

# **2014 Crop Management Diagnostic Clinics – Soil and Water**

**Nick Ward**

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## “Soil Health”

a new way to look at soil testing

- Gauge soil fertility and biology
- Traditional look at mineral NPK and explore organic nutrient content
- Assessments of soil microbiological activity
- A systems approach

2014CMDCSoil&Water-WARD (1)

## Haney Test

- Multiple tests and methods for a single report and recs
  - H3A Extract
  - Microbial Activity
  - Water soluble nutrients
  - C:N Balance

2014CMDCSoil&Water-WARD (2)

### • H3A Extract

- Organic acids simulate root zone activity
- Acids are a food source for microbes
- Malic, Oxalic, Citric Acid solution
- $\text{NO}_3^-$ ,  $\text{NH}_4^+$ ,  $\text{PO}_4^{3-}$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Fe}^{2+}$ ,  $\text{Al}^{3+}$ , Total and organic P

### • Microbial Activity

- Solvita  $\text{CO}_2$  burst test
- Drying and wetting cycle mimics natural



2014CMDCSoil&Water-WARD (3)

## Nature’s Solvent – H<sub>2</sub>O


### • Water Extract

- Organic C, Total N,  $\text{NO}_3^-$ ,  $\text{NH}_4^+$

### • Calculated

- Organic N, Organic C:N, Mineralizable N, Organic N release, Soil health score

2014CMDCSoil&Water-WARD (4)



Ag Testing - Consulting

**Biological Soil Analysis Report**

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Accession No. 1

Service No. 1  
Date Received: 11/11/10  
Date Reported: 11/11/10

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Results For: \_\_\_\_\_  
Sample ID 1: \_\_\_\_\_  
Sample ID 2: \_\_\_\_\_  
Lab No.: \_\_\_\_\_

**Hemery - Soil Health Analysis**

1:1 Soil pH	8.6	SCAP Aluminum, ppm Al	224
1:1 Saturated Salts, mmol/L	8.15	SCAP Iron, ppm Fe	86
Excess Lime Rating	1		
Organic Matter, % OC	1.2	Calculation	
		Organic C Organic N	13.7
		Nitrogen mineralization, ppm N	3.8
		Organic Nitrogen Reserve, ppm N	6.0
		Organic Nitrogen Reserve, ppm N	7.2
		Phosphorus mineralization, ppm P	2.5
		Organic Phosphorus Reserve, ppm P	6.2
		Phosphorus Saturation Adj FA, %	14.1
		Phosphorus Saturation Co. %	18.3


**NMA Extract**

Nitrate, ppm NO3-N	7.1	Soil Health Calculation	5.84
Ammonium, ppm NH4-N	8.6	Clear Crop Suggestion	75% Legume 95% Grass
Inorganic Nitrogen, ppm N	15.9		
Inorganic P (M), Phosphorus, ppm P	37.8		
Total SCAP Phosphorus, ppm P	46.3		
Organic Phosphorus, ppm P	7.7		
SCAP Potassium, ppm K	86		
SCAP Calcium, ppm Ca	250		

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Received By: Lazen Goodness      3392864      Page 1 of 2      Page 1 of 2

Run: 208-224-2410      web: info      4087 Cherry Ave., P.O. Box 788      4087 Cherry Ave., P.O. Box 788  
Fax: 208-224-1940      www.wardlab.com      Aberdeen, Idaho 83401-0788      Aberdeen, Idaho 83401-0788



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**Hemery - Soil Health Analysis Cont'd.**

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<b>Nutrient Quantity Available for Next Crop</b>		<b>Nutrient Storage to Using the Hemery Test</b>	
Nitrogen, lbs N/A	37.6	Traditional evaluation, lbs N/A	14.1
Phosphorus, lbs P2O5/A	62.6	Hemery Test II evaluation, lbs N/A	37.6
Potassium, lbs K2O/A	119.3	Nitrogen Difference, lbs N/A	22.8
Nutrient Value, \$/A	117.45	N Savings, \$/A	15.11

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**Fertilizer Recommendations**

Crop	Yield Goal	Nitrogen, lbs N/A	Phosphorus, lbs P2O5/A	Potassium, lbs K2O/A
Corn, Bu	250	212	57	11

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