Soil Test and Fertilizer Sales Data: Summary for the 2003 Growing Season

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BACKGROUND INFORMATION

Soil test data from samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna during the period 1 September 2002 through 30 August 2003 were categorized according to geographic area, county, soil association number (SAN), and selected cropping systems. This period roughly corresponds to the 2003 crop growing season; therefore, those samples should represent the soil fertility of that cropping season. The geographic area and SAN were obtained from the General Soil Map, State of Arkansas (Base 4-R-38034, USDA, and University of Arkansas AES, Fayetteville, ARK., December 1982). Descriptive statistics of the soil test data were calculated for categorical ranges for pH, phosphorus (P), potassium (K), and soluble salts (i.e., electrical conductivity, EC). Soluble salts can be an indicator of adverse soil conditions that result in poor plant growth or leaching potentials. Soil pH and extractable (Mehlich-3, 1:7 extraction ratio analyzed by ICAP) soil nutrient (i.e., P, K, Ca, etc.) concentrations indicate the relative level of soil fertility.

RESULTS AND DISCUSSION

Crop Acreage and Soil Sampling Intensity

During the interval from 1 September 2002 through 30 August 2003, 78,589 soil samples were analyzed by the University of Arkansas Soil Testing and Research Laboratory in Marianna. A total of 50,630 soil samples, representing a total of 1,234,963 acres averaging 24 acres/sample, had complete data for the county, SAN, last crop produced, geographic area, total acres, pH, P, K, EC, and month/day/year categories and are described in this report. Samples that did not have values in all of those categories were not included in this report. Soil samples from the Bottom Lands and Terraces and Loessial Plains, primarily row crop areas, represented 47% of the total samples and 74% of the total acreage (Table 1). The average number of acres represented by each soil sample by county ranged from 2 to 65 acre/sample (Table 2). Clients from Arkansas (4423), Washington (2954), Benton (2331), Craighead (2265), and Pulaski (2003) counties submitted the most soil samples for analyses.

Soil association numbers show that most samples were taken from row crops and pasture production areas (Table 3). The 44 and 45 SAN's represented 35% of the sampled acreage. Crop codes indicate that, in addition to row crops and pastures, turf and garden enterprises contributed largely to the number of samples submitted but represent only a small percentage of the total acreage (Table 4).

Soil Test Data

Information in Tables 5, 6, 7, and 8 pertain to the fertility status of Arkansas soils as categorized by geographic area, county, SAN, and the crop intended for production in 2003, respectively. The soil test values relate to the potential fertility of a soil but not necessarily to the productivity of the soil. Therefore, it is not realistic to compare soil test values among SAN without knowledge of factors such as location, topography, and cropping system. Likewise, soil-test values among counties cannot be realistically compared without knowledge of the SAN and a profile of the local agricultural production systems.

Soil-test data for cropping systems can be carefully compared; however, the specific agricultural production systems often indicate past fertilization practices or may be unique to certain soils that would influence the current soil-test values. For example, soils used for cotton production have a history of intensive fertilization, whereas intensive fertilization of soybean is normally not practiced. Similarly, rice is commonly grown on soils with low P and K concentrations, which may be more a reflection of the management practices (i.e., flooded soil conditions) used rather than routine fertilization practices. The soil pH of most soils in Arkansas ranges from 5.5 to 6.5, however the predominant soil pH range varies among counties (Table 6), SAN (Table 7), and crop (Table 8).

Table 8 contains soil-test concentration ranges and the median (Md) concentrations for each of the cropping system categories. Soil-test concentration ranges, from low to high concentrations, can be categorized into soil-test levels of very-low, low-to-medium, optimum, high, and excessive (for P). The Md is the value that has an equal number of higher and lower observations and thus is a better overall indicator a soil's fertility status than a mean value. Among row crops, the lowest Md concentrations of P and K occur in soils used for the production of rice and irrigated soybeans whereas soils used for cotton production have the highest Md concentrations of P and K among row crops. Fertilizer consumption by county (Table 9) and by fertilizer nutrient and formulation (Table 10) illustrate the wide use of inorganic fertilizer predominantly in row-crop production areas, but do not account for the use of animal manures or other by-products as a source of nutrients that may be applied to land.

PRACTICAL APPLICATIONS

The data presented, or more specific data, can be used in county or commodity-specific educational programs on soil fertility and fertilization practices. Comparisons of annual soil test information can also document trends in fertilization practices or areas where nutrient management issues may need to be addressed.

ACKNOWLEDGMENTS

Financial support for routine soil testing services offered to Arkansas citizens provided from the Arkansas Fertilizer Tonnage Fee is appreciated.

Table 1. Sample number and total acreage by geographic area for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2002 through August 2003.

Geographic area	Acres sampled	No. of samples	Acres/ sample
Ozark Highlands - Cherty Limestone and Dolomite	119,013	8,423	14
Ozark Highlands - Sandstone and Limestone	5,437	397	14
Boston Mountains	31,587	2,869	11
Arkansas Valley and Ridges	58,631	4,692	13
Ouachita Mountains	36,410	5,.243	7
Bottom Lands and Terraces	490,638	13,967	35
Coastal Plain	42,698	3,428	13
Loessial Plains	426,512	10,053	42
Loessial Hills	18,556	1,193	16
Blackland Prairie	5,481	365	15

Table 2. Sample number and total acreage by county for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2002 through August 2003.

County	Acres sampled	No. of samples	Acres/ sample	County	Acres sampled	No. of samples	Acres/ sample
Arkansas, DeWitt	74,831	2,085	36	Lincoln	9,875	358	28
Arkansas, DeWitt	89,627	2,332	38	Lincoln	4,506	181	25
Arkansas, Stuttgart	88,736	2,091	42	Little River	5,032	196	26
Ashley	16,382	682	24	Logan, Booneville	2,222	145	15
Baxter	2,570	402	6	Logan, Paris	4,271	245	17
Benton	30,929	2,331	13	Lonoke	77,321	1,959	40
Boone	6,410	398	16	Madison	10,195	724	14
Bradley	645	111	6	Marion	3,736	225	17
Calhoun	523	57	9	Miller	2,775	262	11
Carroll	7,507	54	14	Mississippi, Blytheville	18,141	540	34
Chicot	25,974	527	49	Mississippi, Osceola	4,932	115	43
Clark	2,718	332	8	Monroe	41,983	646	65
Clay, Corning	17,306	841	21	Montgomery	4,311	287	15
Clay, Piggott	12,979	498	26	Nevada	2,231	101	22
Cleburne	4,121	293	14	Newton	3,739	167	22
Cleveland	429	57	8	Ouachita	1,198	213	6
Columbia	2,561	347	7	Perry	5,435	386	14
Conway	11,022	532	21	Phillips	24,502	480	51
Craighead	74,039	2,265	33	Pike	3,574	196	18
Crawford	7,203	490	15	Poinsett	38,994	1,011	39
Crittenden	20,227	617	33	Polk	5,135	365	14
Cross	73,589	1,319	56	Pope	14,774	809	18
Dallas	101	29	4	Prairie, Des Arc	23,747	556	43
Desha	18,198	1,135	16	Prairie, DeValls Bluff	7,110	114	43
Drew	2,325	220	11	Pulaski	12,389	2,003	4
Faulkner	5,276	519	10	Randolph	1,368	731	17
Franklin, Charleston	1,150	47	25	Saline	7,517	387	4
Franklin, Ozark	7,011	446	16	Scott	4,679	289	26
Fulton	3,798	128	30	Searcy	2,316	291	16
Garland	3,506	1,743	2	Sebastian, Fort Smith	406	474	5
Grant	751	145	5	Sebastian, Greenwood	9,946	35	12
Greene	26,412	1,086	24	Sevier	3,402	345	29
Hempstead	5,728	265	22	Sharp	23,082	322	11
Hot Spring	1,902	213	9	St. Francis	3,655	632	37
Howard	6,372	337	19	Stone	1,287	318	12
Independence	9,055	481	19	Union	4,633	256	5
Izard	2,811	208	14	Van Buren	43,425	456	10
Jackson	23,843	629	38	Washington	10,962	2,954	15
Jefferson	57,084	1,524	38	White	8,093	1,622	7
Johnson	5,765	391	15	Woodruff	4,238	175	46
Lafayette	23,261	451	52	Yell, Danville	2,910	248	17
Lawrence	36,584	1,140	32	Yell, Dardanelle	4,920	211	14
Lee	39,441	745	53				

Table 3. Sample number and total acreage by soil association number (SAN) for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2002 through August 2003.

SAN	Soil Association	Acres sampled	No. of samples	Acres/ sample
1.	Clarksville-Nixa-Noark	16,192	1,164	14
2.	Gepp-Doniphan-Gassville-Agnos	12,931	1,026	13
3.	Arkana-Moko	8,520	696	12
4.	Captina-Nixa-Tonti	76,448	5,294	14
5.	Captina-Doniphan-Gepp	3,379	148	23
6.	Eden-Newnata-Moko	1,543	95	16
7.	Estate-Portia-Moko	1,396	107	13
8.	Brockwell-Boden-Portia	4,041	290	14
9.	Linker-Mountainburg-Sidon	13,213	700	19
10.	Enders-Nella-Mountainburg-Steprock	18,374	2,169	9
11.	Falkner-Wrightsville	1,608	79	20
12.	Leadvale-Taft	18,930	1,911	10
13.	Enders-Mountainburg-Nella-Steprock	7,766	404	19
14.	Spadra-Guthrie-Pickwick	4,566	226	20
15.	Linker-Mountainburg	25,761	2,072	12
16.	Carnasaw-Pirum-Clebit	16,402	2,680	6
17.	Kenn-Ceda-Avilla	3,794	251	15
18.	Carnasaw-Sherwood-Bismarck	9,587	1,863	5
19.	Carnasaw-Bismarck	618	47	13
20.	Leadvale-Taft	1,060	56	19
21.	Spadra-Pickwick	4,949	346	14
22.	Foley-Jackport-Crowley	107,183	3,150	34
23.	Kobel	18,550	488	28
24.	Sharkey-Alligator-Tunica	44,987	914	49
25.	Dundee-Bosket-Dubbs	96,253	2,818	34
26.	Amagon-Dundee	25,016	786	32
27.	Sharkey-Steele	12,545	311	40
28.	Commerce-Sharkey-Crevasse-Robinsonville	19,269	477	40
29.	Perry-Portland	34,588	1,417	24
30.	Crevasse-Bruno-Oklared	161	3	54
31.	Roxana-Dardanelle-Bruno-Roellen	5,384	311	17
32.	Rilla-Hebert	100,542	2,739	37
33.	Billyhaw-Perry	12,014	224	54
34.	Severn-Oklared	11,248	204	55
35.	Adaton	146	4	37
36.	Wrightsville-Louin-Acadia	2,651	101	26
37.	Muskogee-Wrightsville-McKamie	101	20	5
38.	Amy-Smithton-Pheba	1,878	149	13
39.	Darco-Briley-Smithdale	3	3	1
40.	Pheba-Amy-Savannah	4,460	449	10
41.	Smithdale-Sacul-Savannah-Saffell	12,634	1,317	10
42.	Sacul-Smithdale-Sawyer	13,079	1,072	12
43.	Guyton-Ouachita-Sardis	10,644	438	24
44.	Calloway-Henry-Grenada-Calhoun	224,433	5,128	44
45.	Crowley-Stuttgart	202,079	4,925	41
46.	Loring	2,114	92	23
47.	Loring-Memphis	15,632	1,015	15
48.	Brandon	810	86	9
49.	Oktibbeha-Sumter	5,481	365	15

Table 4. Sample number and total acreage by crop for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2002 through August 2003.

Crop	Acres sampled	No. of samples	Acres/ sample
Soybean - dryland	42,236	1,237	34
Soybean - dryland	34,049	957	36
Soybean - irrigated	477,971	11,382	42
Cotton	184,891	4,744	39
Rice	96,416	2,228	43
Wheat	19,814	601	33
Double-crop wheat-soybean - dryland	3,556	117	30
Double-crop wheat-soybean - irrigated	17,427	390	45
Warm season grass - establish	9,451	534	18
Warm season grass - maintain	102,762	5,167	20
Cool season grass - establish	24,275	884	28
Cool season grass - maintain	43,229	2,297	19
Grain sorghum	20,316	441	46
Corn	39,844	804	50
All garden	7,210	3,680	2
Turf and ground cover	9,934	6,250	2
Fruit and nut	1,362	421	3
Vegetable	60	22	3
Other	142,396	9,711	15

Table 5. Soil test data by geographic area for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2001 through August 2002.

Geographic area	pH[z]			P[y] (lb/acre)				K[y] (lb/acre)				EC[x] (µmhos/cm)		
	<5.5	5.5-6.5	>6.5	<26	26-44	45-100	101-300	>300	<176	176-220	221-350	>350	<100	100-500	>500
	(Percentage of sampled acreage)														
Ozark Highlands - Cherty Limestone and Dolomite	12	59	29	4	8	18	34	36	16	10	25	49	79	21	0
Ozark Highlands - Sandstone and Limestone	14	51	35	14	17	23	28	18	29	13	34	24	91	8	1
Boston Mountains	19	59	22	7	10	23	40	20	35	13	26	26	87	13	0
Arkansas Valley and Ridges	25	55	20	12	13	22	30	23	31	13	28	28	89	11	0
Ouachita Mountains	23	56	21	7	12	25	35	21	37	15	26	22	87	12	1
Bottom Lands and Terraces	7	50	43	10	18	44	26	2	17	14	35	34	96	4	0
Coastal Plain	29	53	18	12	13	21	32	22	45	12	23	20	90	10	0
Loessial Plains	7	36	57	21	33	36	9	1	33	24	31	12	97	3	0
Loessial Hills	15	47	38	17	20	33	24	6	25	17	34	24	93	7	0
Blackland Prairie	26	46	28	21	18	27	21	13	31	12	21	36	79	21	0
Average	18	51	31	13	16	27	28	16	30	14	28	28	89	11	0

[z] Analysis by electrode in 1:2 soil weight:deionized water volume.
[y] Analysis by ICAP in 1:7 soil weight:Mehlich-3 volume.
[x] EC = electrical conductivity, which is a measure of soluble salts in 1:2 soil weight:water volume.

Table 6. Soil test data by county for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2001 through August 2002.

	pH[z]			P[y] (lb/acre)					K[y] (lb/acre)				EC[x] (µmhos/cm)		
Geographic area	<5.5	5.5-6.5	>6.5	<26	26-44	45-100	101-300	>300	<176	176-220	221-350	>350	<100	100-500	>500
	(Percentage of sampled acreage)														
Arkansas, DeWitt	3	26	73	23	40	33	4	0	36	29	28	7	99	1	0
Arkansas, Stuttgart	8	44	48	27	33	34	5	1	27	26	33	14	93	7	0
Ashley	8	40	52	13	8	37	41	1	16	12	45	27	96	4	0
Baxter	5	32	63	7	12	23	36	22	15	9	32	44	79	20	1
Benton	14	64	22	2	3	13	38	44	14	8	22	56	71	29	0
Boone	8	57	35	5	16	33	25	21	22	12	28	38	86	14	0
Bradley	24	39	37	5	14	22	41	18	26	14	34	26	87	11	2
Calhoun	33	58	9	9	9	35	32	15	51	14	30	5	97	3	0
Carroll	5	54	41	2	3	14	29	52	12	8	22	58	65	33	2
Chicot	3	29	68	24	29	32	14	1	3	5	15	77	75	25	0
Clark	31	47	22	18	21	21	24	16	46	13	21	20	89	11	0
Clay, Corning	2	54	44	18	32	44	5	1	48	26	21	5	99	1	0
Clay, Piggott	8	55	37	6	12	43	38	1	13	14	43	30	97	3	0
Cleburne	20	62	18	9	13	27	30	21	32	14	32	22	94	6	0
Cleveland	35	53	12	7	18	42	23	10	39	9	30	22	97	3	0
Columbia	33	53	14	9	9	20	37	25	48	11	23	18	93	7	0
Conway	31	56	13	13	13	17	30	27	29	13	22	36	90	10	0
Craighead	5	49	46	7	11	41	39	2	10	12	46	32	97	3	0
Crawford	17	57	26	10	14	26	30	20	25	14	30	31	87	13	0
Crittenden	10	61	29	1	8	48	41	2	6	4	31	59	98	2	0
Cross	5	22	73	18	34	41	6	1	38	27	25	10	98	2	0
Dallas	24	59	17	24	21	21	17	17	66	0	21	13	93	7	0
Desha	7	36	57	6	19	52	22	1	12	10	26	52	94	6	0
Drew	23	59	18	17	12	23	38	10	25	12	36	27	85	14	1
Faulkner	34	48	18	17	17	28	25	13	36	13	28	23	89	11	0
Franklin, Charleston	43	47	10	21	28	26	21	4	60	13	17	10	96	4	0
Franklin, Ozark	13	77	10	4	7	16	35	38	13	9	31	47	87	13	0
Fulton	10	63	27	6	20	41	23	10	21	13	34	32	88	10	2
Garland	21	58	21	5	14	29	35	17	42	15	25	18	83	16	1
Grant	34	55	11	15	17	27	30	11	48	15	22	15	94	6	0
Greene	10	60	30	20	28	31	20	1	37	17	27	19	99	1	0
Hempstead	30	48	22	9	8	33	31	19	39	9	23	29	86	14	0
Hot Spring	29	47	24	10	16	19	32	23	49	11	16	24	84	16	0
Howard	23	66	11	6	6	10	25	53	29	8	25	38	86	14	0
Independence	16	54	30	17	16	27	30	10	28	23	27	22	93	7	0
Izard	11	57	32	11	17	23	27	22	32	20	24	24	87	13	0
Jackson	9	57	34	12	24	44	18	2	29	23	34	14	99	1	0
Jefferson	7	42	51	5	14	53	24	4	16	14	39	31	93	7	0
Johnson	22	57	21	8	14	23	28	27	32	10	23	35	90	9	1
Lafayette	12	44	44	4	15	41	30	10	16	14	32	38	91	9	0
Lawrence	5	60	35	23	38	33	5	1	37	28	28	7	98	2	0
Lee	11	44	45	3	12	59	26	0	13	14	43	30	98	2	0
Lincoln	23	54	23	9	12	31	38	10	20	15	34	31	91	9	0
Little River	29	38	33	19	23	21	27	10	38	13	16	33	82	17	1

continued

Table 6. Continued.

Geographic area	pH[z]			P[y] (lb/acre)					K[y] (lb/acre)				EC[x] (µmhos/cm)		
	<5.5	5.5-6.5	>6.5	<26	26-44	45-100	101-300	>300	<176	176-220	221-350	>350	<100	100-500	>500
	(Percentage of sampled acreage)														
Logan, Booneville	30	57	13	21	19	19	29	12	37	17	16	30	92	8	0
Logan, Paris	12	73	15	7	11	22	35	25	27	10	22	41	91	9	0
Lonoke	14	58	28	13	26	40	19	2	17	17	36	30	96	4	0
Madison	13	70	17	3	6	14	36	41	18	11	25	46	86	14	0
Marion	7	62	31	2	12	31	39	16	21	11	33	35	86	12	2
Miller	30	52	18	12	14	23	28	23	49	11	18	22	89	10	1
Mississippi, Blytheville	10	60	30	1	3	44	51	1	3	5	38	54	98	2	0
Mississippi, Osceola	6	47	47	2	8	63	27	0	4	8	42	46	99	1	0
Monroe	4	35	61	17	30	43	9	1	23	23	42	12	96	4	0
Montgomery	23	65	12	7	5	18	38	32	45	6	24	25	87	12	1
Nevada	26	60	14	30	10	34	22	4	47	18	12	23	89	11	0
Newton	19	50	31	8	9	32	35	16	17	16	33	34	87	13	0
Ouachita	29	54	17	17	15	17	32	19	55	15	20	10	91	8	1
Perry	25	60	15	13	15	22	33	17	35	13	25	27	94	6	0
Phillips	13	45	42	1	11	61	26	1	7	12	51	30	100	0	0
Pike	30	59	11	7	6	15	31	41	4	7	22	27	92	7	1
Poinsett	6	28	66	14	35	34	15	2	37	19	22	22	97	3	0
Polk	29	57	14	4	7	14	35	40	32	13	29	26	87	13	0
Pope	24	58	18	10	7	18	31	34	26	12	30	32	91	9	0
Prairie, Des Arc	9	43	48	28	33	29	10	0	43	24	21	12	98	2	0
Prairie, DeValls Bluff	6	49	45	40	33	24	3	0	48	26	21	5	97	3	0
Pulaski	24	46	30	8	14	26	35	17	32	19	30	19	87	12	1
Randolph	7	49	44	23	29	35	11	2	35	21	30	14	94	6	0
Saline	26	51	23	11	13	23	35	18	44	12	25	19	88	11	1
Scott	29	63	8	25	14	17	24	20	48	10	18	24	95	5	0
Searcy	26	64	10	7	16	36	33	8	30	17	32	21	91	9	0
Sebastian, Fort Smith	18	48	34	11	8	20	38	23	19	17	31	33	77	22	1
Sebastian, Greenwood	29	51	20	20	20	23	29	8	40	11	23	26	91	9	0
Sevier	33	59	8	8	8	16	35	33	41	7	26	26	90	10	0
Sharp	9	40	51	13	12	23	30	22	18	12	38	32	84	16	0
St. Francis	8	36	56	10	20	46	22	2	17	10	39	34	96	4	0
Stone	23	65	12	5	16	26	35	18	36	13	25	26	90	10	0
Union	31	48	21	14	9	19	34	24	50	12	20	18	88	11	1
Van Buren	25	60	15	10	11	27	32	20	34	14	27	25	93	7	0
Washington	12	60	28	2	6	16	35	41	15	10	25	50	82	18	0
White	18	55	27	9	15	24	43	9	42	14	25	19	85	15	0
Woodruff	11	68	21	13	18	46	23	0	19	16	48	17	98	2	0
Yell, Danville	21	70	9	19	8	16	32	25	38	11	22	29	98	2	0
Yell, Dardanelle	15	50	35	6	11	31	31	21	22	14	29	35	83	16	1
Average	18	53	29	12	16	30	28	14	30	14	28	28	91	9	0

[z] Analysis by electrode in 1:2 soil weight:deionized water.
[y] Analysis by ICAP in 1:7 soil weight:Mehlich-3 volume.
[x] EC = electrical conductivity, which is a measure of soluble salts in 1:2 soil weight:water volume.

Table 7. Soil test data by soil association number (SAN) for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2002 through August 2003.

		pH[z]			P[y] (lb/acre)					K[y] (lb/acre)				EC[x] (µmhos/cm)		
SAN	Soil Association	<5.5	5.5-6.5	>6.5	<26	26-44	45-100	101-300	>300	<176	176-220	221-350	>350	<100	100-500	>500
		(Percentage of sampled acreage)														
1.	Clarksville- Nixa- Noark	12	63	25	5	10	22	43	20	23	13	31	33	86	13	1
1.	Clarksville- Nixa-Noark	11	65	24	5	11	24	33	27	19	14	28	39	85	14	1
2.	Gepp-Doniphan-Gassville-Agnos	8	43	49	11	16	29	27	17	19	12	32	37	82	17	1
3.	Arkana-Moko	8	51	41	6	10	19	28	37	16	12	23	49	70	29	1
4.	Captina-Nixa-Tonti	13	62	25	2	5	14	36	43	15	9	24	52	77	23	0
5.	Captina-Doniphan-Gepp	10	71	19	3	12	32	37	16	24	13	29	34	92	7	1
6.	Eden-Newnata-Moko	28	62	10	6	17	25	37	15	33	16	31	20	91	8	1
7.	Estate-Portia-Moko	9	52	39	10	13	23	38	16	26	13	30	31	82	14	4
8.	Brockwell-Boden-Portia	16	50	34	15	18	24	24	19	30	14	35	21	94	6	0
9.	Linker-Mountainburg-Sidon	21	58	21	6	11	27	27	29	36	11	25	28	90	10	0
10.	Enders-Nella-Mountainburg-Steprock	19	59	22	7	10	22	44	17	35	14	26	25	87	13	0
11.	Falkner-Wrightsville	18	63	19	14	13	20	42	11	28	14	32	26	98	2	0
12.	Leadvale-Taft	23	52	25	12	14	22	31	21	28	14	29	29	86	14	0
13.	Enders-Mountainburg-Nella-Steprock	29	60	11	19	20	31	19	11	43	13	22	22	95	5	0
14.	Spadra-Guthrie-Pickwick	29	66	5	19	13	18	27	23	45	9	22	24	96	4	0
15.	Linker-Mountainburg	25	56	19	11	11	21	32	25	29	12	28	31	89	11	0
16.	Carnasaw-Pirum-Clebit	23	53	24	7	13	25	34	21	36	17	26	21	87	12	1
17.	Kenn-Ceda-Avilla	24	64	12	5	7	17	37	34	29	14	26	31	88	12	0
18.	Carnasaw-Sherwood-Bismarck	23	58	19	4	11	26	36	23	39	14	26	21	85	14	1
19.	Carnasaw-Bismarck	30	49	21	6	9	15	26	44	32	11	28	29	98	2	0
20.	Leadvale-Taft	13	77	10	25	7	21	34	13	45	14	13	28	98	2	0
21.	Spadra-Pickwick	23	60	17	14	14	23	34	15	37	11	25	27	93	7	0
22.	Foley-Jackport-Crowley	4	54	42	21	34	38	7	0	34	26	31	9	98	2	0
23.	Kobel	14	61	25	19	31	33	17	0	29	20	34	17	97	3	0
24.	Sharkey-Alligator-Tunica	10	46	44	6	19	55	19	1	7	7	24	62	92	8	0
25.	Dundee-Bosket-Dubbs	7	56	37	3	10	45	41	1	13	11	42	34	99	1	0
26.	Amagon-Dundee	8	58	34	3	5	38	50	4	8	8	40	44	98	2	0
27.	Sharkey-Steele	6	44	50	1	9	55	34	1	4	8	32	56	98	2	0
28.	Commerce-Sharkey-Crevasse-Robinsonville	7	38	59	13	13	48	26	0	4	8	26	62	92	8	0
29.	Perry-Portland	6	40	54	10	21	46	20	3	11	8	26	55	91	9	0
30.	Crevasse-Bruno-Oklared	0	67	33	0	0	0	33	67	0	0	0	100	67	33	0
31.	Roxana-Dardanelle-Bruno-Roellen	17	56	27	18	11	25	33	13	20	13	31	36	85	14	1
32.	Rilla-Hebert	7	46	47	5	13	50	32	0	10	13	41	36	96	4	0
33.	Billyhaw-Perry	9	36	55	6	18	51	23	2	9	8	27	56	89	11	0
34.	Severn-Oklared	11	48	41	2	14	42	41	1	15	17	41	27	97	3	0
35.	Adaton	25	50	25	0	0	25	75	0	25	25	25	25	100	0	0
36.	Wrightsville-Louin-Acadia	26	44	30	33	20	13	26	8	46	9	15	30	87	12	1
37.	Muskogee-Wrightsville-McKamie	15	65	20	10	15	15	30	30	15	30	35	20	95	5	0
38.	Amy-Smithton-Pheba	33	49	18	25	15	28	22	10	54	9	24	13	93	7	0
39.	Darco-Briley-Smithdale	100	0	0	0	0	33	67	0	67	0	33	0	67	33	0
40.	Pheba-Amy-Savannah	28	49	23	9	21	25	28	17	52	10	21	17	90	10	0
41.	Smithdale-Sacul-Savannah-Saffell	28	54	18	12	11	19	34	24	42	13	25	20	90	9	1
42.	Sacul-Smithdale-Sawyer	28	53	19	11	12	23	31	23	47	13	21	19	89	10	1
43.	Guyton-Ouachita-Sardis	36	54	10	9	9	17	34	31	39	9	27	25	88	12	0

continued

Table 7. Continued.

SAN	Soil Association	pH[z] <5.5	pH[z] 5.5-6.5	pH[z] >6.5	P[y] (lb/acre) <26	P[y] (lb/acre) 26-44	P[y] (lb/acre) 45-100	P[y] (lb/acre) 101-300	P[y] (lb/acre) >300	K[y] (lb/acre) <176	K[y] (lb/acre) 176-220	K[y] (lb/acre) 221-350	K[y] (lb/acre) >350	EC[x] (µmhos/cm) <100	EC[x] (µmhos/cm) 100-500	EC[x] (µmhos/cm) >500
		(Percentage of sampled acreage)														
44.	Calloway-Henry-Grenada-Calhoun	8	34	58	18	29	39	13	1	35	21	31	13	97	3	0
45.	Crowley-Stuttgart	6	38	56	25	37	34	4	0	31	28	31	10	96	4	0
46.	Loring	21	61	18	22	25	30	19	4	36	22	24	18	92	8	0
47.	Loring-Memphis	14	44	42	16	19	33	25	7	23	16	34	27	92	7	1
48.	Brandon	12	63	25	19	30	34	17	0	34	17	36	13	95	5	0
49.	Oktibbeha-Sumter	26	46	28	21	18	27	21	13	31	12	21	36	79	21	0
	Average	19	53	28	11	15	29	31	14	28	13	28	3	90	10	0

[z] Analysis by electrode in 1:2 soil weight:deionized water volume.
[y] Analysis by ICAP in 1:7 soil weight:Mehlich-3 volume.
[x] EC = electrical conductivity, which is a measure of soluble salts by electrode in 1:2 soil weight:deionized water volume.

Table 8. Soil test data by crop for soil samples submitted to the University of Arkansas Soil Testing and Research Laboratory in Marianna from September 2002 through August 2003.

	pH[z]				P[y] (lb/acre)						K[y] (lb/acre)					EC[x] (µmhos/cm)			
Crop	<5.5	5.5-6.5	>6.5	Md[y]	26-<26	45-44	101-100	176-300	221->300	Md	<176	100-220	350	>350	Md	<100	500	>500	Md
	(Percentage of sampled acreage)																		
Soybean - dryland	18	57	25	6.1	9	22	50	18	1	61	21	20	38	21	240	96	4	0	28
Soybean - irrigated	3	39	58	6.7	20	35	39	5	1	41	33	23	28	16	208	97	3	0	35
Cotton	5	52	43	6.5	1	3	46	50	0	101	4	7	44	45	338	100	0	0	27
Rice	7	41	52	6.6	30	35	32	3	0	36	29	21	30	20	220	90	10	0	42
Wheat	22	56	22	6.1	8	20	52	20	0	62	22	19	33	26	248	97	3	0	36
Double-crop wheat - soybean - dryland	22	42	36	6.3	5	17	59	19	0	72	13	15	43	29	299	97	3	0	24
Double-crop wheat - soybean - irrigated	2	26	72	6.9	12	34	47	7	0	48	30	32	30	8	205	100	0	0	34
Warm season grass - establish	18	62	20	6.0	7	11	23	30	29	137	26	14	24	36	274	88	12	0	45
Warm season grass - maintain	22	66	12	5.9	8	10	20	31	31	154	33	11	26	30	250	92	8	0	40
Cool season grass-establish	13	70	17	6.0	4	8	14	35	39	226	20	9	21	50	345	88	12	0	48
Cool season grass-maintain	15	69	16	6.0	4	8	22	35	31	156	22	11	27	40	296	85	15	0	45
Grain sorghum	12	49	39	6.4	5	19	58	18	0	66	14	19	40	27	266	96	4	0	30
Corn	7	50	43	6.4	3	15	51	31	0	78	11	18	41	30	270	98	2	0	31
All garden	12	36	52	6.6	3	5	13	34	45	266	14	9	28	49	349	76	23	1	60
Turf and ground cover	19	53	28	6.1	6	12	28	44	10	110	32	16	31	21	228	86	14	0	51
Fruit and nut	24	54	22	5.9	6	16	25	36	17	113	27	14	27	32	270	84	16	0	51
Vegetable	0	27	73	7.2	14	0	27	55	4	122	5	18	27	50	279	82	18	0	48
Other	24	56	20	5.9	14	14	25	26	21	91	33	13	24	30	236	86	14	0	43
Average	14	50	36		9	16	35	28	12		22	16	31	13		91	9	0	

[z] Analysis by electrode in 1:2 soil weight:deionized water volume.
[y] Analysis by ICAP in 1:7 soil weight:Mehlich-3 volume.
[x] EC = electrical conductivity, which is a measure of soluble salts by electrode in 1:2 soil weight:deionized water volume.

Table 9. Fertilizer consumption in Arkansas counties from 1 July 2002 through 30 June 2003[z].

County	Total	County	Total
	(tons)		(tons)
Arkansas	87,259	Lee	29,057
Ashley	26,014	Lincoln	15,629
Baxter	4,206	Little River	1,937
Benton	16,055	Logan	3,303
Boone	5,832	Lonoke	43,487
Bradley	3,074	Madison	6,525
Calhoun	334	Marion	1,308
Carroll	3,605	Miller	7,495
Chicot	18,207	Mississippi	69,852
Clark	2,342	Monroe	35,839
Clay	47,273	Montgomery	1,163
Cleburne	2,568	Nevada	3,159
Cleveland	195	Newton	688
Columbia	1,021	Ouachita	158
Conway	9,646	Perry	1,762
Craighead	56,355	Phillips	65,416
Crawford	11,303	Pike	9,234
Crittenden	20,477	Poinsett	65,530
Cross	43,519	Polk	3,643
Dallas	2	Pope	3,233
Desha	41,224	Prairie	30,774
Drew	7,634	Pulaski	30,124
Faulkner	5,337	Randolph	25,303
Franklin	3,947	Saline	3,233
Fulton	2,839	Scott	1,633
Garland	916	Searcy	3,614
Grant	255	Sebastian	841
Greene	28,954	Sevier	7,394
Hempstead	6,319	Sharp	1,733
Hot Spring	1,774	St. Francis	48,147
Howard	3,337	Stone	2,318
Independence	13,811	Union	1,556
Izard	3,747	Van Buren	7,283
Jackson	33,629	Washington	5,603
Jefferson	38,196	White	36,460
Johnson	2,151	Woodruff	31,311
Lafayette	7,589	Yell	2,177
Lawrence	27,347		

[z] Arkansas Distribution of Fertilizer Sales by Counties 1 July 2002-20 June 2003, Arkansas State Plant Board, Division of Feed and Fertilizer, Little Rock, Ark., and University of Arkansas AES, Fayetteville, Ark.

Table 10. Fertilizer nutrient and formulation consumed in Arkansas from 1 July 2001 through 30 June 2002[z].

Fertilizer	Bulk	Bagged	Fluid	Totals
		(tons)		
Mixed	379,904	43,986	17,971	441,862
Nitrogen	513,550	3,618	107,000	624,169
Phosphate	18,641	103	183	18,927
Potash	60,708	416	373	61,497
Other	45,197	3,347	1,225	49,769
Totals	1,018,000	51,470	126,752	1,196,223

[z] Arkansas Distribution of Fertilizer Sales By Counties 1 July 2002-30 June 2003, Arkansas State Plant Board, Division of Feed and Fertilizer, Little Rock, Ark., and University of Arkansas AES, Fayetteville, Ark.