

**THE NUTRITIVE VALUES OF SOME FORAGE CROPS
OF PUERTO RICO**

I. Grasses.

Corrections:

On page 106, the third line of the heading of Table 2 should read: "and Body Nitrogen in Urine per 1000 Grams of Body Weight, Based".

On page 107, under the column headed by "Body Nitrogen in Urine Per Kilogram of Body Weight" should read 0.535 instead of 0.801 and 0.372 instead of 0.335. Under the column headed by "Average Body Nitrogen in Urine Per Kilogram of Body Weight" should read 0.561 instead of 0.526.

TABLE A
SCHEDULE FOLLOWED STARTING SEPTEMBER 22, 1937 TO MARCH 29, 1938

Trial No.	Ration	Preliminary Period		Experimental Period		Animal Number
		Starts	Ends	Starts	Ends	
3.....	Soy Bean (in flower) N-P-K Otootan variety.....	Oct. 12..	Oct. 22..	Oct. 22..	Nov. 1..	16-17-18-20-21
4.....	Soy Bean (in flower) N-P-K Otootan variety.....	Oct. 22..	Nov. 1..	Nov. 1..	Nov. 11..	40-41-42-43-44
5.....	Soy Bean (in full-pods) N- P-K Otootan variety.....	Nov. 1..	Nov. 11..	Nov. 11..	Nov. 21..	16-17-18-20-21
6.....	Soy Bean (in full-pods) N- P-K Otootan variety.....	Nov. 11..	Nov. 21..	Nov. 21..	Dec. 1..	40-41-42-43-44
7.....	Velvet Bean (in flower) N- P-K.....	Nov. 21..	Dec. 1..	Dec. 1..	Dec. 11..	16-18-20-21
8.....	Velvet Bean (in flower) N- P-K.....	Dec. 1..	Dec. 11..	Dec. 11..	Dec. 21..	40-41-42-44
9.....	Velvet Bean (in full-pods) N-P-K.....	Jan. 2..	Jan. 12..	Jan. 12..	Jan. 22..	16-17-18-19-20-21
10.....	Pigeon Pea (before blooming) N-P-K.....	Jan. 22..	Feb. 1..	Feb. 1..	Feb. 11..	16-17-18-19-20-21* 1- 2- 3- 4-40-44
11.....	Pigeon Pea (before blooming) N-P-K.....	Feb. 1..	Feb. 11..	Feb. 11..	Feb. 21..	16-17-18-19-20-21
1.....	Yaragua, N and P.....	Sept. 22..	Oct. 2..	Oct. 2..	Oct. 12..	16-17-18-20-21**
2.....	Yaragua, N and P.....	Oct. 2..	Oct. 12..	Oct. 12..	Oct. 22..	40-41-42-43-44
12.....	Merker Grass (N only)....	Feb. 11..	Feb. 21..	Feb. 21..	Mar. 3..	1-3-4-40-41
13.....	Merker Grass (N only)....	Feb. 21..	Mar. 3..	Mar. 4..	Mar. 14..	16-17-18-19-20-21
14.....	Merker Grass (N only) 1¼+ Pigeon Pea (before blooming) 1.....	Mar. 9..	Mar. 18..	Mar. 19..	Mar. 29..	1-3-4-5-6-41

*All animals in preliminary period.

**This trial is not included in the calculations.

TABLE I
SUMMARY OF THE WET AND DRY FEED AND FECES CONSUMED AND ELIMINATED RESPECTIVELY, AND OF THE WATER INTAKE AND URINE ELIMINATION IN TEN-DAY METABOLISM EXPERIMENTS

Trial No.	Animal No.	Ration	Wet feed consumed Gm.	Feed on dry basis fed Gm.	Feed on dry basis refused Gm.	Feed on dry basis consumed Gm.	Wet feces Gm.	Dry feces Gm.	Water cc.	Urine cc.
3.	16.	Soy bean (in flower) Otootan variety NPK.	35250	7062	2332	5330	5307	2108	10015	24755
	17.	Soy bean (in flower) Otootan variety NPK.	39148	7960	1983	5977	5769	2366	620	19165
	18.	Soy bean (in flower) Otootan variety NPK.	33904	7439	2311	5128	4800	2044	460	14860
	20.	Soy bean (in flower) Otootan variety NPK.	39010	8108	2222	5886	8557	2410	875	15405
	21.	Soy bean (in flower) Otootan variety NPK.	32529	7439	2933	4606	4269	1910	630	16415
4.	40.	Soy bean (in flower) Otootan variety NPK.	45250	8736	2020	6717	10791	2766	430	18235
	41.	Soy bean (in flower) Otootan variety NPK.	9488	2282	7906	9567	3101	1795	23880	23880
	42.	Soy bean (in flower) Otootan variety NPK.	40565	8736	3023	5713	6364	2389	505	20435
	43.	Soy bean (in flower) Otootan variety NPK.	45272	8736	2218	6518	7443	2569	730	21155
	44.	Soy bean (in flower) Otootan variety NPK.	44743	8736	2139	6597	8819	2672	540	18950
5.	16.	Soy bean (full pods) Otootan variety NPK.	30729	10789	4178	6611	7525	2380	15010	23615
	17.	Soy bean (full pods) Otootan variety NPK.	35616	12059	4101	7958	7161	2893	2480	13875
	18.	Soy bean (full pods) Otootan variety NPK.	24960	10789	4982	5807	3421	1727	2880	9280
	20.	Soy bean (full pods) Otootan variety NPK.	27959	10789	4557	6232	8406	2093	2865	5720
	21.	Soy bean (full pods) Otootan variety NPK.	25411	10789	5224	5565	4204	1811	2210	9265
6.	40.	Soy bean (full pods) Otootan variety NPK.	29746	13624	6680	6944	8618	2380	6035	8795
	41.	Soy bean (full pods) Otootan variety NPK.	32000	13624	5754	7870	10312	2657	9220	11910
	42.	Soy bean (full pods) Otootan variety NPK.	32254	13624	6125	7498	10482	2694	5330	9180
	43.	Soy bean (full pods) Otootan variety NPK.	34150	13624	5941	7683	8449	3242	4830	10540
	44.	Soy bean (full pods) Otootan variety NPK.	31405	13624	6190	7434	10431	2833	4240	7155
7.	16.	Velvet bean (in flower) NPK.	36859	10071	3445	6626	7499	2137	7440	18805
	18.	Velvet bean (in flower) NPK.	34685	10071	3531	6540	4050	1976	1060	17040
	20.	Velvet bean (in flower) NPK.	35146	10071	3697	6374	7104	1965	1750	12975
	21.	Velvet bean (in flower) NPK.	31699	10071	4318	5753	3426	1769	1200	16055
	40.	Velvet bean (in flower) NPK.	30447	10467	4795	5742	6825	1809	1160	8820
8.	41.	Velvet bean (in flower) NPK.	38037	10467	3699	6768	10599	2728	3265	14190
	42.	Velvet bean (in flower) NPK.	39940	10467	3167	7300	9304	2672	2975	15365
	44.	Velvet bean (in flower) NPK.	36786	10467	3856	6011	9325	2245	2360	12145
	16.	Velvet bean (full pods) NPK.	34766	11393	4760	6684	5060	1636	5220	19345
	17.	Velvet bean (full pods) NPK.	41187	12912	4648	8294	9832	2542	1920	15300
9.	18.	Velvet bean (full pods) NPK.	51045	11393	5290	6133	5159	1702	3240	10000
	19.	Velvet bean (full pods) NPK.	58676	11393	4824	6569	3157	1707	2340	17695
	20.	Velvet bean (full pods) NPK.	37671	11962	4479	7483	8322	1624	4640	14690
	21.	Velvet bean (full pods) NPK.	32098	11393	5230	6163	3883	1230	1140	15420

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10.	1.	Pigeon pea (before blooming)	NPK	20008	11050	6881	4169	5077	1984	315	5170
	3.	Pigeon pea (before blooming)	NPK	19830	11050	6462	4588	6519	2230	840	3470
	4.	Pigeon pea (before blooming)	NPK	21937	11050	6416	4634	6969	2291	1790	5130
	40.	Pigeon pea (before blooming)	NPK	19370	11050	6869	4181	7406	1808	2880	2890
	41.	Pigeon pea (before blooming)	NPK	29569	12155	5490	6665	9754	3252	5230	10645
11.	16.	Pigeon pea (before blooming)	NPK	27832	14038	7804	6234	9339	2640	6720	6960
	17.	Pigeon pea (before blooming)	NPK	28917	14038	7152	6886	9125	2946	4175	6170
	18.	Pigeon pea (before blooming)	NPK	25087	14038	8035	6003	8855	2467	4465	6470
	19.	Pigeon pea (before blooming)	NPK	23280	14038	8283	5755	7310	2289	4385	6275
	20.	Pigeon pea (before blooming)	NPK	22372	14038	8724	5314	8074	2045	4605	3205
	21.	Pigeon pea (before blooming)	NPK	25519	14038	7948	6090	6964	2444	4620	7530
2.	40.	Yaragua (N and P)		26860	10088	4043	6045	8766	2959	700	6965
	41.	Yaragua (N and P)		19667	9507	5024	4483	4337	2269	8125	15465
	42.	Yaragua (N and P)		21685	9507	4534	4973	5024	2426	3050	10055
	43.	Yaragua (N and P)		26945	10318	4602	5716	9067	3093	3400	8530
	44.	Yaragua (N and P)		22457	9623	4552	5071	5067	2463	2485	8940
12.	1.	Merker grass (N only)		24543	11153	6005	5148	4726	2133	330	8270
	3.	Merker grass (N only)		27010	11897	5699	6198	8031	2402	110	6830
	4.	Merker grass (N only)		28276	11897	5826	6071	5433	2592	1510	11480
	40.	Merker grass (N only)		30184	12640	6557	6083	6075	2676	125	11210
	41.	Merker grass (N only)		43586	14871	5637	9234	9107	3829	1400	18260
13.	16.	Merker grass (N only)		37884	13384	5481	7903	6757	3585	3905	18320
	17.	Merker grass (N only)		36060	13012	5333	7679	7283	3265	535	14280
	18.	Merker grass (N only)		36107	13384	6219	7165	6626	3208	435	14470
	19.	Merker grass (N only)		29371	12640	7479	5161	6168	2817	265	11940
	20.	Merker grass (N only)		36447	13384	6710	6674	9224	3309	2450	14415
	21.	Merker grass (N only)		33846	12826	6429	6397	5170	3188	485	14875
14.	1.	Merker grass (N only) 1/4 plus pigeon pea (before blooming)		2787	10496	4611	5885	6737	2898	95	8180
	3.	Merker grass (N only) 1/4 plus pigeon pea (before blooming)		27919	11185	4512	6673	9192	3393	440	6230
	4.	Merker grass (N only) 1/4 plus pigeon pea (before blooming)		27486	11185	4702	6483	7122	3251	455	10420
	5.	Merker grass (N only) 1/4 plus pigeon pea (before blooming)		28478	11300	4472	6828	10114	3415	1250	8645
	6.	Merker grass (N only) 1/4 plus pigeon pea (before blooming)		25670	10841	4933	5908	6750	2888	515	8155
	41.	Merker grass (N only) 1/4 plus pigeon pea (before blooming)		40726	13995	4306	9689	10725	4503	2180	17115

TABLE II
 PER CENT NITROGEN IN FEED FED, REFUSE LEFT AND URINE
 (FEED, REFUSE AND FECES ANALYSES, PER CENT ON DRY BASIS)
 (URINE ANALYSES, PER CENT BY VOLUME)

Trial No.	Ration	Nitrogen in feed fed %	Nitrogen in refuse left %	Animal No.	Nitrogen in feces %	Nitrogen in urine %
3.....	Soy bean (in flower) Ootootan variety	2.42	1.64	16	1.71	0.37
				17	1.84	0.61
				18	1.93	0.60
				20	1.90	0.65
4.....	Soy bean (in flower) Ootootan variety	2.66	1.62	21	2.00	0.54
				40	1.70	0.56
				41	1.67	0.54
				42	1.86	0.57
5.....	Soy bean (in full pods) Ootootan variety	2.60	1.55	43	1.70	0.53
				44	1.71	0.53
				16	1.83	0.42
				17	1.97	0.82
6.....	Soy bean (in full pods) Ootootan variety	2.58	1.61	18	2.13	0.83
				20	1.98	1.07
				21	2.40	0.92
				40	1.91	0.79
7.....	Velvet bean (in flower)	2.48	1.67	41	2.11	0.95
				42	2.16	1.05
				43	1.84	1.00
				44	1.98	1.29
8.....	Velvet bean (in flower)	2.53	1.67	16	2.23	0.45
				18	2.45	0.52
				20	2.40	0.65
				21	2.64	0.52
9.....	Velvet bean (full pods) NPK	2.61	2.05	40	2.69	0.74
				41	2.99	0.68
				42	2.61	0.65
				44	2.63	0.78
10.....	Pigeon peas (before blooming) N-P-K	3.42	3.57	16	3.36	0.41
				17	3.58	0.45
				18	3.36	0.45
				19	3.06	0.41
11.....	Pigeon peas (before blooming) N-P-K	3.05	3.05	20	3.57	0.41
				21	3.69	0.53
				1	2.87	1.42
				3	2.69	2.12
12.....	Merker grass (N only)	1.80	1.33	4	2.83	1.58
				40	2.55	1.35
				41	2.56	1.17
				16	2.61	1.07
13.....	Merker grass (N only)	1.56	1.05	17	2.74	1.67
				18	2.83	1.86
				19	2.72	1.24
				20	2.44	1.92
14.....	Merker grass (N only) 1 1/4 Pigeon peas (before blooming) 1	1.97	1.16	21	2.81	1.35
				40	1.22	0.19
				41	1.34	0.12
				42	1.37	0.24
12.....	Merker grass (N only)	1.80	1.33	43	1.21	0.20
				44	1.31	0.19
				1	1.92	0.55
				3	2.16	0.66
13.....	Merker grass (N only)	1.56	1.05	4	1.85	0.45
				40	1.80	0.49
				41	1.67	0.46
				16	1.38	0.34
14.....	Merker grass (N only) 1 1/4 Pigeon peas (before blooming) 1	1.97	1.16	17	1.47	0.39
				18	1.49	0.40
				19	1.40	0.42
				20	1.38	0.35
14.....	Merker grass (N only) 1 1/4 Pigeon peas (before blooming) 1	1.97	1.16	21	1.41	0.45
				1	2.50	0.56
				3	2.40	0.71
				4	2.51	0.48
14.....	Merker grass (N only) 1 1/4 Pigeon peas (before blooming) 1	1.97	1.16	5	2.42	0.71
				6	2.57	0.58
				41	2.23	0.45

TABLE III

MAINTENANCE REQUIREMENT OF LAMBS AVERAGING 16.96 KILOGRAMS IN WEIGHT, BODY NITROGEN IN FECES PER GRAM OF DRY MATTER INGESTED, AND BODY NITROGEN IN URINE PER KILOGRAM OF BODY WEIGHT, BASED ON TEN-DAY TRIALS DURING WHICH NEARLY NITROGEN-FREE RATIONS WERE FED

Remarks	Lamb No.	Body Nitrogen in Feces Per Gram of Dry Matter Ingested	Average Body Nitrogen in Feces Per Gram of Dry Matter Ingested	Body Nitrogen in Urine Per Kilogram of Body Weight	Average Body Nitrogen in Urine Per Kilogram of Body Weight
Value obtained in the year 1936 to 1937	1A	0.0041	.....	0.535	.....
	2A	0.0051	.....	0.372	.....
	3A	0.0036	.....	0.441	.....
	1B	0.0038	.....	0.830	.....
	2B	0.0046	.....	0.626	.....
	3B	0.0046	0.0043	0.565	0.561

TABLE IV
SUMMARY OF METABOLISM EXPERIMENTS UPON WHICH THE DETERMINATION OF BIOLOGICAL VALUES OF PROTEINS IN THE LEGUMES AND GRASSES IS BASED

Trial No.	Ration	Animal No.	Body Weight			Feed Intake Wet-Gm.	Feed Intake Dry-Gm.	Nitrogen Intake-Gm.	Total fecal Nitrogen-Gm.	Body nitrogen in feces-Gm.	Food nitrogen in feces-Gm.	Absorbed nitrogen-Gm.	Total nitrogen in urine-Gm.	Body nitrogen in urine-Gm.	Food nitrogen in urine-Gm.	Food nitrogen retained-Gm.	Biological value	Average biological value
			Initial Kg.	Final Kg.	Average Kg.													
3.	Soy bean (in flower).....	16	15.42	13.83	14.63	35,250	5,330	147.18	36.05	22.92	13.13	134.05	91.59	7.70	83.89	50.16	37	.....
		17	15.42	15.08	15.25	39,148	5,977	160.11	43.53	25.70	17.53	142.28	116.91	5.02	106.89	33.39	34	.....
		18	12.81	13.95	13.38	33,904	5,128	142.18	39.45	22.05	17.40	129.73	89.16	7.04	82.12	42.06	34	.....
		20	17.05	17.58	17.32	39,010	5,886	159.77	45.79	25.31	20.48	139.29	100.13	9.11	91.02	48.27	35	.....
		21	16.95	16.22	16.59	32,529	4,606	133.56	38.20	19.81	18.39	115.17	88.64	8.73	79.91	35.26	31	.....
4.	Soy bean (in flower)..... Olootian variety	40	17.35	17.58	17.47	45,250	6,716	199.66	47.02	28.88	18.14	181.52	102.12	9.19	92.93	88.59	49	.....
		41	15.76	15.76	15.76	48,553	7,206	215.41	51.79	30.99	20.80	194.61	128.95	8.29	120.66	73.95	38	.....
		42	21.66	22.91	22.28	40,665	5,713	183.41	44.44	24.57	19.87	163.64	116.48	11.72	104.76	58.78	36	.....
		43	21.66	22.00	21.83	45,272	6,518	195.45	43.67	28.03	15.64	180.81	112.12	11.48	100.64	80.17	44	.....
		44	18.26	19.28	18.77	44,743	9,597	197.73	45.69	28.37	17.32	180.41	100.44	9.87	90.57	89.84	50	.....
5.	Soy bean (full pods)..... Olootian variety	16	13.72	15.04	14.38	30,729	6,611	215.75	43.55	28.43	15.12	200.63	86.58	7.56	79.02	121.61	61	.....
		17	15.76	17.69	16.73	35,616	7,658	249.96	57.00	34.22	22.78	227.18	113.78	8.80	104.98	122.20	54	.....
		18	13.49	15.08	14.29	24,960	5,807	203.29	36.79	24.97	11.82	191.47	77.02	7.52	69.50	121.97	64	.....
		20	17.12	17.24	17.18	27,959	6,232	209.88	41.44	26.80	14.64	195.29	61.20	9.04	52.16	143.08	73	.....
		21	14.86	15.76	15.31	25,411	5,565	199.54	43.46	23.93	19.53	180.01	85.24	8.05	77.19	102.82	57	.....
6.	Soy bean (full pods)..... Olootian variety	40	17.69	17.58	17.64	29,746	6,944	243.95	45.46	29.86	15.60	228.35	69.48	9.28	60.20	168.15	74	.....
		41	16.44	16.80	16.67	32,000	7,870	258.86	62.39	33.84	28.55	230.31	113.15	8.77	104.38	125.93	55	.....
		42	22.23	23.59	22.91	32,254	7,499	252.89	58.19	32.25	25.94	226.95	96.39	12.05	84.34	142.61	63	.....
		43	23.09	23.70	23.40	34,150	7,683	255.85	59.65	33.04	26.61	229.24	105.40	12.44	92.96	136.28	60	.....
		44	19.73	19.73	19.73	31,405	7,434	251.84	56.09	31.97	24.12	227.72	92.30	10.38	81.92	145.80	64	.....
7.	Velvet bean (in flower)....	16	15.88	16.33	16.11	36,859	6,626	192.23	47.66	28.19	19.17	173.05	84.62	8.47	76.15	96.91	56	.....
		18	15.19	16.33	15.76	34,685	6,540	190.79	48.41	28.12	20.29	170.50	88.61	8.29	80.32	90.18	53	.....
		20	17.92	18.71	18.32	35,146	6,370	188.02	47.18	27.41	19.77	168.25	84.34	9.64	74.70	93.55	56	.....
		21	15.65	16.33	15.99	31,699	5,753	177.65	46.70	24.74	21.96	155.69	83.49	8.41	75.08	80.61	52	.....
		40	17.46	18.37	17.92	30,447	5,742	185.91	48.66	24.69	23.97	161.94	65.27	9.43	55.84	106.10	66	.....
8.	Velvet bean (in flower)....	41	17.35	17.46	17.41	38,037	6,768	203.05	81.57	26.10	52.47	150.58	96.49	9.16	87.33	63.25	41	.....
		42	23.59	25.06	24.33	39,940	7,300	211.93	67.13	31.39	35.74	176.19	99.87	12.80	87.07	89.12	51	.....
		44	20.53	20.98	20.76	35,736	6,611	200.42	59.04	28.43	30.61	169.81	94.73	10.92	83.81	86.00	51	.....

9.. Velvet bean (full pods)... NPK	16	16.10	16.72	16.44	34,766	6,634	169,801	54.97	26.53	173.36	79.31	6.65	70.66	102.70	59
	17	17.35	17.92	17.64	41,187	8,264	241,722	91.01	56.54	186.26	88.85	8.28	59.57	120.69	68
	18	18.76	15.88	15.32	31,045	6,133	189,533	67.19	28.25	158.71	72.41	8.06	64.35	60.96	60
	19	12.13	13.15	12.64	83,676	6,569	198,477	64.99	30.74	171.73	72.43	6.65	65.78	105.95	62
	20	18.94	18.60	18.77	37,671	7,827	182,309	65.89	36.51	183.89	86.51	9.87	50.11	133.77	73
	21	15.31	16.56	15.97	32,088	6,163	190,144	48.39	18.89	171.25	81.73	8.38	73.31	97.90	57
	1	11.11	11.23	11.17	20,008	4,169	132,266	56.94	17.93	93.25	73.41	5.88	67.53	25.72	28
	3	13.83	13.63	14.23	19,890	4,588	147,222	59.99	19.73	104.05	73.56	7.48	66.08	40.88	38
	4	12.47	13.15	12.81	21,937	4,634	148,966	64.84	14.91	104.57	81.05	6.74	74.31	29.74	29
	41	17.01	18.26	17.64	19,370	6,161	132,669	46.10	17.98	58.12	93.83	9.28	30.55	74.02	71
10.. Pigeon Peas... (before blooming) NPK	21	19.39	20.75	20.07	29,509	6,665	219.71	83.25	26.66	165.12	123.38	10.56	112.82	52.30	32
	1	11.11	11.23	11.17	20,008	4,169	132,266	56.94	17.93	93.25	73.41	5.88	67.53	25.72	28
	3	13.83	13.63	14.23	19,890	4,588	147,222	59.99	19.73	104.05	73.56	7.48	66.08	40.88	38
	4	12.47	13.15	12.81	21,937	4,634	148,966	64.84	14.91	104.57	81.05	6.74	74.31	29.74	29
	41	17.01	18.26	17.64	19,370	6,161	132,669	46.10	17.98	58.12	93.83	9.28	30.55	74.02	71
	16	18.24	20.53	19.40	27,832	6,234	190.14	68.90	26.81	148.05	74.47	10.20	64.27	83.78	57
	17	18.94	21.89	20.42	28,917	6,886	210.02	80.72	29.61	158.91	103.04	10.74	92.30	66.61	42
	18	17.12	19.39	18.26	25,087	5,003	183.09	67.67	26.81	138.23	83.24	9.60	73.64	64.59	47
	19	13.49	14.74	14.12	23,280	5,765	175.53	62.26	24.75	138.02	77.75	7.43	67.70	67.70	49
	21	19.50	20.53	20.02	22,372	5,314	162.08	49.90	27.05	135.03	61.54	10.53	51.01	84.44	62
2.. Yareguá (N and P).....	21	17.46	19.96	18.71	25,519	6,090	185.75	68.68	26.19	143.26	101.66	9.84	91.82	51.44	36
	40	18.90	19.05	18.98	26,860	6,045	62.91	36.10	26.99	52.80	13.23	9.98	3.25	49.55	94
	41	17.43	18.08	17.73	19,607	4,483	53.95	30.40	19.28	42.83	18.56	9.33	9.29	33.60	78
	43	22.03	22.79	22.41	26,945	5,716	62.29	37.43	24.58	49.44	11.79	11.79	6.27	44.17	84
	44	17.65	19.16	18.41	22,457	4,973	56.11	32.24	21.38	44.25	24.13	12.28	11.85	32.40	89
	1	10.55	10.77	10.66	24,543	5,148	120.88	40.95	22.14	102.07	45.49	7.01	39.88	62.19	61
	3	13.49	14.63	14.06	27,010	6,198	138.35	47.95	26.11	113.12	45.08	7.40	37.68	75.44	67
	4	17.01	18.26	17.64	28,276	6,071	136.66	49.95	21.52	114.82	51.66	7.01	44.65	70.17	61
	41	19.28	19.66	19.62	30,164	6,283	140.31	63.17	22.01	118.30	54.93	9.28	45.65	72.65	61
	13.. Metcher grass (N only)...	16	19.05	20.41	19.73	37,884	7,903	151.24	49.47	33.98	135.75	62.29	10.38	51.91	83.84	62
17		19.98	20.87	20.42	38,000	7,679	146.99	48.00	31.82	132.01	55.69	10.74	44.96	87.06	66
18		18.94	20.87	19.91	36,107	7,165	143.49	47.80	31.81	126.50	57.88	10.47	47.41	79.09	62
19		14.26	14.51	14.40	29,371	5,161	118.65	39.44	28.70	101.40	50.15	7.57	42.58	58.82	58
20		21.64	22.00	21.94	36,447	6,574	138.33	45.66	28.19	121.37	60.45	11.54	38.91	82.46	68
21		19.89	20.41	19.90	33,846	6,397	132.59	44.95	27.51	115.15	56.92	10.47	46.46	68.70	60
1		12.25	11.79	12.02	23,757	5,885	153.28	72.45	26.31	106.14	45.81	6.32	39.49	66.65	63
3		14.07	14.67	14.87	27,919	6,673	168.00	81.43	28.61	115.26	44.23	7.87	36.36	78.90	68
4		16.14	17.69	17.82	27,486	6,483	165.80	81.60	27.88	112.08	50.02	7.82	42.20	69.88	62
5		18.34	18.71	17.92	26,478	6,828	170.73	82.64	29.36	117.45	61.38	9.43	51.95	65.50	56
41	22.08	22.57	22.63	40,726	9,689	225.75	100.42	41.66	166.99	77.02	11.90	37.28	70.25	65	
14.. Metcher grass (N only) 1/4 + Pigeon pea (before blooming) 1	1	12.25	11.79	12.02	23,757	5,885	153.28	72.45	26.31	106.14	45.81	6.32	39.49	66.65	63
	3	14.07	14.67	14.87	27,919	6,673	168.00	81.43	28.61	115.26	44.23	7.87	36.36	78.90	68
	4	16.14	17.69	17.82	27,486	6,483	165.80	81.60	27.88	112.08	50.02	7.82	42.20	69.88	62
	5	18.34	18.71	17.92	26,478	6,828	170.73	82.64	29.36	117.45	61.38	9.43	51.95	65.50	56
	6	18.69	18.71	19.05	25,670	5,808	156.35	74.22	25.40	107.53	47.30	10.02	37.28	70.25	65
	9	18.69	18.71	19.05	25,670	5,808	156.35	74.22	25.40	107.53	47.30	10.02	37.28	70.25	65
	41	22.08	22.57	22.63	40,726	9,689	225.75	100.42	41.66	166.99	77.02	11.90	37.28	70.25	65

NUTRITIVE VALUES OF SOME FORAGE CROPS

TABLE V
ANALYSES OF GRASSES AND LEGUMES
FED

WET BASIS

Trial No.	Item	Total moisture %	Crude protein (N x 6.25) %	Ether-soluble extract-%	Crude fiber %	Carbohydrates %	Ash %	Calcium %	Phosphorus %
3....	Soy bean (in flower)								
	Ootoatan var. N-P-K...	83.60	2.48	0.60	5.36	6.05	1.91	0.233	0.0424
4....	Soy bean (in flower)								
	Ootoatan var. N-P-K...	83.95	2.67	0.46	4.98	6.05	1.89	0.236	0.0403
5....	Soy bean (full pods)								
	Ootoatan var. N-P-K...	76.68	3.79	1.32	7.23	8.52	2.46	0.287	0.0606
6....	Soy bean (full pods)								
	Ootoatan var. N-P-K...	74.97	4.04	1.56	7.42	9.03	2.98	0.305	0.0615
7....	Velvet bean (in flower)								
	N-P-K.....	80.86	2.97	0.82	6.58	7.71	1.06	0.232	0.0256
8....	Velvet bean (in flower)								
	N-P-K.....	80.77	3.04	0.79	6.64	7.60	1.16	0.233	0.0367
9....	Velvet bean (full pods)								
	N-P-K.....	79.07	3.42	0.48	5.85	9.81	1.37	0.213	0.0379
10....	Pigeon peas (before blooming) N-P-K.....	75.64	5.21	1.46	7.49	8.79	1.41	0.217	0.0590
11....	Pigeon peas (before blooming) N-P-K.....	74.21	4.92	1.43	7.88	10.07	1.49	0.245	0.0526
1....	Yaragua (N and P).....	75.18	1.15	0.66	9.63	11.56	1.82	0.0779	0.0437
2....	Yaragua (N and P).....	74.44	1.28	0.77	10.10	11.42	1.99	0.0832	0.0513
12....	Merker grass (N only)...	79.51	2.31	0.72	6.52	8.56	2.38	0.079	0.0320
13....	Merker grass (N only)...	79.51	2.00	0.71	6.64	8.80	2.34	0.060	0.0322
14....	Merker grass (N only)								
	1/4 plus pigeon peas (before blooming) 1.....	74.71	3.11	0.99	8.45	10.75	1.99	0.177	0.0448

TABLE VI
ANALYSES OF GRASSES AND LEGUMES
FED

DRY BASIS

Trial No.	Item	Total solids %	Crude protein (N x 6.25) %	Ether-soluble extract-%	Crude fiber %	Carbohydrates %	Ash %	Calcium %	Phosphorus %
3...	Soy bean (in flower)								
	Ootootan var. N-P-K...	16.40	15.13	3.63	32.70	36.88	11.66	1.42	0.259
4...	Soy bean (in flower)								
	Ootootan var. N-P-K...	16.05	16.63	2.84	31.05	37.70	11.78	1.47	0.251
5...	Soy bean (full pods)								
	Ootootan var. N-P-K...	23.32	16.25	5.65	31.00	36.57	10.53	1.23	0.260
6...	Soy bean (full pods)								
	Ootootan var. N-P-K...	25.03	16.12	6.22	29.65	36.11	11.90	1.22	0.245
7...	Velvet bean (in flower)								
	N-P-K.....	19.14	15.51	4.27	34.38	40.29	5.55	1.21	0.134
8...	Velvet bean (in flower)								
	N-P-K.....	19.23	15.80	4.10	34.56	39.53	6.01	1.21	0.191
9...	Velvet bean (full pods)								
	N-P-K.....	20.93	16.36	2.31	27.95	46.84	6.54	1.02	0.181
10...	Pigeon peas (before blooming)								
	N-P-K.....	24.36	21.38	6.00	30.75	36.11	5.76	0.89	0.242
11...	Pigeon peas (before blooming)								
	N-P-K.....	25.79	19.06	5.53	30.55	39.07	5.79	0.95	0.204
1...	Yaragua (N and P).....	24.82	4.63	2.64	38.80	46.61	7.32	0.314	0.176
2...	Yaragua (N and P).....	25.56	5.00	3.03	39.50	44.74	7.77	0.326	0.203
12...	Merker grass (N only)...	20.49	11.25	3.52	31.80	41.82	11.61	0.378	0.156
13...	Merker grass (N only)...	20.49	9.75	3.47	32.40	42.98	11.43	0.294	0.187
14...	Merker grass (N only)								
	1/4 plus pigeon peas (before blooming) 1.....	25.29	12.30	3.91	33.45	42.49	7.85	0.70	0.177

TABLE VII
 PROXIMATE ANALYSES, REPORTED ON DRY BASIS, OF THE FED AND REFUSED PORTIONS OF THE RATIONS USED IN THE DIFFERENT METABOLISM EXPERIMENTS

Trial No.	Item	Total solids %		Crude protein (N x 6.25) %		Ether-soluble extract %		Crude fiber %		Carbohydrate %		Ash %		Calcium %		Phosphorus %	
		Feed fed	Refuse left	Feed fed	Refuse left	Feed fed	Refuse left	Feed fed	Refuse left	Feed fed	Refuse left	Feed fed	Refuse left	Feed fed	Refuse left	Feed fed	Refuse left
3.....	Soy bean (in flower) Otootan variety N-P-K.....	16.40	21.00	15.13	10.25	3.63	1.92	32.70	43.50	36.88	31.73	11.66	12.60	1.42	1.21	0.259	0.194
4.....	Soy bean (in flower) Otootan variety N-P-K.....	16.05	22.36	16.63	10.13	2.84	1.31	31.05	43.50	37.70	32.76	11.78	12.30	1.47	1.19	0.251	0.192
5.....	Soy bean (full pods) Otootan variety N-P-K.....	23.32	25.14	16.25	9.69	5.65	2.66	31.00	41.55	36.57	34.75	10.53	11.35	1.23	1.24	0.260	0.173
6.....	Soy bean (full pods) Otootan variety N-P-K.....	25.03	27.30	16.12	10.06	6.22	1.21	29.65	41.50	36.11	35.22	11.90	12.01	1.22	1.21	0.245	0.172
7.....	Velvet bean (in flower) N-P-K	19.14	20.84	15.51	10.43	4.27	2.12	34.38	44.40	40.29	37.83	5.55	5.22	1.21	1.04	0.134	0.117
8.....	Velvet bean (in flower) N-P-K	19.23	21.48	15.80	10.43	4.10	1.23	34.56	45.50	39.53	37.10	6.01	5.74	1.21	1.06	0.191	0.151
9.....	Velvet bean (full pods) N-P-K	20.93	23.17	16.36	12.81	2.31	2.13	27.95	40.40	46.84	35.39	6.54	9.27	1.02	1.56	0.181	0.148
10.....	Pigeon peas (before blooming) N-P-K.....	24.36	26.39	21.38	22.31	6.00	5.25	30.75	33.05	36.11	32.90	5.76	6.49	0.89	0.91	0.242	0.260
11.....	Pigeon peas (before blooming) N-P-K.....	25.79	27.66	19.06	19.06	5.53	4.39	30.55	34.54	39.07	36.15	5.79	5.86	0.95	0.89	0.204	0.205
1.....	Yaragua (N and P).....	24.82	28.14	4.63	2.88	2.64	1.88	38.80	46.90	46.61	41.94	7.32	6.40	0.314	0.214	0.176	0.114
2.....	Yaragua (N and P).....	25.56	30.84	5.00	2.75	3.03	1.72	39.50	46.63	44.74	42.50	7.77	6.40	0.326	0.164	0.203	0.138
12.....	Merker grass (N only).....	20.49	19.65	11.25	8.31	3.52	2.31	31.80	35.95	41.82	42.78	11.61	10.65	0.378	0.32	0.156	0.148
13.....	Merker grass (N only).....	20.49	21.83	9.75	6.56	3.47	2.30	32.40	37.80	42.98	43.54	11.43	9.80	0.294	0.21	0.157	0.135
14.....	Merker grass (N only) 1 1/4 plus pigeon pea (before blooming) 1	25.29	27.85	12.30	7.25	3.91	2.49	38.45	43.93	42.49	40.75	7.85	5.88	0.70	0.54	0.177	0.165

TABLE VIII
APPROXIMATE ANALYSES OF FECES—DRY BASIS

Trial No.	Item	Animal No.	Total solids %	Crude protein (N x 6.25) %	Ether soluble extract %	Crude fiber %	Carbo-hydrate %	Ash %	Calcium %	Phosphorus %
3...	Soy bean (in flower)	16	40.44	10.69	4.32	30.86	26.43	27.70	4.08	0.723
	Soy bean (in flower)	17	41.16	11.50	3.91	29.20	25.29	30.10	4.08	0.716
	Soy bean (in flower)	18	46.65	12.06	4.22	26.66	27.06	29.10	4.04	0.678
	Soy bean (in flower)	20	28.79	11.88	4.52	28.00	23.62	29.98	3.82	0.698
	Soy bean (in flower)	21	45.31	12.50	4.75	27.00	26.12	29.15	4.07	0.767
4...	Soy bean (in flower)	40	25.51	10.63	4.16	28.35	26.71	30.15	3.24	0.546
	Soy bean (in flower)	41	33.04	10.44	4.28	28.70	25.88	30.70	3.30	0.547
	Soy bean (in flower)	42	37.70	11.63	4.12	24.20	25.22	34.83	4.03	0.676
	Soy bean (in flower)	43	35.02	10.63	3.60	29.00	25.71	31.06	3.65	0.513
	Soy bean (in flower)	44	30.37	10.69	3.91	23.50	24.60	31.30	3.72	0.482
5...	Soy bean (full pods)	16	31.83	11.44	4.73	33.60	29.60	20.63	2.80	0.640
	Soy bean (full pods)	17	40.36	12.31	5.18	26.00	31.20	25.25	3.25	0.653
	Soy bean (full pods)	18	51.32	13.31	4.88	24.90	31.06	45.85	3.26	0.801
	Soy bean (full pods)	20	23.04	12.38	4.24	27.05	32.18	24.15	2.90	0.738
	Soy bean (full pods)	21	43.32	13.00	4.89	23.00	28.36	22.75	3.26	0.820
6...	Soy bean (full pods)	40	27.65	11.94	4.68	25.71	31.84	25.83	2.56	0.750
	Soy bean (full pods)	41	28.38	13.19	4.84	23.50	34.76	23.71	2.54	0.683
	Soy bean (full pods)	42	26.32	13.50	4.66	30.34	30.34	28.00	3.12	0.745
	Soy bean (full pods)	43	36.11	11.50	4.32	26.30	29.28	28.60	3.03	0.718
	Soy bean (full pods)	44	27.13	12.80	5.18	24.55	31.99	25.48	2.85	0.765
7...	Velvet bean (in flower)	16	29.44	13.93	5.14	40.60	29.25	11.08	2.98	0.437
	Velvet bean (in flower)	18	48.70	15.30	6.39	40.40	27.41	10.50	3.06	0.394
	Velvet bean (in flower)	20	28.77	15.00	5.82	39.25	28.00	11.93	3.08	0.448
	Velvet bean (in flower)	21	50.45	16.50	6.43	37.20	29.49	10.38	3.14	0.457
	Velvet bean (in flower)	40	28.09	16.80	5.55	37.50	26.80	13.35	3.02	0.517
8...	Velvet bean (in flower)	41	26.19	18.70	5.80	36.00	27.83	11.67	2.79	0.565
	Velvet bean (in flower)	42	29.10	16.31	5.22	37.15	29.48	11.84	2.80	0.502
	Velvet bean (in flower)	44	25.12	16.42	5.18	35.20	30.57	12.63	3.25	0.546
	Velvet bean (in full pods)	16	32.49	21.00	2.75	30.26	33.84	12.15	2.27	0.474
	Velvet bean (in full pods)	17	25.81	22.38	2.56	28.15	33.83	13.08	2.49	0.674
9...	Velvet bean (in full pods)	18	33.74	21.00	2.92	30.10	33.48	12.50	2.36	0.556
	Velvet bean (in full pods)	19	36.17	19.13	2.90	32.35	32.46	13.16	2.42	0.597
	Velvet bean (in full pods)	20	22.61	22.33	2.81	28.85	32.38	13.63	2.23	0.606
	Velvet bean (in full pods)	21	33.81	23.06	2.82	29.80	32.41	11.91	2.25	0.637

NUTRITIVE VALUES OF SOME FORAGE CROPS

10...	Pigeon peas (before blooming)	N-P-K	39.53	17.94	6.56	35.40	29.88	10.22	2.32	0.486
	Pigeon peas (before blooming)	N-P-K	34.58	16.81	5.22	38.80	29.34	9.83	2.01	0.457
	Pigeon peas (before blooming)	N-P-K	33.51	17.69	6.91	37.07	31.04	9.69	2.02	0.498
	Pigeon peas (before blooming)	N-P-K	24.52	15.94	6.10	38.05	29.43	10.48	2.04	0.388
	Pigeon peas (before blooming)	N-P-K	33.52	16.01	5.72	38.31	30.21	9.75	2.08	0.418
11...	Pigeon peas (before blooming)	N-P-K	28.50	16.31	6.38	40.45	27.50	9.36	1.97	0.326
	Pigeon peas (before blooming)	N-P-K	32.68	17.12	5.81	42.65	24.56	9.86	2.10	0.364
	Pigeon peas (before blooming)	N-P-K	28.81	17.69	6.31	35.09	30.61	10.30	1.98	0.328
	Pigeon peas (before blooming)	N-P-K	31.32	17.00	6.72	36.25	29.70	10.33	2.18	0.407
	Pigeon peas (before blooming)	N-P-K	22.34	15.25	5.97	36.16	31.37	11.25	2.26	0.462
	Pigeon peas (before blooming)	N-P-K	36.25	17.56	6.85	34.70	31.10	9.79	2.27	0.399
2...	Yaragua (N and P)		34.00	7.63	3.82	27.85	45.25	15.45	0.89	0.448
	Yaragua (N and P)		53.57	8.38	3.54	26.00	46.43	15.65	0.987	0.514
	Yaragua (N and P)		50.26	8.56	3.83	23.70	46.41	17.50	1.06	0.555
	Yaragua (N and P)		34.22	7.56	4.23	27.40	45.89	14.92	0.864	0.433
	Yaragua (N and P)		48.50	8.19	4.18	25.00	45.59	17.04	1.04	0.578
12...	Merker grass (N only)		46.66	12.00	5.80	22.85	35.90	23.45	1.28	0.469
	Merker grass (N only)		30.17	13.50	5.39	22.00	35.86	23.25	1.37	0.486
	Merker grass (N only)		47.43	11.56	4.99	25.00	36.15	22.30	1.19	0.426
	Merker grass (N only)		45.04	4.69	4.69	22.40	37.36	24.30	1.20	0.502
	Merker grass (N only)		42.20	10.44	4.21	23.65	40.00	21.70	0.97	0.426
13...	Merker grass (N only)		53.43	8.63	4.46	26.15	38.91	21.85	0.95	0.424
	Merker grass (N only)		45.89	9.19	4.64	24.25	39.24	22.68	0.98	0.443
	Merker grass (N only)		48.90	9.31	4.33	24.90	38.66	22.80	0.94	0.478
	Merker grass (N only)		46.19	8.75	4.71	23.05	40.64	22.85	1.01	0.494
	Merker grass (N only)		36.14	8.63	3.85	23.25	41.12	23.15	1.03	0.428
	Merker grass (N only)		62.88	8.81	4.19	24.25	40.72	22.03	1.04	0.482
14...	Merker grass (N only) 1/4 pigeon pea (b.b.)* 1...		43.20	15.62	5.11	32.78	33.41	15.08	1.06	0.350
	Merker grass (N only) 1/4 pigeon pea (b.b.)* 1...		37.07	15.00	4.45	32.60	33.09	14.86	1.14	0.351
	Merker grass (N only) 1/4 pigeon pea (b.b.)* 1...		46.01	15.72	5.46	30.48	32.88	15.48	1.17	0.387
	Merker grass (N only) 1/4 pigeon pea (b.b.)* 1...		34.01	15.10	5.33	32.35	31.88	15.32	1.14	0.394
	Merker grass (N only) 1/4 pigeon pea (b.b.)* 1...		43.18	16.08	5.68	29.75	32.79	15.70	1.18	0.438
	Merker grass (N only) 1/4 pigeon pea (b.b.)* 1...		42.23	13.93	4.80	30.97	34.89	15.41	1.10	0.413

* Before blooming.

TABLE IX
INDIVIDUAL COEFFICIENTS OF APPARENT DIGESTIBILITY AND AVERAGES

Trial No.	Ration	Animal No.	Dates on which samples were collected	Coefficients of apparent digestibility						Biological value
				Dry matter	Crude protein	Ether-soluble extract	Carbohydrates		Organic matter	
							Crude fiber	N-free extract		
3...	Soy bean (in flower) Ootoon variety. N-P-K	16	Oct. 12 to Nov. 1.	60	76	61	56	73	68	37
		17		60	73	63	60	74	69	24
		18		60	73	62	62	72	68	34
		20		59	72	57	59	73	68	35
		21		60	73	60	59	73	67	31
AVERAGE....				60	73	60	59	73	68	32
4...	Soy bean (in flower) Ootoon variety. N-P-K	40	Nov. 1 to Nov. 11	57	75	48	57	73	66	49
		41		59	76	44	54	72	66	38
		42		58	76	53	59	74	69	36
		43		61	78	58	57	74	69	44
		44		60	77	53	56	75	68	50
AVERAGE....				59	76	51	57	74	68	43
5...	Soy bean (in full pods) N-P-K	16	Nov. 11 to Nov. 21	64	80	77	50	72	68	61
		17		64	78	74	63	70	70	54
		18		70	82	82	66	76	79	64
		20		66	82	82	61	71	72	73
		21		67	78	81	55	76	72	57
AVERAGE....				66	80	79	59	73	62	
6...	Soy bean (in full pods) N-P-K	40	Nov. 21 to Dec. 1	66	81	86	52	70	71	74
		41		62	76	82	58	65	68	55
		42		64	77	84	58	70	71	63
		43		57	76	82	45	65	66	60
		44		62	77	81	53	67	68	64
AVERAGE....				62	77	83	53	67	63	
7...	Velvet bean (in flower) N-P-K	16	Dec. 1 to Dec. 11.	68	75	69	55	77	70	56
		18		70	65	59	59	80	71	53
		20		69	68	58	58	80	71	56
		21		69	74	66	57	78	71	52
		21		69	75	57	57	79	71	54
AVERAGE....				69	75	67	57	79	54	
8...	Velvet bean (in flower) N-P-K	40	Dec. 11 to Dec. 21.	68	74	73	66	80	71	66
		41		60	59	49	73	62	41	
		42		65	68	56	74	67	51	
		44		70	69	58	75	68	51	
		44		65	68	57	76	67	52	
AVERAGE....				65	68	67	57	76	52	

9...	Velvet bean (full pods) N-P-K.....	16 17 18 19 20 21	Jan. 12 to Jan. 22... AVERAGE.....	75 69 72 73 74 80 74	72 67 68 70 77 70	61 59 53 64 66 59	85 81 84 85 89 85	77 72 75 77 81 76	59 88 60 73 57 63
10...	Pigeon peas (before blooming) N-P-K.....	1 3 4 40 41	Feb. 1 to Feb. 11... AVERAGE.....	52 51 57 57 51 51 52	57 64 52 64 58 62 59	38 31 38 39 35 36	66 65 62 69 62 65	55 54 53 59 54 55	23 38 29 71 32 40
11...	Pigeon peas (before blooming) N-P-K.....	16 17 18 19 20 21	Feb. 11 to Feb. 21... AVERAGE.....	58 57 58 60 62 60 59	64 60 63 61 63 69 63 61 64	33 31 63 42 42 42 45 39	73 75 70 73 72 71 72	59 59 61 47 49 64 62 62 61	57 42 47 49 49 62 36 49
2...	Yaragua (N and P).....	40 41 42 43 44	Oct. 12 to Oct. 22... AVERAGE.....	56 49 51 46 51 51	52 43 44 44 52 48	61 58 65 56 63 61	52 50 51 47 53 51	55 53 55 50 55 54	94 78 73 89 84 84
12...	Merker grass (N only).....	1 3 4 40 41	Feb. 21 to Mar. 3... AVERAGE.....	59 61 57 56 59 58	66 63 55 66 67 65	65 69 62 60 68 66	63 66 62 60 60 62	64 66 62 61 61 63	61 67 61 61 56 61
13...	Merker grass (N only).....	16 17 18 19 20 21	Mar. 4 to Mar. 14... AVERAGE.....	55 57 55 45 50 50 52	53 55 57 50 59 58 55	59 64 59 49 57 55 57	59 59 43 51 52 55 54	59 62 60 51 56 55 57	62 66 62 58 68 60 63
14...	Merker grass (N only) 1/4+ pigeon peas (before blooming) 1.....	1 3 4 5 6 41	Mar. 19 to Mar. 29... AVERAGE.....	51 49 50 50 51 54 51	50 54 44 45 46 51 48	36 37 41 39 41 50 41	65 62 62 64 63 62 63	54 52 53 53 56 55 57	63 68 62 53 56 65 61 63

TABLE X
DIGESTIBLE NUTRIENTS IN 100 LBS. OF LEGUME AND GRASS FEEDING STUFFS AS CUT

Trial No.	Ration	Total dry matter	Digestible nutrients				Nutritive ratio 1 to	
			Crude protein	Carbohydrates		Ether-soluble extract		Total* digestible nutrients
				Crude fiber	N-free extract			
3	Soy bean (in flower) Otootan var. N-P-K	16.40	1.81	3.16	4.42	0.36	10.20	4.63
4	Soy bean (in flower) Otootan var. N-P-K	16.05	2.03	2.84	4.48	0.23	9.87	3.86
5	Soy bean (full pods) Otootan var. N-P-K	23.32	3.03	4.27	6.22	1.04	15.86	4.23
6	Soy bean (full pods) Otootan var. N-P-K	25.03	3.11	3.93	6.05	1.29	15.99	4.16
7	Velvet bean (in flower) N-P-K	19.14	2.23	3.75	6.09	0.55	13.31	4.97
8	Velvet bean (in flower) N-P-K	19.23	2.07	3.78	5.78	0.53	12.81	5.19
9	Velvet bean (full pods) N-P-K	20.93	2.43	3.45	8.34	0.34	14.99	5.17
10	Pigeon pea (before blooming) N-P-K	24.36	3.13	2.70	5.71	0.86	13.48	3.31
11	Pigeon pea (before blooming) N-P-K	25.79	3.15	3.07	7.25	0.90	15.50	3.92
2	Yaragua (N and P)	25.56	0.54	6.16	5.82	0.37	13.35	23.7
12	Merker grass (N only)	20.49	1.50	4.30	5.31	0.40	12.01	7.02
13	Merker grass (N only) 1 1/4 +	20.49	1.30	3.78	4.75	0.39	10.71	7.23
14	pigeon pea (before blooming) 1	25.29	1.62	3.46	6.77	0.48	12.93	6.98

* Total digestible nutrients including fat x 2.25.

TABLE XI
DIGESTIBLE NUTRIENTS PRODUCED PER CUERDA* OF GREEN LEGUMES**

Trial No.	Ration	Dry matter lbs.	Crude protein (N x 6.25) lbs.	Crude fiber lbs.	Nitrogen-free extract lbs.	Ether-soluble extract lbs.	Total digestible matter lbs.
3.....	Soy bean (in flower) Ootootan var.....	1,968	217	380	530	43	1,224
4.....	Soy bean (in flower) Ootootan var.....	1,926	243	341	537	28	1,184
	AVERAGE.....	1,947	230	361	534	36	1,204
5.....	Soy bean (full pods) Ootootan var.....	3,731	485	682	996	166	2,537
6.....	Soy bean (full pods) Ootootan var.....	4,005	497	629	969	207	2,561
	AVERAGE.....	3,868	491	656	983	187	2,549
7.....	Velvet bean (in flower).....	4,976	579	975	1,502	142	3,376
8.....	Velvet bean (in flower).....	5,000	537	985	1,584	138	3,417
	AVERAGE.....	4,988	558	980	1,543	140	3,397
9.....	Velvet bean (full pods).....	5,860	681	966	2,333	95	4,194
10.....	Pigeon pea (before flowering).	2,436	313	270	572	86	1,349
11.....	Pigeon pea (before flowering).	2,579	315	307	725	90	1,550
	AVERAGE.....	2,508	314	289	648	88	1,450

*One cuerda equals 0.954 acre.

**All fertilized with N-P-K.

TABLE XII
NET PROTEIN VALUES OF COMMON LEGUMES FED SINGLY AND IN COMBINATION TO LAMBS WET BASIS

Trial No.	Ration	Protein in feed consumed per cent	Coefficient of apparent digestibility	Digestible protein per cent	Aver. biological value of digestible protein	Net protein content per cent
3.....	Soy bean (in flower) Ootootan var.....	2.48	73	1.81	32	0.579
4.....	Soy bean (in flower) Ootootan var.....	2.67	76	2.03	43	0.873
	AVERAGE.....	2.58	75	1.92	38	0.726
5.....	Soy bean (in full pods) Ootootan var...	3.79	80	3.03	62	1.88
6.....	Soy bean (in full pods) Ootootan var...	4.04	77	3.11	63	1.96
	AVERAGE.....	3.92	79	3.07	63	1.92
7.....	Velvet bean (in flower) N-P-K.....	2.97	75	2.23	54	1.20
8.....	Velvet bean (in flower) N-P-K.....	3.04	68	2.07	52	1.08
	AVERAGE.....	3.01	72	2.15	53	1.14
9.....	Velvet bean (in full pods) N-P-K.....	3.42	71	2.43	63	1.53
10.....	Pigeon pea (before blooming) N-P-K..	5.21	60	3.12	40	1.25
11.....	Pigeon pea (before blooming) N-P-K..	4.92	64	3.15	49	1.54
	AVERAGE.....	5.07	62	3.14	45	1.40
14.....	Merker grass (N only 1= plus pigeon pea (before blooming) 1.....	3.11	52	1.62	63	1.02

TABLE XIII
YIELD OF CALCIUM AND PHOSPHORUS PER CUERDA AND PER TON OF
GREEN LEGUMES

Trial No.	Ration	Green forages per cuerda tons*	Dry legume per cuerda lbs.	Yield per Cuerda of		Yield per Ton of	
				Calcium lbs.	Phosphorus lbs.	Calcium lbs.	Phosphorus lbs.
3....	Soy bean (in flower) Ootootan var.	6	1,968	27.95	5.10	4.66	0.85
4....	Soy bean (in flower) Ootootan var.	6	1,926	28.31	4.83	4.72	0.81
	AVERAGE.....		1,947	28.13	4.96	4.69	0.83
5....	Soy bean (full pods) Ootootan var..	8	3,731	45.89	9.70	5.74	1.21
6....	Soy bean (full pods) Ootootan var..	8	4,005	48.86	9.81	6.11	1.23
	AVERAGE.....		3,868	47.38	9.75	5.92	1.22
7....	Velvet bean (in flower).....	13	4,976	60.21	6.67	4.63	0.51
8....	Velvet bean (in flower).....	13	5,000	60.50	9.55	4.45	0.73
	AVERAGE.....		4,988	60.36	8.04	4.64	0.62
9....	Velvet bean (full pods).....	14	5,860	59.77	10.61	4.27	0.76
10....	Pigeon pea (before blooming)....	5	2,436	21.68	5.90	4.34	1.18
11....	Pigeon pea (before blooming)....	5	2,579	24.50	5.26	4.90	1.05
	AVERAGE.....		2,508	23.09	5.58	4.62	1.11

*Yields obtained at the Experiment Station.

TABLE XIV
VALUE OF THE LEGUMES IN FATTENING

Ration	Average dry matter ingested per head Gms.	Number of animals	Number of days in experiment	Average weight of lamb Kgms.	Increase in weight Kgms.	Increase in weight Per cent
Soy bean (in flower) Ootootan var.....	5,968	10	20	18.38	(a) 0.962	(b) 5.23
Soy bean (full pods) Ootootan var.....	6,960	10	20	17.44	0.808	4.63
Velvet bean (in flower).....	6,464	8	20	17.74	0.883	5.02
Velvet bean (full pods).....	6,874	6	10	15.76	0.717	4.56
Pigeon pea (before blooming).....	5,502	11	20	15.70	1.92	12.22
Merker grass (N only).....	6,701	11	20	17.62	0.246	1.39
Merker grass (N only) 1¼ plus pigeon pea (before blooming) 1....	6,911	6	10	16.12	0.473	2.94

(a)—Average decrease in weight.

(b)—Per cent decrease in weight.

TABLE XV
SUMMARY OF THE NUTRITIVE INDEXES DETERMINED IN THE EXPERIMENTS PERFORMED DURING THE YEAR 1937-38

Ration	Date on which samples were collected	Coefficients of apparent digestibility						Biological value of protein	Net protein value	Nutritive ratio 1 to 1	p-Ca ratio 1 to 1
		Dry matter	Crude protein	Crude fat	Crude fiber	N-free extract	Organic matter				
Soy bean (in flower) Ootootan var.	Oct. 22 to Nov. 11	60	75	56	58	74	68	38	0.726	3.75	5.67
Soy bean (full pods) Ootootan var.	Nov. 11 to Dec. 1	64	79	81	56	70	71	63	1.92	4.19	4.84
Velvet bean (in flower) N-P-K.	Dec. 1 to Dec. 21	67	72	67	57	78	69	53	1.14	5.09	7.47
Velvet bean (full pods) N-P-K.	Jan. 12 to Jan. 22	74	71	70	59	85	76	63	1.53	5.12	5.62
Pigeon pea (before blooming) N-P-K.	Feb. 1 to Feb. 21	56	62	61	38	69	58	45	1.40	3.62	4.13
Yaragua (N and P).	Oct. 2 to Oct. 22	51	42	48	61	51	54	84	0.43	23.89	1.68
Merker grass (N only). 1/4 plus	Feb. 21 to Mar. 14	55	65	55	64	58	60	62	0.87	7.13	2.17
pigeon pea (before blooming) 1.	Mar. 19 to Mar. 29	51	52	48	41	63	54	63	1.04	6.98	3.94

NOTE.

Yaragua—average of 5 animals.

Merker grass + pigeon pea } average of 6 animals.

Velvet bean (in full pods) } average of 6 animals.

The rest—average of 10 and 12 animals.