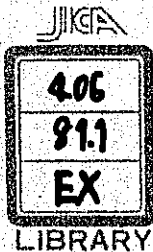


REPORT OF PRELIMINARY SURVEY
ON AGRICULTURE IN ETHIOPIA

1970

OVERSEAS TECHNICAL COOPERATION AGENCY

JAPAN



国際協力事業団

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P R E F A C E

The Overseas Technical Cooperation Agency (OTCA) has the great pleasure of presenting the Report on preliminary survey on Agricultural in Ethiopia prepared by the experts headed by Dr. T. Nishikata, who were dispatched to Ethiopia for the period between October and December in 1969 by OTCA upon instruction of the Government of Japan for a preliminary survey on Agriculture in response to the request of the Government of Ethiopia.

We are sure their survey in Ethiopia was quite successful in collecting data from various sources with the great help of the Government of Ethiopia and in having useful discussions with the Ethiopian authorities.

After their return home, we are very happy to inform you that they devoted themselves to prepare the report after their careful studies about the data collected and information given in Ethiopia.

It is our pleasure if this report would contribute in any way to Agricultural Policy of the Government of Ethiopia.

Keichi Tatsuke
Director General
Overseas Technical Cooperation Agency
Japan

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1. INTRODUCTION

The survey team, upon its arrival at Addis Ababa on October 29, 1969, had discussions with various governmental authorities concerned including the Ministry of Agriculture, Technical Agency, Planning Commission, etc., and based on the recommendations made at such discussions, the team selected the areas for investigation, and thereupon conducted the on-the-spot survey.

The selected areas for survey are as follows:

(Refer to the attached sketch maps, Exhibit I)

SHOA: Addis Ababa, Debre Zeit, Nazareth, Holeta, Ghion, Matanara.

ARUSSI: Assela, Koromusa.

WOLLO: Dessie, Kombolcha, Chiaffa, Borchena Valley, Giouha, Robi, Bati, Woldia.

ERITREA: Asmara, Hasamo, Adi Ugri, El Albert, Keren, Massawa, Assab, Dessot Valley.

HARAR: Harar, Alemaya, Kersa, Dire Dawa, Errer, Melka Warar.

The members of the Team

Leader: Dr. Takaichi Nishikata (Cultivation)

Member: Mr. Shoji Hashimoto (Marketing)

" : Mr. Noboru Hashimoto (Cultivation)

Ethiopian Counterpart:

Mr. Ato Admasu Negussie (Ministry of Agriculture)

2. SUMMARY AND CONCLUSION

As the results of the preliminary investigation, which the team conducted with respect to the geographical environments, cultivation, soil, distribution, etc., in the respective areas, it was revealed that in order to attain a satisfactory development, there existed a number of problems to be solved, involving water problems and such other items as pointed out in the following paragraphs.

The following listed areas, which, of course, will require a further detailed investigation, are considered as promising sites for development.

(Refer to the attached soil analysis report, Exhibit II)

<u>Areas to be Developed</u>	<u>Products</u>
Borechena Valley (WOLLO)	Cereals, Oil Seeds, Vegetables.
Giauha (WOLLO)	" " "
Desset Valley (ERITREA)	Raw Cotton, Fruits, Oil Seeds.
Middle Awash Valley (HARAR)	" " "
Adi Ugri (ERITREA)	Fruits, Vegetables

(1). Agricultural Improvement

A). Necessity of Deep Plowing.

Among various measures proposed for raising yield of crops, the first priority should be given to deep-plowing.

In addition to its favorable effect of promoting plant growth, the deep plowing also increases the effect of fertilizer application. Furthermore, it will bring about subsequent improvements in the works of soil preparation and seeding.

As it would be difficult to expect a satisfactory deep-plowing with the conventional plows, it is necessary to develop an improved type of animal powered plow which would meet such deep-plowing requirements.

However, in such a land having heavy clay soil that may be difficult to be cracked by the animal driven plow, it may be advisable for more efficient farming to use some large-size tractors to make the deep plowing first, and then apply the animal driven plow. For this purpose, it may be also necessary to consider the financial assistance from the Government for the introduction of large-size tractors.

B). Uniformity of Seeds and Introduction of Improved, High Grade Seeds.

One of other important factors for the improvement of agriculture is the uniformity of seeds, which will result not only in higher yield but also will contribute to a higher merchandising value. On this basis, a strong emphasis should be placed in the effort of producing excellent and improved grade of seeds as well as in enlightening the farmers to the knowledge of seeds so that they will become more selective in the use of high grade seeds.

C). Introduction and Use of Simplified Winnowers or Screening Machines.

The farm products containing impurities or foreign matters will extremely injure the value of the products, affecting adversely to the price of the products as a merchandise. Therefore, it is desirable that a simplified, easily operatable equipment such as pedal-driven thrashing machine, winnower, etc. should be introduced and used by the farmers so that these will contribute to the improvement of the after-harvest finishing work and increase their earnings. It may be a desirable approach that these machines may be purchased by farmers cooperatives for joint use.

D). Development, Maintenance and Utilization of water Resources.

Except for some commercial crops produced by plantation enterprises, the agriculture of Ethiopia is mainly subsistence farming. If, however, the export of agricultural products are to be increased, it seems necessary to make mass production of standardised products by expanding cultivation areas and increasing productivity. This expansion of land and the greater increase in the farm products can be achievable by the development of water resources. Extensive survey of available water resources, both surface and underground water, may be necessary to determine the possibility of their development, maintenance and utilization.

(2) Marketing

A). Establishment of Grades and Standards for Farm Products.

Due to the fact that there have been established no specified standards of farm products for transaction, it has been difficult for the farmers to receive the worthy reward based on the fair evaluation of the products, which may be considered as affecting, in part, to discourage the farmers from their effort to improve the product quality.

Therefore, it may be a matter of an urgent importance for the Government to provide set standards for transaction of farm products in the best interest of the farmers in order to stimulate and encourage the farmers to become more conscious about the quality of

product as well as to eliminate the intermediary exploitation.

B). Organization of Farmers, and Promotion of Farmers Cooperative Unions (Associations).

It must be urged that, in parallel with the teaching and extension of improved technique, the effort for organization of farmers should be carried on. Fortunately, there have been indicated several signs and movements for organization of farmers cooperative unions already.

However, the important fact is that, in order to gain a healthy growth and development of such farmers organizations, it is necessary that the farmers cooperative organizations should deal directly with the Grain Corporation eliminating all intermediary exploitation to promote and increase the earnings of the farmers.

Any opportunity of inspection tour by the Ethiopian farmers or officials concerned to actually witness the activities of the Japanese farmers and their organizations would lead to a significant suggestion for the promotion of farmers organization in Ethiopia.

C). Necessity of Export Effort.

It is a general tendency throughout the world that the agricultural products are rather oversupply, and that producing countries are doing their best effort in helping and promoting the export of their farm products. Under the circumstances, for Ethiopia to promote the export of her farm products, it is important that she will collect and secure accurate information on the world market activities of farm products, including price, demand and supply pattern, and the trends of the market requirements, and that she will also exert her best selling effort to expand her export, for which it may be necessary to ease or totally abolish the export duties or taxes to give more competitive strength to her products in the world market. In this connection, it is suggested that the use of the overseas commercial attache or trade representatives for collection of information would be helpful. Also, it can be considered useful to utilize the services of the trade promotion organizations of

various nations such as, for example, the Japanese External Trade Organization(JETRO), in such a way as to usefully and regularly exchange information on each other's market prices as well as the import prices from Japan.

(3). Export Feasibility

A). Oil Seeds (Caster Beans and Sesame Seeds)

The price fluctuation according to the condition of harvest is so widely variable that the farm product export from Ethiopia has been transacted on the basis of F.O.B. Ethiopian port with the account settlement in London in order to prevent the possible breach of contract arising from the high rise of price. The Grain Corporation, which was organized to coordinate the demand and supply balance and adjust and maintain a stable price, has been unable to work and demonstrate its function to its full capacity due to lack of operation fund. But it is expected that the function of the Corporation will be strengthened and received by induction of low interest finance from the Ethiopian Government, and that by promoting export under the direct three party joint work in the line of farmers - cooperative unions - Grain Corporation, it may be possible to eliminate the inter-mediary margin, which will reduce the price down to the level of the international market price. This way she may be able to expand her export. This guarantee of market for the farmers, meaning a greater income for them, will work as an effective incentive to stimulate their will for higher productivity.

B). Sorghum, Maize and Soy-Beans.

The demand for these items has been on the upward trends every year. Particularly, in the recent years, the Japanese demand is conspicuously increasing, and Japan is seeking a stable supply source. The demand for these items (soy-beans is not grown yet) in Ethiopia is very strong at present, and their domestic prices are comparatively higher against the international level. Moreover, the shipping and transportation cost of these products, which normally require bulk and mass transportation by use of a tramp or

chartered ship to reduce the cost of transportation, remains comparatively high in Ethiopia because of her poor transportation and shipping facilities and lack of bulk loading wharf which usually result in the payment of demurrage. For these reasons, it is feared that the earlier realization of export of these products may be difficult under the present condition. (Note: The existing standard type is of 25,000 tons having a loading capacity of 2,000 - 2,500 tons per day)

It may become possible to make the export of these products to Japan, if the road, which is now under construction between Awash and Tendaho, has been completed and a wharf with bulk loading facility is built, as these will undoubtedly strengthen the transporting capacity, and reduce the time and cost for transportation cost as well as for the greater transportation and shipping capacity, the use of canvas-made or cloth-made, large size, easy containers should be considered.

As for the soy-beans, it can be said from the results of the experimental plantation of this product that the soy-beans cultivation will be more profitable than other products, and that there seems a wide area of suitable land available for cultivation of soy-beans. Therefore, the future export can be expected of this product provided a selected grade of seeds is introduced and raised. (Refer to the attached table, Exhibit III)

3. TECHNICAL ASSISTANCE FOR IMMEDIATE FUTURE

The history of Japan's technical cooperation for development of agriculture in the developing countries is still comparatively new. Our agricultural cooperation in the land of Ethiopia, where the climate and the environments are entirely different from those in Japan which is surrounded by sea, will involve many and various unknown factors and problems, and the effectiveness of cooperation, in whatever manner it may have been provided, may remain unjudicable for the time being.

For this reason, before engaging in a large scale development project, it is considered advisable to provide technical assistance to the following items which may have the immediate effect.

A). Despatch of Experts for Research and Investigation in Preparation of development cooperation projects.

As a short time investigation may be apt to result in a superficial observation, it is recommended to send one or more agricultural experts for, at the shortest, six months to twelve months so that he or they should become well familiar with the traditional farming methods and the local climatic and soil conditions through the actual experience and observation, and then to let them find and study the most appropriate ways and direction of the technical cooperation as the basis for their final exploring of the development project. If further presence of the experts is required, they will be dispatched again for a short limited period to complete the survey.

B). Feasibility Survey

A feasibility survey team consisting of a limited number of competent experts will be despatched to the development designated areas as listed in the earlier page upon the request of the Ethiopian Government for the purpose of making study of the feasibility of the project as well as to prepare its key plan.

C). Despatch of water Experts.

As referred to in Paragraph 2-D) above, the survey of water resources including the surface and underground water, and its maintenance and utilization are absolutely essential for the expansion of arable land as well as for the raising of productivity. It is, therefore, recommended to send a team of water experts to cooperate in the water project.

D). Despatch of Experts for Improvement of Agricultural Equipment.

As referred to in Paragraph 2-A) and C) above, a limited number of experts of agricultural equipment will be despatched to tackle with the job of devising and making improvements in the agricultural equipment, including the improvement of the animal driven plows suitable to the physical size of the local cattle,

introducing an improved type of plow for experimental use, or designing and making of low-cost, easily operatable manual thrashers and winnowers employing the locally available materials. The experts will also provide technical assistance to the farmers there.

E). Receiving of Trainees.

As it is considered that the activities of the Japanese farmers organizations, both national and individual, will provide a helpful suggestion for the promotion and growth of the agricultural organizations in Ethiopia, it is recommended that a certain number of following Ethiopian personnel be received in Japan for training:

- (a). Key officials of the Ministry of Agriculture of Ethiopia, or key-staff members of the Grain Corporation.
- (b). Government officials in charge of training and organization of the Agricultural Cooperative Unions.

JAPAN IMPORTS (Commodity by Country)

UNIT: Quantity M/T
Value U.S.\$

ITEM	COUNTRY	1967		1968		1969	
		Q	V	Q	V	Q	V
1. MAIZE (Feeding Purposes)	Purposes)						
	Thailand	3,184,896	219,001,625	4,042,154	241,785,722	4,172,128	248,393,330
	Indonesia	691,199	46,925,450	623,246	36,242,825	450,571	25,670,170
	U. S. A.	100,978	6,427,850	8,762	514,188	35,092	2,038,861
	Cambodia	1,511,495	104,763,352	2,397,424	144,577,744	2,939,522	174,971,136
	Mexico	17,273	1,197,005	9,614	641,666	10,130	643,181
	Brazil	26,708	1,773,583	182,910	10,777,505	20,965	1,278,275
	Argentina	57,829	4,011,350	225	15,641	12,974	805,250
	Mozambique	59,040	4,078,836	---	---	169,586	10,320,530
	S. Africa	3,690	247,802	12,257	732,036	4,202	246,302
	China	562,206	38,516,980	750,241	44,869,941	528,413	32,291,180
	Other	72,832	5,245,211	48,584	2,889,088	---	---
		81,646	5,814,206	8,891	525,088	673	38,345
	2. MAIZE (Excl. Feeding Purposes)	Purposes)					
N. Korea		775,333	51,959,291	1,102,346	65,869,683	1,316,403	83,565,763
Thailand		2,479	171,319	497	30,077	17,177	1,005,411
Indonesia		8,196	569,102	10,057	604,902	13,244	760,967
Cambodia		10,901	668,997	739	37,402	5,951	361,630
U. S. A.		2,273	167,352	4,950	348,616	7,563	499,572
Mexico		71,988	5,482,688	144,242	8,966,361	499,643	32,151,828
Argentina		343,263	22,834,144	150,917	8,478,177	465,051	29,173,928
Kenya		---	---	---	---	8,460	497,425
Mozambique		141,213	9,302,197	171,860	10,225,525	14,618	949,452
		144,299	9,330,666	591,275	35,427,830	145,214	9,214,661

ITEM	COUNTRY	1967		1968		1969	
		Q	V	Q	V	Q	V
3. SORGHUM	S. Africa	108	14,791	294	36,297	138,985	8,889,150
	Other	50,613	3,418,036	27,515	1,714,496	497	59,739
	Feeding Purposes	2,563,250	160,021,483	2,302,627	135,786,530	2,851,196	158,371,888
	China	730	51,700	---	---	287	17,669
	Thailand	35,810	2,225,619	18,657	1,115,738	13,969	757,416
	Canada	94	5,911	---	---	456	23,027
	U. S. A.	2,224,457	138,883,980	1,877,372	110,321,258	1,927,628	107,966,516
	Mexico	121,285	7,631,097	1,584	93,797	51,132	2,991,019
	Argentina	126,026	7,767,783	87,636	5,388,650	856,596	46,556,085
	Australia	18,812	1,211,108	66,034	3,689,638	689	38,119
Other	36,036	2,244,285	251,344	15,177,449	439	22,037	
4. SORGHUM Excl.	Feeding Purposes	20,395	1,260,488	11,228	643,972	8,289	445,105
	U. S. A.	17,933	1,109,177	9,283	530,441	6,562	351,836
	Argentina	1,217	74,080	675	41,113	1,727	93,269
	Other	1,245	77,231	1,270	72,418	---	---
	Castorseed	64,356	8,415,072	43,347	7,530,425	50,409	7,599,452
	Cambodia	76	9,358	---	---	---	---
	China	27,912	3,648,981	9,179	1,639,392	19,106	2,962,928
	Ethiopia	---	---	388	75,445	963	140,539
	Indonesia	2,646	327,097	1,818	301,342	1,652	230,197
	Kenya	---	---	401	79,761	---	---
Nigeria	---	---	411	64,736	41	5,389	

	Pakistan	---	---	4,518	795,241	80	11,497
	Sudan	---	---	1,048	217,383	---	---
	Taiwan	---	---	17	2,011	---	---
	Tanzania	---	---	1,197	222,336	100	17,058
	Thailand	33,722	4,429,636	24,370	4,132,778	28,044	4,168,872
	Philippines	---	---	---	---	423	62,472
Copra		112,059	20,165,245	126,066	27,185,681	108,751	20,275,300
	Bismarck						
	Archipelago	137	23,931	909	212,047	2,863	528,264
	Ceylon	1	331	---	---	---	---
	Indonesia	9,582	1,640,064	47,650	10,588,389	29,290	5,446,083
	Malaysia	1,262	212,586	147	29,289	---	---
	Marianas						
	Marshalls and						
	Carolines	11,512	2,101,072	10,677	2,305,203	11,533	2,168,145
	New Hebrides	4,285	754,203	2,972	683,136	2,317	420,339
	North-East						
	New Guinea	---	---	6,409	1,509,457	16,576	3,052,064
	West New Guinea	2,823	493,942	---	---	---	---
	Papua	1,882	340,361	3,152	716,828	3,734	703,400
	Philippines	74,440	13,484,966	54,150	11,141,322	40,352	7,566,317
	Solomon	6,135	1,113,789	---	---	1,085	198,219
	Tonga			---	---	1,001	192,469
Cotton Seed		216,213	19,694,870	245,805	21,329,725	244,494	19,356,997
	Angola	---	---	2,886	238,861	374	28,750
	Argentina	1,119	108,778	---	---	---	---
	Australia	8,570	763,128	3,936	324,725	5,544	399,147
	Bulgaria	---	---	4,961	513,633	---	---

ITEM	COUNTRY	1967		1968		1969	
		Q	V	Q	V	Q	V
	Cambodia	670	61,739	2,380	175,772	2,729	205,747
	Cameroon	6,643	625,892	11,235	1,015,775	9,436	765,575
	Dahomey	3,375	314,950	4,837	404,325	8,903	716,781
	Ethiopia	5,057	487,444	7,278	584,786	4,992	401,861
	Guatemala	---	---	5,400	515,583	---	---
	Honduras	10,010	958,081	12,249	1,168,442	10,744	920,411
	Indonesia	151	8,617	890	52,489	483	28,747
	Israel	981	93,806	---	---	---	---
	Ivory Coast	8,394	791,561	16,735	1,407,758	20,196	1,609,342
	Kenya	914	87,267	---	---	---	---
	Madagascar	500	45,503	2,358	217,556	---	---
	Mozambique	5,065	455,139	508	44,628	33,081	2,532,922
	Mali	6,038	570,125	13,536	1,216,989	13,980	1,035,539
	Nicaragua	66,967	6,067,017	37,435	3,480,772	4,944	408,559
	Nigeria	49,577	4,685,944	46,625	3,863,947	20,876	1,613,981
	Niger	---	---	2,926	259,825	2,019	162,072
	Republic of Central Africa	500	44,067	2,250	197,323	---	---
	Senegal	501	47,936	1,037	96,781	1,005	73,072
	Sudan	---	---	17,840	1,556,447	38,104	3,081,447
	Tanzania	8,772	823,289	---	---	---	---
	Thailand	27,555	2,205,889	39,004	3,184,550	58,855	4,674,489
	Togo	1,327	116,406	1,200	88,888	---	---
	Upper Volta	3,527	332,292	3,524	328,061	6,385	492,989
	U.S.S.R.	---	---	3,756	295,467	197	15,556
	Yemen	---	---	1,019	96,664	---	---
	South-West Africa	---	---	---	---	877	68,811
	Republic of South Africa	---	---	---	---	770	60,400

Hemp Seed	China	32,745	2,463,549	36,430	2,416,828	19,832	1,476,241
	North Korea	656	142,108	1,598	303,339	1,597	408,353
	South Korea	745	153,983	596	113,828	684	135,133
	Taiwan	116	22,600	264	4,969	153	31,158
						48	11,628
Kapok Seed		32,745	2,463,549	36,430	2,416,828	19,832	1,476,241
	Cambodia	5,349	378,605	4,699	336,864	1,068	86,758
	Indonesia	18,040	1,333,775	17,637	1,135,589	14,954	1,085,091
	Mozambique	225	15,136	141	9,639	125	8,556
	Nigeria	154	12,075	57	3,575	125	8,725
	Tanzania	735	57,581	45	2,897	---	---
	Thailand	8,069	652,658	13,657	915,842	3,287	267,553
	Togo	173	13,719	194	12,422	173	12,411
	India	---	---	---	---	100	7,147
Kardi Seed		126,826	15,911,458	63,226	7,190,436	34,687	4,201,030
	China	602	64,714	460	49,930	1,796	172,144
	Mexico	13,661	1,878,175	---	---	---	---
	U. S. A.	112,563	13,968,569	62,766	7,140,506	32,891	4,028,886
Linseed		106,711	11,192,936	100,384	13,900,063	126,553	16,869,661
	Australia	---	---	1,263	165,419	3,118	373,958
	Canada	106,711	11,192,936	99,121	13,734,644	123,387	16,482,084
	China	---	---	---	---	48	13,619
Mustard Seed		7,006	1,219,867	7,622	1,307,731	8,057	1,351,833
	Canada	6,365	1,048,256	7,066	1,181,564	7,512	1,237,631

ITEM	COUNTRY	1967		1968		1969	
		Q	V	Q	V	Q	V
Niger Seed	China	---	---	124	18,959	160	24,022
	Netherlands	472	126,069	185	47,958	184	42,324
	U. K.	169	45,522	149	34,494	192	45,933
	West Germany	---	---	98	24,756	---	---
	Denmark	---	---	---	---	9	1,853
Palm Kernel	Ethiopia	59	9,214	230	40,900	116	21,606
		59	9,214	230	40,900	116	21,606
Peanut	Costa Rica	---	---	22,901	3,479,809	30,351	3,925,666
	Honduras	---	---	163	27,981	383	52,789
	Indonesia	3,979	688,111	16,651	2,533,161	19,887	2,561,747
	Malaysia	---	550,872	6,087	918,667	9,061	1,180,028
	Sabah	---	---	---	---	422	52,194
	Singapore	305	41,019	---	---	598	78,908
Peanut	Cambodia	30,392	7,554,307	49,490	11,329,130	43,929	12,515,100
	China	97	25,706	---	---	67	20,614
	India	12,315	3,642,533	13,738	4,085,628	11,465	3,698,456
	Indonesia	---	---	309	79,545	805	258,858
	Malawi	1,117	290,103	5,266	1,433,667	6,990	1,990,872
	Mozambique	4	778	---	---	---	---
	Nigeria	8,622	1,614,492	14,997	2,550,931	4,724	1,232,331
North Vietnam	910	252,108	338	86,097	608	165,972	

Republic of South Africa	2,426	604,381	2,251	493,219	843	258,770
Ryukyu Islands	36	8,725	33	11,070	89	42,819
Senegal	3,567	845,931	10,807	2,166,025	15,249	3,975,736
Sudan	0	228	838	190,264	480	131,267
Taiwan	744	158,147	840	215,278	315	88,528
Tanzania	68	13,278	---	---	1,125	313,161
Thailand	---	---	---	---	37	10,536
Uganda	---	---	---	---	48	12,400
Philippines	---	---	---	---	1,082	314,083
Ethiopia	---	---	---	---	2	697
Brazil	---	---	---	---	---	---
Other	---	---	---	---	---	---
Perilla Seed	157	34,403	363	56,622	333	71,802
China	157	34,403	363	56,622	333	71,802
Rape Seed	215,398	26,367,431	249,898	25,616,219	276,318	28,147,530
Canada	196,008	23,989,406	240,684	24,637,369	248,071	25,209,502
China	19,390	2,378,025	8,825	934,567	1,878	196,264
Poland	---	---	386	43,911	26,249	2,729,939
Taiwan	---	---	---	---	120	11,825
U. S. A.	---	---	3	372	---	---
Sesame Seed	39,682	10,174,302	39,191	8,963,167	34,050	7,881,875
Brazil	1,258	342,250	228	58,872	---	---
Cambodia	4,976	1,131,919	3,562	682,625	2,201	424,214
Cameroon	---	---	48	12,358	---	---
China	968	262,511	590	184,697	793	266,669

ITEM	COUNTRY	1967		1968		1969	
		Q	V	Q	V	Q	V
	El Salvador	---	---	100	24,108	---	---
	Ethiopia	4,625	1,228,353	6,756	1,610,064	7,991	1,830,116
	Guatemala	655	177,272	1,188	310,356	24	6,408
	Hong Kong	5	1,972	15	5,414	45	15,403
	Indonesia	3,774	875,333	2,194	508,656	1,606	356,856
	Iran	296	104,564	102	38,789	138	59,667
	Kenya	265	67,267	409	94,992	258	58,133
	Malaya	1	678	---	---	---	---
	Malawi	18	5,103	---	---	---	---
	Mexico	4,010	93,425	---	---	---	---
	Nicaragua	1,726	513,553	2,949	721,483	382	99,564
	Nigeria	1,308	323,983	---	---	---	---
	Pakistan	---	---	50	13,944	40	10,228
	Sierra Leone	176	47,414	---	---	121	28,450
	Sudan	11,791	2,974,072	16,655	3,538,367	14,362	3,160,189
	Tanzania	2,051	570,189	1,197	291,917	3,174	742,572
	Thailand	1,761	448,697	3,148	866,525	2,277	624,567
	Taiwan	9	2,928	---	---	19	6,808
	U. K.	9	2,819	---	---	---	---
	Upper Volta	---	---	---	---	206	50,672
	Uganda	---	---	---	---	198	46,203
	Turkey	---	---	---	---	215	95,156
Sheanut		11,575	1,457,325	29,243	4,015,103	24,637	4,805,455
	Dahomey	553	89,792	2,796	371,814	4,829	771,167
	Ghana	1,725	228,764	1,772	200,608	1,885	401,003
	Ivory Coast	---	---	3,633	487,561	779	184,072
	Mali	---	---	3,010	494,608	4,248	794,633

Soybean	Nigeria	9, 297	1, 138, 769	10, 905	1, 543, 903	7, 438	1, 385, 130
	Togo	---	---	245	41, 553	623	137, 592
	Upper Volta	---	---	6, 882	875, 056	4, 655	1, 101, 126
	Uganda	---	---	---	---	180	30, 722
Soybean	Brazil	2, 169, 802	272, 016, 123	2, 420, 767	274, 119, 960	2, 590, 596	281, 011, 416
	Canada	2, 989	389, 981	514	58, 781	218	24, 594
	China	391, 830	47, 590, 283	417, 152	46, 128, 842	376, 656	42, 325, 261
	Indonesia	3, 651	356, 964	48	13, 217	---	---
	Taiwan	801	97, 253	1, 584	172, 814	---	---
	Thailand	---	---	28	4, 503	---	1, 439
	U. S. A.	1, 770, 522	223, 580, 275	2, 001, 441	227, 741, 803	2, 213, 704	238, 657, 315
	Unknown	9	1, 367	---	---	---	---
	R. Korea	---	---	---	---	9	2, 706
	Sunflower	Seed	96, 445	13, 319, 766	71, 050	9, 758, 541	90, 410
Australia		9	1, 644	---	---	---	---
Bulgaria		13, 044	2, 171, 797	---	---	---	---
China		5, 789	168, 342	1, 394	115, 147	2, 642	227, 064
U. S. S. R.		77, 603	10, 677, 963	69, 656	9, 643, 394	56, 024	7, 568, 627
Romania		---	---	---	---	31, 744	4, 167, 147
Other Seed	China	1, 653	93, 273	1, 846	546, 780	3, 703	195, 688
	Indonesia	8	2, 689	557	54, 872	3, 222	30, 313
	Nigeria	48	15, 372	986	378, 981	14	1, 678
	Sarawak	150	18, 886	---	---	---	---
	Singapore	---	---	209	70, 711	2	728
			1	625	3	1, 078	---

ITEM	COUNTRY	1967		1968		1969		
		Q	V	Q	V	Q	V	
Buckwheat	Turkey	102	34,328	0	319	15	7,500	
	U.S.A.	---	---	3	9,844	7	19,153	
	U.S.S.R.	1,344	21,378	88	30,975	127	42,589	
	Malaya	---	---	---	---	1	439	
	India	---	---	---	---	70	8,311	
	Pakistan	---	---	---	---	240	76,375	
	Iran	---	---	---	---	4	1,558	
	Denmark	---	---	---	---	---	2,922	
	Netherlands	---	---	---	---	1	4,122	
			23,846	3,287,691	35,187	5,213,680	24,256	3,057,275
		R. Korea	1,091	174,903	1,154	229,769	503	68,600
		C. China	8,604	1,218,030	9,741	1,621,892	7,740	1,062,589
		R. China	205	24,102	---	---	57	8,502
	Indonesia	9	1,016	74	8,591	17	1,088	
	Canada	5,384	610,812	10,078	1,285,339	13,439	1,690,444	
	Brazil	1,063	145,156	4,539	608,244	298	27,183	
	S. Africa	7,490	1,113,672	9,299	1,417,845	2,201	198,422	
	U.S.A.	---	---	302	42,000	---	---	
	Other	---	---	---	---	1	497	
Small red beans		35,371	7,514,088	27,318	4,741,372	26,781	5,317,950	
		1,284	276,687	---	---	468	102,194	
		33,569	7,167,253	27,232	4,729,436	26,068	5,172,442	
		98	22,016	---	---	58	12,992	
		149	18,194	---	---	---	---	
	U.S.A.	151	13,311	---	---	---	---	

Argentina	120	16,627	86	11,936	187	30,322
Colombia	---	---	---	---	---	---
Broad beans						
C. China	23,349	2,725,141	18,653	2,548,122	22,937	2,822,878
Portugal	14,657	1,753,287	13,617	1,911,638	11,217	1,593,530
Poland	307	86,036	278	80,239	373	111,966
U.S.A.	778	81,302	---	---	---	---
Ethiopia	78	11,991	---	---	---	---
Netherlands	7,529	792,525	3,269	335,939	11,308	1,109,194
France	---	---	143	27,688	---	---
Morocco	---	---	64	14,727	---	---
	---	---	1,282	117,891	39	8,186
Peas						
C. China	21,381	3,009,847	13,373	1,613,891	28,521	3,443,836
Denmark	38	3,869	48	6,608	877	80,747
Netherlands	0	250	---	---	---	---
Belgium	4,711	1,035,812	2,174	414,031	996	235,628
Portugal	29	7,080	---	---	---	---
Austria	20	4,500	---	---	49	11,319
Hungary	515	52,228	---	---	15	1,758
Canada	137	19,425	97	13,938	---	---
U.S.A.	846	79,644	---	---	---	---
Argentina	13,278	1,547,906	10,339	1,081,214	21,647	2,470,639
New Zealand	638	99,600	---	---	---	---
Other	1,169	159,533	715	98,100	4,121	558,281
	---	---	---	---	816	85,464
Green Beans						
C. China	37,215	4,737,538	35,350	5,606,422	33,510	6,086,708
	1,228	184,900	408	66,953	841	130,900

ITEM	COUNTRY	1967		1968		1969		
		Q	V	Q	V	Q	V	
French Beans	Thailand	13,726	1,764,277	12,776	1,901,867	19,434	3,428,742	
	Burma	22,163	2,776,998	21,869	3,605,312	12,946	2,474,106	
	Iraq	98	11,363	---	---	188	30,847	
	Indonesia	---	---	24	3,216	---	---	
	U.S.A.	---	---	25	3,836	7	4,577	
	Kenya	---	---	50	8,358	49	8,925	
	Malawi	---	---	198	16,880	51	8,611	
			67,409	8,013,941	39,539	4,396,961	88,832	10,022,297
	C. China!	146	20,150	110	16,655	199	32,530	
	Burma	38,328	5,281,065	11,369	1,911,685	18,523	3,050,886	
U.S.A.	7,970	749,862	6,368	698,281	17,122	2,472,119		
Mexico	13,311	1,088,387	16,908	1,149,573	30,847	2,515,888		
Argentina	3,071	424,089	375	57,528	928	84,477		
Tanzania	147	17,769	33	10,283	859	105,163		
Mozambique	133	11,663	---	---	59	8,144		
Madagascar	2,365	248,694	1,606	173,094	1,284	145,763		
Malawi	1,898	164,041	1,127	96,886	---	---		
Thailand	---	---	179	21,333	---	33,325		
Nigeria	---	---	73	12,552	---	---		
Ethiopia	---	---	107	23,205	---	---		
S. Africa	---	---	1,284	225,886	1,827	315,894		
Brazil	---	---	---	---	16,872	1,250,677		
Other	40	8,221	---	---	4	1,430		
Pegin Beans		11,586	1,464,958	7,355	770,636	6,695	820,150	

C. China	50	4,913	---	---	---	772	78,116
Thailand	3,834	475,542	2,205	250,302	843	115,264	
Burma	7,702	984,503	5,150	520,334	5,080	636,770	
Dried leguminous	24,351	2,820,330	10,074	1,085,625	12,894	1,567,511	
Vegetable	2,399	285,106	1,742	191,044	3,045	338,426	
n, e, s,	191	18,561	---	---	---	---	
Indonesia	2,267	339,328	778	114,665	614	95,556	
Burma	19	4,722	---	---	45	25,102	
Netherlands	9	3,030	111	28,778	236	62,478	
Portugal	8,280	970,301	4,201	403,959	3,271	466,458	
U.S.A.	1,552	241,906	1,679	165,278	2,715	239,100	
Mexico	519	56,141	459	71,459	48	4,041	
Argentina	10	3,286	---	---	---	---	
Morocco	129	14,966	---	---	---	---	
Angola	50	5,061	---	---	95	9,338	
Ethiopia	90	10,583	---	---	---	---	
Kenya	403	44,202	544	53,856	389	43,811	
Tanzania	3,965	400,217	99	8,077	498	68,636	
Mozambique	172	18,211	49	4,116	---	---	
Rhodesia	421	45,642	264	26,116	1,275	159,117	
S. Africa	3,875	359,067	146	12,505	121	13,652	
Malawi	---	---	2	5,772	---	---	
FR. Germany	---	---	---	---	---	---	
Other	---	---	---	---	539	41,796	

Soil Analysis in Ethiopia

LOCATION	DEPTH (cm)	PH (H ₂ O)	NH ₄ -N	NO ₃ -N	AV P205	AV -K ₂ O	EX Ca
KOMBOICHLA- (1,900m)	0-10	6.5	ML	M	H	M	H
	10-20	6.5	ML	ML	H	M	H
	20-40	6.8	L	L	H	ML	H
BATIE 7km (1,220m)	0-10	6.5	L	ML	H	L	H
	10-20	6.5	L	ML	H	L	H
	20-30	6.8	L	L	H	L	H
BATIE (1,650m)	0-10	6.5	L	L	H	ML	H
	10-20	6.3	L	L	H	ML	H
	20-30	6.3	L	L	H	L	H
MARSA (1,650m)	0-10	6.8	L	L	M	M	H
	10-20	6.5	L	L	MH	ML	H
	20-40	6.5	L	L	H	L	H
VALDIA (2,020m)	0-10	6.5	L	ML	H	ML	H
	10-20	6.5	L	L	H	ML	H
	20-30	6.5	L	L	H	ML	H
CIAFFA (1,500m)	0-10	7.0	L	ML	MH	MH	H
	10-20	6.8	L	L	MH	M	H
	20-40	6.8	L	L	H	ML	H
CIAFFA PLANTATION (1,500m)	0-10	7.0	L	ML	H	ML	H
	10-20	6.7	L	ML	MH	ML	H
	20-40	6.7	L	L	MH	ML	H
KEREN (1,500m)	0-10	6.5	ML	L	H	ML	H
	10-20	6.5	L	L	H	ML	H
	20-30	6.5	L	L	H	ML	H
DESSET VALLEY (50m)	0-10	6.5	ML	MH	H	M	H
	10-20	6.5	ML	MH	MH	ML	H
	20-40	6.5	ML	MH	MH	ML	H
HASAMO (1,520m)	0-10	6.3	L	L	H	ML	H
	10-20	6.5	L	L	MH	L	H
	20-40	6.5	L	L	MH	L	H
ADI UGRI (1,970m)	0-10	6.3	L	L	H	ML	H
	10-20	6.5	L	L	H	ML	H
	20-40	6.5	L	L	H	L	H
KERSA (1,960m)	0-10	6.7	L	L	MH	ML	H
	10-20	6.5	L	L	H	L	H
	20-40	6.5	L	L	H	L	H
ALEMAYA (2,000m)	0-10	6.5	L	ML	MH	M	H
	10-20	6.2	L	L	MH	ML	H
	20-40	6.2	L	L	MH	ML	H

