tillage; improved soil structure, improved yield reliability |