SOIL HEALTH & NUTRIENT TEST QUICK GUIDE*

Woods End® Laboratories INCORPORATED

SOLVITA®

FALL 2017 INTRODUCES AMERICAN CLIMATE AND RAINFALL ZONES

❶ **Soil Health Factors** are the sum of microbial, organic and physical traits related to soil biological functioning shown numerically and with their categorical rating compared to all past samples tested. Climate Zone is now used to adjust the interpretation of these levels since there is no single national standard.

❷ **Overall Fertility Score** integrates <u>nutrient sufficiency</u> with the <u>biological health score.</u> High soil quality is indicated by a score close to 100, which is rare. Values above 60 are very good.

❸ **Soil Health Score** integrates only key biological and physical traits; a perfect score is 50 and 25 is good (see below *How is the health score calculated*).

❹ **Cover Crop Recommendations** provide a general guide based on level of soil health with the lower health scores getting the highest legume ranking. The choice shoudl also be based on season and total available-N.

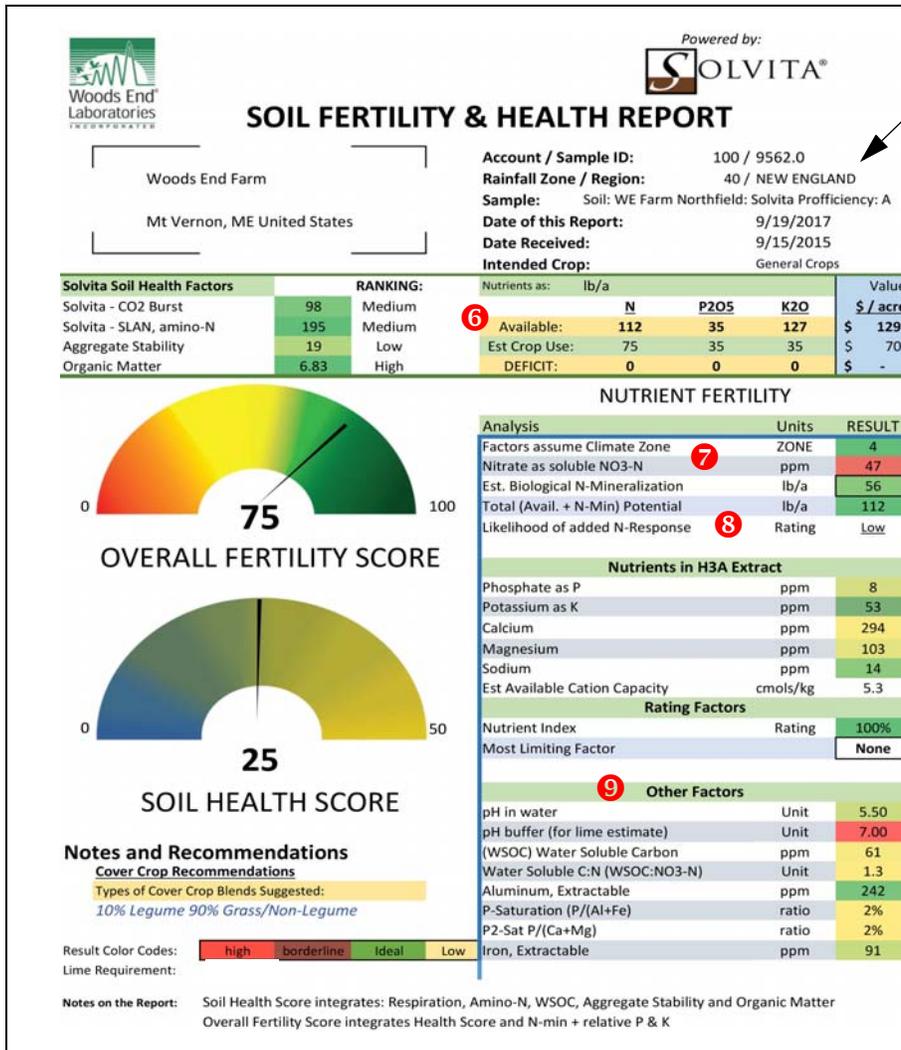**Limestone:** The needed limestone is calculated from the buffer-pH.

SOIL FERTILITY & HEALTH REPORT

Powered by: **SOLVITA®**

Woods End® Laboratories INCORPORATED

Woods End Farm

Mt Vernon, ME United States

Account / Sample ID:		100 / 9562.0
Rainfall Zone / Region:		40 / NEW ENGLAND
Sample:		Soil: WE Farm Northfield: Solvita Profficiency: A
Date of this Report:		9/19/2017
Date Received:		9/15/2015
Intended Crop:		General Crops

Solvita Soil Health Factors		RANKING:
Solvita - CO2 Burst	98	Medium
Solvita - SLAN, amino-N	195	Medium
Aggregate Stability	19	Low
Organic Matter	6.83	High

Nutrients as: lb/a	**N**	**P2O5**	**K2O**	**$ / acre** Value
Available:	112	35	127	$ 129
Est Crop Use:	75	35	35	$ 70
DEFICIT:	0	0	0	$ -

NUTRIENT FERTILITY

Analysis	Units	RESULT
Factors assume Climate Zone	ZONE	4
Nitrate as soluble NO3-N	ppm	47
Est. Biological N-Mineralization	lb/a	56
Total (Avail. + N-Min) Potential	lb/a	112
Likelihood of added N-Response	Rating	Low

Nutrients in H3A Extract		
Phosphate as P	ppm	8
Potassium as K	ppm	53
Calcium	ppm	294
Magnesium	ppm	103
Sodium	ppm	14
Est Available Cation Capacity	cmols/kg	5.3

Rating Factors		
Nutrient Index	Rating	100%
Most Limiting Factor		None

Other Factors		
pH in water	Unit	5.50
pH buffer (for lime estimate)	Unit	7.00
(WSOC) Water Soluble Carbon	ppm	61
Water Soluble C:N (WSOC:NO3-N)	Unit	1.3
Aluminum, Extractable	ppm	242
P-Saturation (P/(Al+Fe)	ratio	2%
P2-Sat P/(Ca+Mg)	ratio	2%
Iron, Extractable	ppm	91

OVERALL FERTILITY SCORE 75 (0 – 100)

SOIL HEALTH SCORE 25 (0 – 50)

Notes and Recommendations
Cover Crop Recommendations
Types of Cover Crop Blends Suggested:
10% Legume 90% Grass/Non-Legume

Result Color Codes: high | borderline | Ideal | Low
Lime Requirement: FALSE

Notes on the Report: Soil Health Score integrates: Respiration, Amino-N, WSOC, Aggregate Stability and Organic Matter
Overall Fertility Score integrates Health Score and N-min + relative P & K

How is the soil health score calculated?

Five independent factors (see ❶+❺) are used to calculate a health score with the matrix shown below.

Factor Measured	*Example*	Highest Expected	Score if at Highest Value	Result
Solvita CO2 Burst (Respiration)	90	200ppm	50	23
Solvita SLAN (Amino-N)	133	300ppm	50	22
Aggregate Stability	40	80%	50	25
Organic Matter	4.7	7.0%	50	9
WSOC (see other factors)	25.0	400ppm	50	34
Total Soil Health Score - averaged for 5 factors:				**22**

* a full interpretation guide comes with every soil test

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Rating Factors

	Rating	
Nutrient Index	Rating	100%
Most Limiting Factor		None

❾ Other Factors

	Units	RESULT
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Cover Crop Recommendations

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Lime Requirement:

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NEW in Fall 2017: Rainfall and Climate Zones and American landscape region are noted. Climate zone is used to adjust the N-min results and interpretations. The **intended crop** is used for estimating nutrient requirements, which should be adjusted to local conditions.

❻ AVAILABLE, Crop Use and Deficit: very readily available + potential biologically susceptible nutrients your crops may have access to. **CROP USE**: the nutrients your crop is expected to use based on yield factors and ordinary USDA uptake tables.
DEFICIT: What you may need to provide.

❼ Nitrogen Factors: *Nitrate-N* and *Biologically available N* (calculated from microbial rate and climate zone) are shown.

❽ Likelihood of N-response is based on the quantity of organic amino-N (SLAN) which is stronly correlated with the natural N-supplying ability of soils not accounted for by available-N or soil respiration.

Phosphate is indicated by traits including free aluminum and iron (Al+Fe) and bases (Ca+Mg) all of which temporarily bind phosphate. If P is sufficient and the P-saturation ratios are normal (>5) it is *unlikely* more P is required.
Nutrient Index (0 - 100) approaches 100 if all major nutrients appear close to optimum.
Most Limiting Factor will be either N, P or K or none if all are present in sufficient mass.

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❾ Other factors:

1) **pH and buffer-pH** are common tests (1:2 water extract and Woodruff buffer) and are used to estimate the overall soil reaction and the need, if any, for limestone supplementation. Lime is shown under the ratings scale on the left, if any needed. Buffer-pH and lime estimates *will be made optional as of 2018*.

2) **Water Soluble Carbon** indicates amount of *free or soluble carbon* believed to originate from biological factors such as plant root exudates and solutes from decaying organic matter and manure additions. This fraction is considered very postive. **Water Soluble C:N** is the ratio of this soluble-C to the total available N. This either indicates potential immobilization potential (if C:N is high or >20) and C-sequestration or excessive soluble nitrogen and/or net loss of carbon if C:N is very low (<10).

3) **P-Saturation** is a measn to estimate the likelihood of phosphorus being partly tied up by Al+Fe at low pH and P2-saturation indicates if Ca+Mg maytemporarily tie up phosphorus at higher pHs. The saturation ratios are used to modify the estimation of a need for more phosphate.

NOTES. **CEC and Cations:** The weak soil extraction method shows *potentially very active* nutrients (K, P, Ca, Mg, Na). This extraction only removes pool of cations believed to be very readily available and not the total amount commonly used for CEC and base saturation calculations. The *available CEC* is calculated from this weak cation pool.
Value of N-P-K: The economic value used in the nutrient tables (❻) are based on USDA estimated costs of pure N-P-K and are intended purely to appreciate the potential value of nutrients already present in soil in contrast to any additional amounts whcih may be required. The actual cost of nutrients depends ont heir form and obviously manures and organic nutrients carry different pricing mechanisms.