

APPENDIX M

WAREHOUSES AND SILOS IN BANGKOK

(Source: The Japanese Chamber of Commerce and Industry, Bangkok)

<u>No.</u>		<u>Page</u>
1.	Rice and General Cargo Warehouses in Bangkok	1
2.	Silo for Export Maize	4
3.	Silo & Godowns Used for Export Tapioca	12
4.	Port of Bangkok	19
5.	Rice and General-cargo Godown	20

1. RICE AND GENERAL CARGO WAREHOUSES IN BANGKOK

Name of G/D	Location	Capacity M/T	Owner	Shippers	Commodities
A.C.F.T. Warehouse	Rasburana	40,000	A.C.F.T.	A.C.F.T. Kit Poin	Rice
An Fong Lao No. 5	Bukkalo	14,000	An Fong Lao	Thai Rice	Rice
Bangkok Bank Warehouse	Klongsen (Near River)	5,000	Bangkok Bank	Various Shippers	Rice
Bangkok Bank Warehouse	Rasburana	57,000	Bangkok Bank	Various Shippers Associated Supplies	Various Rice
Bangkok Rice 3 G/D	16 Bangpongngang, Satupradit	17,000	Bangkok Rice Co., Ltd.	An Fong Lao	Rice
Chai Heng Lee	Ta Dindaeng	700	Chai Heng Lee	Chai Heng Lee	Rice
Chai Hua Lee	Ta Dindaeng	300	Chai Hua Lee	Chai Hua Lee	Steamed Bone Meal Steamed Bone Meal
Charoen Thai Warehouse	Bangrakok	25,000	Charoen Thai	Charoen Thai Co., Ltd.	Rice
Chai Yong Warehouse	Prapadaeng	40,000	Chai Yong	Chai Yong, Chaiyaporn	Kapokseed, Tapioca
Chung Hing	Bukkalo	3,000	Chung Hing	Chung Hing	Jute
Chin Heng Thye	Kongsen	5,000	Chin Heng Thye	Chin Heng Thye	Rice
Charoen Watana	13/9 Trok Rong Nam Khang 1	2,500	Charoen Watana Rice	Charoen Watana Rice Co.	Rice
Chaiwat Enterprise G/D No. 1	55 Bangrak, New Rd.	600	Chaiwat Enterprise	Chaiwat	Beans
G/D No. 2	163 Bangrak, New Rd.	800	Chaiwat Enterprise	Kijuwat	Beans
Chan Seng	Wat Prayakraj, Ban Mai	18,000	Chan Seng Ltd. Part.	Chan Seng Ltd., Part.	Fertilizer
Chia Meng	182/1 Bang-Ka-So, Nondaburi	4,000	Chia Meng Rice Mill	Chia Meng R/M Ltd. Part	Rice
		8,000			Rice
E.P.C.	161 Soi Mitpradung, K-Thow	4,000	K-Thow Co., Ltd.	E.P.C.	Rice
Hoe Thai (Lip Seng)	Opposit Tharon Tok	17,000	Hoe Thai	Hoe Thai Co., Ltd.	Rice
Hoe Thai (Lip Seng)	Prapadaeng	60,000	Hoe Thai Co., Ltd.	Hoe Thai Co., Ltd.	Rice, Maize
Hong Yiah Seng & Pwo.3	Prapadaeng	100,000	Hong Yiah Seng	Hong Yiah Seng Co., Ltd.	Rice, Maize
Ha Mong	Trok Rong Nam Khaeng 1 New Rd.	250	Siri Thanya Export	Nakorn Luang Export	Rice, Maize
Huay Chuan Rice 6 G/D	624-630 Satupradit	40,000	Huay Chuan Rice Co.	Huay Chuan Rice Co., Ltd.	Rice, Maize
Krung Thon Warehouse	Ta Dindaeng	8,000	Krung Thon	Various	Various
Krung Thai Bank	Sam Ray	87,500	Krung Thai Bank	Various	Rice, Maize
Krung Thai Bank	Rasburana	84,000	Krung Thai Bank	B.K.K. Trading Co., Ltd.	Rice, Maize
				Hah Lee Produce	Maize
				P.H. Development	Tapioca
				Thai Phramual Enterprise	Various
				Kaset Asia	Tapioca
				Union South East Product	Maize
				Pak Nam Po Fire Co., Ltd.	Castorseed
				Porn Amnuay Sab.	Cottonseed
				Viriyaraj Import Export	Maize, Sorghum
				Kamol Kij Co., Ltd.	Rice, Maize
				Amorn Chai Co., Ltd.	Tapioca Pellets
Kamol Kij	71 Pak Kred Nhonadacul	6,000	Kamol Kij Co., Ltd.		
G/D A		3,000			
G/D B		8,000			
G/D F		11,000			
G/D G		19,000			
G/D K		3,000			
G/D H		6,000			
G/D I		19,000			
G/D P		25,000			
G/D Q		100,000			
					(to be continued)
					Total

Name of G/D	Location	Capacity M/T	Owner	Shippers	Commodities
Keng Sae Seng Kitti Rice	Trok Rong Nam Khaeng 1 16 Satupradit Rd.	500 35,000	Keng Sae Seng Kitti Rice Ltd., Part.	Keng Sae Seng Kitti Rice Ltd., Part. Dan Chai Rice Co., Ltd. Thong Rung Ruang Produce Kong Peng Ltd., Part.	Beans Rice, Maize
Kong Peng	170 Soi Leakupua, New Rd.	6,000 4,000 10,000	Kong Peng Ltd. Part. "		Maize, Beans sesameseed
Kasert Thal	Near Wat Dan, Satupredit	2,000	Kasert Thal Rice Trading Co., Ltd.	Thai Damrong Patana Kasert Thal Rice Trdg. Co., Ltd.	Rice
Laem Thong Corp. 10 G/D	Bangkok, Prapradang	76,500	Laem Thong Corp.	Chaiyaporn Rice Co.	Rice
Laem Thong Corp. 13 G/D	Bangprakod, Prapradang	140,000	Laem Thong Corp.	An Fong Lao/TSC	Rice, Sugar Fertilizer
Lee Tang Long Warehouse	Bangprakok	24,000	Lee Tang Long	Joo Seng Co., Ltd. I.C.C.	Maize, Beans
Lee Guan	8-9 Soi Wat Prayakrat,	4,000	Lee Guan Enterprise Co., Ltd.	Pin Thong	Rice
Lim Heng Chan	25-26 Ban Mai, New Rd.	2,500	Lim Heng Chan Co.	Lee Guan Enterprises Co., Ltd. Lim Heng Chan Co., Ltd.	Sesameseed, Beans Sesameseed, Beans
Marubeni	102/1 Soi Makus, Wat Prayakral	6,000	Marubeni Corp.	Marubeni Corporation,	Sugar
Nam Fah Warehouse	Bukkalo	12,000	Nam Fah	Various	Various
Nam Heng Long	161 Rong Nam Khaeng 1	4,000	Nam Heng Long Co.	Nam Heng Long Co., Ltd.	Beans
Nanapan Enterprise	Prapradang	70,000	Nanapan Enterprise	Nanapan Enterprise Co., Ltd.	Maize, Tapioca, Beans
P.H. Development Co. 9 G/D	Bengvor, Prapradang	129,000	P.H. Development	P.H. Development	Tapioca Pellets
P.W.O.	Bukkalo	51,270	Ministry of Commerce	Ministry of Commerce	Rice
	Rajburana	58,450	"	"	"
	Bangkrasoy	21,670	"	"	Kenaf
Phornchai Produce	109 Rong Nam Khaeng 1	1,400	Phornchai Produce Co.	Phornchai Produce Co., Ltd.	Maize
Phorn Phan	25-26 Ban Mai, New Rd.	3,500	Phorn Phan Phanih	Phornphan Phanih Co., Ltd.	Sesameseed, Beans
Puey Heng Long	77 Bangrak, New Rd.	35,000	Puey Heng Long Co., Ltd.	Puey Heng Long Co., Ltd.	Rice Beans, Maize
Puey Heng Long	43/1 Ta 38 Satupradit.	35,000	Puey Heng Long Co., Ltd.	Puey Heng Long Co., Ltd.	Maize, Rice
Ruam Pued Kao Thai Rung	3 Dhahan Rd., Dusit	4,000	Ruam Pued Kao Thai Rung	Siam Rice Trading Co., Ltd.	Rice
Sri Ayudthaya Bank	Rasburana	46,000	Sri Ayudthaya Bank	Ruam Pued Export Various	Various
Sab Sathaporn	Prapradang	60,000	Sab Sathaporn	Sab Sathaporn	Tapioca, Maize
Soopa Nawa	Prapradang	10,000	Soopa Nawa	Nam Sae Lee P.C. Enterprise	Rice Tapioca
Saguan Produce	16 Trok Caprainbus,	1,500	Saguan Produce	Slam Ka Kao Co., Ltd.	Rice
Sataphorn	161 Soi Mitir Phadung	4,200	K. Thow Co., Ltd.	Saguan Produce Ltd., Part.	Maize Beans
Sri Ruang Thal	15 Satupradit	4,500	Sri Ruang Thal Co., Ltd.	Sataphorn	Beans, Sesameseed
Sung Chiang Lee	73 Satupradit.	6,000	Tap Phanih Co., Ltd.	Sri Ruang Thal Co., Ltd.	Rice Maize
Sung Chiang Lee 2 G/D	497 Chongmonsri,	5,000	Sung Chiang Lee Co., Ltd.	Sung Chiang Lee Co., Ltd.	Rice
Sung Chan	161 Soi Mitir-pradung	4,200	K. Thow Co., Ltd.	Sung Chiang Lee Co., Ltd.	Rice
Seng Kee	Ta Diindaeng	500	Choek Chai Lee	Sung Chan	Beans, Sesameseed
	Bangprakok		Chai Lee	Choek Chai Lee	Steamed Bone Meal
Santakij	Sam Ray	10,000	Santakij	Chai Lee	"
Swee Yong	Rasburana	8,000	Sri Yong (2509) L.P.	Santakij	Rice
Seng Thong Rice		102,000	Seng Thong Rice	Sri Yong (2509) Ltd., Part. San Charoen	Tapioca Rice
				Seng Thong Rice	Rice
				Chin Heng	Rice
				Chaiyaporn Rice	Rice
				M.O.F.	Rice
				Kilporn Co., Ltd.	Rice
				World Grain	Rice
				A.C.F.T.	Rice
				Thai Rice 1	Rice

Name of G/D	Location	Capacity M/T	Owner	Shippers	Commodities
Tai Sae	Bangkok	15,000	Tai Sae Co., Ltd.	Tai Sae Co., Ltd.	Rice
Tai Sin	Bangkok	8,000	Tai Sin Trading	L.H. Co., Ltd.	Tapioca
Thai Commercial Bank	Klong San	8,000	Thai Commercial Bank	Charoen Pokpand	Animal Feed
Thai Mong	Klong San	7,000	Thai Mong	Thai Mong	Rice
Tawe Seng Thai	Wang Lee Office	12,000	Wang Lee Co., Ltd.	Tawe Seng Thai Co.	Rice
Thai Hua	Prapradaeng	60,000	Thai Hua (2511) Co., Ltd.	Thai Hua Chaiyaporn Rice	Rice, Maize
Thai Farmer Bank	Rasburana	28,000	Thai Farmer Bank	Various	Various
Tep Phanich	73 Satupradit	5,000	Tep Phanich Co., Ltd.	Tep Phanich Co., Ltd.	Rice, Maize
Thai Capital Crops	Trok Karn Rua, Bangkrabua.	3,000	Thai Capital Crops	Tep Nangrong Co., Ltd.	Rice
Thanawat	Satupradit	12,000	Bank of Asia	Various	Sugar
Thai Danu Warehouse (B1) A1	2094 New Rd. Ban Mai	2,500	Thai Danu Bank	Sugar Industry	Beans, Rice, Sugar
A 2		2,500	"	Sugar Produce Trading	Sesameseed
A 3		2,200	"		
A 3B		1,400	"		
B 1		1,500	"		
B 2		1,500	"		
B 3		1,500	"		
B 4		1,500	"		
C		6,200	"		
Thai Danu Bank (Seng Kee) Sig G/D		20,800	Thai Danu Bank		
small G/D		10,000		Charoen Pokpand Co., Ltd.	Rice, Maize, Sorghum
		2,000	"	Preme Co., Ltd.	Kepokseed, Beans
		12,000	"	Kiatr Saeng Co., Ltd.	
Thai Long	25-26 Ban Mai, New Rd.	2,500	Lim Heng Chan Co.	Lim Heng Chan Co., Ltd.	Beans, Sesameseed
Thanakit Warehouse	Wat Mahawong		Thanakit Warehouse	Share Co., Ltd.	
G/D No. 1 & 2		34,000	"		
G/D No. 3		17,000	"	P.W.O. (PWQ 7)	Rice
G/D No. 4, 5 & 6		51,000	"	E.P.C. Rice Trading Co.	Rice
		102,000	"	Soon Hua Seng Co.	Rice
Thonburi Warehouse Co. 7 G/D	Prepradang	35,000	Kwang Soon Lee Co.	Charoen Watana Rice Co.	Rice
3 Molasses tanks			"	P.W.O. (PWQ 12)	Rice
Thong Chai Rice	73 Satupradit.	12,300		Ashahi Co., Ltd.	Chemical
		8,000	Thong Chai Rice Co.	Thong Chai Rice Co., Ltd.	Rice
T. M. K.	161 Sol Mittr Phadung.	1,200	K. Thow Co., Ltd.	Sahaiki Overseas Com.	Seedlac
Wang Lee 2	Sam Ray	10,000	Wang Lee Co., Ltd.	Toyomunka (Thailand) Ltd.	Rice
Wang Lee 3	Sam Ray	13,000	Wang Lee Co., Ltd.	Wang Lee Co., Ltd.	Rice
Wang Lee 4	Sam Ray	13,000	Wang Lee Co., Ltd.	Wang Lee Co., Ltd.	Rice
Union Warehouse	Klong San	47,000	Various	Various	Various
United Silo & Services Co. 16 G/D/Chao Sami Prai Road		245,000	United Silo & Services	Thai pellets Co. Others	Tapioca pellets, General cargos
Yong Sang	TMN Wat Prayakrai	14,000	Yong Sang Ltd., Part.	Yong Sang Ltd., Part.	Beans, Sesameseed
Yu Tai	161 Sol Mittr Phadung	4,000	K. Thow Co., Ltd.	Yu Tai Trading Ltd., Part.	Sesameseed, Beans

2. Silo for Export Maize

BANGKOK DRYING & SILO., LTD.

Head Office : No. 50, Mhou 4, Suksawat Road,
Prapradang, Samutprakam.

Silo Location : No. 50, Mhou 4, Suksawat Road,
Prapradang, Samutprakam.

Operation : Wharf No. 7
Commenced in January 1964
1st enlargement in 1973
2nd enlargement in May 1979

Silo Facilities

- (1) Storage capacity
- | | | | |
|------------------------|----------------|---|------------|
| Main bins (old) | 1,000 M/T x 14 | = | 14,000 M/T |
| Main bins (added 1973) | 1,100 M/T x 16 | = | 17,600 " |
| Star bins (added 1973) | 250 M/T x 9 | = | 2,250 " |
| Flat Warehouses 2 | (in bags) | = | 9,000 " |
| Main bins (added 1979) | 1,100 M/T x 16 | = | 17,600 " |
| Star bins (added 1979) | 250 M/T x 9 | = | 2,250 " |
| Total | | = | 62,700 M/T |
- (2) Dryer
- | | | |
|------------------------|-------------------------|----------|
| 2 sets (made in Japan) | 40 M/T per hour per set | = 80 M/T |
| 1 set (made in USA) | 50-80 M/T per hour. | |
| 1 set (made in USA) | 60-80 M/T per hour. | |
- Capacity is based on 5% moisture reduction.
- (3) Loading Facilities
- | | |
|----------------------|---|
| Length of wharf | : 115 metres |
| Depth of wharf | : 7.85 metres at lowest tide |
| Number of conveyor | : 1 belt |
| Number of Spout | : 3 spouts |
| Normal Loading speed | : 400-450 M/T per hour |
| Loading scale | : How Richardson Automatic Hopper scale,
4 sets, 700 kgs per draft per set |
- (4) Receiving Facilities
- | | |
|--------------------------|---|
| Marine legs (from barge) | : 4 spouts x 50 M/T per hour |
| Dumping pit | : 4 trucks can be unloaded at once |
| Receiving scales | : How Richardson Automatic Hopper Scale,
4 sets
wet corn, 250 kgs per draft
dried corn, 300 kgs per draft
Weigh Bridge Matsushita Scale,
max. 40 tons, min. 10 kgs |

THAI SILO AND INDUSTRY CO., LTD.

Head Office : 62/21-23 Thaniya Rd.,
Silom, Bangkok.

Silo Location : 116 Moo 4, Suksawat Rd.,
Prapradang, Samutprakam.

Operation : Commenced in 21 August 1978.
Enlarged and Remodeled in May, 1981.

Silo Facilities

(1) Storage Capacity				
Large steel bins	1,100 M/T x 12	=	13,200 T.	
Flat Warehouse (in bulk)	23,500 M/T x 2	=	47,000 T.	
Flat Warehouse (in bags)		4	=	35,000 T.
Main bins (new)	1,800 M/T x 18	=	32,400 T.	
Star bins (new)	500 M/T x 10	=	5,000 T.	
	Total	=	132,600 T.	

(2) Dryer :
1 set of Aeroglide Dryer 100 Ton/Hours.
1 set of Cimbria Dryer 100 Ton/Hours.
Capacity is based on 5% moisture reduce from 20% to 15%

(3) Loading Facilities

Length of wharf	: 120 metres
Depth of wharf	: 7.6 metres at lowest tide
Number of conveyor	: 2 belts
Number of spouts	: 2 spouts
Loading speed	: 400-600 M/Tons/Hours
Loading scale	: 1 Buld Tronic Howe Richardson Scale 400 T/Hours.
	: Howe Richardson Automatic Hopper Scale 2 sets 700 kgs/draft/set 200 T/Hours.

(4) Receiving Facilities

from barge	: 2 spouts x 100 M/T per hour
from truck	: 2 dumping conveyor can unload 8 trucks at once -- 400 T/Hours.

LAEM THONG CORPORATION LTD.

Head Office : No. 62/11-14 Thaniya Road, Bangkok.
 Silo Location : No. 49 Mhou 2 Suksawat Road,
 Bangplakod District, Prapradang, Samutprakarn
 Wharf No. 5 (s)
 Operation : Commenced in August 1974
 Enlargement in 1975

Silo Facilities

- (1) Storage Capacity
- | | | |
|-----------|-----------------------|--------------|
| Main bins | 1,100 M/T x 36 bins = | 39,600 M/T |
| Star bins | 350 M/T x 20 bins = | 7,000 M/T |
| | <hr/> | |
| Total | | = 46,600 M/T |
- (2) Dryer :
 2 sets (made in USA) 100 M/T per hour per set x 2 = 200 M/T
 Drying capacity is based on 5% moisture reduction.
- (3) Loading Facilities
- | | |
|--------------------|---|
| Length of wharf | : 280 metres (120 metres for silo loading) |
| Depth of wharf | : 9 metres |
| Number of conveyor | : 1 belt |
| Number of spout | : 1 spout |
| Loading speed | : Max. 250 M/T per hour,
Normally 200-240 M/T per hour |
| Loading scale | : Avey Automatic Hopper Scale,
1 set 2,000 kgs per draft |
- (4) Receiving Facilities
- | | |
|-------------------------|---|
| Marine leg (from barge) | : 2 spouts x 50 M/T per hour
(Loading spout is also usable for unloading;
capacity 60 M/T per hour) |
| Dumping pit | : 12 trucks can be unloaded at once |
| Receiving scales | : Avey Automatic Hopper Scale
1 set 1,000 kgs per draft
1 set 2,000 kgs per draft
Weigh-Bridge 1 set |

A.C.F.T. SILOS

Head Office : 97 Rajdamri Road, Lumpini,
Pratoomwan, Bangkok.

Silo Location : No. 90, Poo Chao Saming Prai Road,
Somrong, Prapradang, Samutprakarn.

Operation : Commenced in October 1967.

Silo Facilities

(1) Stowage Capacity			
Main bins (Old)	1,100 M/T x 16	=	17,600 M/T
Star bins (Old)	350 M/T x 9	=	3,150 "
Main bins (New)	1,200 M/T x 8	=	9,600 "
Star bins (New)	400 M/T x 3	=	1,200 "
Flat Warehouse (in bulk)		=	30,000 "
	<hr/>		
	Total	=	61,550 M/T

(2) Dryer :
2 sets (Made in USA) 50-80 M/T per hr./one set
1 set (Made in USA) 130-160 M/T per hour.
Capacity : based on 5% moisture reduce.

(3) Loading Facilities

Length of wharf	: 400 metres (97 metres for Silo Loading)
Depth of wharf	: 10 metres
Number of conveyor	: 2 belts
Number of spout	: 2 spouts
Loading speed	: 350-360 M/T per hour
Loading scale	: LIBRA Automatic Hopper Scale 2 sets 600-750 kgs/Draft/Set

(4) Receiving Facilities

from barge	: 2 spouts x 50 M/T per hour
from truck	: 2 spouts x 70 M/T per hour
Dumping pit	: can unload 8 trucks at once
Receiving scale	: LIBRA Automatic Hopper Scale 3 sets

UNITED SILO & SERVICES CO., LTD.

Head Office : 177 Rajawong Road,
Samphantawong, Bangkok-1
Tel : 223-4070

Silo Location : No. 51, Poo Chao Saming Prai Road,
Prapradang, Samutprakarn.

Operation : Commenced in June 1968

Silo Facilities : In the near future, this silo will
be used for only import wheat

(1) Stowage Capacity			
Main bins	700 M/T x 44 bins	=	30,800 M/T
Star bins	200 M/T x 24 "	=	4,800 "
	<hr/>		
	Total	=	35,600 M/T

(2) Dryer :

1 set (Made in USA)	40-50 M/T per hour
1 set (Made in USA)	175 M/T per hour

Capacity : based on 5% moisture reduce

(3) Loading Facilities

Length of wharf	: 255 metres
Depth of wharf	: 10.5 metres
Number of conveyor	: 2 lines of conveyor (2 shipments can be operated simultaneously)
Number of spout	: 4 S.K.T.
Loading speed	: 400 M/tons per hour (max. 550 M/T)
Loading scale	: LIBRA Automatic Hopper Scale 2 Tons per draft CHRONOS Mechanic Scale 2 sets 1.5-2.0 ton/draft/set (CHRONOS scales are also usable for receiving)

(4) Receiving Facilities

from barge	: 4 spouts
from ocean going vessel	: 4 S.K.T.
from truck	: 3 dumping pit can unload 3 trucks at once
Receiving scale	: LIBRA Automatic Hopper Scale 2 sets 300-375 kgs/draft/set.

UNITED GRAIN CO., LTD.

(Official Name is not announced yet)

Head Office : 177 Rajawong Road,
Samphantawong, Bangkok-1
Tel : 223-4070

Silo Location : No. 51 Poo Chao Saming Prai Road,
Prapradang, Samutprakarn.

Operation : Commenced in July 1981

Silo Facilities

- (1) Storage Capacity
- | | | |
|-----------------------------|-----------------------|-------------|
| Main bins | 2,250 M/T x 20 bins = | 45,000 M/T |
| Star bins | 2,250 M/T x 12 bins = | 27,000 " |
| Flat warehouses (in bulk) 4 | = | 72,000 " |
| Flat warehouses (in bags) 3 | = | 51,000 " |
| <hr/> | | |
| Total | = | 195,000 M/T |
- (2) Dryer :
- 1 set 200 M/T per hour
 - 1 set 200 M/T per hour (under construction)
- Drying capacity is based on 5% moisture reduction.
- (3) Loading Facilities
- Length of wharf : 400 metres
 - Depth of wharf : 7.9 metres
 - Number of conveyor : 1 belt
 - Number of spout : 2 spouts
 - Normal loading speed : 500 M/T per hour (max. 800 M/T)
 - Loading scale : Avery Automatic Hopper Scale,
2 sets, 2,000 kgs per draft per set
- (4) Receiving Facilities
- Marine leg (from barge) : 2 spouts, 200 M/T per hour per spout
 - Dumping pit : 16 trucks can be unloaded at once
 - Receiving scale : Avery Automatic Hopper Scale
2 sets, 1 ton per draft per set for trucks
2 sets, 1 ton per draft per set for barges
1 set, 1 ton per draft for dryer

SILOS AND WAREHOUSE FOR EXPORT MAIZE AT AMPHOE TARUA

1) THAI SILO INDUSTRY CO., LTD.

Location : Taruatalarn Road
Silo Facilities, operation commenced in 1980

(1) Storage Capacity			
Main bins	800 M/T x 8 bins	=	6,400 M/T
Flat warehouse	1,200 M/T x 1	=	12,000 "
	<u>Total</u>		<u>= 18,400 M/T</u>

(2) Dryer			
1 set (made in Denmark)	70 M/T per hour		
Drying capacity is based on 5% moisture reduction.			

2) LAEM THONG AGRI. CORP., LTD.

Location : Phraputtabath Tarua Road
Operation : Commenced in July 1978
Silo Facilities

(1) Storage Capacity			
Main bins	1,400 M/T x 18 bins	=	25,200 M/T
Star bins	330 M/T x 8 bins	=	2,640 "
Flat warehouse (bags)	2,500 M/T x 1	=	2,500 "
Flat warehouse (bulk)	7,000 M/T x 1	=	7,000 "
	<u>Total</u>		<u>= 37,340 M/T</u>

(2) Dryer			
2 sets 50 M/T per hour per set			
Drying capacity is based on 5% moisture reduction.			

3) CONTINENTAL OVERSEAS CORP., (C.O.C.)

Location : Phraputtabath Tarua Road
Facilities

(1) Storage Capacity			
Steel bins	1,000 M/T x 12 bins	=	12,000 M/T
Warehouse for bags	25,000 M/T x 1	=	25,000 "
Warehouse for bulk	25,000 M/T x 2	=	50,000 "
	<u>Total</u>		<u>= 87,000 M/T</u>

(2) Dryer			
3 sets 500 M/T per 24 hours per set (reduce 5% moisture)			

4) SOR SONG SEARM LTD., PART.

Location : Tambol Champa
Facilities

(1) Storage Capacity			
Silo bins	300 M/T x 8 bins	=	2,400 M/T
Warehouse for bags	10,000 M/T x 2	=	20,000 "
Warehouse for bulk	25,000 M/T x 2	=	50,000 "
	<u>Total</u>		<u>= 72,400 M/T</u>

(2) Dryer			
4 sets 1,000 M/T per 24 hours per set (reduce 5% moisture)			

5) HAH LEE PRODUCE & SILO LTD., PART.

Location : Tambol Tachaosanuk
Facilities

(1) Storage Capacity			
Silo bins	1,000 M/T x 4 bins	=	4,000 M/T
Silo bins	750 M/T x 4 bins	=	3,000 "
Warehouse for bags	16,000 M/T x 2	=	32,000 "
Warehouse for bulk	20,000 M/T x 1	=	10,000 "
	<u>Total</u>		<u>= 59,000 M/T</u>

(2) Dryer			
1 set 1,200 M/T per 24 hours (reduce 5% moisture)			

6) THAI SAWAD KIJ CO., LTD. (old name : Yong Chai Product Co., Ltd.)

Location : Tarutalarn Road

Facilities

(1) Storage Capacity			
Silo bins	250 M/T x 8 bins	=	2,000 M/T
Warehouse for bags	7,000 M/T x 1	=	7,000 "
	3,000 M/T x 1	=	3,000 "
	4,000 M/T x 2	=	8,000 "
Storing open space with roof		=	4,500 "
	<u>Total</u>	=	<u>24,500 M/T</u>

(2) Dryer
1 set 800 M/T per 24 hours (reduce 5% moisture)

7) LERT VANJ PRODUCT (1975) LTD. (old name : Siam Produce Co., Ltd.)

Location : Tambol Tachaosanuk

Facilities

(1) Storage Capacity			
Warehouse for bags or bulk	40,000 M/T x 1	=	40,000 M/T
Open space for storage without roof		=	20,000 M/T
	<u>Total</u>	=	<u>60,000 M/T</u>

(2) Dryer is not equipped yet

I. SATTAAHEEP-SRI RACHA, CHOLBURI AREA

1) WILLING TRADING CO., LTD.

Location : Sattaheep, Cholburi
 Owner : Willing Trading Co., Ltd.
 Operator : Willing Trading Co., Ltd.
 Operation : Commenced 1977
 Capacity : 3 Warehouses each 15,000 M/T x 3 = 45,000 M/T

2) MAH BOONKRONG DRYING & SILO CO., LTD.

Owner : Mah Boonkrong Drying & Silo Co., Ltd.
 Operator : Tradax Ltd.
 Silo Location: Hat Phadaeng, Cholburi
 Operation : Commenced in February 1977
 Silo Facilities:

- (1) Storage Capacity
- | | | |
|-----------------|-----------------------|---------------|
| Silo Bins | : 20 bins x 1,250 M/T | = 25,000 M/T |
| Flat Warehouses | : 25,000 M/T x 1 | = 25,000 M/T |
| | : 50,000 M/T x 1 | = 50,000 M/T |
| Total | | = 100,000 M/T |
- (2) Receiving Facilities
- | | |
|--------------|---|
| Weigh Bridge | : MOLENSCHOT max. 50,000 kgs., min. 50 kgs. |
| Dumping Pit | : for bulk cargo 2 pits
for bag cargo 2 pits |
- (3) Loading Facilities
- | | |
|----------------|--|
| Bucket Scale | : CHAO NO.5
2,500 kgs - 5,000 kgs per draft |
| Conveyor Belt | : 1 Belt, from silo to loader about 3 K. metres
max conveying capacity 700 M/T per hour |
| Loader | : 3 Loaders, 350 M/T per loader per hour |
| Loading Speed | : normal speed 600 M/T per hour |
| Depth of wharf | : 12.5 metres |

3) THE DESUDOM WAREHOUSE CO., LTD.

Owner : The Desudom Warehouse Co., Ltd.
 Leased to : Thai Bamrung Thai Ltd.
 Bangkok Grain Co., Ltd.
 Granaria (Thailand) Co., Ltd.
 C.F.I. (Siam) Co., Ltd.
 Others

Location : 113/2, Mu 1 Bang Na-Trad Road, Thung Suk Lak,
 Sri Racha, Cholburi

Capacity	: G/D No.2 & No.3	12,000 M/T x 2	= 24,000 M/T (T.B.T.)
	: G/D No.4	12,000 M/T x 1	= 12,000 M/T (BKK Gr.)
	: G/D No.5 to No.7	12,000 M/T x 3	= 36,000 M/T (Granaria)
	: G/D No.9	12,000 M/T x 1	= 12,000 M/T (C.F.I.)
	: G/D No.1, No.8, No.10, No.11 & No.12		= 60,000 M/T (Others)
	Total		= 144,000 M/T

Operation : Commenced in 1978

3) THE DESUDOM WAREHOUSE CO., LTD.

Owner : The Desudom Warehouse Co., Ltd.
 Leased to : Thai Bamrung Thai Ltd.
 Bangkok Grain Co., Ltd.
 Granaria (Thailand) Co., Ltd.
 C.F.I. (Siam) Co., Ltd.
 Others

Location : 113/2, Mu 1 Bang Na-Trad Road, Thung Suk Lak,
 Sri Racha, Cholburi

Capacity : G/D No.2 & No.3 12,000 M/T x 2 = 24,000 M/T (T.B.T.)
 G/D No.4 12,000 M/T x 1 = 12,000 M/T (BKK Gr.)
 G/D No.5 to No.7 12,000 M/T x 3 = 36,000 M/T (Granaria)
 G/D No. 9 12,000 M/T x 1 = 12,000 M/T (C.F.I.)
 G/D No.1, No.8, No.10, No.11 & No.12 = 60,000 M/T (Others)

Total = 144,000 M/T

Operation : Commenced in 1978

II. BANG SAN, CHOLBURI AREA

1) KRUNG THAI BANK GODOWN

Owner : Krung Thai Bank Ltd.
 Leased to : U.E.P. Export Import Ltd., Part.
 Location : 62/2 Mu 4, Huay Kapi, Muang District, Cholburi
 Capacity : 2 Warehouse, each 15,000 M/T x 2 = 30,000 M/T
 Operation : Commenced in 1978

2) OTHER TAPIOCA PELLETS BULK WAREHOUSE IN BANG SAN

<u>Name of Warehouse and Owner</u>	<u>Operator</u>	<u>Capacity</u>
N.S.P. Thai Tapioca Co., Ltd.	N.S.P. Thai Tapioca Co., Ltd.	32,000 M/T
Thai General Tapioca Co., Ltd.	Krohn & Co., Ltd.	30,000 M/T

III. BANGPRAKONG AREA

1) LO CHIN SENG CO., LTD.

Owner	:	Lo Chin Seng Co., Ltd.	
Operator	:	Lo Chin Seng Co., Ltd.	
Location	:	No. 2/4 Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Commenced in 1975	
Capacity	:	G/D No. A to No. E each	8,000 M/T x 5 = 40,000 M/T
		G/D No. 1	12,000 M/T x 1 = 12,000 M/T
			<hr/>
		Total	= 52,000 M/T

2) SOON HUA SENG CO., LTD.

Owner	:	Soon Hua Seng Co., Ltd.	
Operator	:	Soon Hua Seng Co., Ltd.	
Location	:	No. 57/4 Mu 22 Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Commenced in 1976	
Capacity	:	G/D No. 1	60,000 M/T x 1 = 60,000 M/T
		G/D No. 2	40,000 M/T x 1 = 40,000 M/T
			<hr/>
		Total	= 100,000 M/T

3) TRAKULKAM FEED MANUFACTURING CO., LTD.

Owner	:	Trakulkam Feed Manufacturing Co., Ltd.	
Operator	:	Trakulkam Feed Manufacturing Co., Ltd. Thai Pellets Co., Ltd.	
Location	:	88/5 Mu 13, Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Feed factory commenced in 1965	
Capacity	:	G/D No. 1	7,000 M/T x 1 = 7,000 M/T
		G/D No. 2 & No. 3	8,500 M/T x 2 = 17,000 M/T
			<hr/>
		Total	= 24,000 M/T

4) SENG THAI BANGPRAKONG CO., LTD.

Owner	:	Seng Thai Bangprakong Co., Ltd.	
Operator	:	Seng Thai Bangprakong Co., Ltd.	
Location	:	85 Mu 1, Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Commenced in 1975	
Capacity	:	2 Warehouse Total = 100,000 M/T	

5) SAHAPHAN PLANT PRODUCTS CO., LTD.

Owner	:	Sahaphan Plant Products Co., Ltd.	
Operator	:	Sahaphan Plant Products Co., Ltd.	
Location	:	117-22, Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Commenced in 1973	
Capacity	:	3 Warehouses, each	17,000 M/T x 3 = 51,000 M/T

6) SAENG PETCH IMPORT-EXPORT CO., LTD.

Owner	:	Saeng Petch Import-Export Co., Ltd.	
Operator	:	Saeng Petch Import-Export Co., Ltd.	
Location	:	85/1 Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Commenced in 1978	
Capacity	:	G/D No. 1	40,000 M/T x 1 = 40,000 M/T
		G/D No. 2	60,000 M/T x 1 = 60,000 M/T
			<hr/>
		Total	= 100,000 M/T

7) THAI CASSAVA CO., LTD.

Owner	:	Thai Cassava Co., Ltd.	
Operator	:	Thai Cassava Co., Ltd.	
Location	:	82 Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Commenced in 1979	
Capacity	:	5 Warehouses, each	20,000 M/T x 5 = 100,000 M/T

8) KROHN & CO., LTD.

Owner	:	Krohn & Co., Ltd.	
Operator	:	Krohn & Co., Ltd.	
Location	:	78/1 Sukumvit Road, Bangprakong, Charchunsal	
Operation	:	Commenced in 1981	
Capacity	:	G/D No. 1 & 2	4,000 M/T x 2 = 8,000 M/T
		G/D No. 3	2,500 M/T x 1 = 2,500 M/T
		G/D No. 4	1,500 M/T x 1 = 1,500 M/T
			<hr/>
		Total	= 12,000 M/T

9) OTHER TAPIOCA PELLETS BULK WAREHOUSES IN BANGPRAKONG

<u>Name of Warehouse</u>	<u>Owner</u>	<u>Operator</u>	<u>Capacity</u>
Thai Wah G/D 1	Thai Wah Co., Ltd.	Thai Wah Co., Ltd.	50,000 M/T
Thai Wah G/D 2	Thai Wah Co., Ltd.	Krohn & Co., Ltd.	13,000 M/T
Thai Wah G/D 3	Thai Wah Co., Ltd.	Under constuction	30,000 M/T
Mongkol 3	Mongkol 3	Mongkol 3	50,000 M/T
Krung Thai Bank G/D	Krung Thai Bank	Thai Bamrung Thai	13,900 M/T
Thai Bamrung Thai	Thai Bamrung Thai	Thai Bamrung Thai	9,000 M/T

IV. BANGKOK AREA

1) SUBSATHAPHORN CO., LTD. (Sui Heng Lee Co., Ltd.)

Owner	Subsathaphorn Co., Ltd.	
Operator	Subsathaphorn Co., Ltd.	
Location	No. 55 Bangyot, Prapradang Wharf No. 21B	
Capacity	7 warehouses, each	7,500 M/T x 7 = 52,500 M/T
	3 warehouses, each	8,000 M/T x 3 = 24,000 M/T
	Total	= 76,500 M/T

Wharf Length : 160 metres
 Water Depth : Vessel's max draft 26'
 Operation : Commenced 1978 for Tapioca Pellets

2) P.H. DEVELOPMENT CO., LTD.

Owner	P.H. Development Co., Ltd.	
Operator	P.H. Development Co., Ltd.	
Location	56, Mu 6, Petchalung Road, Bangyot, Prapradang Wharf No. 21D	
Capacity	G/D No. 1-8, each	15,000 M/T x 8 = 120,000 M/T
	G/D No. 9	9,000 M/T x 1 = 9,000 M/T
	Total	= 129,000 M/T

Wharf Length : 280 metres
 Water Depth : 16 metres
 Operation : Commenced in August 1981

3) THAI PELLETS CO., LTD.

Owner	Thai Pellets Co., Ltd.	
Operator	Thai Pellets Co., Ltd.	
Location	56/2 Mu 2, Poochaosamingprai, Prapradang, Samutprakarn	
Capacity	Godown No. 1	10,000 M/T x 3 = 30,000 M/T
	Godown No. 2 (At U.S.S.)	15,000 M/T x 1 = 15,000 M/T
	Total	= 45,000 M/T

4) POONPIPAT CO., LTD.

Location	155 Moo. 6, Poochaosamingprai Road, South Sam Rong, Prapradang, Samut prakarn	
Owner	Poon Phol Co., Ltd.	
Operator	Poon Phol Co., Ltd.	
Operation	Commenced in 1971	
Capacity	Flat Silo (Bulk) 5 x 2,000 M/T	= 10,000 M/T
	Warehouse No. 8 about	= 20,000 M/T
	No. 6 about	= 20,000 M/T
	Total	= 50,000 M/T

V. AYUTHAYA-PRATOOMTHANEE AREA

1) CHUNG KENG SENG CO., LTD.

Owner : Chung Keng Seng Co., Ltd.
 Operator : Chung Keng Seng Co., Ltd.
 Location : 9/1 No. 1 Bangkadee, Muang District,
 Pratoomthanee
 Operation : Commenced in December, 1979
 Capacity : G/D No. 1 30,000 M/T x 1 = 30,000 M/T
 G/D No. 2 28,000 M/T x 1 = 28,000 M/T
 Total = 58,000 M/T

G/D No. 3 1,000 M/T for bag cargo, using for maize and jute products

2) NARAI WAREHOUSE CO., LTD.

Owner : Narai Warehouse Co., Ltd.
 Leased to : Central Grain Co., Ltd.
 Poon Phol Co., Ltd.
 Thai Wah Co., Ltd.
 Bangkok Grain Ltd.
 TLP Inter-Test Corporation
 Public Warehouse Organization
 Location : No. 32 Mu 5, Bang Prain-Pratoonthanee Road,
 Bangsai, Ayuthaya
 Operation : Commenced in September 1978
 Capacity : G/D No. 2 15,000 M/T x 1 = 15,000 M/T (TLP)
 G/D No. 3 & No. 4 15,000 M/T x 2 = 30,000 M/T (Cent. G)
 G/D No. 5 & No. 6 16,000 M/T x 2 = 32,000 M/T (Thai W.)
 G/D No. 7 16,000 M/T x 1 = 16,000 M/T (Poon P.)
 G/D No. 10 12,000 M/T x 1 = 12,000 M/T (Poon P.)
 G/D No. 11 15,000 M/T x 1 = 15,000 M/T (Poon P.)
 G/D No. 12 16,000 M/T x 1 = 16,000 M/T (Poon P.)
 G/D No. 8 25,000 M/T x 1 = 25,000 M/T (Bkk Gr.)
 Total = 161,000 M/T

G/D No. 1 14,000 M/T for bag cargo, using for jute bags
 G/D No. 9 25,000 M/T for rice in bags for P.W.O.

3) SAHATHAI TRADING CO., LTD.

Location : 71 Tarua-Wang Dang Road, Salaloy, Tarua
 Authaya
 Owner : Sahathai Trading Co., Ltd.
 Operation : Commenced in July 1979
 Capacity : Warehouse No. 1 about = 15,000 M/T
 No. 2 about = 10,000 M/T
 No. 3 about = 5,000 M/T
 Total = 30,000 M/T

BULK TAPIOCA PELLETS LOADING FACILITY AT KOH SICHANG

THAI BULK SERVICES CO., LTD. (TBS)

The company which is a joint venture between two Thai companies, two German Tapioca Traders, and two Dutch Elevator companies.

Joint Venture : Alfred C. Toepfer Ltd. (German Tapioca Trader)
Krohn & Co., Ltd. (German Tapioca Trader)
Furness Ltd. (Holland Elevator Handling Co.)
Graan Elevator Maatschappij (GEM) Ltd. (—"—)

Operator : Thai Bulk Services Co., Ltd.

Location : off Si Chang Island, Choburi

Operation : Commenced in September, 1978

Facilities : 2 Floating Pontoons (72 m x 18 m per pontoon)
made in Singapore
2 Loading Jibs and 2 Loading Spouts per pontoon
2 Grabs per loading jib (total 4 grabs per pontoon)
made in Holland

Loading speed : 14,000 M/T per day

Vessel size : Max. 170,000 Dead Weight can be handled



PORT OF BANGKOK

PORT AUTHORITY OF THAILAND
CONVENTIONAL WHARVES

ORIENTAL HOTEL

SATUPRADIT ANCHORAGE

BANGPLAKOD ANCHORAGE

BAR CHANNEL

WEST BANK		
WHARF NO.	POSITION (K.M.)	OWNER OPERATOR
1	3.43	CO-OPERATIVE SALT WHARF
1A		THAI RUMI TOOK
2	10.50	UNITED SUGAR TERMINAL
3A	10.50	MITRAPHOL WAREHOUSE
5	10.80	LAEM THONG BANNAKARN
5A	12.00	THAI CENTRAL CHEMICAL
5B	12.00	THAI SICO INDUSTRY
6	13.10	BANGKOK CO. (SINGAPORE)
7	13.20	RUAM THONG THAI
8	13.20	MITSUBISHI CO.
11	13.20	BANGKOK MOLASSES
12	13.60	KWANG SOON LER
13	13.70	(THONBUURI WHAREHOUSE)
17	15.50	LAURUBEN CO.
18	15.85	ASIA MOLASSES
19	15.90	THAI FALTA THAI HOAO
20	16.00	THAI SUGAR TERMINAL
21	17.00	THAI SUGAR TERMINAL
21B	17.00	THAI SUGAR TERMINAL
21C	17.00	THAI SUGAR TERMINAL
21D	17.00	THAI SUGAR TERMINAL
21E	17.00	THAI SUGAR TERMINAL
21F	17.00	THAI SUGAR TERMINAL
21G	17.00	THAI SUGAR TERMINAL
21H	17.00	THAI SUGAR TERMINAL
21I	17.00	THAI SUGAR TERMINAL
21J	17.00	THAI SUGAR TERMINAL
21K	17.00	THAI SUGAR TERMINAL
21L	17.00	THAI SUGAR TERMINAL
21M	17.00	THAI SUGAR TERMINAL
21N	17.00	THAI SUGAR TERMINAL
21O	17.00	THAI SUGAR TERMINAL
21P	17.00	THAI SUGAR TERMINAL
21Q	17.00	THAI SUGAR TERMINAL
21R	17.00	THAI SUGAR TERMINAL
21S	17.00	THAI SUGAR TERMINAL
21T	17.00	THAI SUGAR TERMINAL
21U	17.00	THAI SUGAR TERMINAL
21V	17.00	THAI SUGAR TERMINAL
21W	17.00	THAI SUGAR TERMINAL
21X	17.00	THAI SUGAR TERMINAL
21Y	17.00	THAI SUGAR TERMINAL
21Z	17.00	THAI SUGAR TERMINAL
22	17.77	UNION METAL WHARF
23	17.77	UNION METAL WHARF
24	17.77	UNION METAL WHARF
25	17.77	UNION METAL WHARF
26	17.77	UNION METAL WHARF
27	17.77	UNION METAL WHARF
28	17.77	UNION METAL WHARF
29	17.77	UNION METAL WHARF
30	17.77	UNION METAL WHARF
31	17.77	UNION METAL WHARF
32	17.77	UNION METAL WHARF
33	17.77	UNION METAL WHARF
34	17.77	UNION METAL WHARF
35	17.77	UNION METAL WHARF
36	17.77	UNION METAL WHARF
37	17.77	UNION METAL WHARF
38	17.77	UNION METAL WHARF
39	17.77	UNION METAL WHARF
40	17.77	UNION METAL WHARF
41	17.77	UNION METAL WHARF
42	17.77	UNION METAL WHARF
43	17.77	UNION METAL WHARF
44	17.77	UNION METAL WHARF
45	17.77	UNION METAL WHARF
46	17.77	UNION METAL WHARF

EAST BANK		
WHARF NO.	POSITION (K.M.)	OWNER OPERATOR
7	13.47	JALAPAATHAN CEMENT
8	13.47	JALAPAATHAN CEMENT
9	13.47	JALAPAATHAN CEMENT
10	13.47	JALAPAATHAN CEMENT
11	13.47	JALAPAATHAN CEMENT
12	13.47	JALAPAATHAN CEMENT
13	13.47	JALAPAATHAN CEMENT
14	13.47	JALAPAATHAN CEMENT
15	13.47	JALAPAATHAN CEMENT
16	13.47	JALAPAATHAN CEMENT
17	13.47	JALAPAATHAN CEMENT
18	13.47	JALAPAATHAN CEMENT
19	13.47	JALAPAATHAN CEMENT
20	13.47	JALAPAATHAN CEMENT
21	13.47	JALAPAATHAN CEMENT
22	13.47	JALAPAATHAN CEMENT
23	13.47	JALAPAATHAN CEMENT
24	13.47	JALAPAATHAN CEMENT
25	13.47	JALAPAATHAN CEMENT
26	13.47	JALAPAATHAN CEMENT
27	13.47	JALAPAATHAN CEMENT
28	13.47	JALAPAATHAN CEMENT
29	13.47	JALAPAATHAN CEMENT
30	13.47	JALAPAATHAN CEMENT
31	13.47	JALAPAATHAN CEMENT
32	13.47	JALAPAATHAN CEMENT
33	13.47	JALAPAATHAN CEMENT
34	13.47	JALAPAATHAN CEMENT
35	13.47	JALAPAATHAN CEMENT
36	13.47	JALAPAATHAN CEMENT
37	13.47	JALAPAATHAN CEMENT
38	13.47	JALAPAATHAN CEMENT
39	13.47	JALAPAATHAN CEMENT
40	13.47	JALAPAATHAN CEMENT
41	13.47	JALAPAATHAN CEMENT
42	13.47	JALAPAATHAN CEMENT
43	13.47	JALAPAATHAN CEMENT
44	13.47	JALAPAATHAN CEMENT
45	13.47	JALAPAATHAN CEMENT
46	13.47	JALAPAATHAN CEMENT

APPENDIX N
AGRICULTURAL STATISTICS

<u>No.</u>		<u>Page</u>
1.	Value of Agricultural Exports 1978-1982	1
2.	Rice (Major and Second Rice): Planted Area, Production and Farm Value, Crop Year 1973/74-1982/83	2
3.	Second Rice: Planted Area, Production and Farm Value, Year 1974-1983	3
4.	Maize: Planted Area, Production and Farm Value, Crop Year 1973/74-1982/83	4
5.	Cassava: Planted Area, Production and Farm Value, Year 1977-1982	5
6.	Mungbean: Planted Area, Production and Farm Value, Crop Year 1973/74-1982/83	6
7.	Sorghum: Planted Area, Production and Farm Value, Crop Year 1978/79-1982/83	7
8.	Other Oil Seeds: Production and Average Yield, Crop Year 1978/79-1982/83	8
9.	Average Cash Income from Agricultural Sector (from Crops) per Agricultural Households by Type of Income Sources and Regions, 1980/81	9
10.	Average Wholesale Price of Thai Agricultural Products in Foreign Markets, 1978-1982	10
11.	Quantity of Rice Exports, 1978-82	11
12.	Thailand Major Exports Commodities	12

1. Value of Agricultural Exports 1978-1982

Appendix N
Page 1

Products	Unit: million bahts				
	1978	1979	1980	1981	1982
Rice	10,424.0	15,592.4	19,507.6	26,366.4	22,463.4
Rice products	260.0	283.1	310.0	465.2	564.5
Food crop	6,180.9	7,881.0	9,772.8	11,565.5	11,929.9
Cassava products	10,891.8	9,891.2	14,887.2	16,446.5	19,742.9
Raw sugar and products	4,491.3	5,426.9	3,356.7	10,310.9	13,793.7
Oil seeds	833.5	830.9	388.9	683.6	602.0
Vegetable oils	29.9	12.8	225.0	218.6	292.0
Fiber crop	3,037.9	3,686.8	3,783.2	3,217.8	3,953.2
Garden crop and fruits	175.8	210.8	204.8	313.8	505.5
Fruits and products	1,726.9	1,752.4	2,122.7	2,974.8	3,123.7
Spices	74.8	49.7	32.3	512.2	203.9
Miscellaneous crop	344.1	653.5	761.3	818.3	1,024.3
Other food products	140.2	224.2	243.2	415.8	620.5
Tobacco	1,161.2	1,243.4	1,371.6	1,741.0	2,563.1
Rubber	8,213.7	12,704.5	13,024.6	11,470.0	10,065.3
Live animals	291.8	249.4	165.1	96.5	107.4
Animal feed	1,021.1	1,387.8	1,618.2	1,874.3	1,599.5
Animal products	1,027.2	1,531.6	1,390.4	1,053.9	2,346.2
Milk products	110.1	144.3	160.8	149.5	205.5
Fertilizer and pesticides	2.3	3.6	14.2	9.9	21.7
Fishery products	4,325.8	6,388.1	6,185.4	7,635.3	9,996.7
Paper products	102.3	159.6	225.3	188.0	236.1
Forestry products	1,473.9	1,737.8	1,702.7	1,742.8	1,738.0
	56,340.4	72,046.4	81,453.3	100,270.3	107,699.3
Total value of agricultural products exports	56,340.5	72,045.8	81,454.0	100,270.6	107,699.0
Percentage	69.34	67.75	62.46	67.31	68.92
Total value of Exports	81,251.8	106,336.5	130,406.2	148,962.2	156,269.1
Percentage	100	100	100	100	100

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

2. Rice (Major and Second Rice): Planted Area,
Production and Farm Value, Crop Year
1973/74 - 1982/83

Crop Year beginning April	Planted area	Production	Yield Per rai	Farm Price	Farm Value
	1,000 rais	1,000 tons	kgs. per rai	bahts per ton	million bahts
1973/74	52,270	14,899	285	1,935.53	28,838.00
1974/75	49,889	13,386	268	2,104.01	28,164.29
1975/76	55,602	15,300	275	1,949.35	29,824.95
1976/77	53,595	15,068	281	1,849.15	27,862.38
1977/78	56,444	13,921	246	2,302.42	32,051.41
1978/79	62,667	17,470	280	2,183.96	38,153.68
1979/80	58,971	15,758	267	2,604.67	41,043.51
1980/81	60,110	17,368	289	3,082.30	53,533.75
1981/82	59,970	17,774	296	2,838.73	50,456.45
1982/83	60,134	16,879	281	2,809.63	47,422.30

Remarks: Rice, crop year 1973/74 is Major Rice crop year 1973/74
and second Rice year 1974

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

3. Second Rice: Planted Area, Production and Farm Value,
Year 1974-1983

Crop Year beginning April	Planted area	Production	Yield Per rai	Farm Price	Farm Value
	1,000 rais	1,000 tons	kgs.per rai	bahts per ton	million bahts
1974	2,038	1,014	497	1,667.41	1,690.00
1975	2,068	939	454	2,088.59	1,961.18
1976	2,358	1,208	512	1,966.96	2,376.34
1977	2,736	1,393	509	1,897.53	2,644.18
1978	2,979	1,586	532	2,143.71	3,399.53
1979	4,257	2,264	532	2,163.76	4,898.21
1980	2,103	1,111	528	2,543.84	2,826.66
1981	3,228	1,963	608	3,194.80	6,270.47
1982	3,578	2,017	564	2,859.28	5,765.97
1983	3,963	2,104	531	2,526.35	5,315.69

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

4. Maize: Planted Area, Production and Farm Value,
Crop Year 1973/74 - 1982/83

Crop Year beginning April	Planted area	Production	Yield per rai	Farm Price	Farm Value
	1,000 rais	1,000 tons	kgs. per rai	bahts per kg.	Million bahts
1973/74	7,172	2,339.0	326	1.35	3,157.7
1974/75	7,749	2,500.0	323	2.06	5,150.0
1975/76	8,200	2,863.2	349	1.86	5,296.9
1976/77	8,029	2,675.2	333	1.67	4,467.6
1977/78	7,534	1,676.5	223	1.64	2,749.5
1978/79	8,661	2,790.6	322	1.61	4,492.8
1979/80	9,529	2,863.2	300	2.09	5,984.1
1980/81	8,960	2,997.9	335	2.43	7,284.9
1981/82	9,796	3,448.5	352	2.18	7,517.8
1982/83	10,494	3,002.3	286	2.01	6,034.6

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

5. Cassava: Planted Area, Production and Farm Value, Year 1977-1982

Year	Planted area	Production	Yield per rai	Farm Price	Farm Value
	1,000 rais	1,000 tons	Kgs. Per rai	bahts per kg.	Million bahts
1977	5,293	11,840	2,237	0.47	5,564.8
1978	7,282	16,358	2,246	0.37	6,052.5
1979	5,286	11,101	2,100	0.77	8,547.8
1980	7,250	16,540	2,281	0.75	12,405.0
1981	7,940	17,744	2,235	0.46	8,162.2
1982	7,726	17,788	2,302	0.51	9,071.8

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

6. Mungbean: Planted Area, Production and Farm Value,
Crop Year 1973/74 - 1982/83

crop Year beginning April	Planted area	Production	Yield per rai	Farm Price	Farm Value
	1,000 rais	1,000 tons	Kgs. Per rai	bahts per kg.	Million bahts
1973/74	1,596	209.3	131	2.68	560.9
1974/75	1,293	187.9	145	3.54	665.2
1975/76	1,022	120.6	118	3.74	451.0
1976/77	1,392	124.8	90	4.98	621.5
1977/78	2,720	206.9	76	5.67	1,173.3
1978/79	2,638	259.0	98	5.00	1,294.9
1979/80	2,652	250.7	94	4.77	1,195.8
1980/81	2,796	261.0	93	5.85	1,527.1
1981/82	3,040	283.7	94	6.56	1,860.7
1982/83	3,034	281.3	93	5.90	1,659.4

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

7. Sorghum: Planted Area, Production and Farm Value,
Crop Year 1973/74 - 1982/83

Crop Year beginning April	Planted area	Production	Yield per rai	Farm Price	Farm Value
	1,000 rais	1,000 tons	Kgs. per rai	bahts per kg.	Million bahts
1973/74	555	139.7	252	0.96	134.1
1974/75	1,262	250.1	198	1.68	420.1
1975/76	1,226	230.9	188	1.52	351.0
1976/77	892	148.4	166	1.48	219.6
1977/78	1,062	125.9	118	1.41	177.5
1978/79	1,098	215.8	197	1.47	317.3
1979/80	1,182	199.4	169	1.91	380.9
1980/81	1,546	237.0	153	2.24	530.9
1981/82	1,749	273.5	156	2.64	722.1
1982/83	1,534	236.3	154	2.47	583.7

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

8. Other Oil Seeds: Production and Average Yield, Crop Year 1978/79-1982/83

Item	Planted area (1,000 rai)					Production (1,000 tons)					Yield per rai (kgs)				
	1978/79	1979/80	1980/81	1981/82	1982/83	1978/79	1979/80	1980/81	1981/82	1982/83	1978/79	1979/80	1980/81	1981/82	1982/83
Soybeans	1,010	679	788	797	778	158.9	102.1	100.0	131.5	113.4	157	150	127	165	146
Ground Nuts	660	609	658	764	761	127.5	109.1	128.8	146.5	145.3	193	179	196	192	191
Castor bean	271	312(F)	264	277.1	275.5(F)	37.3	35.5(F)	34.5(F)	36.0	34.4	137	114(F)	131(F)	130	125
Sesame	289	228(F)	245(F)	257.4(F)	244.8(F)	29.9	21.7(F)	27.1(F)	28.5(F)	25.7	104	95(F)	111(F)	111(F)	105
Coconut	2,334(r)	2,347(r)	2,363(r)	2,373(r)	2,443	843(r)	785(r)	671(r)	887(r)	1,076	665(r)	544(r)	462(r)	516(r)	619
Palm (L)	91.1	167.3	241.9	310.9	323.9(F)	33.3	61.1	99.5	158.8	260.6(F)	366	365	411	511	805(F)

Remark: (L) year 1982

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

9. Average Cash Income from Agricultural Sector (from crops)
per Agricultural Households by Type of Income Sources and
Regions, 1980/81

Unit: baht/Farm

Income	Regions				Average Whole Kingdom
	Northeast	North	Central	South	
Rice	5,415.92 (45.65)	7,817.63 (42.42)	14,904.00 (40.86)	3,124.90 (19.40)	7,613.47 (39.91)
Corn (Animal food)	755.56 (6.37)	3,623.29 (19.66)	2,377.48 (6.52)	11.80 (0.07)	1,721.42 (9.02)
Pine Apple	7.98 (0.07)	- (-)	218.04 (0.60)	1.43 (0.009)	46.91 (0.25)
Sorghum	57.85 (0.49)	150.11 (0.81)	521.89 (1.43)	- (-)	166.37 (0.87)
Mung Beans	31.54 (0.27)	1,140.37 (6.19)	106.38 (0.29)	142.06 (0.881)	350.61 (1.84)
Cassava	3,501.87 (29.52)	963.35 (5.23)	2,999.82 (8.22)	16.92 (0.11)	2,251.94 (11.80)
Sugar Cane (Factory)	494.42 (4.17)	938.66 (5.09)	8,678.39 (23.79)	- (-)	2,174.21 (11.40)
Cotton	106.14 (0.89)	627.29 (3.40)	930.48 (2.55)	1.98 (0.01)	375.87 (1.97)
Kenaf	479.12 (4.04)	0.04 (0.0002)	- (-)	- (-)	191.56 (1.00)
Tobacco	219.03 (1.85)	969.76 (5.26)	47.04 (0.13)	692.31 (4.30)	446.52 (2.34)
Other fiber crops	125.95 (1.06)	19.87 (0.1078)	10.68 (0.03)	- (-)	57.66 (0.30)
Soybeans	84.05 (0.70)	301.74 (1.64)	82.37 (0.24)	156.77 (0.97)	150.58 (0.79)
Ground Nuts	99.60 (0.84)	579.54 (3.15)	64.05 (0.17)	1.68 (0.01)	203.69 (1.07)
Castor Beans	- (-)	3.20 (0.02)	11.34 (0.03)	- (-)	3.10 (0.02)
Sesame	21.95 (0.19)	92.63 (0.502)	10.12 (0.03)	- (-)	34.91 (0.18)
Coconuts	21.13 (0.18)	13.54 (0.07)	1,025.79 (2.81)	1,482.86 (9.21)	424.76 (2.23)
Rubber	- (-)	- (-)	273.29 (0.75)	9,279.66 (57.61)	1,356.48 (7.11)
Tea	- (-)	39.94 (0.22)	- (-)	- (-)	22.81 (0.12)
Coffee	- (-)	- (-)	- (-)	65.72 (0.41)	9.22 (0.05)
Garden crops and fruits	152.68 (1.29)	638.24 (3.46)	783.19 (2.15)	46.96 (0.29)	390.09 (2.04)
Fruits	280.37 (2.36)	365.61 (1.98)	2,757.10 (7.56)	1,034.79 (6.42)	902.76 (4.73)
Others	7.20 (0.06)	145.25 (0.79)	678.12 (1.86)	47.90 (0.30)	182.76 (0.96)
Total	11,862.36 (100)	18,430.06 (100)	36,479.57 (100)	16,107.79 (100)	19,077.71 (100)

Remarks: The number in brackets is the percentage of cash income from crops by type of crop income sources.

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

10. Average Wholesale Price of Thai Agricultural
Products in Foreign Markets, 1978-1982

Markets and Commodities	Average price per year: Baht/Ton				
	1978	1979	1980	1981	1982
Hong Kong Market					
White Rice 100% (No.1)	9,117	9,032	10,868	13,020	12,320
White Rice 100% (No.2)	9,023	9,005	10,799	12,919	12,219
White Rice 100% (No.3)	8,920	8,810	10,685	12,824	12,128
White Rice Special-3%	8,788	8,705	10,561	12,724	11,871
White Rice A-5%	8,663	8,562	10,206	11,751	11,111
White Rice B-10%	8,416	8,376	9,988	11,372	11,010
White Rice C-15%	8,240	8,236	9,870	11,187	10,916
Singapore Market					
White Rice 100% (No.1)	9,757	9,132	10,142	13,440	12,025
White Rice 100% (No.2)	8,713	8,025	8,656	11,196	9,752
White Rice 100% (No.3)	8,402	7,677	8,507	10,842	9,298
White Rice A-5%	5,837	-	-	-	-
White Rice B-10%	7,760	6,859	7,352	8,381	-
Parboiled Rice	8,353	7,783	8,735	11,272	8,318
Kuala Lumpur Market					
Rubber, smoked sheet (Grade I)	20,000	25,820	29,060	24,150	19,650
Europe Market					
Cassava pellets	2,080	3,380	3,590	3,100	3,060
Chicago Market					
Maize	1,800	2,090	2,350	2,700	2,330
Tokyo Market					
1. Castor seed	8,424	8,658	9,220	-	-
2. Kapok seed	3,813	3,180	-	-	-
3. Cotton seed	3,114	3,762	3,810	-	-
4. Maize	1,835	1,842	2,800	-	-
5. Soy beans	6,090	6,420	3,870	7,480	-
London Market					
1. Ret Kenaf (Grade A)	-	7,125	7,278	-	-
2. Ret Kenaf (Grade B)	6,925	6,725	-	-	-
3. Ret Kenaf (Grade C)	6,364	5,877	-	-	-
4. White Rice 100% (No.1)	9,812	-	-	-	-

Source: Agricultural Statistics of Thailand, Crop Year 1982/83.

11. Quantity of Rice Exports, 1978-82

Item	Quantity: ton				
	1978	1979	1980	1981	1982
EXPORTS					
Total of rice exports	1,606,752	2,796,869	2,799,718	3,031,783	3,818,132
White rice	953,717	2,150,534	2,347,760	2,245,844	3,046,902
White rice 100%	326,338	486,263	777,768	860,787	1,242,149
White rice 5%	72,112	72,099	190,013	63,677	140,525
White rice 10%	190,206	566,797	325,247	386,739	149,976
White rice 15%	3,880	29,235	65,244	246,726	331,080
White rice 20%	900	1,000	1,357	12,612	7,483
White rice 25%	122,975	532,279	466,395	177,406	183,398
White rice 35%	27,950	8,342	3,800	-	54,349
Other white rice	600	11,499	-	14,656	21,011
Broken rice	208,756	443,020	517,936	483,241	916,931
Glutinous rice	35,490	118,601	139,781	356,403	178,759
Glutinous rice 10%	34,020	74,670	115,154	350,017	147,529
Glutinous rice 25%	-	5,521	22,122	1,310	19,860
Glutinous rice 35%	20	35,242	50	340	5,420
Other glutinous rice	2	193	1,392	245	82
Glutinous rice broken	1,448	2,975	1,063	4,491	5,868
Cargo rice	21,783	51,570	28,923	16,007	31,126
Cargo rice 100%	11,186	13,799	6,539	2,385	7,103
Cargo rice 5%	3,018	12,146	19,769	13,251	20,982
Cargo rice 10%	5,929	18,789	295	371	1,416
Cargo rice parboiled	1,600	1,536	2,000	-	1,545
Other cargo rice	50	5,300	320	-	80
Rice parboiled	593,059	467,569	274,700	390,700	556,902
Broken rice parboiled	2,325	8,200	350	9,644	345
Other rice n.e.s.	358	393	319	485	201
Rice in husk or paddy	20	2	7,885	12,700	3,897
Rice Product	49,068	51,063	45,595	55,951	69,689
White rice flour	29,484	31,603	24,168	23,787	38,472
Glutinous rice flour	10,580	13,099	15,764	24,042	18,439
Vermicelli made from rice	9,004	6,361	5,663	8,122	12,778

Source: Agricultural Statistics of Thailand 1982/83

12. THAILAND MAJOR EXPORTS COMMODITIES

Quantity : M/T
Value : Million B

	RICE		RUBBER		TIN		MAIZE		TAPIOCA PRODUCTS		JUTE & KENAF		SUGAR	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1965	1,895,223	4,334	210,954	1,999	20,503	1,166	831,353	1,004	719,442	676	316,986	1,102	83,834	100
1966	1,507,550	4,001	202,535	1,861	18,898	1,316	1,251,556	1,577	688,603	644	473,269	1,614	54,858	82
1977	1,482,272	4,653	211,118	1,574	20,107	1,822	1,145,981	1,431	781,325	726	317,094	866	15,013	37
1968	1,068,185	3,775	252,220	1,016	24,017	1,510	1,558,198	1,647	898,854	772	209,478	674	52	-
1969	1,023,064	2,945	276,381	2,664	23,431	1,631	1,544,015	1,767	975,091	876	255,978	780	16,102	47
1970	1,063,616	2,516	275,610	2,232	22,246	1,618	1,447,955	1,969	1,126,865	1,223	257,663	719	56,248	94
1971	1,576,142	2,909	307,871	1,905	21,873	1,569	1,873,461	2,286	1,123,084	1,240	271,676	935	174,571	382
1972	2,112,114	4,437	317,695	1,862	21,840	1,664	1,843,619	2,085	1,311,038	1,547	255,093	1,087	407,501	1,264
1973	848,717	3,594	390,514	4,573	22,671	2,035	1,386,374	2,969	1,836,453	2,537	264,084	1,054	275,405	1,161
1974	1,029,273	9,778	362,563	5,035	20,767	3,097	2,301,576	6,078	2,395,704	3,836	247,006	845	443,847	3,757
1975	951,260	5,852	332,189	3,474	16,663	2,247	2,104,733	5,705	2,385,443	4,597	157,601	643	595,434	5,696
1976	1,973,391	8,603	373,458	5,297	20,048	2,972	2,419,186	5,676	3,720,710	7,527	138,362	579	1,123,974	6,843
1977	2,946,434	13,382	401,863	6,164	21,437	4,541	1,541,957	3,345	3,954,366	7,720	81,233	418	1,654,610	7,445
1978	1,606,732	10,425	442,191	8,030	28,943	7,229	1,972,446	4,275	6,287,965	10,892	89,286	443	1,040,050	3,969
1979	2,796,869	15,592	520,953	12,351	31,308	9,253	2,013,985	5,643	3,961,201	9,891	78,135	389	1,189,818	4,797
1980	2,799,724	19,508	455,006	12,351	33,955	11,347	2,202,510	7,299	5,217,702	14,887	30,392	154	451,696	2,975
1981	3,035,996	26,364	473,821	10,040	30,143	9,115	2,540,595	8,341	6,263,540	16,439	21,450	78	1,118,644	9,571
1982	3,403,742	22,487	544,900	9,498	24,910	7,776	2,993,933	6,293	7,903,931	10,696	7,705	35	2,034,817	12,932

Source : Department of Customs.
(Reported by Bank of Thailand).

APPENDIX 0
ANALYSIS OF DATA

<u>No.</u>		<u>Page</u>
1.	Gross Domestic Product (GDP) by Industrial Origin at Market Prices	1
2.	Gross Domestic Product (GDP) by Industrial Origin at Fixed Prices and its Growth Rates	2
3.	Production Target of Agriculture in term of Value Added at 1972 Prices	3
4.	Production Target of Agriculture 1982-1986	4
5.	Exports of Four Traditional Items	9
6.	Change of Exports Pattern	10
7.	List of Exports from Thailand at the mid-19th Century	11
8.	Growth of Planted Acreage for Major Upland Crops After 1950	12
9.	Growth of Major Upland Crops Production After 1950	13
10.	Development of Second Rice Crops	14
11.	Domestic Exports from Thailand and Bangkok	15
12.	Exports of Eight Major Agricultural Products in terms of Quantity from Bangkok Port	16
13.	Area Under Annual Crops and Area Irrigated	17
14.	Improvement of Rate of Harvested Area Against Planted Area of Paddy	18
15.	Second Rice Crop: Area Planted and Production	19
16.	Road Condition at the End of 1934	20
17.	Road Condition After Diversification of Agriculture (1963)	21
18.	Current Road Condition (1979)	22
19.	Estimated Most Recent Road Condition Opened to Public, by Regions (1980)	23

<u>No.</u>		<u>Page</u>
20.	Yield per Rai of Major Rice Crop	24
21.	Interest Rates of Loan to Farmers by Different Kinds of Lenders and by Regions Before Establishment of BAAC	25
22.	Sources of Credit to Farmers by Region Before Establishment of BAAC	26
23.	Interest Rate of Loans from BAAC	27
24.	Amount of Farmer's Surplus of Major and Second Rice Crop	28
25.	Surplus and Deficit of Rice by Changwat	35
25-1.	Provinces by Region	36
26.	Amount of Rice Production and Marketing in Thailand	37
27.	Planted Acreage of Upland Crops Listed in the Agricultural Census Report, 1978	38
28.	Eight Major Export Items from Bangkok in Terms of Quantity	39
29.	Average Export Percentage to Production of Selected Major Upland Crops	40
30.	Population Projections for Thailand by Different Assumptions: 1970-2005	41
31.	Elasticity of Average Annual Population Growth Rates of Different Regions Against Competent Rate of Whole Kingdom, 1973-1980	42
32.	Population Projections of Different Regions by Assumption of Low Fertility in 1990 and 2000	43
33.	Projections of Production, Demand and Export of Rice in 1990	44
34.	Projections of Production, Demand and Export of Rice in 2000	45

1. Gross Domestic Product (GDP) by Industrial Origin at Market Prices

(Unit: Billion Baht)

<u>Year</u>	<u>G D P</u>	<u>Agriculture</u>	<u>Manufacturing</u>	<u>Others</u>
1938	0.958	0.436 (45.5)	0.095 (9.9)	0.427 (46.6)
1950	25.6	14.6 (57.0)	3.2 (1.3)	7.8 (41.7)
1955	39.5	17.8 (45.2)	5.0 (12.6)	17.3 (42.3)
1960	55.8	21.4 (38.9)	7.3 (10.5)	27.1 (40.6)
1965	84.3	32.4 (38.7)	11.9 (14.2)	40.0 (47.4)
1970	135.9	38.7 (28.5)	21.7 (15.9)	75.5 (55.6)
1975	297.2	94.1 (31.7)	54.4 (18.3)	148.7 (50.0)
1976	337.5	102.8 (30.5)	63.5 (18.8)	171.2 (50.7)
1977	393.0	110.9 (28.2)	74.7 (19.0)	207.4 (52.8)
1978	464.5	129.1 (27.8)	89.1 (19.2)	246.3 (53.0)
1979	546.4	147.1 (26.9)	109.7 (20.0)	289.6 (53.0)
1980	672.4	173.8 (25.8)	134.5 (20.0)	364.1 (54.1)
1981	785.9	195.0 (24.8)	159.7 (20.3)	431.2 (54.9)

Source: 1938-55, ECAFE, Economic Survey of Asia and Far East, 1957
Other years, Monthly Bulletin of Bank of Thailand Series.

Remark: Bracketed figures are percentages of GDP originated by
different economic sectors against total GDP.

2. Gross Domestic Product (GDP) by Industrial Origin
at Fixed Prices and its Growth Rates

(Units: Value, Million Baht;
Growth Rate, Percent)

Year	Agriculture		Non-Agriculture		GDP Total	
	Value	Growth Rate	Value	Growth Rate	Value	Growth Rate
(GDP at 1962 Prices and annual Growth Rates during selected period)						
1960	21,400		34,670		56,069	
		1960-70		1960-70		1960-70
1970	36,174	5.5	83,668	9.2	120,728	7.9
1971	38,145		91,472		129,617	
1972	37,852		97,833		135,685	
1974	42,767		113,215		155,982	
		1970-76		1970-76		1970-76
1976	46,113	4.1	128,753	7.4	174,866	6.3
		1972-76		1972-76		1972-76
		5.1		7.1		6.5
(GDP at 1972 Prices and annual Growth Rates against previous year)						
1976	64,735		156,646		220,279	
1977	65,537	1.2	171,636	9.6	237,173	7.2
1978	72,513	10.6	188,584	9.9	261,097	10.1
1979	71,408	-1.5	205,499	7.3	276,907	6.1
1980	72,784	1.9	220,068	7.1	292,852	5.8
1981	76,235	4.7	238,881	8.5	315,116	7.6
		1977-81		1977-81		1977-81
		3.9		8.6		7.4

Source: Value, Monthly Bulletin of Bank of Thailand Series.
Percentages are derived from Values listed.

3. Production Target of Agriculture in term of
Value Added at 1972 Prices

(1,000 millions of baht)

	1982	1983	1984	1985	1986	Growth rate 1982-86
<u>Agriculture</u>	78.0	83.2	88.2	92.2	97.9	5.4
<u>Crops</u>	57.6	62.1	66.1	69.1	73.2	5.9
1. Paddy	23.0	23.9	24.6	25.4	26.2	3.4
2. Rubber	3.0	3.1	3.3	3.8	4.3	8.4
3. Cassava	5.2	5.2	5.2	5.2	5.2	0.3
4. Maize	3.1	3.3	3.5	3.7	4.0	6.5
5. Sugarcane	3.4	3.4	3.5	3.6	3.7	2.5
6. Kenaf	0.5	0.5	0.5	0.5	0.5	0.0
7. Tobacco (Virginia)	0.3	0.4	0.4	0.4	0.4	2.6
8. Mungbean	0.8	0.4	0.4	0.4	0.4	2.6
9. Sorghum	0.3	1.0	1.3	1.6	1.9	20.3
10. Castorbean	1.5	0.4	0.4	0.4	0.5	15.6
11. Soybean	0.5	1.7	1.8	2.1	2.2	10.2
12. Groundnut	0.2	0.6	0.7	0.8	0.9	16.8
13. Cotton	1.1	0.3	0.3	0.3	0.3	4.0
14. Sesame	0.2	1.3	1.4	1.7	2.0	16.5
15. Vegetable & Fruits	14.1	0.2	0.2	0.2	0.3	11.0
16. Other crops	0.4	16.4	18.5	18.9	20.8	8.8
<u>Livestock</u>	10.3	0.4	0.5	0.5	0.5	6.5
Cattle	1.7	10.6	11.2	11.8	12.3	4.3
Buffalo	0.6	1.7	1.7	1.7	1.7	1.9
Swine	2.6	0.6	0.6	0.6	0.6	1.2
Poultry	2.5	2.6	2.7	2.9	3.0	2.2
Eggs & Others	2.9	2.6	2.8	3.0	3.1	4.6
Forestry	7.5	3.1	3.4	3.6	3.9	8.0
Fresh water fish	1.8	7.9	8.3	8.7	9.3	5.5
Marine fish	5.7	2.0	2.1	2.3	2.6	11.0
<u>Forestry</u>	2.6	5.9	6.2	6.4	6.7	3.7

4. Production Target of Agriculture 1982-1986

(1/5)

	1982	1983	1984	1985	1986	Growth rate 1982-1986
<u>1. Crops</u>						
<u>1. Paddy</u>						
Planted area	59.9	60.2	60.6	60.7	61.0	0.4
Production	18.0	18.6	19.3	19.9	20.5	3.4
Yield	300	309	318	328	336	3.0
<u>First crop</u>						
Planted area	56.0	56.0	56.0	56.0	56.0	0.0
Production	15.8	16.2	16.6	17.1	17.5	2.8
Yield	282	289	296	305	312	2.8
<u>Second crop</u>						
Planted area	3.9	4.2	4.6	4.7	5.0	5.3
Production	2.2	2.4	2.7	2.8	3.0	2.6
Yield	560	570	580	590	600	1.7
<u>2. Rubber</u>						
Planted area	6.9	6.8	6.7	6.8	6.9	0.1
Production	0.6	0.6	0.7	0.8	0.9	8.4
Yield	90	95	104	117	130	9.7
<u>3. Cassava</u>						
Planted area	7.0	7.0	7.0	7.0	7.0	0.0
Production	14.7	14.7	14.7	14.7	14.7	0.0
Yield	2.1	2.1	2.1	2.1	2.1	0.0
<u>4. Maize</u>						
Planted area	10.0	10.0	10.0	10.0	10.0	0.2
Production	3.3	3.5	3.7	3.9	4.2	6.5
Yield	330	350	375	395	420	6.3

(2/5)

	1982	1983	1984	1985	1986	Growth rate 1982-86
<u>5. Sugar cane</u>						
Planted area	3.2	3.2	3.2	3.2	3.2	0.0
Production	22.5	23.0	23.5	24.0	24.5	2.5
Yield	7.0	7.2	7.3	7.5	7.7	2.5
<u>6. Kenaf</u>						
Planted area	1.2	1.2	1.2	1.2	1.2	0.0
Production	0.2	0.2	0.2	0.2	0.2	0.0
Yield	170	170	170	170	170	0.0
<u>7. Tobacco (virginia)</u>						
Planted	0.3	0.3	0.3	0.3	0.3	0.0
Production	45	46	47	49	50	2.6
Yield	155	159	162	169	172	2.5
<u>8. Mungbean</u>						
Planted	3.0	3.6	4.2	5.1	5.8	14.2
Production (1,000 ton)	330	410	510	640	750	20.5
Yields	110	115	120	125	130	5.4
<u>9. Sorghum</u>						
Planted area	1.5	1.6	1.7	1.8	1.9	10.4
Production	0.3	0.3	0.4	0.4	0.5	15.6
Yield	200	212	218	228	241	4.7
<u>10. Castorbean</u>						
Planted area	0.4	0.4	0.5	0.5	0.6	10.8
Production	0.6	0.6	0.7	0.8	0.8	10.8
Yield	140	145	145	150	150	1.4
<u>11. Soybean</u>						
Planted area	1.3	1.4	1.5	1.6	1.7	7.2
Production	0.2	0.2	0.3	0.3	0.4	16.8
Yield	154	171	200	219	229	8.9

(3/5)

	1982	1983	1984	1985	1986	Growth rate 1982-86
12. <u>Groundnut</u>						
Planted area	0.6	0.6	0.6	0.6	0.6	1.6
Production	0.1	0.1	0.1	0.1	0.1	4.0
Yield	190	195	200	208		
13. <u>Cotton</u>						
Planted	1.1	1.3	1.4	1.6	1.8	10.4
Production	0.2	0.3	0.3	0.4	0.4	16.5
Yield	210	223	227	237	250	5.6
14. <u>Sesame</u>						
Planted area	0.3	0.3	0.3	0.4	0.5	9.7
Production (1,000 ton)	32	33	35	40	50	11.0
Yield	100	100	100	100	100	1.3
15. <u>Coffee</u>						
Planted area	0.2	0.2	0.2	0.2	0.2	5.3
Production (1,000 ton)	63	68	76	84	100	11.6
Yield	350	358	380	400	454	5.4
16. <u>Palm oil</u>						
Planted area	0.2	0.2	0.2	0.2	0.2	4.8
Production	0.1	0.2	0.2	0.2	0.2	23.9
Yield	635	776	986	991	1,000	10.1
17. <u>Tea (dried)</u>						
Planted	16	17	18	19	20	4.6
Production	2	3	3	4	4	16.7
Yield	125	176	167	210	200	10.9
18. <u>Cocoa</u>						
Planted area	23	28	48	48	48	152.0
Production	102	213	463	967	1,894	95.3
Yield	4.4	7.6	9.6	20.1	39.4	60.9

(4/5)

	1982	1983	1984	1985	1986	Growth rate 1982-86
<u>19. Mulberry</u>						
Planted area	0.3	0.3	0.3	0.3	0.3	0.0
Production	45	49	53	58	62	9.2
Yield	135	147	159	174	186	6.7
<u>20. Silk</u>						
Planted area						
Production	930	1,020	1,120	1,220	1,300	9.1
Yield						
<u>21. Wheat</u>						
Planted area	1	2	3	5	7	51.3
Production	200	400	600	1,000	1,400	61
Yield	200	200	200	200	200	8.8
<u>22. Vegetable and fruits^{1/}</u>						
Planted area						
Production	10.9	12.7	14.3	14.6	16.1	8.8
Yield						
<u>Total</u>						
Planted area	97.8	98.7	100.2	101.8	103.4	1.4
Production	71.8	75.2	78.6	80.6	83.9	3.9
Yield ^{2/}						3.8
<u>2. Livestock</u>						
Cattle	1.1	1.1	1.1	1.1	1.1	1.9
Buffalo	0.3	0.3	0.3	0.3	0.3	1.2
Swine	8.0	8.1	8.5	9.1	9.3	2.2
Poultry (M. of head)	258	268	286	311	325	4.6
Eggs (1,000 M. of eggs)	9.8	10.5	11.3	12.2	13.1	7.4
Dairy products (1,000 tons)	33	39	46	54	63	17.7

(5/5)

	1982	1983	1984	1985	1986	Growth rate 1982-86
<u>3. Fisheries</u>						
Marine fish	1.8	1.9	1.9	2.0	2.1	3.7
Fresh water fish	0.2	0.2	0.2	0.2	0.3	11.0
Total (M. of ton)	2.0	2.1	2.1	2.2	2.4	4.4
<u>4. Forestry</u>						
Log	1.3	1.3	1.3	1.3	1.3	0.0
Charcoal	1.1	1.1	1.1	1.1	1.2	0.5
Total (M. of m ³)						

Note 1/ Included garlic, shallot, chilli, coconut, vegetables and fruits.

2/ Excluded coffee, palm oil, tea, cocoa, wheat and mulberry.

5. Exports of Four Traditional Items

(thousand Baht)

	Rice	Rubber	Tin	Teak	Total 4 items	Total Export
1950	1,672 (44.1)	723	257	142	2,794 (80.5)	3,794 (100.0)
1955	3,133 (44.0)	1,798	440	246	5,167 (78.9)	7,120 (100.0)
1960	2,569 (29.8)	2,336	537	356	5,798 (67.3)	8,614 (100.0)
1965	4,334 (33.5)	1,999	1,166	201	7,700 (59.3)	12,640 (100.0)
1970	2,901 (17.0)	2,232	1,618	156	6,522 (44.2)	14,250 (100.0)
1975	5,581 (11.7)	3,426	3,084	445	11,736 (24.7)	47,504 (100.0)
1980	19,817 (15.2)	12,970	8,116	-	40,903 (31.4)	130,406 (100.0)

Source: Data in Monthly Bulletin of Bank of Thailand series.

6. Change of Exports Pattern

(Unit: Million Baht)

	1950	1955	1965	1970	1975	1980
1. Four Traditional* Export Items	2,794	5,167	7,700	6,522	11,736	40,903
2. Estimated Value of Agricultural Products and their processed goods exports	n.a.	n.a.	10,438	10,470	34,108	81,455
3. Total domestic exports	3,794	7,120	12,941	14,250	47,504	130,406
4. Ratio of four traditional export items against total domestic export(%) (1. ÷ 3.)	80.5	78.9	59.3	44.2	24.7	31.4
5. Ratio of Agri- cultural Products of Exports and their processed goods against Total Domestic Exports (2. ÷ 3.)	n.a.	n.a.	81.2	70.9	71.8	62.5

* Four traditional export items are Rice, Rubber, Tin and Teak.
(Refer to S-5)

Remark: Ratios of Exports of agricultural products and their processed goods against total domestic exports during recent years are as follows;

1974	74.9%
1975	71.8%
1976	77.2%
1977	72.2%
1978	65.7%
1979	69.3%
1980	62.5%
1981	68.1%
1982	68.9%

9 years average from 1974 to 1982 is 71.18%.

7. List of Exports from Thailand at the mid-19th Century

<u>Export Item</u>	<u>Value in Baht</u>
Bark	111,000
Bird nest	172,000
Cardamons	124,000
Raw Cotton	450,000
Cotton Cushions	211,000
Fish	213,000
Hides, Horn, Skins	503,000
Iron and Ironware	180,000
Dried Meat of Buffalo and Deer	120,500
Oil	101,000
Ivory	80,000
Gamboge	31,000
Rice	150,000
Pepper	99,000
Tobacco	100,000
Tin and Utensils	253,000
Stilac	254,000
Sugar	708,000
Lard and Fat	146,000
Span wood	350,000
Aliga wood	100,000
Other all items	1,127,000
<u>Total Export</u>	<u>5,585,000</u>
<u>Total Import</u>	<u>4,331,000</u>

Source: Mallock, Siam, Some General Remarks on Its Production, p.7.

Remark: Rice Export in value was only 2.7% of total export, and biggest export item was sugar (12.7%).

8. Growth of Planted Acreage for Major Upland Crops After 1950

(Unit: 1,000 rai)

	Maize	Mung Bean	Cassava	Sugar Cane	Kenaf	Sorghum	Coconut	Rubber
1939-46	67	33	*	124	*	*	258	1,100
1947	144	193	*	245	*	*	239	1,268
48	139	151	*	271	*	*	271	1,918
49	218	233	*	295	*	*	331	2,011
1950	226	253	85	377	31	*	501	2,106
51	259	205	85	438	88	*	584	2,203
52	281	204	86	461	67	*	583	2,302
53	298	182	94	516	60	*	644	2,400
54	331	197	94	599	37	*	745	2,501
1950-54 Av.	279	208	89	470	57	*	611	2,597
55	347	216	86	647	53	*	768	2,597
56	514	217	55	759	109	*	828	2,688
57	606	237	240	803	79	*	850	2,772
58	792	252	276	823	127	*	845	2,853
59	1,247/	289	391	925	278	*	836	2,929
1960	1,785	327	447	986	877	*	1,029	3,009
61	1,916	229	621	776	1,720	*	1,157	3,080
62	2,050	310	767	636	712	*	1,322	4,677
63	2,612	630	875	932	957	*	1,400	5,152
64	3,449	632	656	1,014	1,365/	*	1,400	5,844
65	3,605	753	637	833	2,401	*	1,550	5,882
66	4,083	840	814	778	3,314	*	1,545	6,144
67	4,650	830	880	935	2,177	*	1,700	7,385
68	4,763	1,250/	1,066/	1,137/	1,585	*	1,786	7,576
69	4,503	1,224	1,193	1,170	2,358	*	1,855	7,775
1970	5,183	1,493	1,403	1,285	2,631	254	1,880	7,976
71	6,368	984	1,376	991	2,891	523	1,911	8,177
72	6,231	1,418	2,048	1,133	2,951	359	2,318	8,377
73	7,172	1,596	2,735	1,616	2,714	555	2,425	8,577
74	7,749	1,293	3,000	1,935	2,524	1,262/	2,453	8,786
75	8,200	1,022	3,715	2,444	2,038	1,226	2,467	8,786
76	8,029	1,392	4,373	3,199	1,009	892	2,447	9,099
77	7,534	2,719	4,551	3,541	1,603	1,062	2,560	9,275
78	8,661	2,633	7,282	3,190	2,003	1,098	2,574	9,426
79	9,529	2,652	5,026	2,720	1,413	1,182	2,591	9,576
1980	8,960	2,796	7,250	2,927	1,063	1,546	2,602	9,725
81	9,796	3,040	7,940	3,857	1,166	1,749	2,611	9,869

Source: Agricultural Statistics of Thailand Series

/= Planted area is over 1 million rai for the first time.

9. Growth of Major Upland Crops Production After 1950

(Unit: 1,000 ton)

	Rice	Maize 39-46 Av. 8.2	Mung Bean 39-46 Av. 45	Cassava	Sugar Cane 39-46 Av. 238	Kenaf	Sorghum
1950	6,782	26.9	31.7	256	837	4.6	
51	7,325	41.7	26.0	256	1,291	19.6	
52	6,602	44.8	22.6	257	1,476	13.0	
53	8,239	51.1	25.8	282	1,820	9.7	
54	5,709	62.3	28.1	283	2,437	7.9	
1955	7,334	68	34	256	2,699	10	
56	8,297	115	37	396	3,830	17	
57	5,570	137	41	418	4,147	19	
58	7,053	186	42	487	4,309	30	
59	6,770	317	46	1,083	4,988	50	
1960	7,834	544	60	1,222	5,382	181	
61	8,199	598	41	1,726	3,984	209	
62	9,279	665	54	2,077	1,695	134	
63	10,029	858	116	2,111	2,387	212	
64	9,558	935	110	1,557	3,913	303	
1965	9,218	1,021	125	1,475	3,045	529	
66	11,995	1,122	132	1,892	2,535	611	
67	9,595	1,213	123	2,062	2,379	421	
68	10,348	1,331	184	2,611	4,399	316	
69	13,410	1,713	170	3,079	5,102	373	
1970	13,570	1,938	151	3,431	6,586	381	69
71	13,744	2,300	153	3,114	5,926	419	146
72	12,413	1,315	214	3,974	9,513	428	102
73	14,898(743)	2,339	209	5,668	13,339	469	140
74	13,386(1,014)	2,500	188	6,240	14,592	384	250
75	15,300(939)	2,863	121	8,100	19,910	307	231
76	15,068(1,208)	2,675	125	10,138	26,074	183	148
77	13,921(1,393)	1,677	207	11,839	18,941	245	126
78	17,470(1,586)	2,790	259	16,357	20,560	337	216
79	15,758(2,264)	2,863	251	11,101	12,827	222	199
1980	17,368(1,111)	2,997	261	16,540	19,854	211	237
81	17,774(1,963)	3,449	283	17,774	30,200	194	274
82	16,879(2,017)	3,002	281	17,787	24,407	200	236

(Rice: inclusive of 2nd crops - bracketed figures)

Source: Agricultural Statistics of Thailand Series

10. Development of Second Rice Crops

Planted area: 1,000 rais
 Production : 1,000 tons
 Average Yield per rai: Kgs

	Whole Kingdom			Central		
	Planted Area	Production	Yield	Planted Area	Production	Yield
55/56	126.9	37.9	299	42.3	12.8	303
56/57	70.4	20.7	294	35.1	10.2	291
57/58	73.0	28.7	393	32.7	11.2	344
58/59	65.5	20.3	410	35.4	11.7	330
59/60	44.0	13.3	303	24.3	6.4	264
- 1961: Main Canals of Chainat Dam to both east and west bank completed						
63/64	83.2	25.4	306	38.7	11.6	299
- 1964: Phumipol Dam completed						
64/65	120.4	43.3	359	65.6	21.9	334
65/66	141.2	54.1	383	70.2	31.8	453
66/67	218.7	63.8	292	116.9	37.4	320
67/68	323.8	121.5	375	216.9	91.2	421
68/69	566.1	182.3	322	352.4	109.4	311
69/70	670.0	270.0	403	na.	na.	na.
- 1969: RD-1, non-photosensitive variety for 2nd cropping released						
70/71	620.0	280.0	452	na.	na.	na.
71/72	na.	na.	na.	na.	na.	na.
- 1972: Sirikit Dam for 2nd cropping cultivation completed						
72/73	1,310.3	743.2	567	1,159.9	674.7	582
73/74	2,038.2	1,013.5	497	1,723.3	863.8	501
74/75	2,068.0	939.0	454	1,742.0	800.0	459
75/76	2,358.0	1,208.1	512	1,899.5	983.1	518
76/77	2,735.8	1,393.5	509	2,251.9	1,143.9	508
77/78	2,978.8	1,585.8	532	2,452.6	1,338.2	546
78/79	4,257.3	2,263.7	532	3,463.9	1,927.4	556
79/80	2,102.9	1,111.2	528	1,756.3	958.1	546
80/81	3,227.1	1,962.7	608	2,652.4	1,671.7	630
81/82	3,578.1	2,016.6	564	3,025.8	1,749.9	578
82/83*	3,963	2,104	531	3,168	1,757	555

Source: Office of Agricultural Economics and Agricultural Statistics of Thailand 1982/83

11. Domestic Exports from Thailand and Bangkok

Unit: Quantity; 1,000 tons
Value; Million Bahts

	Whole Kingdom		Bangkok		Ratio of Bangkok(%)	
	Quantity	Value	Quantity	Value	Quantity	Value
1959	2,320	7,258	2,108	-	90.86	-
1950	2,869	8,422	2,649	5,570	92.33	66.13
61	3,588	9,717	3,358	7,206	93.59	74.15
62	3,363	9,255	3,081	6,695	91.61	72.34
63	3,512	9,420	3,276	6,956	93.29	75.16
64	4,733	11,986	4,463	9,281	94.29	77.43
	1960-64 Av.				93.02	73.04
1965	5,793	12,641	4,753	9,466	82.05	74.88
66	5,880	13,798	4,863	10,721	82.70	77.70
67	5,225	13,798	4,344	10,007	83.18	72.52
68		12,987		9,459		72.83
69	6,625	14,101	4,707	9,570	83.25	67.86
	1965-69 Av.				82.80	73.16
1970	5,961	14,250	4,963	10,043	83.26	70.45
71	7,835	16,682	6,797	13,267	86.75	81.64
72	9,191	21,615	7,795	19,130	84.81	88.49
73	8,749	31,146	6,976	25,682	83.55	82.45
74	9,904	49,084	8,765	41,184	88.50	83.90
	1970-74 Av.				85.37	81.39
1975	9,528	47,504	8,782	41,300	92.22	86.94
76	12,664	60,188	11,782	51,111	93.04	84.91
77	15,310	70,397	12,230	58,693	79.88	83.37
78	12,866	81,251	12,138	65,557	94.34	80.68
79	12,866	106,236	12,185	83,695	94.70	78.71
	1975-79 Av.				90.84	82.92
1980	13,205	130,406	12,485	104,360	94.54	86.03

Source : 1959-62, Statistical Year Book, No.25
 1963-67, " " No.28
 1969-74, " " No.31
 1975-80, " " No.32

Remarks: Average annual growth rate in terms of quantity;
 Whole Kingdom, 1960-1980 7.93%
 Bangkok, 1960-1980 8.06%
 1960-1965 12.40%
 1965-1970 0.87%
 1970-1975 12.05%
 1975-1980 7.29%

12. Exports of Eight Major Agricultural Products
in Terms of Quantity from Bangkok Port

(Unit: 1,000 tons)

	Rice	Maize	Mung Bean	Cassava	Kenaf	Sugar	Molas- ses	Sorghum	8 Items Total (a)	Export from Bangkok (b)	(a)/(b) (%)
1950	1,418	11	4	21	-	-	-	-	1,464		
1959	1,091	249	15	149	37	84	-	-	1,625	2,108	77.09
1950	1,202	514	23	241	61	67	-	-	2,108	2,149	79.58
61	1,575	567	26	412	143	92	-	-	2,815	3,358	83.83
62	1,271	472	21	378	237	91	48	-	2,518	3,081	81.73
63	1,417	744	20	123	125	89	36	-	2,554	3,276	77.96
64	1,896	1,115	33	353	162	85	36	13	3,693	4,463	82.75
	1960-64 Av.										81.17
1965	1,895	804	44	220	315	215	133	54	3,680	4,753	77.42
66	1,507	1,218	33	220	473	172	-	102	3,725	4,863	76.60
67	1,482	1,090	22	373	317	76	64	93	3,517	4,344	80.96
68	1,068	1,480	27	532	289	4	24	54	3,478	na.	
69	1,023	1,476	51	901	254	16	82	57	3,860	4,707	82.00
	1965-69 Av.										79.25
1970	1,063	1,520	48	1,311	253	51	406	79	4,731	4,963	95.33
71	1,571	1,806	38	1,113	267	146	239	131	5,311	6,797	78.14
72	2,112	1,912	40	1,306	252	245	227	131	6,245	7,795	80.12
73	848	1,456	59	1,814	262	274	406	125	5,244	6,976	75.17
74	1,015	2,259	53	2,284	245	433	500	188	6,977	8,765	79.60
	1970-74 Av.										81.67
1975	905	2,072	42	2,312	156	594	500	200	6,781	8,782	77.21
76	1,973	2,388	57	3,677	136	1,120	722	181	10,254	11,782	87.03
77	2,976	1,517	70	3,887	62	1,621	953	135	11,191	12,230	91.50
78	1,606	1,954	100	5,796	67	1,039	742	158	11,462	12,138	94.43
79	2,797	1,988	108	3,961	62	1,188	533	167	10,804	12,185	87.46
	1975-79 Av.										87.53
1980	2,799	2,175	66	5,218	18	452	246	181	11,135	12,485	90.53
81	3,032	2,547	110	6,266	6	1,099	443	221	13,724	na.	
1979- 81 Av.	2,876	2,237	95	5,148	29	913	467	180	11,888	(13,200)	

Remarks: Cassava includes all cassava products besides cassava pellets,
for example, cassava flour
Sugar; raw sugar only

* Estimate (11,888 ÷ 0.9 = 13,200)

13. Area Under Annual Crops and Area Irrigated

(Unit: 1,000 rais, under
1,000 rais is omitted)

Year	Area ^{1/} Irrigated	Area under ^{2/} annual crops	Percentage of area irrigated against area under annual crops
1975	15,119	73,554	20.55
1976	15,298	72,577	21.08
1977	16,098	77,122	20.87
1978	17,123	82,516	20.75
1979	18,021	82,439	21.86
1980	18,771	82,953	22.63
1981	20,254	84,077	24.09
1950	4,296 ^{3/}	36,021 ^{4/}	11.92

Source: 1/ Statistical Year Book, No.32; from 1975 to 1979
Agricultural Statistics of Thailand; 1980-81

2/ Processed from Land Use Data in Agricultural
Statistics of Thailand Series;
area under paddy is employed by actual planted
area.

3/ Statistical Year Book, Thailand, New Series
Vol. 1, 1952; Government Irrigation Area only

4/ Estimated figure as in same method of 2/

14. Improvement of Rate of Harvested Area Against Planted Area of Paddy

(Unit: 1,000 rai)

	Area Planted	Area Harvested	Rate of Area Harvested	Vari- ation Rate		Area Planted	Area Harvested	Rate of Area Harvested	Vari- ation Rate
1920	15,293	13,995	91.5		1950	34,625	33,071	95.6	
21	16,224	14,726	90.7		51	37,245	35,851	76.3	
22	16,795	15,013	89.3		52	33,351	32,064	95.6	
23	16,791	14,779	88.0		53	38,445	36,833	76.1	
24	17,356	15,988	92.1		54	43,732	28,274	81.4	
25	na.	na.	na.		55	36,057	33,597	93.2	
26	18,091	17,404	96.2		56	37,648	36,013	95.7	
27	18,298	15,760	87.2		57	31,643	26,720	84.4	
28	17,809	14,809	83.1		58	35,949	32,892	91.6	
29	18,974	15,280	80.5		59	37,908	35,269	86.8	
* Rate of Area Harvested									
10 Year Av.			88.7	17.7				91.6	16.3
1930	19,875	18,184	91.0		1960	37,608	35,335	95.3	
31	19,317	16,132	81.1		61	38,619	35,335	91.5	
32	20,086	18,821	93.7		62	41,168	38,676	93.9	
33	20,283	18,838	88.0		63	41,229	39,715	96.3	
34	20,834	18,335	89.0		64	40,872	37,316	71.2	
35	21,110	18,568	86.8		65	40,761	37,297	70.9	
36	20,363	13,913	68.3		66	46,454	43,759	94.1	
37	21,062	18,396	87.3		67	41,612	36,276	87.2	
38	21,918	19,553	89.2		68	45,173	39,602	87.7	
39	21,649	17,201	88.7		69	47,400	45,370	75.7	
* Rate of Area Harvested									
10 Year Av.			86.4	29.4				72.4	9.8
1940	23,703	20,217	85.0		1970	46,840	42,857	91.5	
41	24,807	22,671	91.4		71	47,043	44,347	94.2	
42	27,491	18,090	65.8		72	45,931	42,375	92.2	
43	26,967	24,643	91.4		73	52,270	48,374	92.6	
44	26,502	24,770	93.5		74	49,889	45,833	91.8	
45	24,639	18,509	75.1		75	55,602	52,393	94.2	
46	24,887	21,932	88.1		76	53,595	51,776	76.6	
47	30,156	20,901	89.2		77	56,444	54,951	97.4	
48	32,573	30,812	94.6		78	62,667	56,604	90.3	
49	32,926	31,016	94.2		79	58,971	54,034	71.7	
* Rate of Area Harvested									
10 Year Av.			86.8	21.9				93.3	6.3

Source: Statistical Year Book Series, before 1955 and Agricultural Statistics of Thailand Series after 1956

Remark: 10 year averaged variation rates of area harvested against area planted are:- 17.7% for 1920-29, 29.4% for 1930-39, 31.9% for 1940-49, 16.3% for 1950-59, 9.8% for 1960-69 and only 6.3% for 1970-79

$$\text{Variation rate} = \frac{\text{Max.} - \text{Min.}}{\text{Mean}} \times 100\%$$

15. Second Rice Crop: Area Planted and Production

<u>Crop Year</u>	<u>Area Planted</u> (1,000 rais)	<u>Area Harvested</u> (1,000 rais)	<u>Production</u> (1,000 tons)	<u>Average Yield</u> (Kg per rai)
1972-73	1,310	1,304	743	567
1973-74	2,038	2,010	1,014	497
1974-75	2,068	2,031	939	454
1975-76	2,358	2,322	1,208	512
1976-77	2,736	2,703	1,393	509
1977-78	2,979	2,879	1,586	532
1978-79	4,257	3,913	2,264	532
1979-80	2,103	1,962	1,111	528
1980-81	3,228	3,202	1,963	608
1981-82	3,578	na.	2,017	564

Source: Agricultural Statistics of Thailand Series

16. Road Condition at the End of 1934

<u>Road Classification</u>	<u>Length (Km)</u>
1. State Highway	
1st class	95
2nd "	191
3rd "	2,041
2. Other Local Road	462

Source: Statistical Year Book, No.18

* Special Remark: First paved road construction started in 1934. 23 kilometer long paved road from Bangkok to Don Muang and 19 kilometer long paved road from Bangkok to Pak Nam were completed to be opened to public traffic in 1936.

There was no paved road in Thailand upto 1936.

17. Road Condition After Diversification
of Agriculture (1963)

Road Classification	Length of Road (Km)
1. State Highway (main) (Thang Luang Phaendin)	9,073
11. Concrete	21
12. Asphalt	4,136
13. Total Paved Road (11. + 12.)	4,157
14. Rate of Paved Road (13. ÷ 1.)	45.8%
2. State Highway (Changwat) (Thang Luang Chanwat)	2,214
21. Concrete	9
22. Asphalt	249
23. Total Paved Road (21. + 22.)	256
24. Rate of Paved Road (23. ÷ 2.)	1.15%
3. State Highway Total (1. + 2.)	11,287
31. Concrete	30
32. Asphalt (12. + 22.)	4,383
33. Total Paved Road (31. + 32.)	4,413
34. Rate of Paved Road (34. ÷ 3.)	38.8%

Source: Statistical Year Book, No.25

* Remark: State Highway in Thailand are called as "Thang Luang" and is classified into two, "Thang Luang Phaendin" and "Thang Luang Changwat". Both of them are maintained by Department of Highway.

In addition to this State Highway, there are local roads maintained by Ministry of Interior, Chanwat authorities and other lower level administrative bodies.

18. Current Road Condition (1979)

Road Classification	Length of Road (Km)
1. State Highway (Main)	13,820
11. Concrete	153.5
12. Asphalt	13,459
13. Total Paved Road (11. + 12.)	13,612.5
14. Rate of Paved Road (13. ÷ 1.)	98.5%
2. State Highway (Changwat)	13,678
21. Concrete	20.3
22. Asphalt	8,109
23. Total Paved Road (21. + 22.)	8,129.3
24. Rate of Paved Road	59.4%
3. State Highway Total	27,498
31. Concrete	173.8
32. Asphalt	21,568
33. Total Paved Road	21,741.8
34. Rate of Paved Road	79.1%

Source: Statistical Year Book, No.32 (recent publication)

19. Estimated Most Recent Road Condition
Opened to Public, by Regions (1980)

Region	No. of Changwat (1,000 so.Km)	Area (1,000 so.Km)	Population (million)	Length of Road (Km)			
				paved	non- paved	total	rate of pavement
North	17	170	9	5,608	1,025	6,633	84.5%
N. East	16	170	16	6,221	2,389	8,610	72.3%
Central	25	104	15	5,628	1,486	7,114	79.1%
South	14	70	6	4,875	847	5,722	85.2%
Whole Kingdom	72	514	46	22,332	5,747	28,079	79.5%

Source: Department of Highway

Remark: There may be another estimated 60 thousand kilometer long local roads maintained by Administrative Authorities other than Department of Highway which controls and maintains State Highway.

Those local roads, of course, are available for transportation of various products and commodities.

Road Density:

(Unit: Km)

	North	N. East	Control	South	Whole Kingdom
Per 1,000 Km ²	29.02	50.65	68.40	81.74	54.63
Per 1,000 population	0.737	0.538	0.474	0.954	0.610

20. Yield per Rai of Major Rice Crop

Year	Planted Area (1,000 rais)	Production (1,000 M/T)	Yield (Kg)
1950	34,625	6,782	196
51	37,245	7,325	197
52	33,551	6,602	197
53	38,445	8,239	214
54	34,732	5,709	164
1950-54 Av.			194
55	36,060	7,334	203
56	37,648	8,297	220
57	31,751	5,570	175
58	35,987	7,053	196
59	37,969	6,770	178
1955-59 Av.			194
1960	37,008	7,834	218
61	38,618	8,177	212
62	41,618	10,992	267
63	41,256	11,585	281
64	40,872	11,362	278
1960-64 Av.			251
65	40,491	10,978	268
66	46,454	11,947	257
67	41,612	9,625	231
68	45,173	10,348	229
69	47,400	13,410	282
1965-69 Av.			254
1970	46,840	13,570	290
71	47,043	13,744	292
72	44,620	13,413	270
73	50,232	14,898	268
74	47,821	12,447	260
1970-74 Av.			276
75	53,244	14,091	265
76	50,859	13,674	269
77	53,465	12,334	231
78	58,410	15,206	261
79	56,868	14,646	258
1975-79 Av.			257
1980	56,882	15,405	271
81	56,392	15,757	279
82	56,171	14,774	263

Source: Agri. Statistics of Thailand,
1950-61 --- 1970
1962-75 --- 1976/77
1975-77 --- 1977/78
1978-82 --- 1982/83

$$\text{Yield} = \frac{\text{Production}}{\text{Planted Area}}$$

21. Interest Rates of Loan to Farmers by Different Kinds of Lenders and by Regions Before Establishment of BAAC

(Unit: % per month)

	<u>Whole Kingdom</u>	<u>Central</u>	<u>North</u>	<u>N. East</u>	<u>South</u>
1. Relatives	1.8	1.7	2.6	1.8	1.1
2. Neighbours	2.6	2.4	3.3	3.3	2.3
3. Commercial Lenders	2.9	2.3	4.8	4.3	2.0
31. Local Shops	3.5	2.7	5.4	6.2	2.7
32. Crop Buyers	2.9	2.4	4.7	3.9	1.3
33. Land Lords	3.5	3.8	-	1.8	-
34. Money Lenders	3.3	2.1	5.0	7.3	3.6
4. Institutional Finance	0.8	0.8	0.8	0.8	0.8
41. Credit Coop	0.8	0.8	0.8	0.8	0.8
42. Other Gov't Agency	0.8	0.8	0.8	0.8	0.8
43. Commercial Bank	-	-	-	-	0.8
Interest-rate per month (weighed average)	2.4	2.2	3.3	2.7	1.5
Interest-rate per annum	26.8	26.4	39.6	32.4	18.0

Source: Kasesart Univ.; Agricultural Credit, Theory, Data, Policy, 1965

22. Sources of Credit to Farmers by Region Before Establishment of BAAC

(Unit: %)

Type of Lender	Whole Kingdom		Central		North		N. East		South	
	No. of loan	Value	No. of loan	Value	No. of loan	Value	No. of loan	Value	No. of loan	Value
1. Relatives	39.9	32.0	17.8	22.6	44.8	47.0	50.0	58.5	40.2	43.0
2. Neighbours	15.7	15.0	14.0	16.7	24.1	19.9	12.1	4.3	15.1	12.9
3. Commercial Lenders	36.5	46.0	65.9	57.8	20.6	23.3	30.5	26.4	31.8	30.6
31. Local Store	16.5	-	39.2	13.9	4.1	3.0	12.1	4.6	12.1	10.9
32. Crop Buyer	8.6	-	8.2	7.9	5.2	10.1	9.1	6.5	13.7	13.8
33. Land Lord	2.1	-	6.6	10.7	0.0	0.0	1.5	5.2	0.0	0.0
34. Money Lender	5.4	-	8.0	14.3	7.8	8.9	3.3	7.5	3.0	1.5
35. Other	3.9	-	3.9	11.0	3.5	1.3	4.5	2.6	3.0	4.4
4. Institutional Finance	7.9	5.0	2.5	3.0	10.3	9.8	7.6	10.8	12.9	13.7
41. Credit Coop	7.5	-	1.4	2.0	10.3	9.8	7.6	10.8	12.1	12.9
42. Other Gov't Agencies	0.4	-	0.9	1.0	0.0	0.0	0.0	0.0	0.8	0.8
43. Commercial Bank	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Kasesart Univ.; Agricultural Credit in Thailand, Bangkok, 1965, P37

23. Interest Rate of Loans from BAAC

To individual Client Farmers of BAAC		To Agricultural Cooperatives	
1. Short term loan	13% a.p.	1. For onlending to members	10% a.p.
		2. For purchasing agricultural input <u>1/</u>	6% a.p.
		3. For marketing agricultural products	13% a.p.
2. Long term loans for refinancing old debt	13% a.p.	4. Long term loan for investment in agriculture	10% a.p.
3. Long term loan for investment in agriculture <u>2/</u>			
31. 300,000	13% a.p.		
32. 300,000-600,000	14% a.p.		
33. over 600,000	15% a.p.		

Remarks: 1/ Special Government fund for farmers' assistance

2/ Loans utilizing OECF loan fund are exception at 12% a.p.

(1/7)

24. Amount of Farmer's Surplus of Major and Second Rice Crop

(Unit 1,000 ton, paddy basis)

Region	Paddy Production	Estimated Demand of Rice Growing Households	Sales of Paddy from Rice Growing Households	Estimated Demand of Non-Rice Growing Households	Total Demand	Surplus and Deficit
Central	5,305	1,142	4,163	2,492	3,634	1,671
Lower North	2,991	790	2,201	668	1,458	1,533
Upper North	1,908	796	1,112	453	1,249	659
N. East	5,632	3,080	2,552	1,753	4,833	799
South	1,131	580	551	634	1,214	Δ83
Whole Kingdom	16,967	6,388	10,579	6,000	12,388	4,579

Note: 1. Estimated demand of rice growing households is amount of home consumption, seed, loss of postharvest, feed, sweet etc.

2. Use milling recovery 60% for North East and 65% for other regions.

Amount of Farmer's Surplus of Major and Second Rice Crop

(Unit 1,000 ton, paddy basis)

Region	Paddy Production	Estimated Demand of Rice Growing Households	Sales of Paddy from Rice Growing Households	Estimated Demand of Non-Rice Growing Households	Total Demand	Surplus and Deficit
<u>Central</u>						
Bangkok Metropolitan	167.2	30.0	137.2	1,133.0	1,163.0	995.8
Nonthaburi	146.7	20.8	125.9	83.9	104.7	42.0
Pathumthani	444.7	61.2	383.5	47.2	108.4	336.3
Ayutthya	423.4	98.2	325.2	110.2	208.4	215.0
Anthong	252.7	49.8	202.9	19.2	69.0	183.7
Saraburi	253.0	52.9	200.1	64.3	117.2	135.8
Lopburi	405.8	87.6	318.2	62.1	149.7	256.1
Singburi	282.8	47.6	235.2	8.4	56.0	226.8
Chainat	370.6	54.3	316.3	29.7	84.0	286.6
Sub Total	2,746.9	519.9	2,227.0	1,495.1	2,015.0	731.9
<u>East</u>						
Samut Prakan	105.2	19.3	85.9	112.7	132.0	△ 26.8
Nakhon Nayok	180.9	43.0	137.9	4.2	47.2	133.7

Region	Paddy Production	Estimated Demand of Rice Growing Households	Sales of Paddy from Rice Growing Households	Estimated Demand of Non-Rice Growing Households	Total Demand	Surplus and Deficit
(East)						
Prachinburi	345.6	101.0	244.6	40.4	141.4	204.2
Chachoengsao	495.9	85.8	410.1	47.1	132.9	363.0
Cholburi	62.5	24.5	38.0	128.1	152.6	△ 90.1
Rayong	50.6	17.0	33.6	58.8	75.8	△ 25.2
Chanthaburi	46.6	15.5	31.1	51.6	67.1	△ 20.5
Trat	20.1	8.0	12.1	20.5	28.5	△ 8.4
Sub Total	1,307.4	315.7	991.7	426.6	742.3	565.1
West						
Kanchanaburi	86.6	34.9	51.7	81.3	116.2	△ 59.6
Ratburi	168.8	51.1	117.7	93.3	144.4	24.4
Phetburi	89.4	32.8	56.6	49.3	82.1	7.3
Prachaup Khirikhan	26.5	9.7	16.8	74.8	84.5	△ 58.0
Suphanburi	564.9	123.5	441.4	67.0	190.5	374.4
Nakhon Pathom	262.7	49.4	213.3	102.4	151.8	110.9
Samut Sakhon	49.9	10.4	39.5	52.0	62.4	△ 42.2
Samut Songkhram	1.5	0.4	1.1	43.7	44.1	△ 42.6
Sub Total	1,250.5	310.8	939.7	568.7	879.5	371.0
Total	5,304.8	1,146.4	4,158.4	2,490.4	3,636.8	1,668.0

(4/7)

Region	Paddy Production	Estimated Demand of Rice Growing Households	Sales of Paddy from Rice Growing Households	Estimated Demand of Non-Rice Growing Households	Total Demand	Surplus and Deficit
<u>Lower North</u>						
Nakhon Sawan	622.6	157.5	465.1	125.5	283.0	339.6
Phichit	539.4	114.5	424.9	40.2	154.7	384.7
Kamphaeng Phet	301.0	77.4	223.6	83.8	161.2	139.8
Phisanulok	470.3	116.4	353.9	87.7	204.1	266.2
Sukhothai	270.1	90.9	179.2	62.4	153.3	116.8
Uttaradit	191.4	62.5	128.9	60.9	123.4	68.0
Uthai Thani	168.8	45.0	123.8	29.0	74.0	94.8
Tak	52.9	27.7	25.2	51.2	78.9	△ 26.0
Phetchabun	273.6	97.8	175.8	136.0	233.8	39.8
Total	2,990.1	789.7	2,200.4	669.3	1,459.0	1,531.1
<u>Upper North</u>						
Chiang Rai	755.1	246.5	508.6	13.1	259.6	508.6
Chiang Mai	372.4	147.3	225.1	175.4	322.7	49.7
Payao	247.3	85.0	162.3	41.9	126.9	120.4
Nan	94.5	68.9	25.6	35.3	104.2	△ 9.7
Phrae	109.8	64.1	45.7	58.7	122.8	△ 5.8

(5/7)

Region	Paddy Production	Estimated Demand of Rice Growing Households	Sales of Paddy from Rice Growing Households	Estimated Demand of Non-Rice Growing Households	Total Demand	Surplus and Deficit
<u>Upper North</u>						
Lampang	190.1	123.6	66.5	57.7	181.3	8.8
Lamphun	103.0	52.0	51.0	45.2	97.2	5.8
Mae Hong Son	35.5	20.3	15.2	16.1	36.4	Δ0.9
Total	1,907.7	793.9	1,113.8	458.8	1,252.7	655.0
<u>North East</u>						
Nakhon Rajasima	394.1	255.0	139.1	320.0	575.0	Δ180.9
Buriram	543.0	227.7	315.3	112.2	339.9	203.1
Surint	556.7	226.9	329.8	83.8	310.7	246.0
Sri Saket	367.5	224.7	142.8	99.9	324.6	42.9
Ubol	483.7	292.0	191.7	176.1	468.1	15.6
Chayapun	290.2	224.4	65.8	32.9	257.3	32.9
Khon Kaen	453.0	233.2	219.8	173.3	406.5	46.5
Maharakam	258.9	160.0	98.9	69.4	229.4	29.5
Roi-et	399.1	241.5	157.6	76.8	318.3	80.8
Kalasint	287.3	148.2	139.1	78.4	226.6	60.7
Loei	129.0	68.3	60.7	66.6	134.9	Δ5.9
Udon	552.2	266.4	285.8	168.0	434.4	117.8
Sakol Nakhon	272.2	155.7	256.5	77.3	233.0	39.2

(6/7)

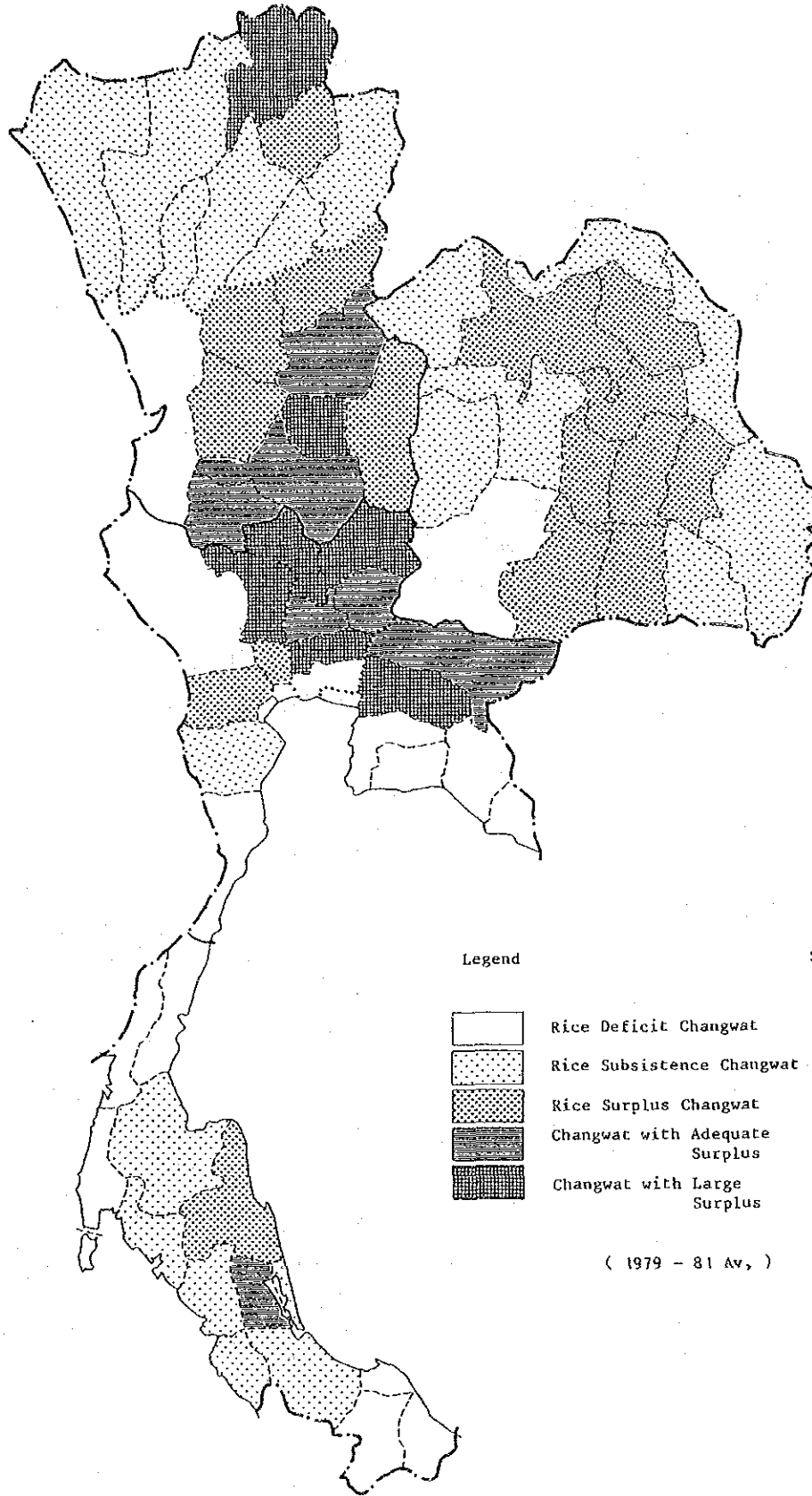
Region	Paddy Production	Estimated Demand of Rice Growing Households	Sales of Paddy from Rice Growing Households	Estimated Demand of Non-Rice Growing Households	Total Demand	Surplus and Deficit
(North East)						
Nong Khai	218.5	123.1	95.4	79.1	202.2	16.3
Nakhon Phanom	241.3	149.4	91.9	78.7	228.1	13.2
Yosothon	185.0	100.8	84.2	36.8	137.6	47.4
Total	5,631.8	3,079.3	2,552.5	1,753.6	4,832.9	798.8
<u>South</u>						
Chumphon	41.5	24.4	17.1	44.3	68.7	△ 27.2
Surathani	121.5	48.7	72.8	74.7	123.4	△ 1.9
Nakhon Sritamaraj	307.4	155.3	152.1	107.1	262.4	45.0
Phatalung	194.9	73.4	121.5	12.4	85.8	109.1
Songkla	151.9	79.8	72.1	96.9	176.7	△ 24.8
Pathani	54.6	44.2	10.4	51.0	95.2	△ 40.6
Yala	21.8	13.3	8.5	43.7	57.0	△ 35.2
Narativas	47.6	34.6	13.0	57.3	91.9	△ 44.3
Satool	37.3	19.2	18.1	15.1	34.3	3.0
Trang	83.4	42.7	40.7	46.1	88.8	△ 5.4
Krabi	44.5	21.3	23.2	24.2	45.5	△ 1.0
Phuket	3.3	2.5	0.8	25.3	27.8	△ 24.5

(7/7)

Region	Paddy Production	Estimated Demand of Rice Growing Households	Sales of Paddy from Rice Growing Households	Estimated Demand of Non-Rice Growing Households	Total Demand	Surplus and Deficit
(South)						
Phanga	15.4	9.2	6.2	27.2	36.4	Δ 21.0
Ranong	4.5	2.7	1.8	14.7	17.4	Δ 12.9
Total	1,129.6	580.6	549.0	635.0	1,215.6	Δ 86.0






Note: Calculation is done with finite number of digits.

25. SURPLUS and DEFICIT of RICE by CHANGWAT



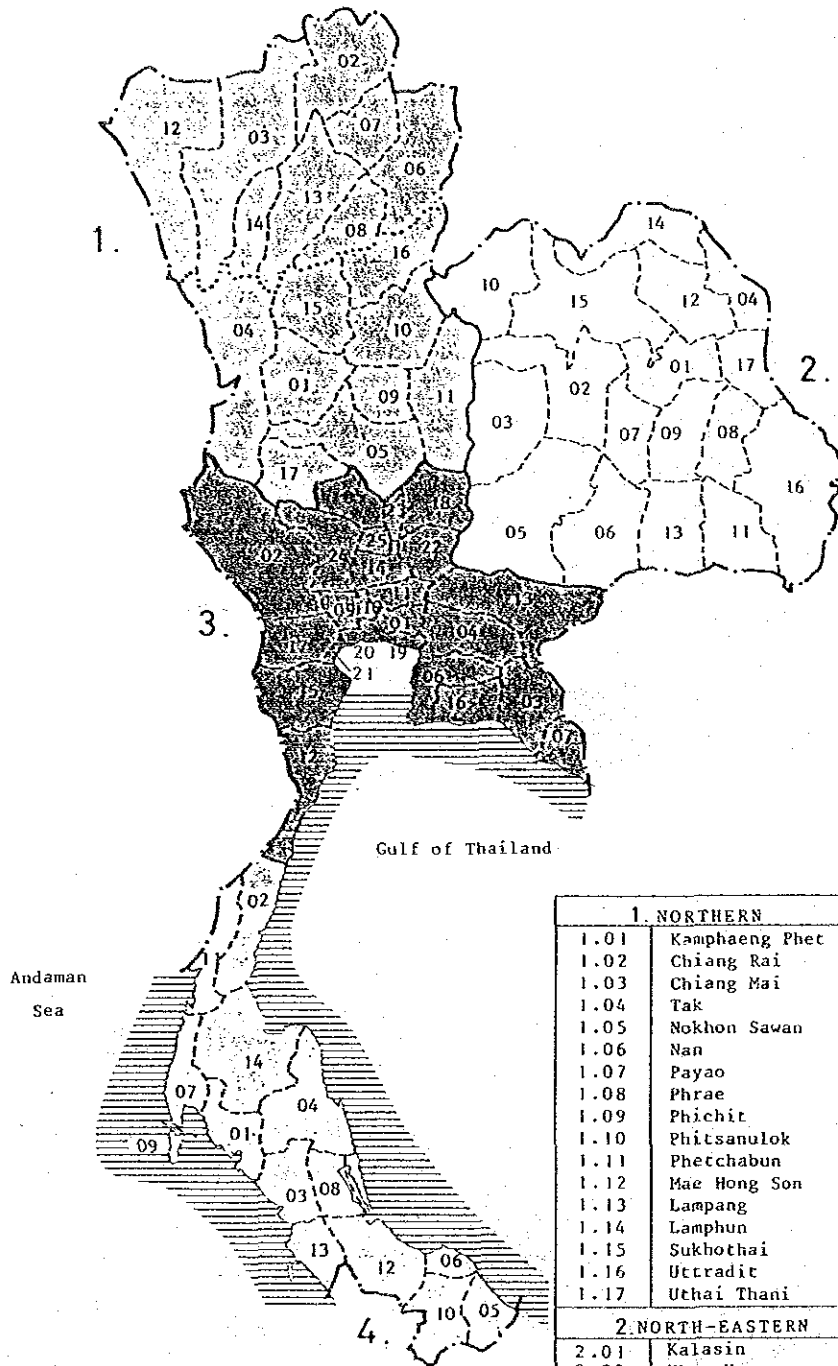
Legend

Supply Demand Ratio

	Rice Deficit Changwat	85 % >
	Rice Subsistence Changwat	85-115 %
	Rice Surplus Changwat	115-200 %
	Changwat with Adequate Surplus	200-250 %
	Changwat with Large Surplus	250 % <

(1979 - 81 Av,)

25-1. PROVINCES by REGION



1. NORTHERN	
1.01	Kamphaeng Phet
1.02	Chiang Rai
1.03	Chiang Mai
1.04	Tak
1.05	Nakhon Sawan
1.06	Nan
1.07	Payao
1.08	Phrae
1.09	Phichit
1.10	Phitsanulok
1.11	Phetchabun
1.12	Mae Hong Son
1.13	Lampang
1.14	Lamphun
1.15	Sukhothai
1.16	Uttaradit
1.17	Uthai Thani

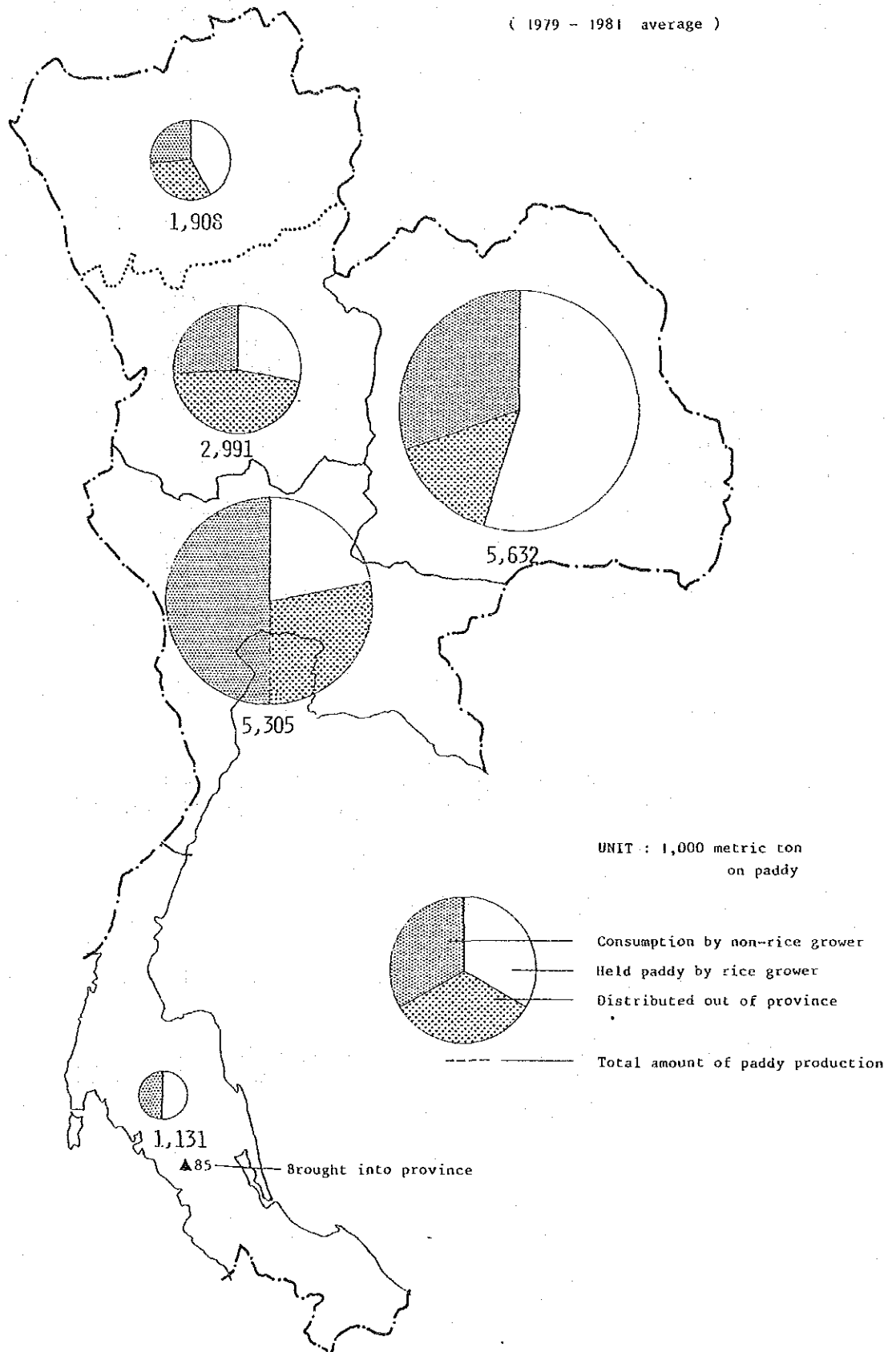
2. NORTH-EASTERN	
2.01	Kalasin
2.02	Khon Kaen
2.03	Chaiyaphum
2.04	Nakhon Phanom
2.05	Nakhon Ratchasima
2.06	Buri Ram
2.07	Maha Sarakham
2.08	Yasothon
2.09	Roi Et
2.10	Loei
2.11	Si Sa Ket
2.12	Sakon Nakhon
2.13	Surin
2.14	Nong Khai
2.15	Udon Thani
2.16	Ubon Ratchathani
2.17	Mukdahan

3. CENTRAL PLAIN	
3.01	Bangkok Metropolis
3.02	Kanchanaburi
3.03	Chanthaburi
3.04	Chachoengsao
3.05	Chai Nat
3.06	Chon Buri
3.07	Trat
3.08	Nakhon Nayok
3.09	Nakhon Pathom
3.10	Nonthaburi
3.11	Pathum Thani
3.12	Prachuap Khiri Khan
3.13	Prachin Buri
3.14	Ayutthaya
3.15	Phetchaburi
3.16	Rayong
3.17	Ratchaburi
3.18	Lop Buri
3.19	Samut Prakan
3.20	Samut Sakhon
3.21	Samut Songkhram
3.22	Saraburi
3.23	Sing Buri
3.24	Suphan Buri
3.25	Ang Thong

4. SOUTHERN	
4.01	Krabi
4.02	Chumphon
4.03	Trang
4.04	Nakhon Si Thammarat
4.05	Narathiwat
4.06	Pattani
4.07	Phangnga
4.08	Phatthalung
4.09	Phuket
4.10	Yala
4.11	Ranong
4.12	Songkhla
4.13	Satun
4.14	Surat Thani

26. AMOUNT of RICE PRODUCTION and MARKETING in THAILAND

(1979 - 1981 average)



27. Planted Acreage of Upland Crops Listed
in the Agricultural Census Report, 1978

(Unit: 1,000 rais)

Horse-Tamarind	1.6	Kenaf*	1,319.5
Field Corn*	6,902.4	Jute	219.5
Sorghum*	659.3	Hemp	1.1
Wheat	2.8	Cotton	238.0
Sesame	184.4	Cassava*	5,869.2
White pea	10.9	Yam bean	17.4
Mung bean*	2,809.9	Tobacco	242.9
Black pea	236.1	Castor bean	50.2
Rice bean	131.2	Black truffle	1.8
Pea nut	410.5	Mulberry	51.4
Soy bean	573.7	Sugar cane*	2,579.9
Job' tears	8.4	Pine apple	209.6
Sunflower	1.1		

A. Total: 22,747.4

B. Total of 6 major upland crops (with mark of *)
planted Acreage: 20,150.2

C. Percentage of 6 major upland crops' planted acreage
against total upland crops' planted acreage: 88.58%
(B/A)

D. Vegetables' planted acreage: 473.4

E. Total planted acreage of upland crops and vegetables: 23,220.3

F. Percentage of 6 major upland crops' planted acreage
against total planted acreage of both upland crops
and vegetables: 86.78%
(B/F)

28. Eight Major Export Items from Bangkok in Terms of Quantity

(Unit: 1,000 M/T)

	1979	1980	1981	1979-81 a.v.
Rice	2,797	2,799	3,032	2,876
Maize	1,988	2,175	2,547	2,237
Mung bean	108	66	110	95
Cassava products	3,961	2,175	6,266	5,148
Kenaf	62	18	6	29
Raw Sugar	1,188	452	1,099	913
Molasses	533	246	443	467
Sorghum	167	181	221	180
Total	10,804	11,135	13,724	11,888

Total of 6 major upland crops and their products

8,007	8,336	10,692	9,012
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Source: Agricultural Statistics of Thailand, 1981/82

29. Average Export Percentage to Production of Selected Major Upland Crops

Y = production
E = export
% = percentage of export to production in terms of quantity

(Unit: 1,000 tons and %)

	Maize			Cassava			Mung bean			Sugar cane			Percentage of E to Y			
	Y	E	%	Y of root	Y of pellet ^{1/}	E of pellet ^{2/}	Y	E	%	Y of sugar cane	Converted from sugar cane ^{3/}		Export sugar molasses	sugar molasses	sugar molasses	
											sugar	molasses				
1950-54 av.	45.4	25.6	56.4	266.8	98.6	18.4	26.8	8.0	29.8	1,572	133.0	76.7	2.8	-	2.1	-
1955-59 av.	164.6	124.8	75.8	528.0	195.4	86.8	40.0	12.6	31.5	3,995	338.0	194.9	21.8	-	6.4	-
1960-64 av.	72.0	682.4	94.7	1,738.6	643.2	301.4	76.2	24.6	32.3	3,472	289.8	169.4	84.8	24.0	8.3	14.2
1965-69 av.	1,280.0	1,213.6	94.8	2,223.8	822.8	449.2	112.8	35.6	31.8	3,492	295.6	170.3	96.6	60.6	32.7	35.6
1970-74 av.	2,078.4	1,794.6	86.3	4,473.4	1,655.6	1,545.6	181.0	48.6	26.5	9,993	846.0	487.5	229.8	355.6	27.2	72.9
1975-79 av.	2,573.6	1,983.8	77.1	11,507.0	4,257.4	3,897.8	192.6	74.4	38.6	19,664	1,664.8	959.2	1,112.2	690.0	66.8	71.9
1980-81 av.	3,223.0	2,429.5	73.8	17,142.0	6,342.5	5,591.0	242.5	87.5	36.1	29,027	2,118.8	1,220.8	775.0	284.0	36.6	23.3

Remarks: 1/ Conversion rate of pellet from root is 365.5 Kgs of pellet from 1,000 Kgs of root.

2/ Cassava product was not exported in form of pellet in early stage of export, but mostly in form of flour. The conversion was made in terms of pellet in this table throughout the period.

Conversion rate of cassava flour from root is 16.6%.

3/ Conversion rate of sugar from sugar cane fluctuates by years and by regions. It ranged from 8.04% to 8.92% in 1975-1980 av., and was averaged at 8.466%.

Conversion rate of molasses from sugar cane is 4.878% (Sugar Institute's information).

30. Population Projections for Thailand by Different Assumptions: 1970-2005

(1 July, in thousand)

	<u>High Fertility</u>	<u>Low Fertility</u>
1970	36,370	36,370
1973	39,375	39,375
1975	41,388	41,388
1980	46,455	46,455
1985	51,571	51,301
1990	56,185	55,345
1995	61,113	59,580
2000	66,114	63,772
2005	71,044	67,745

Source: Population Projection for Thailand,
Working Group on Population Projections

(Unit: %)

	<u>High Fertility</u>	<u>Low Fertility</u>
1970 - 1975	2.62	2.62
1975 - 1980	2.34	2.34
1973 - 1980	2.39	2.39
1980 - 1985	2.11	2.00
1985 - 1990	1.73	1.53
1990 - 1995	1.70	1.49
1995 - 2000	1.59	1.37
2000 - 2005	1.45	1.22
1980 - 1990	1.92	1.77
1990 - 2000	1.64	1.43

31. Elasticity of Average Annual Population Growth Rates of Different Regions Against Competent Rate of Whole Kingdom, 1973-1980

0	Bangkok Metropolis area	1.62
01	Whole Kingdom except Bangkok Metropolis area	0.93
1.	Central	1.13
11.	Central except Bangkok Metropolis area	0.89
2.	North	0.82
21.	Lower North	0.82
22.	Upper North	0.81
3.	North East	1.00
4.	South	1.03

32. Population Projections of Different Regions by Assumption of Low Fertility in 1990 and 2000

		Average annual growth rate		Average annual growth rate		
		1980 (1,000)	1980 - 1990 (%)	1990 (1,000)	1990 - 2000 (%)	2000 (1,000)
0.	Whole Kingdom	46,455	1.77	55,345	1.43	63,772
01.	Bangkok Metro- polis	5,152	2.87	6,840	2.32	8,600
02.	Whole Kingdom excl. Bangkok Metropolis	41,303	1.62	48,500	1.30	55,170
1.	Central	14,601	2.00	17,800	1.62	20,900
11.	Central excl. Bangkok Metro- polis	9,449	1.49	10,960	1.26	12,300
2.	North	9,667	1.45	11,160	1.17	12,500
21.	Lower North	5,108	1.45	5,900	1.17	6,630
22.	Upper North	4,559	1.43	5,250	1.16	5,890
3.	North East	16,433	1.77	19,580	1.43	22,570
4.	South	5,754	1.82	6,890	1.47	7,970
5.	Central and Lower North excl. Bangkok Metropolis	14,557	1.48	16,860	1.17	18,930

33. Projections of Production, Demand and Export of Rice in 1990

(Unit: 1,000 tons)

	Central	Lower North	Upper North	North East	South	Whole Kingdom
0. Population	17,800	5,900	5,250	19,580	6,890	55,345
1. Production						
11. Major crop	3,910	3,130	2,140	6,570	1,260	17,010
12. 2nd crop	2,520	180	ng.	ng.	ng.	3,000
13. Total	6,430	3,310	2,140	6,570	1,260	20,010
2. Demand ^{1/}	4,350	1,710	1,450	5,870	1,430	14,810
3. Balance (13. - 2.)	2,080	1,600	690	700	- 170	5,200
4. Supply Demand ratio (13. ÷ 2.)	1.478	1.936	1.476	1.119	0.881	1.357
5. Export Potential and Regional surplus (in terms of milled rice)						^{2/} approximate 3,350
	1,352	1,040	449	420	- 111	

Remarks: ^{1/} Demand includes requirements of seed, food use, all other usage except of food; feed, processing etc. and post-harvest loss.

^{2/} This projection is about 400 thousand tons larger than actual export 2,940 thousand in 1979-81 av.

Projection shall be, in 1990, 3,350 thousand tons at low estimate and 3,700 thousand tons at high estimate.

34. Projections of Production, Demand and Export of Rice in 2000

(Unit: 1,000 tons)

	Central	Lower North	Upper North	North East	South	Kingdom
0. Population (1,000)	20,900	6,630	5,890	22,570	7,970	63,722
1. Production						
11. Major crop	4,120	3,330	2,420	7,440 335	1,350	18,660
12. 2nd crop	2,910	220	ng.	ng.	ng.	3,465
13. Total	7,030	3,550	2,420	7,440	1,450	22,125
2. Demand ^{1/}	5,080	1,920	1,620	6,770	1,660	17,100
3. Balance (13. - 2.)	1,950	1,630	800	670	- 310	5,025
4. Supply Demand ratio (13. - 2.)	1.384	2.178	1.494	1.099	0.813	1.294
5. Export Potential and Regional surplus (in terms of milled rice)	1,268	1,060	520	402	- 200	approximate ^{2/} 3,250

Remarks: ^{1/} Demand includes requirements of seed, food, all other usage except of food; feed, processing etc. and post-harvest loss.

^{2/} Projection shall be, in 2000, 3,250 thousand tons at low estimate and 3,600 thousand tons at high estimate.

This projection is 100 thousand tons below projected export in 1990.

APPENDIX P

STANDARD DESIGN OF WAREHOUSE FOR
RICE STORAGE DESIGNATED BY THE
FOOD AGENCY OF JAPAN

Standard design of warehouse for rice storage
designated by the Food Agency of Japan

	Refrigerated warehouse 1)	Semi-refrigerated warehouse 2)	Heat insulated warehouse 3)
Floor height	6.5 - 7m	6.5 - 7m	6.5 - 7m
Main structure	Ferro-concrete or steel framed	Ferro-concrete or steel framed	Ferro-concrete or steel framed
Wall structure	Mortar or slate, ferro-concrete	Mortar or slate, ferro-concrete	Mortar or slate, ferro-concrete
Roof structure	Double roof-slate or iron sheet, ferro-concrete	Double roof-slate or iron sheet, ferro-concrete	Double roof-slate, ferro-concrete
Heat insulation ceiling	Styrol or glass fiber, thickness of 75mm	styrol or glass fiber, thickness of 75mm	75mm or 50mm
Heat insulation wall	Styrol or glass fiber, thickness of 75mm	Styrol or glass fiber, thickness of 75mm	75mm or 50mm
Heat insulation floor	Unnecessary except for special purposes	not necessary	not necessary
Ventilation	not necessary	not necessary	Ventilation fan
Required horse power per sq.m. of floor space	0.035 hp	0.025 hp	0.01 hp
Required Humidifier	Spray pump (1 hp per 330 sq. m.)	Spray pump (1 hp per 330 sq. m.)	not necessary

Remarks: 1) Refrigerated warehouse

This type is insulated and has refrigerating facilities to maintain the rice temperature at a constant 15°C or below. It is also equipped with facilities to add moisture to the stored rice for maintenance of optimum moisture content.

2) Semi-refrigerated warehouse

This type of warehouse has refrigerating facilities capable of maintaining the rice temperature below 20°C. It also has equipment to add moisture to the stored rice and maintain an optimum moisture content.

3) Heat insulated warehouse

This warehouse is insulated sufficiently to maintain the rice temperature below 23°C.

Regarding with the refrigerated warehouse, following two temperatures are designated for rice storage in Japan, considering the temperature zone of harmful insects, micro-organism propagation and the influence of temperature on rice quality.

- Refrigerated warehouse

The temperature of stored rice is kept constantly at 15°C or below.

- Semi-refrigerated warehouse

The temperature of stored rice is kept constantly at 20°C or below.

The standard of 15°C or below is attainable in Japan under natural climatic conditions for about half a year.

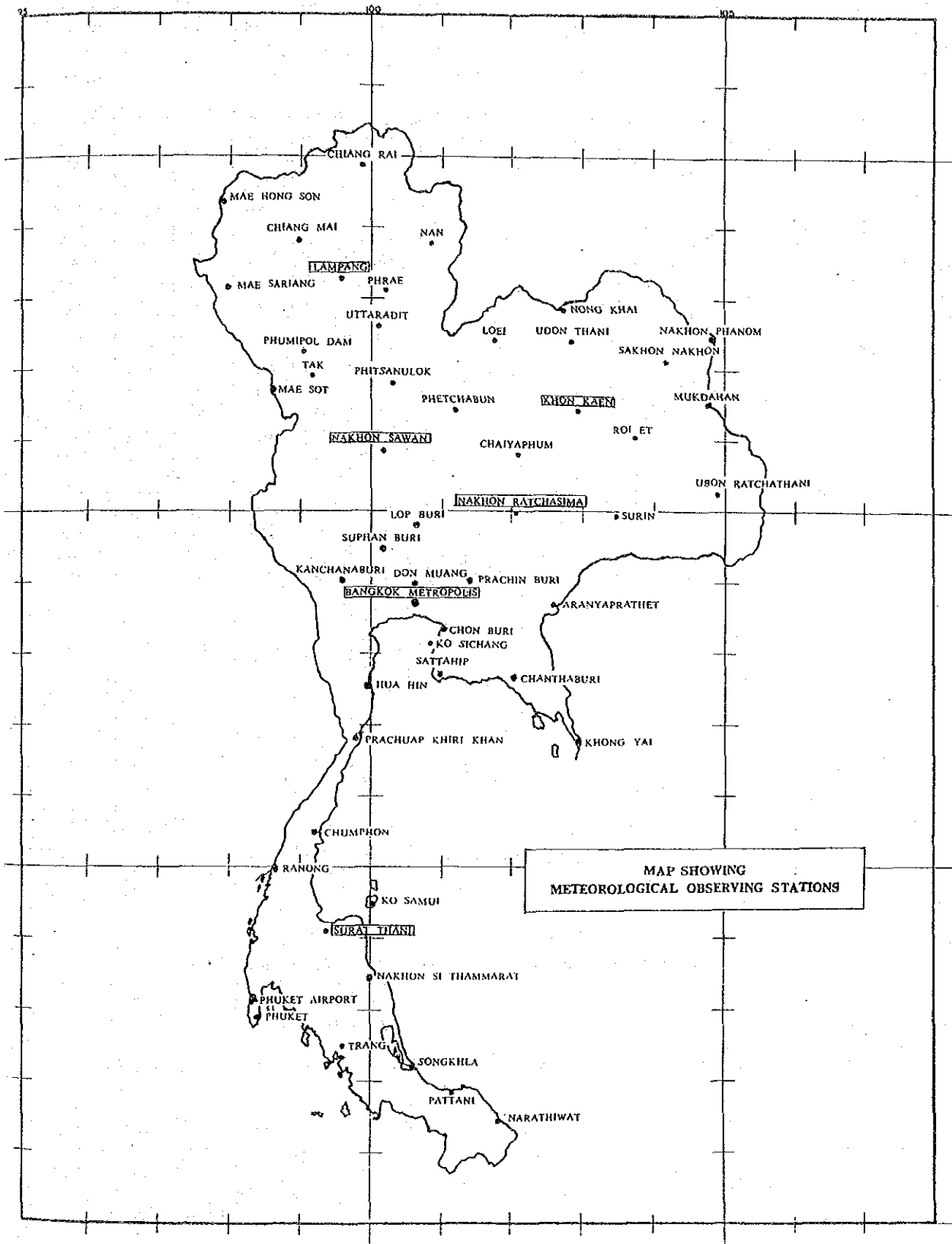
It is common when planning the specifications for refrigerator and insulation materials for a refrigerated warehouse, that 8-12 hours per day be the estimated operation hours in the period from July through September. This is the summer season in Japan.

Estimated electricity charge during the period of May through October in which the refrigerators actually operate is ¥30 to ¥40 per bale (60 kg) of rice.

APPENDIX Q

CLIMATOLOGICAL DATA OF
SELECTED STATIONS





Selected Station

CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1980

Station LAMPANG
Index Station 48 328
Latitude 18° 17' N.
Longitude 99° 31' E.

Elevation of station above MSL. 241 meters
Height of barometer above MSL. 242 meters
Height of thermometer above ground 1.20 meters
Height of wind vane above ground 11.80 meters
Height of rain gauge 0.80 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Pressure (+ 1000 or 900 mbs.)													
Mean	14.08	11.57	09.34	07.39	05.96	04.95	05.00	05.24	07.25	11.11	13.64	14.79	09.19
Ext. Max.	27.35	23.46	22.69	19.84	14.88	12.99	13.39	13.53	15.86	20.17	22.68	25.04	27.35
Ext. Min.	04.14	01.32	06.36	97.73	97.28	95.92	94.93	95.64	98.10	01.24	05.37	04.48	94.93
Mean daily range	6.32	6.82	6.88	6.61	5.57	4.52	4.21	4.46	4.96	5.26	5.44	5.93	5.58
Temperature (°C.)													
Mean	21.3	23.9	27.4	29.7	28.8	28.0	27.6	27.1	26.6	25.9	24.0	21.4	26.0
Mean Max.	30.1	33.2	35.9	37.3	34.9	33.0	32.3	31.8	31.6	31.2	30.5	29.4	32.6
Mean Min.	13.6	15.1	18.7	22.4	23.8	24.0	23.8	23.5	23.0	21.7	18.4	14.8	20.2
Ext. Max.	35.8	37.8	41.2	43.0	43.2	38.4	38.0	37.1	35.8	35.2	35.0	34.7	43.2
Ext. Min.	3.9	8.1	11.2	13.1	19.7	20.7	20.1	20.5	19.0	12.7	7.1	4.7	3.9
Relative Humidity (%)													
Mean	72.0	64.0	58.0	59.0	72.0	77.0	78.0	82.0	85.0	84.0	80.0	76.0	74.0
Mean Max.	95.7	92.1	86.8	85.6	91.0	92.7	92.9	94.9	96.5	97.1	96.8	96.3	93.2
Mean Min.	42.4	34.1	31.3	35.4	51.0	59.6	62.0	65.6	67.5	64.4	56.0	49.3	51.6
Ext. Min.	19.0	12.0	12.0	14.0	21.0	38.0	38.0	45.0	43.0	36.0	32.0	21.0	12.0
Dew Point (°C.)													
Mean	15.2	15.4	16.9	19.7	22.7	23.4	23.2	23.6	23.7	22.7	19.8	16.5	20.2
Evaporation (mm.)													
Mean - Pen	82.3	107.0	153.7	197.8	157.6	146.3	129.7	117.9	110.8	98.7	87.9	80.0	1469.7
Cloudiness (0 - 8)													
Mean	2.6	2.2	2.3	3.4	5.4	6.4	6.8	6.9	6.3	5.1	3.8	3.3	4.5
Sunshine Duration (hr.)													
Mean	No Observation												
Visibility (km.)													
0700 L.S.T.	3.0	2.1	2.0	4.2	9.8	11.8	11.6	9.8	7.8	5.5	4.6	3.9	6.3
Mean	6.6	4.5	3.9	6.4	11.9	12.9	12.7	11.8	11.4	11.0	10.8	9.4	9.4
Wind (Knots)													
Prevailing wind	S	S	S	S	S	S	SW	S	S	NE	NE	NE	-
Mean wind speed	1.9	2.3	2.8	3.4	3.1	3.3	3.5	2.8	2.0	1.6	1.5	1.7	-
Max. wind speed	24 NNW	54 SW	70 NNW	64 WSW	60 ENE	61 WSW	39 SW	50 SW	44 ESE	32 E	28 SSE	28 SSW	70 NNW
Rainfall (mm.)													
Mean	8.2	6.3	25.5	62.2	150.3	131.3	130.6	206.8	210.3	117.2	24.4	6.0	1079.1
Mean rainy days	1.4	1.1	2.7	6.1	14.6	15.6	17.4	19.8	18.4	12.0	3.4	1.6	114.1
Greatest in 24 hr.	35.9	54.5	47.5	140.0	89.0	105.9	95.4	85.0	87.6	71.7	49.2	14.6	140.0
Day/Year	2/77	3/65	7/58	29/74	20/70	7/65	14/71	31/62	14/69	16/72	12/74	28/72	29/74
Number of days with													
Haze	24.9	26.4	29.4	26.3	6.7	0.9	1.0	1.2	3.0	5.6	10.9	16.5	152.8
Fog	8.6	5.9	4.5	1.3	1.0	0.1	0.4	0.7	3.7	10.3	12.8	12.8	62.1
Hail	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Thunderstorm	0.3	0.9	3.6	9.1	16.9	10.7	9.5	10.3	11.9	8.1	1.3	0.2	82.8
Squall	0.0	0.1	0.0	0.3	0.6	0.4	0.3	0.1	0.2	0.0	0.0	0.0	2.0

Remark :

1. Pressure 1954 - 1980
2. Evaporation 1975 - 1980

CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1980

Station KHON KAEN
Index Station 48 381,
Latitude 16° 26' N.
Longitude 102° 50' E.

Elevation of station above MSL. 165 meters
Height of barometer above MSL. 166 meters
Height of thermometer above ground 1.25 meters
Height of wind vane above ground 10.55 meters
Height of rain gauge 1.00 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<u>Pressure (+ 1000 or 900 mbs.)</u>													
Mean	14.01	11.79	09.70	08.00	06.38	05.18	05.15	05.16	07.08	10.70	13.18	14.48	09.23
Ext. Max.	28.70	24.72	24.74	21.68	14.90	13.70	12.62	13.92	15.45	19.70	23.42	25.08	28.70
Ext. Min.	02.54	00.90	99.98	98.61	97.40	94.92	95.05	95.58	94.32	01.90	03.30	03.44	94.32
Mean daily range	5.60	6.01	6.01	5.73	5.13	4.26	4.06	4.14	4.55	4.75	4.82	5.11	5.02
<u>Temperature (°C.)</u>													
Mean	23.2	25.7	28.8	30.2	29.4	28.7	28.1	27.7	27.2	26.7	25.0	23.2	27.0
Mean Max.	30.5	32.7	35.4	36.5	34.8	33.2	32.6	32.0	31.5	31.4	30.8	30.0	32.6
Mean Min.	16.0	18.8	22.1	24.2	24.7	24.6	24.2	24.1	23.6	22.3	19.2	16.3	21.7
Ext. Max.	37.2	41.0	41.8	42.8	41.2	39.4	38.0	37.0	35.5	35.8	37.2	35.8	42.8
Ext. Min.	5.7	10.4	10.3	14.0	19.8	20.7	20.2	20.8	19.3	14.0	9.4	5.6	5.6
<u>Relative Humidity (%)</u>													
Mean	63.0	62.0	60.0	63.0	72.0	76.0	77.0	80.0	82.0	76.0	70.0	66.0	70.0
Mean Max.	85.8	83.2	81.2	82.3	87.7	88.9	90.0	91.4	93.0	90.7	87.8	87.1	87.4
Mean Min.	43.5	41.5	39.9	43.3	53.8	60.0	61.7	64.6	66.4	59.2	49.7	44.8	52.4
Ext. Min.	11.0	10.0	10.0	14.0	27.0	33.0	34.0	37.0	45.0	26.0	21.0	15.0	10.0
<u>Dew Point (°C.)</u>													
Mean	15.3	17.1	19.4	21.6	23.4	23.7	23.6	23.7	24.4	21.9	18.7	15.9	20.7
<u>Evaporation (mm.)</u>													
Mean - Pan	161.6	168.1	215.6	225.0	203.5	168.5	171.2	151.9	138.0	160.7	159.2	160.6	2083.9
<u>Cloudiness (0 - 8)</u>													
Mean	2.6	2.8	3.1	4.1	5.6	6.4	6.5	6.7	6.3	4.6	3.5	2.9	6.2
<u>Sunshine Duration (hr.)</u>													
Mean	275.3	242.8	243.1	255.9	247.2	196.9	183.5	162.3	163.6	243.5	255.6	286.1	2755.8
<u>Visibility (km.)</u>													
0700 L.S.T.	4.9	4.6	4.5	6.1	7.5	7.8	7.9	7.6	7.2	7.8	6.6	5.8	6.5
Mean	7.0	6.4	6.0	7.3	8.4	8.6	8.6	8.4	8.2	8.5	8.3	7.6	7.8
<u>Wind (Knots)</u>													
Prevailing wind	NE	NE	NE	SW	SW	SW	SW	SW	SW	NE	NE	NE	-
Mean wind speed	3.2	3.0	3.5	3.7	3.6	3.9	4.1	3.8	2.8	3.4	3.8	3.6	-
Max. wind speed	33 NE	33 N, SW W, NW	40 NE	46 W	47 SW WNW	59 SW WSW, W	55 W	40 E	33 N, NE SW, W	34 NE	35 N	38 NE	59 SW, WSW, W
<u>Rainfall (mm.)</u>													
Mean	7.7	15.4	34.2	62.7	171.8	180.8	156.5	188.3	276.9	86.0	13.5	2.9	1196.7
Mean rainy days	1.1	2.5	4.3	6.8	13.7	14.7	16.1	17.7	18.2	9.2	1.6	0.6	106.5
Greatest in 24 hr.	31.6	63.4	70.2	65.7	96.9	123.8	92.8	134.8	141.6	124.5	81.0	26.6	141.6
Day/Year	31/53	3/66	11/52	6/65	9/52	12/70	26/63	12/78	7/51	26/69	10/74	20/71	7/51
<u>Number of days with</u>													
Haze	23.8	24.5	25.1	15.4	1.6	0.0	0.1	0.3	0.7	3.8	9.6	20.7	125.6
Fog	4.3	2.7	3.2	1.2	0.3	0.1	0.1	0.2	2.3	1.3	5.1	4.9	25.7
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thunderstorm	0.3	1.4	5.9	11.8	17.4	14.2	13.4	11.5	13.3	5.9	0.4	0.1	95.6
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1

Remark :

1. Evaporation 1961 - 1980

2. Sunshine Duration 1957 - 1980

CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1980

Station NAKHON RATCHASIMA
Index Station 48 431
Latitude 14° 58' N.
Longitude 102° 05' E.

Elevation of station above MSL. 187 meters
Height of barometer above MSL. 188 meters
Height of thermometer above ground 1.25 meters
Height of wind vane above ground 11.30 meters
Height of rain gauge 1.00 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<u>Pressure (+ 1000 or 900 m.l.s.)</u>													
Mean	13.93	11.85	10.11	08.61	07.09	06.16	06.22	06.24	07.71	10.81	13.11	14.39	09.69
Ext. Max.	28.58	24.58	23.88	21.46	15.78	13.86	14.86	13.36	15.26	19.70	22.98	25.66	28.58
Ext. Min.	03.01	01.78	00.86	98.95	99.34	97.28	97.38	97.26	98.98	01.74	03.68	03.58	97.26
Mean daily range	5.82	6.15	5.94	5.43	4.80	4.32	4.25	4.45	4.65	4.79	4.87	5.34	5.07
<u>Temperature (°C.)</u>													
Mean	22.9	25.7	28.1	29.0	28.4	28.1	27.6	27.3	26.5	25.9	24.2	22.5	26.4
Mean Max.	31.0	33.5	35.9	36.5	35.0	34.1	33.4	32.9	31.9	30.8	29.8	29.6	32.9
Mean Min.	16.2	19.3	22.0	23.5	24.0	23.9	23.6	23.4	23.1	22.3	19.5	16.6	21.5
Ext. Max.	37.8	40.6	42.5	42.7	41.4	40.1	40.0	38.1	38.0	35.3	35.3	35.8	42.7
Ext. Min.	4.9	10.6	11.6	15.7	20.7	21.2	21.1	20.5	19.7	16.2	9.1	6.2	4.9
<u>Relative Humidity (%)</u>													
Mean	67.0	65.0	65.0	68.0	76.0	76.0	77.0	78.0	83.0	81.0	76.0	69.0	73.0
Mean Max.	88.5	86.4	86.1	87.2	91.3	91.1	91.4	92.2	95.1	94.2	92.0	90.4	90.5
Mean Min.	43.0	40.9	40.4	43.9	53.4	55.2	56.5	58.6	64.0	63.0	56.2	48.6	52.0
Ext. Min.	22.0	14.0	12.0	19.0	23.0	23.0	35.0	35.0	39.0	31.0	27.0	20.0	12.0
<u>Dew Point (°C.)</u>													
Mean	15.8	17.8	19.2	21.8	23.2	23.1	22.0	22.8	23.2	22.2	19.3	16.6	20.6
<u>Evaporation (mm.)</u>													
Mean - Pan	146.4	152.0	193.0	194.4	182.9	173.4	168.9	159.8	132.2	137.2	134.8	140.5	1915.5
<u>Cloudiness (0 - 8)</u>													
Mean	2.9	3.4	3.8	4.5	5.6	6.3	6.5	6.8	6.5	5.1	3.9	3.2	4.9
<u>Sunshine Duration (hr.)</u>													
Mean	283.0	244.7	248.4	245.3	244.5	207.4	194.7	185.8	166.1	225.0	258.6	277.1	2780.6
<u>Visibility (km.)</u>													
0700 L.S.T.	3.7	3.4	3.6	5.1	8.0	9.6	9.6	9.5	7.7	6.4	5.1	4.1	6.3
Mean	7.5	6.3	6.2	7.6	9.8	10.6	10.6	10.3	9.5	9.7	9.2	8.3	8.8
<u>Wind (Knots)</u>													
Prevailing wind	NE	NE	NE	SW	SW	SW	W	W	W	NE	NE	NE	-
Mean wind speed	2.5	2.6	2.5	2.9	2.8	3.7	3.8	3.6	2.4	2.7	3.2	2.9	-
Max. wind speed	28 ENE	37 E	43 SSW	53 S	46 SE	58 SW	41 W	35 SE	33 S, WSW	54 SE	44 NE,E	40 NE	58 SW
<u>Rainfall (mm.)</u>													
Mean	3.5	22.9	55.2	70.0	157.6	116.2	131.0	126.9	263.3	157.7	30.0	3.1	1137.4
Mean rainy days	1.2	2.9	6.1	7.9	15.9	15.0	15.6	16.5	19.5	12.1	3.8	0.9	117.4
Greatest in 24 hr.	17.1	59.7	97.3	91.8	134.5	114.8	104.1	72.3	143.7	136.0	108.6	20.6	143.7
Day/Year	26/54	23/65	10/74	4/73	13/52	27/69	10/75	27/64	12/68	25/76	9/55	3/70	12/68
<u>Number of days with</u>													
Haze	27.5	26.9	29.1	22.1	6.5	0.9	0.6	1.1	2.3	9.9	17.3	24.2	168.4
Fog	3.2	3.1	2.6	2.9	1.3	0.3	0.3	0.2	1.0	2.5	2.2	2.4	22.0
Hail	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Thunderstorm	0.4	2.0	7.5	13.4	16.9	8.5	8.2	7.5	11.3	7.0	0.6	0.0	83.3
Squall	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2

Remark :

1. Evaporation 1962 - 1980
2. Sunshine Duration 1957 - 1980

CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1980

Station NAKHON SAWAN
Index Station 48 400
Latitude 15° 48' N.
Longitude 100° 10' E.

Elevation of station above MSL. 34 meters
Height of barometer above MSL. 35 meters
Height of thermometer above ground 1.50 meters
Height of wind vane above ground 14.00 meters
Height of rain gauge 1.00 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<u>Pressure (+ 1000 or 900 mbs.)</u>													
Mean	13.33	11.46	09.84	08.18	06.63	05.74	05.86	05.99	07.39	10.48	12.73	13.85	09.29
Ext. Max.	29.74	23.30	22.22	19.38	14.69	13.49	14.59	13.39	15.79	20.61	22.69	24.29	29.74
Ext. Min.	03.10	02.23	00.77	99.84	99.01	97.00	95.10	97.41	98.30	01.80	04.29	03.76	95.10
Mean daily range	5.34	5.62	5.89	5.82	5.11	4.33	3.89	4.10	4.52	4.75	4.72	4.97	4.92
<u>Temperature (°C.)</u>													
Mean	25.6	28.3	30.7	31.9	30.6	29.6	29.0	28.5	28.0	27.9	26.7	25.2	28.5
Mean Max.	32.2	34.5	36.7	37.9	36.1	34.5	33.8	33.1	32.2	32.0	31.5	31.1	33.8
Mean Min.	17.7	21.0	23.7	25.3	25.1	24.7	24.3	24.1	23.9	23.5	21.0	18.2	22.7
Ext. Max.	37.0	39.8	41.2	42.5	42.7	41.0	38.9	37.8	36.3	35.9	35.7	35.8	42.7
Ext. Min.	6.1	12.0	14.2	17.0	20.3	21.4	20.9	20.9	20.4	18.4	11.9	8.2	6.1
<u>Relative Humidity (%)</u>													
Mean	63.0	62.0	61.0	61.0	70.0	74.0	75.0	78.0	82.0	80.0	73.0	67.0	70.0
Mean Max.	87.3	86.9	87.3	86.5	89.1	90.5	91.5	92.9	95.5	94.7	92.4	89.9	90.4
Mean Min.	41.3	40.3	39.1	40.8	51.2	56.6	58.4	62.0	66.4	63.3	53.9	45.9	51.6
Ext. Min.	16.0	10.0	10.0	18.0	23.0	34.0	36.0	38.0	45.0	37.0	25.0	25.0	10.0
<u>Dew Point (°C.)</u>													
Mean	17.1	19.3	21.2	22.7	23.8	23.9	23.8	24.0	24.4	23.7	20.8	17.9	21.9
<u>Evaporation (mm.)</u>													
Mean - Pan	150.5	174.9	232.8	260.3	218.9	184.1	174.3	153.2	127.7	138.8	132.8	140.5	2088.9
<u>Cloudiness (0 - 8)</u>													
Mean	3.0	3.3	3.3	4.0	5.6	6.4	6.7	6.9	6.6	5.4	4.2	3.4	4.9
<u>Sunshine Duration (hr.)</u>													
Mean	264.1	242.9	249.0	259.2	243.0	186.2	174.2	169.0	158.7	228.6	256.8	275.5	2707.2
<u>Visibility (km.)</u>													
0700 L.S.T.	5.1	4.5	5.4	7.9	10.7	11.1	10.2	9.7	8.6	8.3	7.7	6.7	8.0
Mean	7.1	6.1	6.2	8.0	10.8	11.1	10.8	10.2	9.7	9.9	9.8	9.1	9.1
<u>Wind (Knots)</u>													
Prevailing wind	E	S	S	S	S	S	S	S	S	S	E	E	-
Mean wind speed	3.7	4.8	6.3	6.4	5.4	5.5	5.0	4.4	3.2	3.0	3.4	3.5	-
Max. wind speed	33 NE	58 S	62 N	60 N	70 S	50 S	52 S	45 SSW	65 N	54 NE	27 NW	27 E	70 S
<u>Rainfall (mm.)</u>													
Mean	11.5	24.0	38.8	62.0	143.1	118.2	139.6	177.5	248.4	144.3	27.5	6.5	1141.4
Mean rainy days	1.3	1.9	2.9	4.8	12.1	13.7	15.5	17.5	18.1	12.0	2.9	0.8	103.5
Greatest in 24 hr.	60.9	69.6	87.1	84.9	105.5	61.8	96.1	90.3	121.2	147.0	121.6	45.6	147.0
Day/Year	11/75	3/53	23/70	11/72	5/76	1/56	29/73	26/65	23/64	7/51	14/66	16/66	7/51
<u>Number of days with</u>													
Haze	25.5	26.2	28.2	20.7	3.7	0.5	0.7	1.3	1.5	5.4	10.1	17.1	140.9
Fog	8.7	5.9	2.6	1.1	0.3	0.1	0.1	0.6	0.7	1.2	4.3	5.9	31.5
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thunderstorm	0.3	1.1	3.5	7.5	13.6	9.5	9.0	8.9	11.4	8.5	1.3	0.2	74.8
Squall	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2

Remark :

1. Evaporation 1965 - 1980
2. Sunshine Duration 1957 - 1980

CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1980

Station SURAT THANI
Index Station 48 551
Latitude 09° 07' N.
Longitude 99° 21' E.

Elevation of station above MSL. 10 meters
Height of barometer above MSL. 11 meters
Height of thermometer above ground 1.25 meters
Height of wind vane above ground 14.50 meters
Height of raingauge 0.80 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Pressure (+ 1000 or 900 mbs.)													
Mean	11.87	11.09	10.39	09.19	08.31	08.49	08.62	08.74	09.26	10.20	10.80	11.65	09.89
Ext. Max.	19.81	18.54	17.42	15.83	14.32	14.24	14.56	14.11	15.28	16.72	17.71	18.11	19.81
Ext. Min.	04.65	04.08	03.79	01.31	02.04	01.34	02.17	02.38	01.44	02.54	02.17	04.72	01.31
Mean daily range	3.98	4.35	4.60	4.52	3.99	3.48	3.47	3.58	4.01	4.25	3.95	3.83	4.00
Temperature (°C.)													
Mean	25.0	25.9	27.0	27.9	27.3	27.0	26.6	26.5	26.2	25.9	25.4	25.1	26.3
Mean Max.	30.4	32.6	34.0	34.9	33.9	32.8	32.3	32.3	32.1	31.1	29.6	29.4	32.1
Mean Min.	20.4	20.1	20.9	22.4	23.5	23.5	23.1	23.1	23.0	22.8	22.4	21.6	22.2
Ext. Max.	35.2	37.0	39.0	39.0	38.5	37.4	36.6	37.7	36.0	35.1	35.2	34.2	39.0
Ext. Min.	12.4	14.2	15.6	18.1	18.9	19.5	19.7	19.8	20.4	20.7	16.3	16.6	12.4
Relative Humidity (%)													
Mean	83.0	78.0	76.0	77.0	82.0	82.0	83.0	83.0	85.0	87.0	88.0	86.0	83.0
Mean Max.	96.5	96.2	95.7	95.2	95.3	94.6	95.0	94.9	95.7	96.9	96.9	96.4	95.8
Mean Min.	63.5	54.8	51.6	52.5	58.7	61.3	62.1	62.4	63.6	68.7	73.5	70.4	61.9
Ext. Min.	38.0	24.0	20.0	28.0	36.0	37.0	37.0	29.0	41.0	46.0	45.0	47.0	20.0
Dew Point (°C.)													
Mean	21.7	21.3	21.8	22.9	23.6	23.4	23.1	23.0	23.2	23.4	23.1	22.3	22.7
Evaporation (mm.)													
Mean - Pan	No Observation												
Cloudiness (0 - 8)													
Mean	4.4	3.7	3.9	4.8	6.1	6.3	6.3	6.5	6.4	6.3	6.1	5.5	5.5
Sunshine Duration (hr.)													
Mean	226.9	238.3	243.8	223.3	184.6	166.6	171.2	170.2	153.2	145.9	141.4	172.3	2237.7
Visibility (km.)													
0700 L.S.T.	3.9	3.0	3.0	3.8	7.3	8.3	8.1	8.1	7.9	5.6	4.8	5.3	5.8
Mean	8.3	7.9	7.4	7.5	8.8	9.2	9.1	9.0	8.9	8.2	7.9	8.5	8.4
Wind (Knots)													
Prevailing wind	NE	E	NE	NE	SW	SW	SW	SE	SW	SW	NE	NE	-
Mean wind speed	3.1	2.9	2.9	2.6	2.6	3.4	3.3	3.4	2.8	1.9	2.2	3.1	-
Max. wind speed	35 E	29 NE	38 NE	41 WNW	39 SW	38 SSW	43 W	38 NW	35 NW	40 NE	36 SE	28 E	41 WNW
Rainfall (mm.)													
Mean	64.5	11.4	20.7	57.0	169.3	143.2	152.2	144.3	181.2	260.5	340.5	165.2	1710.0
Mean rainy days	7.3	2.5	3.2	7.0	17.3	17.3	17.6	19.1	19.6	20.4	19.6	13.9	164.8
Greatest in 24 hr.	216.6	44.8	67.2	119.2	106.8	92.1	75.3	147.1	95.3	177.3	457.1	168.3	457.1
Day/Year	7/67	27/65	19/71	17/80	27/71	17/79	15/73	26/65	20/66	25/62	12/64	3/51	12/64
Number of days with													
Haze	9.6	16.5	25.1	20.2	4.2	0.9	2.0	1.8	1.3	3.1	3.3	5.5	93.5
Fog	15.1	16.7	16.5	12.3	3.8	1.3	2.3	1.4	3.1	10.5	10.4	9.4	102.8
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thunderstorm	1.9	2.0	7.5	16.0	20.9	12.2	12.7	10.0	12.5	15.6	9.8	2.4	123.5
Squall	0.1	0.0	0.0	0.0	0.3	0.1	0.1	0.2	0.2	0.0	0.0	0.0	1.0

Remark :

Sunshine Duration 1957 - 1980

CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1980

Station BANGKOK METROPOLIS
Index Station 48 455
Latitude 13° 44' N.
Longitude 100° 34' E.

Elevation of station above MSL. 2 meters
Height of barometer above MSL. 20 meters
Height of thermometer above ground 1.25 meters
Height of wind vane above ground 33.10 meters
Height of rain gauge 1.00 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Pressure (+ 1000 or 900 mbs.)													
Mean	12.53	11.18	10.04	08.58	06.94	06.40	06.57	06.63	07.58	09.84	11.61	12.70	09.22
Ext. Max.	26.50	20.96	20.97	17.74	14.06	13.00	14.14	13.50	15.59	18.02	19.98	21.89	26.50
Ext. Min.	04.42	03.87	02.08	00.04	99.40	97.76	98.78	99.36	98.20	98.24	03.68	03.87	97.76
Mean daily range	4.76	4.83	4.83	4.67	4.48	3.83	3.75	3.96	4.39	4.44	4.27	4.49	4.41
Temperature (C.)													
Mean	25.6	27.2	28.6	29.6	29.1	28.6	28.1	27.8	27.6	27.5	26.6	25.5	27.7
Mean Max.	31.9	32.7	33.8	34.9	34.1	33.0	32.5	32.2	31.9	31.7	31.3	31.3	32.6
Mean Min.	20.6	22.8	24.6	25.7	25.4	25.1	24.6	24.7	24.4	24.3	22.8	20.7	23.8
Ext. Max.	36.0	36.6	39.8	40.0	39.4	37.7	37.8	36.3	36.0	35.3	35.1	35.2	40.0
Ext. Min.	9.9	14.9	16.5	19.9	21.1	21.7	21.9	21.2	21.3	18.3	14.2	10.5	9.9
Relative Humidity (%)													
Mean	73.0	76.0	77.0	77.0	79.0	79.0	80.0	81.0	84.0	83.0	79.0	74.0	78.0
Mean Max.	91.6	92.9	92.5	91.4	93.2	92.5	92.5	93.7	95.3	95.2	93.4	91.4	93.0
Mean Min.	49.2	53.6	55.4	55.9	60.7	63.0	64.2	64.6	67.2	66.6	60.2	52.7	59.4
Ext. Min.	27.0	17.0	25.0	28.0	30.0	38.0	43.0	47.0	49.0	40.0	36.0	31.0	17.0
Dew Point (°C.)													
Mean	19.7	21.2	23.6	24.5	24.8	24.3	24.0	24.0	23.5	24.1	21.4	19.9	22.9
Evaporation (mm.)													
Mean - Pan	135.3	140.3	182.7	187.7	169.2	150.6	147.0	145.1	129.0	125.7	124.7	130.0	176.8
Cloudiness (0 - 8)													
Mean	4.7	5.2	5.4	5.6	6.6	6.8	6.9	7.0	7.2	6.5	5.3	4.7	6.0
Sunshine Duration (hr.)													
Mean	280.8	254.1	272.3	261.2	225.5	189.6	171.6	165.2	155.0	209.7	249.5	270.0	2704.5
Visibility (km.)													
0700 L.S.T.	5.1	4.6	5.2	6.8	8.0	8.0	7.7	7.4	7.5	7.7	7.5	6.9	6.9
Mean	9.5	9.0	8.9	10.2	11.6	11.9	11.6	11.4	11.2	11.5	11.5	10.9	10.8
Wind (Knots)													
Prevailing wind	NE	S	S	S	S	S	SW	W	W	NE	N	NE	-
Mean wind speed	3.6	5.1	5.8	5.7	4.6	4.8	4.5	4.6	3.8	3.3	3.5	3.4	-
Max. wind speed	31 NNE	37 N	48 ENE	56 E	42 W	43 S, SW	43 SW	45 WNW	44 SSW	40 NE	45 ENE	31 NNE SE	56 E
Rainfall (mm.)													
Mean	10.3	30.7	23.7	63.5	185.3	159.8	170.7	198.2	341.8	221.3	44.0	8.9	1458.2
Mean rainy days	1.7	3.0	3.3	6.2	15.6	16.7	18.3	20.6	21.3	16.7	5.5	1.4	130.3
Greatest in 2½ hr.	39.3	73.0	52.8	133.5	124.2	167.3	108.8	97.8	153.7	123.2	81.2	32.0	167.3
Da./Year	31/61	11/64	24/73	22/51	15/66	13/79	30/55	26/71	23/68	5/60	2/69	8/72	13/79
Number of days with													
Haze	22.8	22.0	23.0	17.5	11.9	11.5	12.1	11.3	11.1	12.3	13.8	18.9	188.2
Fog	5.3	3.1	2.4	1.2	1.3	0.1	0.4	0.1	0.0	0.3	0.8	1.4	16.4
Hail	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thunderstorm	0.6	1.3	3.2	8.1	15.5	10.7	10.0	11.0	15.8	14.0	3.1	0.7	94.0
Squall	0.0	0.0	0.2	0.1	0.2	0.3	0.3	0.1	0.1	0.0	0.0	0.0	1.3

Remark :

1. Evaporation 1961 - 1980
2. Sunshine Duration 1956 - 1980

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