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FUTURE SUPPLY POTENTIALS AND FACILITY REQUIREMENTS GOVERNMENT SECTOR OF THE SRI LANKA RICE INDUSTRY

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SUMMARY STATEMENT

Since spring 1978 the Food and Feed Grain Institute has been assisting the Government of Sri Lanka in the area of paddy and rice marketing as related to the government's subsidized rice ration system.

The report summarizes a lengthy study which addresses questions related to transport and facility utilization within the government's system. Analysis was done regarding minimization of transport cost, sizing paddy storage and milling facilities, and location determination. Furthermore, matters concerning institutional development, market research, and policy aspects were reviewed and commented upon.

FUTURE SUPPLY POTENTIALS AND FACILITY REQUIREMENTS

GOVERNMENT SECTOR OF THE SRI LANKA RICE INDUSTRY

Prepared By

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and
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ACRONYMS AND DEFINITIONS

FC - Food Commissioner

PMB - Paddy Marketing Board

RM - Rice Mills

PC - Purchase Centers

MPCS - Multiple Purpose Cooperative Society

GSL - Government of Sri Lanka

Tons - Long ton of 2,240 pounds

SECTION I

PURPOSE AND SCOPE OF STUDY

Purpose

The purpose of developing a least-cost marketing network is to define the best path and the total marketing cost associated with this path for getting the commodity from the locations, times and form that it enters the marketing system to the locations, times and form it is needed for final consumption.

The least-cost marketing network would be relatively easy to define if the commodity were all produced in one area at one time and all consumed in another area at another time; if the two areas were connected by only one road of uniform quality; if storage, processing, and other marketing costs were identical in all channels; and if there were no capacity restrictions in the marketing system. If this were the case for a commodity such as rice, the least-cost marketing system probably would be to store the commodity at the point of production in the form it is produced, process it at the point of production as it is needed for consumption, and transport it in final consumption form. This would minimize transport cost because a minimum volume would have to be transported. It would minimize processing costs because a minimum of processing capacity would be required, and also the discounted value of variable processing costs would be minimal. Even if storage costs were somewhat higher for the raw product than for the processed product, the difference would be offset by the savings in transport and processing costs.

This simplified case illustrates some of the interrelationships and trade-offs" involved in finding the least-cost marketing network, but it

is completely unrealistic. Production and consumption take place at many different points and at varying rates from time to time and from point to point. There are alternative highway routes connecting distant points, and the quality of the highways varies. Alternative modes of transport might be available. Both storage costs and processing costs vary depending on the quality and quantity of facilities, capability of management, and degree of utilization. Capacity limits within the marketing system frequently limit the volume that can be marketed via least-cost channels, even when they are known, and force the selection and use of those which are second best, third best, and so on.

Scope

The study is limited to the government sector of the paddy and rice marketing industry. This sector encompasses the purchasing, storage, distribution of paddy, and rice milling under the authority of the Paddy Marketing Board; and the receipt at warehouses and distribution of polished rice to distribution points under the authority of the Food Commissioner.

Specific Objectives

The basic objective is to determine needed storage, milling, and distribution configurations that minimize certain marketing costs in the paddy and rice distribution system under study. Other objectives are:

1. To project production of paddy and forecast required procurement levels to determine additional needs of storage and milling facilities.
2. To ascertain real transport costs as related to rates paid for movement of paddy and rice.
3. To test for viable locations of needed storage by cost minimization of transport.

4. To test for viable locations of needed milling by cost minimization of transport.

5. To test alternative locational decisions for reducing the number of rice warehouses.

6. To test alternative distribution configurations of rice from rice mills to MPCS and FC warehouse locations rather than from rice mill to FC warehouse to MPCS.

A final objective of the authors is to document this work in a case study approach. This will allow this publication to be used as a text for teaching applied quantitative analysis during in-country short courses presented by the Food and Feed Grain Institute. As a result of this objective, additional discussion and appendixes are included in this publication that normally would not be part of the report.

SECTION II

SUMMARY

This section presents a summary evaluation of projected supply potentials, surplus and deficit balances, future facility requirements, and implications of the study as to institutional development and policy actions.

Projected Supply Potentials

Projected supply of rough rice indicates a sustained growth over time reaching a forecasted 118.4 million bushels of rough rice in 1985. An examination of this forecast reveals a pattern of more than doubling gross harvested acreage from 1952 to 1985 to achieve the forecast.[1] Yield patterns reveal that forecasted yields will not double during the historical and future time period under consideration (1952-1985).

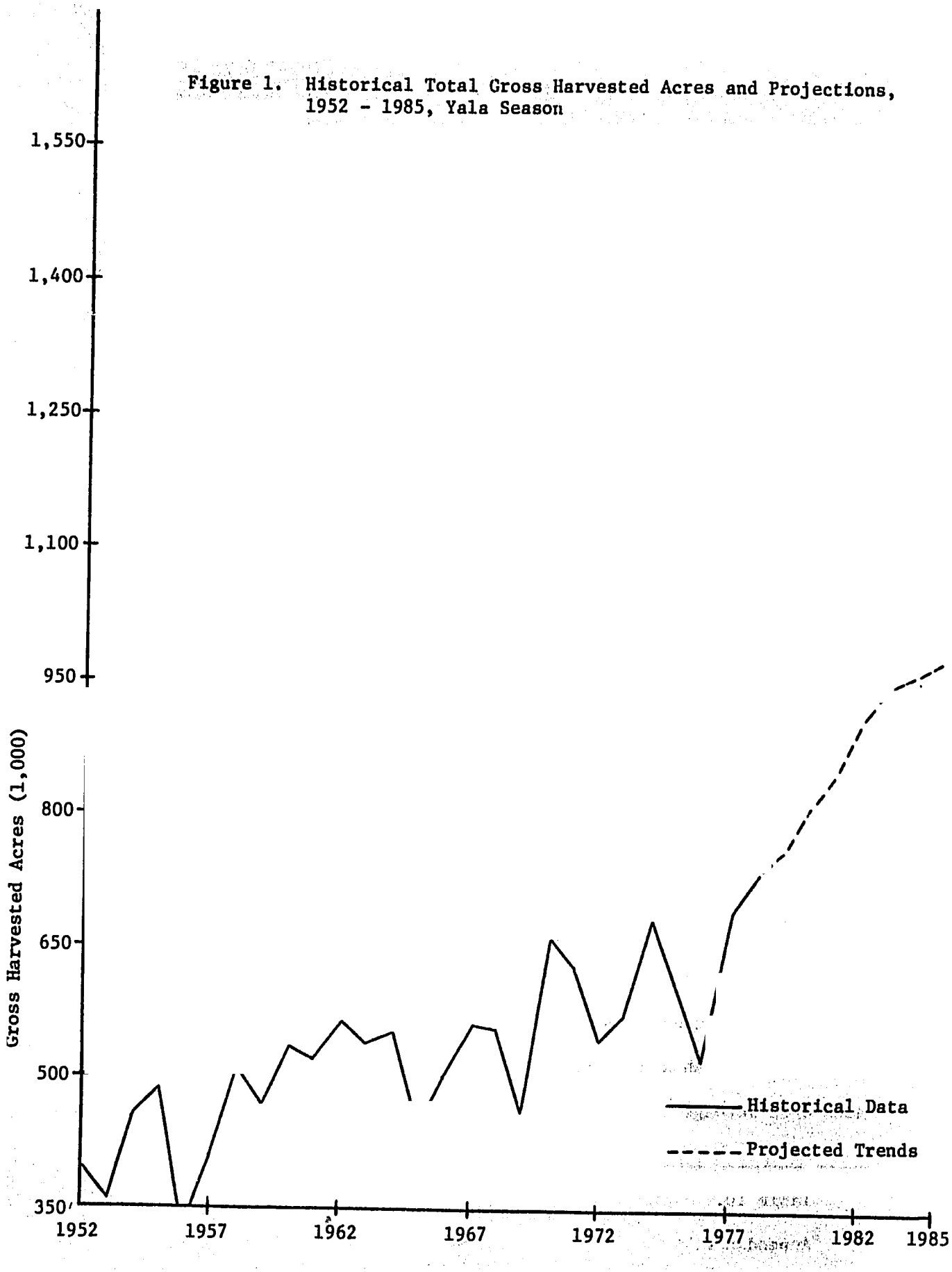
The projected supply potential is based upon an increase in gross harvested acreage of 42.2 and 19.8 percent for Yala and Maha seasons, respectively, between 1977 and 1985. This result is compatible with current government intentions regarding irrigated land development schemes as well as the currently stated target dates for achieving completion of these schemes.[2]

Figures 1 and 2 illustrate historical and projected gross harvested acres, while Figures 3 and 4 illustrate historical and projected yields. Figures 5 and 6 show historical and projected production of rough rice based upon acreage and yield factors. Figure 7 illustrates that the

[1] Table 10.

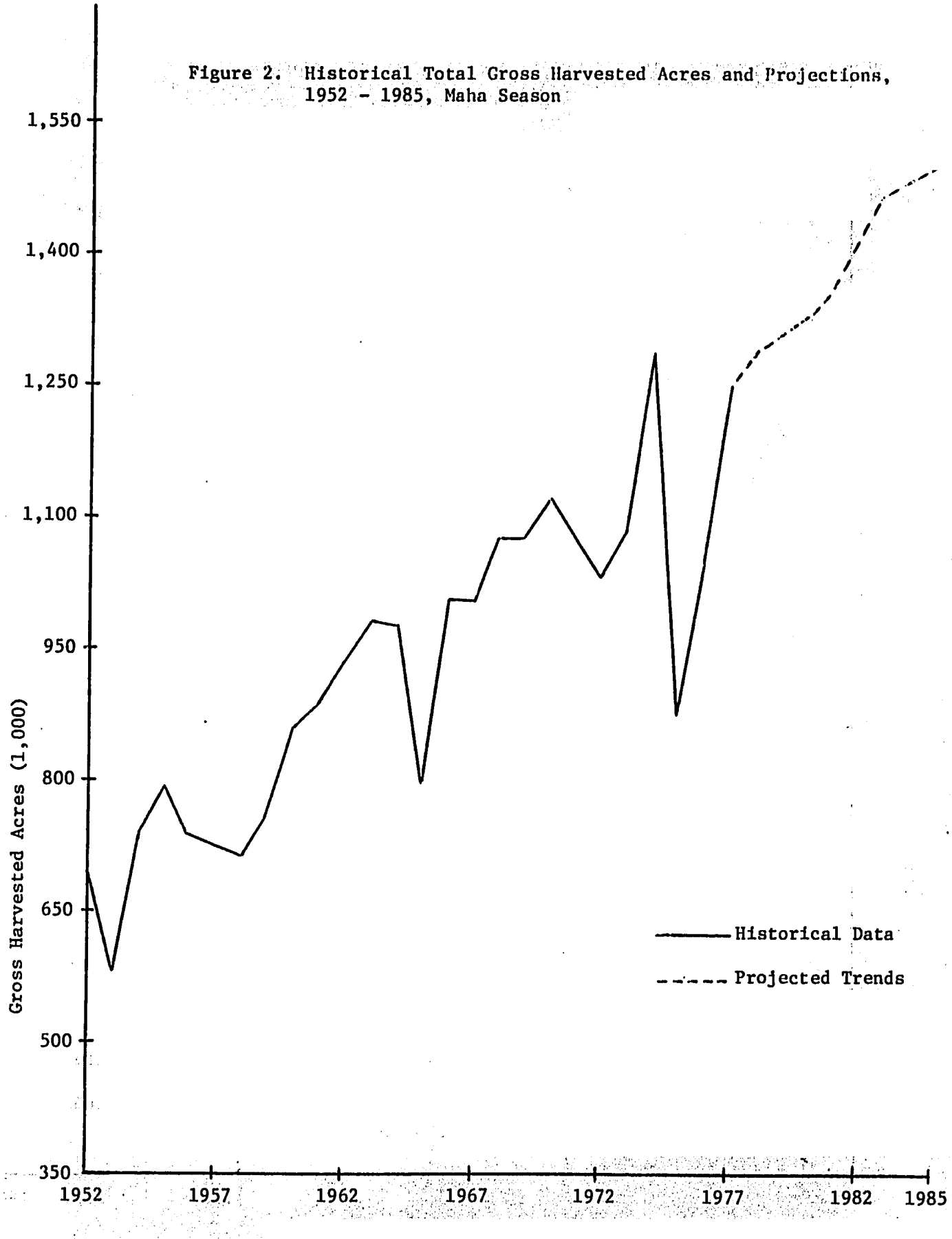
[2] Appendix C.

Figure 1. Historical Total Gross Harvested Acres and Projections, 1952 - 1985, Yala Season



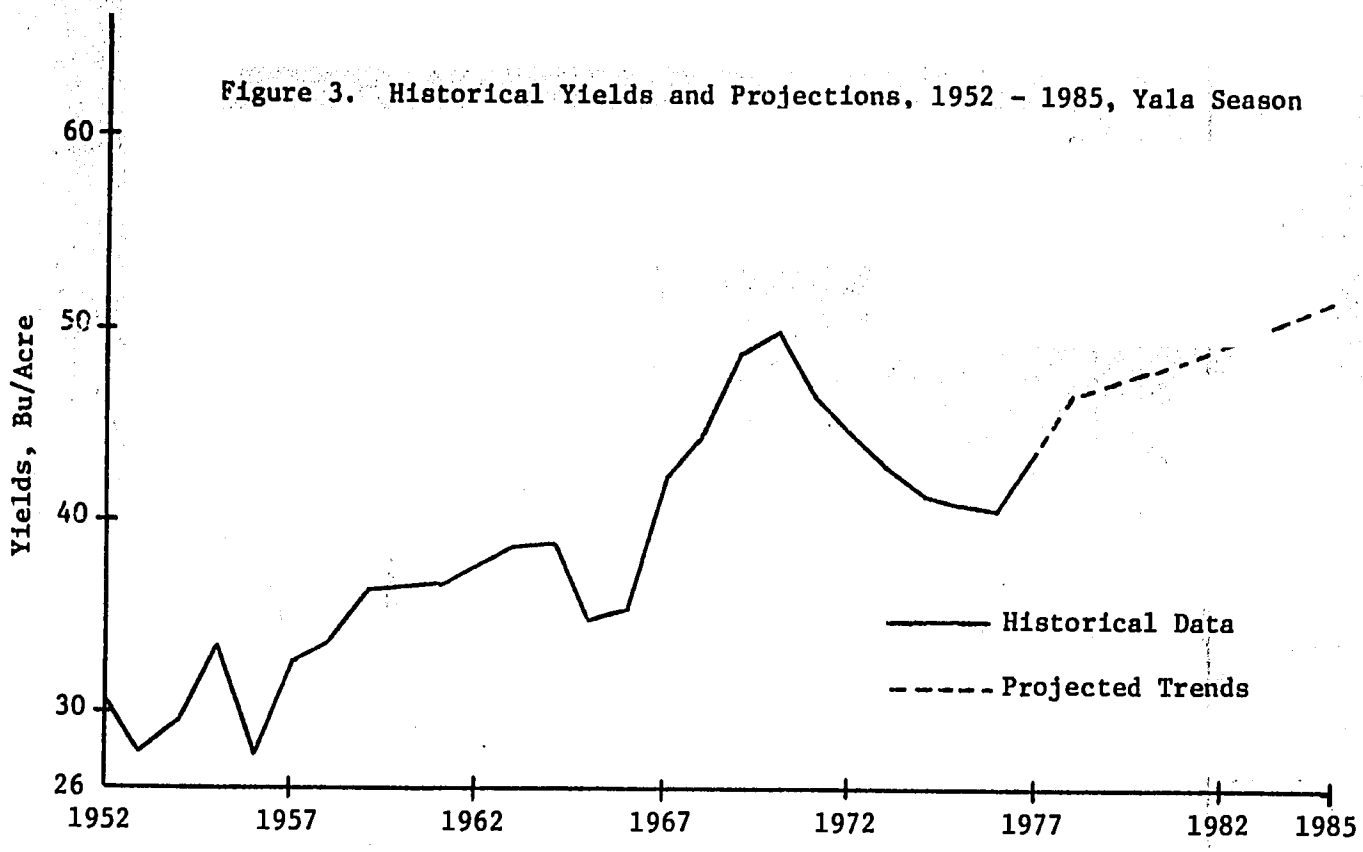
Source: Table 10

Figure 2. Historical Total Gross Harvested Acres and Projections, 1952 - 1985, Maha Season



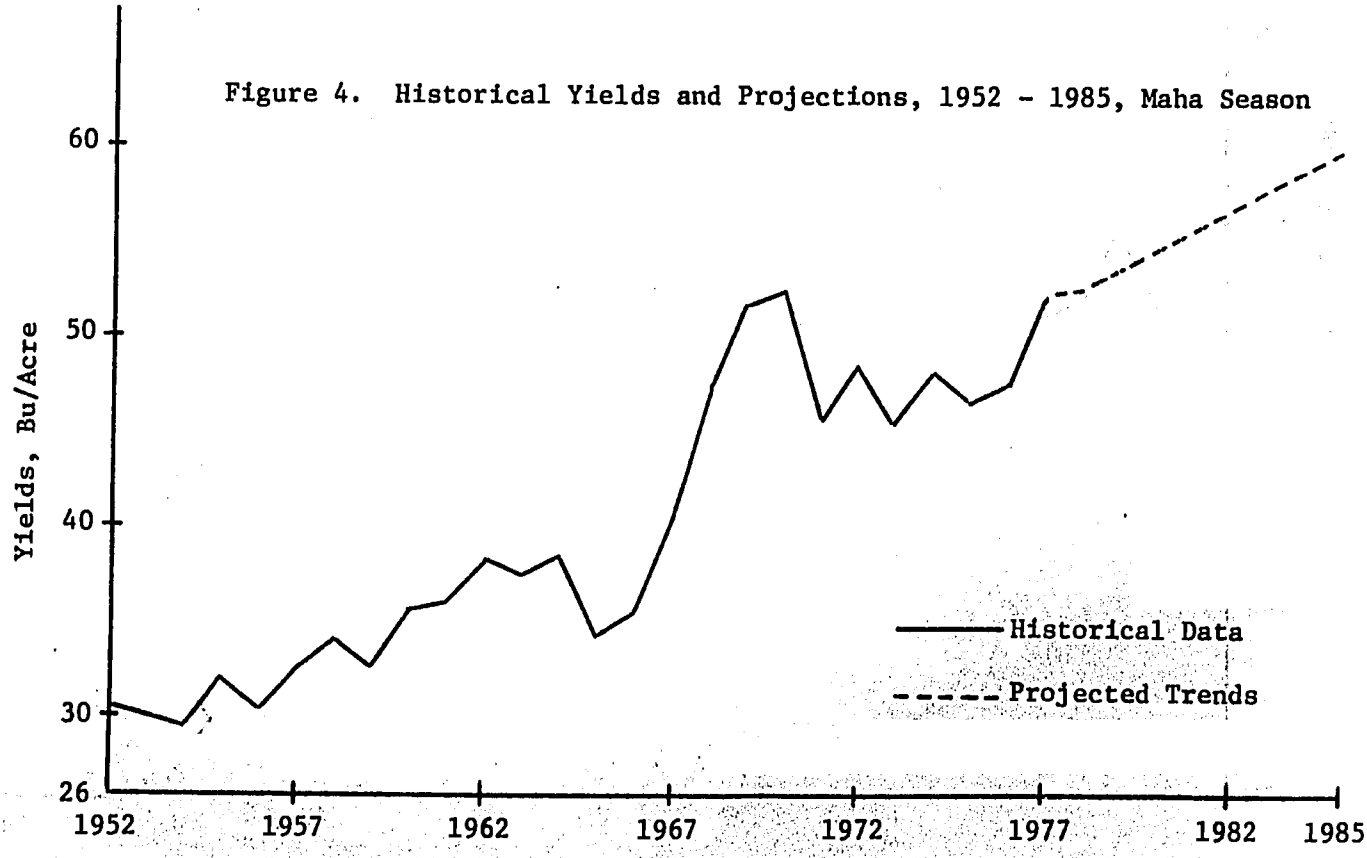
Source: Table 10.

Figure 3. Historical Yields and Projections, 1952 - 1985, Yala Season



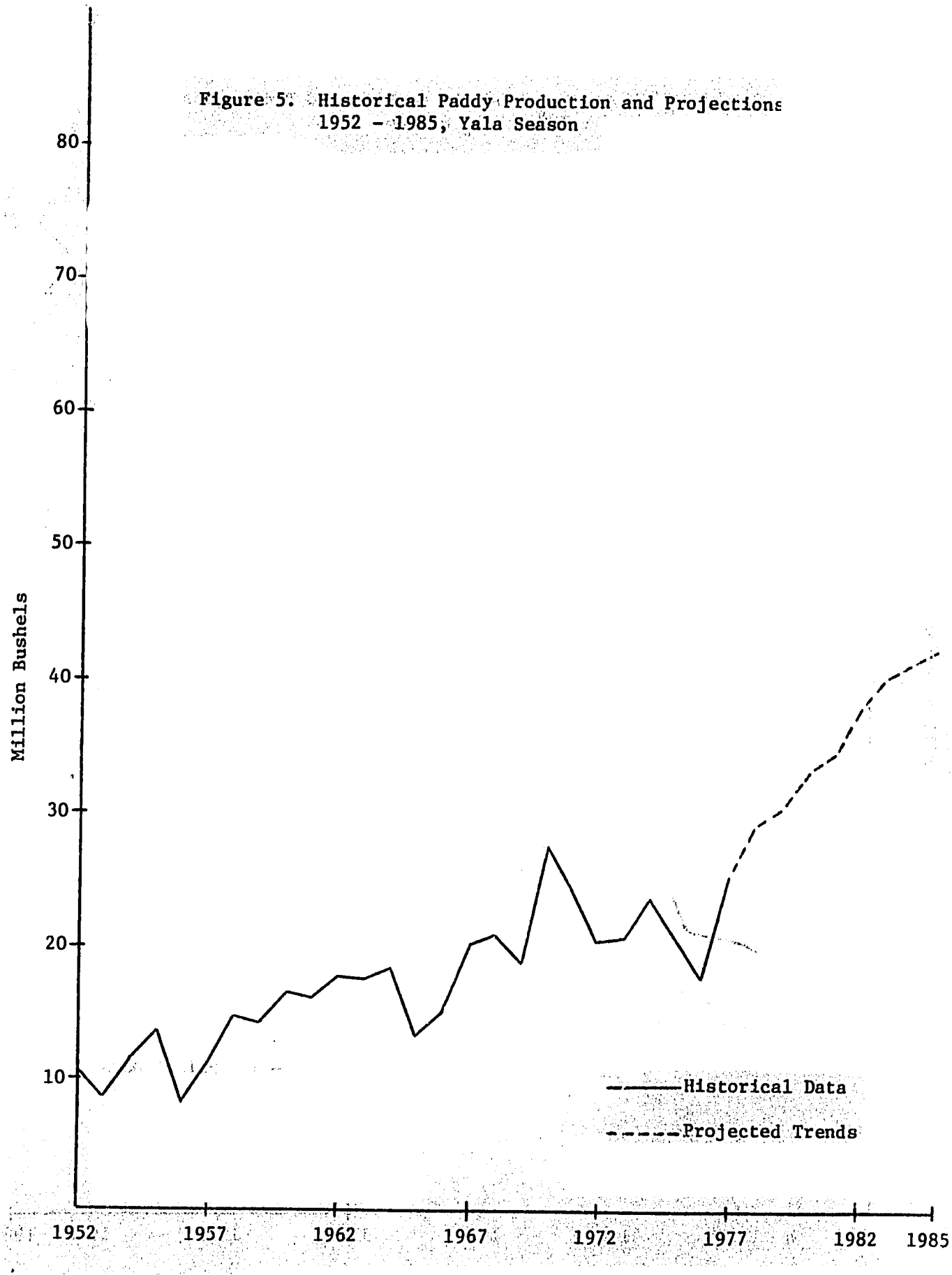
Source: Table 10.

Figure 4. Historical Yields and Projections, 1952 - 1985, Maha Season



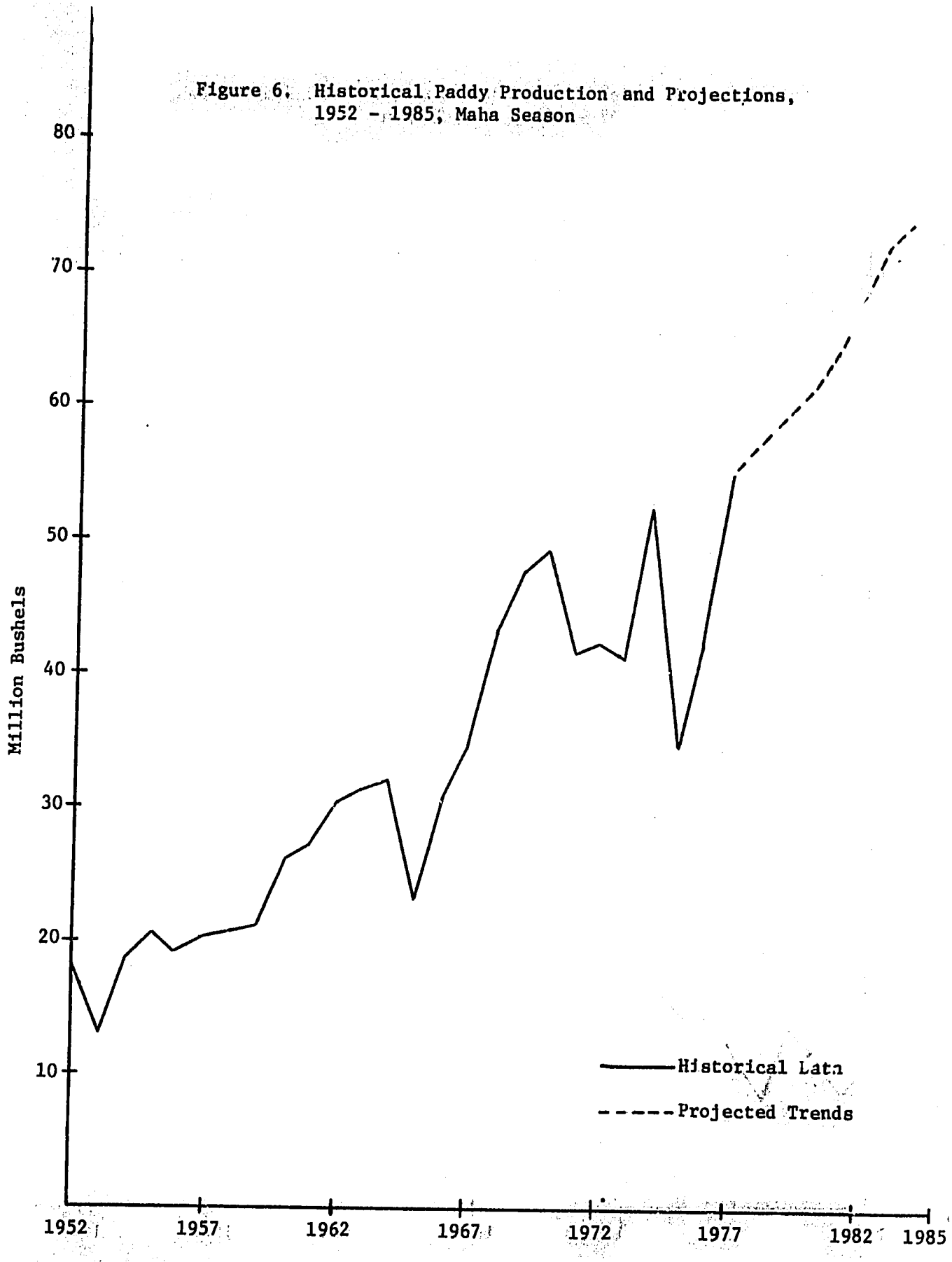
Source: Table 10.

Figure 5. Historical Paddy Production and Projections 1952 - 1985, Yala Season



Source: Table 10.

Figure 6. Historical Paddy Production and Projections, 1952 - 1985, Maha Season



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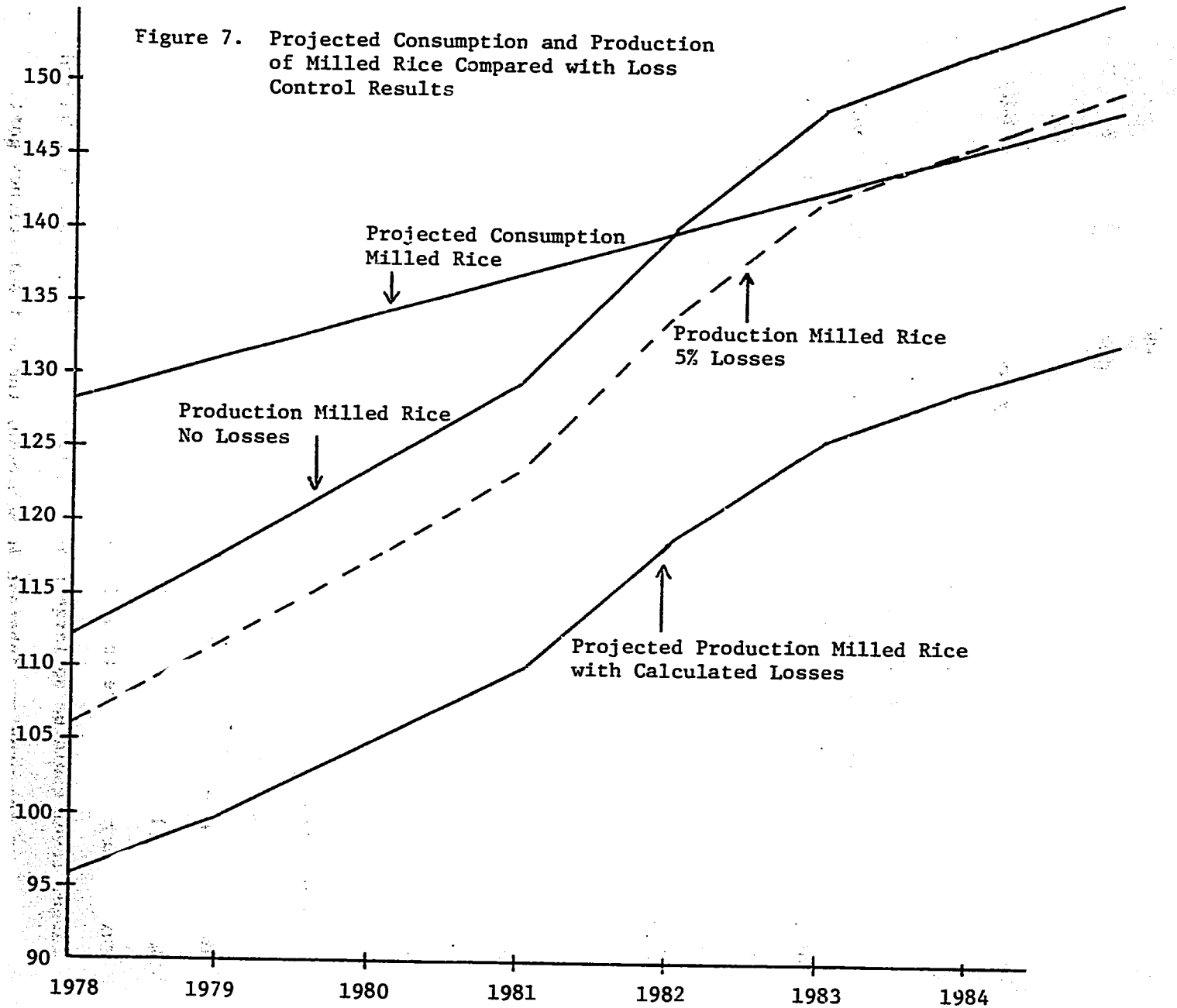


Figure 7. Projected Consumption and Production of Milled Rice Compared with Loss Control Results

projected national production trend becomes less steep in 1984. This is a result of irrigation development having been accomplished and no more systems being introduced. This implies that attention should be given currently to some intensive development approaches so as to impact upon productivity of land under cultivation, thereby increasing production output per unit of land area.

Supply and Demand Balances

While increases in past production have been substantial, the level of self-sufficiency in rice production has not been reached. In the development process to achieve self-sufficiency, the term "self-sufficiency" must be defined. In this particular case, three definitions could be constructed. Self-sufficiency could be defined as achieving the level of domestic production which produces the needed quantity requirements for the consumption of rice only. Secondly, it could be defined as that level of production which provides the quantity requirements for not only the consumption of rice, but also to replace with rice the current consumption of wheat flour. The third definition would be that level of domestic production which would meet the minimum nutrient requirements (primarily carbohydrates) of the population.

In this particular case, the self-sufficiency target selected is as in the first definition above. Due to governmental food policy and pricing, wheat flour has been used as a flexible substitute for rice. If the self-sufficiency target were to be flour and rice quantities combined, then the target level would be so large that long term projections would be required to analyze the problems inherent in achieving the self-sufficiency goal. Since long-run analysis is not the purpose of this study, the self-sufficiency target is to be the projected level of rice consumption within the next eight years.

The surplus-deficit balances within Section III are affected by calculated post-maturity and handling losses. A calculated loss percentage of 14.2 was constructed, composed of 8.0 percent post-maturity losses and 6.2 percent storage and handling losses. At best, this can be only a tentative estimate because of the extremely limited studies which have been undertaken to measure real losses in the system. However, the types of systems represented in Sri Lanka, when compared to similar systems in other countries, indicates that this is probably a sound estimate of probable losses.

When potential losses are included, production does not reach the self-sufficiency level as illustrated in Figure 7. However, if losses were to be somehow entirely eliminated, self-sufficiency could be achieved by 1982. A more realistic scenario would be a reduction of losses to a level of 5 percent, which would allow self-sufficiency to be achieved in 1983. These possibilities are diagramed in Figure 7.

A loss control development program targeted to reduce losses to 5 percent could reduce losses 11.1 thousand tons and 15.0 thousand tons milled rice equivalent for 1978 and 1985, respectively. Annual savings would be well in excess of 4 million U.S. dollars which does not include savings realized through reduction in balance of payments. The cost-benefit analysis for such a development project should be most attractive. Also, such a method of increasing net production would impact favorably upon the requirement for flour in the food ration system.

Surplus and deficit districts are illustrated in Figure 8. The calculated net market flows of rice are shown in Figure 9. These figures illustrate the concentrated area of production, the distances required to move commodity to market outlets, and the general flow of commodity from production to consumption areas.

Figure 8. Projected Surplus and Deficit Districts

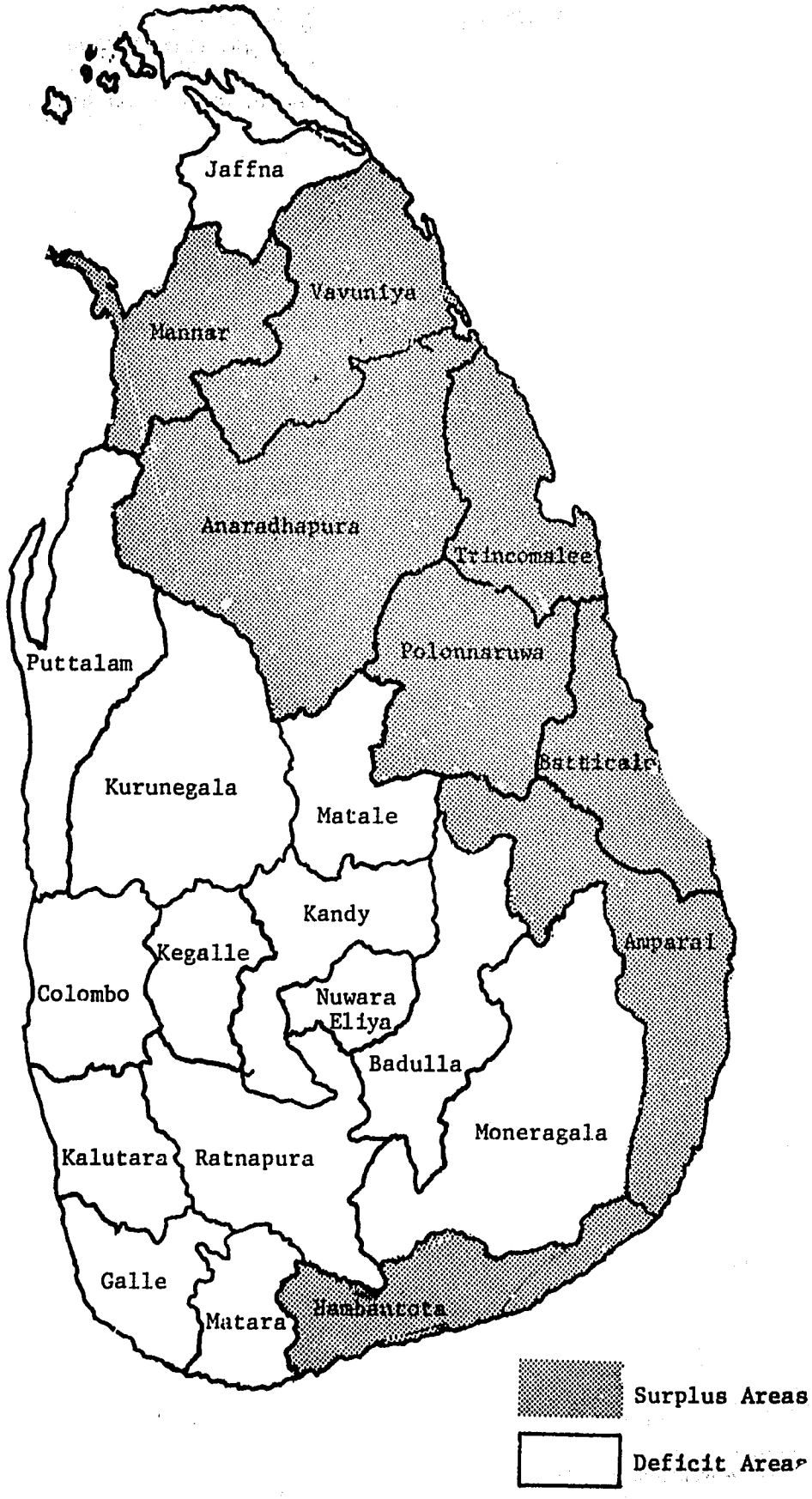
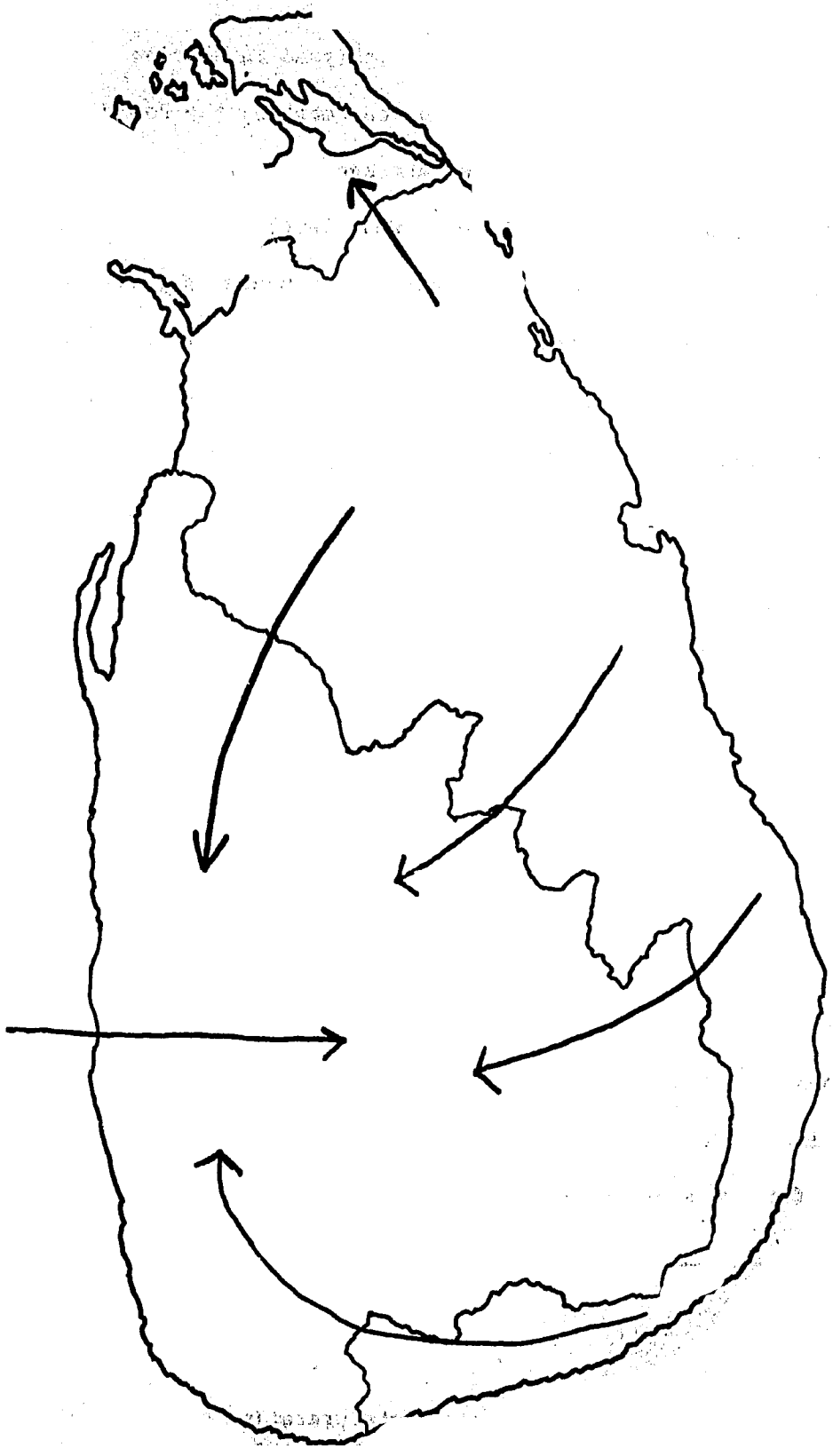


Figure 9. Calculated Net Flows of Rice



Need for Physical Facilities

The need for physical facilities as analyzed in Section IV is based upon a calculated level of rough rice procurement by the Paddy Marketing Board. Table 1 contains a summary of storage and milling needs by 1985. Limited analysis performed to determine what level of procurement in the future would be correct reveals that past performance of governmental purchasing has been greatly influenced by the need of the rice ration system.[1] Because of this factor, defining a future procurement level, without further in-depth analysis as related to nonexistent definitive governmental policy of rough rice price levels, is tentative at best. It is also apparent that any program to reduce losses would increase the amount of rough rice available to the market, thereby increasing the amount of rough rice flowing into the governmental purchasing system.

However, as far as storage facilities are concerned, should governmental purchasing increase over the levels stated herein, size of storage facilities would have to be increased, but locations as determined in the study would stay the same.[2]

Planning for additional future storage facilities for rough rice is imperative to prevent a repetition of past transportation problems and commodity losses.[3] Reduced transportation costs as well as other benefits (such as loss reduction and quality maintenance) should make a cost-benefit analysis of these storage facilities extremely positive.

---

[1]Appendix I.

[2]Table 40.

[3]Figures 11 and 12 give a visual interpretation of transport problems which would be encountered without additional storage facilities.

TABLE 1

SUMMARY OF STORAGE AND MILLING CAPACITY REQUIREMENTS, 1985

District	Additional Warehouse Capacity Requirement Tons	Additional Milling Capacity Requirement Tons Per Month
Amparai	-	3,100
Anaradhapura	-	3,150
Badulla	600	-
Batticoloa	5,100	-
Hambantota	4,300	-
Jaffna	8,900	-
Kegalle	-	250
Kurunegala	-	500
Matale	-	300
Moneragala	-	600
Nuwara Eliya	-	200
Polonnaruwa	17,400	-
Puttalam	-	100
Trincomalee	7,000	2,700

Source: Table 29 and 37.

Future required rice milling facilities presents an entirely different problem. There is no doubt that newer and more efficient rice mills are required. However, the requirement for additional milling facilities as constructed in this study ignores some basic aspects of the current situation. The milling requirement results of the study are defended upon the grounds that there is currently no other method to approach this question, and therefore, underlying assumptions are constructed to achieve validity of the results. The study indicates the number of milling facilities and locations required to achieve a proper balance with storage facilities based upon the assumptions that the current quota milling system is maintained and efficiently utilized. It also assumes the current and proposed PMB owned and managed mills can be effectively utilized at rated capacities.

These assumptions overlook two important aspects of the current situation. First, very little is known about the private milling sector as a whole, either in terms of number of mills, mill sizes, milling efficiency, age and quality of mills, mill utilization, etc., or as to amount of open-market rice which moves through these mills. Secondly, PMB managed mills exhibit low utilization rates, as well as high operating cost per unit of output. This is apparently due to the lack of correct administrative structure and management control.[1]

These remarks are not to be construed as either critical of the study, nor of the GSL, but to define the existing problems in an important sector of the total rice industry in Sri Lanka. This basic problem area leads, therefore, into another development aspect implicit in providing physical facilities.

---

[1]Appendix J.

Need for Institutional Development and Market Research

Physical facilities needed as described herein can be built at any time, any place. A component part of any physical development process must be institutional development. Improvement in industry-wide technical skill levels. High utilization rates, such as used in this study, require technical skills in maintaining and operating facilities and operational skills in quality control of purchasing and storage of rough rice.

Also, with respect to high utilization rates, economic skills are required to guage markets and management skills are required in managing an extremely large labor force as well as a complex marketing system.

The development and use of market research is a large part of institutional development. It is composed of such functions as forecasting, quantitative analysis, feasibility studies, data collection, transport analysis, etc. This has direct implication in the matter previously discussed concerning the rice milling situation. Only through this type of approach can a comprehensive industry-wide rice milling improvement program be developed.

This also has immediate application to the transportation element in the rice industry. Analytical results of survey data detailed in Appendix K need further study. For instance, return on investment was not considered as a cost in this analysis. There appears to be some correlation between this interest return and the spread of rates exhibited in the survey. Such further work would define transportation costs more precisely. Also, the problem of correct commodity flow configurations needs in-depth study. Limited analysis in Section VI reveals that current GLS administrative ideas are sound and would apparently generate large economic savings as well as increase the effectiveness of the rice ration distribution system.

Policy Aspects

The analytical results of this study have implications related to certain aspects of agricultural policy. Historical and projected supply potentials indicate that rapid strides have been and will be made in increasing acreage under rough rice production. The results of Section III imply that governmental development actions in rough rice production are extensive rather than intensive development. The largest emphasis being placed upon development of irrigation. Now the need exists for complementary development planning to enable this production sector to keep growing at its required rate. Such development should encompass farm inputs, extension, production, management, etc. These are components of intensive development.

The problem of loss prevention needs to be considered. A sound program of loss reduction can ultimately increase total available milled rice by at least 10 percent, creating a large impact upon the current deficit situation.

Finally, the need for a coherent policy of rice milling development is required. Sound policy built on a foundation of good quantitative analysis can direct this segment toward objectives established. At this time it cannot be ascertained whether more government milling facilities are the correct ingredient or whether an improved private milling sector would be the best choice.

SECTION III

FUTURE SUPPLY AND DEMAND PATTERNS

Sri Lanka has increased rough rice production substantially over the past 25 years. The increased production has been made possible both by opportunities to increase yields per acre and by the availability of additional land which could be brought under cultivation. It has been supported by: (1) a guaranteed support price, (2) increasing supplies of improved varietal seed, (3) additional available fertilizer, and (4) irrigation development.

The potentials for increasing production over the next few years depends on the availability of the same kind of factors that have facilitated past increases in production.

Projected Production Potentials

Basic approaches to the projection of production are outlined in Section VII. This study uses the second approach since production is a result of two seasons per year, of which one season (Maha) outproduces the other season (Yala) by an approximate ratio of slightly less than two to one.

Projected gross harvested area and yield trends using alternative exponents in the range of .2 to 1.8 are computed by district for harvest area and yield by season. From these alternatives, best fit trends are selected by district. The selection process is indicated in Appendix B. Some district trends selected are not the best fit trends. These alternative selections are caused by limiting factors such as harvested area trend projection to zero or an increasing trend line that increased trend levels beyond what is judged feasible.

Gross harvested area trends are then adjusted to reflect the impact of irrigation projects under development as described in Appendix C. Since regression analysis as described in Appendix D failed to produce satisfactory results which could be used for making adjustments, irrigated acreage is factored directly into the acreage trends of districts where irrigation projects are currently underway and are currently planned. Final adjusted gross harvested area projected trends are illustrated in Tables 2, 3, and 4. In some districts the influence of acreage being improved under irrigation projects is so large a percentage of past land use for rough rice production that the acreage trend is flattened.

To test the results of this adjustment of gross harvested area trends, a series of cropping intensity indexes are computed. While such an index will vary due to weather, it is a target indicator of the impact of available irrigation facilities within a given district. Table C-3, Appendix C, illustrates cropping intensity for selected districts. The results of this test tend to substantiate the harvested area trends projected.

Yield per acre trends are adjusted also to reflect the impact of irrigation development schemes. While the regression analysis presented in Appendix E is not usable, it does reflect the one important fact that yields are highly responsive to water. A survey of the yield trends in affected districts revealed the need for adjustments. The following districts are adjusted to reflect the impact of irrigation: Amparai, Anaradhapura, Badulla, Hambantota, Moneragala, and Ratnapura. The basis for adjustment is the coefficient developed in Appendix E in relationship to the original selected trend line. Final adjusted yield projected trends are illustrated in Tables 5 and 6.

TABLE 2

GROSS HARVESTED AREA OF ROUGH RICE,1952-1977, WITH PROJECTIONS TO 1985(ACRES)

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

YALA SEASON

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1952	0	0	43229	10075	46912	23087	42179	24098	7022	33245	24792	17427	25768
1953	0	0	11469	10308	49698	27339	42867	25003	1397	35368	22236	17298	15408
1954	0	0	37037	9971	49966	27608	40424	24775	6145	36055	26083	19206	55840
1955	0	0	33682	26506	53792	27274	40510	22854	10268	35788	27442	18253	55215
1956	0	0	723	20006	56889	25430	40504	16833	520	35382	18025	20827	20113
1957	0	0	14850	23053	54772	21746	42086	26520	3905	34783	26822	16429	25371
1958	0	0	35616	24074	35317	27169	43185	28103	4807	36807	30905	20881	80574
1959	0	0	10203	23970	59487	24849	41155	26759	1576	35334	28548	19338	61565
1960	0	0	36446	22061	64116	27526	42080	27245	9314	36550	30910	18572	55695
1961	0	36536	35150	20964	33261	23208	40378	33678	8953	35421	32826	15505	41316
1962	0	56347	46777	21453	19556	22084	41315	33677	10600	33443	31592	15500	57502
1963	0	49043	47283	22268	19596	21877	36830	20711	12302	33565	30235	19277	54090
1964	0	53925	37514	19190	15881	25223	39864	32789	10625	34522	34837	20317	57285
1965	0	56351	15522	15469	18263	17849	38255	13784	1627	25926	32835	18068	46012
1966	0	57644	45501	25349	20907	21303	37681	23100	10685	33571	24783	16943	26209
1967	0	62505	27002	25350	18334	37311	40478	25248	6778	39682	32946	22675	62670
1968	0	53550	30372	10503	19365	41023	48004	23708	7495	40848	32927	22285	65058
1969	0	44408	19828	11173	17375	34513	36537	24588	0	34549	35603	21221	44278
1970	0	57840	60659	11613	22349	35878	46417	26988	12246	39852	37008	22408	50637
1971	0	49721	51291	12431	23531	29723	44650	28650	13607	38325	38747	21535	66375
1972	0	49471	33614	11450	21076	28806	42457	22894	7851	36221	40511	20551	62187
1973	0	50684	24215	10281	17747	44549	47616	23724	8895	40115	39565	20856	79610
1974	0	54416	28901	14391	21002	51090	51765	30249	11393	43712	44215	26056	106512
1975	0	50501	4055	14295	17664	52618	56655	32042	0	48255	43006	26320	84603
1976	0	62623	16868	15608	17320	44267	52710	14968	10056	46271	23476	17558	23162
1977	0	32309	43366	13668	15883	48584	50641	25647	10892	46673	40489	25625	111501
1978	0	63283	67473	16263	15883	49216	50841	25847	9112	45179	40152	24355	84558
1979	0	64828	73423	16224	15883	51094	54059	25847	9208	45999	40658	24812	86672
1980	0	66340	106386	16185	15883	53026	58366	25847	9302	46843	41235	25238	88787
1981	0	67821	111146	16148	15883	55012	60356	31523	9393	47711	41777	25676	90701
1982	0	69273	115906	16111	21857	57052	63564	36283	9483	48602	42311	26126	92616
1983	0	82121	115906	25615	21857	59145	63564	41043	9572	49517	42842	26587	94530

1984	0	82121	115906	25615	21857	61291	63564	45803	9658	50455	43370	27060	56444
1985	0	82121	115906	25615	21857	63490	63564	50563	9743	51415	43894	27545	58355

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 2, CONTINUED

GROSS HARVESTED AREA OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (ACRES)

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

YALA SEASON

YEAR		MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONNA-ARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UVA WALAWE	TOTAL SRI LANKA
1952	0	2460	13848	40720	0	8595	0	2029	22046	10565	3409	0	401506
1953	0	2533	10586	39828	0	8619	12357	1797	20614	5870	1035	0	365630
1954	0	3076	13508	34982	0	9357	23728	5134	24302	8531	2543	0	458311
1955	0	3315	13974	35013	0	8969	24328	6295	25120	14730	4647	0	492075
1956	0	0	6079	33792	0	7554	363	710	22846	11504	88	0	338192
1957	0	107	10945	34336	0	7633	26920	463	24666	9494	1572	0	410517
1958	0	661	13402	39590	0	8672	29336	5581	24571	18451	4604	0	513114
1959	0	1040	10773	38564	0	8264	29271	6277	25717	14083	1517	0	469138
1960	0	3784	14376	39553	3169	8577	31184	6703	29414	19589	4603	0	535871
1961	0	3466	11717	34637	2496	8575	39444	6056	28202	18204	5290	0	519285
1962	0	4561	14700	38585	2455	7663	41251	5315	23484	20969	8366	0	561595
1963	0	5073	14952	36157	2598	8723	44047	5115	25750	22681	10598	0	543571
1964	0	4177	13975	40860	3573	9561	42156	4125	25046	21284	3757	0	554654
1965	0	4206	11894	33227	3112	9122	44677	1368	23358	13363	2585	0	446935
1966	0	5098	10166	42457	3305	7769	40164	2659	23522	21099	5372	0	505291
1967	0	4177	11091	42333	2815	9871	37893	4045	25988	20122	1065	0	560579
1968	0	368	11086	41434	3242	9638	42812	5103	27737	15347	4376	0	556285
1969	0	0	9109	31206	2529	9735	41516	1591	30885	8876	1362	0	463882
1970	0	5622	16210	40108	5029	11155	46653	9268	30903	24317	7612	0	660672
1971	0	5688	13458	43584	4854	11395	49267	5663	35177	10566	6697	0	625379
1972	0	3567	14261	41444	4981	10038	37279	5459	37230	8594	3056	0	543438
1973	0	1995	12162	44231	3797	11019	43152	7350	35842	5825	1422	0	574656
1974	0	1423	15832	44500	4468	12346	43170	9800	50561	10700	4173	0	661115
1975	0	1114	13934	46173	5472	12819	27155	4676	33541	9189	345	16011	600483
1976	0	1823	9415	44301	4163	11547	44279	4245	33118	2927	746	16487	516338
1977	0	2443	14634	45823	4376	11771	53719	11312	35305	25926	2002	9660	683053
1978	0	3039	18561	45813	4376	11771	49955	11312	40087	34800	3793	18200	734352
1979	0	3051	21346	46471	4614	13256	49955	11312	41278	34853	4302	18500	757925
1980	0	3063	21346	47147	5328	13256	49955	11312	42503	36904	8710	18500	811500
1981	0	3075	21346	47842	6766	13256	49955	14644	43762	36954	13719	19300	843846
1982	0	3086	21346	48556	6766	13256	66012	15953	45055	51622	13725	19700	903261
1983	0	3098	21346	49289	6766	13256	70764	15953	46382	51670	13733	23100	944656

1984	0	3109	21346	50040	6766	13256	70764	15953	47743	51718	13741	20500	55808
1985	0	3119	21346	50810	6766	13256	70764	15953	49137	51718	13745	20900	57159

SOURCE:

MINISTRY OF AGRICULTURE. GSL

TABLE 3

GROSS HARVESTED AREA OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (ACRES)

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

MAHA SEASON

YEAR		APPARAI	ANURAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1952	0	0	76425	25739	50580	47410	36500	30485	38495	32882	38975	25467	118895
1953	0	0	23798	27929	54004	47226	35293	28355	41566	27316	39675	25053	75805
1954	0	0	54333	30763	72284	48998	39012	32150	45501	36054	35767	26324	116891
1955	0	0	60837	17052	56364	49175	39021	33849	48678	37106	40703	27505	126171
1956	0	0	35516	11896	58955	50434	39217	32739	49892	36018	39205	27241	127770
1957	0	0	21924	13388	106776	53069	40651	31759	52213	35943	41337	26580	95630
1958	0	0	52598	14497	61051	47228	35370	36277	49772	28481	40707	26355	124417
1959	0	0	40749	19230	99574	50518	36574	37817	57115	36104	42643	27327	83226
1960	0	0	65990	11626	101085	49191	37645	39255	56245	36312	42666	27720	123882
1961	0	0	80055	10721	105549	50289	37450	30492	62005	36012	42720	27576	128815
1962	0	62995	82534	11128	55213	53033	36544	36042	66177	32827	43495	27425	136727
1963	0	74530	84818	13308	67324	52649	35374	37654	68761	33585	43254	26703	140292
1964	0	76426	90730	15759	68540	52174	32577	29683	71800	31241	44650	26715	143835
1965	0	61995	43543	18425	55145	52934	35848	26531	31471	37353	45730	26480	121397
1966	0	81359	90417	13956	77264	54166	33411	36871	75132	37210	47066	26680	143670
1967	0	75367	103968	16374	70680	53587	35812	36013	59898	38213	46204	26718	147435
1968	0	81535	118693	30702	77289	54389	39183	34346	69980	41968	45218	26871	141001
1969	0	87440	107249	32006	78982	58279	42552	38179	55258	40872	46555	27230	148505
1970	0	81598	139288	33320	70217	57749	36737	21883	72080	40082	47432	27010	145254
1971	0	83410	104659	28946	73359	55116	42403	39947	68482	40584	47277	27246	127248
1972	0	87895	100285	31250	64635	56746	45405	33865	63070	39712	46118	26894	114841
1973	0	88041	105730	31012	70282	56640	45065	44786	68885	40377	48192	26403	128728
1974	0	99000	132783	35011	89317	60301	57309	44609	81941	50677	47811	27081	141429
1975	0	86475	14953	36949	76655	62312	57578	44239	17740	50357	48786	27290	77897
1976	0	98415	48966	37209	87204	57403	53522	43969	66269	45800	48229	27190	115555
1977	0	100417	115179	36527	89724	61897	54366	44309	77978	46601	47687	27071	146556
1978	0	114309	173417	38477	79759	61717	53407	43519	67581	48828	49418	27247	135065
1979	0	118530	174443	40061	79855	62441	54722	44344	68001	49952	49758	27264	135508
1980	0	122721	174443	41692	79548	63176	56075	45192	68410	51108	50095	27281	135938
1981	0	126883	174443	43368	80038	63920	57466	52179	68807	52297	50431	27297	136763
1982	0	131017	174443	45089	86563	64675	58855	57307	69193	53517	50764	27313	136763
1983	0	143324	174443	56810	86648	65439	60361	62435	69570	54769	51095	27328	136763

1984	0	143324	174443	56810	86732	66214	61864	67563	69937	56054	51424	27343	137547
1985	0	143324	174443	56810	86814	66997	63404	72691	70296	57369	51721	27358	137525

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 3, CONTINUED

GROSS HARVESTED AREA OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (ACRES)

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

MAHA SEASON

YEAR		MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONN-ARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UVA WALAWE	TOTAL SRI LANKA
1952	0	24378	21473	39431	0	15568	0	19273	22700	13983	21303	0	700366
1953	0	12560	16877	38547	0	16432	16534	9138	24901	10936	9902	0	585851
1954	0	20203	18091	39410	0	16599	23572	18110	25790	20286	19275	0	743417
1955	0	22704	19438	40984	0	16533	24636	21109	27155	21303	22750	0	753273
1956	0	19706	14162	40910	0	15907	25463	19849	25909	14006	14889	0	735684
1957	0	15044	18168	41611	0	15833	26988	9483	26578	25366	25065	0	727806
1958	0	20690	18399	34850	0	16514	24653	9490	25664	17339	31716	0	716068
1959	0	24730	14543	40750	0	15949	28226	11140	25944	27515	38786	0	758860
1960	0	25186	19693	41469	10238	16606	28247	22675	26991	30718	43352	0	856952
1961	0	28017	20117	39755	10328	15638	35125	21131	26657	36560	42507	0	887537
1962	0	29663	21047	38085	11669	16232	45447	22612	26806	35308	45255	0	936264
1963	0	29896	21690	40551	11813	16495	50396	23268	27164	37652	44595	0	981772
1964	0	29422	22199	29986	13841	16968	51113	23398	26560	32744	47461	0	979826
1965	0	25223	18882	38964	9928	17128	50333	16064	27433	22601	12288	0	795696
1966	0	34158	23809	27855	14206	17604	49126	19862	30017	32952	40920	0	1007711
1967	0	32192	24424	34150	15616	17305	51544	19125	30337	33583	37059	0	1006408
1968	0	35174	25968	32107	16917	15499	51587	21065	32746	38839	46776	0	1077853
1969	0	26544	27168	41894	16100	17439	54894	23453	35756	38489	33256	0	1078100
1970	0	37345	25649	25585	18580	17832	55956	26377	35783	46678	50747	0	1117222
1971	0	36538	24801	32430	17095	17938	58972	25105	37727	43136	46547	0	1078966
1972	0	29056	22077	42218	15541	17855	61455	17136	39009	36406	43962	0	1035491
1973	0	34192	21923	37835	15779	17879	62281	22531	39450	34449	43674	0	1084124
1974	0	46278	27323	48009	20821	18021	68753	30262	52940	55984	52702	0	1288362
1975	0	372	22050	48373	22170	18273	63683	11952	36280	26536	5760	18621	875301
1976	0	2331	27074	46258	21470	18135	62356	17634	36414	43459	22405	20706	1051943
1977	0	26196	31726	43946	20145	16498	68575	23638	37814	60328	56275	15756	1250013
1978	0	29035	28464	41511	23395	18121	68725	22873	44031	60328	43889	18361	1291485
1979	0	29187	29051	41806	24436	18231	70030	23078	45373	60328	44311	18661	1309371
1980	0	29335	29646	42109	25867	18343	71304	23281	46754	62534	44722	18961	1328935
1981	0	29479	30249	42420	27892	18456	80244	24762	48174	62534	45121	19261	1362484
1982	0	29619	30861	42740	28711	18570	95700	26172	49632	81149	45510	19561	1425564
1983	0	29755	31481	43068	29526	18686	103654	26172	51128	81149	45889	19861	1469354

1984	0	29888	32108	43405	30335	18804	103654	26172	52662	81149	46258	20161	1483651
1985	0	30018	32743	43749	31139	18923	103654	26172	54233	81149	46619	20461	1458012

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 4

GROSS HARVESTED AREA OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (ACRES)

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

ANNUAL

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1952	0	0	119654	35814	97492	70497	78679	54583	45521	66127	63767	42694	144663
1953	0	0	35267	38237	103702	74565	78160	53358	42963	62684	61915	42351	99213
1954	0	0	91370	40734	122250	76606	79436	56925	51646	72149	65850	45530	172731
1955	0	0	94519	43558	150156	76449	79531	56703	59146	72894	68149	45858	185386
1956	0	0	36239	31902	155844	75864	79721	49572	50412	71400	57234	48068	147883
1957	0	0	36774	36481	161548	74815	82737	58279	56122	70726	68159	43409	129001
1958	0	0	88214	38571	96368	74397	78559	64380	54579	65288	71616	47236	204591
1959	0	0	50952	43200	159461	75367	77773	64576	59091	71438	71191	46665	144795
1960	0	0	102436	33687	165201	76717	79925	66500	65559	72862	73576	46692	183581
1961	0	36536	115205	31685	138810	73497	77828	64170	70962	71433	75546	47081	170137
1962	0	119342	129311	32581	75169	75117	77863	69719	76777	66270	75087	47325	194229
1963	0	123573	132101	35576	86920	74526	72204	58365	81063	67150	73489	45980	194382
1964	0	130351	128244	35949	88821	77397	72841	62472	82429	65763	79687	47032	201128
1965	0	118356	59065	33894	73408	70783	74147	40315	33098	63279	78569	44548	167409
1966	0	139003	135918	39305	98171	75469	71092	59571	85821	70781	71849	43623	169879
1967	0	137872	130970	41724	89014	91298	76290	61261	66676	77895	79150	49593	210109
1968	0	135085	149065	41205	96654	95412	87187	58054	77475	82816	78145	49160	206059
1969	0	131848	127077	43179	96357	92792	79089	62767	55258	75421	82158	48451	192783
1970	0	139438	199947	44933	92566	93627	83154	48771	84326	79934	84440	49418	239891
1971	0	133131	155950	41377	96890	84839	87093	68597	82089	78909	86024	49185	213623
1972	0	137366	133899	42700	85711	85552	87902	56779	70921	75933	86629	47845	177028
1973	0	138725	129545	41293	88029	101189	92681	68510	77784	80492	87747	47259	208338
1974	0	153416	161684	49402	110319	111391	109074	74858	93334	94389	92030	53177	247941
1975	0	136976	19008	51244	94319	114930	114273	76281	17740	98612	91792	53610	162500
1976	0	161038	65834	52817	104524	101670	106232	58937	76325	92071	71705	45148	142717
1977	0	132726	158545	50195	105607	110481	105207	70156	88870	93274	88176	52656	258857
1978	0	177592	240890	54740	95642	110933	104248	69366	76693	94007	89570	51646	220023
1979	0	183358	247866	56285	95738	113535	108781	70191	77219	95951	90456	52076	222380
1980	0	189061	280829	57877	95831	116202	114441	71039	77712	97951	91334	52519	224725
1981	0	194704	285589	59516	95921	118932	117862	83702	78200	100008	92238	52973	227464
1982	0	200290	290349	61200	108420	121727	122459	93590	78676	102119	93075	53439	229379
1983	0	225445	290349	82425	108505	124584	123925	103478	79142	104286	93937	53915	231293

1984	0	225445	290349	82425	108589	127505	125428	113366	79595	106509	54794	54403	223991
1985	0	225445	290349	82425	108671	130487	126968	123254	80039	108784	55615	54503	236294

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 4, CONTINUED

GROSS HARVESTED AREA OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (ACRES)

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

ANNUAL

YEAR		MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONNA-ARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UVA WALAWE	TOTAL SRI LANKA
1952	0	26838	35321	80151	0	24563	0	21302	44746	24548	24712	0	1101672
1953	0	15093	27463	78375	0	25051	28851	10935	45515	16806	10937	0	951481
1954	0	23279	31599	74392	0	25956	47300	23244	50092	28817	21822	0	1201728
1955	0	26019	33412	75997	0	25502	48564	27404	52275	36033	27397	0	1285348
1956	0	19706	20241	74702	0	23461	25826	20559	48755	25510	14577	0	1077876
1957	0	15151	29113	75947	0	23466	53908	9946	51244	34860	26637	0	1138323
1958	0	21351	31801	74440	0	25186	53989	15471	50635	35790	36320	0	1225182
1959	0	25770	25316	79314	0	24213	57457	17417	51661	41598	40703	0	1227598
1960	0	28970	34069	81022	13407	25183	59431	29378	56405	50307	47955	0	1352863
1961	0	31483	31834	74392	12824	24213	74579	27187	54859	54764	47757	0	1406822
1962	0	34224	35747	76670	14124	23895	86658	27927	50290	56277	53621	0	1458263
1963	0	34969	36642	76708	14811	25218	54443	28383	52514	60333	55593	0	1525343
1964	0	33599	36174	70846	17414	26929	93269	27523	51606	54028	51218	0	1534720
1965	0	29429	30776	72191	13040	26250	55010	17432	50791	35964	14877	0	1242631
1966	0	39256	33975	70312	17511	25373	89290	22521	53539	54051	46292	0	1513002
1967	0	36369	35515	76483	18431	27176	89437	23170	56325	54105	38124	0	1566587
1968	0	35542	37054	73541	20159	25137	94399	26168	60483	54186	51152	0	1634138
1969	0	26544	36277	73100	18629	27174	56410	25044	66641	47365	34618	0	1538582
1970	0	42967	41859	65693	23609	28987	102649	35645	66686	70995	58359	0	1777894
1971	0	42226	38259	76014	21949	29333	108239	30768	72904	53702	53244	0	1704345
1972	0	32623	36338	83662	20522	27893	98774	22595	76235	45000	47018	0	1578529
1973	0	36187	34085	82066	19576	28898	105433	29881	75292	40274	45096	0	1658780
1974	0	47701	43155	92509	25289	30367	111923	40062	103901	66684	56875	0	1969481
1975	0	1486	35984	94546	27642	31092	90838	16628	69621	35725	6105	34632	1475784
1976	0	4154	36489	90559	25633	29682	106635	21849	69532	46386	23151	37193	1570281
1977	0	28639	46360	89769	24521	28269	122654	34950	73123	86254	58281	25416	1933066
1978	0	32073	47025	87324	27775	29892	118724	34185	84118	95128	47682	36561	2025837
1979	0	32238	50397	88277	29050	31487	120025	34390	86651	95181	48613	37161	2067296
1980	0	32398	50992	89256	31195	31599	121299	34593	89257	99438	53432	37861	2140841
1981	0	32554	51595	90262	34658	31712	133229	39406	91536	99488	59840	38561	2206330
1982	0	32705	52207	91296	35477	31926	163512	42125	94687	132771	59235	39261	2329825
1983	0	32853	52827	92357	36292	31942	174418	42125	97510	132819	59622	39961	2414010

1984	0	32997	53454	93445	37101	32060	174418	42125	100435	132867	59555	40661	2441531
1985	0	33137	54089	94559	37905	32179	174418	42125	103370	132867	60368	41361	2465602

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 5

YIELD OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

BUSHELS PER 100 ACRES

YALA SEASON

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1952	0	0	3728	2815	3602	2402	2115	4045	3760	1938	3285	2515	3218
1953	0	0	3015	3558	3538	2728	1843	3503	2618	1898	3205	2493	2898
1954	0	0	3690	2995	2952	2710	2298	3208	2660	2102	2855	3452	2735
1955	0	0	3930	3293	2935	2845	2620	4020	3335	2762	2918	3078	3293
1956	0	0	2823	2823	3638	2262	2600	2798	2823	2265	3145	2600	1512
1957	0	0	4608	3262	3370	2380	2505	3668	2872	2345	3745	3065	3385
1958	0	0	2837	3487	3957	2902	2630	4011	3487	2804	3902	2891	2546
1959	0	0	3707	3739	3304	3000	3633	4370	3707	3163	3533	3467	3391
1960	0	0	4322	3682	3065	2995	2872	4318	3300	2780	5080	4202	3412
1961	0	3646	4322	4570	3775	3215	2940	3910	2782	2602	4410	4870	3432
1962	0	3882	4168	5128	4037	2912	2595	4460	3498	2410	4575	4540	3300
1963	0	3767	3992	5147	3575	3380	2705	4390	3692	3305	4422	4405	3597
1964	0	3810	3991	5147	3657	3412	2772	4408	3679	3173	4483	4477	3658
1965	0	3320	3873	3863	3405	2586	2430	3273	4163	2532	4155	3520	3118
1966	0	3108	4042	4285	3820	2952	2842	4570	3382	2610	4402	2738	3835
1967	0	4723	3748	4940	4123	3180	2695	5255	3540	3158	5382	4360	4213
1968	0	4955	4725	5468	4368	4292	2622	6875	4288	3285	5668	5032	4788
1969	0	5935	5335	5415	5975	3845	2628	7603	0	2865	6285	4898	3838
1970	0	5535	5865	5418	5308	3298	3075	5840	4652	3012	6412	5205	4265
1971	0	4786	5175	4688	4810	3342	2915	5952	5070	2925	5580	4700	4505
1972	0	4180	5262	4625	5228	3492	2748	5552	3748	2708	6230	4685	3830
1973	0	4517	4127	5802	4605	3762	2647	5007	4167	2967	5315	4840	4122
1974	0	3727	4138	4208	4055	3517	2870	5958	4412	2528	6065	3525	4016
1975	0	4579	3314	4827	4931	3414	2667	5308	0	3346	4935	3831	3820
1976	0	4938	6934	4558	5092	3019	2356	4521	3796	2704	5123	3451	3189
1977	0	4580	5747	4915	4678	3309	2698	4771	3885	2754	5461	4056	4175
1978	0	5201	5435	5217	5227	3581	2853	5913	3529	3101	5937	4590	4212
1979	0	5318	5529	5257	5321	3605	2862	5955	3538	3117	5848	4620	4250
1980	0	5423	5624	5296	5416	3629	2870	6077	3547	3133	5900	4649	4288
1981	0	5524	5719	5334	5512	3652	2878	6158	3555	3148	5949	4678	4325
1982	0	5623	5814	5371	5608	3674	2886	6239	3564	3193	5998	4705	4362
1983	0	5719	5911	5407	5705	3696	2893	6319	3572	3178	6045	4732	4398

1984	0	5813	6008	5442	5803	3718	2901	6398	3580	3192	6091	4758	4433
1985	0	5905	6105	5476	5901	3740	2908	6478	3588	3206	6136	4784	4468

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 5, CONTINUED

YIELD OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

BUSHELS PER 100 ACRES

YALA SEASON

YEAR		MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONN-ARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UDA WALAWE
1952	0	3760	3430	2578	0	4335	0	3218	2400	4995	3760	0
1953	0	2845	2258	2313	0	4440	4105	2238	2210	4268	3578	0
1954	0	4068	2758	2600	0	2995	4678	2995	2858	4292	3152	0
1955	0	4072	3762	2975	0	3293	5492	2170	3218	5130	3230	0
1956	0	0	3812	2332	0	2823	2823	2823	2258	5035	2823	0
1957	0	3176	3940	2762	0	3176	5282	3176	2595	3068	4014	0
1958	0	3487	3326	2924	0	3487	6087	2641	2641	5467	3487	0
1959	0	3054	4359	2837	0	3489	5478	3467	3337	4761	3633	0
1960	0	3388	4415	3078	3682	5145	4982	2962	2788	4748	3322	0
1961	0	3748	3750	2832	3646	5015	4085	3658	2785	4355	3766	0
1962	0	4542	4328	2890	5128	4212	4622	2455	3278	4245	3472	0
1963	0	4437	3722	3497	4945	4460	4775	3045	3147	4235	4392	0
1964	0	4560	3810	3547	4510	4565	4802	3160	3376	4282	4492	0
1965	0	4318	3740	3356	3765	5397	4860	3335	2853	3958	4115	0
1966	0	4020	3958	3208	2865	3088	3918	2230	3420	4560	4015	0
1967	0	5970	5243	3858	4530	5818	4865	3000	2923	5958	4663	0
1968	0	4459	4815	3702	3892	6388	4275	3718	3490	4872	4580	0
1969	0	0	5100	4290	3880	8095	5435	2468	4523	5078	3625	0
1970	0	7058	5080	4085	3635	7330	7310	3790	3598	7148	4795	0
1971	0	5810	4485	4085	4262	4485	6780	4165	3935	5470	4540	0
1972	0	6478	4702	4040	5458	6915	5562	3050	4105	5108	4672	0
1973	0	5567	4247	3502	5220	6840	5892	3442	4072	5497	4792	0
1974	0	3279	4260	3468	4202	6424	4919	3177	4044	5425	5189	0
1975	0	5337	3997	3860	4539	4762	4605	2877	3944	5309	4084	6558
1976	0	5328	3987	2994	4636	5990	5562	3144	3828	4436	3250	5216
1977	0	5313	4801	3784	4425	6584	5600	3725	4302	5936	4822	6624
1978	0	5666	4692	3920	5187	6728	5915	3420	4262	5719	4694	6133
1979	0	5789	4720	3953	5288	6844	5966	3442	4325	5804	4739	6133
1980	0	5913	4747	3986	5385	6960	6011	3465	4308	5891	4784	6133
1981	0	6038	4773	4018	5481	7075	6055	3487	4450	5980	4829	6133
1982	0	6164	4799	4049	5573	7189	6098	3509	4511	6072	4874	6133
1983	0	6290	4824	4080	5664	7302	6140	3531	4572	6166	4918	6133

1984	0	6418	4848	4110	5752	7415	6181	3553	4633	6263	4562	6133
1985	0	6546	4872	4139	5838	7527	6220	3575	4694	6362	5006	6133

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 6

YIELD OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

BUSHELS PER 100 ACRES

MAHA SEASON

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1952	0	0	4316	4075	2548	3070	1770	3605	1578	1968	4265	3085	2730
1953	0	0	3350	3286	2485	2700	1605	3465	1605	1540	3265	3073	2225
1954	0	0	4240	3578	2810	2012	2015	3525	2112	2022	3875	3635	2515
1955	0	0	3918	4052	3027	3468	2155	3355	2350	2058	4835	4215	2650
1956	0	0	2295	3678	2580	3098	2260	3358	2438	2320	5078	4705	2785
1957	0	0	3269	3269	3115	3228	2565	4642	2750	2520	4958	5815	2558
1958	0	0	2717	5989	3100	3109	2467	3783	2485	2370	4413	4707	3185
1959	0	0	3967	3739	2554	3457	2522	4065	2272	2696	5130	4446	2524
1960	0	0	4225	3610	3180	3476	2685	4380	2565	2822	5180	4282	3140
1961	0	0	4750	4828	2742	3505	2620	4210	3402	2285	4800	4478	3170
1962	0	3678	3972	4812	3678	3595	2388	4180	2872	2822	5558	5092	3450
1963	0	3582	3765	5080	3312	3242	2662	3742	2650	3115	5290	5170	3468
1964	0	3697	4040	5080	3395	3335	2925	3830	2830	3185	5145	5155	3460
1965	0	3025	4255	4410	2195	3260	2693	4235	1655	2915	4693	4125	2573
1966	0	3448	4690	4563	3225	3293	3152	3830	2645	2273	5683	3933	2818
1967	0	4520	4940	4492	3130	3370	2405	5930	2365	2858	5365	5332	3712
1968	0	4125	5415	5588	4350	4038	3235	6272	3210	3100	6780	6172	3582
1969	0	5438	5832	6642	4690	3885	2850	4095	3300	3318	8598	6180	4862
1970	0	5238	5832	6642	4690	3885	2850	4095	3300	3318	8598	6180	4862
1971	0	5647	4780	6312	3575	3685	2708	5747	3163	3103	6028	5200	3700
1972	0	5200	5292	5822	3953	3822	3220	6340	3383	3250	6238	5330	4368
1973	0	4295	5230	6110	3425	3555	2382	5330	3612	2962	6652	4208	4090
1974	0	4420	5035	6669	3991	4015	3293	6264	3774	3317	6219	5431	3886
1975	0	4369	3616	6370	4527	4096	3158	5948	1384	3027	6690	5221	3521
1976	0	4594	5461	5908	4310	4324	2987	5860	3544	3156	5549	5196	4565
1977	0	5976	6471	5328	5050	4069	2941	6431	3336	2908	5825	4689	5038
1978	0	6159	5971	6072	4840	4138	3106	6068	3266	3101	6654	5522	4755
1979	0	6387	6130	6121	4982	4181	3128	6163	3290	3117	6704	5554	4855
1980	0	6613	6294	6468	5128	4224	3146	6258	3314	3133	6752	5585	4956
1981	0	6838	6462	6214	5278	4267	3169	6352	3337	3148	6799	5615	5058
1982	0	7062	6635	6259	5433	4310	3188	6446	3359	3163	6845	5645	5160
1983	0	7284	6812	6303	5591	4353	3207	6539	3381	3178	6890	5674	5263

1984	0	7504	6993	6346	5754	4395	3226	6631	3402	3192	6933	5702	5367
1985	0	7723	7180	6387	5920	4437	3244	6723	3423	3206	6976	5729	5471

SOURCE:

MINISTRY OF AGRICULTURE, GSL

TABLE 6, CONTINUED
YIELD OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985

ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

BUSHELS PER 100 ACRES

MAHA SEASON

YEAR		MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONA-RUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UDA WALAWE
1952	0	3432	3560	2338	0	4565	0	2705	2482	3230	3510	0
1953	0	2892	3078	2148	0	4412	4258	2202	2950	2962	2892	0
1954	0	2512	4135	2750	0	3798	4368	2269	2468	3218	2760	0
1955	0	3822	4080	2815	0	3215	5118	2592	2642	2530	3195	0
1956	0	4465	3825	2268	0	3085	5155	3258	3495	2555	2130	0
1957	0	2205	4790	2910	0	5478	4130	2415	2500	2860	2818	0
1958	0	4587	4348	2880	0	6511	5804	2348	2446	2989	3043	0
1959	0	3337	3261	3348	0	3489	6141	2837	2576	3750	2174	0
1960	0	4082	4762	3222	3610	5523	5385	2570	3128	4095	3142	0
1961	0	3818	4850	2930	3593	5058	5448	3308	3175	3740	3210	0
1962	0	4115	4312	3380	5132	4310	5452	3300	2825	4180	3932	0
1963	0	4595	4392	3745	5525	5848	5645	3405	2748	3288	3725	0
1964	0	4520	4395	3735	5840	5867	5715	3420	2842	3390	3750	0
1965	0	4535	3840	3480	4313	6372	4765	2340	2538	2833	2203	0
1966	0	4037	4437	2575	4463	5457	4498	2433	3030	3388	3713	0
1967	0	5042	4560	2810	5035	4970	5658	2815	3800	4155	3830	0
1968	0	6090	6491	4155	6647	5735	6827	3155	3805	5095	4610	0
1969	0	5248	6325	2985	5095	9392	8915	4492	4485	5560	4315	0
1970	0	5248	6325	2985	5095	9392	8915	4492	4485	5560	4315	0
1971	0	5130	5095	3503	5330	8375	7418	3570	4242	4375	3458	0
1972	0	5138	4935	4115	5028	9595	8300	3090	4590	4243	3760	0
1973	0	5585	5020	3082	6115	6248	7757	3565	4067	4825	4225	0
1974	0	5595	4888	4090	5915	9685	8228	3221	5722	4308	4055	0
1975	0	1651	5300	3540	5663	6916	7465	2686	3847	2724	1435	7498
1976	0	5912	5387	3850	4647	5897	8077	3344	3825	4217	2759	8210
1977	0	7353	6825	3764	5350	6964	8013	4020	4065	4906	4767	7221
1978	0	6098	5964	3725	6281	8449	8133	3628	4185	4732	3866	7492
1979	0	6272	6053	3749	6405	8630	8227	3661	4223	4793	3901	7492
1980	0	6453	6141	3771	6525	8811	8319	3694	4256	4855	3934	7492
1981	0	6638	6230	3794	6642	8992	8408	3726	4289	4916	3966	7492
1982	0	6828	6318	3815	6756	9173	8495	3757	4321	4976	3999	7492
1983	0	7023	6407	3836	6867	9354	8579	3789	4352	5036	4031	7492

1984	0	7223	6495	3857	6575	9535	8662	3820	4382	5096	4062	7643
1985	0	7428	6584	3877	7081	9716	8742	3850	4411	5155	4094	7643

SOURCE:

MINISTRY OF AGRICULTURE, GSL

The resulting production projection shown in Tables 7, 8, and 9 are the result of projected gross harvested area trends (gross harvested area trends multiplied by factor of .85 to arrive at net harvested area) multiplied by projected yield trends. A summary of these tables is presented in Table 10.

Projected Patterns of Future Consumption

While population projections have been made for Sri Lanka through 2001 by the Department of Census and Statistics, these projections follow three different growth patterns of low, medium, and high. A survey of historical population growth patterns revealed a declining rate of growth as follows: 2.8 percent for 1946 to 1953, 2.6 percent for 1953 to 1963, and 2.2 percent for 1963 to 1971. A declining growth rate curve was developed, based upon the historical growth rates, to construct national population projections beyond the latest census year of 1971. The census of 1971 was converted to a midyear estimate and the growth rates multiplied by this base year to project midyear population estimates for 1972 through 1985. The growth rates used were annual rates of 2.096 for 1972 through 1976, 1.878 for 1977 through 1980, and 1.830 for 1981 through 1985.

District census data for years 1963 and 1971 are projected and then prorated to the national projection of population. This population projection is then further projected and prorated into urban and rural population by district. These projected midyear estimates of population by district are illustrated in Tables 11, 12, and 13.

TABLE 7

PRODUCTION OF ROUGH RICE,1952-1977, WITH PROJECTIONS TO 1985(BUSHELS)

YALA SEASON

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA
1952	0	0	1369839	241069	1436304	471367	758273	828549	224423	547645
1953	0	0	293922	311745	1494567	633936	671533	744476	31087	570592
1954	0	0	1161664	253837	1253746	635950	789601	675564	138938	644909
1955	0	0	1125146	741916	1341975	659553	902157	780921	291072	840194
1956	0	0	17349	480054	1759177	488942	895138	400339	12478	681192
1957	0	0	581644	640299	1568942	439921	896116	826840	95426	693312
1958	0	0	858861	713541	1187868	670177	965490	958129	142477	877258
1959	0	0	321491	761802	1670631	633649	1272245	953963	62263	949972
1960	0	0	1338916	690443	1670380	700743	1027256	999973	261258	863676
1961	0	1132286	1291304	814346	1067261	634216	1009045	1119287	211711	783406
1962	0	1859280	1657214	935093	684780	546623	911393	1276694	315169	685080
1963	0	1570331	1604405	974213	595473	628526	846813	772830	386061	942924
1964	0	1746360	1272605	839552	617991	731517	939275	1228537	332385	931075
1965	0	1590506	510992	507932	528577	392339	791065	383477	57572	557979
1966	0	1522838	1563277	923274	678850	534535	910259	897319	307277	744772
1967	0	2509293	860229	1064445	642524	1008516	927249	1127764	203550	1065183
1968	0	2255391	1219814	488158	718983	1496600	1069864	1385435	273178	1140577
1969	0	2240271	899150	514265	882432	1127970	815265	1589011	0	841354
1970	0	2721225	3024001	534813	1008342	1005767	1213223	1334719	484231	1020290
1971	0	2022699	2256162	495350	962064	844341	1107306	1459201	586393	952855
1972	0	1757704	1503452	450128	936575	855019	992644	1080413	250117	833735
1973	0	1945985	849450	507028	694662	1424542	1071335	1009681	315198	1011680
1974	0	1723871	1016535	514737	723886	1527309	1262806	1542184	427260	1087903
1975	0	1965573	114225	586516	740360	1526920	1285246	1445670	0	1372419
1976	0	2628474	994183	604700	749644	1135956	1055569	575197	324467	1063492
1977	0	1257788	2118406	571014	631555	1366496	1165935	1048186	359681	1092567
1978	0	2797645	3117082	721174	705673	1498060	1232918	1299082	273328	1190849
1979	0	2930418	3450622	724961	718364	1565647	1315092	1317097	276912	1218719
1980	0	3057974	5085671	728583	731189	1635665	1423837	1335113	280451	1247451
1981	0	3184465	5402970	732134	744150	1707681	1477466	1650007	283833	1276650
1982	0	3310936	5727954	735523	1041879	1781676	1559287	1924141	287278	1319082
1983	0	3992021	5823519	1177251	1059900	1858098	1563065	2204479	290625	1337601

1984	0	4057635	5919084	1184872	1078106	1936978	1567391	2490903	293893	1368944
1985	0	4121854	6014647	1192275	1096313	2018345	1571174	2784149	297142	1401109

SOURCE:

TABLE 2 X TABLE 5

TABLE 7, CONTINUED

PRODUCTION OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (BUSHELS)

YALA SEASON

YEAR		KANDY	KEGALLE	KURUN-EGALA	MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONN-ARUWA
1952	0	692254	431797	704832	78622	403738	892297	0	316704	0
1953	0	605764	366553	478077	61254	203177	783038	0	325281	431166
1954	0	632969	563542	1298139	106362	316668	773102	0	238206	543496
1955	0	680644	480169	1657456	114739	446846	885391	0	251047	1135679
1956	0	481960	460276	326876	0	196972	669825	0	181262	8710
1957	0	853811	430809	845077	2889	366548	806106	0	206060	1208626
1958	0	1025158	513119	2017652	19592	378888	983969	0	257034	1517829
1959	0	857310	569881	1774633	26997	399156	929951	0	245081	1362545
1960	0	1334693	677623	1731389	108572	539495	1034824	99180	375093	1320548
1961	0	1230481	807409	1205328	110420	373479	833781	77354	365530	1369593
1962	0	1228533	835600	1612930	176086	540783	947840	107008	274350	1620627
1963	0	1136442	721779	1653773	191325	473036	1074748	126013	330689	1787756
1964	0	1327480	773153	1781286	161500	452580	1231907	136971	386511	1720680
1965	0	1159790	540594	1219455	154373	378110	947833	59592	418467	1845605
1966	0	927305	394314	847664	174198	342015	1157716	80485	203921	1337580
1967	0	1507179	847747	2244243	211962	494276	1388225	108392	488150	1566969
1968	0	1586356	953345	2647729	13948	453722	1303803	107252	523324	1555680
1969	0	1902000	883493	1444480	0	394875	1137926	83406	669841	1917934
1970	0	2017009	991386	3285815	337280	699947	1392649	155383	695012	2858782
1971	0	1837769	876463	3307510	280902	513052	1513345	175846	434405	2839255
1972	0	2145258	834321	2024496	196410	569969	1423186	231083	590008	1762438
1973	0	1787446	858015	2789292	94402	439042	1316623	168473	640644	2161137
1974	0	2279598	870627	3635892	39661	573277	1311770	159584	674141	1805001
1975	0	1805455	857071	2747056	50536	473400	1514935	211118	518874	1062914
1976	0	1022274	526771	627840	82560	319069	1127415	164047	587915	2243925
1977	0	1879438	883447	3971083	110327	597191	1473850	164592	658752	2557023
1978	0	2026249	951926	3041662	146313	740249	1526488	192936	673160	2515322
1979	0	2023015	974367	3138249	150129	856401	1561448	207390	771154	2535295
1980	0	2068135	997317	3236107	153948	861300	1597386	243876	784225	2554418
1981	0	2112515	1020954	3334392	157818	866017	1633946	315218	797182	2573116
1982	0	2157140	1044844	3433920	161688	870735	1671127	320509	810027	3421598
1983	0	2201328	1069381	3533810	165635	875271	1709341	325742	822760	3693171

1984	0	2245415	1094387	3634055	169605	879625	1748146	330803	835492	3717833
1985	0	2289334	1120089	3735475	173544	883980	1787571	335749	848112	3741291

SOURCE:

TABLE 2 X TABLE 5

TABLE 7, CONTINUED

PRODUCTION OF ROUGH RICE.1952-1977. WITH PROJECTIONS TO 1985(BUSHELS)

YALA SEASON

YEAR		PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UDA WALAWE	TOTAL SRI LANKA
1952	0	55499	449738	448563	108552	0	10460465
1953	0	34184	387234	212952	31477	0	8672015
1954	0	130699	590368	311228	68132	0	11527120
1955	0	116111	687107	642301	127583	0	13908007
1956	0	17037	438483	492342	2112	0	8010524
1957	0	12499	544070	247584	53635	0	11320214
1958	0	134264	560561	857408	136460	0	14775735
1959	0	184980	729449	569918	59198	0	14375515
1960	0	168761	697053	790572	129575	0	16560823
1961	0	188299	667611	673866	169428	0	16135441
1962	0	110911	654334	756614	246897	0	17983835
1963	0	132389	688799	816459	410577	0	17865361
1964	0	110797	718719	774673	143450	0	18359404
1965	0	38779	566443	449571	90557	0	13229608
1966	0	50401	683784	817797	183333	0	15282914
1967	0	103147	645684	1019038	42212	0	20076377
1968	0	161270	822817	635550	170358	0	20983154
1969	0	33376	1187388	383115	41967	0	18993523
1970	0	298568	1050176	1477451	310246	0	27956315
1971	0	200484	1176582	491266	258437	0	24591667
1972	0	141524	1299047	373134	121360	0	20372021
1973	0	215039	1240562	272170	57921	0	20870327
1974	0	264644	1751732	493403	184056	0	23869877
1975	0	114349	1124428	414667	11976	892501	20836205
1976	0	113443	1077592	110365	23608	730967	17886473
1977	0	358166	1291143	1308121	82056	543896	25490713
1978	0	328840	1452230	1691679	151337	948775	29222977
1979	0	330955	1517481	1719437	173291	964414	30440858
1980	0	333166	1585276	1847911	354183	985266	33128448
1981	0	434041	1655296	1878370	563117	1006118	34807456
1982	0	475872	1727565	2664313	568613	1026970	38042627
1983	0	478805	1802496	2708074	574080	1047823	40314280

1984	0	481788	1880142	2753232	579554	1068674	41316557
1985	0	484771	1960516	2796753	585033	1089526	42328752

SOURCE:

TABLE 2 X TABLE 5

TABLE 8

PRODUCTION OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (BUSHELS)

MAHA SEASON

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA
1952	0	0	2803726	891534	1267432	1237163	549142	934136	516387	550050
1953	0	0	677648	780084	1140698	1083836	481484	835125	567064	357566
1954	0	0	1958160	935595	1726502	837964	668178	963294	816834	619660
1955	0	0	2026053	587305	2479395	1449580	714767	965288	976337	649095
1956	0	0	692826	371904	2170080	1328077	753358	545600	1033911	710274
1957	0	0	609191	372005	2827158	1456106	886253	1253114	1220478	769898
1958	0	0	1214723	737991	1608692	1248069	741691	1166504	1053000	573749
1959	0	0	1374035	611158	2170334	1484445	784036	1306671	1103004	827359
1960	0	0	2369864	356744	2732324	1453396	863717	1461463	1226281	871015
1961	0	0	3232216	439968	2460028	1498234	834011	1091155	1793113	699443
1962	0	1969411	2786510	455157	1726123	1620554	741770	1280571	1615511	787421
1963	0	2269214	2714384	574639	1895303	1450847	800407	1197660	1665734	889246
1964	0	2401647	3115664	723653	1989434	1479001	819890	966330	1727146	845772
1965	0	1594045	1574840	690661	1028867	1466800	820578	955049	442718	925514
1966	0	2384467	3604471	541290	2117997	1516133	855147	1200334	1816878	718915
1967	0	2895598	4365611	625192	1880440	1546456	732086	1815234	1204099	928308
1968	0	2858817	5463137	1458282	2857758	1866792	1077434	1831053	1909403	1105856
1969	0	4041733	5316543	1806962	3148615	1924517	1030822	1328914	1549986	1152712
1970	0	3632983	6904779	1881146	2759199	1907015	889953	761652	2021842	1130432
1971	0	4003633	4252292	1553010	2478616	1726370	976032	1951390	1841172	1070422
1972	0	3884954	4511015	1546468	2171767	1843506	1242734	1826061	1813608	1097043
1973	0	3214153	4700222	1610607	2046083	1711518	912431	2029029	2114905	1016571
1974	0	3719425	5682775	1984650	3029943	2057921	1604107	2375160	2628583	1428811
1975	0	3211375	459595	2000602	2949645	2169453	1545565	2236634	208693	1255659
1976	0	3843003	2272927	1868561	3194716	2105789	1358855	2190094	1996286	1228629
1977	0	5100779	6335244	1654234	3851400	2140799	1359067	2422094	2211141	1151882
1978	0	5984244	8801515	1985874	3281282	2170771	1409957	2244622	1876115	1287031
1979	0	6434928	9089345	2384312	3381614	2219058	1454947	2322981	1901646	1323452
1980	0	6898203	9332518	2292141	3484769	2268270	1500453	2403857	1927040	1361030
1981	0	7374814	9581624	2290653	3590741	2318345	1547932	2817247	1951674	1359362
1982	0	7864554	9838142	2398801	3997518	2369367	1595936	3139906	1975562	1438830
1983	0	8873758	10100592	3043623	4117811	2421274	1645410	3470229	1999336	1479474

1984	0	9141773	10368972	3064386	4241573	2473588	1696371	3808085	2022367	1520656
1985	0	9408571	10646248	3084185	4368477	2526757	1748301	4153961	2045295	1563361

SOURCE:

TABLE 3 X TABLE 6

TABLE B, CONTINUED

PRODUCTION OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (BUSHELS)

MAHA SEASON

YEAR		KANDY	KEGALLE	KURUN-EGALA	MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONN-ARUWA
1952	0	1412940	667808	2758955	711155	722781	783612	0	619598	0
1953	0	1101190	654396	1509309	308750	441553	703790	0	616233	598415
1954	0	1309824	813346	2896265	431374	635853	921208	0	535865	875181
1955	0	1672790	985435	3056489	737585	674110	980644	0	451805	1071739
1956	0	1692204	1089435	3024632	747892	460442	788663	0	417121	1115724
1957	0	1742064	1333553	2166252	281962	739710	1029248	0	737232	947413
1958	0	1526939	1054449	3368277	806692	679990	853128	0	913542	1216230
1959	0	1859447	1032714	2068497	701454	403110	1159662	0	472991	1473354
1960	0	1878583	1008924	3306407	873878	797113	1135710	314153	779577	1292934
1961	0	1670351	1049624	3471025	909235	829323	990098	315422	672324	1627030
1962	0	2054833	1187008	4009517	1037537	771414	1094181	509025	594659	2106103
1963	0	1944915	1173462	4135526	1167662	809731	1290828	554768	819933	2418125
1964	0	1961401	1179666	4230303	1130392	829299	951980	687067	846185	2482940
1965	0	1824191	928454	3067760	972283	616308	1152554	363965	927686	2038611
1966	0	2273545	891925	3441324	1172113	897944	609676	538911	816552	1878233
1967	0	2107016	1210912	4651991	1379651	1029715	815672	668325	731049	2496429
1968	0	2605912	1409705	4772456	1820781	1432524	1133938	955802	755537	2993566
1969	0	3402377	1430391	6137260	1184074	1460619	1062955	697250	1392189	4159728
1970	0	3466471	1418834	6168216	1665884	1378953	649155	804653	1423563	4243235
1971	0	2422377	1204272	4001546	1593238	1074068	965619	774489	1276960	3718360
1972	0	2445313	1218432	4263812	1268961	926074	1476679	664191	1456208	4338470
1973	0	2724305	944382	4475224	1623178	935454	991163	820153	949518	4106465
1974	0	2527359	1250153	4671538	2200865	1135215	1669031	1046827	1483532	4808445
1975	0	2774214	1234285	2596189	5220	993352	1455542	1067163	1074195	4040844
1976	0	2274791	1200872	4639027	117137	1239704	1513792	848054	909007	4281018
1977	0	2361101	1078954	6293091	1637262	1840504	1406007	916093	976582	4697919
1978	0	2795031	1278891	5458985	1504970	1442953	1314341	1249237	1301386	4751268
1979	0	2835408	1287105	5592072	1556016	1494687	1332210	1330356	1337334	4897161
1980	0	2875050	1295096	5726519	1609038	1547475	1349740	1434647	1373770	5042010
1981	0	2914481	1302816	5879847	1663292	1601834	1368031	1574697	1410628	5734874
1982	0	2953575	1310545	5998419	1719027	1657327	1385950	1648757	1447911	7040224
1983	0	2992377	1318001	6118155	1776238	1714438	1404274	1723417	1485704	7558601

1984	0	3030440	1325232	6274822	1834987	1772601	1423010	1758485	1524016	7631729
1985	0	3066847	1332238	6413989	1895275	1832428	1441725	1874209	1562774	7702212

SOURCE:

TABLE 3 X TABLE 6

TABLE 8, CONTINUED

PRODUCTION OF ROUGH RICE,1952-1977, WITH PROJECTIONS TO 1985(BUSHELS)

MAHA SEASON

YEAR		PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UDA WALAWE	TOTAL SRI LANKA
1952	0	443134	478902	383903	635575	0	18367933
1953	0	171036	624392	275335	243411	0	13171315
1954	0	349278	541022	554883	452285	0	18842571
1955	0	465073	609819	458121	617833	0	21629263
1956	0	549678	769691	304175	269565	0	19235254
1957	0	194662	564782	616647	600382	0	20348150
1958	0	189401	533580	440523	820350	0	20747920
1959	0	268635	568070	877040	716726	0	21262742
1960	0	495335	717636	1069216	1157801	0	26162071
1961	0	594161	719405	1162241	1159803	0	27218210
1962	0	634766	643679	1254492	1512511	0	30392253
1963	0	673434	634496	1052297	1411988	0	31544605
1964	0	680179	641609	943518	1512818	0	32145896
1965	0	319513	685084	544243	230099	0	23169823
1966	0	410756	773087	948951	1291455	0	30740104
1967	0	457613	979885	1200194	1206455	0	34927931
1968	0	564910	1059087	1682019	1832916	0	43447665
1969	0	895482	1363107	1818989	1219746	0	47524971
1970	0	1007126	1364136	2206001	1861271	0	49586539
1971	0	761811	1360321	1604119	1368155	0	41978672
1972	0	450077	1521935	1312999	1405025	0	42685332
1973	0	682745	1363766	1412839	1568441	0	41953152
1974	0	828528	2574841	2050021	1816505	0	52574236
1975	0	272876	1186337	614414	70453	1186771	34649076
1976	0	500376	1185147	1557765	525430	1444967	42295587
1977	0	807710	1306567	2515736	2280395	967079	55311630
1978	0	705357	1567789	2426511	1442981	1169264	57450415
1979	0	718152	1628685	2457791	1469285	1188369	59336914
1980	0	731000	1691371	2580620	1495458	1207473	61427588
1981	0	784237	1756254	2613044	1521073	1226578	64224048
1982	0	835789	1822907	3432275	1546952	1245683	68663957
1983	0	842908	1891326	3473661	1572316	1264787	72287710

1984	0	849804	1361500	3515047	1597149	1309768	74186961
1985	0	856478	2033384	3555744	1622293	1329258	76064010

SOURCE:

TABLE 3 X TABLE 6

TABLE 9

PRODUCTION OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (BUSHELS)

ANNUAL

YEAR		AMPARAI	ANURADHAPURA	BADULLA	BATTICOLOA	COLOMBO	GALLE	HAMBANTOTA	JAFFNA	KALUTARA
1952	0	0	4173565	1132603	2703736	1708530	1307415	1762685	740810	1097695
1953	0	0	971570	1091829	2635265	1717772	1153017	1579601	598151	928158
1954	0	0	3119824	1189432	2980248	1473914	1457779	1638858	955772	1264569
1955	0	0	3151199	1329221	3821370	2109133	1616924	1746209	1267409	1489289
1956	0	0	710177	851958	3929257	1817019	1648496	1345939	1046389	1391466
1957	0	0	1190835	1012304	4396100	1896027	1782409	2079954	1315904	1463210
1958	0	0	2073584	1451532	2796560	1918246	1707181	2124633	1195477	1451007
1959	0	0	1695526	1372960	3840965	2118094	2056281	2300634	1165267	1777331
1960	0	0	3708780	1047187	4402704	2154139	1890573	2461436	1487539	1734691
1961	0	1132286	4523520	1254314	3527289	2132450	1843056	2210442	2034824	1482849
1962	0	3828691	4443724	1390250	2410903	2167177	1653163	2557265	1930680	1472531
1963	0	3839545	4318789	1548852	2490776	2079373	1647220	1970490	2051795	1832170
1964	0	4148007	4388269	1563205	2607425	2210518	1759165	2194867	2059533	1776847
1965	0	3184551	2085832	1198593	1557444	1859139	1611643	1338526	500290	1483493
1966	0	3907305	5167748	1464564	2796847	2050568	1805406	2097653	2124155	1463687
1967	0	5404891	5225840	1689637	2522964	2554972	1659335	2942998	1408049	1993491
1968	0	5114208	6682951	1946440	3576741	3363392	2147298	3216488	2182581	2246433
1969	0	6282704	6215693	2321227	4031047	3052487	1850091	2917925	1549986	1994066
1970	0	6354208	9928780	2415959	3807541	2912782	2103176	2096411	2506073	2150722
1971	0	6026332	6508454	2048360	3440680	2570711	2083338	3410591	2427565	2023277
1972	0	5642658	6014457	1996596	3108342	2698525	2235378	2906474	2063725	1930778
1973	0	5160138	5549672	2117835	2740745	3136060	1983766	3038710	2430103	2028251
1974	0	5443296	6699310	2499387	3753829	3585230	2866513	3917344	3055843	2516714
1975	0	5176948	573820	2587118	3690005	3696373	2830811	3682304	208693	2668078
1976	0	6471477	3267110	2473261	3944360	3245745	2414464	2765291	2320753	2292121
1977	0	6358567	8453650	2225248	4482955	3507295	2525002	3470270	2570822	2244449
1978	0	8781889	11918597	2707048	3986555	3668831	2642915	3543704	2149443	2477880
1979	0	9365346	12539967	2809273	4099578	3784735	2770039	3640078	2178558	2542171
1980	0	9956177	14418189	3020724	4215558	3903935	2924250	3739010	2207491	2608481
1981	0	10559279	14984594	3022787	4334691	4026026	3025358	4467254	2235507	2676012
1982	0	11175490	15566096	3134324	5039397	4151043	3155223	5064047	2262840	2757912
1983	0	12865779	15924111	4220874	5177711	4279372	3208479	5674708	2289561	2817075

1984	0	13199408	16288056	4249258	5320079	4410566	3263762	6298988	2316260	2889800
1985	0	13530425	16660895	4276460	5464790	4545102	3319475	6938110	2342437	2964470

SOURCE:

TABLE 7 + TABLE 8

TABLE 9, CONTINUED

PRODUCTION OF ROUGH RICE, 1952-1977, WITH PROJECTIONS TO 1985 (BUSHELS)

ANNUAL

YEAR		KANDY	KEGALLE	KURUN-EGALA	MANNAR	MATALE	MATARA	MONER-AGALA	NUWARA ELIYA	POLONN-ARUWA
1952	0	2105194	1099605	3463787	789777	1126519	1675909	0	936302	0
1953	0	1706954	1020949	1987386	370004	644730	1486828	0	941514	1029581
1954	0	1942793	1376888	4194404	537736	952521	1694310	0	774071	1818677
1955	0	2353434	1465604	4713945	652324	1120956	1866035	0	702852	2207418
1956	0	2174164	1549711	3351508	747892	657414	1458488	0	598383	1124434
1957	0	2595875	1764362	3011329	284851	1106258	1835354	0	943292	2156039
1958	0	2552097	1567568	5385929	826284	1058878	1837057	0	1170576	2734059
1959	0	2716757	1602595	3843130	728451	802266	2089613	0	718072	2836299
1960	0	3213276	1686547	5037796	982850	1336608	2170534	413333	1154670	2613482
1961	0	2900832	1857033	4676353	1019655	1202802	1823879	392776	1037654	2956623
1962	0	3283366	2022608	5622447	1213623	1312197	2042021	616033	869009	3726730
1963	0	3081357	1895241	5789299	1358587	1282767	2365586	680781	1150622	4205881
1964	0	3288881	1952819	6011589	1292292	1281879	2183887	824038	1232696	4203620
1965	0	2983981	1469048	4287215	1126656	994418	2100387	463557	1346153	3884216
1966	0	3200850	1286239	4288588	1346311	1239959	1767352	619356	1020473	3215813
1967	0	3614195	2058659	6896234	1591613	1523991	2203857	776717	1219199	4063398
1968	0	4192268	2363050	7420185	1834729	1886246	2437741	1063054	1278861	4549246
1969	0	5304377	2313884	7581740	1184074	1855494	2200881	780656	2062030	6077662
1970	0	5483480	2410220	9454031	2003164	2078900	2041804	960036	2118575	7142017
1971	0	4260146	2080735	7309456	1874140	1587120	2478964	950335	1711365	6557615
1972	0	4590571	2052753	6288308	1465371	1496043	2899865	855274	2046216	6100508
1973	0	4511751	1802397	7264516	1717580	1374496	2307786	988626	1590162	6267602
1974	0	4806957	2120780	8307430	2240526	1708492	2580801	1206411	2157674	6613446
1975	0	4579669	2091356	5343245	55756	1466752	2970477	1278281	1593065	5103758
1976	0	3297065	1727643	5266867	199697	1558773	2641207	1012101	1496522	6524943
1977	0	4240539	1962401	10264174	1747589	2437695	2879857	1080695	1635334	7254942
1978	0	4821280	2230817	8500647	1651283	2183202	2840829	1442173	1974546	7266590
1979	0	4858423	2261472	8730321	1706145	2351088	2893658	1537746	2108488	7432456
1980	0	4943185	2292413	8962626	1762586	2408775	2947126	1673523	2157995	7596428
1981	0	5026996	2323770	9214239	1821110	2467851	3001947	1889915	2207810	8307990
1982	0	5111715	2355389	9432339	1880715	2528062	3057077	1969266	2257938	10461822
1983	0	5193705	2387382	9651565	1941873	2589709	3113615	2049159	2308464	11251772

1984	0	5275855	2419619	9908877	2004592	2652226	3171156	2129288	2359508	11349562
1985	0	5356181	2452327	10149464	2068819	2716408	3229256	2209558	2410886	11443503

SOURCE:

TABLE 7 + TABLE 8

TABLE 9, CONTINUED

PRODUCTION OF ROUGH RICE,1952-1977, WITH PROJECTIONS TO 1985(BUSHELS)

ANNUAL

YEAR		PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	UDA WALAWE	TOTAL SRI LANKA
1952	0	498633	928640	832466	744527	0	28828358
1953	0	205220	1011626	498287	274888	0	21843330
1954	0	479977	1131390	866111	520417	0	30369651
1955	0	581184	1256926	1190422	745416	0	35537270
1956	0	566715	1208174	796517	271677	0	27245778
1957	0	207161	1108852	864231	654017	0	31668364
1958	0	323665	1094141	1297931	956810	0	35523655
1959	0	453615	1297519	1446958	775924	0	35638257
1960	0	664096	1414689	1859788	1287776	0	42722854
1961	0	782460	1387016	1836107	1329231	0	43353651
1962	0	745177	1298013	2011106	1759408	0	48376092
1963	0	815823	1323295	1868756	1822565	0	49409570
1964	0	790976	1360328	1718191	1656268	0	50505300
1965	0	358292	1251527	993814	320656	0	36399431
1966	0	461157	1456871	1766748	1474788	0	46023018
1967	0	560760	1625569	2219232	1249667	0	55004308
1968	0	726180	1881904	2317569	2003274	0	64430839
1969	0	928858	2550495	2702104	1261713	0	66518494
1970	0	1305694	2414312	3683452	2171517	0	77542854
1971	0	962295	2536903	2095385	1626592	0	66570359
1972	0	591601	2820582	1686133	1526385	0	63057353
1973	0	897784	2604328	1685009	1626362	0	62823479
1974	0	1093172	4326573	2543424	2000561	0	76444113
1975	0	337225	2310765	1029081	82429	2079272	55485285
1976	0	613819	2262739	1668130	546038	2175934	60186460
1977	0	1165876	2597710	3823857	2362451	1510975	80802343
1978	0	1034197	3020019	4118190	1534218	2118039	66673352
1979	0	1049107	3146166	4177228	1642576	2152783	89777772
1980	0	1064166	3276647	4428531	1849641	2192739	94556036
1981	0	1218278	3411550	4491414	2084190	2232696	95031504
1982	0	1311611	3550472	6096588	2115565	2272653	100706564
1983	0	1321713	3693872	6181735	2146396	2312610	112681990

1984	0	1331592	3841642	626827[illegible]	[illegible]176703	2378442	115503518
1985	0	1341249	3993900	635249[illegible]	2207326	2418784	[illegible]

SOURCE:

TABLE 7 + TABLE 8

TABLE 10

SUMMARY OF STUDY PRODUCTION DATA, 1952-1977
WITH PROJECTION TO 1985

	YALA SEASON			MAHA SEASON		
Year	Gross Harvested (Acres)	Production (Bushels)	Yield[1] (Bu/Ac)	Gross Harvested (Acres)	Production (Bushels)	Yield[1] (Bu/Ac)
1952	401,506	10,460,465	30.65	700,366	18,367,933	30.85
1953	365,630	8,672,015	27.90	585,851	13,171,315	26.45
1954	458,311	11,527,120	29.59	743,417	18,842,571	29.70
1955	492,075	13,908,007	33.25	793,273	21,629,263	32.08
1956	338,192	8,010,524	27.87	739,684	19,235,254	30.59
1957	410,517	11,320,214	32.44	727,806	20,348,150	32.89
1958	513,114	14,775,735	33.88	716,068	20,747,920	34.09
1959	469,138	14,375,515	36.05	758,860	21,262,742	32.96
1960	535,871	16,560,823	36.36	856,992	26,162,071	35.92
1961	519,285	16,135,441	36.56	887,537	27,218,210	36.08
1962	561,999	17,983,839	37.65	936,264	30,392,253	38.19
1963	543,571	17,865,361	38.67	981,772	31,544,609	37.80
1964	554,894	18,359,404	38.93	979,826	32,145,896	38.60
1965	446,935	13,229,608	34.82	795,696	23,169,823	34.26
1966	505,291	15,282,914	35.58	1,007,711	30,740,104	35.89
1967	560,579	20,076,377	42.13	1,006,408	34,927,931	40.83
1968	556,285	20,983,154	44.38	1,077,853	43,447,685	47.42
1969	460,882	18,993,523	48.48	1,078,100	47,524,971	51.86
1970	660,672	27,956,315	49.78	1,117,222	49,586,539	52.22
1971	625,379	24,591,687	46.26	1,078,966	41,978,672	45.77
1972	543,438	20,372,021	44.10	1,035,491	42,685,332	48.50
1973	574,656	20,870,327	42.73	1,084,124	41,953,152	45.53
1974	681,119	23,869,877	41.23	1,288,362	52,574,236	48.01
1975	600,483	20,836,209	40.82	875,301	34,649,076	46.57
1976	518,338	17,886,473	40.60	1,051,943	42,299,987	47.31
1977	683,053	25,490,713	43.90	1,250,013	55,311,630	52.06
1978	734,352	29,222,977	46.87	1,291,485	57,450,415	52.33
1979	757,925	30,440,858	47.25	1,309,371	59,336,914	53.31
1980	811,906	33,128,448	48.00	1,328,935	61,427,588	54.38
1981	843,846	34,807,456	48.53	1,362,484	64,224,048	55.46
1982	904,261	38,042,627	49.49	1,425,564	68,663,957	56.67
1983	944,656	40,314,280	50.08	1,469,354	72,287,710	57.88
1984	958,080	41,316,557	50.73	1,483,851	74,186,961	58.82
1985	971,590	42,328,752	51.25	1,498,012	76,064,010	59.74

[1]Yield = Production/(Gross Harvested Acres x .85)

TABLE 11

MIDYEAR ESTIMATES OF URBAN POPULATION IN SRI LANKA BY DISTRICT 1963 - 1971

WITH PROJECTIONS THROUGH 1985

YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1963	0	28600	32870	42260	49290	1026237	129849	22250	150779	126439	119230	17510	30100
1964	0	29048	33616	43782	51535	1073530	133060	23439	159554	130376	122633	19753	31452
1965	0	29505	34381	45356	53884	1125499	136230	24690	168815	134424	126117	22372	32866
1966	0	29962	35156	46992	56336	1179993	139469	26003	178605	138595	129683	25290	34342
1967	0	30427	35941	48669	58892	1236989	142778	27378	188952	142878	133350	28586	35881
1968	0	30892	36746	50409	61563	1296663	146159	28837	199883	147287	137111	32303	37492
1969	0	31367	37571	52210	64358	1359128	149579	30358	211444	151819	140573	36502	39165
1970	0	31850	38406	54074	67266	1424514	153119	31971	223648	156483	144937	41245	40911
1971	0	32156	39046	55693	69915	1484803	155854	33474	235254	160490	148179	41302	42496
1972	0	32651	39919	57697	73095	1549612	159613	35246	247637	165365	152374	49531	44413
1973	0	33044	40676	59569	76160	1614841	162882	36990	260285	169908	156160	55155	46252
1974	0	33438	41443	61498	79346	1681908	166206	38814	273385	174559	160027	61455	48164
1975	0	33833	42220	63485	82657	1750829	169587	40724	286937	179320	163575	68363	50152
1976	0	34229	43008	65530	86099	1821612	173025	42723	300541	184194	168006	75971	52217
1977	0	34559	43720	67505	89501	1890591	176179	44727	314784	188815	171784	84173	54257
1978	0	34889	44440	69533	93029	1961151	179378	46818	329018	193534	175633	92152	56373
1979	0	35219	45167	71617	96687	2033292	182621	49002	343636	198351	179552	102562	58566
1980	0	35548	45901	73757	100479	2107004	185910	51280	358632	203267	183540	113653	60840
1981	0	35848	46605	75896	104328	2180554	189057	53616	373702	208122	187453	125178	63147
1982	0	36147	47316	78089	108313	2255544	192325	56049	389107	213072	191430	137660	65536
1983	0	36446	48032	80340	112439	2331955	195593	58586	404833	218116	195473	151140	68010
1984	0	36742	48754	82648	116711	2409768	198903	61228	420868	223258	199582	165653	70571
1985	0	37038	49482	85015	121133	2488957	202253	63981	437201	228497	203757	181227	73222

SOURCE:

TABLE 13

TABLE 11, CONTINUED

MIDYEAR ESTIMATES OF URBAN POPULATION IN SRI LANKA BY DISTRICT 1963 - 1971

WITH PROJECTIONS THROUGH 1985

YEAR		MANNAR	MATALE	MATARA	MONOR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1963	0	8991	29380	60472	3390	24510	5910	38229	26290	34821	11200	2018597
1964	0	9245	30350	61221	3576	24921	6721	39836	28527	38213	12110	2106538
1965	0	9511	31341	62010	3772	25342	7645	41504	30950	41925	13092	2201231
1966	0	9776	32363	62807	3979	25762	8681	43234	33589	45997	14147	2300761
1967	0	10052	33415	63601	4196	25997	9871	45047	36444	50460	15294	2405098
1968	0	10338	34509	64404	4423	26620	11224	46923	39547	55356	16534	2515223
1969	0	10624	35634	65225	4671	27049	12752	48871	42908	60725	17867	2630800
1970	0	10920	36790	66034	4919	27496	14496	50902	46548	66610	19304	2752443
1971	0	11165	37769	66495	5160	27791	16385	52726	50221	72661	20750	2859095
1972	0	11482	39014	67361	5444	28237	18533	54933	54403	78815	22364	2987739
1973	0	11768	40159	68001	5724	28613	20929	57038	58770	85561	24048	3112573
1974	0	12060	41334	68642	6017	28992	23613	59219	63466	92745	25848	3242179
1975	0	12359	42542	69285	6325	29375	26619	61478	68514	100379	27768	3376726
1976	0	12663	43782	69930	6649	29761	29977	63818	73936	108475	29818	3516364
1977	0	12950	44967	70439	6975	30091	33660	66113	79602	116816	31940	3654148
1978	0	13242	46182	70947	7316	30424	37754	68485	85668	125603	34197	3796766
1979	0	13540	47427	71454	7674	30758	42297	70936	92157	134843	36595	3944353
1980	0	13843	48702	71961	8049	31094	47329	73469	99096	144540	39140	4097024
1981	0	14141	49968	72409	8435	31406	52851	76026	106425	154575	41807	4251589
1982	0	14445	51264	72854	8839	31720	58938	78664	114243	165056	44632	4411243
1983	0	14753	52590	73297	9261	32035	65633	81387	122575	175983	47622	4576099
1984	0	15068	53947	73738	9703	32351	72981	84197	131448	187355	50783	4746257
1985	0	15388	55334	74177	10166	32668	81026	87096	140890	199172	54124	4921804

SOURCE:

TABLE 13

TABLE 12

MIDYEAR ESTIMATES OF RURAL POPULATION IN SRI LANKA BY DISTRICT 1963 - 1971

WITH PROJECTIONS THROUGH 1985

YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1963	0	183132	246918	479585	146899	1181183	511625	252047	461817	505018	924402	560596	822561
1964	0	189844	258397	489822	151702	1191018	520522	258818	464559	513650	931852	566712	842575
1965	0	196766	270373	500216	156626	1197452	529631	265648	466568	522357	939253	576251	862987
1966	0	203924	282868	510786	161705	1202704	538859	272710	469028	531152	946604	583565	883810
1967	0	211309	295909	521537	166916	1206796	548191	280012	470694	540041	953656	590672	905054
1968	0	218947	309508	532484	172296	1209662	557664	287381	471969	549019	961135	597483	926758
1969	0	226830	323695	543594	177808	1211146	567283	294921	472800	558102	968321	603946	948898
1970	0	234962	338493	554898	183485	1211181	576971	302602	473157	567263	975435	610002	971487
1971	0	242044	351991	563306	188302	1203062	583604	308760	470438	573365	1046677	617267	985116
1972	0	250846	368253	575306	194418	1208090	593881	316951	471388	583077	1015476	620488	1013154
1973	0	259044	383893	585497	200017	1204644	602235	324199	469769	590838	1024546	624094	1034141
1974	0	267483	400154	595822	205759	1200557	610667	331574	467822	598649	1033622	627191	1055482
1975	0	276170	417062	606281	211647	1195848	619174	339074	465549	606506	1042677	629726	1077177
1976	0	285111	434637	616876	217682	1190528	627757	346700	462947	614406	1051717	631647	1099235
1977	0	293740	452028	626389	223435	1182315	635182	353767	459129	621144	1058674	631670	1119480
1978	0	302600	470065	635998	229318	1173542	642649	360932	455001	627893	1065590	630965	1140005
1979	0	311694	488772	645701	235332	1164230	650159	368193	450571	634655	1072453	629479	1160613
1980	0	321031	508170	655498	241481	1154398	657711	375552	445846	641427	1079252	627162	1181904
1981	0	330355	527869	664866	247573	1143167	664782	382704	440487	647698	1085147	623470	1202335
1982	0	339915	548275	674313	253793	1131478	671860	389942	434656	653964	1090964	618854	1223017
1983	0	349715	569411	683834	260144	1119355	679004	397260	428969	660224	1096706	613272	1243946
1984	0	359764	591300	693431	266627	1106811	686154	404660	422833	666476	1102374	606690	1265127
1985	0	370062	613968	703104	273244	1093873	693330	412139	416461	672720	1107961	599078	1286555

SOURCE:

TABLE 13

TABLE 12, CONTINUED

MIDYEAR ESTIMATES OF RURAL POPULATION IN SRI LANKA BY DISTRICT 1963 - 1971

WITH PROJECTIONS THROUGH 1985

YEAR		MANNAR	MATALE	MATARA	MONOR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1963	0	51133	226250	454457	128870	373246	108061	264317	519757	103732	57421	8563467
1964	0	52948	232455	462807	135314	379719	112717	271810	531671	105986	59308	8726206
1965	0	54807	238832	471483	142065	386277	117515	279493	543736	108150	61238	8888132
1966	0	56759	245350	480271	149145	392918	122465	287369	555905	110171	63195	9051299
1967	0	58751	252030	489198	156572	399831	127544	295416	568204	112039	65191	9215803
1968	0	60817	258877	498257	164356	406457	132749	303683	580616	113725	67206	9381049
1969	0	62955	265885	507445	172501	413365	138078	312153	593111	115186	69261	9547284
1970	0	65165	273075	516775	181061	420356	143502	320825	605695	116400	71337	9714131
1971	0	67069	278907	523365	188986	425115	148215	327911	614976	116687	73034	9902201
1972	0	69454	286588	533253	198451	432556	153989	337190	628118	118273	75252	10044452
1973	0	71672	293455	541431	207666	438568	159262	345509	639081	118870	77206	10195637
1974	0	73955	300467	549701	217297	444637	164575	354005	650016	119290	79172	10347697
1975	0	76306	307627	558060	227360	450762	169910	362683	660907	119530	81152	10501185
1976	0	78727	314937	566510	237873	456944	175250	371537	671733	119585	83140	10655479
1977	0	81061	321775	573936	248375	462284	180221	379840	681151	119225	84971	10785792
1978	0	83459	328740	581421	259325	467657	185133	388296	690427	118682	86798	10924496
1979	0	85922	335833	588964	270740	473062	189959	396906	699535	117959	88615	11059555
1980	0	88452	343057	596565	282639	478500	194676	405671	708464	117059	90432	11194547
1981	0	90979	350138	603750	294811	483590	199097	414270	716617	115898	92160	11321763
1982	0	93570	357341	610980	307486	488702	203345	423014	724523	114573	93871	11448658
1983	0	96230	364667	618254	320686	493836	207391	431903	732160	113093	95561	11575823
1984	0	98957	372117	625571	334430	498990	211205	440940	739503	111468	97228	11702656
1985	0	101755	379693	632932	348740	504165	214759	450126	746525	109706	98866	11829768

SOURCE:

TABLE 13

TABLE 13
MIDYEAR ESTIMATE OF TOTAL POPULATION IN SRI LANKA BY DISTRICT 1963-1978

WITH PROJECTIONS THROUGH 1985

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1963	0	211732	279788	521845	196189	2207420	641474	274297	612596	631457	1043632	578506	852661
1964	0	218892	292013	533604	203237	2264548	653582	282257	624113	644026	1054485	585505	874027
1965	0	226271	304754	545572	210510	2322951	665861	290338	635783	656781	1065370	598623	895853
1966	0	233886	318024	557778	218041	2382697	678328	298713	647633	669747	1076287	606675	918152
1967	0	241736	331850	570206	225808	2443785	690969	307390	659646	682919	1087246	619258	940935
1968	0	249839	346254	582893	233859	2506325	703823	316218	671852	696306	1098246	625786	964250
1969	0	258197	361266	595804	242166	2570274	716862	325279	684244	709921	1109294	640448	988063
1970	0	266812	376899	608972	250751	2635695	730090	334573	696805	723746	1120372	651247	1012398
1971	0	274200	391037	618999	258217	2687865	739458	342234	705692	733765	1154856	658569	1031612
1972	0	283497	408172	633003	267513	2757702	753494	352197	719025	748442	1167850	670019	1057567
1973	0	292088	424569	645066	276177	2819485	765117	361189	730054	760746	1180706	679289	1083393
1974	0	300921	441597	657320	285105	2882465	776873	370388	741207	773208	1193649	688646	1103646
1975	0	310003	459282	669766	294304	2946677	788761	379798	752486	785826	1206652	698089	1127329
1976	0	319340	477645	682406	303781	3012140	800782	389423	763888	798600	1219723	707618	1151452
1977	0	328299	495748	693894	312936	3072906	811361	398494	773913	809959	1230458	715843	1173737
1978	0	337489	514505	705531	322347	3134693	822027	407750	784019	821427	1241223	724117	1196378
1979	0	346913	533939	717318	332019	3197522	832780	417195	794207	833006	1252005	732441	1219379
1980	0	356579	554071	729255	341960	3261402	843621	426832	804478	844694	1262792	740815	1242744
1981	0	366203	574474	740762	351901	3323721	853879	436320	814185	855820	1272600	748648	1265482
1982	0	376062	595591	752402	362106	3387022	864205	445991	823965	867036	1282394	756514	1288553
1983	0	386161	617443	764174	372583	3451310	874597	455846	833802	878340	1292181	764412	1311956
1984	0	396506	640054	776079	383338	3516579	885057	465888	843701	889734	1301956	772343	1335698
1985	0	407100	663450	788119	394377	3582830	895583	476120	853662	901217	1311718	780305	1359781

SOURCE:

1963 AND 1971 CENSUS DATA, DEPARTMENT OF CENSUS AND STATISTICS
TABLE 11 AND TABLE 12

TABLE 13, CONTINUED
MIDYEAR ESTIMATE OF TOTAL POPULATION IN SRI LANKA BY DISTRICT 1963-1978

WITH PROJECTIONS THROUGH 1985

YEAR		MANNAR	MATALE	MATARA	MONERAGALA	NUWARA ELIYA	POLONNARUWA	PUTTALAM	RATNAPURA	TRINCOMALEE	VAVUNIYA	TOTAL SRI LANKA
1963	0	60124	255630	514969	132260	397756	113971	302546	546037	138553	68621	10582064
1964	0	62193	262805	524028	138890	404640	119438	311646	560198	144195	71418	10832744
1965	0	64318	270173	533493	145841	411615	125164	320957	574636	150075	74330	11069363
1966	0	66535	277713	543078	153124	418680	131150	330603	589498	156168	77346	11352060
1967	0	68803	285445	552799	160768	425828	137415	340463	604648	162499	80485	11620501
1968	0	71155	293386	562661	168779	433077	143973	350636	620163	169081	83740	11896272
1969	0	73579	301519	572670	177172	440414	150830	361024	636015	175911	87128	12173084
1970	0	76085	309865	582809	185980	447852	157958	371727	652247	183010	90641	12466574
1971	0	78234	316676	589860	194146	452906	164604	380637	665197	189348	93784	12761856
1972	0	80936	325602	600614	203895	460793	172522	392123	682521	197088	97616	13032151
1973	0	83440	333614	609432	213390	467181	180151	402547	697851	204431	101254	13308210
1974	0	86015	341801	618343	223314	473629	188188	413224	713482	212035	105020	13590076
1975	0	88665	350169	627345	233685	480137	196529	424158	729421	219909	108920	13877911
1976	0	91390	358719	636440	244522	486705	205227	435355	745669	228060	112958	14171843
1977	0	94011	366742	644375	255350	492375	213861	445953	760753	236041	116911	14443940
1978	0	96701	374922	652368	266641	498081	222887	456781	776095	244285	120995	14721262
1979	0	99462	383260	660418	278414	503820	232256	467842	791696	252802	125214	15003908
1980	0	102295	391759	668526	290688	509594	242005	479140	807566	261599	129572	15291581
1981	0	105120	400106	676159	303246	514996	251948	490256	823042	270473	133967	15573352
1982	0	108015	408605	683834	316325	520422	262283	501678	838766	279629	138503	15859901
1983	0	110983	417257	691551	329947	525871	273024	513290	854735	289076	143183	16151722
1984	0	114025	426064	699309	344133	531341	284186	525137	870951	298823	148011	16448513
1985	0	117143	435027	707109	358906	536833	295785	537222	887415	308878	152992	16751572

SOURCE:

1963 AND 1971 CENSUS DATA, DEPARTMENT OF CENSUS AND STATISTICS
TABLE 11 AND TABLE 12

Projected average per capita consumption of rice is based upon the constructed rice balance table in Appendix G. While the table is deficient in the respect that it contains certain estimates and no carry-over data, it is the best available construction of average per capita consumption that can be calculated. The household budget studies by the Central Bank, 1963 and 1973, together with a budget study by the Department of Census and Statistics, 1969 are shown in Table 14. If this data is used to construct a trend, it is easily seen that this would be a declining trend which is not characteristic of either a staple food grain or the past situation. This result is apparently due to the bias in the latter survey years, being during drought, and therefore having insufficient food supplies as well as rice ration system policy changes causing distortions in such a survey.

Therefore, this survey data is used as a control check for the rice balance sheet (Table G-1, Appendix G) results. The mean of available per capita consumption is 202.72 pounds annually with a standard deviation of 24.33. Using the standard deviation for available per capita consumption for any given year, it is found that the household budget survey results fits within the expected dispersion for those years.

Projections are computed for available per capita consumption of rice and available per capita consumption of rice and wheat flour combined (Table G-2, Appendix G). Also, a two-year moving average and three-year moving average of each consumption pattern are used.

The results of all projections are essentially a flat trend line tilted slightly upward. Since there is no statistical difference between the original data and moving averages, the original data base linear trend line was selected as the projected pattern of future average per capita

TABLE 14

AVERAGE PER CAPITA CONSUMPTION OF RICE AND FLOUR
HOUSEHOLD BUDGET STUDY SURVEYS[1]

	YEAR (Pounds per Year)		
	1963	1969	1973
Urban Population			
Rice			
Open Market	35.30	N/A	37.60
Rice Ration	130.21	N/A	139.22
Total	165.51	185.40	177.00
Flour	18.54	19.32	23.16
Rural Population			
Rice			
Open Market	64.85	N/A	50.11
Rice Ration	175.73	N/A	144.45
Total	240.58	211.92	194.56
Flour	32.05	45.48	41.96
Total Population			
Rice			
Open Market	58.92	N/A	47.76
Rice Ration	166.08	N/A	143.52
Total	225.08	207.12	191.28
Flour	28.14	40.80	38.42

Source: 1963 and 1973 - Survey of Ceylon's Consumer Finances, Central Bank of Ceylon. 1969 - Preliminary Report on the Socio-Economic Survey of Ceylon, Department of Census and Statistics.

[1]Adjusted to remove bias in sample size as related to population.

rice and flour consumption. Flour, being essentially government controlled through ration system and price policy, which strongly affects consumption levels, is projected at a flat trend. Tables 15 and 16 detail the computed projections of average per capita consumption patterns for rice, and rice and flour combined, respectively.

Tables 17 and 18 present total consumption of rice by district and total consumption of rice and flour combined by district. These tables are the calculated result of population projections multiplied by projected average per capita consumption.

Demand for the Ration System

A subsidiary demand exists as a component of the previously explored demand for rice. This is the need of the rice ration system for rice. Table 19 illustrates the calculated future milled rice requirement for the rice ration system by district. This computation is based upon the August, 1978 list of ration holders by district. The current policy concerning the ration system was assumed to remain unchanged over the future time span of the study. It was also assumed that there would be an increase in the number of ration holders in direct proportion to population growth. Number of ration holders are then multiplied by standard ration allotment resulting in demand of the ration system for milled rice.

Total Surplus-Deficit Balances

Surplus and deficit balances of total rice production and consumption are constructed for the purposes of structuring a commodity flow between districts and to forecast the time element in achieving some level of self-sufficiency.

Table 20 presents the net production of rough rice by distrct. This is the result of total production (Table 9) less seed usage and losses.

TABLE 15

AVERAGE PER-CAPITA CONSUMPTION OF RICE AND FLOUR BY DISTRICT FOR TOTAL POPULATION

CALCULATED FOR 1978-1985(HUNDREDS OF POUNDS PER YEAR)

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	26928	26928	26928	26928	26928	26928	26928	26928	26928	26928	26928	26928
1979	0	26975	26975	26975	26975	26975	26975	26975	26975	26975	26975	26975	26975
1980	0	27022	27022	27022	27022	27022	27022	27022	27022	27022	27022	27022	27022
1981	0	27069	27069	27069	27069	27069	27069	27069	27069	27069	27069	27069	27069
1982	0	27116	27116	27116	27116	27116	27116	27116	27116	27116	27116	27116	27116
1983	0	27163	27163	27163	27163	27163	27163	27163	27163	27163	27163	27163	27163
1984	0	27210	27210	27210	27210	27210	27210	27210	27210	27210	27210	27210	27210
1985	0	27257	27257	27257	27257	27257	27257	27257	27257	27257	27257	27257	27257

YEAR		MANNAR	MATALE	MATARA	MONOR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA
1978	0	26928	26928	26928	26928	26928	26928	26928	26928	26928	26928
1979	0	26975	26975	26975	26975	26975	26975	26975	26975	26975	26975
1980	0	27022	27022	27022	27022	27022	27022	27022	27022	27022	27022
1981	0	27069	27069	27069	27069	27069	27069	27069	27069	27069	27069
1982	0	27116	27116	27116	27116	27116	27116	27116	27116	27116	27116
1983	0	27163	27163	27163	27163	27163	27163	27163	27163	27163	27163
1984	0	27210	27210	27210	27210	27210	27210	27210	27210	27210	27210
1985	0	27257	27257	27257	27257	27257	27257	27257	27257	27257	27257

SOURCE:

CALCULATED FROM RICE AND FLOUR BALANCE SHEET AND HOUSEHOLD BUDGET STUDIES

TABLE 16

AVERAGE PER-CAPITA CONSUMPTION OF RICE BY DISTRICT FOR TOTAL POPULATION

CALCULATED FOR 1978-1985(HUNDREDS OF POUNDS PER YEAR)

YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	19563	19563	19563	19563	19563	19563	19563	19563	19563	19563	19563	19563
1979	0	19610	19610	19610	19610	19610	19610	19610	19610	19610	19610	19610	19610
1980	0	19657	19657	19657	19657	19657	19657	19657	19657	19657	19657	19657	19657
1981	0	19704	19704	19704	19704	19704	19704	19704	19704	19704	19704	19704	19704
1982	0	19751	19751	19751	19751	19751	19751	19751	19751	19751	19751	19751	19751
1983	0	19798	19798	19798	19798	19798	19798	19798	19798	19798	19798	19798	19798
1984	0	19845	19845	19845	19845	19845	19845	19845	19845	19845	19845	19845	19845
1985	0	19892	19892	19892	19892	19892	19892	19892	19892	19892	19892	19892	19892

YEAR		MANNAR	MATALE	MATARA	MONER-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA
1978	0	19563	19563	19563	19563	19563	19563	19563	19563	19563	19563
1979	0	19610	19610	19610	19610	19610	19610	19610	19610	19610	19610
1980	0	19657	19657	19657	19657	19657	19657	19657	19657	19657	19657
1981	0	19704	19704	19704	19704	19704	19704	19704	19704	19704	19704
1982	0	19751	19751	19751	19751	19751	19751	19751	19751	19751	19751
1983	0	19798	19798	19798	19798	19798	19798	19798	19798	19798	19798
1984	0	19845	19845	19845	19845	19845	19845	19845	19845	19845	19845
1985	0	19892	19892	19892	19892	19892	19892	19892	19892	19892	19892

SOURCE:

CALCULATED FROM RICE BALANCE SHEET AND HOUSEHOLD BUDGET STUDIES

TABLE 17

TOTAL CONSUMPTION OF RICE AND FLOUR BY DISTRICT FOR TOTAL POPULATION

CALCULATED FOR 1978-1985 (TONS)

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	40571	61851	84615	38751	376835	98819	49017	94250	98747	149213	87049	143822
1979	0	41777	64299	86382	39583	385059	100287	50240	95642	100314	150772	88204	146843
1980	0	43016	66840	87973	41252	393436	101769	51490	97047	101899	152336	89367	149517
1981	0	44253	69422	89517	42525	401651	103186	52727	98390	103421	153786	90469	152926
1982	0	45524	72098	91081	43834	410011	104615	53989	99744	104958	155236	91579	155984
1983	0	46827	74873	92666	45181	418518	106057	55277	101110	106511	156694	92695	159092
1984	0	48165	77749	94273	46565	427170	107511	56593	102487	108079	158153	93819	162252
1985	0	49537	80731	95901	47989	435970	108977	57936	103876	109663	159614	94950	165462

YEAR		MANNAR	MATALE	MATARA	MONOR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1978	0	11625	45071	78424	32054	59876	26794	54912	93298	29367	14545	1769706
1979	0	11978	46154	79530	33528	60672	27969	56339	95339	30443	15079	1806833
1980	0	12340	47259	80647	35067	61474	29194	57801	97419	31558	15631	1844732
1981	0	12703	48350	81710	36645	62234	30446	59249	99460	32685	16189	1881944
1982	0	13076	49463	82781	38292	62995	31750	60730	101536	33850	16766	1919858
1983	0	13458	50598	83860	40011	63769	33108	62243	103648	35054	17363	1958613
1984	0	13851	51755	84947	41803	64544	34521	63790	105797	36299	17979	1998102
1985	0	14254	52935	86043	43673	65324	35992	65371	107983	37585	18617	2038383

SOURCE:

TABLE 13 X TABLE 15

TABLE 18

TOTAL CONSUMPTION OF RICE BY DISTRICT FOR TOTAL POPULATION

CALCULATED FOR 1978-1985 (TONS)

YEAR		AMPARAI	HAPURA	BADULLA	CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	29475	44934	61617	28152	273768	71752	35611	68472	71739	108402	63241	104486
1979	0	30370	46744	62797	29066	279926	72905	36523	69529	72925	109606	64121	106750
1980	0	31291	48622	63995	30009	286203	74032	37456	70597	74126	110816	65010	105056
1981	0	32213	50533	65161	30955	292369	75111	38381	71620	75282	111943	65854	111217
1982	0	33159	52516	66342	31928	298648	76201	39325	72652	76450	113084	66705	113617
1983	0	34130	54572	67541	32930	305040	77300	40289	73695	77631	114208	67562	115956
1984	0	35128	56705	68758	33961	311547	78411	41275	74747	78825	115245	68425	118335
1985	0	36152	58917	69988	35022	318168	79531	42281	75808	80031	116485	69294	120753

YEAR		MANNAR	MATALE	MATARA	MONER-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1978	0	8445	32744	56974	23287	43500	19466	39893	67780	21335	10567	1285680
1979	0	8707	33552	57816	24374	44107	20333	40957	69305	22131	10962	1313510
1980	0	8977	34379	58666	25509	44719	21237	42047	70667	22956	11371	1341541
1981	0	9247	35195	59478	26675	45301	22162	43129	72398	23792	11784	1369900
1982	0	9524	36028	60297	27892	45888	23127	44235	73557	24656	12212	1398443
1983	0	9809	36879	61122	29162	46479	24131	45367	75545	25550	12655	1427553
1984	0	10102	37747	61954	30488	47074	25177	46524	77161	26474	13113	1457276
1985	0	10403	38632	62794	31872	47673	26267	47707	78806	27429	13586	1487599

SOURCE:

TABLE 13 X TABLE 16

TABLE 15

MILLED RICE REQUIREMENT FOR THE RICE RATION SYSTEM BY DISTRICT 1979-1985(TONS)

ANNUAL

YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1979	0	22310	17093	28179	15911	118819	48422	28555	46522	45349	53638	42885	78987
1980	0	22932	17738	28647	16387	121192	49052	29624	47124	45985	54101	43375	80398
1981	0	23551	18391	29099	16863	123508	49649	30283	47693	46591	54521	43834	81869
1982	0	24185	19067	29556	17352	125860	50249	30954	48265	47201	54940	44294	83362
1983	0	24835	19767	30019	17854	128249	50853	31638	48842	47817	55360	44757	84876
1984	0	25500	20491	30486	18370	130675	51462	32335	49421	48437	55778	45221	86412
1985	0	26181	21240	30959	18899	133137	52074	33045	50005	49062	56197	45687	87970

ANNUAL

YEAR		MANNAR	MATALE	MATARA	MONER-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1979	0	4987	19589	42978	13495	19040	9229	28895	51000	11076	6151	753810
1980	0	5129	20432	43506	14090	19258	9616	29593	52022	11462	6366	768029
1981	0	5271	20868	44032	14699	19462	10011	30282	53049	11851	6535	781852
1982	0	5416	21311	44502	15333	19668	10422	30985	54032	12252	6804	796010
1983	0	5565	21762	45004	15993	19873	10849	31702	55061	12666	7034	810376
1984	0	5717	22221	45509	16681	20080	11292	32433	56105	13093	7271	824990
1985	0	5874	22689	46017	17397	20288	11753	33180	57166	13534	7516	839870

SOURCE:

CALCULATIONS BASED UPON 1978 LIST OF RATION HOLDERS(AUGUST). FOOD COMMISSIONER. ASSUMED CURRENT POLICY WITH INCREASE IN RATION LIST IN PROPORTION TO DISTRICT POPULATION GROWTH. LIST MULTIPLIED BY STANDARD RATION ALLOTMENT

TABLE 20

NET PRODUCTICN OF ROUGH RICE BY DISTRICT, 1978-1985, LESS SEED USE ANC LOSSES(BUSHELS)

ANNUAL

YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-COLOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	6968428	9457406	2148042	3163648	2911217	2097152	2811928	1705582	1966197	3825685	1770153	6745262
1979	0	7446386	9970527	2233652	3259892	3009218	2202457	2894225	1732171	2021280	3862931	1798056	6941471
1980	0	7931090	11485529	2406308	3358432	3109874	2329489	2978495	1758487	2077915	3937741	1826136	7139627
1981	0	8427360	11959204	2412486	3459676	3213171	2414570	3565315	1784158	2135725	4012045	1854600	7352684
1982	0	8934804	12445093	2505892	4028997	3318758	2522600	4048705	1809140	2204950	4086016	1883133	7541154
1983	0	10296482	12744065	3377565	4143721	3424781	2567745	4541469	1832655	2254504	4156521	1910621	7724467
1984	0	10589884	13067906	3409179	4268299	3538596	2618516	5053677	1858335	2318486	4232818	1941260	7949891
1985	0	10873048	13388694	3436563	4391504	3652443	2667529	5575464	1882382	2382247	4304226	1970665	8156108

ANNUAL

YEAR		MANNAR	MATALE	MATARA	MONOR-AGALA	NUWARA ELIYA	POLONN-ARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	LCA WALAWE	TOTAL SRI LANKA
1978	0	1310292	1732370	2254197	1144364	1566802	5766038	820635	2396384	3267783	1265091	1690663	66775315
1979	0	1356555	1869350	2300747	1222661	1676458	5909545	834144	2501516	3321313	1306012	1711677	71382290
1980	0	1404394	1918830	2347680	1337111	1719058	6051314	847714	2610176	3527767	1473422	1746735	75322225
1981	0	1453427	1969591	2395853	1508341	1762053	6630606	972307	2722758	3584597	1663392	1781914	79037033
1982	0	1503631	2021185	2444133	1574428	1805221	8364226	1048632	2838602	4874222	1651394	1816986	85311502
1983	0	1554080	2072543	2491825	1639541	1847463	9004752	1057766	2956165	4947242	1717760	1850781	90115353
1984	0	1608284	2127880	2544218	1708327	1893033	9105753	1068336	3082145	5029040	1746368	1908223	92668458
1985	0	1662502	2182905	2595062	1775922	1937387	9195998	1077827	3209497	5104866	1773807	1943734	95140404

SOURCE:

TABLE 9 X CALCULATED SEED USAGE AND CALCULATED POST-MATURITY HANDLING LOSSES

Historical seed usage rates are calculated based upon seeding rate times next season's area sown to rice.[1] This usage rate states that this amount of seed must be withheld from all marketing systems to plant the next season's crop. This rate is projected and deducted from gross production.

Losses within the system are extremely hard to estimate since so little research has been conducted as to amount of losses or in what sector losses occur. Based upon the best available information, losses were estimated at 14.2 percent, 8 percent in handling from point of maturity and 6.2 percent in storage and transport.

Table 21 shows production of milled rice by district. This is the result of Table 20 multiplied by a milling outturn of 68 percent. While GSL policy dictates a higher milling outturn (69 and 70 percent) in the government procurement system, this is viewed as unworkable due to outdated equipment and poor management. The resulting rice quality is evidence that this viewpoint is well founded.

The subtraction of demand for rice by district (Table 18) from production of milled rice by district (Table 21) results in a table of surplus and deficit balances by district. Table 22 presents these balances. The results of the national surplus-deficit balance is illustrated in Figure 10. The results in this illustration give rise to the discussion on post-maturity loss control as set forth in Section II.

Table 23 is the result of subtraction of demand for rice and flour combined by district (Table 17) from production of milled rice by district (Table 21). The purpose of this table is to examine the question of

[1]This is based upon the fact that area, yield, and production data includes rice raised for seed. The Ministry of Agriculture states that this is the case!

TABLE 21
PRODUCTION OF MILLED RICE BY DISTRICT, 1978-1985 (TONS)

ANNUAL

YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	97300	132053	29993	44134	40649	29282	62729	23815	27454	53416	24716	54184
1979	0	103973	139218	31188	45517	42017	30752	64312	24186	28223	53936	25106	96923
1980	0	110741	160372	33599	46893	43423	32526	65977	24553	29013	54982	25458	99690
1981	0	117671	166986	33685	48307	44865	33714	74662	24912	29821	56020	25895	102682
1982	0	124756	173770	34989	56256	46339	35223	81902	25261	30787	57053	26294	105297
1983	0	143769	177945	47166	57858	47820	35853	89254	25589	31479	58037	26677	107856
1984	0	147866	182467	47602	59598	49409	36562	97208	25947	32373	59102	27105	111004
1985	0	151820	186946	47984	61318	50999	37246	104990	26283	33263	60099	27516	113883

ANNUAL

YEAR		MANNAR	MATALE	MATARA	MONGR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1978	0	18295	24189	31475	15978	21877	80511	11458	33460	45628	17664	960302
1979	0	18941	26101	32125	17072	23408	82514	11647	34928	46375	18235	996699
1980	0	19609	26792	32780	18670	24003	84494	11836	36445	49258	20573	1051727
1981	0	20294	27501	33453	21060	24603	92583	13576	38017	50051	23225	1103583
1982	0	20995	28221	34127	21983	25206	116789	14642	39635	68058	23616	1191195
1983	0	21699	28938	34793	22898	25796	125733	14769	41276	69078	23985	1258268
1984	0	22456	29711	35524	23853	26432	127143	14917	43036	70220	24384	1293919
1985	0	23213	30479	36234	24797	27051	128403	15049	44814	71279	24767	1328433

SOURCE:

TABLE 20 X CONVERSION FACTOR FOR TONS X MILLING CUTTURN OF 0.66
UDE WALAWE DISTRICT PRODUCTION INCLUDED IN HAMBANTOTA DISTRICT

TABLE 22
DEFICIT-SURPLUS BALANCES FOR RICE BY DISTRICT

CALCULATED FOR 1978 - 1985 (TONS)

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	67825	87119	-31624	16022	-233119	-42510	27118	-44657	-44285	-54584	-38525	-10302
1979	0	73603	92474	-31609	16451	-237909	-42153	27789	-45343	-44702	-55668	-39015	-9827
1980	0	79450	111750	-30396	16884	-242780	-41506	28521	-46044	-45113	-55834	-39512	-9366
1981	0	85458	116453	-31476	17352	-247504	-41397	36281	-46708	-45461	-55923	-39959	-8635
1982	0	91597	121254	-31353	24328	-252309	-40578	42577	-47391	-45663	-56031	-40411	-8320
1983	0	109639	123373	-20375	24928	-257220	-41447	48965	-48106	-46152	-56171	-40885	-8100
1984	0	112738	125762	-21156	25637	-262138	-41849	55933	-48800	-46452	-56243	-41320	-7331
1985	0	115668	128029	-22004	26296	-267169	-42285	62709	-49525	-46768	-56386	-41778	-6870

YEAR		MANNAR	MATALE	MATARA	MONER-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1978	0	9850	-8555	-25499	-7309	-21623	61045	-28435	-34220	24293	7097	-325378
1979	0	10234	-7451	-25691	-7302	-20699	62181	-29310	-34381	24244	7273	-316611
1980	0	10632	-7587	-25886	-6839	-20716	63257	-30211	-34422	26302	9202	-290214
1981	0	11047	-7694	-26025	-5615	-20698	70421	-29553	-34381	26259	11441	-266317
1982	0	11471	-7807	-26170	-5909	-20682	93662	-29593	-34322	43402	11404	-207244
1983	0	11890	-7941	-26329	-6264	-20683	101602	-30558	-34265	43528	11330	-169285
1984	0	12354	-8036	-26430	-6635	-20642	101966	-31607	-34125	43746	11271	-163357
1985	0	12810	-8153	-26560	-7075	-20622	102136	-32658	-33992	43850	11181	-159166

SOURCE:

TABLE 21 - TABLE 18

TABLE 23
DEFICIT-SURPLUS BALANCES FOR RICE AND FLOUR BY DISTRICT

CACULATED FOR 1978-1985 (TONS)

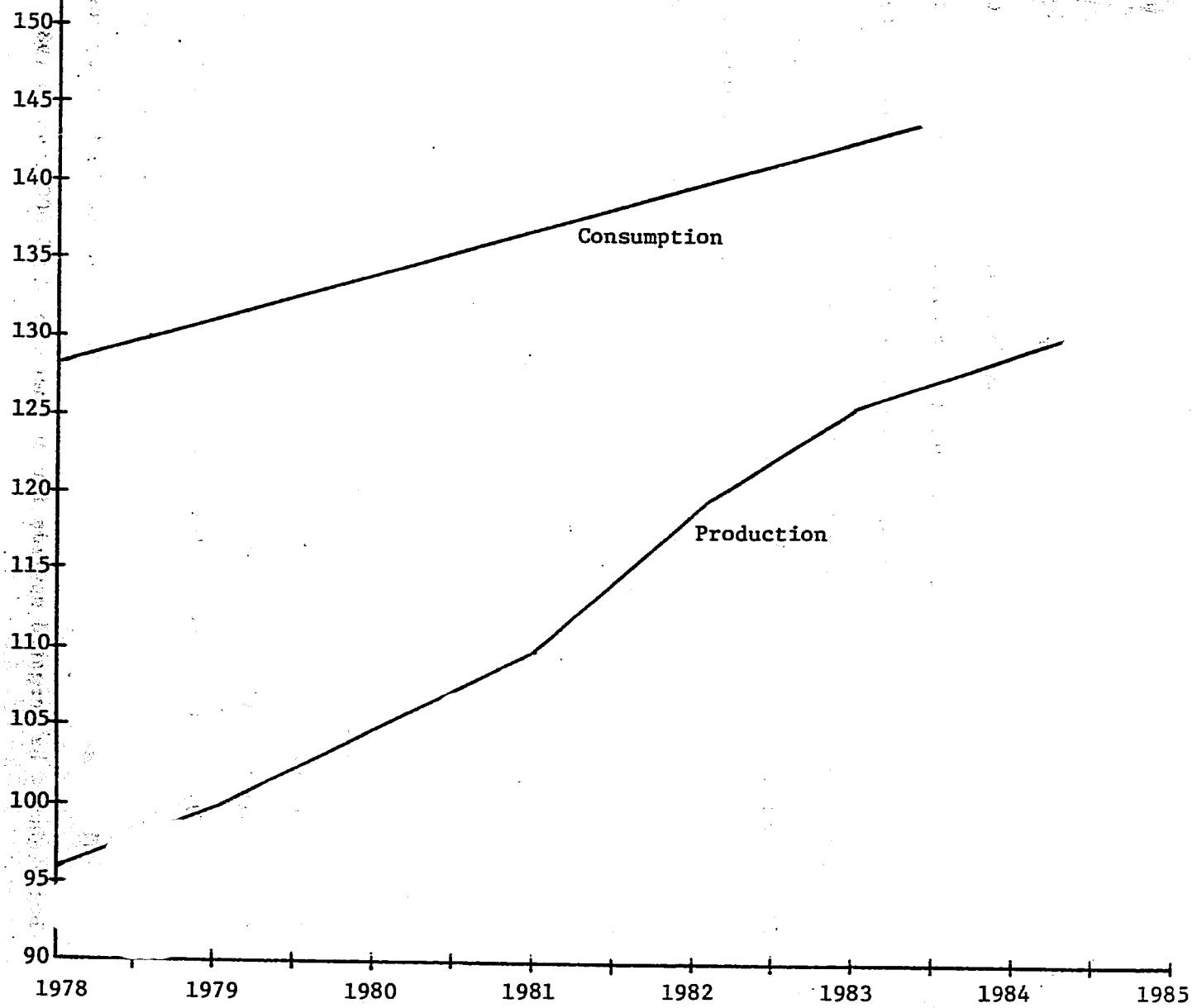
YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1978	0	56729	70202	-54822	5423	-336186	-69537	13712	-70435	-71293	-55795	-62333	-49638
1979	0	62196	74919	-55194	5534	-343042	-69535	14072	-71456	-72091	-56834	-63058	-49520
1980	0	67725	93532	-54374	5641	-350013	-69243	14487	-72494	-72886	-57354	-63869	-50227
1981	0	73418	97564	-55832	5782	-356786	-69472	21935	-73478	-73600	-57766	-64574	-50244
1982	0	79232	101672	-56092	12422	-363672	-69392	27913	-74483	-74171	-58185	-65285	-50687
1983	0	96942	103072	-45500	12677	-370698	-70204	33977	-75521	-75032	-58657	-66018	-51236
1984	0	99701	104718	-46671	13033	-377761	-70949	40615	-76540	-75706	-59051	-66714	-51248
1985	0	102283	106215	-47917	13329	-384971	-71731	47054	-77593	-76400	-59515	-67434	-51579

YEAR		MANNAR	MATALE	MATARA	MONOR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1978	0	6670	-20882	-46949	-16076	-37999	53717	-43454	-55838	16261	3115	-809404
1979	0	6963	-20053	-47405	-16456	-37264	54545	-44692	-60411	15932	3156	-810134
1980	0	7269	-20467	-47867	-16357	-37471	55300	-45565	-60574	17700	4942	-793005
1981	0	7591	-20849	-48257	-15585	-37631	62137	-45673	-61443	17366	7036	-778361
1982	0	7919	-21242	-48654	-16309	-37793	85039	-46088	-61901	34208	6850	-728659
1983	0	8241	-21660	-49067	-17113	-37973	92625	-47474	-62372	34024	6622	-700345
1984	0	8605	-22044	-49423	-17550	-38112	92622	-48873	-62761	33921	6405	-704183
1985	0	8959	-22456	-49809	-18876	-38273	92411	-50322	-63165	33694	6150	-709550

SOURCE:

TABLE 21 - TABLE 17

Figure 10. Projected National Production and Consumption Trends for Milled Rice



self-sufficiency. Since flour is used in the ration system through price policy as a flexible substitute for rice, then what would be the difference between production and consumption if rice were substituted for flour. Comparison of Tables 22 and 23 reveal there is, with the exception of Hambantota district, no shifts of surplus districts in Table 22 to Table 23. The major point of comparison is the national deficit level which indicates, without doubt, that the necessary target to achieve basic self-sufficiency is rice consumption alone. To attempt to substitute rice for flour in the near future will only require additional imports of rice.

Ration System Surplus-Deficit Balances

Of equal importance is the question of surplus and deficit balances by district for the rice ration system. The purposes of this computation allows the structuring of commodity flows to determine where imports should enter into the distribution system and to attempt to determine whether the level of procurement should be further enhanced.

Table 24 presents milled domestic rice available to the rice ration system from Paddy Marketing Board Procurement. This table is the result of procurement targets (Table 27) less storage losses multiplied by a milling outturn of 68 percent.[1] Table 25 is the result of available milled rice by district (Table 24) less ration system demand for rice by district (Table 19). When compared to total surplus-deficit balances (Table 22), there is no difference between the districts being either surplus or deficit. There is implication that procurement levels by the Paddy Marketing Board should be targeted upwards for an increase of 58,000 tons in 1982 and 60,000 tons in 1985 so as to achieve the maximum possible level of use

[1]Storage losses of 6.2 percent.

TABLE 24

MILLED DOMESTIC RICE AVAILABLE 1979-1985 FOR RICE RATION SYSTEM BY DISTRICT

BASED ON PADDY MARKETING BOARD PROCUREMENT TARGETS

YEAR		AMPARAI	ANURAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1979	0	75481	59136	8883	22326	764	3579	30009	12590	2807	16764	2145	15373
1980	0	81769	64064	9624	24186	827	3877	32509	14072	3041	18160	2328	20586
1981	0	88019	68960	10359	26034	891	4174	34953	15146	3274	19548	2506	22591
1982	0	97403	76312	11463	28810	986	4619	39724	16763	3622	21632	2773	24595
1983	0	105490	82648	12416	31202	1068	5002	41939	18154	3923	23429	3004	27075
1984	0	110983	86950	13062	32827	1123	5262	44123	19100	4128	24646	3161	28484
1985	0	113759	89126	13388	33648	1151	5394	45227	19577	4231	25265	3240	29197

ANNUAL

YEAR		MANNAR	MATALE	MATARA	MONOR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1979	0	7198	7960	4920	9672	1002	62551	3245	11562	36147	13016	411536
1980	0	7798	8624	5330	10478	1086	67763	3516	12526	39158	14102	445824
1981	0	8394	9283	5738	11278	1169	72942	3784	13483	42151	15180	479859
1982	0	9289	10273	6349	12481	1294	80719	4188	14920	46645	16799	531063
1983	0	10061	11125	6876	13517	1401	87420	4536	16159	50518	18193	575156
1984	0	10584	11705	7235	14221	1474	91572	4772	17001	53148	19140	605133
1985	0	10849	11997	7415	14577	1511	94273	4891	17426	54477	19615	620238

SOURCE:

TABLE 27 LESS STORAGE LOSSES X MILLING FACTOR OF 0.68

TABLE 25

RATION SYSTEM SURPLUS AND DEFICIT BALANCES BY DISTRICT 1979-1985(TONS)

ANNUAL

YEAR		AMPARAI	ANARAD-HAPURA	BADULLA	BATTI-CALOA	COLOMBO	GALLE	HAMBAN-TOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUN-EGALA
1979	0	53171	42043	-19296	6415	-118055	-44843	1054	-33532	-42542	-36874	-40736	-59514
1980	0	58837	46326	-19023	7799	-120365	-45175	2885	-33052	-42944	-35941	-41047	-59412
1981	0	64468	50569	-18740	9171	-122617	-45475	4710	-32545	-43317	-34973	-41328	-59278
1982	0	73218	57245	-18093	11458	-124874	-45630	7770	-31502	-43579	-33308	-41521	-58363
1983	0	80655	62881	-17603	13348	-127181	-45851	10301	-30688	-43894	-31931	-41753	-57801
1984	0	85483	66459	-17424	14457	-129552	-46200	11788	-30321	-44309	-31130	-42060	-57528
1985	0	87578	67886	-17571	14749	-131986	-46660	12182	-30428	-44831	-30932	-42447	-56773

ANNUAL

YEAR		MANNAR	MATALE	MATARA	MONCR-EGALA	NUWARA ELIYA	POLON-NARUWA	PUTTALAM	RATNAPURA	TRIN-COMALEE	VAVUNIYA	TOTAL SRI LANKA
1979	0	2211	-12029	-38058	-3823	-18038	53322	-25650	-39438	25071	6867	-342274
1980	0	2669	-11808	-38176	-3612	-18172	58147	-26077	-39496	27696	7736	-322205
1981	0	3123	-11585	-38264	-3421	-18293	62931	-26458	-39536	30300	8645	-301953
1982	0	3873	-11038	-38153	-2852	-18374	70257	-26797	-39112	34393	9595	-264547
1983	0	4496	-10637	-38128	-2476	-18472	76571	-27166	-38902	37852	11159	-235220
1984	0	4867	-10516	-38274	-2460	-18606	80688	-27661	-39104	40055	11869	-215887
1985	0	4975	-10692	-38602	-2820	-18777	82520	-28289	-39740	40943	12103	-219632

SOURCE:

TABLE 24 - TABLE 19

of domestic rice for the ration system. This would imply raising of national procurement targets to 41.9 percent and 43.5 percent for 1982 and 1985. These procurement levels are only 3.9 and 3.5 percent greater than the target levels calculated in Section IV. While this difference is not large, the higher level above was not used as a target level because insitutional constraints were considered too severe to achieve this level of performance.

SECTION IV

FUTURE STORAGE AND MILLING REQUIREMENTS

The needs for expanded marketing facilities in Sri Lanka over the next eight years are the direct outgrowth of the projected increases in the volume of production. While some of the existing facilities need to be remodeled and updated, much of this can be accomplished in the process of adding to the existing capacity. The needs for expansion of the rough rice marketing facilities vary considerably from one district to another, both in the terms of magnitude and in terms of the kind of facilities needed for meeting the projected requirements.

Procurement Targets

The basis for calculating the requirements for marketing facilities is the future level of procurement of the Paddy Marketing Board. Historical levels of procurement by the Paddy Marketing Board and its predecessor institution reveal a wide variation (Tables H-1 and H-2, Appendix H), both nationally and by district.

While the regression analysis presented in Appendix I is not considered adequate to use as a forecast tool, it was applied as a test. The resulting percentages generated do not reflect past historical movements. Therefore, projection of procurement targets by district is based upon a calculated national procurement target. The national target for 1978 was established as 34 percent of production based upon historical averages. The unweighted historical average is 32.8 percent, while the weighted historical average is 33.1 percent. Also, the constant (a intercept) in the island wide equation in Appendix I is 35 percent. The constant is applied and discounted to 34 percent to reflect bottlenecks that exist in the system. The procurement

percentage was allowed to rise at the rate of one percent per year till 1984 and then flattened at 40 percent. What this procedure implies is that more adequate in-depth analysis needs to be undertaken to determine what factors affect procurement levels. National procurement targets are presented in Table 26.

TABLE 26

CALCULATED NATIONAL PROCUREMENT TARGETS
1978-1985

Year	Procurement (Bushels)
1978	29,468,954
1979	31,422,165
1980	34,040,131
1981	36,641,685
1982	40,548,477
1983	43,914,738
1984	46,201,349
1985	47,357,049

Procurement targets by district are computed by using a weighted average percentage of procurement for each district and prorating this to the national procurement targets. The weighted average procurement percentage within each district is based upon the years 1969, 1970, 1971, 1972, and 1977. The deleted years in this time series were dropped because procurement levels are affected by serious drought conditions in these years. The years represented above are considered to be "normal" years, and differences in the percentage procurement between these years is a result of internal problems and policy changes rather than uncontrollable external problems. The result of this proportioning procedure (performed by the master projection computer program) is presented in Table 27. An analysis

TABLE 27

CALCULATED ANNUAL MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY DISTRICT 1978-1985(TONS)

YEAR		AMPARAI	ANURADHAPURA	BADULLA	BATTICOLOA	COLOMBO	GALLE	HAMBANTOTA	JAFFNA	KALUTARA	KANDY	KEGALLE	KURUNEGALA
1978	0	110983	86951	13062	32827	1124	5263	44123	19100	4128	24645	3161	28485
1979	0	118339	92714	13928	35003	1198	5612	47048	20366	4402	26283	3370	30373
1980	0	129198	100439	15089	37919	1298	6079	50968	22062	4768	28472	3651	32903
1981	0	137996	108115	16242	40817	1398	6544	54863	23745	5133	30648	3930	35418
1982	0	152709	119642	17573	45165	1547	7242	60712	26281	5680	33916	4349	39194
1983	0	165387	129575	19466	48919	1675	7843	65753	28463	6151	36732	4710	42448
1984	0	173999	136321	20479	51466	1762	8251	69176	29945	6472	38644	4956	44658
1985	0	178351	139732	20991	52754	1806	8458	70907	30694	6634	39611	5080	45775

YEAR		MANNAR	MATALE	MATARA	MONERAGALA	NUWARA ELIYA	POLONNARUWA	PUTTALAM	RATNAPURA	TRINCOMALEE	VAVUNIYA	TOTAL SRI LANKA
1978	0	10585	11705	7235	14222	1475	91572	4772	17001	53148	19141	605112
1979	0	11236	12481	7714	15164	1572	98068	5089	18128	56671	20410	645219
1980	0	12227	13521	8357	16428	1703	106239	5513	19639	61393	22110	698576
1981	0	13161	14554	8996	17683	1833	114358	5934	21135	66085	23800	752396
1982	0	14564	16106	9955	19569	2029	126551	6567	23393	73131	26338	832617
1983	0	15774	17443	10781	21193	2197	137057	7112	25335	79202	28524	901745
1984	0	16595	18351	11343	22297	2312	144154	7462	26655	83326	30005	948653
1985	0	17010	18810	11626	22854	2370	147801	7669	27321	85410	30760	972424

SOURCE:

CALCULATIONS BASED UPON NATIONAL PROCUREMENT TARGETS PRORATED TO DISTRICT BY HISTORICAL PROCUREMENT FACTORS

of the data in Table 27 revealed, that with the exception of four districts, purchases trended slightly upward over time. These are expected results. Four districts, Jaffna, Pollonaruwa, Ratnapura, and Trincomalee, have either steeper trend lines or trend lines which have a higher intercept value than expected. Comparison of data in the table to the Paddy Marketing Board's purchases during Maha 1978 revealed that purchases by district lay within one standard deviation of the trends for each district (in many cases, well within this limit). Therefore, it is concluded that the results of the proration as expressed in Table 27 is representative of every district.

Each district targets are then further proportioned into monthly procurement targets by year. The basis of this schedule of purchases is the weighted average historical purchasing percentage by month of the years previously listed. In the cases of districts where irrigation projects will impact, the weighted average of percentage purchases are adjusted to reflect the changing levels of production between Maha and Yala seasons. The adjustment was in relation to increased production in any one season resulting from irrigation impact upon new or existing paddy lands. Table Series 28 presents calculated procurement targets by month for each district.

Future Storage Needs

The need for additional storage capacity, in many cases, depends to a large degree upon the average total storage turnover rate that can be expected in the future. The total turnover depends upon harvesting patterns, the year-end carry-over, and the number of different types of facilities within the total system through which the same product moves on its way to the consumer.

The last factor above places a constraint upon using historical turnover rates in this study. Since the marketing system is complex and subject

TABLE 28-1

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

AMPARAI DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV.	DEC	TOTAL
1978	1476	1409	14073	22197	17602	9278	4954	6271	6737	10566	11398	4982	110983
1979	1574	1503	15005	23668	18769	9893	5325	6686	7183	11266	12153	5314	118339
1980	1705	1628	16255	25640	20332	10717	5769	7243	7782	12204	13166	5757	128158
1981	1835	1753	17498	27599	21886	11536	6210	7797	8376	13137	14172	6197	137996
1982	2031	1939	19363	30542	24220	12766	6872	8628	9269	14538	15683	6858	152709
1983	2200	2100	20971	33077	26230	13826	7442	9344	10039	15745	16985	7428	165387
1984	2314	2210	22063	34800	27596	14546	7830	9831	10562	16565	17870	7812	173999
1985	2372	2265	22615	35670	28286	14910	8026	10077	10826	16979	18317	8008	179351

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-2

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

ANURADHAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	756	1365	9208	10791	9895	13817	8008	7026	9104	9225	4956	2800	86951
1979	909	1558	9698	11367	10421	14556	8437	7491	9828	9576	5387	3086	92714
1980	984	1687	10506	12314	11289	15769	9140	8115	10647	10807	5836	3345	100439
1981	1060	1816	11309	13255	12152	16974	9838	8736	11460	11633	6281	3601	108115
1982	1172	2010	12515	14668	13448	18784	10887	9667	12682	12873	6951	3985	119642
1983	1270	2177	13554	15886	14564	20343	11797	10470	13735	13942	7528	4315	129581
1984	1336	2290	14259	16713	15322	21402	12405	11015	14450	14668	7920	4541	136321
1985	1369	2347	14616	17131	15706	21938	12716	11290	14812	15035	8118	4654	139732

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-3

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

BADULLA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	114	93	956	1954	2825	1839	1416	816	601	1308	826	314	13062
1979	121	99	1020	2084	3013	1961	1510	870	641	1394	880	335	13528
1980	131	107	1105	2257	3264	2125	1636	943	694	1510	954	363	15089
1981	141	115	1189	2430	3513	2287	1761	1015	747	1626	1026	392	16242
1982	156	128	1316	2689	3898	2531	1948	1123	827	1799	1136	432	17573
1983	169	138	1425	2912	4210	2741	2110	1217	895	1949	1230	470	19466
1984	178	145	1499	3064	4430	2883	2220	1280	942	2050	1294	494	20479
1985	183	149	1537	3140	4540	2956	2275	1312	966	2101	1327	505	20991

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-4

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

BATTICOLOA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	158	762	8387	8509	5397	2646	886	893	2341	1812	742	294	32827
1979	168	812	8943	9073	5754	2821	945	952	2496	1932	791	316	35003
1980	182	880	9688	9829	6234	3056	1024	1031	2704	2093	857	341	37919
1981	196	947	10429	10580	6710	3290	1102	1110	2910	2253	922	368	40817
1982	217	1048	11541	11708	7426	3641	1220	1229	3221	2493	1021	404	45165
1983	235	1135	12499	12680	8042	3943	1321	1331	3488	2700	1106	439	48919
1984	247	1194	13150	13340	8461	4148	1390	1400	3670	2841	1163	462	51466
1985	253	1224	13479	13674	8673	4252	1424	1435	3761	2912	1192	475	52754

'7 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-5

LATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF R(

COLOMBO DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	6	9	192	177	95	36	14	40	89	277	142	47	1124
1979	6	10	204	188	101	39	14	42	95	295	151	53	1198
1980	6	11	221	204	110	42	16	46	103	319	164	56	1258
1981	7	11	238	220	118	45	17	49	111	344	176	62	1358
1982	8	13	264	243	131	50	19	55	123	381	195	65	1547
1983	8	14	285	263	142	54	20	59	133	412	211	74	1675
1984	9	14	300	277	149	57	21	62	140	433	222	78	1762
1985	9	15	308	284	153	58	22	64	144	444	228	77	1836

FOOTNOTES

STRICT TOTAL [illegible] 7 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-6

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

GALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	23	764	1407	240	86	24	7	979	1260	379	77	17	5263
1979	24	814	1458	256	92	25	7	1065	1365	405	82	19	5612
1980	26	882	1519	277	100	27	8	1184	1505	438	85	20	6075
1981	28	933	1635	298	107	29	9	1275	1624	488	96	22	6544
1982	31	1023	1809	330	119	33	9	1411	1798	549	106	24	7242
1983	34	1108	1960	358	129	35	10	1528	1947	595	115	24	7843
1984	35	1165	2062	376	135	37	11	1608	2048	626	121	27	8251
1985	36	1195	2116	386	139	38	11	1648	2100	641	124	27	8461

TABLE 28-7
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
HAMBANTOTA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	525	675	3274	5132	7576	7263	3530	2943	3984	4721	3044	1456	44123
1979	560	720	3491	5472	8078	7744	3764	3138	4248	5034	3246	1553	47048
1980	607	780	3782	5928	8751	8389	4077	3400	4602	5454	3517	1681	50968
1981	653	839	4071	6381	9420	9030	4385	3659	4954	5870	3786	1811	54863
1982	722	929	4505	7061	10424	9993	4857	4049	5482	6496	4189	2005	60712
1983	782	1006	4879	7647	11290	10823	5260	4386	5937	7036	4537	2170	65753
1984	823	1058	5133	8045	11878	11386	5534	4614	6247	7402	4773	2283	69176
1985	844	1085	5261	8246	12175	11671	5673	4729	6403	7587	4893	2340	70507

FOOTNOTES
DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-8
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
JAFFNA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	11	688	6101	5325	2854	856	187	151	1532	1075	309	11	19100
1979	12	733	6505	5678	3043	912	200	161	1633	1147	330	12	20366
1980	13	794	7047	6151	3296	988	216	174	1769	1242	357	15	22062
1981	14	855	7585	6621	3548	1064	233	188	1905	1337	385	14	23749
1982	16	946	8394	7327	3926	1177	258	208	2108	1480	426	15	26281
1983	17	1025	9091	7935	4252	1275	279	225	2283	1602	461	18	28463
1984	18	1078	9564	8349	4474	1342	293	237	2402	1686	485	17	29945
1985	18	1105	9804	8557	4586	1375	301	242	2462	1728	497	19	30694

FOOTNOTES
DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-9
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
KALUTARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	14	20	1576	474	167	53	17	148	715	631	252	57	4128
1979	15	21	1681	506	178	57	18	158	766	673	269	60	4402
1980	17	23	1821	548	193	62	19	171	830	729	291	64	4768
1981	18	25	1960	590	207	66	21	184	894	785	314	69	5133
1982	20	27	2169	653	229	73	23	204	985	868	347	78	5680
1983	22	30	2349	707	249	79	25	221	1071	940	376	82	6151
1984	23	31	2472	744	261	83	26	232	1127	990	395	88	6472
1985	23	32	2534	762	268	86	27	238	1155	1014	405	90	6633

TABLE 28-10
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
KANDY DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	483	234	1989	4323	4323	2465	1228	574	1454	4208	2571	757	24645
1979	515	250	2121	4610	4610	2628	1309	612	1551	4487	2741	845	26283
1980	558	270	2298	4994	4994	2847	1418	663	1680	4860	2970	920	28472
1981	601	291	2473	5376	5376	3065	1526	714	1808	5232	3197	989	30648
1982	665	322	2737	5949	5949	3392	1689	790	2001	5789	3537	1096	33916
1983	720	349	2964	6443	6443	3673	1829	856	2167	6270	3831	1187	36732
1984	757	367	3119	6778	6778	3864	1924	900	2280	6597	4031	1249	38644
1985	776	376	3197	6948	6948	3961	1973	923	2337	6762	4131	1279	39611

FOOTNOTES
DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-11
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
KEGALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	47	35	473	343	231	149	80	95	493	759	335	117	3161
1979	50	37	504	366	246	159	85	105	526	809	357	126	3370
1980	54	40	546	396	267	172	92	114	570	877	387	136	3651
1981	59	43	588	426	287	185	99	123	613	944	417	146	3930
1982	65	48	650	472	317	205	110	136	679	1044	461	162	4349
1983	70	52	704	511	344	222	119	147	735	1131	499	176	4710
1984	74	55	741	538	362	233	125	155	774	1190	525	184	4956
1985	76	56	759	551	371	239	129	159	793	1220	538	189	5080

FOOTNOTES
DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-12
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
KURUNEGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	271	732	4741	3721	2251	2305	1721	2054	4052	3092	2148	1397	28485
1979	289	781	5056	3968	2400	2458	1835	2191	4320	3296	2291	1488	30373
1980	313	846	5477	4298	2600	2663	1988	2373	4680	3571	2482	1612	32903
1981	337	911	5895	4627	2799	2866	2140	2554	5038	3844	2671	1736	35418
1982	372	1008	6524	5120	3097	3172	2368	2827	5575	4254	2956	1921	39194
1983	403	1091	7065	5545	3354	3435	2565	3061	6038	4607	3202	2082	42446
1984	424	1148	7433	5834	3529	3614	2698	3221	6352	4847	3368	2190	44658
1985	435	1177	7619	5980	3617	3704	2766	3301	6511	4968	3452	2245	45775

TABLE 28-13
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
MANNAR DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	18	152	2297	2187	1718	1511	854	365	781	458	168	36	10585
1979	19	163	2450	2332	1832	1611	911	389	833	531	175	36	11286
1980	21	176	2654	2527	1985	1745	987	422	903	575	194	38	12227
1981	22	190	2857	2720	2136	1878	1062	454	971	619	209	43	13161
1982	25	210	3161	3010	2364	2079	1176	503	1075	685	232	44	14564
1983	27	227	3424	3260	2561	2251	1273	544	1164	742	251	50	15774
1984	28	239	3602	3429	2694	2369	1339	573	1225	780	264	53	16595
1985	29	245	3692	3515	2761	2428	1373	587	1256	800	271	53	17010

FOOTNOTES
DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-14
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
MATALE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	118	118	1301	1773	1419	1655	946	709	705	828	591	1538	11705
1979	126	126	1387	1639	1513	1765	1009	756	1009	882	630	1639	12481
1980	137	137	1502	1775	1639	1912	1093	819	1093	956	683	1775	13521
1981	147	147	1617	1911	1764	2058	1176	882	1176	1029	735	1912	14554
1982	163	163	1790	2115	1952	2278	1301	976	1301	1139	813	2115	16106
1983	176	176	1938	2290	2114	2467	1410	1057	1410	1233	881	2291	17443
1984	185	185	2039	2410	2224	2595	1483	1112	1483	1298	927	2410	18351
1985	190	190	2090	2470	2280	2660	1520	1140	1520	1330	950	2470	18810

FOOTNOTES
DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-15
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
MATARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	37	679	1219	703	596	268	78	1020	1681	653	204	55	7235
1979	39	724	1300	751	636	286	83	1088	1793	739	218	57	7714
1980	43	784	1408	814	689	310	90	1178	1942	801	236	62	8357
1981	46	844	1516	876	741	334	97	1268	2091	862	254	67	8956
1982	51	934	1677	970	820	369	108	1404	2314	954	281	73	9955
1983	55	1011	1817	1050	888	400	116	1520	2506	1033	304	91	10781
1984	58	1064	1911	1105	935	421	123	1599	2636	1087	320	84	11343
1985	59	1091	1959	1132	958	431	126	1639	2702	1114	328	87	11626

TABLE 28-16

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

MONERGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	124	129	912	1766	2563	3218	2177	1101	771	758	466	237	14222
1979	132	138	972	1883	2733	3432	2322	1174	822	808	497	251	15164
1980	143	149	1053	2040	2960	3718	2515	1272	890	876	535	273	16428
1981	154	161	1133	2196	3186	4002	2707	1369	958	943	580	294	17682
1982	170	178	1254	2430	3526	4428	2996	1515	1061	1043	642	326	19565
1983	184	193	1358	2632	3819	4796	3245	1640	1149	1130	695	352	21153
1984	194	203	1429	2769	4018	5046	3414	1726	1208	1188	731	371	22297
1985	199	208	1465	2838	4118	5172	3495	1765	1239	1218	750	379	22854

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-17

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

NUWARA ELIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	26	36	195	92	64	142	350	221	159	128	35	27	1475
1979	28	38	192	99	68	152	373	235	185	136	37	29	1572
1980	30	41	208	107	73	165	404	255	200	148	40	32	1703
1981	32	44	223	115	79	177	435	274	216	159	43	36	1833
1982	36	49	247	127	87	196	482	303	235	176	48	39	2029
1983	39	53	268	138	95	212	522	328	259	191	52	40	2197
1984	41	56	282	145	100	223	549	346	272	201	54	43	2312
1985	42	57	289	149	102	229	563	354	279	206	56	44	2370

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-18

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

POLONNARUWA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	975	598	12012	13695	14191	9896	5114	5528	12370	10935	4028	2630	91572
1979	1040	637	12808	14602	15132	10552	5453	5894	13190	11660	4295	2805	98068
1980	1126	691	13875	15819	16393	11431	5907	6385	14299	12632	4653	3038	106235
1981	1212	743	14935	17028	17645	12306	6358	6873	15381	13597	5009	3272	114359
1982	1341	823	16528	18843	19527	13617	7036	7606	17021	15047	5543	3619	126551
1983	1453	891	17900	20408	21148	14747	7620	8237	18434	16296	6003	3920	137157
1984	1528	937	18832	21470	22249	15515	8017	8666	19394	17145	6316	4125	144194
1985	1567	961	19303	22008	22806	15903	8218	8883	19879	17574	6474	4225	147601

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-19

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

PUTTALAM DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	37	134	1002	987	567	413	231	159	241	392	409	200	4772
1979	39	143	1069	1053	605	441	247	170	258	418	436	210	5089
1980	42	155	1158	1141	655	477	267	184	279	453	472	230	5513
1981	46	167	1246	1228	706	514	288	198	300	487	509	245	5934
1982	51	185	1379	1359	781	569	318	219	332	539	563	272	6567
1983	55	200	1494	1471	846	616	345	238	360	584	609	294	7112
1984	58	210	1571	1548	890	648	363	250	379	614	641	310	7482
1985	59	215	1534	1587	912	664	372	256	388	706	657	319	7665

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-20

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

RATNAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	184	429	1439	2782	2341	1951	1044	804	1472	2323	1530	762	17001
1979	196	458	1535	2966	2496	2123	1113	857	1569	2370	1631	814	18128
1980	213	496	1663	3213	2704	2300	1206	929	1700	2568	1767	880	19639
1981	229	534	1790	3459	2910	2476	1298	1000	1830	2764	1902	947	21139
1982	253	591	1981	3828	3221	2740	1437	1106	2025	3059	2105	1047	23393
1983	274	640	2145	4145	3488	2968	1556	1198	2193	3313	2280	1135	25335
1984	288	673	2257	4361	3670	3122	1637	1261	2308	3485	2398	1195	26655
1985	296	690	2313	4470	3761	3200	1678	1292	2365	3573	2458	1225	27321

FOOTNOTES

DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

TABLE 28-21

CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)

TRINCOMALEE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	415	1478	11767	10757	7754	4746	1945	1366	2413	5628	3295	1584	53148
1979	442	1575	12547	11470	8268	5061	2074	1456	2573	6001	3514	1690	56671
1980	479	1707	13592	12426	8957	5482	2247	1578	2787	6502	3806	1830	61353
1981	515	1837	14631	13376	9642	5901	2419	1698	3000	6998	4097	1971	66085
1982	570	2033	16191	14802	10670	6531	2677	1879	3320	7745	4534	2179	73131
1983	618	2202	17535	16030	11556	7073	2899	2035	3596	8387	4911	2360	79202
1984	650	2316	18442	16865	12157	7441	3050	2141	3783	8824	5166	2485	83326
1985	666	2374	18910	17287	12461	7627	3126	2195	3878	9045	5295	2546	85410

TABLE 28-22
CALCULATED PADDY MARKETING BOARD PROCUREMENT TARGETS OF ROUGH RICE BY MONTH 1978-1985(TONS)
VAVUNIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1978	54	394	4665	4369	2751	2297	1491	1026	858	758	304	135	19142
1979	57	420	4872	4658	2933	2449	1550	1094	914	953	325	145	20410
1980	41	305	3386	3231	2128	1777	1153	794	8114	840	235	106	22110
1981	42	310	3288	3130	2160	1804	1171	806	9741	1003	235	106	23800
1982	47	343	3538	3464	2391	1996	1256	892	10780	1110	265	116	26338
1983	50	371	3940	3751	2589	2162	1403	966	11675	1202	286	125	28524
1984	53	390	4145	3946	2724	2275	1477	1016	12283	1264	301	135	30005
1985	54	400	4249	4045	2792	2331	1514	1041	12590	1296	309	139	30760

FOOTNOTES
DISTRICT TOTAL IN TABLE 27 PRORATED BY CALCULATED PURCHASING %'S BY MONTH

to many bottlenecks, a different approach to determining facility requirements is required.

Future monthly storage requirements for each district by year are calculated using the following equations.

(1) Beginning Year Inventory + Time lag quantity to smooth commodity flow + Monthly Procurement of Rough Rice − Monthly Milling Requirement to Mill Annual Procurement

Balance of Rough Rice to be Stored Monthly

(2) Balance of Rough Rice to be Stored Monthly − Current Available Storage Capacity = Additional Storage Capacity Required

Monthly procurement of rough rice in equation 1 is explained in the previous subsection. Monthly milling requirement is the monthly capacity of milling needed to evenly mill the annual procurement of rough rice throughout the year. Since monthly purchases have the same general configurations as production, this means that large amounts are purchased in specified months and small amounts in other months. By milling on a continuous basis throughout the year, milling facilities can be efficiently used, and the commodity flow of milled rice to the ration system will be a continuous smooth flow to match demand of the ration system which is a constant demand. This would eliminate inefficient, discontinuous milling and long-term storage of milled rice as well as use rough rice storage capacity in the most efficient manner.

Carry-over balances and time lags must be entered into the equation. The beginning year inventory balance entered into the equation is the carry-over of rough rice in storage from year 1977 to year 1978. This is based

upon data provided by the Paddy Marketing Board. In districts where no data for carry-over was provided, it was assumed there was some level of carry-over. This balance was artificially constructed by using one month's milling requirement as the beginning year inventory balance.

Since commodity flows in such situations as this do not fit the neat time blocks in which analysis is performed, a time lag quantity must be introduced to reflect the real-life fact that shipments into and out of warehouses through any given month are highly irregular. To allow for this, a time lag quantity of one month's milling requirement is added.

A computer program is used to construct the balance of rough rice to be stored monthly. The computation enters the beginning year inventory plus one month's milling capacity plus the first month's procurement less one month's milling capacity to which result is the balance of rough rice to be stored for the first month. For the second month, the balance stored for the first month is added to the second month's procurement less the monthly milling requirement which result is the balance of rough rice to be stored for the second month. This is continued throughout the year.

At the end of the year and beginning the next year, the carry-over balance (rough rice in storage for the last month) is adjusted to reflect the needed change in the time lag quantity. Therefore, the current year time lag quantity (monthly milling requirement) is subtracted from the rough rice in storage for the last month of the year, and the next year's time lag quantity (monthly milling requirement for the following year) is added to construct an adjusted annual carry-over. This procedure produces a resulting carry-over that places a conservative bias in outflow from the warehouse, and therefore will allow additional warehouse capacity for irregularities in commodity flows. Table Series 29 and 30 present required milling

TABLE 29-1
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
AMPARAI DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	9248	9248	9248	9248	9248	9248	9248	9248	9248	9248	9248	9248
1979	9861	9861	9861	9861	9861	9861	9861	9861	9861	9861	9861	9861
1980	10683	10683	10683	10683	10683	10683	10683	10683	10683	10683	10683	10683
1981	11499	11499	11499	11499	11499	11499	11499	11499	11499	11499	11499	11499
1982	12725	12725	12725	12725	12725	12725	12725	12725	12725	12725	12725	12725
1983	13782	13782	13782	13782	13782	13782	13782	13782	13782	13782	13782	13782
1984	14499	14499	14499	14499	14499	14499	14499	14499	14499	14499	14499	14499
1985	14862	14862	14862	14862	14862	14862	14862	14862	14862	14862	14862	14862

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-2
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
ANURADHAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	7245	7245	7245	7245	7245	7245	7245	7245	7245	7245	7245	7245
1979	7726	7726	7726	7726	7726	7726	7726	7726	7726	7726	7726	7726
1980	8369	8369	8369	8369	8369	8369	8369	8369	8369	8369	8369	8369
1981	9009	9009	9009	9009	9009	9009	9009	9009	9009	9009	9009	9009
1982	9970	9970	9970	9970	9970	9970	9970	9970	9970	9970	9970	9970
1983	10798	10798	10798	10798	10798	10798	10798	10798	10798	10798	10798	10798
1984	11360	11360	11360	11360	11360	11360	11360	11360	11360	11360	11360	11360
1985	11644	11644	11644	11644	11644	11644	11644	11644	11644	11644	11644	11644

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-3
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
BADULLA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1088	1088	1088	1088	1088	1088	1088	1088	1088	1088	1088	1088
1979	1160	1160	1160	1160	1160	1160	1160	1160	1160	1160	1160	1160
1980	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257	1257
1981	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353	1353
1982	1497	1497	1497	1497	1497	1497	1497	1497	1497	1497	1497	1497
1983	1622	1622	1622	1622	1622	1622	1622	1622	1622	1622	1622	1622
1984	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706
1985	1749	1749	1749	1749	1749	1749	1749	1749	1749	1749	1749	1749

TABLE 29-4
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
BATTICCLOA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	2735	2735	2735	2735	2735	2735	2735	2735	2735	2735	2735	2735
1979	2916	2916	2916	2916	2916	2916	2916	2916	2916	2916	2916	2916
1980	3159	3159	3159	3159	3159	3159	3159	3159	3159	3159	3159	3159
1981	3401	3401	3401	3401	3401	3401	3401	3401	3401	3401	3401	3401
1982	3764	3764	3764	3764	3764	3764	3764	3764	3764	3764	3764	3764
1983	4076	4076	4076	4076	4076	4076	4076	4076	4076	4076	4076	4076
1984	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288
1985	4396	4396	4396	4396	4396	4396	4396	4396	4396	4396	4396	4396

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-5
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
COLOMBO DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	93	93	93	93	93	93	93	93	93	93	93	93
1979	99	99	99	99	99	99	99	99	99	99	99	99
1980	108	108	108	108	108	108	108	108	108	108	108	108
1981	116	116	116	116	116	116	116	116	116	116	116	116
1982	128	128	128	128	128	128	128	128	128	128	128	128
1983	139	139	139	139	139	139	139	139	139	139	139	139
1984	146	146	146	146	146	146	146	146	146	146	146	146
1985	150	150	150	150	150	150	150	150	150	150	150	150

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-6
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
GALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	438	438	438	438	438	438	438	438	438	438	438	438
1979	467	467	467	467	467	467	467	467	467	467	467	467
1980	506	506	506	506	506	506	506	506	506	506	506	506
1981	545	545	545	545	545	545	545	545	545	545	545	545
1982	603	603	603	603	603	603	603	603	603	603	603	603
1983	653	653	653	653	653	653	653	653	653	653	653	653
1984	687	687	687	687	687	687	687	687	687	687	687	687
1985	705	705	705	705	705	705	705	705	705	705	705	705

FOOTNOTES

TABLE 29-7
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
HAMBANTOTA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	3676	3676	3676	3676	3676	3676	3676	3676	3676	3676	3676	3676
1979	3920	3920	3920	3920	3920	3920	3920	3920	3920	3920	3920	3920
1980	4247	4247	4247	4247	4247	4247	4247	4247	4247	4247	4247	4247
1981	4571	4571	4571	4571	4571	4571	4571	4571	4571	4571	4571	4571
1982	5059	5059	5059	5059	5059	5059	5059	5059	5059	5059	5059	5059
1983	5479	5479	5479	5479	5479	5479	5479	5479	5479	5479	5479	5479
1984	5764	5764	5764	5764	5764	5764	5764	5764	5764	5764	5764	5764
1985	5908	5908	5908	5908	5908	5908	5908	5908	5908	5908	5908	5908

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-8
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
JAFFNA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591
1979	1697	1697	1697	1697	1697	1697	1697	1697	1697	1697	1697	1697
1980	1838	1838	1838	1838	1838	1838	1838	1838	1838	1838	1838	1838
1981	1979	1979	1979	1979	1979	1979	1979	1979	1979	1979	1979	1979
1982	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190
1983	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371
1984	2495	2495	2495	2495	2495	2495	2495	2495	2495	2495	2495	2495
1985	2557	2557	2557	2557	2557	2557	2557	2557	2557	2557	2557	2557

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-9
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
KALUTARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	344	344	344	344	344	344	344	344	344	344	344	344
1979	366	366	366	366	366	366	366	366	366	366	366	366
1980	397	397	397	397	397	397	397	397	397	397	397	397
1981	427	427	427	427	427	427	427	427	427	427	427	427
1982	473	473	473	473	473	473	473	473	473	473	473	473
1983	512	512	512	512	512	512	512	512	512	512	512	512
1984	539	539	539	539	539	539	539	539	539	539	539	539
1985	552	552	552	552	552	552	552	552	552	552	552	552

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-10
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
KANDY DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	2054	2054	2054	2054	2054	2054	2054	2054	2054	2054	2054	2054
1979	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190
1980	2372	2372	2372	2372	2372	2372	2372	2372	2372	2372	2372	2372
1981	2554	2554	2554	2554	2554	2554	2554	2554	2554	2554	2554	2554
1982	2826	2826	2826	2826	2826	2826	2826	2826	2826	2826	2826	2826
1983	3061	3061	3061	3061	3061	3061	3061	3061	3061	3061	3061	3061
1984	3220	3220	3220	3220	3220	3220	3220	3220	3220	3220	3220	3220
1985	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-11
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
KEGALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	263	263	263	263	263	263	263	263	263	263	263	263
1979	280	280	280	280	280	280	280	280	280	280	280	280
1980	304	304	304	304	304	304	304	304	304	304	304	304
1981	327	327	327	327	327	327	327	327	327	327	327	327
1982	362	362	362	362	362	362	362	362	362	362	362	362
1983	392	392	392	392	392	392	392	392	392	392	392	392
1984	413	413	413	413	413	413	413	413	413	413	413	413
1985	423	423	423	423	423	423	423	423	423	423	423	423

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-12
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
KURUNEGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	2373	2373	2373	2373	2373	2373	2373	2373	2373	2373	2373	2373
1979	2531	2531	2531	2531	2531	2531	2531	2531	2531	2531	2531	2531
1980	2741	2741	2741	2741	2741	2741	2741	2741	2741	2741	2741	2741
1981	2951	2951	2951	2951	2951	2951	2951	2951	2951	2951	2951	2951
1982	3266	3266	3266	3266	3266	3266	3266	3266	3266	3266	3266	3266
1983	3537	3537	3537	3537	3537	3537	3537	3537	3537	3537	3537	3537
1984	3721	3721	3721	3721	3721	3721	3721	3721	3721	3721	3721	3721
1985	3814	3814	3814	3814	3814	3814	3814	3814	3814	3814	3814	3814

TABLE 29-13
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
MANNAR DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	882	882	882	882	882	882	882	882	882	882	882	882
1979	940	940	940	940	940	940	940	940	940	940	940	940
1980	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018
1981	1096	1096	1096	1096	1096	1096	1096	1096	1096	1096	1096	1096
1982	1213	1213	1213	1213	1213	1213	1213	1213	1213	1213	1213	1213
1983	1314	1314	1314	1314	1314	1314	1314	1314	1314	1314	1314	1314
1984	1382	1382	1382	1382	1382	1382	1382	1382	1382	1382	1382	1382
1985	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417	1417

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-14
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
MATALE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	975	975	975	975	975	975	975	975	975	975	975	975
1979	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040
1980	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126
1981	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212
1982	1342	1342	1342	1342	1342	1342	1342	1342	1342	1342	1342	1342
1983	1453	1453	1453	1453	1453	1453	1453	1453	1453	1453	1453	1453
1984	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529
1985	1567	1567	1567	1567	1567	1567	1567	1567	1567	1567	1567	1567

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-15
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
MATARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	602	602	602	602	602	602	602	602	602	602	602	602
1979	642	642	642	642	642	642	642	642	642	642	642	642
1980	696	696	696	696	696	696	696	696	696	696	696	696
1981	749	749	749	749	749	749	749	749	749	749	749	749
1982	829	829	829	829	829	829	829	829	829	829	829	829
1983	898	898	898	898	898	898	898	898	898	898	898	898
1984	945	945	945	945	945	945	945	945	945	945	945	945
1985	968	968	968	968	968	968	968	968	968	968	968	968

TABLE 29-16
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
MONERAGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185
1979	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263
1980	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369	1369
1981	1473	1473	1473	1473	1473	1473	1473	1473	1473	1473	1473	1473
1982	1630	1630	1630	1630	1630	1630	1630	1630	1630	1630	1630	1630
1983	1766	1766	1766	1766	1766	1766	1766	1766	1766	1766	1766	1766
1984	1858	1858	1858	1858	1858	1858	1858	1858	1858	1858	1858	1858
1985	1904	1904	1904	1904	1904	1904	1904	1904	1904	1904	1904	1904

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-17
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
NUWARA ELIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	122	122	122	122	122	122	122	122	122	122	122	122
1979	131	131	131	131	131	131	131	131	131	131	131	131
1980	141	141	141	141	141	141	141	141	141	141	141	141
1981	152	152	152	152	152	152	152	152	152	152	152	152
1982	169	169	169	169	169	169	169	169	169	169	169	169
1983	183	183	183	183	183	183	183	183	183	183	183	183
1984	192	192	192	192	192	192	192	192	192	192	192	192
1985	197	197	197	197	197	197	197	197	197	197	197	197

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-18
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
POLONNARUWA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	7664	7664	7664	7664	7664	7664	7664	7664	7664	7664	7664	7664
1979	8172	8172	8172	8172	8172	8172	8172	8172	8172	8172	8172	8172
1980	8853	8853	8853	8853	8853	8853	8853	8853	8853	8853	8853	8853
1981	9529	9529	9529	9529	9529	9529	9529	9529	9529	9529	9529	9529
1982	10545	10545	10545	10545	10545	10545	10545	10545	10545	10545	10545	10545
1983	11421	11421	11421	11421	11421	11421	11421	11421	11421	11421	11421	11421
1984	12016	12016	12016	12016	12016	12016	12016	12016	12016	12016	12016	12016
1985	12316	12316	12316	12316	12316	12316	12316	12316	12316	12316	12316	12316

TABLE 29-19
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
PUTTALAM DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	397	397	397	397	397	397	397	397	397	397	397	397
1979	424	424	424	424	424	424	424	424	424	424	424	424
1980	459	459	459	459	459	459	459	459	459	459	459	459
1981	494	494	494	494	494	494	494	494	494	494	494	494
1982	547	547	547	547	547	547	547	547	547	547	547	547
1983	592	592	592	592	592	592	592	592	592	592	592	592
1984	623	623	623	623	623	623	623	623	623	623	623	623
1985	639	639	639	639	639	639	639	639	639	639	639	639

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-20
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
RATNAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1978	1416	1416	1416	1416	1416	1416	1416	1416	1416	1416	1416
1979	1510	1510	1510	1510	1510	1510	1510	1510	1510	1510	1510
1980	1636	1636	1636	1636	1636	1636	1636	1636	1636	1636	1636
1981	1761	1761	1761	1761	1761	1761	1761	1761	1761	1761	1761
1982	1949	1949	1949	1949	1949	1949	1949	1949	1949	1949	1949
1983	2111	2111	2111	2111	2111	2111	2111	2111	2111	2111	2111
1984	2221	2221	2221	2221	2221	2221	2221	2221	2221	2221	2221
1985	2276	2276	2276	2276	2276	2276	2276	2276	2276	2276	2276

FOOTNOTES
TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 29-21
REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)
TRINCOMALEE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	4429	4429	4429	4429	4429	4429	4429	4429	4429	4429	4429	4429
1979	4722	4722	4722	4722	4722	4722	4722	4722	4722	4722	4722	4722
1980	5116	5116	5116	5116	5116	5116	5116	5116	5116	5116	5116	5116
1981	5507	5507	5507	5507	5507	5507	5507	5507	5507	5507	5507	5507
1982	6094	6094	6094	6094	6094	6094	6094	6094	6094	6094	6094	6094
1983	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600
1984	6943	6943	6943	6943	6943	6943	6943	6943	6943	6943	6943	6943
1985	7117	7117	7117	7117	7117	7117	7117	7117	7117	7117	7117	7117

TABLE 29-22

REQUIRED MILLING CAPACITY TO MILL PROCUREMENT OF ROUGH RICE, 1978-1985(TONS PER MONTH)

VAVUNIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1595	1595	1595	1595	1595	1595	1595	1595	1595	1595	1595	1595
1979	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
1980	1842	1842	1842	1842	1842	1842	1842	1842	1842	1842	1842	1842
1981	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983
1982	2194	2194	2194	2194	2194	2194	2194	2194	2194	2194	2194	2194
1983	2377	2377	2377	2377	2377	2377	2377	2377	2377	2377	2377	2377
1984	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
1985	2563	2563	2563	2563	2563	2563	2563	2563	2563	2563	2563	2563

FOOTNOTES

TOTAL ANNUAL PROCUREMENT / 12 MONTHS = MONTHLY MILLING CAPACITY REQUIRED TO MILL ANNUAL PROCUREMENT

TABLE 30-1
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
AMPARAI DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	11476	3637	8462	21411	29765	29795	25541	22564	20053	21371	23521	19255
1979	11581	3223	8367	22174	31082	31114	26578	23403	20725	22130	24422	19875
1980	11719	2664	8236	23193	32842	32876	27962	24522	21621	23142	25625	20699
1981	11851	2105	8104	24204	34591	34628	29339	25637	22514	24152	26825	21523
1982	12055	1269	7907	25724	37219	37260	31407	27310	23854	25667	28625	22758
1983	12233	551	7740	27035	39483	39527	33187	28749	25006	26969	30172	23818
1984	12350	61	7625	27926	41023	41070	34401	29733	25796	27862	31233	24546
1985	12419	0	7753	28561	41985	42033	35197	30412	26376	28493	31948	25094

FOOTNOTES
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TABLE 30-2
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
ANURADHAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	22756	16876	18839	22385	25035	31607	32370	32151	34010	35990	33701	29256
1979	22920	16752	18724	22365	25060	31891	32601	32366	34468	36718	34379	29739
1980	22997	16315	18452	22397	25317	32717	33488	33234	35512	37950	35417	30393
1981	23064	15891	18191	22437	25580	33545	34374	34101	36552	39176	36448	31040
1982	23203	15243	17788	22486	25964	34778	35695	35392	38104	41007	37938	32003
1983	23303	14682	17438	22526	26292	35837	36836	36508	39445	42589	39319	32836
1984	23374	14304	17203	22556	26518	36560	37605	37260	40350	43658	40218	33395
1985	23408	14111	17083	22570	26632	36926	37998	37644	40812	44203	40677	33687

FOOTNOTES
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TABLE 30-3
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
BADULLA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	2114	1119	987	1853	3590	4341	4665	4397	3910	4130	3868	3094
1979	2127	1066	926	1850	3703	4504	4854	4564	4045	4279	3995	3174
1980	2145	995	843	1843	3850	4718	5097	4783	4220	4473	4170	3276
1981	2160	922	758	1835	3995	4929	5327	4999	4393	4666	4335	3378
1982	2181	812	631	1823	4214	5248	5655	5325	4655	4957	4596	3531
1983	2203	719	522	1812	4400	5519	6007	5602	4875	5202	4810	3658
1984	2214	653	446	1804	4528	5705	6219	5793	5025	5373	4961	3745
1985	2226	626	414	1805	4596	5803	6329	5892	5109	5461	5039	3795

TABLE 30-4
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
BATTICCLOA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	4158	2185	7837	13611	16273	16184	14335	12493	12095	11176	9183	6742
1979	4175	2071	8098	14255	17093	16958	15027	13063	12643	11659	9534	6934
1980	4200	1921	8450	15120	18195	18092	15957	13829	13374	12308	10006	7188
1981	4225	1771	8799	15978	19287	19176	16877	14586	14095	12947	10468	7435
1982	4251	1535	9312	17256	20918	20755	18251	15716	15173	13902	11159	7759
1983	4270	1329	9752	18356	22322	22189	19434	16689	16101	14725	11755	8118
1984	4289	1195	10057	19109	23282	23142	20244	17356	16738	15291	12166	8340
1985	4305	1133	10216	19494	23771	23627	20655	17694	17059	15575	12371	8450

FOOTNOTES
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TABLE 30-5
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
COLOMBO DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	99	15	114	198	200	143	64	11	7	191	240	194
1979	107	18	123	212	214	154	69	12	8	204	256	210
1980	117	20	133	229	231	165	73	11	6	217	273	221
1981	120	15	137	241	243	172	73	6	1	229	289	235
1982	127	12	148	263	266	188	79	6	1	254	321	258
1983	138	13	159	283	286	201	82	2	0	273	345	250
1984	150	18	172	303	306	217	92	8	2	289	365	257
1985	160	25	183	317	320	228	100	14	8	302	380	307

FOOTNOTES
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TABLE 30-6
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
GALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	461	787	1756	1558	1206	752	361	902	1724	1665	1304	883
1979	469	816	1807	1596	1221	779	315	917	1815	1753	1368	920
1980	479	855	1868	1639	1233	754	256	934	1937	1069	1452	966
1981	488	876	1966	1719	1281	765	229	959	2038	1981	1532	1009
1982	495	915	2121	1848	1364	794	200	1008	2203	2149	1652	1072
1983	504	959	2266	1971	1447	829	186	1061	2355	2297	1759	1130
1984	512	990	2365	2054	1502	852	176	1097	2458	2397	1831	1171
1985	520	1010	2421	2102	1536	869	175	1118	2513	2449	1868	1193

TABLE 30-7
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
HAMBANTOTA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	6525	3524	3122	4578	8478	12065	11919	11166	11494	12539	11907	9667
1979	6571	3371	2942	4494	8652	12476	12320	11538	11866	12980	12306	9939
1980	6626	3159	2694	4375	8879	13021	12851	12004	12359	13566	12836	10270
1981	6676	2944	2444	4254	9103	13562	13380	12468	12851	14150	13365	10605
1982	6756	2626	2072	4074	9439	14373	14171	13161	13584	15021	14151	11097
1983	6820	2347	1747	3915	9726	15070	14851	13758	14216	15773	14831	11522
1984	6866	2160	1529	3810	9924	15546	15316	14166	14649	16287	15296	11815
1985	6895	2072	1425	3763	10030	15793	15558	14379	14874	16553	15538	11970

FOOTNOTES
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TABLE 30-8
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
JAFFNA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	4011	3108	7618	11352	12615	11880	10476	9036	8977	8461	7179	5559
1979	4020	3056	7864	11845	13191	12406	10909	9373	9309	8759	7392	5707
1980	4023	2979	8188	12501	13959	13109	11487	9823	9754	9158	7677	5854
1981	4030	2906	8512	13154	14723	13808	12062	10271	10197	9555	7961	5996
1982	4033	2789	8993	14130	15866	14653	12921	10939	10857	10147	8383	6208
1983	4035	2689	9409	14973	16854	15758	13666	11520	11432	10663	8753	6400
1984	4047	2630	9699	15553	17532	16379	14177	11919	11826	11017	9007	6529
1985	4052	2600	9847	15847	17876	16694	14438	12123	12028	11159	9139	6601

FOOTNOTES
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TABLE 30-9
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
KALUTARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	358	34	1266	1396	1219	928	601	405	780	1067	975	688
1979	359	14	1329	1469	1281	972	624	416	816	1123	1026	720
1980	371	0	1424	1575	1371	1036	658	432	865	1197	1091	756
1981	379	0	1533	1696	1476	1115	709	466	933	1291	1178	820
1982	413	0	1656	1876	1632	1232	782	513	1025	1424	1298	903
1983	452	0	1837	2032	1769	1336	849	558	1117	1545	1409	979
1984	490	0	1933	2138	1860	1404	891	584	1172	1623	1479	1028
1985	512	0	1982	2192	1908	1442	917	603	1206	1668	1521	1059

TABLE 30-10
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
KANDY DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	12183	10363	10298	12567	14836	15247	14421	12941	12341	14495	15012	13755
1979	12216	10276	10207	12627	15047	15485	14604	13026	12387	14684	15235	13894
1980	12262	10160	10086	12708	15330	15805	14851	13142	12450	14938	15536	14084
1981	12313	10050	9969	12791	15613	16124	15096	13256	12510	15188	15831	14266
1982	12377	9873	9784	12907	16030	16596	15459	13423	12598	15561	16272	14542
1983	12436	9724	9627	13009	16391	17003	15771	13566	12672	15881	16651	14777
1984	12473	9620	9519	13077	16635	17279	15983	13663	12723	16100	16911	14940
1985	12496	9572	9469	13117	16765	17426	16059	13722	12759	16221	17052	15031

FOOTNOTES
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TABLE 30-11
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
KEGALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	310	82	292	372	340	226	43	0	230	726	798	652
1979	439	196	420	506	472	351	156	0	246	775	852	658
1980	472	208	450	542	505	373	161	0	266	839	922	754
1981	509	225	486	585	545	403	115	0	286	903	993	812
1982	550	236	524	634	589	432	180	0	317	959	1098	858
1983	606	266	578	697	649	479	206	0	343	1082	1189	973
1984	655	297	625	750	699	519	231	0	361	1138	1250	1021
1985	684	317	653	781	729	545	251	0	370	1167	1282	1048

FOOTNOTES
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TABLE 30-12
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
KURUNEGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	6271	4630	6998	8346	8224	8156	7504	7185	8864	9583	9358	8382
1979	6298	4548	7073	8510	8379	8306	7610	7270	9059	9824	9584	8541
1980	6323	4428	7164	8721	8580	8502	7749	7381	9320	10150	9891	8762
1981	6358	4318	7262	8938	8786	8701	7890	7493	9580	10473	10193	8978
1982	6399	4141	7399	9253	9084	8990	8092	7653	9962	10950	10640	9295
1983	6432	3986	7514	9522	9339	9237	8265	7789	10290	11360	11025	9570
1984	6457	3884	7596	9709	9517	9410	8387	7887	10518	11644	11291	9760
1985	6474	3837	7642	9808	9611	9501	8453	7940	10637	11791	11429	9860

TABLE 30-13
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
MANNAR DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1018	288	1703	3008	3844	4473	4445	3928	3827	3443	2725	1883
1979	1020	243	1753	3145	4037	4708	4679	4128	4021	3612	2851	1947
1980	1028	186	1822	3331	4298	5025	4954	4398	4283	3840	3016	2030
1981	1040	134	1855	3519	4559	5341	5307	4665	4540	4063	3176	2123
1982	1052	49	1997	3754	4945	5811	5774	5064	4926	4398	3417	2248
1983	1062	0	2110	4056	5303	6240	6159	5429	5275	4707	3644	2380
1984	1094	0	2220	4267	5579	6566	6523	5714	5557	4955	3837	2508
1985	1155	0	2275	4373	5717	6728	6684	5854	5693	5076	3930	2566

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TABLE 30-14
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
MATALE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1618	761	1087	1885	2329	3009	2980	2714	2448	2301	1917	2482
1979	1631	717	1064	1663	2136	2861	2830	2546	2515	2357	1947	2546
1980	1643	654	1030	1679	2192	2978	2945	2638	2605	2435	1992	2641
1981	1662	597	1002	1701	2253	3099	3063	2733	2697	2514	2037	2737
1982	1688	509	957	1730	2340	3276	3235	2865	2828	2625	2096	2865
1983	1703	426	911	1748	2409	3423	3380	2984	2941	2721	2145	2987
1984	1719	375	885	1766	2461	3527	3481	3064	3018	2787	2185	3066
1985	1727	350	873	1776	2489	3582	3535	3108	3061	2824	2207	3110

FOOTNOTES
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TABLE 30-15
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
MATARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	639	716	1333	1436	1430	1096	572	990	2069	2160	1762	1215
1979	652	734	1392	1501	1495	1139	580	1026	2177	2274	1850	1265
1980	666	754	1466	1584	1577	1191	585	1067	2313	2418	1958	1324
1981	674	769	1536	1663	1655	1240	588	1107	2449	2562	2067	1385
1982	687	792	1640	1781	1772	1312	591	1166	2651	2776	2228	1472
1983	698	811	1730	1882	1872	1374	592	1214	2822	2957	2363	1546
1984	706	825	1791	1951	1941	1417	595	1249	2940	3082	2457	1596
1985	710	833	1824	1988	1978	1441	595	1270	3004	3150	2510	1629

TABLE 30-16
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
MONERAGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1309	253	0	581	1959	3992	4984	4900	4486	4059	3340	2392
1979	1339	214	0	620	2090	4259	5318	5229	4788	4333	3567	2555
1980	1435	215	0	671	2262	4611	5757	5660	5181	4688	3858	2762
1981	1547	235	0	723	2436	4965	6199	6395	5580	5050	4157	2978
1982	1675	223	0	800	2696	5494	6860	6745	6176	5589	4601	3297
1983	1851	278	0	866	2919	5949	7428	7302	6685	6049	4978	3564
1984	1992	337	0	911	3071	6259	7815	7683	7033	6363	5238	3749
1985	2090	394	0	934	3148	6416	8011	7876	7211	6525	5371	3846

FOOTNOTES
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TABLE 30-17
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
NUWARA ELIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	148	62	135	105	47	67	295	394	431	437	350	255
1979	161	68	129	97	34	55	297	401	455	460	366	264
1980	163	63	130	96	28	52	315	429	488	495	394	285
1981	176	68	139	102	25	54	337	459	523	530	421	305
1982	189	69	147	105	23	50	363	497	567	574	453	323
1983	193	63	148	103	15	44	383	528	604	612	481	338
1984	196	60	150	103	11	42	399	553	633	642	504	355
1985	205	65	157	109	14	46	412	569	651	660	515	366

FOOTNOTES
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TABLE 30-18
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
POLONNARUWA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	27275	20209	24557	30588	37115	39347	36797	34661	39367	42638	39002	33968
1979	27344	19809	24445	30875	37835	40215	37496	35218	40236	43724	39847	34480
1980	27434	19272	24294	31260	38800	41378	38432	35964	41400	45179	40979	35164
1981	27523	18737	24143	31642	39758	42535	39364	36708	42560	46628	42108	35851
1982	27663	17941	23924	32222	41204	44276	40767	37828	44304	48806	43804	36878
1983	27786	17256	23735	32722	42449	45775	41574	38790	45803	50678	45260	37759
1984	27866	16787	23603	33057	43230	46789	42790	39440	46818	51947	46247	38356
1985	27907	16552	23539	33231	43721	47308	43210	39777	47340	52598	46756	38665

TABLE 30-19
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
PUTTALAM DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	434	171	776	1366	1536	1552	1386	1148	952	987	999	802
1979	444	163	808	1437	1618	1635	1458	1204	1038	1032	1044	830
1980	448	144	843	1525	1721	1739	1547	1272	1092	1086	1095	870
1981	457	130	882	1616	1828	1848	1642	1346	1152	1145	1160	911
1982	468	106	938	1750	1984	2006	1777	1449	1234	1226	1242	967
1983	475	83	985	1864	2118	2142	1895	1541	1309	1301	1318	1020
1984	486	73	1021	1946	2213	2238	1978	1605	1361	1352	1370	1057
1985	493	69	964	1912	2185	2210	1943	1560	1309	1376	1394	1074

FOOTNOTES
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TABLE 30-20
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
RATNAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1600	613	636	2002	2527	3502	3130	2518	2574	3381	3495	2841
1979	1621	569	594	2050	3036	3649	3252	2599	2658	3518	3635	2943
1980	1646	506	533	2110	3178	3842	3412	2705	2769	3701	3832	3076
1981	1669	442	471	2169	3218	4033	3570	2809	2878	3881	4022	3208
1982	1700	342	374	2253	3525	4316	3804	2961	3037	4147	4303	3401
1983	1726	255	289	2323	3700	4557	4002	3089	3171	4373	4542	3566
1984	1743	195	231	2371	3820	4721	4137	3177	3264	4528	4705	3679
1985	1754	168	205	2399	3884	4808	4210	3226	3315	4612	4794	3743

FOOTNOTES
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TABLE 30-21
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE,1978-1985(TONS)
TRINCOMALEE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	11415	8464	15802	22130	25455	25772	23288	20225	18239	19408	18274	15925
1979	11442	8295	16120	22868	26414	26753	24105	20839	18690	19969	18761	15729
1980	11486	8077	16553	23863	27704	28070	25201	21663	19334	20720	19410	16124
1981	11523	7853	16977	24846	28981	29375	26287	22478	19971	21462	20052	16516
1982	11579	7518	17615	26323	30899	31336	27919	23704	20930	22581	21021	17106
1983	11630	7232	18167	27597	32553	33026	29325	24760	21756	23543	21654	17614
1984	11664	7037	18542	28464	33678	34176	30283	25481	22321	24202	22425	17967
1985	11690	6947	18740	28910	34254	34764	30773	25851	22612	24540	22718	18147

TABLE 30-22
BALANCE OF ROUGH RICE TO BE PLACED IN STORAGE, 1978-1985 (TONS)
VAVUNIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1649	448	3518	6292	7448	8150	8046	7477	6740	5943	4652	3152
1979	1654	374	3546	6504	7737	8426	8376	7770	6984	6237	4862	3307
1980	1648	111	1655	3044	3330	3265	2576	1528	7800	6758	5191	3455
1981	1655	0	1305	2452	2629	2450	1638	461	8219	7239	5495	3618
1982	1682	0	1444	2714	2911	2713	1815	513	9055	8015	6086	4008
1983	1864	0	1563	2937	3149	2934	1960	549	9847	8672	6581	4333
1984	2009	0	1645	3091	3315	3090	2067	583	10366	9130	6931	4566
1985	2120	0	1686	3168	3397	3165	2116	594	10621	9354	7100	4676

FOOTNOTES
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capacities and balances of rough rice to be stored by district.

The second equation is simply the balance of rough rice to be stored less available storage capacity which result is additional storage capacity required, if any. Current available storage capacity data is provided by the Paddy Marketing Board and includes warehouses under construction which will be available for use in 1979 and funded proposed warehouses which will be available for use in 1980. Table Series 31 and 32 present currently available storage capacity and additional storage capacity required. Table 33 is a summary of future needed warehouse capacity.

TABLE 33

ADDITIONAL WAREHOUSE CAPACITY REQUIREMENTS FOR 1982 AND 1985[1]

District	Capacity (Tons) 1982	1983	1984	1985
Badulla	0	300	200	100
Batticoloa	2,200	1,400	1,000	500
Hambantota	2,800	700	600	200
Jaffna	6,900	1,000	600	400
Polonnaruwa	13,600	1,900	1,200	700
Trincomalee	3,600	1,700	1,200	500

[1]No earlier years placed under consideration because of time required for planning and construction.

Source: Table Series 32.

Storage Turnover Ratios

As previously addressed, historical storage turnover ratios are not only unknown, but cannot be accurately identified due to the complexity of the system and the bottlenecks which exist due to improper management. However, minimum turnover ratios by district have been calculated based upon the level of procurement and existing required future storage capacities.

TABLE 31-1
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
AMPARAI DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	37499	37499	37499	37499	37499	37499	37499	37499	37499	37499	37499	37499
1979	40824	40824	40824	40824	40824	40824	40824	40824	40824	40824	40824	40824
1980	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024
1981	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024
1982	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024
1983	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024
1984	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024
1985	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024	47024

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-2
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
ANURADHAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	43284	43284	43284	43284	43284	43284	43284	43284	43284	43284	43284	43284
1979	48560	48560	48560	48560	48560	48560	48560	48560	48560	48560	48560	48560
1980	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860
1981	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860
1982	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860
1983	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860
1984	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860
1985	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860	57860

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-3
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(1
BADULLA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717
1979	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717
1980	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717
1981	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717
1982	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717
1983	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717
1984	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717
1985	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717	5717

TABLE 31-4
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
BATTICCLOA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	13036	13036	13036	13036	13036	13036	13036	13036	13036	13036	13036	13036
1979	15655	15655	15655	15655	15655	15655	15655	15655	15655	15655	15655	15655
1980	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755
1981	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755
1982	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755
1983	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755
1984	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755
1985	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755	18755

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-5
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
COLOMBO DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
1979	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
1980	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
1981	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
1982	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
1983	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
1984	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412
1985	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412	2412

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-6
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
GALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394
1979	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394
1980	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394
1981	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394
1982	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394
1983	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394
1984	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394
1985	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394	3394

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-7
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
HAMBANTOTA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254
1979	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254
1980	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254
1981	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254
1982	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254
1983	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254
1984	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254
1985	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254	12254

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-8
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
JAFFNA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
1979	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
1980	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
1981	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
1982	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
1983	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
1984	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
1985	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-9
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
KALUTARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484
1979	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484
1980	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484
1981	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484
1982	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484
1983	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484
1984	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484
1985	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484	3484

TABLE 31-10
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
KANDY DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376
1979	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376
1980	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376
1981	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376
1982	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376
1983	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376
1984	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376
1985	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376	17376

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-11
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
KEGALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
1979	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
1980	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
1981	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
1982	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
1983	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
1984	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
1985	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-12
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
KURUNEGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	23032	23032	23032	23032	23032	23032	23032	23032	23032	23032	23032	23032
1979	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562
1980	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562
1981	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562
1982	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562
1983	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562
1984	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562
1985	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562	26562

FOOTNOTES
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TABLE 31-13
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
MANNAR DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638
1979	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638
1980	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638
1981	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638
1982	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638
1983	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638
1984	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638
1985	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638	9638

FOOTNOTES
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TABLE 31-14
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
MATALE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	8932	8932	8932	8932	8932	8932	8932	8932	8932	8932	8932	8932
1979	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805
1980	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805
1981	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805
1982	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805
1983	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805
1984	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805
1985	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805	9805

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-15
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
MATARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466
1979	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466
1980	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466
1981	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466
1982	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466
1983	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466
1984	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466
1985	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466	4466

TABLE 31-16
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
MONERAGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	7414	7414	7414	7414	7414	7414	7414	7414	7414	7414	7414	7414
1979	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120
1980	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120
1981	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120
1982	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120
1983	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120
1984	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120
1985	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120	8120

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-17
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
NUWARA ELIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	715	715	715	715	715	715	715	715	715	715	715	715
1979	715	715	715	715	715	715	715	715	715	715	715	715
1980	715	715	715	715	715	715	715	715	715	715	715	715
1981	715	715	715	715	715	715	715	715	715	715	715	715
1982	715	715	715	715	715	715	715	715	715	715	715	715
1983	715	715	715	715	715	715	715	715	715	715	715	715
1984	715	715	715	715	715	715	715	715	715	715	715	715
1985	715	715	715	715	715	715	715	715	715	715	715	715

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 31-18
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
POLONNARUWA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	29679	29679	29679	29679	29679	29679	29679	29679	29679	29679	29679	29679
1979	32131	32131	32131	32131	32131	32131	32131	32131	32131	32131	32131	32131
1980	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231
1981	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231
1982	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231
1983	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231
1984	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231
1985	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231	35231

TABLE 31-19
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
PUTTALAM DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	3524	3524	3524	3524	3524	3524	3524	3524	3524	3524	3524	3524
1979	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397
1980	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397
1981	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397
1982	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397
1983	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397
1984	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397
1985	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397	4397

FOOTNOTES
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TABLE 31-20
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
RATNAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574
1979	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574
1980	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574
1981	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574
1982	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574
1983	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574
1984	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574
1985	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574	8574

FOOTNOTES
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TABLE 31-21
CURRENTLY AVAILABLE STORAGE CAPACITY,1978-1985(TONS)
TRINCOMALEE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	25300	25300	25300	25300	25300	25300	25300	25300	25300	25300	25300	25300
1979	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752
1980	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752
1981	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752
1982	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752
1983	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752
1984	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752
1985	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752	27752

FOOTNOTES

TABLE 31-22
CURRENTLY AVAILABLE STORAGE CAPACITY, 1978-1985 (TONS)
VAVUNIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637
1979	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637
1980	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637
1981	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637
1982	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637
1983	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637
1984	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637
1985	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637	17637

FOOTNOTES
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TABLE 32-1
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
AMPARAI DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE 32-2
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
ANURADHAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE 32-3
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS
BADULLA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	250	0	0	0	0	0
1985	0	0	0	0	0	86	502	76	0	0	0	0
							612	175	0	0	0	0

TABLE 32-4
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
BATTICCLOA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	575	3237	3148	1299	0	0	0	0	0
1979	0	0	0	0	1438	1343	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	532	421	0	0	0	0	0	0
1982	0	0	0	0	2163	2040	0	0	0	0	0	0
1983	0	0	0	0	3567	3434	679	0	0	0	0	0
1984	0	0	0	354	4527	4387	1489	0	0	0	0	0
1985	0	0	0	739	5016	4872	1500	0	0	0	0	0

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TABLE 32-5
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
COLOMBO DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE 32-6
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
GALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 32-7
ADDITIONAL STORAGE CAPACITY REQUIRED, 1978-1985 (TONS)
HAMBANTOTA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	285	0	0
1979	0	0	0	0	0	222	66	0	0	726	52	0
1980	0	0	0	0	0	767	597	0	135	1312	582	0
1981	0	0	0	0	0	1308	1126	214	597	1856	1111	0
1982	0	0	0	0	0	2119	1917	907	1330	2767	1897	0
1983	0	0	0	0	0	2816	2597	1504	1962	3519	2577	0
1984	0	0	0	0	0	3292	3062	1912	2355	4033	3042	0
1985	0	0	0	0	0	3539	3304	2125	2620	4259	3284	0

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TABLE 32-8
ADDITIONAL STORAGE CAPACITY REQUIRED, 1978-1985 (TONS)
JAFFNA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	2326	3589	2854	1450	10	0	0	0	0
1979	0	0	0	2819	4165	3380	1863	347	283	0	0	0
1980	0	0	0	3475	4933	4083	2461	797	728	132	0	0
1981	0	0	0	4128	5697	4782	3036	1245	1171	529	0	0
1982	0	0	0	5104	6840	5827	3855	1913	1831	1121	0	0
1983	0	0	383	5947	7828	6732	4640	2494	2406	1637	0	0
1984	0	0	673	6527	8506	7353	5151	2853	2800	1991	0	0
1985	0	0	821	6821	8850	7668	5412	3097	3002	2173	113	0

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TABLE 32-9
ADDITIONAL STORAGE CAPACITY REQUIRED, 1978-1985 (TONS)
KALUTARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 32-10
ADDITIONAL STORAGE CAPACITY REQUIRED, 1978-1985 (TONS)
KANDY DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	50	0	0	0	0	0	0

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TABLE 32-11
ADDITIONAL STORAGE CAPACITY REQUIRED, 1978-1985 (TONS)
KEGALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE 32-12
ADDITIONAL STORAGE CAPACITY REQUIRED, 1978-1985 (TONS)
KURUNEGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	[illegible]	0	0	0	0	0	0	0	0	0	0	0

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TABLE 32-13
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
MANNAR DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
TABLE SERIES 30- TABLE SERIES 31

TABLE 32-14
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
MATALE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
TABLE SERIES 30- TABLE SERIES 31

TABLE 32-15
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
MATARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 32-16
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
MONERAGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1978	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
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TABLE 32-17
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
NUWARA ELIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
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TABLE 32-18
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
POLONNARUWA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	905	7436	5668	7118	4982	5688	12559	9323	4285
1979	0	0	0	0	5704	8084	5365	3087	8105	11593	7716	2349
1980	0	0	0	0	3565	6147	3201	733	6169	9948	5748	0
1981	0	0	0	0	4527	7304	4123	1477	7325	11397	6877	620
1982	0	0	0	0	5973	9045	5536	2597	9073	13575	8573	1647
1983	0	0	0	0	7218	10544	6743	3559	10572	15447	10029	2528
1984	0	0	0	0	8055	11358	7559	4205	11587	16716	11016	3125
1985	0	0	0	0	8490	12077	7979	4546	12105	17367	11525	3434

FOOTNOTES
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TABLE 32-19
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
PUTTALAM DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
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TABLE 32-20
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
RATNAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
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TABLE 32-21
ADDITIONAL STORAGE CAPACITY REQUIRED,1978-1985(TONS)
TRINCOMALEE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	155	472	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	318	0	0	0	0	0	0
1981	0	0	0	0	1229	1623	0	0	0	0	0	0
1982	0	0	0	0	3147	3584	167	0	0	0	0	0
1983	0	0	0	0	4801	5274	1573	0	0	0	0	0
1984	0	0	0	712	5526	6424	2531	0	0	0	0	0
1985	0	0	0	1158	6502	7012	3021	0	0	0	0	0

TABLE 32-22
ADDITIONAL STORAGE CAPACITY REQUIRED, 1978-1985(TONS)
VAVUNIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
TABLE SERIES 30- TABLE SERIES 31

Since turnover ratios are the result c nflows and outflows of paddy m storage, they are influenced by purchasing patterns, amount purchased, and carry-over balances. Within the system being studied, there cannot be a specified range of ratios. However, any ratio below 1.50 would indicate an excess of storage in that district as related to storage needs. Only one district falls into this classification. Of course, the greater the ratio, the more efficient the storage system and the cheaper storage becomes per unit stored.

The calculated ratios in this case are presented as a management guide to the minimum turonover required given the assumptions established within this study. While individual warehouses within each district will undoubtedly vary from the calculated average, any sigificant variance indicates either a management flaw or a system bottleneck. Either of which must be remedied so the system can perform as anticipated.

Future Milling Needs

Future milling needs are the result of required milling capacity (Table Series 29) described in the previous subsection less current available milling capacity. Data for current milling capacity is provided by the Paddy Marketing Board and includes funded proposed milling facilities to be available for use in 1980. Also, PMB owned mills which are obsolete and recommended for closure have been deleted (Table J-2, Appendix J). Table Series 35 lists currently available milling capacity. Table Series 36 presents excess milling capacity as well as additional required milling capacity. A summary of additional milling requirements is detailed in Table 37.

TABLE 34

CALCULATED MINIMUM REQUIRED TURNOVER RATIOS BY DISTRICT

District	Minimum Turnover Ratios 1982	1985
Amparai	3.25	3.79
Anaradhapura	2.07	2.42
Badulla*	3.14	3.32
Batticoloa*	2.16	2.22
Colombo	0.64	0.75
Galle	2.13	2.49
Hambantota*	4.04	4.28
Jaffna*	1.66	1.72
Kalutara	1.63	1.90
Kandy*	1.95	2.27
Kegalle	1.87	2.19
Kurunegala	1.48	1.72
Mannar	1.51	1.76
Matale	1.64	1.92
Matara	2.23	2.60
Moneregala	2.41	2.81
Nuwara Eliya	2.84	3.31
Polonnaruwa*	2.59	2.81
Puttalam	1.49	1.74
Ratnapura	2.73	3.19
Trincomalee*	2.33	2.46
Vavuniya	1.49	1.74

*Districts requiring future storage facilities.

TABLE 35-1
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
AMPARAI DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	10765	10765	10765	10765	10765	10765	10765	10765	10765	10765	10765	10765
1979	10765	10765	10765	10765	10765	10765	10765	10765	10765	10765	10765	10765
1980	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765
1981	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765
1982	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765
1983	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765
1984	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765
1985	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765	11765

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-2
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
ANURADHAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	6358	6358	6358	6358	6358	6358	6358	6358	6358	6358	6358	6358
1979	6358	6358	6358	6358	6358	6358	6358	6358	6358	6358	6358	6358
1980	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888
1981	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888
1982	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888
1983	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888
1984	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888
1985	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888	8888

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
BATULLA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1979	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1980	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1981	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1982	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1983	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1984	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1985	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963

TABLE 35-4
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
BATTICCLOA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	5868	5868	5868	5868	5868	5868	5868	5868	5868	5868	5868	5868
1979	5868	5868	5868	5868	5868	5868	5868	5868	5868	5868	5868	5868
1980	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868
1981	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868
1982	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868
1983	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868
1984	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868
1985	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868	6868

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-5
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
COLOMBO DISTRICT

YEAR	JAN.	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	908	908	908	908	908	908	908	908	908	908	908	908
1979	908	908	908	908	908	908	908	908	908	908	908	908
1980	908	908	908	908	908	908	908	908	908	908	908	908
1981	908	908	908	908	908	908	908	908	908	908	908	908
1982	908	908	908	908	908	908	908	908	908	908	908	908
1983	908	908	908	908	908	908	908	908	908	908	908	908
1984	908	908	908	908	908	908	908	908	908	908	908	908
1985	908	908	908	908	908	908	908	908	908	908	908	908

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-6
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
GALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	857	857	857	857	857	857	857	857	857	857	857	857
1979	857	857	857	857	857	857	857	857	857	857	857	857
1980	857	857	857	857	857	857	857	857	857	857	857	857
1981	857	857	857	857	857	857	857	857	857	857	857	857
1982	857	857	857	857	857	857	857	857	857	857	857	857
1983	857	857	857	857	857	857	857	857	857	857	857	857
1984	857	857	857	857	857	857	857	857	857	857	857	857
1985	857	857	857	857	857	857	857	857	857	857	857	857

TABLE 35-7
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
HAMBANTOTA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655
1979	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655
1980	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655
1981	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655
1982	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655
1983	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655
1984	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655
1985	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655	7655

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-8
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
JAFFNA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	5368	5368	5368	5368	5368	5368	5368	5368	5368	5368	5368	5368
1979	5368	5368	5368	5368	5368	5368	5368	5368	5368	5368	5368	5368
1980	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018
1981	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018
1982	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018
1983	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018
1984	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018
1985	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-9
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
KALUTARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	564	564	564	564	564	564	564	564	564	564	564	564
1979	564	564	564	564	564	564	564	564	564	564	564	564
1980	564	564	564	564	564	564	564	564	564	564	564	564
1981	564	564	564	564	564	564	564	564	564	564	564	564
1982	564	564	564	564	564	564	564	564	564	564	564	564
1983	564	564	564	564	564	564	564	564	564	564	564	564
1984	564	564	564	564	564	564	564	564	564	564	564	564
1985	564	564	564	564	564	564	564	564	564	564	564	564

TABLE 35-1C
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
KANDY DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	9352	9352	9352	9352	9352	9352	9352	9352	9352	9352	9352	9352
1979	9352	9352	9352	9352	9352	9352	9352	9352	9352	9352	9352	9352
1980	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947
1981	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947
1982	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947
1983	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947
1984	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947
1985	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947	8947

FOOTNOTES
PADDY MARKETING BOARD. MINISTRY OF AGRICULTURE

TABLE 35-1I
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
KEGALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	178	178	178	178	178	178	178	178	178	178	178	178
1979	178	178	178	178	178	178	178	178	178	178	178	178
1980	178	178	178	178	178	178	178	178	178	178	178	178
1981	178	178	178	178	178	178	178	178	178	178	178	178
1982	178	178	178	178	178	178	178	178	178	178	178	178
1983	178	178	178	178	178	178	178	178	178	178	178	178
1984	178	178	178	178	178	178	178	178	178	178	178	178
1985	178	178	178	178	178	178	178	178	178	178	178	178

FOOTNOTES
PADDY MARKETING BOARD. MINISTRY OF AGRICULTURE

TABLE 35-1J
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
KURUNEGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	3617	3617	3617	3617	3617	3617	3617	3617	3617	3617	3617	3617
1979	3617	3617	3617	3617	3617	3617	3617	3617	3617	3617	3617	3617
1980	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347
1981	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347
1982	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347
1983	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347
1984	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347
1985	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347	3347

FOOTNOTES

TABLE 35-13
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
MANNAR DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	2562	2562	2562	2562	2562	2562	2562	2562	2562	2562	2562	2562
1979	2562	2562	2562	2562	2562	2562	2562	2562	2562	2562	2562	2562
1980	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427
1981	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427
1982	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427
1983	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427
1984	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427
1985	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-14
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
MATALE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1686	1686	1686	1686	1686	1686	1686	1686	1686	1686	1686	1686
1979	1686	1686	1686	1686	1686	1686	1686	1686	1686	1686	1686	1686
1980	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351
1981	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351
1982	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351
1983	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351
1984	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351
1985	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351	1351

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-15
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
MATARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
1979	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
1980	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
1981	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
1982	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
1983	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
1984	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
1985	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682

TABLE 35-16
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
MONERAGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538
1979	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538
1980	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293
1981	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293
1982	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293
1983	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293
1984	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293
1985	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-17
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
NUWARA ELIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-18
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
POLONNARUWA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814
1979	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814
1980	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409
1981	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409
1982	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409
1983	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409
1984	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409
1985	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409	18409

TABLE 35-19
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
PUTTALAM DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	538	538	538	538	538	538	538	538	538	538	538	538
1979	538	538	538	538	538	538	538	538	538	538	538	538
1980	538	538	538	538	538	538	538	538	538	538	538	538
1981	538	538	538	538	538	538	538	538	538	538	538	538
1982	538	538	538	538	538	538	538	538	538	538	538	538
1983	538	538	538	538	538	538	538	538	538	538	538	538
1984	538	538	538	538	538	538	538	538	538	538	538	538
1985	538	538	538	538	538	538	538	538	538	538	538	538

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-20
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
RATNAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
1979	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
1980	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
1981	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
1982	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
1983	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
1984	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
1985	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 35-21
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
TRINCOMALEE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	4764	4764	4764	4764	4764	4764	4764	4764	4764	4764	4764	4764
1979	4764	4764	4764	4764	4764	4764	4764	4764	4764	4764	4764	4764
1980	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419
1981	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419
1982	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419
1983	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419
1984	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419
1985	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419	4419

TABLE 35-22
CURRENTLY AVAILABLE MILLING CAPACITY,1978-1985(TONS PER MONTH)
VAVUNIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294
1979	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294
1980	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294
1981	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294
1982	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294
1983	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294
1984	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294
1985	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294	4294

FOOTNOTES
PADDY MARKETING BOARD, MINISTRY OF AGRICULTURE

TABLE 36-1
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
AMPARAI DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-1517	-1517	-1517	-1517	-1517	-1517	-1517	-1517	-1517	-1517	-1517	-1517
1979	-904	-904	-904	-904	-904	-904	-904	-904	-904	-904	-904	-904
1980	-1082	-1082	-1082	-1082	-1082	-1082	-1082	-1082	-1082	-1082	-1082	-1082
1981	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266
1982	960	960	960	960	960	960	960	960	960	960	960	960
1983	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017
1984	2734	2734	2734	2734	2734	2734	2734	2734	2734	2734	2734	2734
1985	3097	3097	3097	3097	3097	3097	3097	3097	3097	3097	3097	3097

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-2
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
ANURADHAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	887	887	887	887	887	887	887	887	887	887	887	887
1979	1368	1368	1368	1368	1368	1368	1368	1368	1368	1368	1368	1368
1980	-519	-519	-519	-519	-519	-519	-519	-519	-519	-519	-519	-519
1981	121	121	121	121	121	121	121	121	121	121	121	121
1982	1082	1082	1082	1082	1082	1082	1082	1082	1082	1082	1082	1082
1983	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910
1984	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472	2472
1985	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756

FOOTNOTES
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TABLE 36-3
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
BADULLA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-875	-875	-875	-875	-875	-875	-875	-875	-875	-875	-875	-875
1979	-803	-803	-803	-803	-803	-803	-803	-803	-803	-803	-803	-803
1980	-706	-706	-706	-706	-706	-706	-706	-706	-706	-706	-706	-706
1981	-610	-610	-610	-610	-610	-610	-610	-610	-610	-610	-610	-610
1982	-466	-466	-466	-466	-466	-466	-466	-466	-466	-466	-466	-466
1983	-341	-341	-341	-341	-341	-341	-341	-341	-341	-341	-341	-341
1984	-257	-257	-257	-257	-257	-257	-257	-257	-257	-257	-257	-257
1985	-214	-214	-214	-214	-214	-214	-214	-214	-214	-214	-214	-214

FOOTNOTES

TABLE 36-4
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
BATTICCLOA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-3133	-3133	-3133	-3133	-3133	-3133	-3133	-3133	-3133	-3133	-3133	-3133
1979	-2952	-2952	-2952	-2952	-2952	-2952	-2952	-2952	-2952	-2952	-2952	-2952
1980	-3709	-3709	-3709	-3709	-3709	-3709	-3709	-3709	-3709	-3709	-3709	-3709
1981	-3467	-3467	-3467	-3467	-3467	-3467	-3467	-3467	-3467	-3467	-3467	-3467
1982	-3104	-3104	-3104	-3104	-3104	-3104	-3104	-3104	-3104	-3104	-3104	-3104
1983	-2792	-2792	-2792	-2792	-2792	-2792	-2792	-2792	-2792	-2792	-2792	-2792
1984	-2580	-2580	-2580	-2580	-2580	-2580	-2580	-2580	-2580	-2580	-2580	-2580
1985	-2472	-2472	-2472	-2472	-2472	-2472	-2472	-2472	-2472	-2472	-2472	-2472

FOOTNOTES
ABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-5
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
COLOMBO DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-815	-815	-815	-815	-815	-815	-815	-815	-815	-815	-815	-815
1979	-809	-809	-809	-809	-809	-809	-809	-809	-809	-809	-809	-809
1980	-800	-800	-800	-800	-800	-800	-800	-800	-800	-800	-800	-800
1981	-792	-792	-792	-792	-792	-792	-792	-792	-792	-792	-792	-792
1982	-780	-780	-780	-780	-780	-780	-780	-780	-780	-780	-780	-780
1983	-769	-769	-769	-769	-769	-769	-769	-769	-769	-769	-769	-769
1984	-762	-762	-762	-762	-762	-762	-762	-762	-762	-762	-762	-762
1985	-758	-758	-758	-758	-758	-758	-758	-758	-758	-758	-758	-758

FOOTNOTES
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TABLE 36-6
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
GALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-419	-419	-419	-419	-419	-419	-419	-419	-419	-419	-419	-419
1979	-390	-390	-390	-390	-390	-390	-390	-390	-390	-390	-390	-390
1980	-351	-351	-351	-351	-351	-351	-351	-351	-351	-351	-351	-351
1981	-312	-312	-312	-312	-312	-312	-312	-312	-312	-312	-312	-312
1982	-254	-254	-254	-254	-254	-254	-254	-254	-254	-254	-254	-254
1983	-204	-204	-204	-204	-204	-204	-204	-204	-204	-204	-204	-204
	-170	-170	-170	-170	-170	-170	-170	-170	-170	-170	-170	-170
	-152	-152	-152	-152	-152	-152	-152	-152	-152	-152	-152	-152

NOTES
SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-7
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
HAMBANTOTA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-3979	-3979	-3979	-3979	-3979	-3979	-3979	-3979	-3979	-3979	-3979	-3979
1979	-3735	-3735	-3735	-3735	-3735	-3735	-3735	-3735	-3735	-3735	-3735	-3735
1980	-3408	-3408	-3408	-3408	-3408	-3408	-3408	-3408	-3408	-3408	-3408	-3408
1981	-3084	-3084	-3084	-3084	-3084	-3084	-3084	-3084	-3084	-3084	-3084	-3084
1982	-2596	-2596	-2596	-2596	-2596	-2596	-2596	-2596	-2596	-2596	-2596	-2596
1983	-2176	-2176	-2176	-2176	-2176	-2176	-2176	-2176	-2176	-2176	-2176	-2176
1984	-1891	-1891	-1891	-1891	-1891	-1891	-1891	-1891	-1891	-1891	-1891	-1891
1985	-1747	-1747	-1747	-1747	-1747	-1747	-1747	-1747	-1747	-1747	-1747	-1747

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-8
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
JAFFNA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-3777	-3777	-3777	-3777	-3777	-3777	-3777	-3777	-3777	-3777	-3777	-3777
1979	-3671	-3671	-3671	-3671	-3671	-3671	-3671	-3671	-3671	-3671	-3671	-3671
1980	-3180	-3180	-3180	-3180	-3180	-3180	-3180	-3180	-3180	-3180	-3180	-3180
1981	-3039	-3039	-3039	-3039	-3039	-3039	-3039	-3039	-3039	-3039	-3039	-3039
1982	-2828	-2828	-2828	-2828	-2828	-2828	-2828	-2828	-2828	-2828	-2828	-2828
1983	-2647	-2647	-2647	-2647	-2647	-2647	-2647	-2647	-2647	-2647	-2647	-2647
1984	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523
1985	-2461	-2461	-2461	-2461	-2461	-2461	-2461	-2461	-2461	-2461	-2461	-2461

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-9
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
KALUTARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-220	-220	-220	-220	-220	-220	-220	-220	-220	-220	-220	-220
1979	-198	-198	-198	-198	-198	-198	-198	-198	-198	-198	-198	-198
1980	-167	-167	-167	-167	-167	-167	-167	-167	-167	-167	-167	-167
1981	-137	-137	-137	-137	-137	-137	-137	-137	-137	-137	-137	-137
1982	-91	-91	-91	-91	-91	-91	-91	-91	-91	-91	-91	-91
1983	-52	-52	-52	-52	-52	-52	-52	-52	-52	-52	-52	-52
1984	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
1985	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-10
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
KANDY DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-7298	-7298	-7298	-7298	-7298	-7298	-7298	-7298	-7298	-7298	-7298	-7298
1979	-7162	-7162	-7162	-7162	-7162	-7162	-7162	-7162	-7162	-7162	-7162	-7162
1980	-6575	-6575	-6575	-6575	-6575	-6575	-6575	-6575	-6575	-6575	-6575	-6575
1981	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393
1982	-6121	-6121	-6121	-6121	-6121	-6121	-6121	-6121	-6121	-6121	-6121	-6121
1983	-5886	-5886	-5886	-5886	-5886	-5886	-5886	-5886	-5886	-5886	-5886	-5886
1984	-5727	-5727	-5727	-5727	-5727	-5727	-5727	-5727	-5727	-5727	-5727	-5727
1985	-5647	-5647	-5647	-5647	-5647	-5647	-5647	-5647	-5647	-5647	-5647	-5647

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-11
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
KEGALLE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	85	85	85	85	85	85	85	85	85	85	85	85
1979	102	102	102	102	102	102	102	102	102	102	102	102
1980	126	126	126	126	126	126	126	126	126	126	126	126
1981	149	149	149	149	149	149	149	149	149	149	149	149
1982	184	184	184	184	184	184	184	184	184	184	184	184
1983	214	214	214	214	214	214	214	214	214	214	214	214
1984	235	235	235	235	235	235	235	235	235	235	235	235
1985	245	245	245	245	245	245	245	245	245	245	245	245

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-12
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH
KURUNEGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-1244	-1244	-1244	-1244	-1244	-1244	-1244	-1244	-1244	-1244	-1244	-1244
1979	-1086	-1086	-1086	-1086	-1086	-1086	-1086	-1086	-1086	-1086	-1086	-1086
1980	-606	-606	-606	-606	-606	-606	-606	-606	-606	-606	-606	-606
1981	-396	-396	-396	-396	-396	-396	-396	-396	-396	-396	-396	-396
1982	-81	-81	-81	-81	-81	-81	-81	-81	-81	-81	-81	-81
1983	190	190	190	190	190	190	190	190	190	190	190	190
1984	374	374	374	374	374	374	374	374	374	374	374	374
1985	467	467	467	467	467	467	467	467	467	467	467	467

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-13
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
MANNAR DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-1680	-1680	-1680	-1680	-1680	-1680	-1680	-1680	-1680	-1680	-1680	-1680
1979	-1622	-1622	-1622	-1622	-1622	-1622	-1622	-1622	-1622	-1622	-1622	-1622
1980	-1409	-1409	-1409	-1409	-1409	-1409	-1409	-1409	-1409	-1409	-1409	-1409
1981	-1331	-1331	-1331	-1331	-1331	-1331	-1331	-1331	-1331	-1331	-1331	-1331
1982	-1214	-1214	-1214	-1214	-1214	-1214	-1214	-1214	-1214	-1214	-1214	-1214
1983	-1113	-1113	-1113	-1113	-1113	-1113	-1113	-1113	-1113	-1113	-1113	-1113
1984	-1045	-1045	-1045	-1045	-1045	-1045	-1045	-1045	-1045	-1045	-1045	-1045
1985	-1010	-1010	-1010	-1010	-1010	-1010	-1010	-1010	-1010	-1010	-1010	-1010

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQU

TABLE 36-14
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
MATALE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-711	-711	-711	-711	-711	-711	-711	-711	-711	-711	-711	-711
1979	-646	-646	-646	-646	-646	-646	-646	-646	-646	-646	-646	-646
1980	-225	-225	-225	-225	-225	-225	-225	-225	-225	-225	-225	-225
1981	-139	-139	-139	-139	-139	-139	-139	-139	-139	-139	-139	-139
1982	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
1983	102	102	102	102	102	102	102	102	102	102	102	102
1984	178	178	178	178	178	178	178	178	178	178	178	178
1985	216	216	216	216	216	216	216	216	216	216	216	216

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQU

TABLE 36-15
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
MATARA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-1080	-1080	-1080	-1080	-1080	-1080	-1080	-1080	-1080	-1080	-1080	-1080
1979	-1040	-1040	-1040	-1040	-1040	-1040	-1040	-1040	-1040	-1040	-1040	-1040
1980	-986	-986	-986	-986	-986	-986	-986	-986	-986	-986	-986	-986
1981	-933	-933	-933	-933	-933	-933	-933	-933	-933	-933	-933	-933
1982	-853	-853	-853	-853	-853	-853	-853	-853	-853	-853	-853	-853
1983	-784	-784	-784	-784	-784	-784	-784	-784	-784	-784	-784	-784
1984	-737	-737	-737	-737	-737	-737	-737	-737	-737	-737	-737	-737
1985	-714	-714	-714	-714	-714	-714	-714	-714	-714	-714	-714	-714

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING

TABLE 36-16
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
MONERAGALA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-353	-353	-353	-353	-353	-353	-353	-353	-353	-353	-353	-353
1979	-275	-275	-275	-275	-275	-275	-275	-275	-275	-275	-275	-275
1980	76	76	76	76	76	76	76	76	76	76	76	76
1981	180	180	180	180	180	180	180	180	180	180	180	180
1982	337	337	337	337	337	337	337	337	337	337	337	337
1983	473	473	473	473	473	473	473	473	473	473	473	473
1984	565	565	565	565	565	565	565	565	565	565	565	565
1985	611	611	611	611	611	611	611	611	611	611	611	611

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQU

TABLE 36-17
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
NUWARA ELIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	122	122	122	122	122	122	122	122	122	122	122	122
1979	131	131	131	131	131	131	131	131	131	131	131	131
1980	141	141	141	141	141	141	141	141	141	141	141	141
1981	152	152	152	152	152	152	152	152	152	152	152	152
1982	169	169	169	169	169	169	169	169	169	169	169	169
1983	183	183	183	183	183	183	183	183	183	183	183	183
1984	192	192	192	192	192	192	192	192	192	192	192	192
1985	197	197	197	197	197	197	197	197	197	197	197	197

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQU

TABLE 36-18
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
POLONNARUWA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-10150	-10150	-10150	-10150	-10150	-10150	-10150	-10150	-10150	-10150	-10150	-10150
1979	-9642	-9642	-9642	-9642	-9642	-9642	-9642	-9642	-9642	-9642	-9642	-9642
1980	-9556	-9556	-9556	-9556	-9556	-9556	-9556	-9556	-9556	-9556	-9556	-9556
1981	-8880	-8880	-8880	-8880	-8880	-8880	-8880	-8880	-8880	-8880	-8880	-8880
1982	-7864	-7864	-7864	-7864	-7864	-7864	-7864	-7864	-7864	-7864	-7864	-7864
1983	-6988	-6988	-6988	-6988	-6988	-6988	-6988	-6988	-6988	-6988	-6988	-6988
1984	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393	-6393
1985	-6093	-6093	-6093	-6093	-6093	-6093	-6093	-6093	-6093	-6093	-6093	-6093

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY

TABLE 36-19
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
PUTTALAM DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-141	-141	-141	-141	-141	-141	-141	-141	-141	-141	-141	-141
1979	-114	-114	-114	-114	-114	-114	-114	-114	-114	-114	-114	-114
1980	-79	-79	-79	-79	-79	-79	-79	-79	-79	-79	-79	-79
1981	-44	-44	-44	-44	-44	-44	-44	-44	-44	-44	-44	-44
1982	9	9	9	9	9	9	9	9	9	9	9	9
1983	54	54	54	54	54	54	54	54	54	54	54	54
1984	85	85	85	85	85	85	85	85	85	85	85	85
1985	101	101	101	101	101	101	101	101	101	101	101	101

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-20
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
RATNAPURA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-3328	-3328	-3328	-3328	-3328	-3328	-3328	-3328	-3328	-3328	-3328	-3328
1979	-3234	-3234	-3234	-3234	-3234	-3234	-3234	-3234	-3234	-3234	-3234	-3234
1980	-3108	-3108	-3108	-3108	-3108	-3108	-3108	-3108	-3108	-3108	-3108	-3108
1981	-2983	-2983	-2983	-2983	-2983	-2983	-2983	-2983	-2983	-2983	-2983	-2983
1982	-2795	-2795	-2795	-2795	-2795	-2795	-2795	-2795	-2795	-2795	-2795	-2795
1983	-2633	-2633	-2633	-2633	-2633	-2633	-2633	-2633	-2633	-2633	-2633	-2633
1984	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523	-2523
1985	-2468	-2468	-2468	-2468	-2468	-2468	-2468	-2468	-2468	-2468	-2468	-2468

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-21
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER YEAR)
TRINCOMALEE DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-335	-335	-335	-335	-335	-335	-335	-335	-335	-335	-335	-335
1979	-42	-42	-42	-42	-42	-42	-42	-42	-42	-42	-42	-42
1980	697	697	697	697	697	697	697	697	697	697	697	697
1981	1088	1088	1088	1088	1088	1088	1088	1088	1088	1088	1088	1088
1982	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675
1983	2181	2181	2181	2181	2181	2181	2181	2181	2181	2181	2181	2181
1984	2524	2524	2524	2524	2524	2524	2524	2524	2524	2524	2524	2524
1985	2698	2698	2698	2698	2698	2698	2698	2698	2698	2698	2698	2698

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 36-22
ADDITIONAL MILLING CAPACITY REQUIRED,1978-1985(TONS PER MONTH)
VAVUNIYA DISTRICT

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1978	-1659	-1659	-1659	-1659	-1659	-1659	-1659	-1659	-1659	-1659	-1659	-1659
1979	-1594	-1594	-1594	-1594	-1594	-1594	-1594	-1594	-1594	-1594	-1594	-1594
1980	-2452	-2452	-2452	-2452	-2452	-2452	-2452	-2452	-2452	-2452	-2452	-2452
1981	-2311	-2311	-2311	-2311	-2311	-2311	-2311	-2311	-2311	-2311	-2311	-2311
1982	-2100	-2100	-2100	-2100	-2100	-2100	-2100	-2100	-2100	-2100	-2100	-2100
1983	-1917	-1917	-1917	-1917	-1917	-1917	-1917	-1917	-1917	-1917	-1917	-1917
1984	-1794	-1794	-1794	-1794	-1794	-1794	-1794	-1794	-1794	-1794	-1794	-1794
1985	-1731	-1731	-1731	-1731	-1731	-1731	-1731	-1731	-1731	-1731	-1731	-1731

FOOTNOTES
TABLE SERIES 29- TABLE SERIES 35 : MINUS INDICATES EXCESS MILLING CAPACITY, POSITIVE NUMBER INDICATES ADDITIONAL CAPACITY REQUIRED

TABLE 37

ADDITIONAL MILLING CAPACITY REQUIREMENTS
FOR 1982-1985

District	Capacity (Tons per Month) 1982	1983	1984	1985
Amparai	1,000	1,000	700	400
Anaradhapura	1,450	800	600	300
Kegalle	250	-	-	-
Kurunegala	-	200	200	100
Matale	100	100	100	-
Moneregala	400	100	100	-
Nuwara Eliya	200	-	-	-
Puttalam	100	-	-	-
Trincomalee	1,700	500	400	100

Source: Table Series 36.

Several implications of the results and underlying assumptions need to be evaluated. The current available milling capacity data supplied by the Paddy Marketing Board is composed mostly of privately owned mills which have allocations of PMB owned rough rice to mill. These allocations do not equal milling capacity, and it is reasonable to suppose that this should be the case since private mills undoubtedly are milling for the open market trade. Also, PMB owned mills apparently operate at less than their full capacity as evidenced in Table J-2, Appendix J.

The results of Table Series 36 implies either excess capacity or needed capacity. This may not necessarily be correct because milling facility needs for government rough rice procurement is computed separately from total rice milling facility requirements based upon total needs and operational mill capacities.

Therefore, one underlying assumption is that the given level of current mill capacity as related to current allotments can, in one way or another, be

adjusted to mills at given capacity level either by increasing allotments to current mills or by increasing the number of millers on the allotment system. A second assumption is that current development programs will have only a minor impact on the private milling sector and that this impact will be directed toward making operational capacity equal effective capacity in currently operating mills.

Because of lack of data which specifies both operational and effective milling capacity by district for all privately owned mills, no analysis of required milling facilities for total production of rough rice can be undertaken. As a result, the only analysis is the one present herein.

The basic implications of these problems are (1) that the answer derived herein is at best a tentative answer with which to begin initial planning, (2) that to properly analyze future requirements requires a total analysis of milling requirements for both the governmental and open market sectors of the total rice industry, and (3) that the only way developmental assistance to the private milling sector can be directed with competence is to understand whether the basic needs are increased capacity, upgraded capacity, or some combination of both.

SECTION V

LOCATION ANALYSIS

The analysis in Section IV determines the capacity of storage and milling facilities required in the future. Now, the important question becomes, where to place needed facilities so as to minimize total transportation costs in the movement of paddy and rice. Procedures for this portion of the analysis are described in Section VIII, and only the results of analysis are included in the section.

The transportation function used to calculate costs is the truck transportation function described in Appendix K. Since all rough rice movement between purchase centers and PMB warehouses and the majority of paddy movement between PMB warehouses and rice mills is by truck, no other cost function is introduced.

First Marketing Level

Using the 1977 Purchasing Center shipment data as a base, 1982 and 1985 procurement levels are proportioned to the purchase centers under the assumption that 1977 represents a normal year in the commodity flow of rough rice from Purchase Centers to PMB warehouses. Adjustments are made in the amounts to be shipped from Purchasing Centers located near or in areas where irrigation development projects will bring either new land into production or allow a second crop (Yala season) to be harvested.

This procedure involves proportioning to Purchase Centers that amount of procurement which would be available and purchased if no irrigation development projects existed. The amount of procurement attributable to irrigation development projects is then proportioned to those Purchase Centers near or within the project area on the basis of geographical location.

While this does not take into account new Purchase Centers which will undoubtedly be established, it does allow for a volume configuration by Purchase Centers which will minimize this problem.

The districts selected for determination of facility locations are those which analysis in Section IV indicates the need for additional storage facilities. A cost base must be established against which cost savings of different locations can be measured. To establish a cost base the assumption of no more storage constructed is applied. Therefore, all shipments from purchase centers which are in excess of current storage capacity are directed toward the nearest district having excess storage capacity. Two costs are calculated, costs for shipments between Purchase Centers and PMB warehouses within the district plus transshipment costs, which are cost: f shipments between district Purchase Centers and PMB warehouses in other stricts. The base costs for each district are exhibited in Tables 38 and 39.

The determination of transshipment costs are based upon moving excess ly to nearby districts as illustrated in Figures 11 and 12. These illus- :ions visually describe the problem that will be encountered as production eases. Rough rice will have to be moved further to be placed in adequate rage. These districts have sufficient total capacity, according to lor analysis, to handle these inflows. However, besides the extremely gh cost of transport to place paddy under cover, it places the receiving stricts in a vulnerable position. In some districts, all available pacity would be used. In other districts, capacity utilization would ange from 89 to 96 percent. While such capacity utilization is highly efficient, it leaves no margin of error for operation of the system. Since constraints do currently exist and management of the system can only be described as marginal, then a sufficient surplus of storage capacity must

TABLE 38

TRANSPORTATION COST SAVINGS FOR PROPOSED WAREHOUSES
IN DISTRICTS REQUIRING ADDITIONAL STORAGE FACILITIES
-1982-

District	Transport Cost Without Additional Storage[1] R$	Transport Cost With Additional Storage[2] R$	Savings R$
Badulla	N/A	N/A	N/A
Batticoloa	840,841	767,634	73,207
Hambantota	1,075,834	951,951	123,883
Jaffna	599,473	480,921	118,552
Polonnaruwa	3,125,103	2,007,107	1,117,996
Trincomalee	1,696,570	1,402,208	294,362
TOTAL SAVINGS			1,728,000

[1]Includes cost of transshipping paddy to storage outside district.

[2]Optimum least-cost solution for alternative locations.

TABLE 39

TRANSPORTATION COST SAVINGS FOR PROPOSED WAREHOUSES
IN DISTRICTS REQUIRING ADDITIONAL STORAGE FACILITIES
-1985-

District	Transport Cost Without Additional Storage[1] R$	Transport Cost With Additional Storage[2] R$	Savings R$
Badulla	468,606	441,282	27,324
Batticoloa	1,024,158	896,566	127,592
Hambantota	1,536,481	1,154,026	382,455
Jaffna	746,400	642,860	103,540
Polonnaruwa	3,906,357	2,358,899	,547,458
Trincomalee	2,157,438	1,463	546,975
TOTAL SAVINGS			2,735,344

[1]Includes cost of transshipping paddy to storage outside district.

[2]Optimum least-cost solution for alternative locations.

Figure 11. Required Paddy Movement Without Additional Storage, 1982

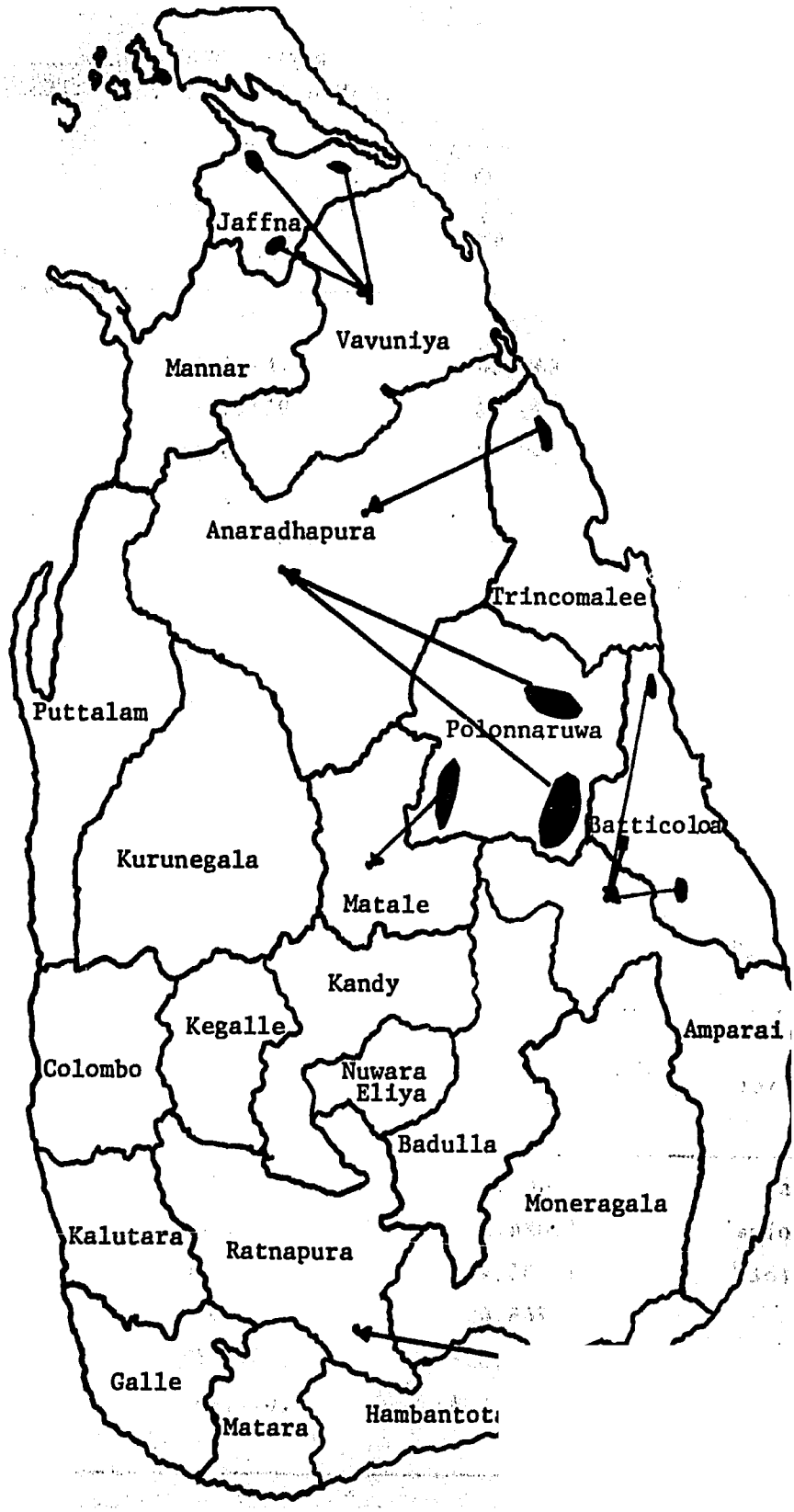
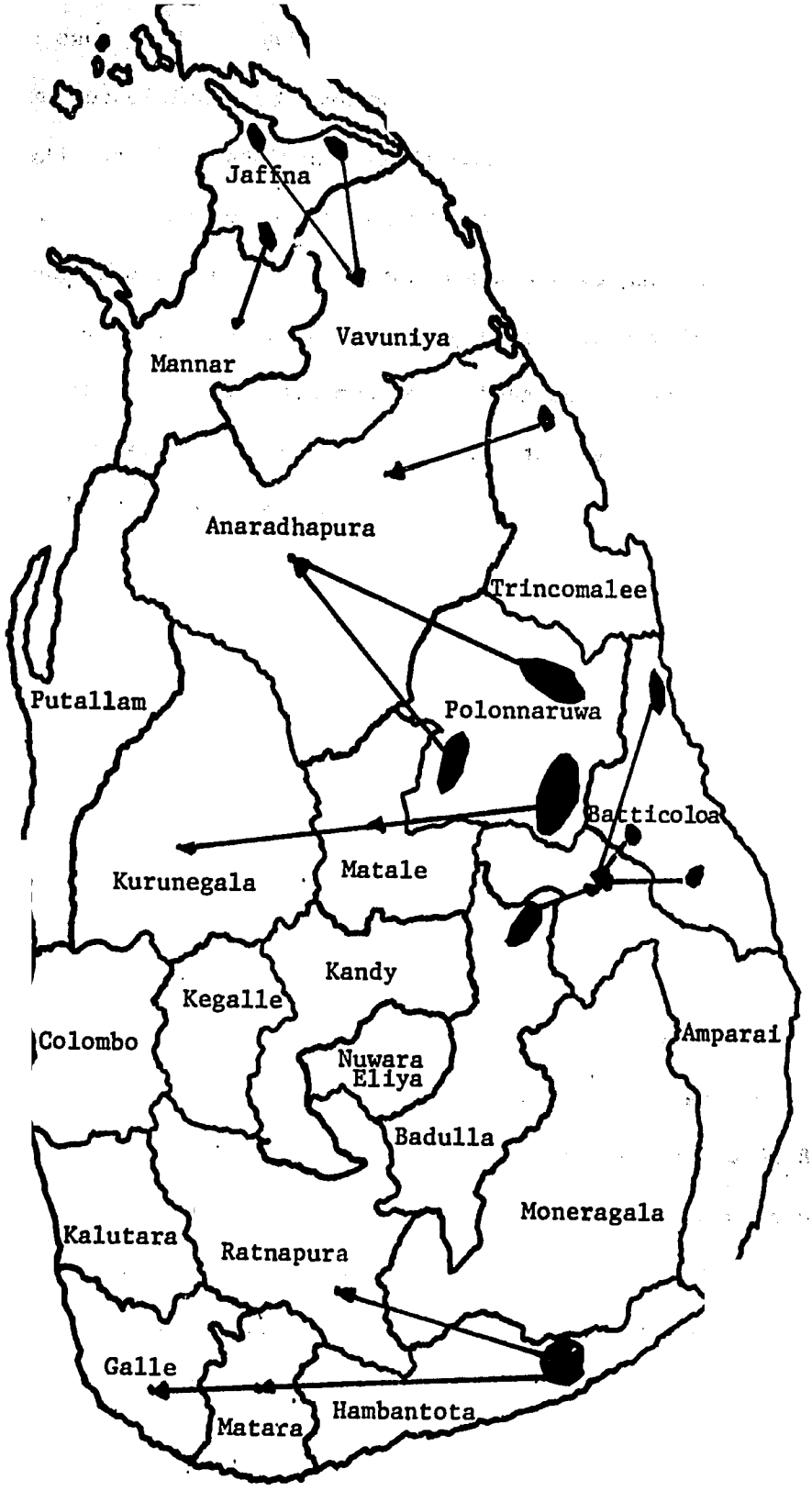


Figure 12. Required Paddy Movement Without Additional Storage, 1985



exist so as to enable the system to overcome potential problems within the commodity flow. This, in addition to the extremely high cost of moving paddy, dictates the need for storage as near as possible to purchase centers.

Location analysis of the specified districts indicates that needed warehousing should be located at the points indicated in Table 40. Warehouses located as stated are based upon 1985 storage requirements.

Locations of warehouses have also been tested for time staging to determine which warehouses need to be completed first. This is based upon which location would generate the greatest saving in transportation costs in the year required for completion. This time staging is detailed in Table 40.

Many different locational configurations were tested, and the configurations having the least transportation costs were selected.

Cost savings due to transport minimization between purchase centers and PMB warehouses are shown in Tables 38 and 39. While there are some second-best configurations which are only slightly greater in cost than the optimum solution, there is no way to test second best solutions because differences in construction and operating costs by locations are not known. Several sources have stated that there is no differences between locations, however, this was not documented by numbers or other substantial facts. Table 38 shows cost savings achieved for 1982 procurement for these warehouse locations and capacities, while Table 39 shows cost savings achieved for 1985, respectively. Annual cost savings are not stable over time, but will tend to increase since procurement increases. This is shown by Tables 38 and 39, as well as illustrated by Figure 13.

TABLE 40

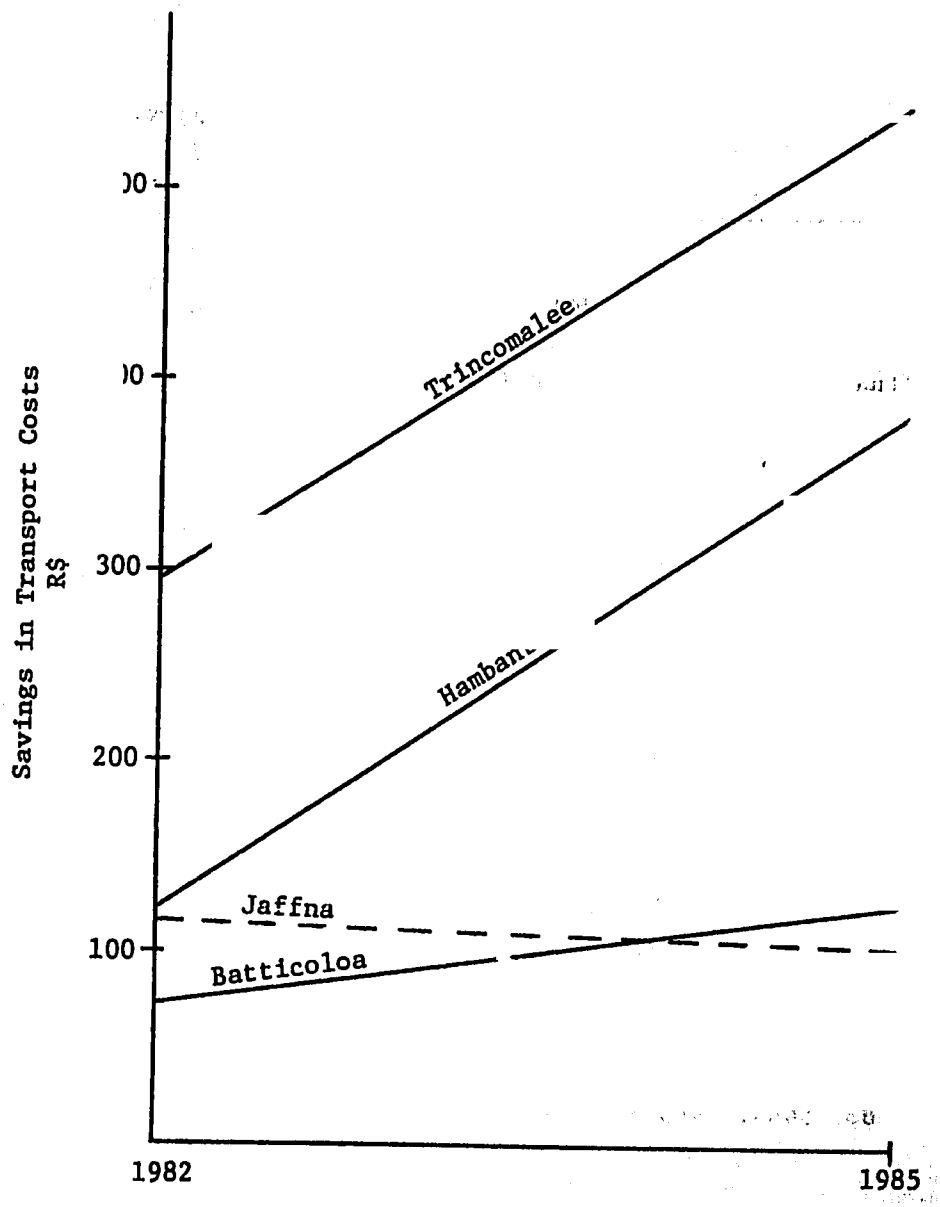
LEAST-COST WAREHOUSE LOCATIONS IN DISTRICTS REQUIRING FUTURE STORAGE FACILITIES

District	Warehouse Location	Warehouse Capacity* (Tons)	Completion Date
Jaffna	Paranthan (5203)	3,100	1982
	Thunnukai (5205)	3,100	1982
	Punakarai (5207)	3,100	1982
Trincomalee	Kiliveddi (5590)	3,900	1982
	Thopper (5591)	3,100	1985
Hambantota	Padavigama (981)	4,350	1982
Batticoloa	Vavunathivu (5105)	3,100	1985
	Kokkadicholai (5104)	3,100	1982
Badulla	Aluttarama (568)	775	1985
Polonnaruwa**	Giritalae (5472)	1,200	1982
	Manampitiya (5479)	6,200	1982
	Vijayapura (5481)	3,100	1982
	Aralaganwila (5480)	3,700	1985

*Effective capacity.

**This configuration keeps rental warehouses at location numbers 5483, 5484, 5485 = 3,300 tons.

Figure 13. Examples of Savings in Transport Costs Over Time Due to Storage Facility Construction, by District



Source: Tables 38, 39.

Second Marketing Level

Analysis for rice mill location involves the flow of rough rice between PMB warehouses and designated rice mills. The results of Section IV have a different group of districts requiring rice mill facilities than the group requiring storage facilities. Only one district, Trincomalee, requires both future storage and rice milling facilities.

Again, a base case must be constructed. The base case is no additional milling facilities. At this marketing level, the base case is the movement of rough rice from PMB warehouses within a district to rice mills within the same district and the movement of excess surplus of rough rice to the nearest milling facilities outside the district having available milling capacity. The base case transport cost is shown in Table 41.

Least-cost mill locations and capacity sizes, by district, as generated by analysis, are listed in Table 42. With these locations, transport cost savings are as shown in Table 41.

The least-cost location configurations generated by analysis reduces transport costs by far more than the amount of cost for transporting excess supply to mills out of district. This cost reduction is detailed in Table 43 in terms of cost per unit. In most districts, there is a substantial reduction in per unit cost. Even in cases where per unit cost reduction is small, Anaradhapura for example, total cost reduction is significant because of the large volume of rough rice involved.

TABLE 41

TRANSPORTATION COST SAVINGS FOR PROPOSED RICE MILLS IN DISTRICTS REQUIRING ADDITIONAL MILLING FACILITIES
-1985-

District	Transport Cost Without Additional Milling Facilities R$	Transport Cost With Additional Milling Facilities R$	Savings R$
Puttalam	185,279	114,874	70,405
Matale	468,124	377,278	90,846
Moneregala	514,181	326,272	187,909
Kegalle	135,215	48,654	86,561
Kurunegala	1,023,931	673,508	350,423
Trincomalee	2,300,684	937,375	1,363,309
Anaradhapura	4,185,351	2,248,718	1,936,633
Amparai	4,820,835	2,240,307	2,580,528
Nuwara Eliya	58,698	-	58,698
TOTAL SAVINGS			6,725,312

TABLE 42

LEAST-COST MILLING FACILITY LOCATION IN DISTRICTS REQUIRING FUTURE MILLING FACILITIES

District	Mill Location	Capacity
Amparai	Addapachenai (5021, 6015)	3,100 TPM
	Sagama (5003)	3,100 TPM
	Maha Oya (5018)	600 TPM
	Bakkiella (6010)	600 TPM
Anaradhapura	Nochchiyagama (5053)	3,100 TPM
	Kebithigollewa (5045)	3,100 TPM
	Padaviya (6058)	3,100 TPM
Kegalle	Rambukkana (5293)	250 TPM
Kurunegala	Maho (5313)	500 TPM
Matale	Hettipola (5385)	250 TPM
Moneregala	Wellawaya (5434)	700 TPM
Nuwara Eliya	Rikillagaskada (5451)	250 TPM
Puttalam	Tabbowa (5512)	100 TPM
Trincomalee	Kallor (5589)	1,000 TPM
	Thoppur (5591)	1,000 TPM
	Kiliveddi (5590)	700 TPM

TABLE 43

COST PER TON OF MOVEMENT OF
GH RICE BETWEEN WAREHOUSE AND MILL
INTERDISTRICT MOVEMENT ONLY*

District	R$ per Ton	
	Base Case	Best Least-Cost Alternative
Amparai	14.85	12.56
Anaradhapura	16.51	16.09
Kegalle	14.13	9.58
Kurunegala	16.61	14.71
Moneregala	15.76	14.28
Puttalam	17.53	14.98
Matale	24.19	20.06
Trincomalee	17.41	10.97

*Base Case: Cost per ton for only that portion of rough rice delivered to rice mills within districts, does not include cost of that portion of rough rice shipped to mills out of district.
Alternative: Cost per ton for all rough rice being milled within district.

Summary

Location analysis reveals substantial transportation cost savings occurring to the construction of new facilities, not only by reducing costs of commodity movement out-of-district, but by reducing per unit costs of interdistrict movement by proper positioning of new facilities.

The trade-offs involved, between construction and operating cost differences by location versus transportation costs, by location configurations cannot be calculated. Therefore, the configurations computed are the least-cost locations.

Annual transport cost savings in some districts is not large in comparison to the probable investment cost of construction. To further ascertain the viability of individual location, as well as location configurations, a cost benefit analyses needs to be undertaken.

SECTION VI

COMMODITY FLOW ANALYSIS

The analysis of commodity flow in this study deals with the third and fourth marketing level. Analyzing commodity flows involves determining (1) the impact on transport costs of locational configuration changes which have been made to achieve other objectives, (2) reduction of transportation cost by using different transport modes or combination of transport modes in commodity movement, (3) reduction of transport costs by different combinations of shipping patterns, and/or (4) a combination of the above.

Time constraints placed upon this study preclude an in-depth analysis of commodity flows. In view of this, two areas are selected for analysis of a specific situation. Objective of this approach is to test validity of proposed locational changes as well as to test the outcome in possible change of shipping pattern. In view of the results achieved from the randomly selected areas, it is suggested that more in-depth analysis should be undertaken.

The specific situation analyzed is a proposed program which would reduce the current number of 56 FC warehouses to 13 FC warehouse complexes. Each complex could then be managed by highly qualified personnel and would include quality control laboratories, adequate storage facilities, supplemental cleaning and drying facilities, and weighing and handling facilities. The overall purposes of such a change would be to implant a quality control system and to achieve better operating effectiveness.

Also analyzed is the change of commodity flow which directs milled rice from rice mills to MPCS distribution points.

Analysis

Two areas selected for analysis are Amparai district and the combined districts of Jaffna, Mannar, and Vavuniya as one area.

The base case for cost comparison of alternatives is the transportation cost of rice in a commodity flow which moves from rice mill to FC warehouse to MPCS distribution point. Projected 1985 Paddy Marketing Board procurement converted to milled rice basis is used as the tonnage of milled rice moved in the commodity flow.

In the Amparai district case, Amparai is a surplus district with a procurement tonnage of 121,280 milled rice basis and a food ration system demand of 26,181 tons. Therefore, the excess milled rice must be stored in a FC warehouse so as to be diverted to rice deficit districts.

All FC warehouse locations were analyzed, and the Amparai location was found to be the least-cost location.[1] Table 44 details base case and least-cost alternative cost as well as savings. This alternative configuration involves the movement of rice ration system demand directly from rice mills to MPCS distribution points with excess rice moving from rice mills to the Amparai FC warehouse.

To further test the consequences of this alteration in commodity flow, costs per ton are compared in Table 45. It is found that milled rice can be moved directly from rice mills to MPCS distribution points cheaper than the movement between FC warehouses and MPCS distribution points. Also, the movement of the excess supply to the Amparai FC warehouse location generates transportation savings of 4.17 rupees per ton over the configuration of four FC warehouses.

[1]As previously selected by locational change proposal.

TABLE 44

ANNUAL TRANSPORTATION COSTS AND SAVINGS

District	Commodity Flow Analysis		
	Base Case Cost	Least-Cost Alternative Location[2]	Savings
	R$	R$	R$
Amparai	3,477,278	2,349,609	1,127,669
Combined area of Jaffna, Mannar, Vavuniya	2,753,000	1,872,481	880,519

[1]Commodity flow: rice mill to FC warehouse to MPCS distribution point.

[2]Alternative of one warehouse location including (1) total movement of milled rice required by MPCS distribution points directly from mills for Amparai district and (2) partial movement of milled rice required by MPCS distribution points directly from mills for combined district area.

TABLE 45

TRANSPORTATION COST DIFFERENCES
OF COMMODITY FLOWS ON RUPEE PER TON BASIS

	Amparai District	Combined Area of Jaffna, Mannar, & Vavuniya Districts
	R$ per Ton	
Base Case		
(1) RM to FC	24.95	16.94
(2) FC to MPCS	17.26	26.54
(3) Total (1 + 2)	42.21	43.53
Least-Cost Alternative		
(4) RM to FC & MPCS	19.37	29.54
Savings (3 - 4)	22.84	13.99
Alternative to Base Case Comparisons		
RM to MPCS	14.54[1]	26.27[1]
RM to FC	20.78[2]	27.26[3]
FC to MPCS	N/A	57.59[4]

[1]Milled rice demand of MPCS distribution points delivered directly from rice mills.

[2]Excess of supply over demand.

[3]Inclusion of FC location at Mankulam

[4]Movement of milled rice from FC warehouse at Mankulam to MPCS distribution points not delivered directly in least-cost alternative configurations.

In the combined districts case, the total rice system demand is larger than domestic procurement on a milled rice basis. The rice ration system demand is 63,395 tons being supplied by domestic procurement of 53,356 tons plus importation of 10,039 tons.

All FC warehouse locations were analyzed, and the Mankulam FC warehouse location was found to be the least-cost alternative.[1] The FC warehouse throughput was restricted, in all cases, to the available supply of milled rice in the district which the FC warehouse is located. Table 44 lists the base case and alternative configuration costs. The alternative configuration involves the movement of all milled rice in the Jaffna and Mannar districts directly from rice mill to MPCS distribution points, with the movement of milled rice in Vavuniya district from rice mill to Mankulam FC warehouse to MPCS distribution points. While the least-cost method would be the movement of all milled rice from rice mills to MPCS distribution points, the logic of correct day to day operations would require at least one FC warehouse to act as a storage facility for uneven flows due to timing and quantity available problems. Table 45 presents a summary of results in terms of cost per ton.

Summary

This analytical test is very limited, but it does point out the possibility of significant savings by changing the pattern of milled rice flows as well as the locational configuration of FC warehouse locations. There is no way to compare trade-offs. Further investigation should be conducted which involves differences in operating costs of warehouse locations as well as any needed investment in new or updated facilities.

[1]As previously selected by locational change proposal.

Also, this test implies the need for a higher level of management expertise to achieve possible cost savings. This facet should be included in the further study of this problem since a higher level of management expertise calls for human resource development which has a training cost.

The further need to study this particular segment of the GSL sector of the rice industry is emphasized because it appears that potential savings in transport costs, due to changes that could be made in the system, for the third and fourth marketing levels would be of the same significant size as for the first and second marketing levels.

A further need is for research to determine the proper combination of modes of transport for shipment of milled rice from surplus to deficit districts. This aspect of determining whether the most efficient movement would be by truck, rail, or some combination of these modes was not addressed because of time constraints placed upon the study.

SECTION VII

METHODOLOGY

The purpose of this section is to present the statistical methods used herein to analyze historical data by which forecasts of the future can be constructed. This and the following section are included in the report to fulfill the last objective of the study set forth in Section I as well as for those who are interested in the analytical aspect of the study.

Supply Projections

Two basic types of models are applied in the study: a time series model and a causal model. Time series analysis uses only the time series history of the variable being forecast in order to develop a model for projecting future values. To project time series, it is necessary to represent the behavior of the process by a mathematical model that can be extended into the future.

In this study, projections of trends are generated by the Master Projection Program. This program is designed to fit mathematical regression trends to historical time series data and develop projections by extending the fitted trends. The projections which may be specified in the program include (1) linear, (2) exponential, (3) logarithmic, and (4) given coefficients (as developed for previous studies). The computer program handles both simple and multiple regression techniques.

The basic exponential model is $Q = a + bX^n$, where

Q is the projected quantity

a is the intercept quantity at the y axis

b is the average incremental (annual) change

X is the number of periods from the first period in the time series (for example, if 1971 is the first period in the series, then X for 1981 is 11)

n is the exponent

The exponent can be any number, but exponents in the range from 0.1 to 2.0 have the most relevance for normal time series projections. The exponential formula is linear in the special case where the exponent is 1.0 and quadratic in the special case where the exponent is 2.0.

An important advantage of the exponential model as formulated in the Master Projection Program is that complete projections can be fitted to a given set of historical data for a series of alternative exponents in the same computer run. This permits comparison of the projected values, regression coefficients, correlation coefficients, and other statistical parameters before selection of the final projection trend.

Judgement must be exercised in selecting the most realistic exponential trend from the alternatives. In making short-run projections, the trend that yields the highest R^2 value normally will be selected. However, if there are physical, biological, managerial, market, or other limits to continued extension of the trend, the trend providing the best statistical fit may not yield realistic short-run projections.

Since time series analysis is predicted upon the past representing the future, certain limitations exist. The basic limitation of these models is that changes in market or production structures being planned through outside influences (i.e., governmental development programs) cannot be directly applied to the model.

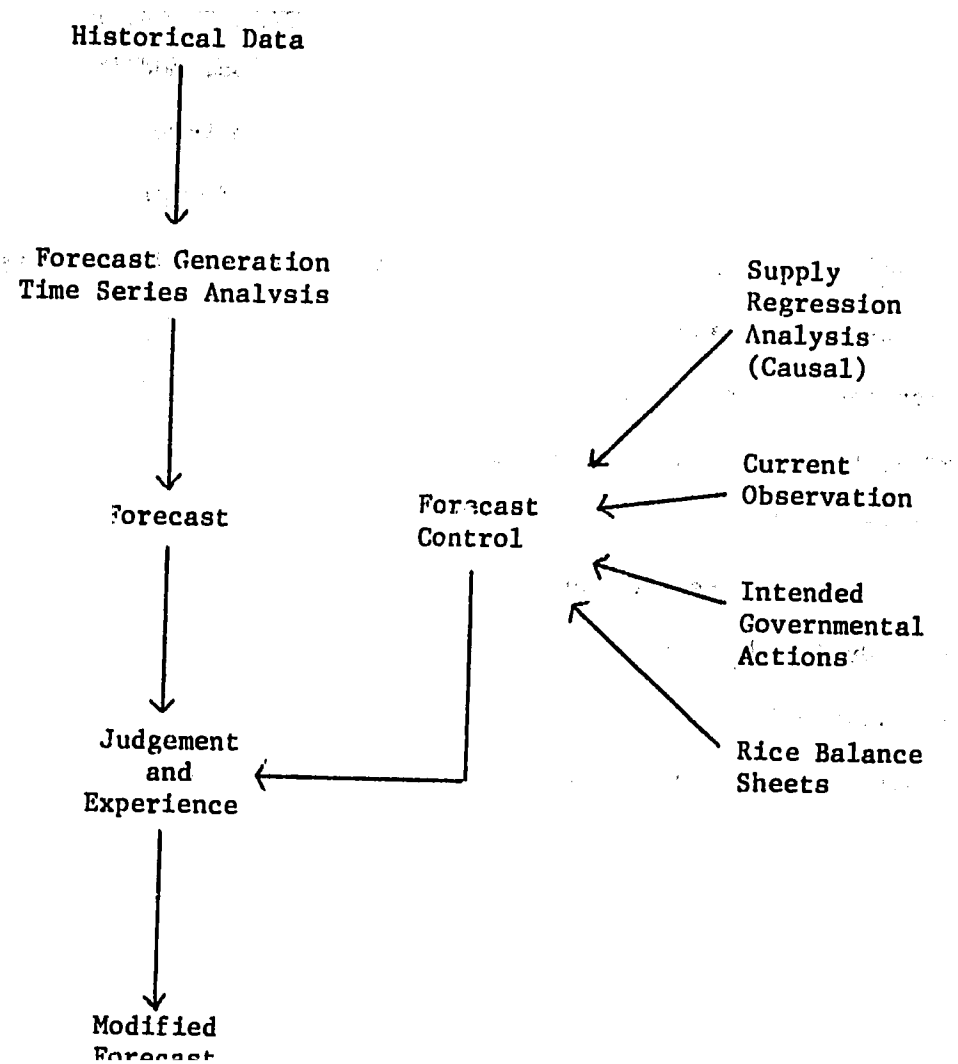
Causal models exploit the relationship between the time series of interest and one or more other time series. If these other variables are

correlated with the variable of interest, and if there appears to be some cause for this correlation, a statistical model describing this relationship can be constructed. Then, knowing the values of the independent variables, one can use the model to develop a forecast of the dependent variable. There are limitations to the use of causal models. First, the value of independent variables must be known at the time of forecast. If independent variables for the future must first be forecast before this model can be used, then the model is rendered useless since a forecast is being constructed based upon the results of another forecast. Second, it is often the case that a model can be developed which meets the statistical criteria, but is not an accurate forecasting tool because the results do not reflect reality.

A stepwise regression analysis program is used to analyze the variables under study in an attempt to construct a causal model. This program calculates multiple linear regression in a stepwise manner, inserting at each step that variable which is eligible and has the highest partial correlation with the dependent variable, given the previous selected variable in the regression equation.

Since neither approach may result in a well defined forecast that includes significant factors of change, a forecasting system will be used as illustrated in Figure 14. This will allow the forecast to be modified based upon structural changes occuring or changes that will occur within the production system being analyzed. Therefore, the results of the causal model may be used to alter the trend line developed from time series analysis where the trend line does not and cannot reflect the impact of future proposed development programs.

Figure 14. Forecasting Approach for Supply and Demand Projections



Demand Projections

The key factors for volume of domestic demand for rice in any given year are total population and average per capita consumption. Average per capita consumption is affected by eating habits and food preferences, by average income levels, and by the price of one food relative to prices of complementary or substitute foods. Rural populations generally have different eating habits than urban populations so the average per capita consumption is different among the two populations. As income increases, different shifts in the consumption level of foods occur. The magnitude of these shifts depends on the income elasticity of demand as well as the price elasticity of demand for the particular food. Income elasticity measures the percentage increase or decrease in consumption with a given percentage increase in income. Price elasticity measures the percentage decrease/increase in consumption with a given increase/decrease in price.

In this study, elasticities cannot be constructed because of the lack of adequate data on per capita consumption and because the subsidized ration system for rice and flour would distort any results because of governmental subsidies, price controls, and government manipulations of the ration system.

This set of circumstances dictates that another approach be devised for construction of future domestic consumption. Using the same generalized forecast system as illustrated in Figure 14, the methodology for constructing total demand is as follows:

1. Projection of population by national and district levels.
2. Proration of total district population projections to urban-rural projections by district.
3. Projection of urban and rural per capita consumption for rice and flour with result being the construction of two different

future forecasts, one with flour and one without flour.

4. Construction of total demand for rice by district.

This process involves the use of the master projection model as previously described in the Supply Projections subsection for time series analysis. Because of the restrictions previously stated, regression analysis to determine relationships and determination of elasticities is not feasible.

Another demand construction is required in this study. That is the demand of the rice ration system administered by the government. The calculation of this demand is computed by current numbers of the population holding ration cards multiplied by the ration level. The resulting numbers will be the maximum requirement of the rice ration system by district under current government rice ration policy. No other means can be used to construct future demand of the rice ration system since governmental policy regarding this system has been highly varied over the past ten years.

Calculation of Government Procurement Levels

Calculation of future targets for government (Paddy Marketing Board) procurement levels is necessary to begin the process of determination for rough rice storage and milling facility capacity requirements.

Historical data of past performance of government procurement as a percentage of total production exhibits extreme variation due to a serious drought in the mid 1970's as well as the changing requirements of the rice ration system.

With the problem of purchase level variation as a background, the question to be solved is what level of purchase is necessary to support the Guaranteed Price System as a floor price to farmer for rough rice. It must be assumed under current government policy regarding the rice

ration system that the most important function of the Paddy Marketing Board is to stand ready to purchase, store, and mill any and all rough rice offered to it for sale by farmers so as to support the rough rice floor price as set by government.

Given this assumption, an approach to determining the level of require purchases can be formulated by developing a causal model using the program as outlined in the first sub-section of this section. If a causal model cannot be developed because of inadequate statistical relationships, then a nationwide target of purchasing can only be calculated based upon current observation and heuristic relationships.

After calculation of a national procurement target, procurement targets by district are constructed by using the proration feature of the Master Projection Program wherein the historical district percentage purchases of district production are averaged to use as a base for prorating the national procurement target to a set of district procurement targets.

The resulting procurement targets by district are then prorated, by the use of the Master Projection Program into monthly procurement targets by district. The basis for monthly procurement targets is the average purchases by month compiled from historical data. Adjustments to these monthly purchasing percentages will be made based upon factors of production which tend to influence seasonal production patterns.

Construction of Transportation Costs

When conducting transport and/or locational analysis, two cost structures may be considered. First, transportation rates may be used to calculate the transportation function. However, transport rates may not reflect the true cost of transport involved in the physical distribution of any individual product. This is because transport rates cannot reflect any

governmental subsidies, preferential rates on specific products below cost, nor the economic cost differences due to different load sizes of hauls. The second cost structure is the true cost of transport by taking into consideration all known costs involved in a given mode of transport. These costs may be constructed by survey of actual operations or by engineering economics. In the case of surveying actual transport operations, some fixed costs may be ignored (such as interest, return on investment, or depreciation) because operators tend to delete these in setting rates because of competitive situations.

Transportation functions are generally linear equations, expressed as $Y = A + bX$, or in some cases a kinked linear expression such as $Y = A + b(X-K)$.[1] This is not to say that a quadradic or exponential expression cannot be used to reflect true costs, but generally this type of equation is not found to reflect reality significantly better than a linear expression.

The basic model for estimating operating costs of trucks should consist of three components: (1) variable costs which are associated with distances, (2) fixed costs, and (3) transfer costs which involve the cost of loading and unloading trucks and/or drivers time during the loading-unloading process. In this study, transfer costs are deleted because they are considered to be a warehouse cost associated with the storage and handling of paddy and rice. Also, truck drivers' salaries are in this study a fixed cost because the drivers are paid a monthly salary. The following general equation reflects the total cost component of a given truck:

---

[1] X = distance in the first equation, X = distance and K = given minimum distance in the second equation. The second linear expression somewhat ignores the fact that some variable costs are incurred even in the first mile of movement.

$$TCv = TFCv + VCv\ Mv$$

where for vehicle type v,

TCv = total cost annually per truck
TFCv = total fixed cost annually per truck
VCv = variable cost per mile
Mv = miles per year

Variable costs include fuel, maintenance (oil, oil filters, lubrication, repair), and tires. These are converted to a cost per mile as follows:

$$\text{Fuel cost per mile} = \frac{\text{fuel cost per gallon}}{\text{miles per gallon}}$$

$$\text{Tire cost per mile} = \frac{(\text{tire cost per tire}) \times (\text{tires per vehicle})}{\text{miles per tire}}$$

$$\text{Maintenance cost per mile} = \left(\frac{\text{oil and filter cost per change}}{\text{miles per change}}\right) + \left(\frac{\text{lubrication}}{\text{miles per lubrication}}\right) + \left(\frac{\text{yearly repair costs as a function of purchase price}}{\text{average annually miles traveled}}\right)^{1}$$

This procedure for calculating variable cost per mile of operation can be "checked out" by survey collected data as expressed in the following equations:

$$VCv = \frac{TVCv}{Mv}$$

where for vehicle type v,

VCv = variable cost per mile
TVCv = total annual variable cost
Mv = total annual miles operated

[1]At best this is an estimated component, no two individual vehicles will have exactly the same repair costs over the same given mileage.

$$VCvt = \frac{VCv}{TA}$$

where for vehicle type v,

VCvt = variable cost per ton per mile
VCv = variable cost per mile
TA = average tonnage hauled per trip

Those costs which are not associated with mileage, but are accrued whether or not the truck is even moved are considered as fixed costs. Fixed costs include interest, depreciation, license fees, insurance costs, highway use taxes, management expenses (administration), and drivers and helpers wages.

Interest and depreciation could be based upon annual equivalent cost as expressed in the following equation:

$$A.E.C. = Pv \frac{i\ (1 + i)\ Nv}{(1 + i)Nv - 1} - Sv \frac{i}{(1 + i)\ Nv - 1}$$

where for vehicle type v,

A.E.C. = annual equivalent cost
Pv = purchase price
Sv = salvage value
Nv = service life
i = interest rate

Annual equivalent cost, however, seems to understate actual true costs involved in truck ownership. Interest cost should be based upon opportunity cost of investment to reflect the foregone return on other investments, regardless of the actual cost of borrowed money (considering the fact that opportunity cost of investment is greater than the cost of money). Depreciation should be structured to reflect replacement cost after normal service life.[1] The following general equations reflect this approach.

---

[1]Normal service life meaning life of truck before reaching some high level of annual repair.

$$A.I.C.v = PvI$$

where for vehicle type v,

A.I.C. = annual interest cost
Pv = purchase price
I = opportunity cost of money

and

$$A.D.C.V = \frac{Pv - Sv}{Nv}$$

where for vehicle type v,

A.D.C. = annual depreciation cost
Pv = purchase price
Sv = salvage value at end of normal service life
Nv = normal service life

All other fixed costs as detailed in the first paragraph of this subsection can be directly attributed to any given vehicle on an annual basis. This type of data can be ascertained by surveys.

The process of constructing a truck transportation function such as $Y = A + bx$ involves computation of fixed costs A, on a per-ton hauled basis. Therefore, additional data of length of trips, number of trips, percentage of capacity load, and annual mileage is required.

The number of trips per year can be estimated based on trip distance, speed, transfer time and number of working days per year as expressed in the following equation:

$$Nv = \frac{Hv}{\frac{D}{S} + T}$$

where for any given vehicle type v,

Nv = number of trips per year
Hv = total working hours per year
D = round trip distance (miles per tr
S = speed (miles per hour)
T = transfer time, including waiting time, loading-unloading time (hours per trip)

However, this equation should be used as a control and not as a complete answer to the determination of number of trips per year.

The average length of round trip, average number of trips, average capacity load, and annual mileage should be ascertained by survey of operating vehicles. From this data, the following series of equations can be used to derive fixed costs apportioned to tonnage hauled.

$$TFCv = AICv + ADCv + OFCv$$

where for vehicle type v,

TFC = total annual fixed costs
AIC = annual interest cost
ADC = annual depreciation cost
OFC = other fixed costs, annual basis

$$TNv = ACLv \times ATv$$

where for vehicle type v,

TNv = tonnage hauled annually
ACLv = average capacity load
AT = average number of trips annually

$$FCv = \frac{TFCv}{TNv}$$

where for vehicle type v,

FCv = fixed cost per ton
TFCv = total annual fixed cost
TNv = tonnage hauled annually

The number derived for FCv is therefore our A in the transportation function $Y = A + bX$. Variable costs, which have been computed as VCv, become b in the transportation function. Therefore, for every ton of product transported, the cost is Y, being the fixed cost per ton, A, plus a variable cost, b, for every mile transported, X.

Due to the nature of rail and water transportation, these modes exhibit high fixed costs. While the basic procedures for estimation of costs differs little from truck transport cost estimation, additional variables are involved. Also, these modes involve larger capital costs than truck transport.

A second approach to constructing a transportation function involves determining what actual payments are per ton per specific trip. If payment data can be ascertained to contain no excess profit levels, then this data can be regressed against distances involved to construct a workable function.

Both methodologies will be used in this study because a lack of data and lack of previous transport cost studies requires that data will have to be collected by survey. In this case, then both methodologies will be applied to compare results and selection will be based upon the best resu obtained.

Locational Analysis

The concept of optimization as related to this study implies cost minimization which is the achievement of minimum transportation, processing, and storage costs associated with the government's paddy and rice marketing system. The minimizing framework to be used specifies a set of conditions in the form of restrains such as demand for rice, supply of paddy, and storage, processing and transportation capacities, which can be met by certain activities (storage, process, transportation)--each with a cost attached--and seeks the combination of activities that permit satisfaction of the restraining conditions at minimum cost.

A technique which allows optimization, or at least approximate such a desired optimum, is known as Linear Programming. It is a methodology used widely for allocating a group of limited resources in a manner which satisfies a group of competing demands under known and fixed limitations.

In solving these problems, objectives such as profits, costs, or other measures of effectiveness are to be obtained in the best possible, or optimal way subjet to certain conditions. These conditions, in turn, may arrive from a variety of sources, such as government policies, marketing, production, storage, legal, and others.[1] Finally, since a well-defined objective is the target of the solution, the answer to the problem must satisfy this requirement, that is, the objective.[2]

The linear programming technique used here is of the Transportation Linear Programming type, and like many other linear programming tools, it offers certain advantages.

1. Optimum Use of Productive Factors

Linear programming techniques indicate how one can most effectively employ productive factors using existing and usable facilities and equipment by more efficiently selecting and distributing these elements. Having a previously defined objective, this more efficient use of productive factors can be obtained.

2. Improved Quality of Decisions

When using linear programming techniques, one must analyze problems in their real and essential appearance, and must collect and select only the pertinent data useful for the mathematical formulation according to the requirements of the process to be applied. This causes the consideration of problems in their realistic and true nature, disregarding components that do not affec

[1]Refer to Appendix A for LP example.

[2]Refer to Section I for objectives.

3. Modification of Mathematical Solutions

There may be valid reasons for modifying the optimal solution which has been objectively obtained by computation. Sometimes if it is not convenient to apply the solution as such because it may interfere with other operations, or it may contrast with some unwritten policies.

Finally, it may become necessary to modify two or more solutions obtained by linear programming techniques in order to achieve a combined solution to the overall problem. Although simultaneous optimization of all phases of a system is desirable, practical restrictions usually require sequential optimization of parts of the system accompanied by adjustments to approach an overall optimization.

It is this third feature which makes linear programming techniques very appealing for solving real-life problems which are beyond the capacity of today's computer software and applied techniques.

The lack of sufficient processing and/or storage capacity at the proper locations forces the use of routings in space, time, and form which are different from those selected in the least-cost marketing network. Specific capacity restrictions can be very expensive, or relatively inexpensive, depending upon (1) the magnitude of the unit savings foregone by having to select the next best routing and (2) the volume of marketing over the affected routings (as determined by the linear programming solution). By comparative solutions with and without the capacity restrictions, the transportation linear programming model can give accurate measurement of the costs of the restrictions (and the potential benefits from capital projects to remove them).

SECTION VIII

STUDY PROCEDURES

The methodology as explained in the previous section allows itself to be molded readily to the procedural approach to be used in the analysis of this study.

Data Collection

Data collection has proceeded under the auspices of the Paddy Marketing Board and USAID/Colombo with these institutions providing manpower for this purpose. The following is a detail of the data collected.

1. 1977 data on paddy purchases by Purchasing Center, warehouse issues and receipts by Paddy Marketing Board, and amount of paddy milled by rice mill.
2. Effective capacity of current paddy Marketing Board warehouses including warehouses under construction and proposed warehouses.
3. Capacity of current PMB and Quota rice mills, including proposed PMB rice mills.
4. Capacity of Food Commissioner warehouses.
5. Locations of all Purchasing Centers, Paddy Marketing Board warehouses, PMB and Quota rice mills, Food Commissioner warehouses, and Multiple Purpose Cooperative Societies plotted on a 1 inch to 1 mile scale map of Sri Lanka.
6. 1952-1977 data of cultivated acres, harvested acres, and yields by district and production season.
7. Available data of factors influencing yields: fertilizer distribution by district, irrigation development programs, and usage rates of improved varieties.

8. Available data of factors influencing land use for Production of rough rice, such as irrigation development programs and target dates, and governmental prices for rough rice.
9. Procurement data of the Paddy Marketing Board by district and month.
10. Available open market price of rough rice by district.
11. Truck transportation cost data by two separate surveys.
12. Available per-capita consumption data from household budget studies.
13. Population numbers based upon census.
14. Rice ration cardholders by district and Multiple Purpose Cooperative Society.
15. Estimated post-production losses in the rice industry.
16. Railroad transport cost data.
17. Importation data of milled rice and flour.

Data Constraints

All studies are bounded by constraints either in the data collected or the way data was prepared for analysis. Constraints are caused by inadequacy of the data which must be corrected for by establishing certain assumptions. Recognition of these types of events does not alter the validity of the outcome of the study, but simply places the results of the study in the correct perspective.

Data constraints encountered are detailed as follows:

1. Since data is naturally collected in most instances on a geographical boundary basis, it is natural that analysis of data will be structed on some type of geographical basis Therefore, this acts as an initial constraint in arriving at

the desired optimum result in the analysis if the situation dictates a different aggregation of data than the geopolitical boundary basis.

2. District average yield data when multiplied by district net harvested area equals district production.[1] District production when totaled equals national production. This procedure does not equal the estimated national production provided by the Ministry of Agriculture, GSL. This distortion is caused by the factor .85 used in irrigated and rainfed acreages, but not in upland and miscellaneous acreages. The difference amounts to approximately a ± .1 percent, which is not of significant importance in constructing projections of supply possibilities for paddy.

3. Data regarding PMB rice mill capacity and 1977 amount of rough rice milled for PMB mills indicates on the whole, a low level of utilization of capacity. This is demonstrated in Appendix B, which lists level of capacity utilization for each PMB mill. This is assumed to be the result of old, unmaintained equipment, and/or poor management at both mill and administrative level.

4. Truck transportation cost data is subject to bias since survey data not collected on a random sample basis. Rail transportation cost data is extremely limited due to both lack of basic data and data aggregation as available data was supplied. No complete data could be collected on water transport, therefore, no function can be constructed.

[1]Net harvest area given as harvested area x .85 (factor which reduces harvested area to growing area eliminating paddy dikes, etc).

5. Per capita consumption data is quite limited with only two specific sample years. Sample years involved are influenced by drought conditions as well as governmental changes in rice ration policy. There appears to be insufficient average per capita income data which can be related to per capita consumption of rice. There is insufficient data of rural and urban consumption of rice and flour, and when sample sizes related to urban and rural population census numbers an apparent bias in the samples is detected.
6. Estimates of post-maturity losses in the rice industry are based upon extremely limited research.
7. Fertilizer data is shipments only, not use, by season.
8. There is a lack of available data on the free market in rice, including such items as commodity flow, retained on-farm usage, and number, sizes, etc. of private rice milling facilities.

Steps for Supply Projections

The purpose of production projections is to develop a projection of supply potential and a forecast of purchases by the governmental sector of the paddy and rice industry. The result will be used to determine future storage and milling requirements as well as future locations of facilities and facility size requirements.

Production projections can be constructed by two different procedures. First, projections can be computed using a historical production time series. Or, secondly, projections can be calculated by use of two factors that compose production, harvested area and yield.

The steps involved in projection of future rough rice production are as follows:

1. Develop time series trends of yield by district using base years 1952-1977.

2. Develop time series trends of harvested land area by district using base years 1952-1977.

3. Regression analysis of yields and dominant factors influencing yields such as irrigated land development, fertilizer use, and improved variety use to determine if statistically sound relationships exist. This involves the concept that yields are a function of available water, nutrients, and improved varieties that have ability to yield under these conditions. Data for regression analysis is grouped by wet and dry zones, Maha and Yala seasons so as to have sufficient observation size as well as to reduce weather impact upon data.

4. Regression analysis of harvested area and dominant factors influencing harvested area such as irrigated land development, governmental purchase price of rough rice, and ratios of irrigated cultivated rice land to total cultivated rice land. This involves the concept that increased harvested area is a function of higher paddy prices because more land is planted, of irrigated land development because this brings more land into production that is guaranteed to reach harvest, and the ratio of irrigated cultivated acreage to total cultivated acreage which, as it increases, should reduce the difference between cultivated area and harvested area due to water availability. There is another approach to this specific analysis which is discussed in Appendix D which contain the results of this step. Data for regression analysis is grouped by wet an

dry zones, Maha and Yala seasons so as to have a sufficient observation size as well as to reduce weather impact upon data.

5. Application of the analytical results of Steps 3 and 4 to the projected trend lines for yields and harvested acres. The results of application are adjusted trend lines which attempt to reflect future conditions not anticipated by time series analysis.

6. The projected trends of yield and harvested area are multiplied which results in a calculated projection of future production.

Steps for Calculation of Future Procurement Targets

The concepts for construction of procurement targets as discussed in the methodology section lead to the following procedural steps.

Regression analysis by district of procurement percentages of production and independent factors assumed to influence these procurement percentages. The independent variables to be used are open market prices, government support prices, production levels, and a dummy variable representing past policy changes in the rice ration system.

2. Assess the statistical results of the regression analysis as well as its ability to forecast future procurement targets.

3. To test regression analysis against a construction of weighted procurement averages to determine which result is applicable.

4. Construct national procurement targets.

Construct district procurement targets by prorating calculated district targets to national procurement targets.

6. Construct monthly procurement targets by district by proration of monthly purchasing percentages to total district targets.

Steps for Calculation of Future Storage and Milling Requirements

The results of the procedures described above are entered into this series of calculations. The result of this procedural process will be the required level of storage and milling capacities to effectively aid in developing a smooth and continuous flow of product through the procurement system under study. The following described steps are used on an individual district basis for the years 1978 through 1985. All the steps reflecting entered data are steps where data is entered into a computer program especially designed for this problem. All other steps are performed by the program.

1. Enter procurement targets by month.
2. Enter initial carry-over balance which is calculated using two separate formulas, depending upon available data. Where data for ending 1977 carry-over is available, the initial balance is calculated as equal to the ending 1977 carry-over plus one month's milling requirement. The concept underlying this formula is that one month's milling requirement must be added to ending 1977 carry-over balance to reflect the fact that the receipts and issues are continuous throughout the month and do not occur in a single transaction at a given point in time. This smooths out the process of calculation of required storage levels.

   Where no ending 1976 carry-over balance is available for a district, the initial balance is calculated as equal

to two month's milling requirement. The concept underlyin the use of this formula is the same as described for the first formula as well as to place into assumption that ther probably was an ending 1977 carry-over balance which either was not reported or not collected in the data collection process.

Required mill[illegible] [illegible]viding the total of the ear's purchases by 12 to determine the milling capacity equired per month to mill the annual procurement.

Balance of rough rice to be placed into storage is the result of Step 1 - Step 3. In computation of this balance, a new entering carry-over is constructed for each year. This new entering carry-over is the December balance for storage less that year's monthly required milling capacity plus the next year's monthly required milling capacity. The concept underlying this adjustment in each year's entering carry-over balance is that as the required milling level increases each year, the entering carry-over balance must be adjusted to reflect the concept established in Step

Enter currently available storage capacities including facil ties under construction and proposed facilities with funding in the years in which they are targeted to be ready for use.

Additional storage capacity required is computed by Step 4 - Step 5.

Enter currently available milling capacity including proposed facilities with funding in the years in which they are targeted to be ready for use.

8. Additional milling capacity required is computed by Step 3 - Step 7.

9. Computation or storage turnover rates for current available storage capacity and future required storage capacity.

Steps for Calculation of Supply-Demand Balances

The supply-demand balances calculation process is based upon the methodologies as discussed in Section VII. Since supply projection procedures have been completed, the first series of steps in this procedural category is to compute projections of total milled rice demand by district and for rice ration system demand by district. This encompasses the following steps

1. Calculation of apparent rice supply and consumption via a balance sheet approach. Also, the development of a balance sheet which includes both milled rice and flour since indications from available data are that the flexible interchangeability among these two products is the result of the subsidized food-ration system within the country. Since relative pricing of these products by government has made flour easily substitutable for milled rice, then flour consumption must be included in the determination of demand for rice.

2. Construction of a simple time trend of milled rice consumption and milled rice plus flour consumption based upon the data developed by balance sheet approach. The balance sheet results being checked by the three household budget surveys. The third household budget study was conducted by another agency during a time of limited rice supply due to drought. It was concluded after reviewing the surveys that the results were biased by sampling techniques and environmental circumstance

and therefore not acceptable to be included in the data used for the construction of a time trend and could only used as control factors

3. Develop a forecast of per capita consumption by total population using the results of Steps 1 and 2. Because per capita consumption could not be portioned into urban and rural consumption, total per capita consumption was forecast.

After the computation of per capita consumption, the next series of procedural steps involves the construction of total demand. The steps are follows:

1. National population projections based upon historical growth patterns.
2. Urban and rural population projections by district based upon historical growth patterns prorated to the national population projections.
3. Total population projections by district derived from urban plus rural population projections in Step 2.
4. Total consumption of rice for total population calculated by multiplying total populations by district and average per capita consumption projections. Two levels of consumption are calculated, rice consumption and rice and flour consumption.
5. Calculation of surplus-deficits by district.
   a) Supply projections less seed uses and losses multiplied by a milling factor to determine available supply of domestic milled rice.
   b) Subtraction of total consumption by district from available domestic milled rice supply by district.

The third series of procedural steps is concerned with construction of a surplus-deficit balance by district based upon procurement of rough rice by the Paddy Marketing Board and demand of the rice-ration system. The steps are as follows:

1. Construction of demand by district of the rice-ration system derived from number of current ration card holders per district as related to the population trend and then multiplied by the current ration level.

   Calculation of surplus-deficit balances by district

   a) Procurement projections less losses multiplied by a milling factor to determine available supply of milled rice for the rice-ration system

   Subtract total demand of the rice-ration system by district from available domestic supply of milled rice for the system by district.

Preparatory Steps for Location Analysis

Many large scale studies, such as this one, which arise from real-life situations simply do not fit existing methodologies and one must be satisfied with overall near optimal solutions as obtained by combining formal arguments with heuristic reasoning. Since the current government paddy and rice distribution system is long and complex, it is necessary to separate the system into logical marketing levels. In this manner, the 22 districts into which the nation is geopolitically subdivided each contain four marketing levels as follows:

First marketing level: Purchasing Center to PMB warehouse

Second marketing level: PMB warehouse to rice mills

Third marketing level: rice mills to FC warehouses

Fourth marketing level: FC warehouse to MPCS store

Combining the first marketing level of all districts into one national first marketing level would tax the capacities of the available computer space and programs. Subdividing the total system into marketing levels is also required because of product form change of rough rice to milled rice and subproducts for which other marketing considerations become applicable.

The initial work required to prepare each marketing level within each district for analysis involves the concept of optimum transportation (or routing) networks. Such a network specifies the optimum routes of transportation a commodity should use in order to minimize the distance between any two points.

Since intradistrict transportation of rough rice and milled rice is accomplished with trucks, the routing networks in each district are composed of only one mode, namely roads. Key roadway links connecting each shipping and receiving point and the roadway distance for each link make up the relevant input which is designed so that the resulting optimum roadway routing pattern holds for all commodities, regardless of the direction of haul, so long as the road system remains the same. This permits using the same computer-generated optimum highway routing network file to produce the least-cost roadway network given the parameters used in each step. Therefore, the selected alternative for the first marketing level becomes a parameter for analysis of the second marketing level. If the savings generated by the solution in the first marketing level are not offset by dissavings in the second marketing level, then this process is continued throughout the third and fourth marketing levels. Dissavings may occur at the second, third, or fourth marketing levels because of the locational configurations selected in a previous marketing level. If in the event that dissavings in a marketing level exceed savings in the previous marketing level, then the previous

marketing level must be reanalyzed and a new locational configuration constructed. Then the results of the new locational configuration replaces the original configuration used as a parameter in the analysis of the next marketing level.

While this approach can optimize each marketing level, the complexity of the system and the need to consider locational configuration constraints precludes the total system from being optimized. However, this approach leads to a "satisfysing" solution. This is a solution which always tends toward the optimum total solution but will never reach the optimum because of the constraints imposed by the procedure.

Interdistrict transportation, which may involve other modes of transport such as rail and coastal shipping, could be analyzed in order to determine the feasibility of a combination of modes for long hauls which would minimize interdistrict transportation distances and costs.

Completion of preparatory requirements involves the following steps.

1. Locations

The commodity flow through the existing marketing system used by the government of Sri Lanka serves as a basis for locating and numbering in a sequential manner all the facilities through which rough rice and milled rice flow as they go from the producer to the consumer. Thus, using accurate maps of Sri Lanka's 22 districts each PC, PMB, RM, FC, and MPCS is located and numbered.

2. Distances

This step involves measuring the distances (in miles with accuracy to one decimal place) between the numbered locations pertaining to each marketing level within each district by mode of transport. For example, in any district's first marketing level all road distances are measured between all

Purchase Centers and the nearest PMB warehouse as well as the road distances connecting all PMB warehouses so that all locations within the first marketing level are connected according to the commodity flow and later programming requirements.

The following summarizes location to location measurements by marketing levels, both to reflect present distribution system and possible alternatives.

First Marketing Level	Purchase Center to nearest PMB warehouse
	PMB warehouse to PMB warehouse
Second Marketing Level	PMB warehouse to nearest rice mill
	rice mill to rice mill
Third Marketing Level	rice mill to nearest FC warehouse
	FC warehouse to FC warehouse
	rice mill to nearest MPCS
Fourth Marketing Level	FC warehouse to nearest MPCS store
	MPCS store to MPCS store

The accuracy of measured distances between locations is made possible by the use of an Electronics Graphics Calculator which, by tracing the route between one location and any other, is able to convert this measured distance into actual miles based on the scale of the map.

3. Link Checks

After measurement, coding, and punching onto computer cards all relevant distances, a key-link check program is used to substantiate correctness of all card entries for location numbers and distance between locations. This is to eliminate errors such as duplicate numbers, duplicate distances, lack of connecting links, incorrect distances between locations, as well as mispunched computer cards.

4. Calculating Minimum Distances

The last of this series of procedural steps involves the computation of minimum distance between any one location and all other locations within each district. The basic assumption in support of this step is that all commodities will travel the shortest distance between shipping point and receiving point given no undue constraints. This calculation is computed by Network Generator Program.[1]

The finalization of this group of steps leads to analysis of commodity flows as described in the following subsection.

Location Analysis

Locational analysis is applied to those districts which prior analysis indicates a need for future storage and milling facilities to determine the least transport cost location for these facilities within the district. This analysis is based upon annual procurement, and the target years of 1982 and 1985 have been selected for analysis. The selection of 1982 is because it is the nearest year that effective planning and implementation for facilities can be accomplished. Any planning for years beyond 1985 is tentative at best, therefore, it is considered as a time point for which planning can be undertaken and later revised as current operating conditions are evaluated. Several underlying assumptions are required. These assumptions are:

1. That the 1977 purchasing center shipments of rough rice to PMB warehouses is representative of past market flows and can therefore be utilized as the basis for proportioning future annual procurement by purchasing center.

[1]See Bibliography.

2. That the purchasing center will always ship rough rice to the nearest or nearest group of PMB warehouses unless capacity restrictions exist.

3. That in the case where no warehouse additions are tested, excess supply must be shipped out-of-district, therefore incurring a transshipment cost.

The analysis is applied to each district individually and to the first and second marketing levels only. The procedural steps involved in this analysis of the first marketing level are:

1. Selection of districts from prior analysis which indicates additional storage capacity requirements.
2. Using for analysis years 1982 and 1985, proportion annual procurement of rough rice in those years to purchasing centers based upon 1977 purchasing center shipments. In the case of irrigation project development, this proportion will be shifted to reflect intensification of annual rice production in the project areas within the applicable district.
3. Construction of the amount of rough rice that each warehouse can accept annually based upon warehouse storage capacity multiplied by a turnover ratio computed in previous analysis.
4. Construction of a transportation function as outlined in Section VII and detailed in Appendix K.
5. Analysis of problem using the Transportation Linear Program.
   a) Computation of base case to determine transport cost if no additional warehouses constructed.
   b) Computation of alternative locations for warehouse facilities to determine the least-cost locations

Once this procedural group of steps is accomplished, then using the output of Step 5, analysis is undertaken for the second marketing level which will determine future rice milling facility locations. There will also be included in the analysis of the second marketing level districts which did not require future additional storage. A serious managerial and administrative problem exists within the framework of this portion of locational analysis. The mixture of private and government owned milling facilities,[1] antiquated milling facilities, and lack of correct management and technical operation. Additional capacity required previously computed is based on rated capacity of milling facilities within this system. No other way exists to compute required capacity because future allotments to private mills are administratively determined. Even if allotments were estimated, the possibility exists of arriving at a computed answer for additional milling facilities which would forecast a milling requirement level that would result in an excess of milling capacity.[2]

Because of this analytical constraint, assumptions are constructed to maintain the validity of this study. The assumptions are as follows:

1. That in the case of a district which prior analysis has shown to be deficit in milling capacity, all mills listed in the 1977 commodity flow data are assumed to be capable

[1]Refer to Appendix J for utilization rates for PMB rice mills. This same situation is somewhat applicable to privately owned mills since milling of government owned rough rice by these mills is by an allotment.

[2]This analytical constraint strongly suggests (or demands) that what is required, to properly assess this segment of the rough rice and milled rice industry, is a survey of all existing private rice mills within the country. This survey could develop the total rated capacity as well as the effective capacity available by district. The results could then be used in conjunction with the surplus-deficits balances in this study so as to assess the basic needs in the developments of the private rice milling sector.

of milling their listed capacity of government owned rough rice.[1]

2. For the case of a district which prior analysis has shown to be excess in milling capacity, all listed mills in the 1977 commodity flow data will have available rough rice to be milled proportioned to each mill. This proportion will be based upon the capacity of the individual mill to total district capacity.
3. That PMB warehouses will always ship rough rice to the nearest rice mill or group of rice mills unless capacity restrictions exist.

The procedural steps involved in the analysis of the second marketing level are:

1. Selection of districts from prior analysis which indicates additional milling capacity requirements.
2. For the year 1985 use the output of warehouse location analysis for supply points and amounts of rough rice to be shipped to mills in those districts which required additional storage capacity. The supply points and amounts of rough rice to be shipped to mills for those districts not requiring additional storage capacity but requiring additional milling capacity are calculated by proportioning district procurement of rough rice among warehouses based upon warehouse capacity and turnover ratios.
3. Using the assumption previously stated, all listed milling facility locations will receive the amount of rough rice equal to their capacity.

[1] Data supplied by Paddy Marketing Board.

4. Analysis of problem using the Transportation Linear Program.
   a) Computation of base case to determine transport costs if no additional milling facilities constructed.
   b) Computation of alternative locations for milling facilities to determine least-cost locations.
5. Comparison of aggregate cost-savings of alternative locations given in analysis of the first and second marketing levels to determine if there are any trade-offs involved in using different alternatives among the two marketing levels.
6. No comparison between transport savings and investment and/or operating costs can be analyzed because of lack of data. Authors have been informed that there will be no difference among locations in either investment cost or operating cost. Therefore, this is taken as a basic assumption in this study.

Steps for Commodity Flow Analysis

All intradistrict hauling of rough rice and milled rice is done by truck. Depending upon the district, other modes of transport may or may not be available. In addition to this constraint, distances are too short to justify such other mode of transportation as rail or water even if available.

Interdistrict rough rice and milled rice transportation does not imply the exclusive use of rail or water. It merely suggests that distances are longer which would tend to penalize truck transportation in favor of other modes such as railway which, due to its high fixed costs, needs longer distances to justify its usage. Therefore, interdistrict transportation opens up the possibility of using a combination of various modes depending on the distances, transfer costs, facilities, etc., which could tend to reduce

transportation costs even more. Such a possibility also adds flexibility and capacity to the total transportation system available for rough rice and milled rice movement.

This analysis is undertaken to determine if there is some alternative configuration to the current commodity flow that would further reduce transportation costs. Alternative configurations may be either a combination of transport modes and/or a redesign in the movement of commodity by shifting current functions of one marketing level to another marketing level.

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APPENDIX A

GRAPHIC ILLUSTRATION OF LINEAR PROGRAMMING

The nature of linear programming can be illustrated by graphically showing a simple problem. Suppose that a firm can produce either one or both of two products: toothpicks and matchsticks. At capacity, the available machines can produce either 15,000,000 toothpicks per day or 10,000,000 matchsticks per day, or any combination of both, subject to the limitation:

$$2T + 3M = 30,000,000$$

where T equals the number of toothpicks and M equals the number of matchsticks.

If we substitute zero for toothpicks, it can be seen that we could produce 10,000,000 matchsticks. If the firm produced 9,000,000 toothpicks, how many matchsticks could also be produced? Substituting 9,000,000 for T in the equation and solving for M (the equation would read: 2(9,000,000) + 3M = 30,000,000) and get 4,000,000 matchsticks per day.

Suppose that as a further limitation the firm must (because of a labor contract) operate eight hours a day and hire exactly 100 workers (800 man-hours per day). These workers are needed to carry wood to the machines and to package the finished product. Assume that the workers can haul and pack 20,000,000 toothpicks or 8,000,000 matchsticks per day, or any combination of both. These assumptions could be stated as:

$$8T + 20M = 160,000,000$$

The above two equations could be shown graphically as a machine constraint and a labor constraint. Assume that our objective is to maximize profit.

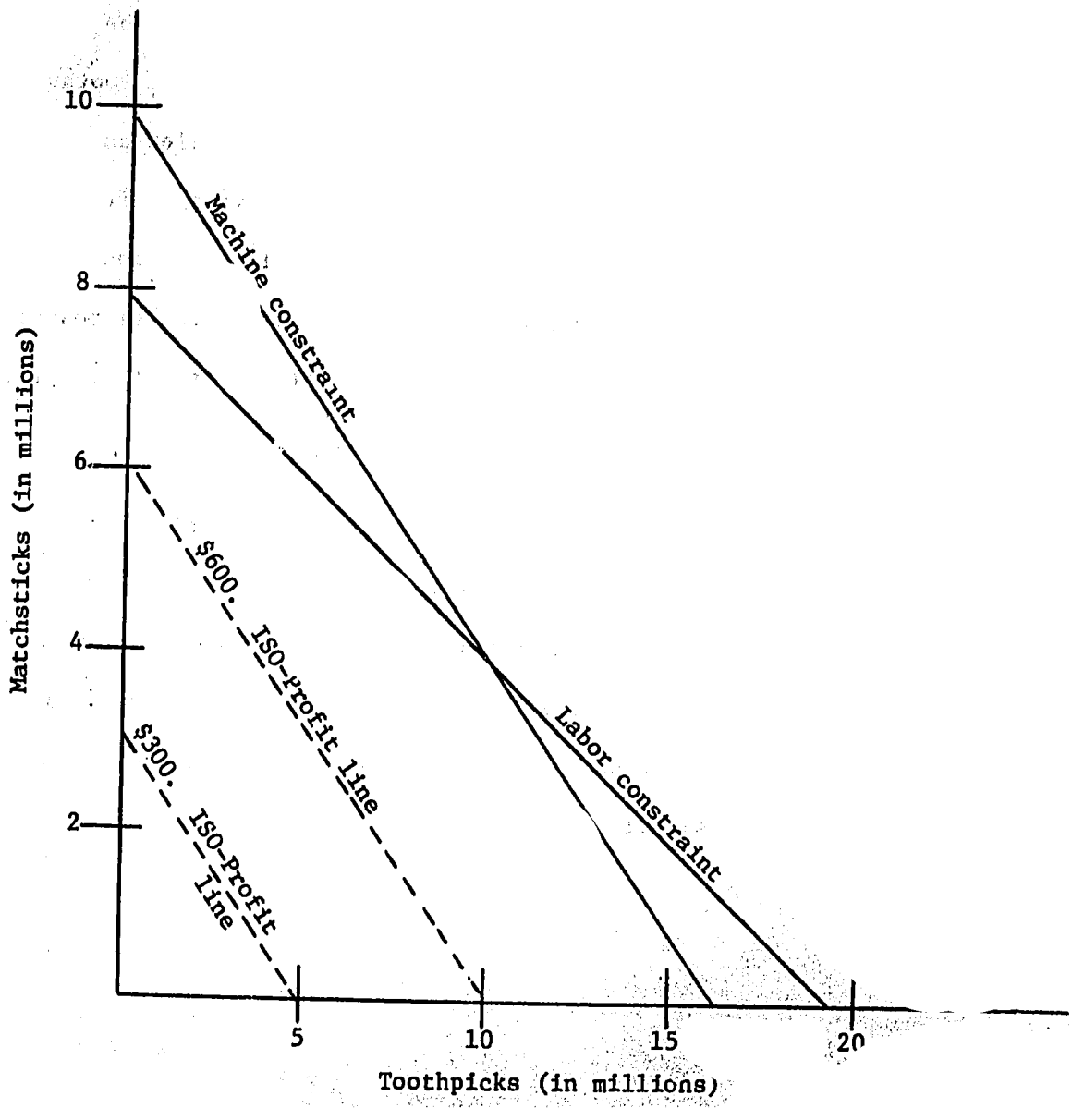
If matchsticks return a profit of $100 per million produced and toothpicks $60 per million produced, we could state an objective function as:

$$\$60 \frac{T}{1 \text{ million}} + \$100 \frac{M}{1 \text{ million}} = \text{Maximum}$$

In other words, we want to produce the optimum quantity of toothpicks and matchsticks that will maximize our profit.

Because our problem is to maximize profit, we will push the objective function as far from the origin as possible and still remain under or on the constraint lines. (Notice that an objective function can be drawn for any level of production, representing various combinations of toothpicks and matchsticks that yield equal profit; hench, each is called an iso-profit line. These lines represent larger profits as they move away from the origin.) The solution will always be found at some intersection. In this case, we can push the objective function out until we reach the point: 5,000,000 matchsticks and 7,500,000 toothpicks. At that point our profit would be $\$60 \frac{(7,500,000)}{1,000,000} + \$100 \frac{(5,000,000)}{1,000,000} = \$950$ per day.

This simplified example serves only to indicate the class of problems that are solvable by means of linear programming. If we had additional constraints, we might find that some other combination of matchsticks and toothpicks would prove more profitable. If we had additional products and additional constraints, it would be impossible to show the relationships in a simple two-dimensional graph.


10
8
6
4
2
Matchsticks (in millions)
Machine constraint
Labor constraint
$600 ISO-Profit line
$300 ISO-Profit line
5
10
15
20
Toothpicks (in millions)

APPENDIX B

SUPPLY PROJECTION TABLES

TABLE B-1

SUMMARY OF SELECTED TRENDS BY DISTRICT, MAHA SEASON

	Harvested Acres			Yield for Acres		
District	Best Fit Trend Line (exponent)	Selected Trend Line (exponent)	R^2 Value Best Fit Trend	Best Fit Trend Line (exponent)	Selected Trend Line (exponent)	R^2 Value Best Fit Trend
Amparai	.8	Same	.8366*	.8	Same	.8116*
Anaradhapura	.6	Same	.2788	1.4	Same	.4974*
Badulla	1.8	Same	.5232*	1.0	Same	.6382*
Batticoloa	.2	Same	.0101	1.8	Same	.6322*
Colombo	1.4	Same	.8672*	.8	Same	.6580*
Galle	1.8	Same	.6274*	.2	Same	.7213*
Hambantota	1.8	Same	.3611	1.8	Same	.6882*
Jaffna	.2	Same	.2372	.2	Same	.3950
Kalutara	1.8	Same	.7108*	.2	Same	.7400*
Kandy	.8	Same	.9369	.4	Same	.5069*
Kegalle	.2	Same	.2469	.2	Same	.4306
Kurenegala	.2	Same	.1410	1.2	Same	.7258*
Mannar	.2	Same	.0685	.8	Same	.3870
Matale	1.4	Same	.6303*	1.0	Same	.5171*
Matara	1.8	Same	.0506	.2	Same	.5178*
Moneragala	.8	Same	.8953*	.4	Same	.7600*
Nuwara Eliya	1.4	Same	.5219*	1.0	Same	.5038*
Polonnaruwa	.4	Same	.9494*	.2	Same	.7161*
Puttalam	.6	Same	.1720	.6	Same	.3324
Ratnapura	1.8	Same	.7320*	1.4	Same	.6338*
Trincomalee	.6	Same	.6703*	.8	Same	.3909
Vavuniya	.2	Same	.2620	.8	Same	.1317
Uda Walowe[1]	N/A	N/A	N/A	N/A	N/A	N/A

*R^2 value statistically significant.

[1]Three-year average used because of short data time series.

TABLE B-2

SUMMARY OF SELECTED TRENDS BY DISTRICT, YALA SEASON

	Harvested Acres			Yield for Acres		
District	Best Fit Trend Line (exponent)	Selected Trend Line (exponent)	R^2 Value Best Fit Trend	Best Fit Trend Line (exponent)	Selected Trend Line (exponent)	R^2 Value Best Fit Trend
Amparai	0.4	Same	.6735*	.6	Same	.7605*
Anared	0.4	Same	.0092	1.4	1.2	.3998
Badulla	1.8	0.2	.1637	.2	Same	.6198*
Batticoloa	0.6	0.2	.6523*	1.2	Same	.5947*
Colombo	1.8	Same	.6587*	.4	Same	.4870
Galle	1.8	Same	.5052*	.2	Same	2052
Hambantota	.2	Same	.0032	.8	Same	4364
Jaffna	.4	Same	.0971	.4	Same	.0112
Kalutara	1.8	Same	.5353*	.2	Same	.4958
Kandy	.8	Same	.5446*	.6	.4	.7374*
Kegalle	1.8	Same	.4466	.2	Same	.3831
Kurenegala	1.0	Same	.3237	.6	Same	.4723
Mannar	.2	Same	.0150	1.2	Same	.2402
Matale	1.6	Same	.0352	.2	Same	.4935
Matara	1.8	Same	.4593	.4	Same	.6404*
Moneragala	.8	Same	.8276*	.4	.2	.7171*
Nuwara Eliya	1.8	Same	.7522*	1.2	.8	.5136*
Polonnaruwa	.2	Same	.7005*	.2	Same	.3620
Puttalam	1.8	Same	.2364	.8	Same	.1603
Ratnapura	1.8	Same	.6161*	1.0	.8	.7489*
Trincomalee	.2	Same	.0212	1.8	Same	.2141
Vavuniya	1.8	0.2	.0206	.8	Same	.4270
Uda Walowe[1]	N/A	N/A	N/A	N/A	N/A	N/A

*R value statistically significant.

[1]Three-year average used because of extremely short data time series.

TABLE B-3

PROJECTIONS OF EXTENTS CULTIVATED AND PRODUCTION OF PADDY - 1977/1978 TO 1981/1982 BY GSL

Period	Asweddumised Extent (Acres)	Season	Gross Ext. Sown (Acres)	Gross Ext. Harvested (Acres)	Net Ext.[1] Harvested (Acres)	Average Yield (Bu/Ac)	Estimated Production (M.Bush)
1977-78	1,641,474	Maha	1,378,838	1,276,804	1,085,283	53	57,519,999
		Yala	738,663	684,001	581,401	44	25,581,644
							83,101,643
1978-79	1,669,483	Maha	1,368,975	1,267,671	1,077,520	54	58,186,080
		Yala	751,267	695,673	591,322	45	26,609,490
							84,795,470
1979-80	1,695,383	Maha	1,390,214	1,287,338	1,094,237	55.5	60,730,153
		Yala	762,922	706,465	600,495	46	27,622,770
							88,352,923
1980-81	1,733,033	Maha	1,438,417	1,331,974	1,132,178	57	64,534,146
		Yala	797,195	738,202	627,472	47	29,491,184
							94,025,330
1981-82	1,755,483	Maha	1,474,605	1,365,485	1,160,662	61	70,800,382
		Yala	825,077	764,021	649,418	48	31,172,064
							101,972,446

[1]Net Harvested Area = Gross Harvested Area x .85

Source: GSL

TABLE B-4

CROPPING INTENSITY INDEX BASED UPON PROJECTED TRENDS ADJUSTED FOR IMPACT OF IRRIGATION PROJECTS

		SELECTED DISTRICTS WITH IRRIGATION PROJECTS						
Year	Island Wide	Anarad-hapura	Badulla	Amparai	Trincom-alee	Batti-coloa	Hamban-tota	Vavuniy
1977	1.55	1.38	1.37	1.32	1.43	1.18	1.58	1.04
1978	1.57	1.39	1.42	1.55	1.58	1.20	1.59	1.09
1979	1.58	1.42	1.40	1.55	1.58	1.20	1.58	1.10
1980	1.61	1.61	1.39	1.54	1.59	1.20	1.57	1.19
1981	1.62	1.64	1.37	1.53	1.59	1.20	1.60	1.30
1982	1.63	1.66	1.36	1.53	1.64	1.25	1.63	1.30
1983	1.64	1.66	1.45	1.57	1.64	1.25	1.66	1.30
1984	1.65	1.66	1.45	1.57	1.64	1.25	1.68	1.30
1985	1.65	1.66	1.45	1.57	1.64	1.25	1.70	1.29

APPENDIX C

SUMMARY OF IRRIGATION PROJECTS

TABLE C-1

MAHAWELI IRRIGATION PROJECT OUTLINE

Project Phase	District Location	Year of Implementation	PADDY AREA Existing Land (Acres)	New Land (Acres)
Phase I (Stage 1)	Anaradhapura	MAHA 1978	51,300	
	Polonnaruwa	MAHA 1978	50,500	
	Trincomalee	MAHA 1978	19,300	
	Matale	MAHA 1978	3,300	
Phase I (Stage 2)	Anaradhapura	1978	4,200	
	-do-	1980	18,800	
Phase II	Polonnaruwa	1982		13,464
	Trincomalee	1982		14,520
	Batticoloa	1982		5,016
	Polonnaruwa	1981		6,000
	Amparai	1983		9,600
	Badulla	1983		9,600
	Polonnaruwa	1983		4,800

Source: Ministry of Irrigation, GSL.

TABLE C-2

MINOR IRRIGATION PROJECTS

PROJECT	DISTRICT	Year of Implementation & Paddy Area (Acres) 1978	1979	1980	1981	1982
Wahalkadawewa	Anaradhapura	1200	800			
Padaviya	"		500*	4000*	4000*	4000*
Mahawilachchiya	"		700*	1900*		
Mahakandarawa	"		3000*	3000*		
Mahakandura and Pannala	Kurunegala					
	"	1000*				
Vavuni Kulam	Vavuniya		500*	2500*	3000*	
Pavatkulam	"			2400*	2000*	
Bomurella	Nuwara Eliya		1500*			
Mutukandiya	Moneragala		200	600	1200	
Dewahuwa	Matale		2340*			
Mahadivulwewa	Trincomalee			2000		
Gin Ganga	Galle		3250*	4350*	2050*	700+ 2500*
Lunuganwehera	Hambantota				4770	4000
Inginimitiya	Puttalam				1000+ 1800*	1100
Uda Walawe	Hambantota					

*Existing Paddy Land.

Source: Ministry of Irrigation, GSL.

TABLE C-3

CROPPING INTENSITY INDEX

District	Year Projected 1977	1985
Amparai	1.32	1.57
Anaradhapura	1.38	1.66
Badulla	1.37	1.45
Batticoloa	1.18	1.25
Colombo	1.78	1.95
Galle	1.94	2.00
Hambantota	1.58	1.70
Jaffna	1.14	1.14
Kalutara	2.00	1.91
Kandy	1.85	1.85
Kegalle	1.95	2.00
Kurunegala	1.76	1.71
Mannar	1.09	1.10
Matale	1.46	1.69
Matara	2.00	2.00
Moneragala	1.22	1.22
Nuwara Eliya	1.71	1.70
Polonnaruwa	1.78	1.78
Puttalam	1.48	1.61
Ratnapura	1.91	1.91
Trincomalee	1.43	1.64
Vavuniya	1.04	1.29

APPENDIX D

REGRESSION ANALYSIS OF HARVESTED AREA OF ROUGH RICE

Before presentation of results, a discussion of quantitative analysis by S. M. Hussain is relevant.[1] Factors which influence sown acreage were regressed against sown acreage. The factors selected were asweddumized (diked) paddy land, average rainfall, and GPS paddy price. The regression used time series data 1953-1976 and was based upon national data (i.e., aggregated). The regression equations which resulted from this analysis are statistically significant. The analysis revealed that the two most important factors were asweddumized land and rainfall. GPS prices were statistically insignificant in explaining variations in sown acres when combined with the other independent variables.

The results of this analysis when applied to reality have important meaning. The regression cannot be used as a forecast tool with meaningful accuracy since asweddumized land must be forecast to be entered into the equation. This results in a forecast being developed from a previous forecast.

Future rainfall is not a known variable, therefore, average rainfall would have to be used as an independent variable. The most important factor is harvested acreage, derived by calculation of sown acreage multiplied by 95 percent, which is the average of harvested acreage to sown acreage for the time period under study. However, there is an extreme annual variation of this percentage from 85.4 to 97.7 to which a simple mean average is not sufficient.

A different approach to the problem is applied herein. The dependent

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[1]Hussain, S. M., Sectorial Analysis of Paddy Productions, Marketing, and Processing in Sri Lanka, Research Paper #6, June, 1977, Ministry of Planning and Economic Affairs, Development Planning Unit, GSL.

variable selected is harvested acreage based upon the concept that irrigation projects under development would increase the percentage of harvested acreage as related to sown acreage. Based upon this, the independent variables are the ratio of irrigated sown acres to total sown acres and total irrigated acres. These types of independent variables could be targeted for the future based on the assumption that the GSL would achieve the schedule set forth for these development projects. A third independent variable selected is GPS price since it had been indicated to the authors by GSL representatives that there is a strong correlation between acreages and government floor price for rough rice. The equation to be tested is therefore $Y = A + b_1 X_1 + b_2 X_2 + b_3 X_3$.

The data is analyzed on a disaggregated basis by grouping district data into Maha and Yala seasons and then into the geographical wet and dry zones. This is an attempt to negate the impact of rainfall patterns upon the data. The time series is 1969-1977. The resulting equations are detailed in Table D-1.

The results are interesting, but neither significant nor useful. While the R^2 and F values are significant with two exceptions, the beta coefficients for the most part are insignificant.[1] The Durbin-Watson statistic should be between 1.45-1.68 or larger. Only two equations meet this criteria, indicating a severe problem of autocorrelation. Since autocorrelation may be due to omission of variables or measurement error, this finding is in direct relationship to the statistical results as discussed in the following paragraphs.

The equations indicate that the impact of weather upon harvested acres is substantial. The variable X_1 in the equations has a negative value that

[1]Significance level of .05

implies a weather caused shift in the ratio of irrigated acres sown to total acres sown. Tests are performed to determine the possibility of multicolinearity, but any such influence is found to be weak both in the terms of simple correlations and F-values.

An analysis of the data base and the process of aggregating the data revealed that coefficients of variation were extremely large in the majority of cases of Y_1 X_1, and X_2. A test for skewness and kurtosis resulted in the expected values which characterize the common types of non-normal population distribution.

Analysis of variance tests reveal that means of data of districts by zone for the same seasons are not significantly different. However, analysis of variance among all seasons for the same district is significantly different Among season and zones, the test results indicated a significant difference between seasons for wet and dry zones but no significant difference for wet and dry zones for the same season. It can be concluded that data grouping must be by season to formulate a meaning approach to regression analysis.

However, an analysis of variance between pooled district data and individual district data indicates a significant difference between pooled and non-pooled data. To determine if the pooled data represents the same or different populations, a pooled data regression test was performed. The results indicate that each district represents a separate population. It is therefore concluded that the basic failure in this approach is the pooling of data by wet and dry zones. Consequently, the underlying concepts when using regression analysis must be more closely and intensely studied so as to develop and classify the variables which influence harvested acreage.

TABLE D-1

HARVESTED ACREAGE RESPONSE: RESULTS OF REGRESSION ANALYSIS

Constant	Independent Variables			R^2	F	DW
		Maha Season, Wet Zone				
44613.164	$-52308.942X_1$* (5193.154)	$1.037X_2$ (0.136)	$101.788X_3$* (124.750)	0.680	35.46	0.71
35942.344		$-0.06106X_2$* (0.141)	$265.283X_3$* (213.155)	0.032*	0.83*	0.36
		Maha Season, Dry Zone				
54019.203	$-78823.910X_1$* (8067.276)	$1.282X_2$* (0.062)	$81.335X_3$* (190.969)	0.856	146.62	1.67
6319.081		$1.103X_2$* (0.089)	$115.868X_3$* (287.013)	0.670	76.21	0.91
		Yala Season, Wet Zone				
34439.729	$-43431.47X_1$* (2997.849)	$0.99983X_2$ (0.111)	$267.084X_3$ (115.049)	0.814	72.97	0.85
24759.462		$0.12867X_2$* (0.212)	$304.686X_3$* (259.647)	0.034*	0.88*	0.24
		Yala Season, Dry Zone				
-3133.599	$-0.6509X_1$* (0.129)	$1.1927X_2$ (0.073)	$60.482X_3$* (163.440)	0.785	90.29	1.66
-269.301		$1.112X_2$* (0.082)	-14.046* (187.311)	0.712	187.87	1.68

*Statistically not significant (.05 level)

X_1 = Ratio of irrigated sown acres to total sown acres
X_2 = Total irrigated acres
X_3 = GPS price of rough rice

Sample Size:

Wet Zone n = 54
Dry Zone n = 78

APPENDIX E

REGRESSION ANALYSIS OF YIELD OF ROUGH RICE

Before presentation of results, a discussion of quantitative analysis in this area by S. M. Hussain is relevant.[1] Hussain constructed a yield response function based upon yield as the dependent variable and the independent variables of fertilizer use per acre, average rainfall, and time trend. The data series was 1953-1976 and was based upon national averages. The equations resulting from regression analysis were statistically significant except for average rainfall coefficient where average rainfall was combined with fertilizer usage. The results, while not practical for forecasting, were of such significance that this approach was selected for trial on a disaggregated basis as used for harvested area. The rainfall variable was deleted and independent variables selected for analysis were pounds of fertilizer per sown acre, ratio of acreage sown of improved varieties to total sown acreage, ratio of irrigated sown acreage to total acreage, pounds of fertilizer used per sown acre per year, and a two period moving average of fertilizer use per acre.

The concept underlying selection of these variables is that yields are some function of nutrients (fertilizer), water (irrigation), and ability of a given plant to yield (improved varieties). All of these variables can be adopted to a forecasting system since all may be indicated as targets which governmental development programs attempt to achieve. The other two selected fertilizer variables are included as substitute variables since fertilizer data is only in shipments, not use. These variables are selected to attempt to negate carry-over of stocks which exist from season to season.

[1]Refer to Appendix D for reference.

The time series used is 1972-1977 because no earlier data is available on fertilizer issues by district.

The results of the regression analysis are detailed in Table E-1. Again, the results of the regression analysis follow the same pattern as for harvested acreage, interesting but neither significant nor useful. While R^2 and F values are significant for the most part, the beta coefficients for fertilizer use are insignificant. Also, there is a variation in significance between regressions for improved varieties sown. The one independent variable that is significant throughout all equations is irrigated acreage, indicating that the most important current factor impacting upon yields is water availability. The Durbin-Watson statistic should be between 1.56 to 1.72 or larger for the dry zone and 1.45 to 1.68 or larger for the wet zone. Three of the four groups fail to meet this test, indicating a serious problem of autocorrelation.

The same statistical tests are applied as in the harvested area response function. The same tendencies are observed as the case of harvested area with the exception being the variables observed are indicated by test to be separate and distinct populations by district and season in over sixty percent of variables tested. The conclusion drawn is the same as stated in the previous appendix.

TABLE E-1
YIELD RESPONSE: RESULTS OF REGRESSION ANALYSIS

Constant	Independent Variables					R^2	F	DW
			Maha Season, Wet Zone					
18.503	$0.027X_1$* (0.029)	$18.304X_2$ (5.080)	$34.142X_3$ (4.323)			0.76	52.65	1.71
21.394		$19.386X_2$ (5.011)	$32.290X_3$ (4.121)	$-0.003X_4$* (0.031)		0.755	51.48	1.66
18.333		$18.946X_2$ (5.019)	$33.608X_3$ (4.351)		$0.026X_5$* (0.042)	0.757	52.02	1.66
			Maha Season, Dry Zone					
7.265	$0.114X_1$* (0.028)	$2.766X_2$* (8.638)	$41.818X_3$ (6.331)			0.452	20.363	1.03
10.945		$5.468X_2$* (9.107)	$40.441X_3$ (6.691)	$0.049X_4$* (0.021)		0.385	15.45	0.89
10.156		$7.421X_2$* (9.262)	$40.796X_3$ (6.874)		$0.038X_5$* (0.027)	0.356	13.63	0.99
			Yala Season, Wet Zone					
25.950	$-0.008X_1$* (0.016)	$8.477X_2$ (4.074)	$25.923X_3$ (2.824)			0.686	36.36	1.06
21.851		$8.324X_2$ (4.029)	$27.082X_3$ (2.925)	$0.031X_4$* (0.026)		0.693	37.63	1.08
17.637		$6.975X_2$* (3.980)	$29.086X_3$ (3.078)		$0.075X_5$ (0.036)	0.719	40.77	1.15
			Yala Season, Dry Zone					
27.732	$-0.001X_1$* (0.003)	$-0.273X_2$* (0.884)	$20.804X_3$ (6.406)			0.125*	3.54	1.14
28.002		$-0.262X_2$* (0.882)	$19.122X_3$ (6.458)	$0.009X_4$* (0.015)		0.128*	3.607	1.14
27.933		$-0.252X_2$* (0.883)	$19.281X_3$ (6.555)		$0.008X_5$* (0.0193)	0.125*	3.53	1.14

*Statistically not significant (.05 level)

Sample Size:

Wet Zone n = 54
Dry Zone n = 78

X_1 = Pounds of fertilizer used per sown acre by season
X_2 = Ratio of acreage of improved varieties sown to total acreage
X_3 = Ratio of irrigated sown acres to total sown acres
X_4 = Pounds of fertilizer used per sown acre by year
X_5 = 2 period moving average of X_4

APPENDIX F

POPULATION

TABLE F-1

POPULATION PROJECTIONS FOR SRI LANKA, 1971-2001 A.D.
(High, Medium, and Low Projections, Both Sexes)

වය සහ ප්‍රක්ෂේපණයේ වර්ගය மற்றும் எறிதிறன் வகையும் Age and type of projections		ස්ත්‍රී පුරුෂ දෙපක්ෂය වෙනුවෙන්ම ප්‍රක්ෂේපණය කළ මධ්‍ය වාර්ෂික ජනගහනය நட்டான் டிலுள்ளவாறாக ஆண்பெண் பிரிவுகள் இரண்டுக்குமான திட்டமிடப்பட்ட குடிசனம்—ஆயிரத்தில் Projected population of both sexes in Thousands as at mid year						
		1971	1976	1981	1986	1991	1996	2001
සෑම වයස්වලට எல்லா வயதும் All Ages	උස්, உயர் High		14,230	15,898	17,817	19,934	22,207	24,637
	මධ්‍ය, மத்திமம் Medium	12,714	14,230	15,765	17,292	18,797	20,261	21,704
	පහත්, தாழ் Low	—	14,154	15,282	16,183	17,180	18,244	19,244
0- 4	උස්, உயர் High	—	1,884	2,080	2,375	2,626	2,841	3,062
	මධ්‍ය, மத்திமம் Medium	1,746	1,884	1,946	1,981	2,006	2,020	2,058
	පහත්, தாழ் Low	—	1,808	1,537	1,347	1,486	1,587	1,623
5- 9	උස්, உயர் High	—	—	1,849	2,043	2,334	2,584	2,798
	මධ්‍ය, மத்திமம் Medium	1,678	1,711	1,849	1,912	1,947	1,974	1,989
	පහත්, தாழ் Low	—	—	1,774	1,510	1,324	1,462	1,562
10-14	උස්, உயர் High	—	—	—	1,840	2,034	2,325	2,574
	මධ්‍ය, மத்திமம் Medium	1,565	1,669	1,702	1,840	1,903	1,939	1,967
	පහත්, தாழ் Low	—	—	—	1,766	1,503	1,339	1,457
15-19	උස්, உயர் High	—	—	—	—	1,833	2,027	2,318
	මධ්‍ය, மத்திமம் Medium	1,408	1,558	1,661	1,696	1,833	1,897	1,934
	පහත් தாழ் Low	—	—	—	—	1,759	1,498	1,315
20-24	උස්, உயர் High	—	—	—	—	—	1,824	2,018
	මධ්‍ය, மத்திமம் Medium	1,179	1,398	1,547	1,651	1,686	1,824	1,888
	පහත්, தாழ் Low	—	—	—	—	—	1,751	1,492
25-29	උස්, உயர் High	—	—	—	—	—	—	1,812
	මධ්‍ය, மத்திமம் Medium	986	1,168	1,385	1,534	1,639	1,675	1,812
	පහත් தாழ் Low	—	—	—	—	—	—	1,740
30-34		780	976	1,156	1,373	1,522	1,627	1,663
35-39		650	770	964	1,144	1,359	1,508	1,613
40-44		605	640	758	951	1,129	1,342	1,491
45-49		524	592	627	744	934	1,110	1,322
50-54		428	508	575	610	725	912	1,086
55-59		349	410	487	533	588	700	882
60-64		282	327	385	459	522	556	664
65-69		214	249	290	343	410	468	500
70-74		162	173	203	237	281	337	387
75 සහ අවසානය 75 ம் மேற்பட்டதும் 75 and over		159	198	228	266	313	372	448

Source: Department of Statistics and Census.

APPENDIX G

CONSUMPTION DATA

TABLE G-1
RICE BALANCE SHEET

Year	(1) Paddy Production (tons)	(2) Seed Usage[1] (tons)	(3) Losses[2] (tons)	(4) Net Paddy Production[3] (tons)	(5) Milled Rice[4] (tons)	(6) Rice Imports[5] (tons)	(7) Total Available Rice[6] (tons)	(8) Population[7]	(9) Available Per Capita Consumption (pounds)
1952	591,959	55,198	84,058	452,703	307,838	412,327	720,165	8,005,617	201.50
1953	448,528	59,762	63,691	325,075	221,051	416,799	637,850	8,185,702	174.55
1954	623,608	66,800	88,552	468,256	318,414	408,871	727,285	8,398,609	193.97
1955	729,718	69,875	103,620	556,223	378,232	371,064	749,296	8,617,054	194.70
1956	559,462	58,739	79,444	421,279	286,470	499,427	785,897	8,841,181	199.11
1957	650,274	65,131	92,339	492,804	335,107	531,441	866,548	9,071,137	213.98
1958	729,439	70,351	103,580	555,508	377,745	562,236	939,981	9,307,074	226.23
1959	731,792	72,019	103,914	555,859	377,984	593,031	971,015	9,549,147	227.78
1960	877,267	76,085	124,572	676,610	460,095	536,726	996,821	9,797,518	227.90
1961	890,219	76,784	126,411	687,024	467,176	476,661	943,837	10,052,348	210.32
1962	993,349	81,006	141,056	771,287	524,475	417,307	941,782	10,313,806	204.54
1963	1,014,578	80,602	144,070	789,906	537,136	409,481	946,617	10,582,064	200.38
1964	1,037,070	80,195	147,264	809,611	550,535	668,748	1,219,283	10,832,744	252.12
1965	747,422	78,221	106,134	563,067	382,886	538,657	921,543	11,089,363	186.15
1966	945,031	83,194	134,194	727,643	494,797	704,523	1,199,320	11,352,060	236.65
1967	1,129,452	88,916	160,382	880,154	598,505	360,494	958,999	11,620,901	184.85
1968	1,323,015	91,248	187,868	1,043,899	709,851	375,948	1,085,799	11,896,272	204.45
1969	1,365,883	88,533	193,955	1,083,395	736,709	313,777	1,050,486	12,178,084	193.22
1970	1,592,256	94,309	226,100	1,271,847	864,856	553,502	1,418,358	12,466,574	254.85
1971	1,366,948	94,303	194,107	1,078,538	733,406	344,748	1,078,154	12,761,896	189.24
1972	1,294,812	91,763	183,863	1,019,186	693,046	270,751	963,797	13,032,191	165.66
1973	1,290,010	99,126	183,181	1,007,703	685,238	349,111	1,034,349	13,308,210	174.10
1974	1,569,694	93,172	222,897	1,253,625	852,465	302,268	1,154,733	13,590,076	190.33
1975	1,139,328	92,119	161,785	885,424	602,088	472,954	1,075,042	13,877,911	173.52
1976	1,235,862	101,163	175,492	959,207	652,261	419,000	1,071,261	14,171,843	169.32
1977	1,659,186	109,762	235,604	1,313,820	893,398	534,000	1,427,398	14,443,940	221.36

[1]Calculation based upon holdback for seed at rate of 2 1/2 bu. per sown acres times next season sown acres
[2]Losses calculated as 8 percent post-maturity losses (farm) plus 6.2 percent storage and handling loss
[3]Column 4 = Column 1 - Column 2 - Column 3
[4]Column 4 x .68 milling factor
[5]FAO data series
[6]Column 7 = Column 5 + Column 6
[7]Midyear estimation of population
[8]Column 9 = Column 7/ Column 8

TABLE G-2
FLOUR BALANCE SHEET

Year	(1) Wheat Import[1] (tons)	(2) Flour Import[2] (tons)	(3) Total Flour[3] (tons)	(4) Population[4]	(5) Available Per Capita Consumption[5] (pounds)	(7) Total Per Capita Consumption Flour & Rice[6] (pounds)
1952	203	214,751	214,897	8,005,617	60.13	261.63
1953		296,363	296,363	8,185,702	81.10	255.65
1954	102	206,316	206,389	8,398,609	55.05	249.02
1955	305	222,476	222,696	8,617,054	57.89	252.59
1956	102	188,530	188,603	8,841,181	47.78	246.89
1957		197,779	197,779	9,071,137	48.84	262.82
1958		230,302	230,302	9,307,074	55.43	281.66
1959		262,824	262,824	9,549,147	61.65	289.43
1960		170,744	170,744	9,797,518	39.04	266.94
1961	305	176,131	176,351	10,052,348	39.30	249.62
1962	102	178,265	178,338	10,313,806	38.73	243.27
1963		142,083	142,083	10,582,064	30.08	230.46
1964	305	326,341	326,561	10,832,744	67.53	319.65
1965	102	144,422	144,495	11,089,363	29.13	215.28
1966	305	366,831	367,051	11,352,060	72.43	309.08
1967	305	210,512	210,732	11,620,901	40.62	225.47
1968	17,684	346,073	358,805	11,896,272	67.56	272.01
1969	25,917	332,931	351,591	12,178,084	64.67	257.89
1970	30,229	369,000	390,765	12,466,574	70.21	325.06
1971	44,982	333,000	365,387	12,761,896	64.13	253.37
1972	71,143	324,000	375,223	13,022,191	65.54	230.20
1973	88,761	365,000	428,908	13,308,210	72.19	246.29
1974	82,368	442,000	501,305	13,590,076	82.63	272.96
1975	90,431	455,000	520,110	13,877,911	83.95	257.47
1976	87,187	380,000	442,775	14,171,843	69.98	239.30
1977	87,187	523,861	586,636	14,443,940	90.98	322.34

[1]FAO data series
[2]1952-1963 FAO data series, 1964-1977 FC data series
[3]Column 3 = Column 1
[4]Midyear estimate of population
[5]Column 5 = Column 3 / Column 4
[6]Column 7 = Column 9 Table G-1 + Column 5

APPENDIX H

GOVERNMENTAL PROCUREMENT

TABLE H-1

PADDY PRODUCTION AND G.P.S. PURCHASES 1970-1977

(100 Bushels)

Year	Paddy Production			G.P.S. Purchases	GPS Purchases as a % of Total Production
	Maha	Yala	Total		
1970	49,492.0	27,955.0	77,477.0	26,218.4	33.85
1971	41,560.0	25,335.0	66,895.0	32,376.5	48.40
1972	42,327.0	29,574.0	62,901.0	26,353.8	41.90
1973	42,004.0	20,896.0	62,900.0	22,914.1	36.43
1974	52,629.0	24,165.0	76,794.0	20,872.9	27.18
1975	34,458.0	20,857.0	55,315.0	11,348.2	20.52
1976	42,278.0	17,756.0	60,034.0	12,821.4	21.36
1977	25,554.0	54,833.0	80,387.0	24,401.2	30.40

Source: Department of Census and Statistics. Paddy Marketing Board.

TABLE H-2

ANNUAL G.P.S. PADDY PURCHASES

Bushels (46 Pounds Per Bushel)

DISTRICT	YEARS						
	1963	1964	1965	1966	1967	1968	1969
Amparai	3,246,393	4,868,689	4,116,097	4,547,492	3,001,892	2,983,387	2,707,235
Anaradhapura	3,152,216	3,747,179	2,231,089	3,640,195	1,418,115	1,387,729	1,041,990
Badulla	344,083	257,113	192,689	258,087	371,791	355,430	419,805
Batticoloa	1,376,188	1,793,510	2,023,791	1,411,492	1,387,388	1,418,216	1,334,748
Colombo	250,879	229,015	186,894	146,915	26,393	76,452	16,508
Galle	392,682	597,203	504,584	418,588	172,918	171,750	101,628
Hambantota	1,883,889	2,052,181	1,549,788	1,819,708	498,692	463,972	539,596
Jaffna	1,021,391	1,067,019	430,616	1,092,389	436,410	421,607	324,995
Kalutara	437,092	488,515	502,783	399,694	153,586	153,148	99,485
Kandy	1,181,210	1,487,896	1,515,798	1,511,805	925,704	924,195	857,384
Kegalle	654,518	541,885	435,680	367,409	80,494	84,341	83,903
Kurunegala	2,379,318	2,568,598	1,639,680	2,184,487	314,623	280,390	399,694
Mannar	96,710	108,689	83,803	107,374	59,701	568,278	549,530
Matale	605,579	538,282	373,690	421,510	222,101	206,713	225,899
Matara	510,817	50,984	604,410	416,007	123,882	130,407	71,534
Moneragala	393,412	619,214	448,000	502,490	466,894	457,252	416,202
Nuwara Eliya	131,283	-	-	-	33,016	33,162	59,263
Polonnaruwa	2,828,390	3,331,805	2,966,490	3,355,276	2,605,899	2,559,297	2,297,607
Puttalam	477,802	452,383	376,515	737,106	123,882	129,725	128,946
Ratnapura	237,002	354,602	373,203	508,090	332,396	328,452	481,697
Trincomalee	1,861,781	1,873,224	1,354,518	1,790,198	1,343,318	1,058,497	1,116,007
Vavuniya	136,591	138,685	43,631	138,831	73,823	725,370	436,995

Continued on next page

TABLE H-2 Continued

DISTRICT	YEARS							
	1970	1971	1972	1973	1974	1975	1976	1977
Amparai	3,908,654	5,047,986	4,265,359	2,875,345	2,770,275	2,069,467	2,416,912	3,391,215
Anaradhapura	3,367,840	3,357,565	2,799,803	2,749,309	2,309,547	70,997	793,202	3,293,385
Badulla	547,729	717,287	591,391	557,334	587,258	601,052	609,378	532,535
Batticoloa	2,052,570	1,763,026	1,476,392	777,876	940,609	773,239	768,418	1,460,287
Colombo	49,377	117,941	27,508	26,367	29,352	15,435	17,091	24,933
Galle	198,630	470,887	259,503	124,926	142,157	87,019	17,824	112,243
Hambantota	836,640	1,774,031	1,580,843	1,540,860	2,286,494	1,502,697	851,250	1,691,784
Jaffna	810,442	1,384,710	1,071,787	860,111	334,182	22,594	210,073	609,913
Kalutara	153,440	418,831	154,888	91,195	43,622	26,928	14,462	73,143
Kandy	1,274,463	1,681,607	1,355,942	1,074,567	933,404	660,216	610,788	1,026,603
Kegalle	206,956	281,217	143,895	121,993	91,549	30,579	16,848	86,776
Kurunegala	1,721,830	2,399,673	1,100,825	1,604,993	1,114,045	113,704	193,274	1,312,835
Mannar	1,099,791	1,255,910	829,706	841,729	792,131	30,727	128,069	898,435
Matale	437,530	496,696	705,333	620,042	454,403	292,466	342,916	813,410
Matara	206,957	654,226	552,448	241,709	231,894	302,789	55,076	265,683
Moneragala	529,516	664,501	474,703	509,541	462,982	407,777	377,441	529,224
Nuwara Eilya	60,821	86,289	127,551	117,698	58,690	42,023	36,862	42,168
Polonnaruwa	4,067,694	4,742,470	5,005,447	4,654,916	4,084,341	3,471,219	3,998,008	4,808,940
Puttalam	345,009	347,054	104,281	256,133	199,533	6,622	31,166	207,790
Ratnapura	566,866	971,283	1,087,573	819,703	989,589	663,429	515,443	212,021
Trincomalee	2,406,442	2,111,395	1,539,931	1,325,756	1,307,569	372,769	731,749	2,035,527
Vavuniya	1,303,242	1,926,010	1,098,665	1,121,992	709,282	15,047	150,079	684,076

Source: Paddy Marketing Board.

APPENDIX I

REGRESSION ANALYSIS OF PROCUREMENT FUNCTION

The need to set procurement targets for the calculation of storage and milling requirements supports the need to analyze the factors which may impact upon procurement levels. The underlying concept is that the Paddy Marketing Board must stand ready to purchase any and all rough rice offered to it for sale. This must be done if the GSL expects the actions of the Paddy Marketing Board to make the GPS price effective.

The factors selected for analysis are percentage procurement of production by district as the dependent variable and open market price for rough rice by district, GPS rough rice price, annual production by district, and a dummy variable which represents the level of the rice-ration system as the independent variables.

The rationale for selection of independent variables is that the amount of rough rice farmers offer for sale to the Paddy Marketing Board depends upon open market and the GPS price. Also, the amount of rough rice offered to the government system should be affected by the level of production. Since the purchases of the Paddy Marketing Board are destined for the rice-ration system, policy changes are reflected by the use of a dummy variable. This dummy variable is one for 1963-1966, zero for 1967-1970, and one for 1971, and zero for 1972-1977. Also taken into consideration in the selection of independent variables is whether these variables could be targeted in the future so as to use the resulting equation as a forecasting tool.

Data is analyzed by regression for each district since the districts exhibits a wide variation in the amount purchased as related to total production of rough rice. Analysis is performed by a stepwise multiple regression program which deletes variables which cause less than 0.02 percent of change

in reduction of total sum of squares. The time series analyzed is 1963 through 1977.

The results of this analysis, as detailed in Table I-1, are extremely revealing. Statistical significance of the equations is quite varied. The only independent variable which enters continuously into each equation is the dummy variable which seems to represent that either purchasing has more reflected the needs of the rice-ration system and/or that management problems, as well as evident storage and milling problems, prevented further purchases beyond the Board's ability to provide for the rice-ration system. The balance of independent variables enter in different patterns in the set of equations. Well over 60 percent of these variables are insignificant. The GPS price and production level variables, for the most part, have a negative sign which is not expected. The R^2 and F values are significant in more than one-half of the equations. The Durbin-Watson statistics are in a range of 0.69 to 1.97 or larger which is significant at level of 0.05. Therefore, no autocorrelation exists as in previous regression analyses.

A test for skewness and kurtosis reveals non-normal population distributions as expected. Tests for analysis of variance support the basic concept that each district is a separate population.

In summary, these series of equations reveal that governmental changes in policy of the rice-ration system has had a far greater impact on procurement of the Paddy Marketing Board than any other variable. As a result, the usefulness of these series of equations for determining procurement targets is doubtful.

TABLE I-1
PROCUREMENT RESPONSE: RESULTS OF REGRESSION ANALYSIS

District	Constant	Independent Variables				R^2	F	DW
Ratnapura	5.046	$-0.715X_1$* (0.517)	$0.839X_2$* (0.673)	$.00001X_3$* (0.000)	$8.817X_4$* (4.904)	0.325*	1.20*	1.24
egalle	4.464				$22.338X_4$ (2.633)	0.847	71.99	2.20
wara Eliya	5.077		$-0.075X_2$* (0.082)		$1.718X_4$* (1.434)	0.267*	2.187*	1.22
runegala	10.343				$30.825X_4$ (3.893)	0.828	62.70	2.14
ttalam	31.638		$-0.70418X_2$* (0.614)		$47.604X_4$ (10.687)	0.741	17.14	1.64
dulla	5.361			$0.00001X_3$* (0.000)	$3.566X_4$* (4.069)	0.223*	1.72*	1.18
neragala	96.159			$-.00005X_3$ (0.000)	$14.010X_4$ (5.542)	0.838	31.11	1.62
lombo	3.457	$-0.0726X_1$* (0.051)			$6.256X_4$ (1.339)	0.801	24.14	1.25
lutara	29.873			$-0.00001X_3$ (0.000)	$16.437X_4$ (1.897)	0.961	148.43	2.62
lle	13.484		$-0.344X_2$ (0.120)		$17.762X_4$ (2.087)	0.920	68.50	2.49
tara	8.317				$12.211X_4$ (3.878)	0.433*	9.91*	2.19
mbantota	88.544	$0.847X_1$* (0.706)		$-0.00002X_3$* (0.000)	$33.910X_4$ (14.412)	0.585	5.17*	1.21
ffna	53.511		$-0.977X_2$ (0.448)	$-0.00000X_3$* (0.000)	$25.555X_4$ (7.865)	0.741	10.48	1.66
nara	61.131			$-0.00001X_3$ (0.000)	$28.474X_4$ (4.598)	0.788	22.33	2.25

Continued on next page

TABLE I-1, Continued

District	Constant	Independent Variables				R^2	F	DW
Vavuniya	80.724	$-1.641X_1$ (0.407)			$28.064X_4$ (9.230)	0.822	27.67	1.08
Batticoloa	90.850	$-0.567X_1$* (0.378)		$-0.00001X_3$* (0.000)	$10.121X_4$* (9.153)	0.725	9.67*	2.37
Anaradhapura	61.650	$-0.692X_1$* (0.648)		$-0.0000X_3$* (0.000)	$23.466X_4$* (15.081)	0.522*	4.010*	1.098
Polonnaruwa	75.167	$0.405X_1$* (0.375)		$-0.0000X_3$* (0.000)	$16.737X_4$* (9.185)	0.422*	2.68*	1.36
Trincomolee	63.308				$36.618X_4$ (9.398)	0.539*	15.18	2.26
Amparai	73.600		$-1.071X_2$ (0.308)		$33.347X_4$ (5.366)	0.887	47.06	2.42
Kandy	55.442	$1.846X_1$ (0.689)	$-2.716X_2$ (0.870)	$-0.000X_3$* (0.000)	$16.345X_4$* (8.703)	0.688	5.51*	1.86
Matale	39.324			$-0.00001X_3$* (0.000)	$9.400X_4$* (7.953)	0.293*	2.484*	0.98
Island Wide	35.227		$-0.329X_2$* (0.244)		$25.371X_4$ (4.243)	0.832	29.80	1.75

*Statistically not significant at 0.05 level

Sample Size:

N = 15

X_1 = Open market price
X_2 = GPS price
X_3 = Production in bushels
X_4 = Dummy variable, 1 representing years when total population on full ration, 0 representing years when one-half population on full ration or total population on one-half ration

APPENDIX J

RICE MILL DATA

TABLE J-1

PMB RICE MILL UTILIZATION RATES
1977

District	Rice Mill Number	Percent Utilization[1]
Amparai	6017	31
Anaradhapura	6055	28
	6056	73
	6057	51
	6058	84
Batticoloa	5108	29
Hambantota	6171	35
Jaffna	6211	66
Kandy	6271	39
	6272	10
	6273	30
	6274	9
Kurunegala	6337	28
	6338	39
	6339	13
Mannar	6368	50
Matale	6400	45
	6401	16
Moneragala	6455	22
Polonnaruwa	6512	52
	6513	11
Trinocomalee	6589	21
	6591	26
	6592	100

[1]Tonnage milled/divided by capacity.

TABLE J-2

PMB RICE MILLS TO BE CLOSED

District	Mill
Anaradhapura	Medwachchiya - 6056
	Kalawea - 6057
	Padaviya - 6058
Jaffna	Chunnakam - 6211
Kandy	Pallewatte - 6271
	Gannoruwa - 6274
	Denuwara - 6273
Kurunegala	Maho - 6337
Mannar	Nannatan - 6368
Matale	Kandalama - 6400
Moneragala	Moneragala - 6455
Polonnaruwa	Bakamuna - 6513
Trincomalee	Kantalai I - 6589

APPENDIX K

TRANSPORTATION COST FUNCTIONS

The transportation function for trucks is developed as described in Sections III and IV. The first series of functions are developed as the result of a survey of freight costs for rough rice shipments from Purchasing Centers to Paddy Marketing Board warehouses. Regression analysis is applied to develop the following function.

$$Y = a + bx$$

where y = total cost of shipment per ton

a = constant (fixed cost per ton)

b = cost per mile

x = miles

Table K-1 shows the results. Three types of expressions are analyzed, linear, kinked-linear, and curvi-linear (exponential). The statistical results of the equations are significant with the exception of the R^2 value for the 0-10 mile kinked-linear equation and the D-W value for the linear equation which indicates a problem of autocorrelation. Figure 1 illustrates the linear and curvi-linear equations.

The data of a second survey which collected actual trucking operation costs is analyzed as per Section III to develop a second set of truck transportation functions. The basic unresolved problems in the survey data is that no accurate measurement could be established as to load size nor percentage of trips with backhauls. Therefore, functions are developed for 5 and 8 ton loads, with and without backhauls.

In addition, a function is developed using engineering estimates of operational truck costs. None of these functions included the cost of interest or return on investment in the fixed costs. No data for these

TABLE K-1

REGRESSION ANALYSIS RESULTS, RATE SURVEY DATA*

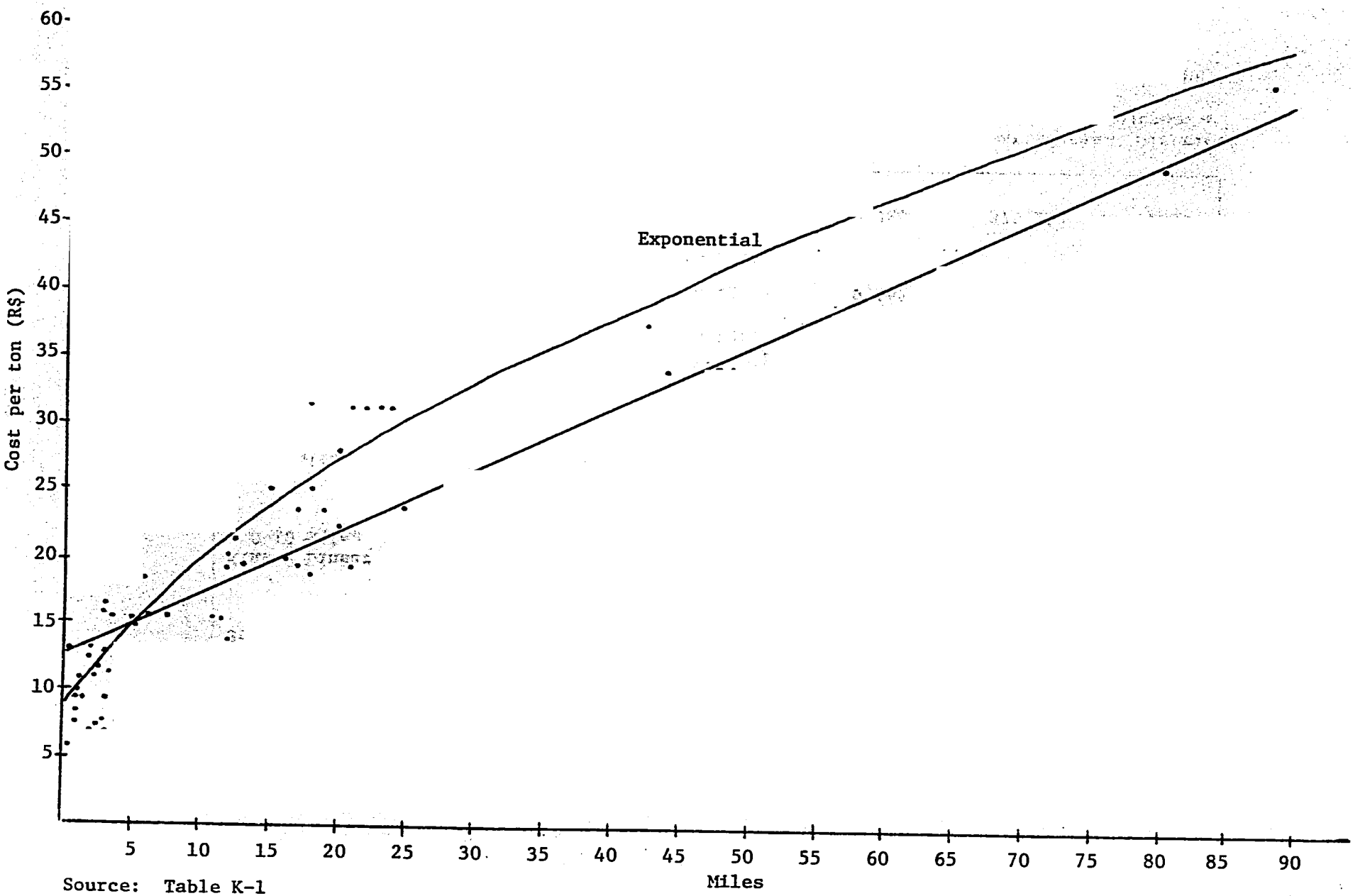
Model	Sample Size	Constant	Independent Variable X_1=Miles	R^2 Value	F Value	Durbin Watson Statistic
Straight Linear	103	13.213	$0.518X_1$ (0.030)	0.751	305.191	1.349
Kinked Linear 0-10 miles	60	8.428	$1.326X_1$ (0.329)	0.219**	16.262	1.627
11-∞ miles	44	17.341	$0.447X_1$ (0.034)	0.805	166.936	1.510
Kinked Linear 0-20 miles	82	10.164	$0.857X_1$ (0.127)	0.363	45.535	1.630
21-∞ miles	23	20.891	$0.404X_1$ (0.038)	0.862	130.80	1.670
Exponential 0.6	103	5.806	$3.524X_1$ (0.182)	0.788	375.253	1.655

Source: Survey results of PC and MPCS rough rice shipments to PMB warehouses. Districts of Amparai, Anardhapura, Badulla, Batticoloa, Kandy, Ratnapura, and Colombo.

*Rates paid by Purchasing Centers for transport of rice from Purchasing Centers to PMB warehouses.

**Statistically insignificant 0.05 level.

Figure 1. Transport Functions of Rates



Source: Table K-1

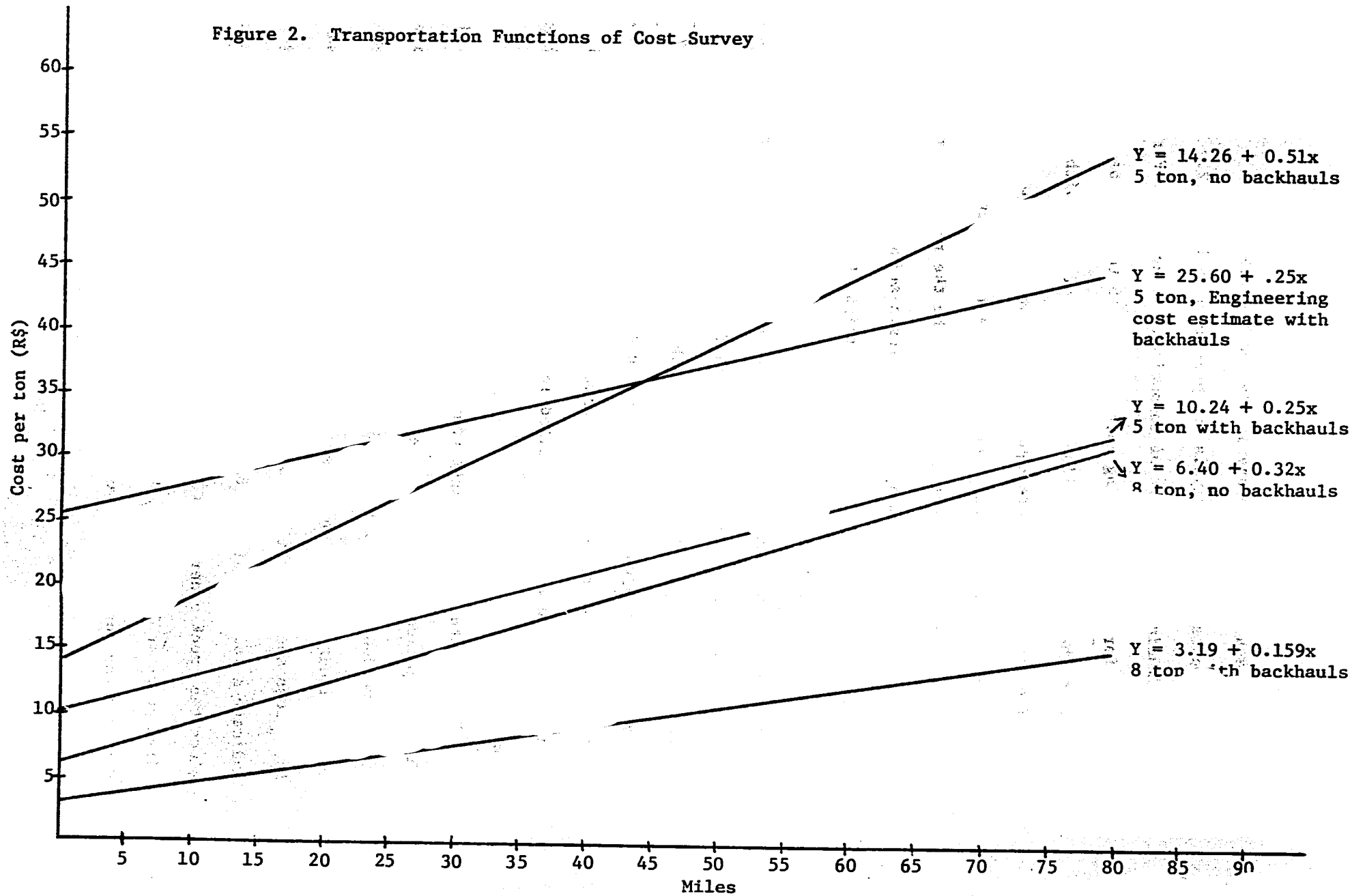
factors are available in the operational cost survey.

The results of this analysis are presented in Figure 2. Two very important findings as a result of comparison are evident. First, the slope of the line for the engineering cost estimate, 5 ton with backhaul function is equal to the slope of the line for the survey, 5 ton with backhaul function. The variable costs are equal, tending to substantiate the soundness of the collected survey data. The difference in the constant (fixed cost per ton) between these functions is found to be the result of the number of trips and annual mileage assigned to the engineering cost estimate. The survey data reflected higher mileages and trips, therefore, the fixed cost per ton was substantially lower.

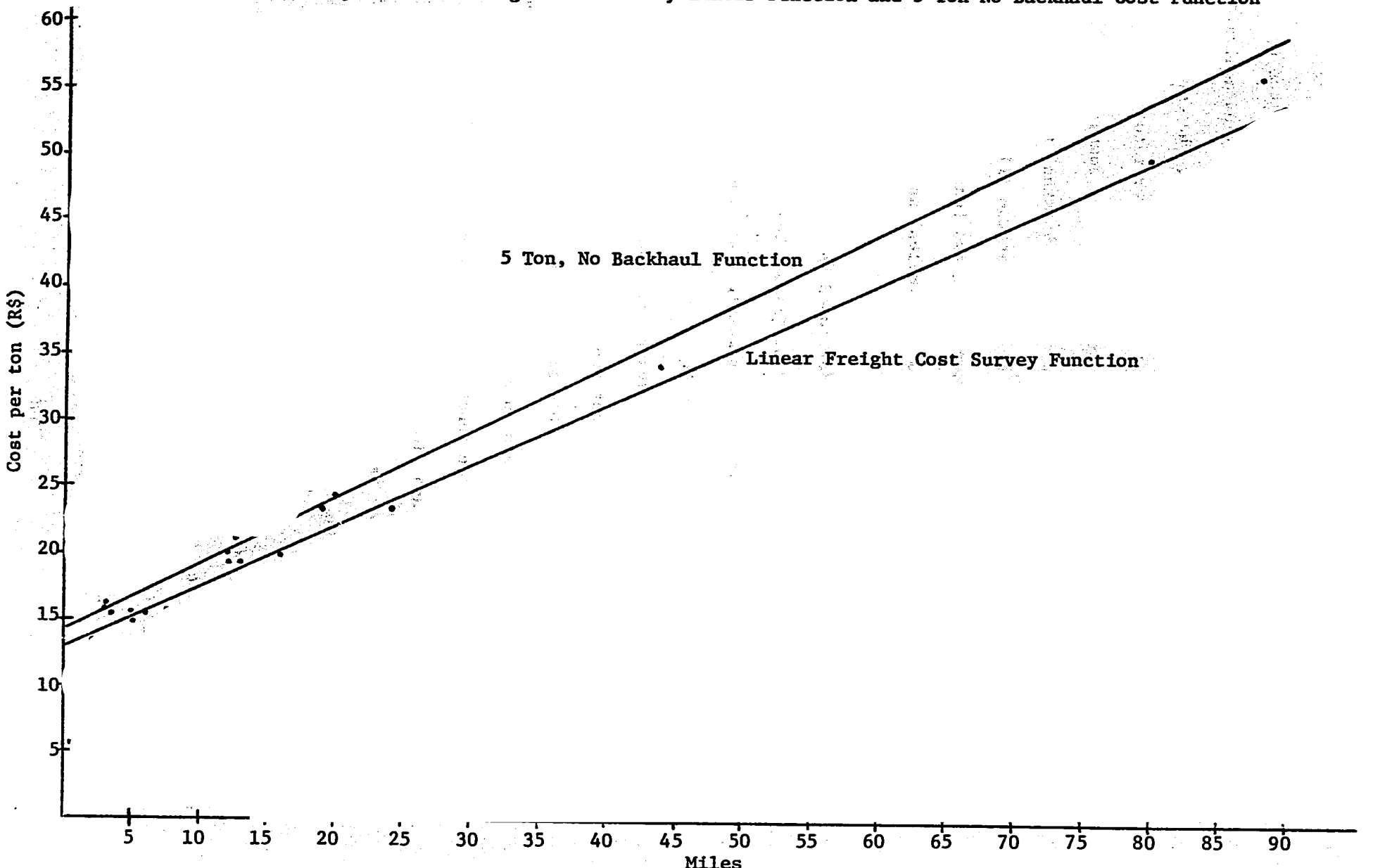
The second important finding is that the 5 ton, no backhaul function is nearly the same as the linear function in Table K-1 developed from the freight cost survey. This implies that the samples in the freight cost surveys are based upon trucks carrying an average of 5 tons per trip without backhauls. A comparison of these functions is illustrated in Figure 3. An analysis of these equations resulted in no statistical difference between the equations.

The results of the freight cost survey as expressed in Figure 1 indicated a wide variation in costs. The coefficients of variation for cost and miles hauled are 0.65 and 1.52 respectively. Assuming the data represents the actual situation, this suggests an element of competition since this sample is a cross section of time and districts. It is suggested that the results indicate a lowering of freight rates to acquire business. This is logical since the truck owner would be covering all variable costs and a portion of fixed costs at lower rates indicated in the sample. This is a better business decision and not as costly as a truck being idle.

Figure 2. Transportation Functions of Cost Survey



3. Comparison of Freight Cost Survey Linear Function and 5 Ton No Backhaul Cost Function



Source: Table K-1, Figure 1, 2.

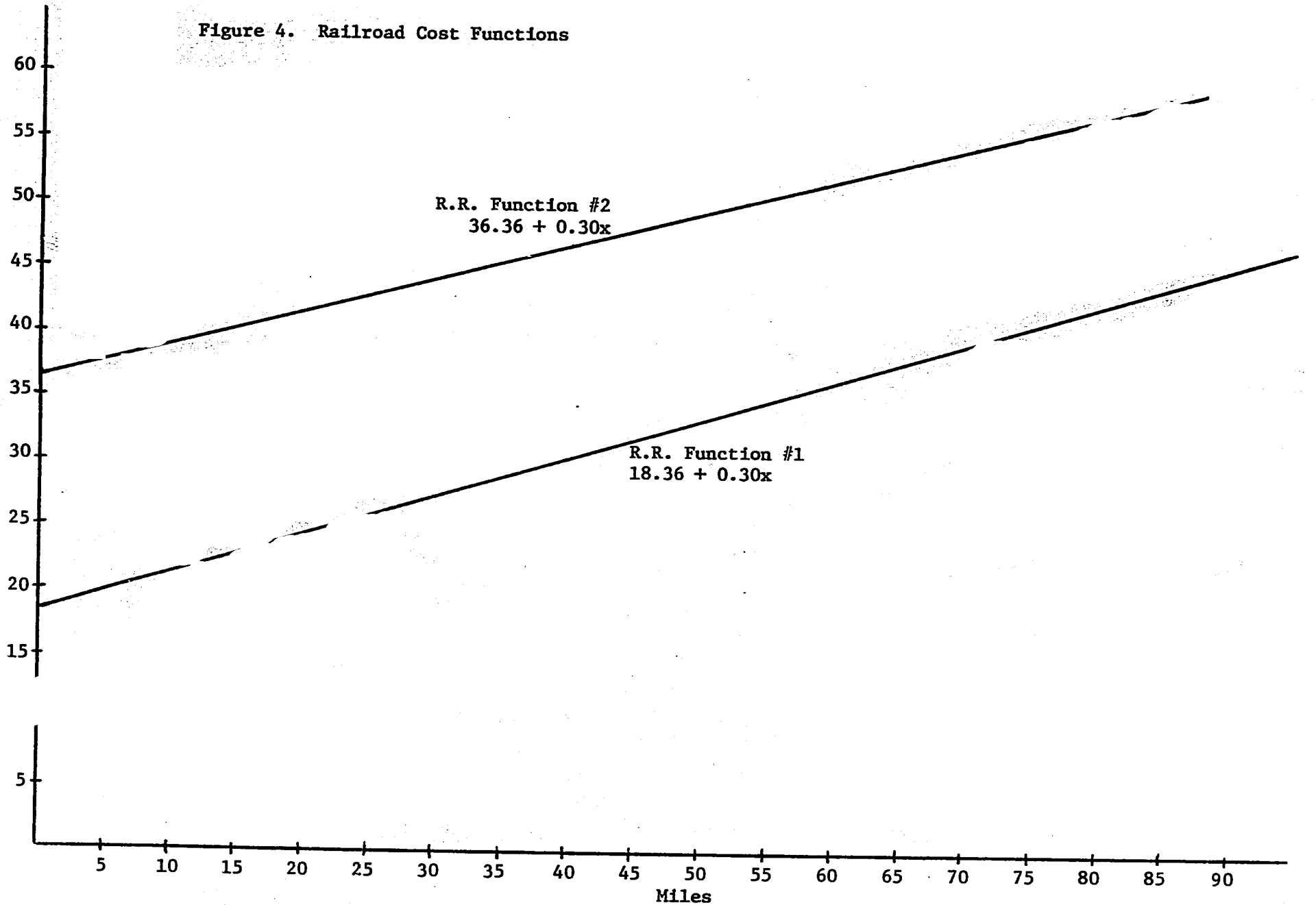
The linear rate transportation function in Table K-1 is selected to be the transportation function for the location and commodity flow analysis portion of this study. While slightly better statistically, the curvilinear function was not selected because it tended to understate the cost of short hauls and overstate the cost of longer hauls when compared to the linear function. In comparison to the 5 ton, no backhaul function (Figure 3), the linear rate function was selected because (1) there is no statistically significant difference between these two functions and (2) it does not overstate longer hauls (in excess of 35 miles) as much as the comparative function.

A rail transport cost function was developed based upon the data in the "Sri Lanka Railroad Assessment Study" by Trimac Consulting of Canada, as well as limited additional data. The resulting functions are illustrated in Figure 4. Two functions are constructed. The first for warehouse to warehouse or mill shipment where rail sidings are available. The second for warehouse to warehouse or mill shipment where rail sidings are not available at shipment and receiving points. This second function simply includes the additional cost of handling in this specific case.

When the rail transportation function is compared to actual freight rate charged for rough rice and rice shipments (.22R$ ton/mile) it is easily discernable that this product is highly subsidized in rail transport. Since this is a government subsidy, the rail transportation function reflects the cost of this subsidy.

Comparison of the selected truck transport function to the rail transport function indicates that for hauls over 35 miles, rail is a cheaper mode of transport, if and only if, rail sidings are available at shipping and destination points. Otherwise, the length of haul must be slightly

Figure 4. Railroad Cost Functions



over 120 miles for rail transport to be less expensive.

No water transport function was developed due to lack of sufficient cost data.