

Agricultural Services



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Applications:

These testing services provide the agricultural industry with the data they need to make informed decisions concerning all aspects of nutrient management. Fertilizer manufacturers and custom blenders will appreciate the wide range of product testing we provide. If land application of bio-solids such as manure and compost are of concern, we are familiar with both the environmental and agricultural implications.

Reference Methods:

Soil Science Society of America, Methods of Soil Analysis-Chemical Methods.
AOAC Methods of Analysis, 18th edition.
Test Methods for the Examination of Composting and Compost.
503E Municipal Sludge application rules.

Soil Fertility Analyses

Soil Fertility Testing Packages

S3M	(S1M plus all of the following: B, Cu, Fe, Mn, Na, S, and Zn)	\$ 16.50
S2M	(S1M plus two of: B, Cu, Fe, Mn, Na, S or Zn)	\$ 12.00
S1M	(Soil pH, Buffer pH, Ca, Mg, K, P and OM, calculated CEC, Base Sat.%)	\$ 8.00

All of the above come with these standard services!

Next Day turnaround!
2 crop recommendations!

Email report delivery!
Easyread® Graphical report!

Substantial volume discounts are available, please call to discuss.

<u>Individual Analysis</u>	<u>With Package</u>	<u>Without Package</u>
Na, S, B, Zn, Mn, Fe or Cu (per element)	\$ 2.50	\$ 4.00
Soluble Salts (Cond.) 1:2	\$ 3.50	\$ 6.00
Nitrate Nitrogen	\$ 3.50	\$ 6.00
Ammoniacal Nitrogen	\$ 14.00	\$ 20.00
Chloride	\$ 15.00	\$ 15.00
Phosphorus (Bray-P1, P2 or Olsen)	\$ 6.00	\$ 10.00
Exchangeable Aluminum	\$ 12.00	\$ 15.00

Alternative Extractants:

Neutral Ammonium Acetate Cations (Ca, K, Mg, Na,)	\$ 4.00	\$ 15.00
Double Acid (Mehlich I) (Ca, Cu, Fe, K, Mg, Mn, Na, P)	\$ 4.00	\$ 15.00
DTPA Micronutrients (Cu, Fe, Mn, Zn)	\$ 4.00	\$ 15.00

All fertilizer recommendations are made by ARCPACS Certified Professional Agronomists.

Plant Nutrient, Diagnostic and Golf Course Analyses

Plant Nutrient Analyses

Price/Sample

Basic PT2 (Nitrogen plus Al, B, Ca, Cu, Fe, K, Mg, Mn, Na, P, S, and Zn)

\$ 26.00

All of the above come with these standard services!

Next Day turnaround!

Custom Recommendations!

Email report delivery!

Easyread® Graphical report!

Substantial volume discounts are available, please call to discuss details

Soil & Plant Diagnostic Services

Price/Sample

Nitrate Nitrogen

\$ 10.00

Chloride

\$ 15.00

Nematode Assay: Complete Parasitic (full bag of soil required)

\$ 26.00

Golf Course Analysis

Price/Sample

Sand Classification (USGA Size limits by wet sieving)
(18, 35, 60, 140, 270)

\$ 60.00

Putting Green Physical Test (requires one gallon of sample)

Inquire

Includes:

Bulk Density

Porosity

Infiltration Rate

40cm Moisture Retention

Particle Size Evaluation

Soil Characterization

Soil pH/Electrical Conductivity

	Price
Electrical Conductivity (1:2)	\$ 6.00
pH (1:1)	\$ 6.00
pH (1:2)	\$ 10.00

Soil Salinity Analyses

Saturated Paste Package (Includes all analyses below)			\$ 150.00
Saturation Percentage	Sulfate	Individual Analysis \$25.00 Each except SAR price as listed	
pH Saturated Paste	Phosphorus		
EC Saturated Paste	Potassium		
Carbonates	Gypsum		
Bicarbonates			
Chloride			
SAR (Ca, Mg and Na)			\$ 50.00

Acid-Base Accounting

Neutralization Potential	\$ 35.00
Potential Acidity (Maximum)	\$ 45.00
Total Sulfur	\$ 26.00
Pyritic Sulfur	\$ 55.00

Lime Requirement

Adams-Evans Buffer	\$ 10.00
Woodruff Buffer	\$ 10.00
SMP Buffer	\$ 10.00

***Note: Multiple Sample submittals may qualify for a substantial discount. Call lab for quote.**

Soil Characterization

Soil Chemical Characteristics	Price
Carbon-Nitrogen Ratio (TN & TC)	\$ 75.00
Carbon-Nitrogen Ratio (TKN & TOC)	\$ 75.00
Fractional Organic Carbon	\$ 45.00
Organic Matter by Combustion	\$ 15.00
Organic Matter by Walkley-Black (Titrimetric)	\$ 45.00
Total Carbon	\$ 45.00
Total Nitrogen	\$ 30.00
Total Organic Carbon	\$ 45.00
Total Phosphorus	\$ 35.00
Phosphorus Sorption Isotherm	\$ 125.00
 Soil Physical Characteristics	
Moisture Holding Capacity 1/3 Bar or 15 Bar	\$ 30.00
Additional Pressure Limits (price per plate)	Inquire
Bulk Density (Disturbed Soil)	\$ 16.00
Particle Density	\$ 50.00
Total Soil Porosity	\$ 50.00
Particle Size Analysis: Hydrometer Method (Texture)	\$ 18.00
Particle Size Analysis: Pipet Method	\$ 70.00
Sieve Analysis (Please specify sieve sizes) Per screen	\$ 10.00
Sieve Analysis (100, 200, or 325 mesh) Per screen	\$ 10.00
 Cation Exchange Capacity/Base Saturation	
CEC-Ammonium Replacement (SW-9080)	\$ 40.00
CEC-Sodium Replacement (SW-9081)	\$ 40.00
Base Saturation % (includes CEC)	\$ 60.00
Exchangeable Sodium Percentage-ESP (includes CEC)	\$ 60.00
Sodium Absorption Ratio-SAR	\$ 50.00

***Note: Multiple Sample submittals may qualify for a substantial discount. Call lab for quote.**

Water Suitability Analyses

Livestock Suitability

Price/Sample

Basic Test W1: (Ca, Cu, Fe, Mg, Na, Cl-, Conductivity, Total Dissolved Solids) \$60.00

(One quart of sample in a clean, plastic container is required.)

Irrigation Suitability

Price/Sample

Basic Test W2: (P, K, Ca, Mg, Na, Fe, Cu, B, Cl-, Conductivity, Sulfate, Nitrate-Nitrogen, pH, Carbonate, Bicarbonate, Total Dissolved Solids, and SAR) \$65.00

Lead (Pb) analyses available upon request \$16.00

****Small Sample Sizes Subject to Additional Charges****

Domestic Well Water Suitability

Price/Sample

Basic Test W3: Purity (Total Coliform), Nitrate-Nitrogen, Ca, Mg, pH, Total Hardness, Conductivity, Total Dissolved Solids, Fe, Cu, and Pb** \$97.00

***Two separate sample containers are required.
Contact laboratory for additional instructions.*

Domestic Suitability: Call for kit.
Samples must be received in the laboratory Monday through Thursday.

Total Coliform available individually \$47.00

Fertilizer and Lime Analyses

Fertilizer Testing Packages	Price
Controlled Release Nitrogen, Available P (P ₂ O ₅) and K (K ₂ O)	\$195.00
Total N and Available P (P ₂ O ₅)	\$ 60.00
Total N, Available P (P ₂ O ₅) and K (K ₂ O)	\$ 78.00
Total N, Total P (P ₂ O ₅) and Available K (K ₂ O)	\$ 70.00
Washington Metals Package (As, Cd, Co, Mo, Ni, Pb, Se, Zn, Hg)	\$175.00
**Individual Analysis ...see page 10	

Lime Materials:	Price/Sample
Calcium, Magnesium, Total Neutralizing Value (CCE)	\$ 46.00
Calcium and Magnesium Content	\$ 33.00
Moisture (oven 105° C)	\$ 15.00
Sieve Analysis (per screen size) please specify screen size	\$ 15.00
100, 200 or 325 mesh sieves	\$ 25.00
Total Neutralizing Value (CaCO ₃ Equivalence)(CCE)	\$ 28.00
TN Lime Test Includes:	\$ 78.00
CCE, RNV, Moisture, Ca, Mg, 10, 40, & 60 mesh sieves	
Effective CCE Determination Includes:	\$ 75.00
CCE, Moisture, 8, 20, 40, 60, & 100 mesh sieves	
Relative Neutralizing Value Includes:	\$ 60.00
CCE, Moisture, 10, 40, & 60 mesh sieves	
Limestone Elemental Analysis (with Ca and Mg)	\$ 100.00
S, B, P, K, Al, Na, Zn, Fe, Mn and Cu	

A sample preparation fee of \$10.00 will be added for all dry fertilizer products, suspensions, and limestone requiring preparation.

When submitting fertilizer samples, please indicate the estimated % of nutrients expected. AOAC Methods are used where applicable.

Fertilizer Analyses

Individual Analysis	Method	Price/ Sample
Acid Insolubles	AOAC 1.3.01	\$ 20.00
Activity Index (Nitrogen)	AOAC	\$ 65.00
Biuret	AOAC 2.4.23	\$ 70.00
Chloride	AOAC 2.6.09	\$ 30.00
Free Acid		\$ 10.00
Free Ammonia		\$ 25.00
Loss on Ignition		\$ 15.00
Metals (see page 16)		
Magnesium-Water Soluble	AOAC 2.6.21	\$ 35.00
Moisture (Oven 105 C)	AOAC 2.2.01	\$ 15.00
Nitrogen - Ammoniacal	AOAC 2.4.07	\$ 25.00
Nitrogen - Nitrate	AOAC 2.4.11 or 2.4.12	\$ 30.00
Nitrogen - Total	AOAC 2.4.02	\$ 25.00
Nitrogen - Urea	AOAC 2.4.20	\$ 42.00
Nitrogen - Organic	Various methods	\$ 50.00
Nitrogen - Water Soluble	AOAC 2.4.15	\$ 36.00
Nitrogen - Water Insoluble	AOAC 2.4.15	\$ 35.00
pH		\$ 12.00
P(P ₂ O ₅)-Available (Citrate Soluble)	AOAC 2.3.12	\$ 35.00
P (P ₂ O ₅) - Ortho	AFPC 11-30	\$ 30.00
P (P ₂ O ₅) - Poly (req. Total P ₂ O ₅)	Calculation	\$ 55.00
Phosphorus (P ₂ O ₅) - Total	AOAC 2.3.02	\$ 30.00
Phosphorus (P ₂ O ₅) - Water Soluble	AOAC 2.3.09	\$ 40.00
Potassium (K ₂ O) (Soluble)	AOAC 2.5.07	\$ 26.00
Specific Gravity (25 C)	ASTM 287	\$ 25.00
Specific Gravity (60 F)	ASTM 287	\$ 25.00
Silica (SiO ₂)	AOAC 1.3.02	\$ 40.00
Sulfur (Elemental)	AOAC 2.6.28a	\$ 45.00
Sulfur - Sulfate	AOAC 2.6.28a or b	\$ 35.00
Sulfur - Total	AOAC 2.6.28a or b	\$ 35.00
Zinc (Water Soluble)	AOAC 2.6.01	\$ 30.00

Bio Solids / Land Application

Manure Analyses	Prices
M1: (Moisture, Total N, P, K)	\$40.00
M2: (<i>M1 plus</i> S, B, Ca, Mg, Na, Fe, Al, Mn, Cu, Zn)	\$49.00
M3: (<i>M2 plus</i> Cd, Cr, Pb, Ni)	\$60.00
Ammoniacal-N	\$20.00
Ash	\$15.00
Carbon: Nitrogen Ratio (TKN & TOC)	\$75.00
Moisture (oven 105C)	\$15.00
Nitrate-N	\$15.00
Metals (See page 16)	

Warning! Do Not ship manure samples in glass containers or fill containers more than 1/4 full of gas-producing manures!

503E Regulation (Monitoring)

Ammoniacal-Nitrogen	
Nitrate-Nitrogen	
Organic Nitrogen	
pH	
Total Cd, Cr, Cu, K, P, Pb and Zn	
Total Nitrogen	
Total Solids	
Total Volatile Solids	
Price/Sample	\$185.00

503E Regulation (EPA Compliance)

Total As, Cd, Cr, Cu, Hg, Mo, Pb, Se, Ni and Zn	
Total N	
Total Solids	
Price/Sample	\$220.00

Miscellaneous 503E Land Application Tests (pathogen reduction)

	Method	Price
Cation Exchange Capacity	SW-9081	\$ 40.00
Enteric Viruses	Yanko 1987	\$350.00
Fecal Coliform Class B (8 Samples) MPN/4 grams	SM-9221E	\$440.00
Fecal Coliform (1 Sample) MPN/gram	SM-9221E	\$ 65.00
Salmonella	SM-9260D	\$300.00
Specific Oxygen Consumption Rate	SM-2540G	\$100.00
Viable Helminth Ova	SM-2710	\$250.00
(Negative)		
(Positive)		\$375.00

Greenhouse Media and Compost

Container and Greenhouse Mix Test	Price
Test S8B: Conductivity, pH, Ammoniacal-Nitrogen, Nitrate-Nitrogen, P, K, Mg, Mn, Ca, Na, S, Al, Fe, Cu, B, Zn	\$ 42.00
Moisture Holding Capacity	\$ 30.00
Total Pore Space	\$ 80.00
Bulk Density	\$ 20.00
 Compost Analyses	
Basic C1: Moisture, Total Nitrogen, Phosphorous, and Potassium	\$ 25.00
Complete C2: Basic Test plus S, Ca, Mg, Na, Fe, Al, Mn, Cu, Zn, B, Soluble Salts, pH	\$ 60.00
Additional Metals (see page 16)	
 Individual Analysis	
C: N Ratio	\$ 75.00
Ash	\$ 15.00
Soluble Salts	\$ 10.00
Chloride	\$ 25.00
Ammoniacal Nitrogen	\$ 20.00
Nitrate Nitrogen	\$ 15.00
Cation Exchange Capacity (CEC)	\$ 40.00
Available Moisture: Includes 1/3 Bar and 15 Bar	\$ 60.00
Total Solids	\$ 15.00
Total Inorganic Carbon	\$ 60.00
Total Carbon	\$ 45.00
Total Organic Carbon	\$ 60.00
Sieve Analysis (please specify sieve sizes)	\$15.00/per sieve
Metals: Al, As, Ag, B, Ba, Ca, Cd, Co, Cr, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Zn	\$16.00/per metal
<i>(A digestion charge of \$10.00 will be added for less than 3 sample submitted or less than 3 analytes requested.)</i>	
*Call lab for multiple sample/multiple element quote.	

Pesticides

Multi-Residue Pesticides and Herbicides GCMS 95000

\$350 per Sample (All Compounds)

Acetochlor (Surpass)	Ethalfuralin (Sonalan)	Pendimethalin (Prowl)
Alachlor (Lasso)	Ethion	Permethrin (Total)
Ametryn	Ethyl Parathion	Prodiamine (Barricade)
Atrazine	Hexazinone (Velpar)	Profluralin (Tolban)
Benfluralin (Balan)	Isopropalin	Prometon (Pramitol)
Bifenthrin (Talstar)	Malathion	Prometryn (Caparol)
Bromacil (Hyvar)	Methyl Parathion	Propachlor
Butylate (Sutan)	Metolachlor (Dual)	Propazine (Milo-Pro)
Clomazone (Command)	Metribuzin (Sencor)	Prothiofos
Cyanazine (Bladex)	Molinate (Ordram)	Simazine (Princep)
Cycloate (Ro-neet)	Norflurazon (Zorial)	Terbacil (Sinbar)
DEF	Oxadiazon (Ronstar)	Trifluralin (Treflan)
EPTC (Eptam)	Pebulate (Tillam)	Vernolate (Vernam)

Each Compound \$150.00

Phenoxy Herbicides 95016

\$250 per Sample (All Compounds)

2,4,5-T	Dicamba (Banvel)
2,4,5-TP (Silvex)	Dichlorprop
2,4-D	Dinoseb
2,4-DB	MCPA
2,4,5-T	MCPP
Dalapon	Picloram

Each Compound \$150.00

Carbamates 90615

\$350 per Sample (All Compounds)

3-Hydroxycarbofuran	Dioxacarb
Aldicarb (Temik)	Methiocarb (Mesurol)
Aldicarb Sulfone	Methomyl (Lannate)
Carbaryl (Sevin)	Promecarb
Carbofuran (Furadan)	Propoxur (Barygon)

Each Compound \$150.00

Normal turnaround time in 10 working days.

Select from the above list any pesticide for analysis. If not in list above, please call lab to inquire.

These packages are for Agricultural screening purposes only.

Volume discounts for multiple sample and multiple compounds are also available.

Main: (901) 213-2400
Toll Free (800) 264-4522
Fax: (901) 213-2440

Pesticides

Organochlorine Pesticides—GCMS 95161

**\$350 per Sample
(All Compounds)**

Aldrin	4,4'-DDD	Endrin
alpha-BHC	4,4'-DDE	Endrin Aldheyde
beta-BHC	4,4'-DDT	Endrin Ketone
delta-BHC	Dieldrin	Heptachlor
gamma-BHC	Endosulfan I	Heptachlor Epoxide
alpha-Chlordane	Endosulfan II	Methoxychlor
gamma-Chlordane	Endosulfan Sulfate	

**Each
Compound
\$150.00**

Organophosphorous Pesticides—GCMS 95020

**\$350 per Sample
(All Compounds)**

Azinphos Methyl	Ethoprop	Parathion Methyl
Bolstar (Sulprofos)	Famphur	Phorate
Chlorpyrifos	Fensulfothion	Ronnel
Coumaphos	Fenthion	Simazine
Demeton	Malathion	Stirophos
Diazinon	Merphos	Sulfotep
Dichlorvos	Mevinphos	TEPP
Dimethoate	Monocrotophos	Tokuthion
Disulfoton	Naled	Trichloronate
EPN	Parathion Ethyl	

**Each
Compound
\$150.00**

Miscellaneous Herbicides

Price/Sample

Glyphosate (Round-up) 90017	\$350.00
Bentazone (Basagran) 95018	\$150.00
Acifluorfen (Blazer) 95019	\$150.00
Clopyralid (Lontrel) 95021	\$150.00
Fluometuron (Cotoran) 90150	Call lab for price
Imazapic 90660	\$225.00
Imazapyr 90665	\$225.00
Imazaquin (Scepter) 90667	\$225.00
Imazethapyr (Pursuit) 90667	\$225.00
Diuron (Karmex) 90240	Call lab for price
Triclopyr 90725	\$250.00

Normal turnaround time in 10 working days.

These packages are for Agricultural screening purposes only.

Volume discounts for multiple sample and multiple compounds are also available.

Feed Chemistry

Feed Packages	Price
F2 Moisture, Crude Protein, Crude Fat, Acid Detergent Fiber, TDN & Ash	\$ 80.00
F3 P, K, Mg, Ca, Na, Fe, Mn, S, Cu, & Zn	\$ 70.00
F4 Moisture and Crude Protein	\$ 35.00
F5 Moisture, Crude Protein, Ca, & P	\$ 45.00
F6 Moisture, Crude Protein, Acid Detergent Fiber, TDN, Ca, P, K, Mg, & S	\$ 78.00
F7 Moisture, Crude Protein, Acid Detergent Fiber, & TDN	\$ 55.00
F8 Moisture, Crude Protein, Acid Detergent Fiber, TDN, Ca, & P	\$ 65.00
F9 Moisture, Crude Protein, Crude Fat, Crude Fiber	\$ 45.00

Individual Analysis

Acid Detergent Fiber	\$ 35.00
Acid Insoluble Ash	\$ 18.00
Aflatoxin	Inquire
Ash	\$ 10.00
Crude Fat	\$ 25.00
Crude Fiber	\$ 30.00
Crude Protein	\$ 25.00
Moisture	\$ 10.00
Neutral Detergent Fiber (NDF)	\$ 35.00
Nitrate	\$ 25.00
T-2	Inquire
Vomitoxin	Inquire

Laboratory Methods: AOAC, NFTA, AOCS

Metals Scan

Metals Analyses	Methods	Price/Sample
Aluminum (Al)	6010	\$16.00
Antimony (Sb)	6010	\$16.00
Arsenic (As)	6010	\$16.00
Barium (Ba)	6010	\$16.00
Beryllium (Be)	6010	\$16.00
Bismuth (Bi)	6010	Inquire
Boron (B)	6010	\$16.00
Cadmium (Cd)	6010	\$16.00
Calcium (Ca)	<i>A digestion charge of \$10.00 will be added for less than 3 samples submitted or less than 3 analytes requested.</i>	\$16.00
Cerium (Ce)		Inquire
Chromium (Cr)		\$16.00
Cobalt (Co)	6010	\$16.00
Copper (Cu)	<i>For metals needed that are not listed please Inquire.</i>	\$16.00
Iron (Fe)		\$16.00
Lead (Pb)	6010	\$16.00
Lithium (Li)	6010	Inquire
Magnesium (Mg)	6010	\$16.00
Manganese (Mn)	6010	\$16.00
Mercury (Hg)	7471	\$45.00
Molybdenum (Mo)	6010	\$16.00
Nickel (Ni)	6010	\$16.00
Phosphorous (P)	6010	\$16.00
Potassium (K)	6010	\$16.00
Selenium (Se)	6010	\$16.00
Silica (Si)	6010	\$16.00
Silver (Ag)	6010	\$16.00
Sodium (Na)	6010	\$16.00
Strontium (Sr)	6010	\$16.00
Sulfur (S)	6010	\$16.00
Thallium (Tl)	6010	\$16.00
Tin (Sn)	6010	\$16.00
Titanium (Ti)	6010	\$16.00
Tungsten (W)	6010	Inquire
Vanadium (V)	6010	\$16.00
Zinc (Zn)	6010	\$16.00