SOIL HEALTH & NUTRIENT TEST QUICK GUIDE *21

CLIMATE ZONES, RAINFALL ZONES and SOIL ORDERS-SUBORDERS

❶ **Soil Health Factors:** Traits which are associated with ecological functioning and rated independently of available nutrients and crop production. Shown numerically with ranking based on historical values.

Climate Zone, Rainfall Zone and *Soil Orders* are used to adjust interpretation.

❷ **Overall Fertility Score** integrates soil health factors with mineral nutrients 50/50, producing a score that should compare reasonably with crop productivity. Highest quality is a score close to 100, which is very rare. Values above 60 are optimal. The <u>Potential Best Score</u> for this soil and region is seen as a red line.

❸ **Soil Health Score** is based on averaging six soil health factors against a maximum expected value. No single trait dominates and the score is moderately rich. The maximum attainable score is seen as the <u>Red Pointer</u> and the lowest expected score is the <u>Blue Pointer</u>. All are based on local soil and climate factors (see below "How is the health score calculated").
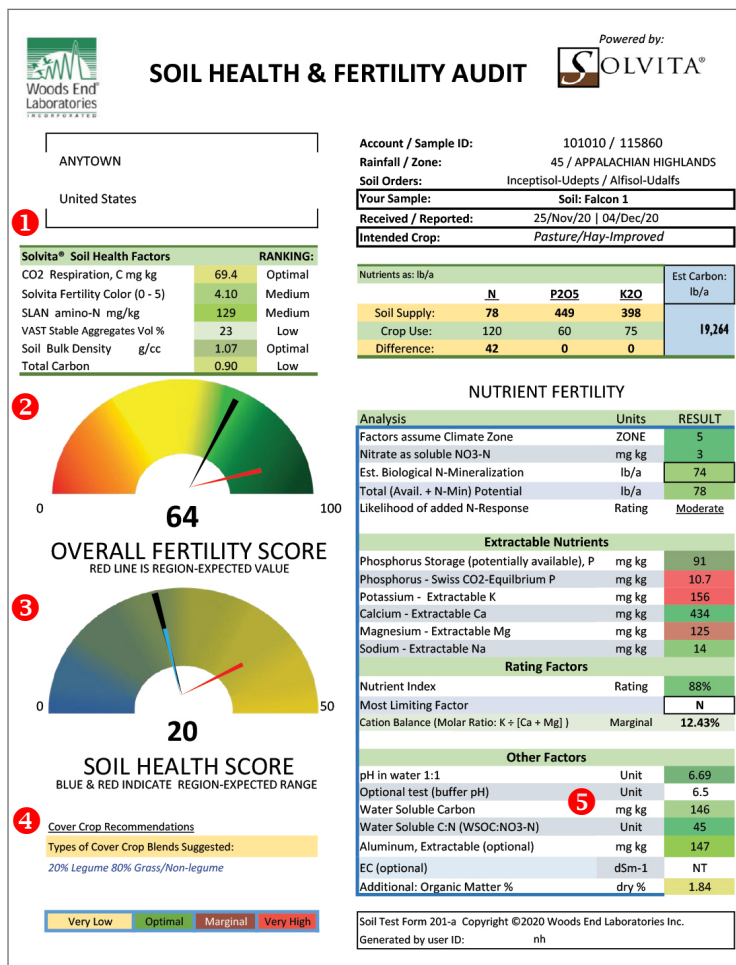
❹ **Cover Crop Recommendations:** Generally high nitrate soils get a grass recommendation and low SLAN soils get a legume choice. This is only a suggestion and should be based on the season and current crops.
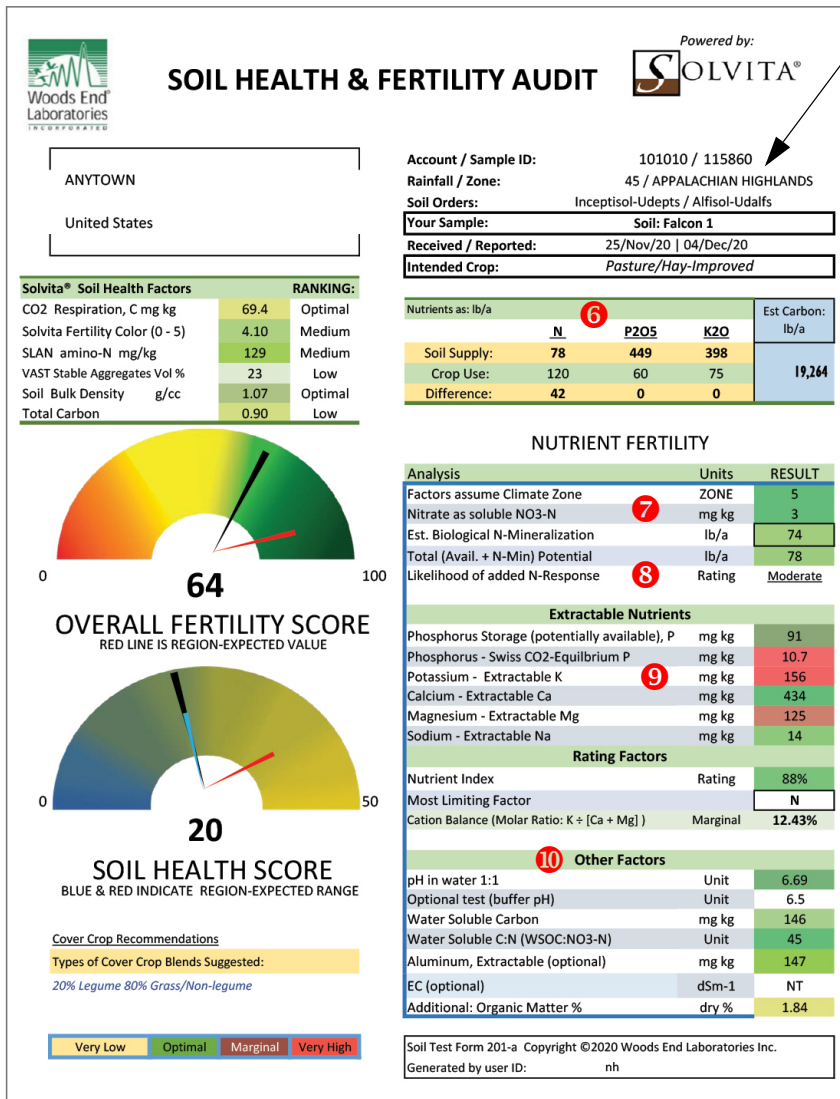

SOIL HEALTH & FERTILITY AUDIT

Powered by:

Woods End Laboratories

ANYTOWN
United States

Account / Sample ID:	101010 / 115860
Rainfall / Zone:	45 / APPALACHIAN HIGHLANDS
Soil Orders:	Inceptisol-Udepts / Alfisol-Udalfs
Your Sample:	Soil: Falcon 1
Received / Reported:	25/Nov/20	04/Dec/20
Intended Crop:	Pasture/Hay-Improved

❶

Solvita® Soil Health Factors		RANKING:
CO2 Respiration, C mg kg	69.4	Optimal
Solvita Fertility Color (0 - 5)	4.10	Medium
SLAN amino-N mg/kg	129	Medium
VAST Stable Aggregates Vol %	23	Low
Soil Bulk Density g/cc	1.07	Optimal
Total Carbon	0.90	Low

Nutrients as: lb/a				Est Carbon: lb/a
	N	**P2O5**	**K2O**	
Soil Supply:	78	449	398	19,264
Crop Use:	120	60	75	
Difference:	42	0	0	

❷

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OVERALL FERTILITY SCORE
RED LINE IS REGION-EXPECTED VALUE

0   100

NUTRIENT FERTILITY

Analysis	Units	RESULT
Factors assume Climate Zone	ZONE	5
Nitrate as soluble NO3-N	mg kg	3
Est. Biological N-Mineralization	lb/a	74
Total (Avail. + N-Min) Potential	lb/a	78
Likelihood of added N-Response	Rating	<u>Moderate</u>

Extractable Nutrients		
Phosphorus Storage (potentially available), P	mg kg	91
Phosphorus - Swiss CO2-Equilbrium P	mg kg	10.7
Potassium - Extractable K	mg kg	156
Calcium - Extractable Ca	mg kg	434
Magnesium - Extractable Mg	mg kg	125
Sodium - Extractable Na	mg kg	14

Rating Factors		
Nutrient Index	Rating	88%
Most Limiting Factor		N
Cation Balance (Molar Ratio: K ÷ [Ca + Mg])	Marginal	12.43%

❸

20

SOIL HEALTH SCORE
BLUE & RED INDICATE REGION-EXPECTED RANGE

0   50

Other Factors		
pH in water 1:1	Unit	6.69
Optional test (buffer pH)	Unit	6.5
Water Soluble Carbon	mg kg	146
Water Soluble C:N (WSOC:NO3-N)	Unit	45
Aluminum, Extractable (optional)	mg kg	147
EC (optional)	dSm-1	NT
Additional: Organic Matter %	dry %	1.84

❺

❹ Cover Crop Recommendations
Types of Cover Crop Blends Suggested:
20% Legume 80% Grass/Non-legume

| Very Low | Optimal | Marginal | Very High |

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How is the soil health score calculated?

Six co-related factors (from ❶ and ❺) are used to calculate a health score with the matrix shown below.

Factor Measured	*Example*	Highest Expected	Max Score	Result
Solvita CO2 Burst mg/l	70	250	50	13.9
Solvita Fertility Color (units)	4.1	5.25	50	39.0
SLAN - Labile amino-N mg/l	129	400	50	16.1
VAST Stable Aggregates Vol%	23	80	50	14.4
Water Soluble Carbon mg/l	146	400	50	18.3
Total Carbon g/100g	0.9	3.5	50	12.9
Total Soil Health Score - averaged for 6 factors:				**19.2**

* A full interpretation guide comes with every soil test

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STABILITY FACTORS: *Soil Orders/Soil Suborders, Climate and Rainfall Zones*: These are factors that influence interpretation. Soil orders and suborders are accessed from national SSURGO maps with some EU and Canadian Ecophysiography zones. Climate zone + rainfall are from national spatial charts and are used to adjust the N-min expectations. Soil Orders set the baseline and target (Hi/Low) soil scores.

The **intended crop** is based on client information and is used as a guide for Crop Use.

❻**NUTRIENTS: Supply, Use and Difference**:
The table shows available and potential biological nutrients your crops may have access to.
CROP USE: the nutrients your crop is expected to use based on yield factors and national use tables (adjust per your own needs).
Difference: Total supply minus expected crop use is what you may need to provide in addition to what is already present.
Est. Carbon: This box estimates the amount of carbon present by area (acre or ha) from the TC test (or estimated from OM) and corrected for lab bulk-density. This can be adjusted to field density.

❼**Nitrogen Factors:** *Nitrate-N* is tested and *Biologically available N* calculated from microbial rate and climate zone. The total combines 60% of the available pool and all the estimated biological pool.

❽**Likelihood of N-response** is based on the quantity of organic amino-N (SLAN) that is present and the probability from a generalied research-based probalistic equation that crops would respond to additional nitrogen.

❾**MINERALS/ RATING FACTORS: Storage P** vs the **Equilibrium-P** - available + fixed and strictly available; equiP is what is immediately available in the water pool saturated with CO_2.
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.

❿**OTHER FACTORS:**
1) **pH** is measured in 1:2 water extract. pH buffer is utitlized to estimate the need, if any, for limestone supplementation and to better calculate cation exchange capacity.

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. **Water Soluble C:N** is the ratio of this measured soluble-C to the measured nitrate-N and has been found to correlate closely to N-immobilization in a range typical for the soil and region.

NOTES: Soil extraction uses two methods, one to obtain storage + available (Mehlich-1) and equilibrium P based on the Swiss saturated CO_2 method which indicates actual presence in the plant-available pool.

* a full interpretation guide comes with every soil test. Supporting literature for this form of test and interpretation is available by request. For information on Solvita methods go to woodsend.com and solvita.com.