AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

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1. SUBJECT CLASSIFICATION

A. PRIMARY: Agriculture — AF25-0000-G356

B. SECONDARY: Soil fertility,fertilizers,and plant nutrition--Guatemala

2. TITLE AND SUBTITLE

Nutrient status of soils in the five physiographic regions of Guatemala

3. AUTHOR(S)

Walker,J.L.

4. DOCUMENT DATE: 1967

5. NUMBER OF PAGES: 8p.

6. ARC NUMBER: ARC GT631.42.W181

7. REFERENCE ORGANIZATION NAME AND ADDRESS

N.C.State

8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability)

9. ABSTRACT

10. CONTROL NUMBER: PN-RAA-437

11. PRICE OF DOCUMENT

12. DESCRIPTORS

Agricultural products
Guatemala

13. PROJECT NUMBER

14. CONTRACT NUMBER: CSD-287 Res.

15. TYPE OF DOCUMENT

AID 590-1 (4-74)

GT
631.42
W181

H 287

NUTRIENT STATUS OF SOILS IN THE FIVE PHYSIOGRAPHIC REGIONS OF GUATEMALA

DR. JAMES L. WALKER, REGIONAL DIRECTOR INTERNATIONAL
SOIL TESTING PROJECT
NORTH CAROLINA STATE UNIVERSITY/AID/W.

Data compiled from the records of the Department of Soils,
General Directorist for Agricultural Research and Extension
National Soil Fertility and Analysis Program
Ministry of Agriculture - Republic of Guatemala Central America

	Total Samples	Phosphorous Only Deficient	Phosphorous Only Medium	Phosphorous Only Adequate	Potash Only Deficient	Potash Only Medium	Potash Only Adequate	Both Phosphorous and Potash Deficient	Both Phosphorous and Potash Medium	Both Phosphorous and Potash Adequate	Phosphorous Deficient and Potash adequate	Nitrogen Deficient	Nitrogen Adequa
SOILS OF THE CENTRAL ALTIPLANO AND VOLCANIC MOUNTAINS	1617 (39.5%)	1393 (36.5%)	34 (5.0%)	135 (8.5%)	24 (1.5%)	106 (6.5%)	1437 (92 %)	22 (1.5%)	7 (0.5%)	125 (7.5%)	1287 (80%)	1613 (99.75%)	4
Avocado	12	12	0	0	0	0	12	0	0	0	12	12	
Banana	10	10	0	0	8	2	0	8	0	0	0	10	
Barley	1	0	0	1	0	0	1	0	0	1	0	1	
Beans (Dried)	41(2.5%)	38(92.5%)	1	2	0(0%)	0	41	0	0	2	33(92.5%)	41(100%)	
Christmas trees	1	0	0	1	0	0	1	0	0	1	0	1	
Citrus	22 (1.5%)	21 (95.5%)	1	0	0 (0%)	5	17	0 (0%)	0	0	16 (72.5%)	22 (100%)	
Coffee	133 (8.0%)	113 (85%)	2	13	5 (4%)	13	110	5 (4%)	0	17	91 (68.5%)	133 (100%)	
Corn	805 (50.0%)	713 (89%)	34	53	4 (0.5%)	53	743	4 (0.5%)	4	50	668 (83%)	804 (100%)	1
Flowers	4	2	0	2	0	0	4	0	0	2	2	4	
Fruit trees, non-citrus	105 (6.5%)	90 (85.5%)	7	3	2 (2%)	3	100	1 (1%)	0	3	86 (82%)	105 (100%)	
Pastures	37 (25%)	31 (84%)	3	3	2 (5.5%)	4	31	2 (5.5%)	0	2	26 (70.5%)	37 (100%)	
Potato	23 (1.5%)	15 (65%)	3	5	0 (0%)	3	20	0 (0%)	0	3	14 (61%)	23 (100%)	

NUTRIENT STATUS OF CROPS IN THE FIVE PHYSIOGRAPHIC REGIONS OF GUATEMALA

DR. JAMES L. WALKER, REGIONAL DIRECTOR INTERNATION
SOIL TESTING PROJECT
NORTH CAROLINA STATE UNIVERSITY/AID/W.

Data compiled from the records of the Department of Soils,
General Directorate for Agricultural [illegible] and Research
National Soil Fertility and Analysis Program
Ministry of Agriculture - Republic of Guatemala - Central America

LS OF THE TRAL ALTI-NS (contd)	Total Samples	Phosphorous only			Potash Only			Both Phosphorous and Potash			Phosphorous Deficient and Potash adequate	Nitrogen	
		Deficient	Medium	Adequate	Deficient	Medium	Adequate	Deficient	Medium	Adequate		Deficient	Adequate
ice, dryland	3	0	1	2	0	0	3	0	0	2	0	3	
rgnum	8	3	4	1	0	0	8	0	0	1	3	3	
oybeans	5	2	1	2	0	0	5	0	0	2	2	5	
Strawberries	1	1	0	0	0	0	1	0	0	0	1	1	
Sugar cane	11	7	2	2	1	1	9	0	0	0	7	11	
Tomato	5	4	1	0	0	0	5	0	0	0	4	5	
Vegetables	83(5.0%)	64(77%)	6	13	0(0%)	2	81	0(0%)	1	13	63(76%)	83(100%)	
Wheat	257(16.0%)	227(88.5%)	14	16	2(1%)	13	242	2(1%)	2	16	2[illegible](88.5%)	256(99.5%)	1
Unclassified	50	40	4	6	0	2	48	0	0	5	39	48	2

	Total Samples	Phosphorous only			Potash only			Both Phosphorous and Potash			Phosphorous Deficient and Potash adequate	Nitrogen	
		Deficient	Medium	Adequate	Deficient	Medium	Adequate	Deficient	Medium	Adequate		Deficient	Adequa
SOILS OF THE PACIFIC COASTAL PLAIN	125(3%)	92(73.5%)	5(4%)	28(22.5%)	21(17%)	5(4%)	99(79%)	21(17%)	0(0%)	28(22.5%)	66(53%)	125(100%)	
Banana	7	0	0	7	0	0	7	0	0	7	0	7	
Beans (Dried)	1	0	1	0	0	0	1	0	0	0	0	1	
Citrus	1	1	0	0	0	0	1	0	0	0	1	1	
Coffee	26(20%)	25(100%)	0	0	20(80%)	2	3	20	0	0	3 (12%)	25	
Corn	5	5	0	0	0	0	5	0	0	0	5	5	
Cotton	70(56%)	55(78.5%)	2	13	1(1.5%)	3	66	1	0	13	51(73%)	70	
Lemon grass	4	4	0	0	0	0	4	0	0	0	4	4	
Pastures	2	0	0	2	0	0	2	0	0	2	0	2	
Rice	5	1	0	4	0	0	5	0	0	4	1	5	
Sesame	1	0	0	1	0	0	1	0	0	1	0	1	
Soybeans	4	1	2	1	0	0	4	0	0	1	1	4	
SOILS OF THE PACIFIC SLOPE	1364 (33%)	1100 (80.5%)	99 (7.5%)	165 (12%)	119 (9%)	302 (22%)	943 (69%)	111 (8%)	27 (2%)	118 (8.5%)	756 (55.5%)	1358 (99.5%)	6
Allspice	2	2	0	0	0	0	2	0	0	0	2	2	
Beans	3	3	0	0	0	0	3	0	0	0	3	3	
Cardamum	3	3	0	0	2	0	1	2	0	0	1	3	
Chile peppers	5	4	0	1	0	0	5	0	0	1	4	5	
Citrus	61(4.5%)	34(55.5%)	10	17	0(0%)	7	54	0	0	17	27(44%)	60	1
Coffee	613(45%)	430(78.5%)	59	74	59(9.5%)	160	394	52	25	30	333(54.5%)	610	3
Corn	254(18%)	207(81.5%)	11	36	20(8%)	52	182	20	0	36	135(53%)	254	
Cotton	53(4%)	35(66%)	2	16	0(0%)	9	44	0	1	16	27(51%)	52	1
Fruit trees, non-citrus	26 (2%)	23 (88.5%)	3	0	0 (0%)	0	26	0	0	0	23 (88.5%)	26	
Lemon grass	32(2.5%)	32(100%)	0	0	0(0%)	4	28	0	0	0	28(87.5%)	32	
Papaya	4	4	0	0	0	0	4	0	0	0	4	4	

	Total Samples	Phosphorous only Deficient	Phosphorous only Medium	Phosphorous only Adequate	Potash only Deficient	Potash only Medium	Potash only Adequate	Both Phosphorous and Potash Deficient	Both Phosphorous and Potash Medium	Both Phosphorous and Potash Adequate	Phosphorous Deficient and Potash adequate	Nitrogen Deficient	Nitrogen Adequate
SOILS OF THE PACIFIC SLOPE (Contd.)													
Pastures	[illegible] (6%)	73(37%)	8	3	23(27.5%)	23	38	23	1	1	29(34.5%)	83	1
Rice		10	2	5	0	0	17	0	0	5	10	17	
Soybeans	1	1	0	0	0	0	1	0	0	0	1	1	
Pineapple	4	4	0	0	0	2	2	0	0	0	2	4	
Potato	3	3	0	0	0	0	3	0	0	0	3	3	
Rubber	4	0	1	3	0	0	4	0	0	3	0	4	
Sugar Cane	77(5.5%)	70(91%)	2	5	2(2.5%)	14	61	2	0	5	54(70%)	77	
Tomato	4	4	0	0	0	3	1	0	0	0	1	4	
Vegetables	14	10	1	3	0	2	12	0	0	3	8	14	
Wheat	1	1	0	0	0	0	1	0	0	0	1	1	
Unclassified	99	97	0	2	13	26	60	12	0	1	59	99	
SOILS OF THE LIMESTONE HILLS	116(3%)	111(95.5%)	4(3.5%)	1(1%)	14(12%)	59(51%)	43(37%)	14(12%)	3(2.5%)	0(0%)	42(36%)	115(99%)	1
Beans (dried)	7	7	0	0	1	4	2	1	0	0	2	7	
Citrus	3	3	0	0	0	2	1	0	0	0	1	3	
Coffee	44(38%)	44(100%)	0	0	7(16%)	23	9	7	0	0	9(20.5%)	44	
Corn	39(33.5%)	36(92.5%)	3	0	3(7.5%)	12	24	3	2	0	23(59%)	39	
Pepper, black	2	2	0	0	1	1	0	1	0	0	0	2	
Potato	1	1	0	0	0	0	1	0	0	0	1	1	
Tobacco	1	1	0	0	0	0	1	0	0	0	1	1	
Wheat	5	5	0	0	0	2	3	0	0	0	3	4	1
Unclassified	14	12	1	1	2	10	2	2	1	0	2	14	

	Total Samples	Phosphorous Only Deficient	Phosphorous Only Medium	Phosphorous Only Adequate	Potash Only Deficient	Potash Only Medium	Potash Only Adequate	Both Phosphorous and Potash Deficient	Both Phosphorous and Potash Medium	Both Phosphorous and Potash Adequate	Phosphorous Deficient and Potash Adequate	Nitrogen Deficient	Nitrogen Adequate
SOILS OF THE PETEN-CARIBBEAN LOWLANDS	369(9%)	350(95%)	7(2%)	12(3%)	123(33.5%)	156(42%)	90(24.5%)	117(32%)	3(1%)	5(1.5%)	83(22.5%)	369(100%)	
Banana	46(12.5%)	36(78%)	2	8	8(17.5%)	25	13	7	0	5	7(15%)	46	
Beans, dried	4	4	0	0	1	2	1	1	0	0	1	4	
Citrus	7	7	0	0	5	0	2	5	0	0	2	7	
Coffee	10	10	0	0	6	4	0	6	0	0	0	10	
Corn	3	3	0	0	1	2	0	1	0	0	0	3	
Oil Palm	6	5	1	0	1	3	2	1	0	0	1	6	
Pastures	18	18	0	0	14	3	1	14	0	0	1	18	
Rice, dryland	217(59%)	212(97.5%)	1	4	50(23%)	102	65	45	0	0	65(30%)	217	
Rubber	28(7.5%)	28(100%)	0	0	19(68%)	4	5	19	0	0	5(18%)	28	
Unclassified	30(8%)	27(90%)	3	0	18(60%)	11	1	18	3	0	1(3%)	30	

	Total Samples	Phosphorous Only Deficient	Phosphorous Only Medium	Phosphorous Only Adequate	Potash Only Deficient	Potash Only Medium	Potash Only Adequate	Both Phosphorous and Potash Deficient	Both Phosphorous and Potash Medium	Both Phosphorous and Potash Adequate	Phosphorous Deficient and Potash Adequate	Nitrogen Deficient	Nitrogen Adequate
MISCELLANEOUS CLASSES OF LAND	514(12.5%)	324(63.5%)	27(5%)	163(31.5%)	52(10%)	78(15%)	384(75%)	52(10%)	2(0.5%)	156(30.5%)	204(39%)	514(100%)	
Avocado	4	4	0	0	0	0	4	0	0	0	4	4	
Beans (Dried)	16	8	2	6	0	1	15	0	0	5	3	16	
Chile peppers	10	9	0	1	0	1	9	0	0	1	3	10	
Citrus	57(11%)	15(26.5%)	4	38	3(5%)	1	53	3	0	38	11(19%)	57	
Coffee	37(7%)	30(81%)	0	7	0(0%)	7	30	0	0	7	23(62%)	37	
Corn	77(15%)	43(56%)	9	25	2(2.5%)	3	72	2	0	24	39(50.5%)	77	
Flowers	23(4.5%)	2(3%)	1	23	0(0%)	0	23	0	0	20	2(3%)	23	
Fruit trees, non -citrus	16	12	1	3	1	2	13	0	0	3	10	16	
Pastures	11	6	0	5	0	1	10	0	0	5	5	11	
Potato	4	4	0	0	0	0	4	0	0	0	4	4	
Rice	13	11	1	1	4	3	6	4	1	1	5	13	
Sorghum	3	1	0	2	0	0	3	0	0	2	1	3	
Soybeans	13	2	0	11	0	0	13	0	0	11	2	13	
Sugar cane	20(4%)	19(95%)	0	1	0(0%)	1	19	0	0	1	18(90%)	20	
Tobacco	3	0	0	3	0	0	3	0	0	8	0	3	
Tomato	69(13.5%)	43(69.5%)	5	16	2(3%)	9	58	2	1	16	38(55%)	69	
Vegetables	10	10	0	0	0	4	6	0	0	0	6	10	
Wheat	9	3	0	1	0	3	6	0	0	1	5	9	
Unclassified	114	95	4	15	40	42	32	40	0	13	15	114	

	Total Samples	Phosphorous Only			Potash Only			Both Phosphorous and Potash			Phosphorous Deficient and Potash Adequate	Nitrogen	
		Deficient	Medium	Adequate	Deficient	Medium	Adequate	Deficient	Medium	Adequate		Deficient	Adequate
CROPS PROVIDING MAJOR SOURCE OF HUMAN NUTRITION IN GUATEMALA	2363 (57.5%)	1947 (82%)	127 (5.5%)	293 (12.5%)	123 (5%)	311 (13%)	1938 (82%)	116 (5%)	11 (0.5%)	241 (10%)	1153 (49%)	2366 (100%)	
Beans, dried	63	56(32.5%)	4	8	1(1.5%)	5	62	1	0	7	51(75%)	63	
Corn	1133	969(82%)	57	157	30(2.5%)	122	1031	30	6	110	870 (73.5%)	1182	1
Fruit	313	230(72.5%)	26	66	11(3.5%)	22	239	9	0	66	195(61.5%)	313	
Pastures (meat, milk)	134	110(82%)	11	13	25(18.5%)	23	91	25	1	10	60(45%)	134	
Potato	31	23(74%)	3	5	0(0%)	3	28	0	0	3	22(71%)	30	
Rice	255	234(92%)	5	16	54(21%)	105	96	49	1	12	81(32%)	255	
Vegetables	107	84(73.5%)	7	16	0(0%)	8	99	0	1	16	77(72%)	107	
Wheat	272	241(88.5%)	14	17	2(1%)	13	252	2	2	17	223(82%)	271	1
CROPS PROVIDING MAJOR SOURCE OF EXTERNAL REVENUE FOR GUATEMALA	1182(29%)	960(81%)	71(6%)	151(13%)	111(9.5%)	274(23%)	797(67.5%)	102(8.5%)	26(2%)	101(8.5%)	655(55.5%)	1179(99.75%)	
Bananas	63	46(73%)	2	15	16(25.5%)	27	20	15	0	12	7(11%)	63	
Cofee	852	692(81%)	61	99	91(10.5%)	215	546	84	25	54	459(54%)	849	3
Cotton	123	90(73%)	4	29	1(1%)	12	110	1	1	29	78(63.5%)	123	
Essential Oils	36	36(100%)	0	0	0(0%)	4	32	0	0	0	32(89%)	36	
Sugar Cane	108	96(89%)	4	8	3(3%)	16	89	2	0	6	79(73%)	108	

GUATEMALA, SOIL TEST SUMMARY BY PHYSIOGRAPHIC REGIONS

	Total Samples %	Phosphorous Only Deficiente %	Medium	Adequate	Potash Only Deficient %	Medium	Adequate	Both Phosphorous and Potash Deficient %	Medium	Adequate	Phosphorous Deficient and Potash Adequate %	Nitrogen Deficient %	Adequate
ENTIRE COUNTRY	4105	82.5	5.5	12	8.5	17	74.5	8	1	10.5	60	99.75	
MISCELLANEOUS LANDS (ALLUVIAL SOILS, VALLEY SOILS, RECENT VOLCANIC*	514(12.5%)	63.5	5	31.5	10	15	75	10	0.5	30.5	39	100	
SOILS OF THE PACIFIC COASTAL PLAIN*	125(3%)	73.5	4	22.5	17	4	79	17	0	22.5	53	100	
SOILS OF THE PACIFIC SLOPE*	1364(33%)	80.5	7.5	12	9	22	69	8	2	8.5	55.5	99.5	
SOILS OF THE CENTRAL ALTIPLANE AND VOLCANIC MOUNTAINS*	1617(39.5%)	86.5	5	8.5	1.5	6.5	92	1.5	0.5	7.5	80	99.75	
SOILS OF THE LIMESTONE HILLS**	116(3%)	95.5	3.5	1	12	51	37	12	2.5	0	36	99	
SOILS OF THE PETEN-CARIBBEAN LOWLANDS**	369(9%)	95	2	3	33.5	42	24.5	32	1	1.5	22.5	100	

* Derived largely from mostly pyroclastic intermediate to acid volcanic slight influence of mostly low grade metamorphic rocks.

** Derived largely from limestone and dolomite residua, very slight influence of pyroclastic volcanic and low-grade metamorphic rocks.