



# ALABAMA SOIL TEST SUMMARIES for 1972 and 1973





# Alabama Soil Test Summaries For 1972 and 1973

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ONE OF THE MANY ADVANTAGES of using a computer for making fertilizer and lime recommendations from the Soil Testing Laboratory at Auburn University is that data can be quickly summarized at the end of the year. The computer stores information throughout the year and can produce detailed summaries by crops, soil groups, levels of individual nutrients, and levels of soil pH for each county and for the entire state. This publication gives the state summaries for the fiscal years July 1, 1971-June 30, 1972 and for 1972-73. Copies of county summaries have been sent to County Extension Agents and are on file in the Soil Testing Laboratory.

The Auburn University Soil Testing Program is a joint effort of the Agricultural Experiment Station and the Alabama Cooperative Extension Service. The Extension Service promotes the program and distributes the supplies. The Ex-

periment Station operates the laboratory. The following ranking shows the 10 counties sending in the most samples for each 5-year period since the Soil Testing Laboratory was established.

This tabulation shows that the Wiregrass area was first to widely adopt the practice of soil testing. Counties in this area have consistently led in numbers of samples tested. In recent years, increasing numbers of samples have been received from urban counties such as Jefferson, Montgomery, Mobile, and Lee. This shift has been due largely to samples from gardens, lawns, and shrubs for which special efforts have been made to provide detailed comments about the use of fertilizers and lime. Tables 1 through 4 show the number of samples received in the laboratory from each county by extension districts since the soil testing program was started in Alabama in 1953.

Rank	1953-57	1958-62	1963-67	1968-72	1973	1953-73
1	Geneva	Houston	Geneva	Jefferson	Jefferson	Houston
2	Henry	Limestone	Pike	Montgomery	Houston	Geneva
3	Houston	Lauderdale	Coffee	Houston	Coffee	Pike
4	Coffee	Henry	Montgomery	Pike	Pike	Jefferson
5	Barbour	Barbour	Limestone	Dallas	Dallas	Coffee
6	Limestone	Morgan	Barbour	Henry	Geneva	Henry
7	Madison	Geneva	Houston	Madison	Henry	Montgomery
8	Pike	Madison	Jefferson	Coffee	Mobile	Limestone
9	Dale	Coffee	Madison	Geneva	Montgomery	Barbour
10	Dallas	DeKalb	Covington	Lee	Lee	Dallas

TABLE 1. NUMBER OF SAMPLES RECEIVED AND PER CENT OF STATE TOTAL BY COUNTY AND BY DISTRICT, JULY 1, 1972 THROUGH JUNE 30, 1973—DISTRICT 1

County	1953-57		1958-62		1963-67		1968-70		1971-72		1973		21 years	
	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.
Blount	273	0.6	970	1.2	1,260	1.0	767	1.0	969	1.4	352	1.1	4,591	1.1
Cherokee	758	1.7	1,711	2.2	1,364	1.1	1,173	1.5	666	1.0	423	1.3	6,095	1.4
Colbert	288	0.7	585	0.7	1,555	1.2	675	0.9	709	1.0	302	0.9	4,114	1.0
Cullman	794	1.8	1,128	1.4	1,292	1.0	631	0.8	1,135	1.7	538	1.6	5,518	1.3
DeKalb	960	2.2	1,978	2.5	2,158	1.7	1,219	1.5	1,361	2.0	444	1.3	8,120	1.9
Etowah	395	0.9	621	0.8	1,492	1.1	951	1.2	1,077	1.6	303	0.9	4,839	1.1
Franklin	459	1.1	602	0.8	2,017	1.6	587	0.7	701	1.0	159	0.5	4,525	1.0
Jackson	588	1.3	1,104	1.4	1,251	1.0	668	0.8	1,174	1.7	446	1.4	5,231	1.2
Lauderdale	470	1.1	3,431	4.3	2,805	2.2	1,308	1.7	1,601	2.4	618	1.9	10,233	2.4
Lawrence	218	0.5	744	0.9	1,063	0.8	494	0.6	919	1.4	383	1.2	3,821	0.9
Limestone	1,597	3.7	4,010	5.1	4,640	3.6	1,077	1.4	1,298	1.9	702	2.1	13,324	3.1
Madison	1,237	2.8	2,284	2.9	3,458	2.7	2,748	3.5	1,444	2.1	769	2.3	11,940	2.8
Marion	120	0.3	391	0.5	1,167	0.9	391	0.5	728	1.1	199	0.6	2,996	0.7
Marshall	511	1.2	1,548	2.0	1,111	0.9	649	0.8	854	1.3	389	1.2	5,062	1.2
Morgan	921	2.1	2,677	3.4	2,771	2.1	1,319	1.7	1,157	1.7	444	1.3	9,289	2.1
Winston	112	0.3	332	0.4	444	0.3	236	0.3	477	0.7	191	0.6	1,792	0.4
District total	9,701	22.2	24,116	30.4	29,848	23.0	14,893	18.8	16,270	24.0	6,662	20.2	101,490	23.5
State total	43,674	100.0	79,237	100.0	129,904	100.0	79,119	100.0	67,715	100.0	32,942	100.0	432,591	100.0

TABLE 2. NUMBER OF SAMPLES RECEIVED AND PER CENT OF STATE TOTAL BY COUNTY AND BY DISTRICT, JULY 1, 1972 THROUGH JUNE 30, 1973—DISTRICT 2

County	1953-57		1958-62		1963-67		1968-70		1971-2		1973		21 years	
	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.
Barbour.....	1,605	3.7	2,816	3.6	4,608	3.5	1,676	2.1	1,434	2.1	727	2.2	12,866	3.0
Bullock.....	407	0.9	816	1.0	1,908	1.5	1,075	1.4	752	1.1	291	0.9	5,249	1.2
Chambers.....	449	1.0	564	0.7	745	0.6	896	1.1	801	1.2	337	1.0	3,792	0.9
Coffee.....	2,117	4.8	2,131	2.7	4,734	3.6	2,581	3.3	1,526	2.3	1,262	3.8	14,351	3.3
Coosa.....	133	0.3	392	0.5	240	0.2	126	0.2	317	0.5	62	0.2	1,270	0.3
Covington.....	1,008	2.3	1,743	2.2	3,397	2.6	1,969	2.5	1,189	1.8	611	1.9	9,917	2.3
Crenshaw.....	773	1.8	751	0.9	1,453	1.1	920	1.2	800	1.2	438	1.3	5,135	1.2
Dale.....	1,112	2.5	1,867	2.4	2,611	2.0	1,253	1.6	1,224	1.8	669	2.0	8,736	2.0
Elmore.....	764	1.7	1,347	1.7	2,373	1.8	1,393	1.8	1,021	1.5	440	1.3	7,338	1.7
Geneva.....	2,666	6.1	2,625	3.3	5,348	4.1	2,363	3.0	1,690	2.5	1,166	3.5	15,858	3.7
Henry.....	2,294	5.3	2,845	3.6	3,362	2.6	2,451	3.1	2,221	3.3	1,154	3.5	14,327	3.3
Houston.....	2,264	5.2	5,011	6.3	4,228	3.3	2,732	3.5	2,763	4.1	1,488	4.5	18,486	4.3
Lee.....	1,035	2.4	1,372	1.7	2,763	2.1	2,342	3.0	1,551	2.3	840	2.5	9,903	2.3
Macon.....	327	0.7	898	1.1	1,929	1.5	1,454	1.8	1,090	1.6	481	1.5	6,179	1.4
Pike.....	1,230	2.8	1,796	2.3	5,153	4.0	2,734	3.5	2,444	3.6	1,256	3.8	14,613	3.4
Russell.....	443	1.0	701	0.9	953	0.7	841	1.1	586	0.9	349	1.1	3,873	0.9
Tallapoosa.....	538	1.2	811	1.0	1,163	0.9	414	0.5	612	0.9	244	0.7	3,782	0.9
District total.....	19,165	43.9	28,486	36.0	46,968	36.2	27,220	34.4	22,021	32.5	11,815	35.9	155,675	36.0
State total.....	43,674	100.0	79,237	100.0	129,904	100.0	79,119	100.0	67,715	100.0	32,942	100.0	432,591	100.0

TABLE 3. NUMBER OF SAMPLES RECEIVED AND PER CENT OF STATE TOTAL BY COUNTY AND BY DISTRICT, JULY 1, 1972 THROUGH JUNE 30, 1973—DISTRICT 3

County	1953-57		1958-62		1963-67		1968-70		1971-72		1973		21 years	
	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.
Baldwin.....	704	1.6	712	0.9	2,716	2.1	2,407	3.0	1,128	1.7	673	2.0	8,340	1.9
Butler.....	548	1.3	903	1.1	1,633	1.3	424	0.5	448	0.7	185	0.6	4,141	1.0
Choctaw.....	245	0.6	514	0.6	757	0.6	660	0.8	485	0.7	179	0.5	2,840	0.7
Clarke.....	155	0.4	257	0.3	589	0.5	493	0.6	592	0.9	155	0.5	2,241	0.5
Conecuh.....	500	1.1	902	1.1	1,463	1.1	768	1.0	473	0.7	210	0.6	4,316	1.0
Dallas.....	1,064	2.4	1,531	1.9	3,362	2.6	2,701	3.4	2,198	3.2	1,173	3.6	12,029	2.8
Escambia.....	667	1.5	469	0.6	842	0.6	494	0.6	352	0.5	410	1.2	3,234	0.7
Hale.....	334	0.8	879	1.1	1,489	1.1	942	1.2	624	0.9	339	1.0	4,607	1.1
Lowndes.....	240	0.5	713	0.9	1,968	1.5	1,386	1.8	993	1.5	394	1.2	5,694	1.3
Marengo.....	533	1.2	1,018	1.3	1,853	1.4	1,244	1.6	1,281	1.9	541	1.6	6,470	1.5
Mobile.....	547	1.3	1,255	1.6	2,373	1.8	2,117	2.7	1,407	2.1	966	2.9	8,665	2.0
Monroe.....	254	0.6	598	0.8	1,612	1.2	778	1.0	309	0.5	220	0.7	3,771	0.9
Montgomery.....	567	1.3	1,654	2.1	4,693	3.6	3,659	4.6	2,216	3.3	871	2.6	13,660	3.2
Perry.....	468	1.1	666	0.8	1,386	1.1	885	1.1	702	1.0	484	1.5	4,591	1.1
Sumter.....	179	0.4	686	0.9	1,623	1.2	906	1.1	612	0.9	319	1.0	4,325	1.0
Washington.....	176	0.4	477	0.6	382	0.3	278	0.4	543	0.8	188	0.6	2,044	0.5
Wilcox.....	455	1.0	670	0.8	1,348	1.0	872	1.1	771	1.1	449	1.4	4,565	1.1
District total.....	7,636	17.5	13,904	17.5	30,089	23.2	21,014	26.6	15,134	22.3	7,756	23.5	95,533	22.1
State total.....	43,674	100.0	79,237	100.0	129,904	100.0	79,119	100.0	67,715	100.0	32,942	100.0	432,591	100.0

TABLE 4. NUMBER OF SAMPLES RECEIVED AND PER CENT OF STATE TOTAL BY COUNTY AND BY DISTRICT, JULY 1, 1972 THROUGH JUNE 30, 1973—DISTRICT 4

County	1953-57		1958-62		1963-67		1968-70		1971-72		1973		21 years	
	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.	Number	Pct.
Autauga.....	406	0.9	1,322	1.7	2,523	1.9	2,011	2.5	1,566	2.3	897	2.7	8,725	2.0
Bibb.....	363	0.8	492	0.6	1,007	0.8	530	0.7	530	0.8	246	0.7	3,168	0.7
Calhoun.....	461	1.1	1,026	1.3	1,098	0.8	747	0.9	816	1.2	394	1.2	4,542	1.0
Chilton.....	317	0.7	635	0.8	981	0.8	631	0.8	972	1.4	529	1.6	4,065	0.9
Clay.....	179	0.4	275	0.3	831	0.6	422	0.5	484	0.7	90	0.3	2,281	0.5
Cleburne.....	116	0.3	401	0.5	382	0.3	250	0.3	370	0.5	83	0.3	1,602	0.5
Fayette.....	597	1.4	462	0.6	858	0.7	471	0.6	370	0.5	196	0.6	2,954	0.7
Greene.....	378	0.9	501	0.6	1,775	1.4	938	1.2	685	1.0	328	1.0	4,605	1.1
Jefferson.....	630	1.4	1,902	2.4	3,968	3.1	3,591	4.5	2,936	4.3	1,583	4.8	14,610	3.4
Lamar.....	445	1.0	872	1.1	1,278	1.0	534	0.7	530	0.8	147	0.4	3,806	0.9
Pickens.....	544	1.2	495	0.6	1,102	0.8	624	0.8	667	1.0	248	0.8	3,680	0.9
Randolph.....	387	0.9	249	0.3	736	0.6	515	0.7	367	0.5	175	0.5	2,429	0.6
Shelby.....	657	1.5	1,004	1.3	1,125	0.9	757	1.0	564	0.8	209	0.6	4,316	1.0
St. Clair.....	279	0.6	726	0.9	932	0.7	781	1.0	588	0.9	220	0.7	3,526	0.8
Talladega.....	618	1.4	830	1.0	898	0.7	785	1.0	694	1.0	401	1.2	4,226	1.0
Tuscaloosa.....	497	1.1	1,192	1.5	2,709	2.1	1,902	2.4	1,394	2.1	691	2.1	8,385	1.9
Walker.....	298	0.7	347	0.4	796	0.6	503	0.6	757	1.1	272	0.8	2,973	0.7
District total.....	7,172	16.4	12,731	16.1	22,999	17.7	15,992	20.2	14,290	21.1	6,709	20.4	79,893	18.5
State total.....	43,674	100.0	79,237	100.0	129,904	100.0	79,119	100.0	67,715	100.0	32,942	100.0	432,591	100.0

## SOIL pH BY CROPS (TABLES 5 AND 6)

The number of samples at various pH levels are given by crops for 1973 and 1972, respectively. These tables also show the percentage of samples from 17 crop classifications. In 1973, 21 per cent of all samples was from summer grass pastures including bahiagrass, bermudagrass, dallisgrass, and temporary summer grasses. The second most predominant crop was peanuts at 15 per cent. The percentage of samples for specific crops at various pH levels can be calculated from numbers in the tables. The number of samples received for

gardens, lawns, and shrubs has increased rapidly. The percentage from these areas in 1973 was 21 per cent of all samples with another 4 per cent coming from fruits, nuts, and commercial truck crops.

Of all samples received, 51 per cent was below pH 5.8 and needed lime for most crops. Another 13.6 per cent had pH values of 5.8 or 5.9 and can be expected to need lime in two years or more. Lime is recommended for most crops if the pH is below 5.8. For coastal bermuda and other perennial summer grasses, including lawns, lime is not recommended unless the pH is below 5.5.

TABLE 5. ALABAMA STATE NUMBER OF SAMPLES ACCORDING TO CROP AND SOIL ACIDITY (pH), JULY 1, 1972 THROUGH JUNE 30, 1973

Crop	Acidity (pH)									Total*	Per cent	Total**
	Below 4.5	4.5-4.9	5.0-5.4	5.5-5.7	5.8-5.9	6.0-6.4	6.5-6.9	7.0-7.4	Above 7.4			
Corn.....	16	119	515	383	202	275	47	5	18	1,580	4.8	4,020
Cotton.....	16	150	620	554	371	635	166	36	12	2,560	7.8	2,732
Peanuts.....	2	150	1,201	1,375	1,011	1,106	97	6	0	4,948	15.0	5,391
Soybeans.....	9	150	614	457	321	494	179	75	182	2,481	7.5	3,367
Clover-winter grass.....	9	196	742	452	247	526	243	90	55	2,560	7.8	2,818
Clover-summer grass.....	0	13	83	106	91	162	84	35	67	641	1.9	783
Legumes.....	1	18	73	55	29	49	29	8	9	271	0.8	367
Temp. winter grass.....	2	49	129	104	58	84	26	13	23	488	1.5	911
Perm. winter grass.....	14	144	583	390	267	485	259	98	157	2,397	7.3	2,784
Summer grass.....	22	264	1,093	1,173	757	1,220	344	120	188	5,181	15.7	6,115
Coastal Bermuda.....	11	128	429	370	242	389	110	16	9	1,704	5.2	1,909
Fruits and nuts.....	2	29	185	204	148	226	58	10	8	870	2.6	1,280
Truck crops.....	6	48	90	68	32	42	19	2	4	311	0.9	394
Tomatoes-peppers.....	0	9	35	36	20	25	11	3	0	139	0.4	162
Gardens.....	27	191	597	497	273	540	288	129	83	2,625	8.0	2,808
Lawns.....	41	216	558	495	296	648	363	135	92	2,844	8.6	3,615
Shrubs.....	26	82	201	153	117	369	246	90	58	1,342	4.1	1,998
Total.....	204	1,956	7,748	6,872	4,482	7,275	2,569	871	965	32,942	100.0	41,454
Per cent.....	0.6	5.9	23.5	20.9	13.6	22.1	7.8	2.6	2.9	100.0		

\* Total samples.

\*\* Total recommendations.

TABLE 6. ALABAMA STATE NUMBER OF SAMPLES ACCORDING TO CROP AND SOIL ACIDITY (pH), JULY 1, 1971 THROUGH JUNE 30, 1972

Crop	Acidity (pH)									Total*	Per cent	Total**
	Below 4.5	4.5-4.9	5.0-5.4	5.5-5.7	5.8-5.9	6.0-6.4	6.5-6.9	7.0-7.4	Above 7.4			
Corn.....	8	144	1,006	1,126	620	778	124	18	11	3,835	9.5	7,143
Cotton.....	13	144	632	669	463	891	264	30	14	3,120	7.7	4,250
Peanuts.....	0	86	742	993	625	787	54	2	2	3,291	8.1	5,516
Soybeans.....	2	120	490	419	245	403	142	69	91	1,981	4.9	3,137
Clover-grass pasture.....	11	269	1,379	1,003	580	1,188	508	153	128	5,219	12.9	6,310
Legumes.....	0	27	187	143	64	143	53	11	16	644	1.6	853
Small grain-winter grass.....	12	270	1,497	1,200	704	1,341	566	200	214	6,004	14.8	8,661
Summer grass pasture.....	8	172	1,077	1,301	955	1,532	461	146	224	5,876	14.5	10,233
Coastal Bermuda.....	22	118	555	557	382	612	182	34	13	2,475	6.1	2,758
Fruits and nuts.....	0	35	141	229	154	299	105	20	7	990	2.4	1,779
Truck crops.....	4	24	55	79	32	59	18	2	6	279	0.7	482
Tomatoes.....	0	3	29	26	16	29	12	3	0	118	0.3	175
Irish potatoes.....	3	14	24	6	2	6	5	0	0	60	0.1	128
Gardens.....	22	99	390	322	232	439	195	100	34	1,833	4.5	2,295
Lawns.....	35	187	575	548	402	794	366	146	81	3,134	7.7	4,495
Shrubs and flowers.....	18	105	287	241	237	386	239	88	61	1,662	4.1	3,052
Total.....	158	1,817	9,066	8,862	5,713	9,687	3,294	1,022	902	40,532	100.0	61,267
Per cent.....	0.4	4.5	22.4	21.9	14.1	23.9	8.1	2.5	2.2	100.0		

\* Total samples.

\*\* Total recommendations.

## SOIL pH BY SOIL GROUP CLASSIFICATIONS (TABLES 7 AND 8)

When samples are received in the laboratory, they are classified into five groups, based primarily on location, soil texture, and organic matter content. A description of these groups is given on page 7 of Auburn University Agricultural Experiment Station Circular 176. In 1973, 43 per cent of all samples received was sandy soils from the coastal plain. Of these, 55 per cent had pH values below 5.8. Of the Group 2 loams and light clays from throughout the state, 47 per cent had pH values below 5.8. The calcareous soils of the Black Belt contain an excess of lime. A few soils classified in this group had pH values below 6.0, which indicates that

they were from fields of mixed soil types including both calcareous and acid soils. The sandy loam soils of North Alabama are separated from the coastal plain soils because they usually respond to higher rates of fertilizer. Of these soils, 63 per cent were below pH 5.8, supporting recent observations that low pH may be limiting yields severely on a high percentage of soils in this area of Alabama. On the heavy acid clay soils of the Black Belt and the limestone valleys of North Alabama, lime is not recommended for most crops unless the pH is below 5.5. Only 26 per cent of these soils was below this pH. Tables 7 and 8 show, as did Tables 5 and 6, that 51 per cent of all samples received was below pH 5.8 in both 1972 and 1973.

TABLE 7. ALABAMA STATE NUMBER OF SAMPLES ACCORDING TO SOIL CLASS AND ACIDITY (pH), JULY 1, 1972 THROUGH JUNE 30, 1973

Soil group		Acidity (pH)											
Code	Name	Below 4.5	4.5-4.9	5.0-5.4	5.5-5.7	5.8-5.9	6.0-6.4	6.5-6.9	7.0-7.4	Above 7.4	Total*	Per cent	Total**
1	Sandy soils of Coastal Plain.....	59	644	3,469	3,690	2,449	3,170	629	69	15	14,194	43.1	18,785
2	Loams and light clays.....	89	643	2,312	2,020	1,336	2,692	1,125	352	122	10,691	32.5	13,032
3	Calcareous Black Belt soils.....	0	0	1	4	1	42	100	241	760	1,149	3.5	1,363
4	Sandy loams of North Ala.....	44	508	1,566	837	472	805	354	85	19	4,690	14.2	5,579
5	Acid clays-Black Belt and Limestone Valleys..	12	161	400	321	224	566	361	124	49	2,218	6.7	2,695
Total.....		204	1,956	7,748	6,872	4,482	7,275	2,569	871	965	32,942	100.0	41,454
Per cent.....		0.6	5.9	23.5	20.9	13.6	22.1	7.8	2.6	2.9	100.0		

\* Total samples.

\*\* Total recommendations.

TABLE 8. ALABAMA STATE NUMBER OF SAMPLES ACCORDING TO SOIL CLASS AND ACIDITY (pH), JULY 1, 1971 THROUGH JUNE 30, 1972

Soil group		Acidity (pH)											
Code	Name	Below 4.5	4.5-4.9	5.0-5.4	5.5-5.7	5.8-5.9	6.0-6.4	6.5-6.9	7.0-7.4	Above 7.4	Total*	Per cent	Total**
1	Sandy soils of Coastal Plain.....	53	594	3,717	4,311	2,721	4,128	198	+69	+5	15,635	38.6	26,413
2	Loams and light clays.....	18	347	1,850	1,590	870	2,034	869	187	27	7,792	19.2	10,408
3	Calcareous Black Belt soils.....	0	3	1	6	3	44	127	267	637	1,088	2.7	1,452
4	Sand Mountain loams.....	27	467	2,231	1,358	734	1,403	546	75	20	6,861	16.9	9,086
5	Acid clays-Black Belt and Limestone Valleys..	0	33	209	150	141	304	185	56	13	1,091	2.7	1,542
6	Gardens, lawns and shrubs.....	82	469	1,497	1,449	1,069	2,006	939	358	189	8,058	19.9	12,377
Total.....		180	1,913	9,505	8,864	5,538	9,919	2,864	874	881	40,525	100.0	61,278
Per cent.....		0.4	4.7	23.5	21.9	13.7	24.5	7.1	2.2	2.2	100.0		

\* Total samples.

\*\* Total recommendations.

**RATINGS OF P, K, AND Mg BY CROPS  
(TABLES 9 AND 10)**

These tables show the number of samples in the different rating categories by crops for the state. This information is probably of more use on a county basis than for the state. Only 52 per cent of samples was rated VL, L, or M for P and would be expected to respond to this element. A total of 25 per cent, mostly from gardens, lawns, and shrubs was rated VH or EH in P and should not be fertilized with this element because the supply in the soil is adequate for top production for several to many years and further additions could be detrimental. (The distribution of samples among the different P ratings was different in the two years because

the soil-test values required for the higher ratings on gardens, lawns, shrubs, and horticultural crops was reduced in 1973.)

Only 56 per cent of samples was rated VL, L, and M in K and would be expected to respond to this element. The 9 per cent in the VH range was much lower than for P, showing that K does not build up in these soils as does P. The distribution of samples among the K ratings was about the same for the 2 years.

Only 14 to 15 per cent of samples was low in Mg for the 2 years. The crop having the highest percentage of Low Mg soils was peanuts, because they are planted primarily on the sandy soils of the coastal plain. The need for Mg can be met in most cases by adding dolomitic limestone; practically all of the low Mg soils also need lime.

TABLE 9. ALABAMA STATE SAMPLES RATED BY P, K, AND Mg LEVELS FOR EACH CROP, JULY 1, 1972 THROUGH JUNE 30, 1973

Crop	Phosphorus						Potassium					Magnesium		Total	Per cent
	VL	L	M	H	VH	EH	VL	L	M	H	VH	L	H		
Corn.....	124	213	483	510	204	46	3	99	545	751	182	526	1,054	1,580	4.8
Cotton.....	75	238	555	924	655	113	11	141	1,206	1,102	100	467	2,093	2,560	7.8
Peanuts.....	121	645	1,916	1,888	358	20	110	974	2,487	1,286	91	1,460	3,488	4,948	15.0
Soybeans.....	385	474	685	584	271	82	36	391	1,212	720	122	420	2,061	2,481	7.5
Clover-winter grass...	929	536	550	345	150	50	83	635	1,151	597	94	220	2,340	2,560	7.8
Clover-summer grass	139	116	133	129	82	42	11	88	261	220	61	15	626	641	1.9
Legumes.....	62	54	75	50	22	8	14	56	118	79	4	39	232	271	0.8
Temp. winter grass...	82	59	116	154	61	16	4	40	128	219	97	75	413	488	1.5
Perm. winter grass...	732	490	509	338	198	130	10	181	803	938	465	214	2,183	2,397	7.3
Summer grass.....	944	945	1,274	1,239	583	196	54	552	1,751	2,104	720	626	4,555	5,181	15.7
Coastal Bermuda.....	181	243	437	488	266	89	27	279	629	611	158	248	1,456	1,704	5.2
Fruits and nuts.....	76	83	124	188	195	204	16	91	319	331	113	55	815	870	2.6
Truck crops.....	43	25	42	68	79	54	9	54	112	119	17	83	228	311	0.9
Tomatoes-peppers...	10	8	32	30	28	31	10	12	62	43	12	32	107	139	0.4
Gardens.....	215	196	304	404	495	1,011	62	301	858	1,042	362	333	2,292	2,625	8.0
Lawns.....	379	297	385	434	454	895	76	451	1,167	995	155	158	2,686	2,844	8.6
Shrubs.....	88	74	82	126	216	756	36	205	473	439	189	42	1,300	1,342	4.1
Total.....	4,585	4,696	7,702	7,899	4,317	3,743	572	4,550	13,282	11,596	2,942	5,013	27,929	32,942	100.0
Per cent.....	13.9	14.3	23.4	24.0	13.1	11.4	1.7	13.8	40.3	35.2	8.9	15.2	84.8	100.0	

TABLE 10. ALABAMA STATE SAMPLES RATED BY P, K, AND Mg LEVELS FOR EACH CROP, JULY 1, 1971 THROUGH JUNE 30, 1972

Crop	Phosphorus						Potassium					Magnesium		Total	Per cent
	VL	L	M	H	VH	EH	VL	L	M	H	VH	L	H		
Corn.....	255	578	1,309	1,280	413	0	20	302	1,325	1,772	416	994	2,841	3,835	9.5
Cotton.....	227	334	831	1,020	708	0	23	231	1,295	1,427	144	314	2,806	3,120	7.7
Peanuts.....	101	436	1,268	1,208	278	0	114	718	1,626	790	43	911	2,380	3,291	8.1
Soybeans.....	359	357	520	500	245	0	42	398	942	535	64	288	1,693	1,981	4.9
Clover-grass pasture	2,018	1,056	906	718	521	0	222	1,300	2,249	1,183	265	622	4,597	5,219	12.9
Legumes.....	221	142	143	85	53	0	29	154	291	148	22	71	573	644	1.6
Small grain-winter grass	1,847	1,177	1,195	1,027	758	0	57	578	2,025	2,378	966	841	5,163	6,004	14.8
Summer grass pasture	1,650	847	372	234	298	0	122	1,018	2,820	3,184	1,207	492	5,384	5,876	14.5
Coastal Bermuda.....	423	404	614	637	397	0	51	424	917	820	263	287	2,188	2,475	6.1
Fruits and nuts.....	119	105	148	174	444	0	16	84	299	381	210	145	845	990	2.4
Truck crops.....	48	69	65	61	27	9	51	92	93	39	4	83	196	279	0.7
Tomatoes.....	18	24	31	16	18	11	19	28	42	20	9	35	83	118	0.3
Irish potatoes.....	7	10	16	15	12	0	0	9	39	12	0	38	22	60	0.1
Gardens.....	258	257	278	384	369	287	186	416	663	451	117	348	1,485	1,833	4.5
Lawns.....	648	516	497	554	505	414	422	742	1,241	671	58	248	2,886	3,134	7.7
Shrubs and flowers...	269	207	240	298	263	385	178	422	587	361	114	106	1,556	1,662	4.1
Total.....	8,468	6,519	8,433	8,211	5,309	1,106	1,552	6,916	16,454	14,172	3,902	5,823	34,698	40,521	100.0
Per cent.....	20.9	16.1	20.8	20.3	13.1	2.7	3.8	17.1	40.6	35.0	9.6	14.4	85.6	100.0	

TABLE 11. ALABAMA STATE SAMPLES RATED BY P, K, AND Mg LEVELS FOR EACH SOIL GROUP, JULY 1, 1972 THROUGH JUNE 30, 1973

Soil group	Phosphorus						Potassium					Magnesium		Total	Per cent
	VL	L	M	H	VH	EH	VL	L	M	H	VH	L	H		
1	1,098	1,664	3,893	4,432	2,060	1,047	301	2,240	5,786	4,821	1,046	2,671	11,523	14,194	43.1
2	1,808	1,647	2,206	1,985	1,322	1,723	128	1,246	4,334	3,980	1,003	1,031	9,660	10,691	32.5
3	436	361	207	80	30	35	5	50	201	530	363	60	1,089	1,149	3.5
4	951	755	956	987	591	450	79	693	2,085	1,502	331	1,211	3,479	4,690	14.2
5	292	269	440	415	314	488	59	321	876	763	199	40	2,178	2,218	6.7
Total	4,585	4,696	7,702	7,899	4,317	3,743	572	4,550	13,282	11,596	2,942	5,013	27,929	32,942	100.0
Per cent	13.9	14.3	23.4	24.0	13.1	11.4	1.7	13.8	40.3	35.2	8.9	15.2	84.8	100.0	

TABLE 12. ALABAMA STATE SAMPLES RATED BY P, K, AND Mg LEVELS FOR EACH SOIL GROUP, JULY 1, 1971 THROUGH JUNE 30, 1972

Soil group	Phosphorus						Potassium					Magnesium		Total	Per cent
	VL	L	M	H	VH	EH	VL	L	M	H	VH	L	H		
1	2,225	2,677	5,264	5,395	2,549	0	351	2,473	6,718	6,834	1,734	2,923	15,187	18,110	44.7
2	2,871	5,141	5,303	2,431	20	0	165	1,246	3,016	2,571	794	267	5,050	5,317	13.1
3	561	316	152	35	24	0	2	53	241	476	316	55	1,033	1,088	2.7
4	1,733	1,317	1,512	1,365	934	0	134	1,209	3,092	1,968	458	1,572	5,289	6,861	16.9
5	271	180	281	221	138	0	22	151	434	394	90	5	1,086	1,091	2.7
6	1,372	1,187	1,270	1,499	1,624	1,106	878	1,785	2,955	1,929	511	1,002	7,056	8,058	19.9
Total	9,033	10,818	13,782	10,946	5,289	1,106	1,552	6,917	16,456	14,172	3,903	5,824	34,701	40,525	100.0
Per cent	22.3	26.7	34.0	27.0	13.1	2.7	3.8	17.1	40.6	35.0	9.6	14.4	85.6	100.0	

**RATINGS OF P, K, AND Mg FOR THE DIFFERENT SOIL GROUPS (TABLES 11 AND 12)**

There was little difference in the P and K ratings of Group 1 and Group 2 soils. About 50 per cent of them was *High* to *Extremely High* in P and would not be expected to respond to this element. Over 40 per cent of both groups was *High* or *Very High* in K. About 70 per cent of the calcareous soils of Group 3 was *Low* or *Very Low* in P and only 13 per cent was *High*, *Very High*, or *Extremely High*. However, these soils are well supplied with K, for 78 per cent of them was

*High* or *Very High*, while only 4 per cent of them was *Low* in K. The levels of P and K in the sandy loams of North Alabama and in the heavy clay soils were about the same as for Group 1 and Group 2 soils.

The Mg ratings showed that 19 per cent of Group 1 and 26 per cent of Group 4 soils were *Low* in Mg. The other soil groups had small percentages of Mg deficient soils. The soil-test Mg level below which soils are rated low is 25 lb. Mg per acre for Group 1 soils and 50 lb. per acre for the other soil groups.

TABLE 13. ALABAMA STATE P K COMBINATIONS BY SOIL GROUP, JULY 1, 1972 THROUGH JUNE 30, 1973

P K rating	Soil group					Total	Per cent	Rating	P totals	K totals
	1	2	3	4	5					
VL- VL	92	71	4	47	20	234	0.71			
L	384	482	32	338	92	1,328	4.03			
M	398	871	88	427	114	1,898	5.76			
H	199	357	206	119	56	937	2.84			
VH	25	27	106	20	10	188	0.57	VL-	4,585	572
L- VL	64	24	0	14	3	105	0.32			
L	399	278	13	167	55	912	2.77			
M	773	853	54	418	149	2,247	6.82			
H	385	431	186	147	52	1,201	3.65			
VH	43	61	108	9	10	231	0.70	L-	4,696	4,550
M- VL	90	15	0	8	2	115	0.35			
L	701	227	0	100	53	1,081	3.28			
M	1,786	1,034	31	529	231	3,611	10.96			
H	1,140	801	88	284	130	2,443	7.42			
VH	176	129	88	35	24	452	1.37	M-	7,702	13,282
H- VL	29	10	0	6	4	49	0.15			
L	563	138	0	58	25	784	2.38			
M	1,852	787	13	445	178	3,275	9.94			
H	1,687	850	29	411	183	3,160	9.59			
VH	301	200	38	67	25	631	1.92	H-	7,899	11,596
VH- VL	16	4	0	4	12	36	0.11			
L	149	64	3	19	47	282	0.86			
M	682	405	8	184	89	1,368	4.15			
H	964	678	7	307	135	2,091	6.35			
VH	249	171	12	77	31	540	1.64	VH-	4,317	2,942
EH- VL	10	4	1	0	18	33	0.10			
L	44	57	2	11	49	163	0.49			
M	295	384	7	82	115	883	2.68			
H	446	863	14	234	207	1,764	5.35			
VH	252	415	11	123	99	900	2.73	EH-	3,743	
Total	14,194	10,691	1,149	4,690	2,218	32,942	100.00			
Per cent	43.09	32.45	3.49	14.24	6.73	100.00				



**PK RATING COMBINATIONS BY SOIL GROUPS  
(TABLES 13 AND 14)**

Data in these tables can be used to indicate the need for various ratios of P<sub>2</sub>O<sub>5</sub> to K<sub>2</sub>O in fertilizers for samples received. The percentages shown for the PK ratings on all samples have been used to show the need for different fertilizer grades.

Ratio of P <sub>2</sub> O <sub>5</sub> to K <sub>2</sub> O Needed for Cotton	Ratings	Per cent of All Samples	Per cent of Samples Needing Fertilizer
Even P <sub>2</sub> O <sub>5</sub> to K <sub>2</sub> O	1-1 VL-VL, VL-L, L-VL, L-L, M-M, H-H	28.0	34
High P-	2-1 VL-M, L-H	9.4	29
Low K	3-2 L-M, M-H	14.2	

Low P-High K	1-2 M-VL, H-L	2.7	20
	2-3 M-L, H-M	13.2	
P only	1-0 VL-H, VL-VH, L-VH, M-VH	5.5	7
K only	0-1 H-VL, VH-VL, VH-L, VH-M, EH-M, EH-L, EH-VL	8.4	10
None	0-0 VH-VH, H-VH, VH-H, EH-H, EH-VH	18.0	---

Ratios would vary only slightly for most crops other than cotton. The last column shows that the ratios needed were about 34 per cent for 1-1, 29 per cent for 2-1 or 3-2, 20 per cent for 1-2 or 2-3, while 17 per cent needed only P or K. These data do not agree very closely with amounts of the different ratios being sold in the state, for most of the fertilizers sold are of the 1-1 ratio.

TABLE 14. ALABAMA STATE P K COMBINATIONS BY SOIL GROUP, JULY 1, 1971 THROUGH JUNE 30, 1972

P K rating	Soil group						Total	Per cent	Rating	P totals	K totals
	1	2	3	4	5	6					
VL- VL	111	103	1	87	10	408	720	1.78			
L	584	671	42	595	63	458	2,413	5.95			
M	834	1,043	142	809	120	398	3,346	8.26			
H	594	462	261	213	65	94	1,689	4.17			
VH	102	78	115	29	13	14	351	0.87	VL-	8,519	1,501
L- VL	78	13	1	26	5	178	301	0.74			
L	530	163	3	287	35	350	1,368	3.38			
M	1,088	581	54	680	71	481	2,955	7.29			
H	801	434	143	286	42	161	1,867	4.61			
VH	180	76	115	38	27	17	453	1.12	L-	6,944	6,493
M- VL	92	4	0	7	4	117	224	0.55			
L	707	23	4	194	24	341	1,293	3.19			
M	2,227	322	27	775	126	526	4,003	9.88			
H	1,882	429	52	489	117	256	3,225	7.96			
VH	356	94	69	47	10	30	606	1.50	M-	9,351	15,539
H- VL	59	-5	0	10	1	91	156	0.38			
L	522	-29	1	102	18	330	944	2.33			
M	1,930	129	8	581	71	629	3,348	8.26			
H	2,320	285	13	579	114	385	3,696	9.12			
VH	564	137	13	93	17	64	888	2.19	H-	9,032	13,352
VH- VL	11	-1	0	4	2	62	78	0.19			
L	130	-6	3	31	11	220	389	0.96			
M	639	24	10	247	46	551	1,517	3.74			
H	1,237	141	7	401	56	569	2,411	5.95			
VH	532	146	4	251	23	222	1,178	2.91	VH-	5,573	3,640
EH- VL	0	0	0	0	0	22	22	0.19			
L	0	0	0	0	0	86	86	0.96			
M	0	0	0	0	0	370	370	3.74			
H	0	0	0	0	0	464	464	5.95			
VH	0	0	0	0	0	164	164	2.91	EH-	1,106	
Total	18,110	5,317	1,088	6,861	1,091	8,058	40,525	100.00			
Per cent	44.69	13.12	2.68	16.93	2.69	19.88	100.00				

## CALCIUM RATINGS OF SAMPLES FOR PEANUTS FROM 13 COUNTIES, 1972 (TABLE 15)

Peanuts is the only major crop in Alabama that responds to calcium and for which soil-test Ca is determined. Calcium deficiency prevents nuts from filling properly. Calcium needs of other crops except for tomatoes are met by liming soils to the proper pH. Peanuts are grown primarily on the sandy Group 1 soils in 13 counties in southeast Alabama.

Calcium levels of samples for peanuts from these counties in 1971-72 are given in Table 15. Data for 1972-73 are not

available because of a change made in the computer program during the year. On the 26 per cent of samples rated *Low* in Ca (index of 70 per cent sufficiency or below) gypsum was recommended, even where lime also was recommended. Gypsum was recommended on the 42 per cent of samples that were *Medium* in Ca (index of 80 to 100 per cent sufficiency), only where the pH was above 5.7 and no lime was needed. The remaining 32 per cent of samples was *High* in Ca (index of 110 per cent sufficiency or above) and did not need gypsum to produce top yields of peanuts.

TABLE 15. CALCIUM, NUMBER AND PER CENT OF PEANUT SAMPLES RATING LOW, MEDIUM AND HIGH FOR 13 COUNTIES, 1972

County	Calcium rating						Total	
	Low		Medium		High		Number	Per cent
	Number	Per cent	Number	Per cent	Number	Per cent		
Barbour.....	141	42.3	124	37.2	68	20.4	333	10.2
Bullock.....	16	72.7	3	13.6	3	13.6	22	0.7
Butler.....	1	4.5	8	36.4	13	59.1	22	0.7
Coffee.....	57	18.8	126	41.6	120	39.6	303	9.3
Conecuh.....	1	50.0	1	50.0	0	0.0	2	0.1
Covington.....	29	25.7	42	37.2	42	37.2	113	3.5
Crenshaw.....	46	35.9	50	39.1	32	25.0	128	3.9
Dale.....	69	25.7	123	45.9	76	28.4	268	8.2
Geneva.....	50	15.0	135	40.4	149	44.6	334	10.2
Henry.....	172	24.5	310	44.1	221	31.4	703	21.5
Houston.....	129	21.4	254	42.1	221	36.6	604	18.5
Pike.....	151	34.2	189	42.9	101	22.9	441	13.5
Russell.....	0	0.0	0	0.0	0	0.0	0	0.0
Total.....	862	26.3	1,365	41.7	1,046	32.0	3,273	100.0

## HOUSTON COUNTY SOIL TEST DATA (TABLES 16-19)

Tables of data for 1973 samples from Houston county are presented as examples of county data sent to Cooperative Extension offices in each county.

TABLE 16. HOUSTON, NUMBER OF SAMPLES ACCORDING TO CROP AND SOIL ACIDITY (pH), JULY 1, 1972 THROUGH JUNE 30, 1973

Crop	Acidity (pH)									Total*	Per cent	Total**
	Below 4.5	4.5-4.9	5.0-5.4	5.5-5.7	5.8-5.9	6.0-6.4	6.5-6.9	7.0-7.4	Above 7.4			
Corn.....	0	0	16	26	12	14	5	0	0	73	4.9	345
Cotton.....	0	0	0	1	1	0	0	0	0	2	0.1	8
Peanuts.....	0	26	179	234	171	174	19	1	0	804	54.0	916
Soybeans.....	0	1	13	17	10	18	1	0	0	60	4.0	115
Clover-winter grass.....	0	1	0	0	2	4	0	0	0	7	0.5	9
Clover-summer grass.....	0	0	0	1	1	1	0	0	0	3	0.2	3
Legumes.....	0	0	3	2	4	1	0	0	0	10	0.7	27
Temp. winter grass.....	0	3	16	17	5	7	2	0	0	50	3.4	69
Perm. winter grass.....	0	0	3	0	3	2	0	0	0	8	0.5	8
Summer grass.....	1	4	49	51	42	60	6	0	1	214	14.4	240
Coastal Bermuda.....	0	1	10	13	10	8	0	0	0	42	2.8	45
Fruits and nuts.....	0	1	0	2	6	12	1	0	0	22	1.5	37
Truck crops.....	0	2	6	2	2	4	1	0	0	17	1.1	25
Tomatoes-peppers.....	0	0	8	13	8	6	1	0	0	36	2.4	40
Gardens.....	0	3	13	14	11	12	2	2	0	57	3.8	64
Lawns.....	0	2	13	15	9	19	4	0	0	62	4.2	79
Shrubs.....	0	0	3	3	1	5	8	1	0	21	1.4	42
Total.....	1	44	332	411	298	347	50	4	1	1,488	100.0	2,072
Per cent.....	0.1	3.0	22.3	27.6	20.0	23.3	3.4	0.3	0.1	100.0		

\* Total samples.

\*\* Total recommendations.

TABLE 17. HOUSTON, NUMBER OF SAMPLES ACCORDING TO SOIL CLASS AND ACIDITY (pH), JULY 1, 1972 THROUGH JUNE 30, 1973

Soil group		Acidity (pH)									Total*	Per cent	Total**
Code	Name	Below 4.5	4.5-4.9	5.0-5.4	5.5-5.7	5.8-5.9	6.0-6.4	6.5-6.9	7.0-7.4	Above 7.4			
1	Sandy soils of Coastal Plain.....	1	40	301	378	278	320	43	3	0	1,364	91.6	1,911
2	Loams and light clays.....	0	4	31	33	20	27	7	1	1	124	8.4	161
Total	.....	1	44	332	411	298	347	50	4	1	1,488	100.0	2,072
Per cent	.....	0.1	3.0	22.3	27.6	20.0	23.3	3.4	0.3	0.1	100.0		

\* Total samples.

\*\* Total recommendations.

TABLE 18. HOUSTON, SAMPLES RATED BY P, K, AND Mg LEVELS FOR EACH CROP, JULY 1, 1972 THROUGH JUNE 30, 1973

Crop	Phosphorus						Potassium					Magnesium		Total	Per cent
	VL	L	M	H	VH	EH	VL	L	M	H	VH	L	H		
Corn.....	0	3	20	30	20	0	0	2	23	32	16	22	51	73	4.9
Cotton.....	0	0	0	1	1	0	0	1	1	0	0	2	0	2	0.1
Peanuts.....	14	81	285	351	69	4	6	100	401	271	26	191	613	804	54.0
Soybeans.....	1	9	14	30	6	0	0	11	30	16	3	16	44	60	4.0
Clover-winter grass.....	0	2	1	3	1	0	0	1	5	1	0	1	6	7	0.5
Clover-summer grass.....	0	1	0	1	1	0	1	0	0	2	0	0	3	3	0.2
Legumes.....	0	0	1	6	3	0	1	0	6	3	0	4	6	10	0.7
Temp. winter grass.....	0	0	10	35	5	0	0	0	18	27	5	12	38	50	3.4
Perm. winter grass.....	7	0	0	1	0	0	0	0	1	5	2	0	8	8	0.5
Summer grass.....	30	28	55	66	31	4	1	14	83	93	23	36	178	214	14.4
Coastal Bermuda.....	2	6	11	13	10	0	0	2	15	24	1	8	34	42	2.8
Fruits and nuts.....	0	0	1	2	5	14	0	0	4	15	3	0	22	22	1.5
Truck crops.....	0	4	5	3	4	1	0	3	10	3	1	4	13	17	1.1
Tomatoes-peppers.....	1	2	12	13	7	1	1	1	14	17	3	6	30	36	2.4
Gardens.....	3	3	4	11	11	25	2	8	21	21	5	11	46	57	3.8
Lawns.....	10	5	9	15	13	10	4	12	26	19	1	7	55	62	4.2
Shrubs.....	2	1	2	4	3	9	2	6	8	3	2	2	19	21	1.4
Total.....	70	145	430	585	190	68	18	161	666	552	91	322	1,166	1,488	100.0
Per cent.....	4.7	9.7	28.9	39.3	12.8	4.6	1.2	10.8	44.8	37.1	6.1	21.6	78.4	100.0	

TABLE 19. HOUSTON, SAMPLES RATED BY P, K, AND Mg LEVELS FOR EACH SOIL GROUP, JULY 1, 1972 THROUGH JUNE 30, 1973

Soil group	Phosphorus						Potassium					Magnesium		Total	Per cent
	VL	L	M	H	VH	EH	VL	L	M	H	VH	L	H		
1.....	50	120	398	555	175	64	17	139	598	525	85	290	1,074	1,364	91.6
2.....	18	25	32	30	15	4	1	22	68	27	6	32	92	124	8.4
Total.....	70	145	430	585	190	68	18	161	666	552	91	322	1,166	1,488	100.0
Per cent.....	4.7	9.7	28.9	39.3	12.8	4.6	1.2	10.8	44.8	37.1	6.1	21.6	78.4	100.0	

