Guidance for Implementation of Soil Monitoring Protocol

The Demeter Biodynamic Farm Standard is at once a set of minimum requirements for becoming certified Biodynamic and an ideal to be striven for with the aim of continued improvement of soil and raised food, forage and fiber. There is an emphasis of regenerating fertility and vitality from within the farm using diverse options including livestock integration. The purpose of the Soil Monitoring Protocol is to bring an element of objective. quantifiable verification of a farm's striving toward the ideal Biodynamic farm. Establishing an initial benchmark includes an on-farm assessment of soil quality and a laboratory measurement of soil organic matter or soil organic carbon. In the years following, the same assessment is done and compared overtime within the context of the history of land management. There is no correct outcome of the initial assessment, rather the purpose of the assessment is to observe the changes occurring in a defined area of the farm.

The Biodynamic standard requires that a certified farm maintains or increases the soil carbon. An area of the farm is chosen for assessment that is a typical representative of the farm's management. The farmer will choose the area (a field, a block, a pasture, a repeating strip planting, etc.) and explain to Demeter why the area is representative of the farm. The area must not be too small to prevent statistical bias.

If the Soil Monitoring Protocol shows that soil carbon is maintained or improved and the average scoring is maintained or improved, the Biodynamic Standard is considered met.

If the soil organic carbon/soil organic (SOC/SOM) matter or the average on-farm scoring has decreased for two consecutive assessments (not less than 5 ½ years and not more than 7 years), the farmer will need to offer Demeter an explanation of probable reasons for the decrease. A plan must be developed by the farmer to restore the SOC/SOM to the original or better level. The On-Farm Measurement Worksheet will be used as a tool for the farmer and Demeter to help determine the general health of the soil and possible causes for declining and increasing SOC/SOM.

The Soil Monitoring Protocol needs to be completed within a year of the roll out. An existing test report from the previous two years may be used if parameters of the test meet the parameters of the Soil Monitoring Protocol along with a new on-farm assessment. A new soil test and on-farm assessment will be required later so the sampling remains within a three-year interval.

Factors considered when making certification decisions:

- Entire crop rotation and the timing of the soil sample within the crop rotation.
- Use of soil carbon building practices overall

- Identified hinderances and capabilities (e.g., knowledge or lack of Biodynamic Preparation use, training opportunities offered for farmer or staff)
- Existing management plans and/or plans to correct soil carbon loss
- It is recognized that soil carbon and soil organic matter can change slowly and not always in an increasing direction. Some crops result in losses while others result in increases. Over time, the general trend of soil carbon/soil organic matter needs to be maintained or increasing from the initial assessment.

Toolbox of options for correction as found in the Biodynamic Standards:

- Increase Biodynamic Preparation use
- Increase livestock integration within maximum Demeter's stocking rates
- Increased use of cover crops
- Allowing cover crops to mature further prior to termination (e.g., the plants are allowed to flower rather than termination in a young, vegetative stage)
- Additional applications of farm-derived compost
- Increasing permitted imported fertility applications up to the maximum allowed

Order of escalation level with identified soil carbon level decline is:

0. Standard requirement is being met. No further action.
1. Observation - first declined test result after initial or later assessment – year three
2. Minor nonconformity - second consecutive declined test result – year six
3. Major Nonconformity – third consecutive declined test result - year nine
4. Certification suspension– fourth consecutive declined test result - year twelve

If the soil carbon level increases to the initial assessment, the escalation level resets to zero. Consideration will be given for the possibility of the initial assessment being taken at the SOC/SOM high point of a crop rotation; it may be the case that the level of maintaining SOC/SOM is a lower level than the initial assessment. This determination will be made over multiple soil testing periods.

If soil carbon levels are increasing after a decline below the initial assessment, the escalation level will remain an Observation with improvement noted.

Process –

1. Farmer completes assessment at a time when the soil is biologically active and a soil test – results submitted to Demeter USA

2. The inspector conducts an assessment onsite of the monitoring location and the whole farm according to the ECERT checklist parameters that includes observations of the soil/visually, texture/feel, smell, noted issues of compaction and geologic challenges, observations of soil life signs – micro and macro, observations of life above ground – insects, birds, reptiles, mammals.
3. Demeter reviews the soil monitoring assessment submitted by the farmer, the reporting of the inspector, and follows up with the farmer if more details are needed. Demeter then determines if the soil carbon is maintained or increasing and if a Finding of observation or nonconformity needs to be issued.