

Soil Health: Alderney Room
Bringing Back the Soil for Improved Productivity

Claude Berthélemé

Executive Summary

The lecture given by Claude Berthélemé is useful especially for the new farmer by focusing on site selection and the mechanics of developing or rehabilitating soil. Claude makes recommendations to help focus energy in efficient and productive ways on organic farms. He also emphasizes the time commitment required to effect positive change. Another take-home message is of the importance of planning ahead based on the demands of the soil. Claude has an excellent slideshow of this presentation.

Detailed Notes

- This presentation is targeted at new entrants into farming
- Topics include:
 - ❖ Cover crops & rotations
 - ❖ Fallow, abandoned land, soil reclamation
 - ❖ Rehabilitation of soil is difficult if previously abused
 - ❖ Plan carefully: high value crops may be expensive to establish
 - ❖ Observations of sites
- Site Selection: Idle land is sometimes difficult to convert to organic.
 - It takes more than 2 years to condition soil
 - Previously prepared fields are difficult to obtain
 - Annual weeds gain population successively
 - Why hasn't the land been farmed? It is useful to get back-story of land, topography, accessibility while investigating property.
 - New entrants need to take *time* because *there are no short cuts*.
- Site Selection: Most common problem is *drainage*.
 - Soil characteristics?

- Field characteristics? (example: deer & wildlife)
- Ask for advice (example: local experts, community farmers)
- **Planning Ahead: Multiple years**
 - In the first 2 years an estimated \$1000-\$1500 per hectare is needed to get established.
 - Specific soil conditions should be tested (find out what is needed) and then plan accordingly.
 - Most amendments are not immediately effective. Even lime takes months to take effect.
 - Include in the plan: additions of organic matter, sustainability measures, cost of inputs.
 - Soil has a natural buffering capacity to minimize the intensity of reaction to stimulus – including amendments.
 - Any intervention should also take into account crop rotation.
- **Soil testing is very valuable, especially when first starting and developing (micronutrients, macronutrients, water, and pH).**
 - Labs also have a formula to determine a recommendation of lime usage.
 - Assessment should include suitability (crop)
 - More than a chemical test, soil tests can help you optimize conditions for biological activity.
- **Weed Management:**
 - Map your weeds to identify zones and species to help come up with a strategy.
 - Weed identification also depends on the time of year and should begin with the first flush.
 - Decomposing weeds or roots can impede crop growth and quality due to allelopathic compounds that are released.
 - Perennial weeds require a long-term management strategy.
- **See slide on Indicators, useful for site assessment, including common grasses.**

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- See ACORN website for directory of allowable inputs and disease & pest management.
- *Fallow*: use for high value crop land
 - Use for severe infestation of perennial weed (example: couch grass)
 - Till repeatedly with the goal of plant desiccation by bringing rhizomes to surface. See slides.
 - Objective: delete root mass and energy reserves of undesirables.
 - Some pastures can control couch grass through grazing.
- Recommendation: Jean Duval studied organic control of couch grass. Information available on the internet.
- Recommendation: Use fallow and cover crop working together. Depending on the infestation, certain cover crops would be preferable. Example: rye & oats can suppress couch grass.
- Drainage: research to know what you're doing. Example: Grade, depth of soil.
 - Big capital costs to manipulate drainage
 - Study site for several years before investing
 - Raised beds dry out well, though aisles and mechanized areas may tend to be always wet.
 - Open ditching may need to be readjusted (limitations of any method).
- Soil structure desired: fluffy!
 - Tillage & traffic destroy soil structure. Objective is don't overwork (pulverize).
 - Soil crusting indicates too little organic matter, and it these sites would be difficult for small seeds.
 - You can repair many things about the soil but there is never a quick fix. Perennial forage is a useful tool.
- Field stubble can be high in Carbon but lower in Nitrogen, providing long-lived organic matter or humus to soil.
- Increase biological activity by also improving soil structure.
- There is an important site to crop suitability to be considered.

- Site selection order of events:
 - 1) chemical analysis (early)
 - 2) identify problems
 - 3) monitor
 - 4) changing issues
 - 5) prioritize actions
 - 6) amend soil
 - 7) implement long-term strategies
- See slides for more details!