

**Agricultural Service Laboratory
Clemson University
2009 Annual Report**

Soil – pages 1, 2, 3, 4

Plant Tissue – pages 5, 6, 7

Feed and Forage – pages 8, 9, 10

Animal Waste – pages 11, 12, 13

Irrigation Water – pages 14, 15

Compost – pages 16

Other – page 17

National Exchange Programs – page 18

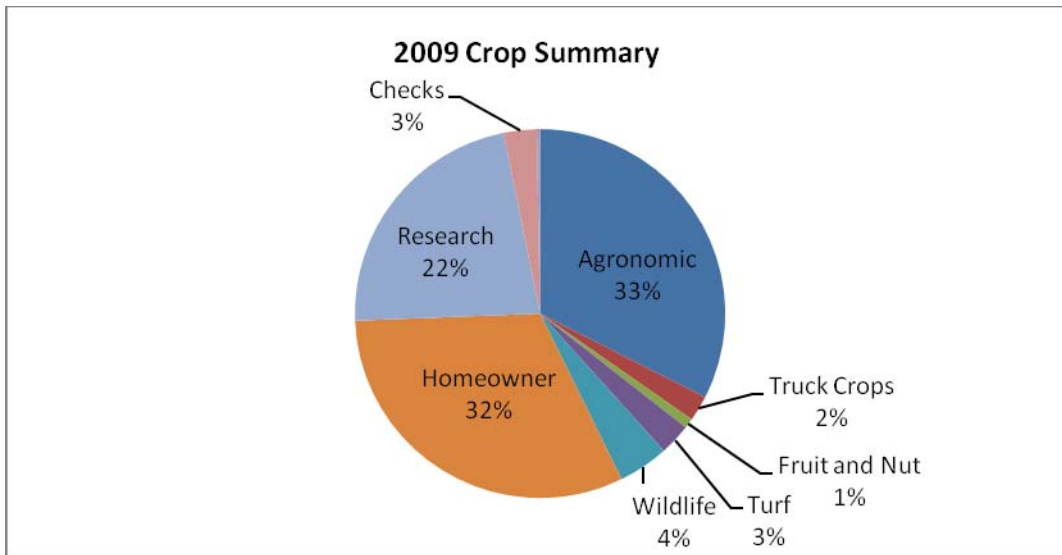
Publications and Presentations – page 19, 20

Soil

Counties	Sample Number Totals	Large Area Crop Codes	Small Area Crop Codes	Diagnostic Reports
Abbeville	184	105	79	0
Aiken	1472	578	894	0
Allendale	420	383	37	0
Anderson	646	311	333	2
Bamberg	1355	1300	55	0
Barnwell	399	286	112	1
Beaufort	1397	250	1140	7
Berkeley	625	150	474	1
Calhoun	879	745	129	5
Charleston	1461	445	1012	4
Cherokee	256	94	74	88
Chester	313	247	66	0
Chesterfield	334	257	76	1
Clarendon	2156	2014	137	5
Colleton	672	517	151	4

Darlington	1045	832	211	2
Dillon	224	149	74	1
Dorchester	413	202	211	0
Edgefield	255	123	131	1
Fairfield	182	114	66	2
Florence	944	445	493	6
Georgetown	1207	615	577	15
Greenville	1811	456	1349	6
Greenwood	510	247	263	0
Hampton	806	652	154	0
Horry	1945	604	1334	7
Jasper	461	276	183	2
Kershaw	1009	613	260	136
Lancaster	363	239	123	1
Laurens	415	291	122	2
Lee	2070	2016	54	0
Lexington	2495	963	1520	12
Marion	267	225	42	0
Marlboro	764	716	48	0
McCormick	95	42	52	1
Newberry	632	468	164	0
Oconee	507	241	265	1
Orangeburg	655	367	285	3
Pickens	427	176	251	0
Richland	1912	493	1405	14
Saluda	429	347	82	0
Spartanburg	1273	506	756	11

Sumter	1208	496	650	62
Union	175	88	87	0
Williamsburg	277	222	54	1
York	720	419	301	0
Prepaid	1158	490	590	78
Accounts	3083	810	335	1938
SubTotal	42306	22625	17261	2420
Research	12725	6177	154	6394
Checks & Blanks	1639	6	4	1629
Total Samples Analyzed	56670	28808	17419	10443

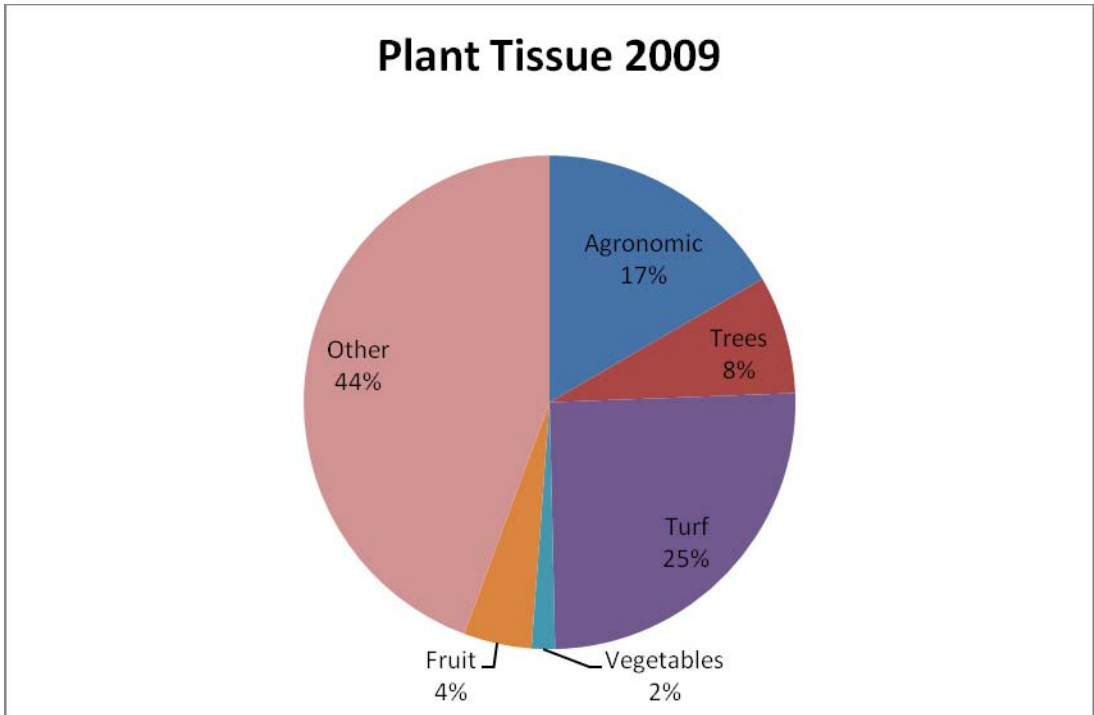


Other Soil Analyses	Total
Organic Matter	550
Nitrate Nitrogen	1639
Soluble Salts	422
Extractable Sulfate Sulfur	48
pH Only	6
Pond Bottom	58
Shrimp Pond	1
Soilless Mixes	43
Bulk Density	14

Plant Tissue

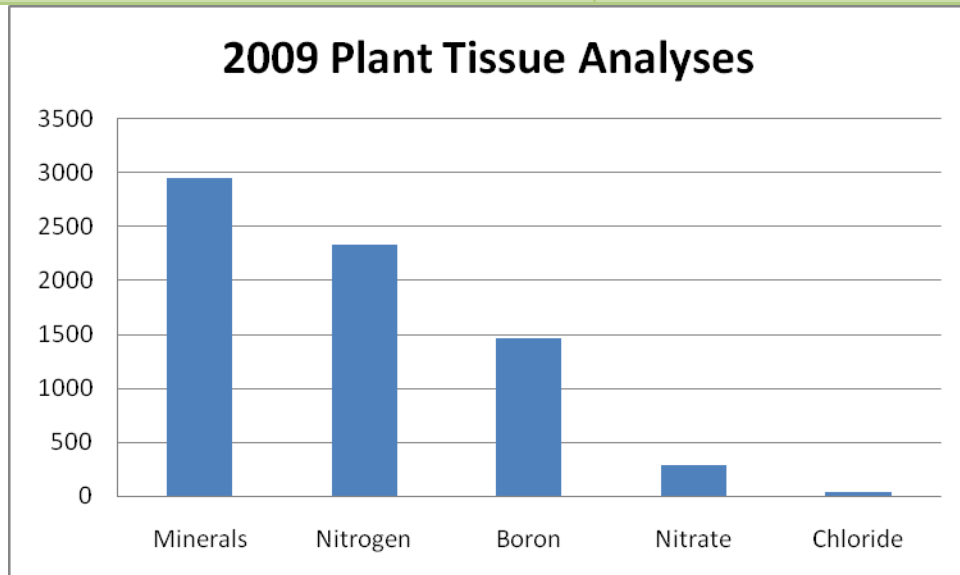
Counties	Total
Abbeville	1
Aiken	4
Bamberg	5
Beaufort	5
Berkeley	6
Calhoun	2
Charleston	21
Cherokee	86
Clarendon	66
Colleton	3
Edgefield	24
Greenville	4
Hampton	4
Horry	8
Laurens	1
Lexington	33
Marion	2
Marlboro	1
Newberry	20
Richland	1
Saluda	7
Spartanburg	44
Sumter	8
Williamsburg	3

Sub Total	359
Prepaid	22
Accounts	1829
Research	2046
Total Samples Analyzed	4256



Crop	Total
Coastal Bermuda Hay	2
Cotton	17
Corn Leaf	385
Corn Whole	250
Small Grain	43
Tobacco	9
Total Agronomic	706
Evergreen	72
Pine, Loblolly	74
Pine, Longleaf	3
Deciduous	180
Total Trees	329
Geranium	1

Hydrangea	8
Lily	4
Roses	4
Total Ornamental	13
Centipede	3
Zoysia	1
Cool Season Grass	71
Bentgrass	23
Bermudagrass	973
Total Turf	1071
Asparagus	2
Green Beans	1
Watermelon	1
Sweet Corn	1
Lettuce	1
Peppers	3
Tomatoes	2
Tomatoes, Greenhouse	16
Turnips	38
Total Vegetables	65
Strawberries	174
Peaches	3
Pecans	12
Fruit and nuts	189
Other	1896
Total All	4256

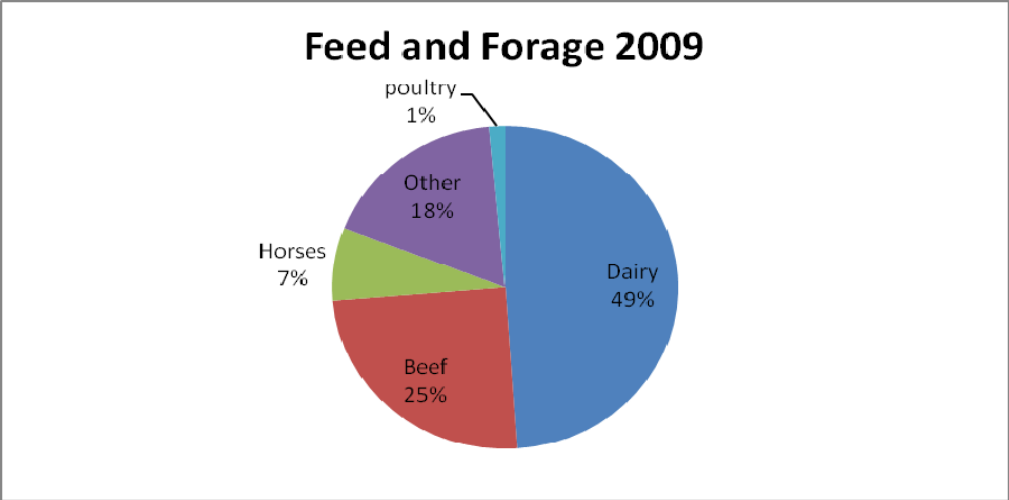


Minerals include phosphorus, potassium, calcium, magnesium, zinc, copper, manganese, iron, sulfur sodium, and aluminum

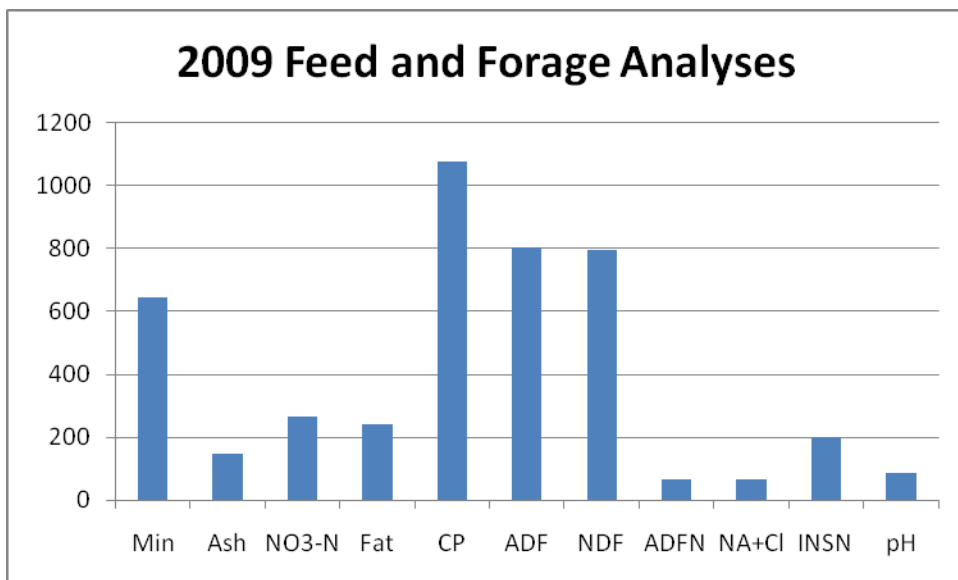
Feed and Forage

Counties	Total
Abbeville	13
Aiken	24
Allendale	1
Anderson	19
Bamberg	8
Barnwell	1
Beaufort	1
Calhoun	2
Charleston	5
Cherokee	10
Chester	5
Chesterfield	3
Clarendon	1
Colleton	21
Darlington	9
Dillon	4
Dorchester	2
Edgefield	1
Florence	1
Greenville	18
Greenwood	54
Hampton	5
Kershaw	11

Lancaster	4
Laurens	4
Lexington	1
Marion	3
Marlboro	3
McCormick	3
Newberry	23
Oconee	10
Orangeburg	1
Pickens	8
Richland	4
Saluda	14
Spartanburg	6
Union	2
York	1
Sub Total	313
Prepaid	67
Accounts	661
Research	152
Total Samples Analyzed	1193



Total Number	Feed Type
219	Hay Bermuda
4	Hay Bahia
25	Hay Fescue
22	Hay Legume
5	Hay Sorghum
60	Hay Mixed
61	Hay Small Grain
64	Pasture Grass
2	Earlage
171	Silage Corn
38	Silage Sorghum
22	Silage Legume
151	Silage Small Grain
37	Silage Grass
5	Gluten
1	Grain Barley
1	Grain Oats
6	Grain Mixed
13	Mixed Ration-Corn
5	Mixed Ration-Sm Grain
2	Mixed Ration - Sorghum
2	Hominy
152	Other
103	Complete Feed
14	Distillers Grain
1	Soybean Hulls
2	Cotton Seed
4	Soybean Meal



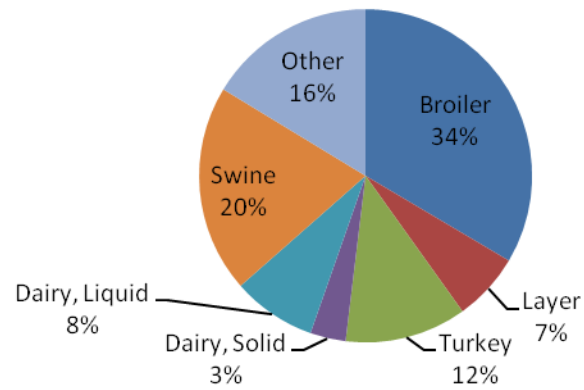
Min includes phosphorus, potassium, calcium, magnesium, zinc, copper, manganese, iron, and sulfur

Animal Waste

Counties	Total
Abbeville	5
Aiken	51
Allendale	2
Anderson	13
Bamberg	16
Barnwell	19
Calhoun	14
Cherokee	11
Chester	17
Chesterfield	32
Clarendon	15
Colleton	2
Darlington	24
Dillon	48
Dorchester	13
Edgefield	4
Florence	1
Georgetown	1
Greenwood	1
Hampton	6
Horry	11
Kershaw	41
Lancaster	15

Laurens	16
Lee	51
Lexington	78
Marion	2
Marlboro	11
McCormick	1
Newberry	58
Oconee	23
Orangeburg	53
Pickens	1
Richland	3
Saluda	31
Spartanburg	3
Sumter	8
Union	1
Williamsburg	1
York	6
Sub Total	712
Prepaid	161
Accounts	165
Research	4
Virginia Contract	926
Total Samples Analyzed	1968

In State Animal Waste 2009



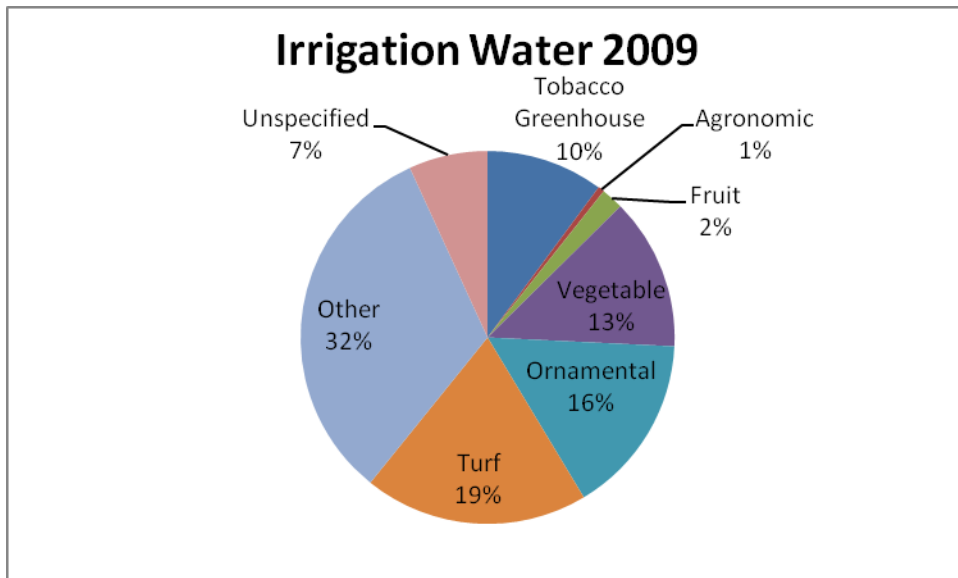
In State Animal Waste Analyses 2009	Total
Routine	1034
Nitrate Nitrogen	41
Arsenic	6
CCE	12
pH	106
Soluble P	159

Irrigation Water

Counties	Total
Aiken	2
Bamberg	1
Barnwell	1
Beaufort	7
Berkeley	7
Calhoun	3
Charleston	70
Colleton	3
Darlington	1
Dillon	2
Dorchester	5
Edgefield	4
Florence	2
Georgetown	27
Greenville	1
Horry	47
Jasper	1
Kershaw	1
Laurens	4
Lexington	4
Pickens	2
Richland	2
Spartanburg	3
Sumter	4

Williamsburg	14
Sub Total	220
PrePaid	28
Accounts	96
Research	21
Total Samples Analyzed	365

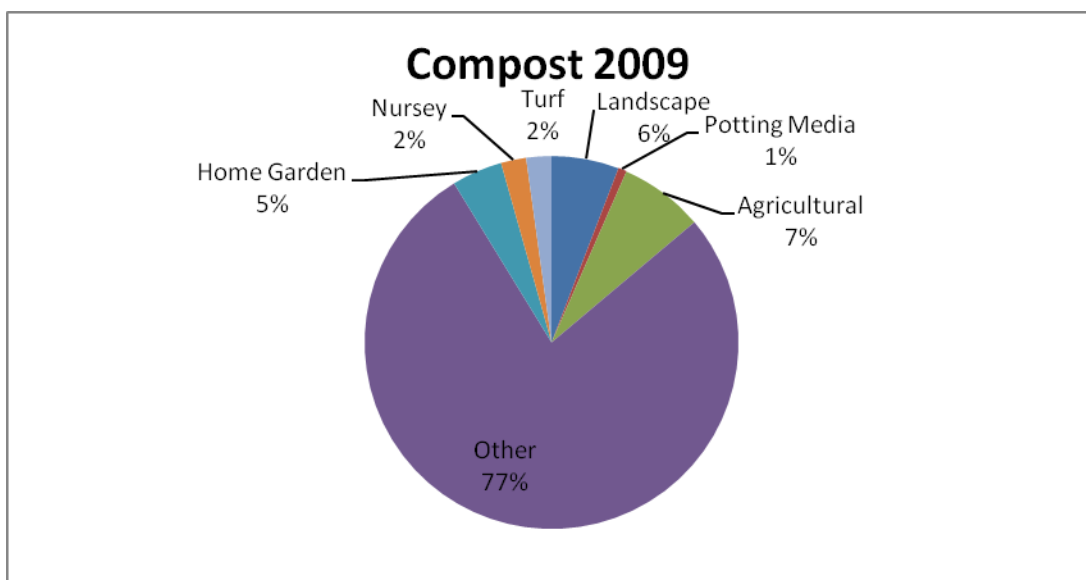
Irrigation Water Analyses 2007	Total
Special (pH, EC, P, K, Ca, Mg, Fe, Zn, Cu, Mn, Na, Cl, B, S, NO3-N, HCO3, and CO3)	308
Standard (pH plus EC)	57



Compost

	Total
PrePaid	13
Accounts	2
County	23
Research	99
Total	137

Compost Analyses 2008	Total
Standard (Moisture, N, C, pH, OM, EC)	19
Special (Moisture, N, C, pH, OM, EC, NH4-N, P, K, Ca, Mg, S, Zn, Cu, Mn, Fe, Na)	46
Carbon/Nitrogen	72
Bulk Density	0
Nitrate Nitrogen	20



Other

Sample Type	Total Samples	Various Analyses
Total solutions and other materials	4529	P, K, Ca, Mg, Zn, Cu, Mn, Fe, S, Al, B, Cd, Cr, Se, Mo, Ni, As, Hg, Si, Ag, NH4-N, TKN, Ash, other

National Exchange Programs

- A. The National Forage Testing Association (NFTA) submits one sample quarterly for analysis of dry matter, protein, minerals, acid detergent fiber, and neutral detergent fiber. The lab is certified for forage testing through NFTA.
- B. The Association of American Feed Control Officials submits one sample monthly for analysis of protein, minerals, fat, ash, acid detergent fiber and neutral detergent fiber.
- C. The National Manure Analysis Proficiency Program submits samples quarterly for analysis of NH₄-N, total N, minerals, and dry matter. The Ag Service Lab is a certified manure testing lab.
- D. The Agricultural Service Laboratory is a member and certified as a participant of the North American Proficiency Testing Program for Soil, Plant, and Water Analysis Laboratories which provides quarterly exchanges of plant, soil, and water samples.

Publications and Presentations

Adelberg, J. (2010) Sucrose, water and nutrient use during stage II multiplication of two turmeric clones (*Curcuma longa* L.) in liquid medium. *Scientia Horticulturae* doi:10.1016/j.scienta.2009.12.027

Adelberg, J., M. P. Delgado, and J. P. Tomkins. (2010) Spent Medium Analysis for Liquid Culture Micropropagation of *Hemerocallis* on Musrashige and Skoog Medium. *In Vitro Cellular and Developmental Biology Plant*. 10.1007/s11627-009-9247-1

Tompkins, R.D., W. Stringer, K.H. Richardson, E.A. Mikhailova, and W.C. Bridges. 2009. A newly documented and significant Piedmont Prairie site with a *Helianthus schweinitzii* Torrey & A. Gray (Schweinitz's Sunflower) population. *The Journal of the Torrey Botanical Society* (Accepted).

Gilbert, N.E., E.A. Mikhailova, M.A. Schlautman, W.C. Bridges, C.H. Newton, L.R. Nelson, K.C. Hall, C.J. Post, S.K. Cox, P.A. Layton, and D.C. Guynn. 2009. Effects of kudzu (*Pueraria montana*) solarization on the chemistry of an Upper Piedmont South Carolina soil. Technical Contribution No. 5332 of the Clemson University Experiment Station. *Soil Sci.* (In Press).

Tompkins, R.D., K.H. Richardson, W. Stringer, E.A. Mikhailova, and W.C. Bridges. 2009. Suther Prairie: Vascular flora, species diversity and edaphic factors. *Castanea* (Accepted).

Tompkins, R.D., Stringer W.C., Richardson K.H., Mikhailova, E.A., and W.C. Bridges. 2009. Big bluestem (*Andropogon gerardii* Poaceae) populations in the Carolinas. *Rhodora* (Accepted).

Mikhailova, E.A., M.A. Barfield, J.L. Sharp, M.A. Schautman, C.J. Post, and K.C. Hall. 2009. Effects of compost on major nutrients in an urban Cecil soil. *In Annual meetings abstracts [CD-ROM]. GSA-ASA-CSSA-SSSA-GCAGS-HGS Joint Annual Meeting in Pittsburgh, PA. November 1-5.*

Kelly, S.M., E.A. Mikhailova, C.J. Post, J.L. Sharp, S.K. Cox, and D.C. Guynn. 2009. Evaluation of nutritive value of *Pueraria montana* (kudzu) during the growing season. *In Annual meetings abstracts [CD-ROM]. GSA-ASA-CSSA-SSSA-GCAGS-HGS Joint Annual Meeting in Pittsburgh, PA. November 1-5.*

Kelly, S.M., E.A. Mikhailova, C.J. Post, J.L. Sharp, S.K. Cox, and D.C. Guynn. 2009. Evaluation of nutritive value of *Pueraria montana* (kudzu) during the growing season. *In Annual meetings abstracts [CD-ROM]. GSA-ASA-CSSA-SSSA-GCAGS-HGS Joint Annual Meeting in Pittsburgh, PA. November 1-5.*

Mikhailova, E.A., M.A. Barfield, J.L. Sharp, M.A. Schautman, C.J. Post, and K.C. Hall. 2009. Effects of compost on major nutrients in an urban Cecil soil. Focus on Creative Inquiry Symposium, Clemson University. April 13.

Kelly, S.M., E.A. Mikhailova, C.J. Post, J.L. Sharp, S.K. Cox, and D.C. Gynn. 2009. Evaluation of nutritive value of Pueraria montana (kudzu) during the growing season. Focus on Creative Inquiry Symposium, Clemson University. April 13.

Kelly, S.M., E.A. Mikhailova, C.J. Post, J.L. Sharp, S.K. Cox, and D.C. Gynn. 2009. Evaluation of nutritive value of Pueraria montana (kudzu) during the growing season. *In* Annual meetings abstracts [CD-ROM]. 106th Annual Meeting of Southern Association of Agricultural Scientists. Atlanta, GA, January 31-February 03.