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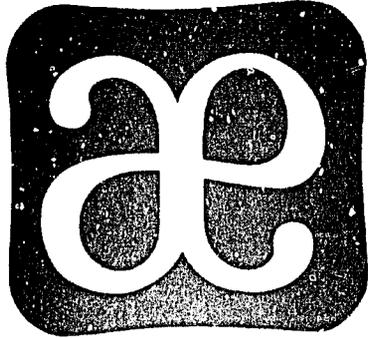
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KOREAN AGRICULTURAL SECTOR STUDY



Special Report 7.

ORGANIZATION AND PERFORMANCE OF THE AGRICULTURAL MARKETING SYSTEM IN KOREA

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FOREWORD

This publication is one of a series of Korean Agricultural Sector Study Special Reports. Through the cooperation of the Republic of Korea, Michigan State University and USAID, an agricultural sector study, entitled Korean Agricultural Sector Analysis and Recommended Development Strategies, 1971-1985 was completed between September 1971 and July 1972. Concurrent with and contributing to the sector study the rudimentary components of a computerized simulation model were developed. This work continues with the objective of developing and institutionalizing a fully operational agriculture sector simulation model as a tool for use by Korean decision makers in policy formulation and program development.

The KASS special reports are the result of the work of a number of joint Korean and American task forces established to collect and analyze data and develop working papers on a variety of specific topics for background and input and follow up to the sector analysis efforts. The reports are joint publications of the Agricultural Economics Research Institute, Ministry of Agriculture and Forestry, Republic of Korea and the Department of Agricultural Economics, Michigan State University, East Lansing, Michigan.

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Acronyms of Public and Private Agencies and Programs

ADC - Agricultural Development Corporation
AERI - Agricultural Economics Research Institute
AFDC - Agriculture and Fisheries Development Corporation
AJAE - American Journal of Agricultural Economics
CSNRD - Consortium for the Study of Nigerian Rural Development
DPB - Development Planning Board
FAO - Food and Agriculture Organization of the United Nations
FYP - First Five-Year Plan
IBRD - International Bank for Reconstruction and Development (World Bank)
KASS - Korean Agricultural Sector Study
KDI - Korean Development Institute
KEC - Korean Electric Co. half-owned by Ministry of Commerce and Industry
KFPA - Korean Family Planning Association
KIFP - Korean Institute for Family Planning
KOWAC - Quasi-government power company, regulated by Ministry of Construction
MAF - Ministry of Agriculture and Forestry
MHA - Ministry of Home Affairs
NACF - National Agriculture Cooperative Foundation
ORD - Office of Rural Development
PL480 - United States Commodity Aid Program
PORD - Provincial Office of Rural Development
ROK - Republic of Korea
SFYP - Second Five-Year Plan
TFYP - Third Five-Year Plan
UNDP - United Nations Development Project
US/AID - United States Agency for International Development

CONTENTS

	Foreword	11
	Acronyms	111
Chapter 1	Introduction	1
Chapter 2	Traditional Agriculture and the Future Demand for Marketing Services	5
Chapter 3	Selected Commodities in the Marketing System	11
	Introduction	11
	Grains	11
	Soybeans, Other Pulses	25
	Potatoes	30
	Fruits	33
	Apples	44
	Peaches	46
	Grapes	50
	Vegetables	53
	Livestock and Related Products	53
	Other Products	55
Chapter 4	Delivery System for Technical Form Inputs	57
	Introduction	57
	Fertilizer	57
	Agricultural Chemicals	63
	Improved Seeds	64
	Farm Implements	64
	Formulated Processed Feeds	66
	System Modification	66
Chapter 5	Selected Marketing Functions	69
	Assembly	69
	Transportation	71
	Processing	71
	Storage and Losses	75
	Wholesaling and Retailing	77
	Coordination by Contracting	82
Chapter 6	Summary Comments	85
	Appendix	89

CONTENTS (cont.)

Tables

Table II-1	Ratio of Marketed Supply for Selected Commodities	6
Table III-1	Estimated Marketing Margins for Rice in Merchant Channel	14
Table III-2	Marketing Costs and Margins for Barley	15
Table III-3	Marketing Costs and Margins by Function for Corn	15
Table III-4	Marketing Costs and Margins for Wheat Flour	16
Table III-5	Geographic Difference in Monthly Wholesale Prices for 4 Grains	16-17
Table III-6	Average Wholesale Prices in Five Major Cities, 1971	18
Table III-7	Seasonal Price Changes for 4 Grains	19-20
Table III-8	Average Annual Prices Received by Farmers	26
Table III-9	Marketing Costs and Margins for Soybeans	26
Table III-10	Soybean Price Variations, Seasonal Prices	27
Table III-11	Day-to-Day Price Variations in Soybeans	27
Table III-12	Geographic Price Difference in Soybeans	28
Table III-14	Marketing Cost and Margins for Table-Use Sweet Potatoes	32
Table III-15	Index of Seasonal Prices of Sweet Potatoes	32
Table III-16	Day-to-Day Wholesale Price Variation in Sweet Potatoes	32
Table III-17	Geographic Wholesale Price Differences in Sweet Potatoes	33
Table III-18	Average Annual Fruit Prices Received by Farmers	37
Table III-19	Marketing Margin and Prices Received by Kuchwang Apple Producers	40
Table III-20	Day-to-Day Price Variations for Apples, November, 1971	41
Table III-21	Day-to-Day Price Variations for Apples, May, 1971	41
Table III-22	Index of Seasonal Wholesale Price Fluctuations in Apples	42
Table III-23	Geographic Price Differences for Apples in 1970	43
Table III-24	Apple Exports by Country and Year	44
Table III-25	Marketing Margins for Fresh Peaches, 1970	47
Table III-26	Day-to-Day Price Variations for Peaches	47
Table III-27	Geographic Price Variations in Peaches	48
Table III-28	Marketing Margin and Prices Received by Grape Producers	48
Table III-29	Day-to-Day Price Variations of Grapes	49
Table III-30	Geographic Wholesale Price Differences in Grapes, 1970	49
Table III-31	Average Prices of Farm Vegetables	50
Table III-32	Seasonal and Geographic Price Variations for Superior Quality Radishes	51

CONTENTS (Cont.)

Tables

Table III-33	Seasonal and Geographic Price Variations for Superior Quality Chinese Cabbage	51
Table III-34	Day-to-Day Price Variations for Radishes	52
Table III-35	Day-to-Day Price Variations for Chinese Cabbage	52
Table IV-1	Price Indexes for Major Purchased Farm Inputs	58
Table IV-2	Percentage of Fertilizer Sold on Credit	59
Table IV-3	Extent and Rate of Increase in Use of Fertilizer	60
Table IV-4	Annual Use of Farm Chemicals	61
Table IV-5	Supply and Rate of Increase in Sales of Improved Seeds	63
Table IV-6	Extent and Rate of Sales Increase in Farm Implements by NACF	64
Table IV-7	Extent and Rate of Increase in Use of Formulated Feeds	65
Table IV-8	Marketing Costs and Margins for Formulated Feed	65
Table V-1	Processing Facilities for Meat, 1970	74
Table V-2	Processing Facilities for Fruits and Vegetables	74
Table V-3	Rate of Loss of Rice by Type of Warehouse	76
Table V-4	Estimated Storage of Marketed Grain by Grade of Warehouse	76
Table V-5	Grain Warehouses at End of 1970	77
Table V-6	Contract Farming Items	83
Table A-1	Marketing Costs and Margins by Function (from Suwon to Seoul) for Korean Cattle, November 1968	92
Table A-2	Seasonal Price Variation in Korean Cattle for Farmers	92
Table A-3	Retail Price Differences by Cities of Korean Beef, 1970	93
Table A-4	Marketing Costs and Margins per Pig by Merchants (from Ko-Myung to Seoul), 1969	93
Table A-5	Variation Index of Pig Price by Month	93
Table A-6	Retail Price Differences of Pork by Cities, 1970	95
Table A-7	Marketing Costs and Margins for Eggs, 1968	95
Table A-8	Index of Seasonal Wholesale Price Variations for Eggs	95
Table A-9	Wholesale Price Variations of Eggs by Cities, 1970	97
Table A-10	Marketing Costs and Margins for Chickens by Merchants (from Yang Joo to Seoul), 1970	97
Table A-11	Seasonal Retail Price Variations for Chicken	97
Table A-12	Retail Price Differences for Chicken by Cities, 1971	99
Table A-13	Consumer Prices of Market Milk	99
Table A-14	Marketing Costs and Margins by Function (from producers to consumers), 1970	99
Table A-15	Cocoon Prices Received by Farmers	99
Table A-16	Tobacco Price Variations	101
Table A-17	Cuttlefish Marketing Margin	103
Table A-18	Rape Seed Marketing Margin, September 8, 1968	104
Table A-19	Farmers' Price Variations for Rape Seed	104
Table A-20	Index of Seasonal Farm Prices for Rape Seed	104
Table A-21	Price of Straw-goods Purchased by Government	105
Table A-22	Bamboo Ware Prices Received by Farmers	105

CONTENTS (cont.)

Figures

Figure III-1	Rice Marketing Channels	13
Figure III-2	Government Rice Purchase Procedures	24
Figure III-3	Soybean Market Channels	29
Figure III-4	Sweet Potato Market Channels	31
Figure III-5	Apple Market Channels	39
Figure III-6	Marketing Channels for Peaches	45
Figure III-7	Marketing Channels for Grapes	49
Figure IV-1	Fertilizer Marketing Channels and Commissions	58
Figure IV-2	Channels for Formulated Processed Feeds	64
Figure V-1	Transportation Distances to Major Cities	72
Figure A-1	Main Korean Cattle and Beef Marketing Channels by Function	91
Figure A-2	Marketing Channels of Pig and Pork	94
Figure A-3	Main Marketing Channels for Eggs	96
Figure A-4	Marketing Channels of Domestic Fowl and Chicken from Yang-Joo to Seoul, 1970	98
Figure A-5	Marketing Channels for Market Milk	100
Figure A-6	Marketing Channels for Cocoons	101
Figure A-7	Channels of Tobacco Marketing	101
Figure A-8	Market Channels for Dried Cuttlefish	102
Figure A-9	Market Channels for Fresh Cuttlefish	102
Figure A-10	Marketing Channel for Rape Seed	103
Figure A-11	Marketing Channels for Straw-Goods	105
Figure A-12	Marketing Channels for Domestic Bamboo	106
Figure A-13	Marketing Channels for Imported Bamboo	107
Figure A-14	Domestic Marketing Channels for Bambooware	107
Figure A-15	Export Marketing Channels for Bambooware	108

Chapter 1

INTRODUCTION

The major purposes of this report are to provide a general description of the organization of the agricultural marketing system in Korea; to identify trends and factors affecting the changing organization and its requirements; to indicate current performance of the existing marketing system; to identify barriers to improved performance; and to suggest possible improvements in the organization of the agricultural marketing system.

Marketing has two closely related but different aspects. One aspect is the physical transformations which take place in the distribution system. Utility is created by transferring products from producers to consumers, changing the form and condition of products, and transferring products from one time period to another. The second aspect is the coordination of economic activities of the system. Coordination of the system takes three forms:

1. Interaction of buyers and sellers in the market, resulting in prices which act as incentives and guides to producers and consumers;
2. Internal or administrative coordination within firms and public organizations, and
3. Administrative rules and regulations which determine what has to be taken into account in economic decisions.

Both aspects of marketing are important in the transition from traditional agriculture to a scientific industrial economy. Fundamental to the transition or development process, are the interrelationships of production

and distribution of consumer goods, capital goods, and scientific and technical knowledge. The production and distribution of capital goods and technical knowledge need investment (deferred consumption or stored labor) as well as specialization. The investment in scientific-technical knowledge and the capital goods in which the knowledge is embedded, produce new technologies and greater potential for a more productive economy. The transition, thus, involves more specialized, more round-about and more complex production-distribution systems; coordination becomes more critical to the performance of the system. While costs of distribution become a large and critical component of the economy.

The production-distribution system for any food consists of a series of coordinated transformations including the production of farm inputs, farming, assembly, conditioning and processing, storage, transporting, wholesaling, and retailing. Related functions include credit, insurance, communications, and regulations. As the transformation progresses, a larger percentage of activities in the system takes place off farms in the production of technical inputs, processing, and distribution. Also important to the transition from traditional agriculture are distribution of consumer goods to rural areas and transfer of labor to more productive activities.

This report while concerned primarily with farm product marketing and with lesser consideration of the delivery system for technical farm inputs, will attempt to consider these activities within the context of the coordinated agricultural system in the process of development.

The transition from traditional agriculture to a scientific industrial economy can stagnate at any level of development, leaving large numbers of people in very low productivity employment and very low levels of

consumption. Achieving the productivity gain potentially available from an industrialized system requires a continuous search for methods of improving performance of the various elements of the economy. Incentives must be structured to encourage the identification and exploitation of the changing economic opportunities. But barriers to improved performance develop within the system. Performance failures of the agricultural marketing system in coordination and physical distribution can retard the transition from a traditional to a high-productivity economy. Uncertain and unrewarding farm products and inputs, and high prices and uncertain supplies of food to urban consumers all encourage the maintenance of low-productivity subsistence farming.

System performance is conceived as a flow of consequences from a particular organization of the system, including both the structure of the system and the rules of behavior regulating the participants of the system. Performance is improved when a change in organization produces a more desirable flow of consequences.

In a broader context, performance can be judged only in terms of a set of goals or objectives. Changes in organization of an agricultural marketing system can contribute to effective achievement of the following eight goals:

1. To assure an abundant and reliable supply of food at economical prices, by stimulating the production and distribution of the quantities and varieties of food which will result in more nutritionally adequate diets
2. To facilitate and promote the production and distribution of combinations of foods and related services which best reflect preferences and needs of consumers and real relative costs of production

3. To create incentives for increased productivity in each activity of the total system of food production and distribution, by providing farmers with reliable markets, reducing uncertainty, stimulating production, and creating incentives to produce those commodities demanded by consumers
4. To achieve a fair and equitable exchange system, insuring that the consequences of government policies and programs are fair and equitable
5. To stimulate development of opportunities for productive and rewarding employment, and a productive labor force
6. To discourage uneconomic use and spoilation of natural resources in the environment^{1/}
7. To encourage socially desirable population settlement patterns ^{2/}
8. To encourage a sense of belonging and personal effectiveness among participants in the system.

^{1/}The rules and regulations determining what has to be taken into account by individuals in economic activity are critical in achieving the objective.

^{2/}Many aspects of marketing and marketing programs influence settlement patterns; location of marketing facilities is an example.

Chapter 2

TRADITIONAL AGRICULTURE AND THE DEMAND FOR MARKETING SERVICES

Since 1969 more than half of the Korean labor force has been employed outside of farming, forestry, and fishing. More than half of the agricultural production, roughly, has been marketed since about 1969. The percentage of farm production which enters commercial channels varies considerably by commodity. Table II-1 estimates the ratio of marketed supplies to farm production for 12 major commodities. The data do not provide a very precise estimate of commercial marketings. The amount entering commercial marketing channels is between the estimates of ratio marketed in the narrow and broad sense as presented in the Table. What is not known is the percentage of the commodities paid in kind for wages, rents, and donations which enter the commercial market, but a large portion of the food grains probably is exchanged for rent or credit owed, to be marketed in turn by the landlord or lender. Hired farm workers most likely sell a large portion of the rice they receive as wages while consuming most of the barley received. Thus, a reasonable estimate of the portion of marketed output for rice would be more than 65 percent and for barley less than 30 percent for 1970. The differences between marketings in the narrow and broad senses are much less for the other commodities; the marketings in the narrow sense probably come close to the amounts actually entering marketing channels.

Based upon farm consumption and gross receipts estimates, it can be assumed that almost all of the production of meat, milk, fruits, and

Table II-1: Ratio of Marketed Supply for Selected Commodities

Commodity		Marketed Supply									B/Ax100 in narrow sense	C/Ax100 in broad sense
		(A) Production	Market sales ^{1/}	Taxes & charges ^{2/}	Milling charges ^{3/}	Sub- Total (B)	Wage payment in kind	Subsidy & donation	Rent	(C) Total		
Rice	69	1,861.40	755.60	37.45	58.92	851.97	68.16	70.78	392.42	1,340.33	45.77	72.01
	70	2,081.65	895.59	56.08	61.16	1,012.83	77.61	77.23	368.09	1,535.76	48.66	73.78
Glutinous rice	69	36.49	16.74	0.01	1.31	18.06	0.36	1.90	2.05	22.37	49.49	61.30
	70	49.56	20.46	-	1.72	22.18	0.18	1.47	1.59	25.42	44.75	51.29
Barley	69	792.47	156.43	4.31	21.81	182.55	19.36	10.31	56.83	269.05	23.04	33.95
	70	761.95	159.60	4.54	20.54	184.68	17.85	13.29	63.05	278.87	24.24	36.60
Wheat	69	158.83	36.07	0.10	3.58	39.75	3.36	2.65	8.24	54.00	25.03	34.00
	70	186.46	34.40	0.18	4.07	38.65	2.78	1.89	11.93	55.25	20.73	29.63
Millet	69	47.55	7.85	0.05	1.36	9.26	0.79	0.72	1.82	12.59	19.47	26.48
	70	29.05	4.54	0.00	0.99	5.53	0.64	0.24	1.34	7.75	19.04	26.68
Sorghum	69	6.97	0.91	-	0.12	1.03	0.10	0.12	0.73	1.98	14.78	28.41
	70	5.83	2.09	-	0.08	2.17	0.07	0.07	0.08	2.39	37.22	41.00
Corn Corn 69	69	57.03	27.82	0.25	-	28.07	0.34	0.06	2.92	31.39	49.22	55.04
	70	33.44	23.59	0.21	-	23.80	0.16	0.02	4.01	27.99	71.17	83.70
Soybean	69	131.37	65.97	0.09	-	66.06	1.53	1.55	6.52	75.66	50.29	57.59
	70	102.99	56.17	0.10	-	56.27	0.66	1.89	5.03	63.85	54.64	62.00
Red bean	69	23.47	10.23	-	-	10.23	0.67	0.43	0.78	12.11	43.59	51.60
	70	16.45	11.60	-	-	11.60	0.09	0.34	0.41	12.44	70.52	75.62
Green bean	69	2.80	1.65	0.00	-	1.65	0.02	0.12	0.20	1.99	58.93	71.07
	70	2.44	1.86	-	-	1.86	0.01	0.08	0.10	2.05	76.23	84.02
Sweet potatoes	69	438.95	132.01	0.04	-	132.05	1.55	6.24	19.61	159.45	30.08	36.33
	70	396.81	118.16	-	-	118.16	1.47	5.77	14.62	140.02	29.78	35.29
White potatoes	69	178.85	39.00	-	-	39.00	0.96	2.27	3.69	45.91	21.81	25.67
	70	177.87	47.74	0.10	-	47.84	0.84	1.96	4.07	54.71	26.90	30.76

1/Include barter as well as cash exchange

2/Payments in kind for local tax, national tax, and other public charge

3/Payments in kind for rent on land, farm machineries, draft animals and repayments with interest for borrowed grains

4/Potatoes are measured in kilograms.

Source: NACF Monthly Review 12, 1971, p. 34.

industrial crops are marketed while less than half of the vegetables produced appear to be marketed.

The most significant factor in the expanding need for marketing services and facilities is illustrated by the projected population and employment statistics. The population is projected to increase from 31,624,214 in 1970 to about 39,300,000 in 1985, an increase of approximately 28 percent. In contrast, the non-farm work force is projected to increase from about 4,834,000 in 1970 to about 11,700,000 in 1985, a 244 percent increase. To provide food at current levels of per-capita consumption, farm production would increase by 28 percent while food marketed would increase by about 240 percent, assuming that the current food consumed by farm families is self-supplied and not marketed. But farm families do purchase food and other food marketing services such as grain milling, and required expansion in marketing services would vary by type of service and commodity.

The population and employment projections indicate the magnitude of the required expansion in the overall system of food marketing. Since rice is dominant, and rice milling would increase only by the percentage of increased total consumption, and since the percentage of rice marketed exceeds the percentage of the rural population, the 240 percent projection overestimates the aggregate effect of the population transition. Nevertheless, it remains a fairly reliable indicator of the minimum increase needed in urban-related food marketing services and facilities.

Changing incomes, preferences, and technologies also will influence requirements for specific types of marketing services and relative cost and importance of marketing and distribution. Quantitative analysis has not been attempted, but some observations concerning the relevant factors

may be useful in future analysis leading to projection of needed services and facilities.

Since many advantages accrue from more specialized farm production and expanded farm incomes will increase the demand for a more varied diet, especially for meats and fruits which are now farm self-sufficiency foods, the demand for marketing services to serve farm family consumption needs will greatly expand.

The general shift in the relative composition of diets from grains to non-grains also will greatly affect the relationship of the marketing bill to total food costs. The costs of marketing grain, relative to the retail price of grain are very low, amounting to only 15 to 20 percent, not including interest charges on storage. In contrast, the marketing costs of non-processed fruits and vegetables appears to be about 50 percent and for processed 75 percent would not be an unrealistic expectation.^{1/}

The demand for processing and convenient retailing also will be increased by changes in life styles and employment patterns. As more women enter the work force and the opportunity costs of domestic services increase the demand for improved grading, sanitation, and processing, and for convenience in shopping will increase.

An offsetting factor in marketing costs will be a reduction in marketing costs associated with increased output per worker. Very substantial economics of scale can exist in providing many of the services and current scale is very small. The assembly, wholesaling, and retail functions required in 1985 should be possible using fewer workers than are currently employed in these activities. The net effect, however, will depend upon

^{1/}In the U.S. more than 60 percent of the retail value of food is accounted for by costs between the farmer and the consumer.

what happens to wage rates, and overall willingness to adopt improvements
in the food distribution system.

Chapter 3

SELECTED COMMODITIES IN THE MARKETING SYSTEM

Introduction

Commodities in the Korean agricultural marketing system discussed in this chapter include grains, soybeans and other pulses, potatoes, three varieties of fruit, vegetables, livestock and related products and other products.

Grains

Food grains, especially rice, dominate both Korean agriculture and consumption. The performance of the marketing system in grains is closely related to the Government's grain management program designed to stabilize prices and reduce the spread between farm and retail prices.

The farm price for rice and barley are typically quoted on a polished or milled basis. The farm-retail price spreads, using average annual prices in 1970 expressed as a percent of retail prices were:

<u>Grain</u>	<u>Percent</u>
Rice	4.8
Barley	11.4
Wheat	17.7
Corn	16.2

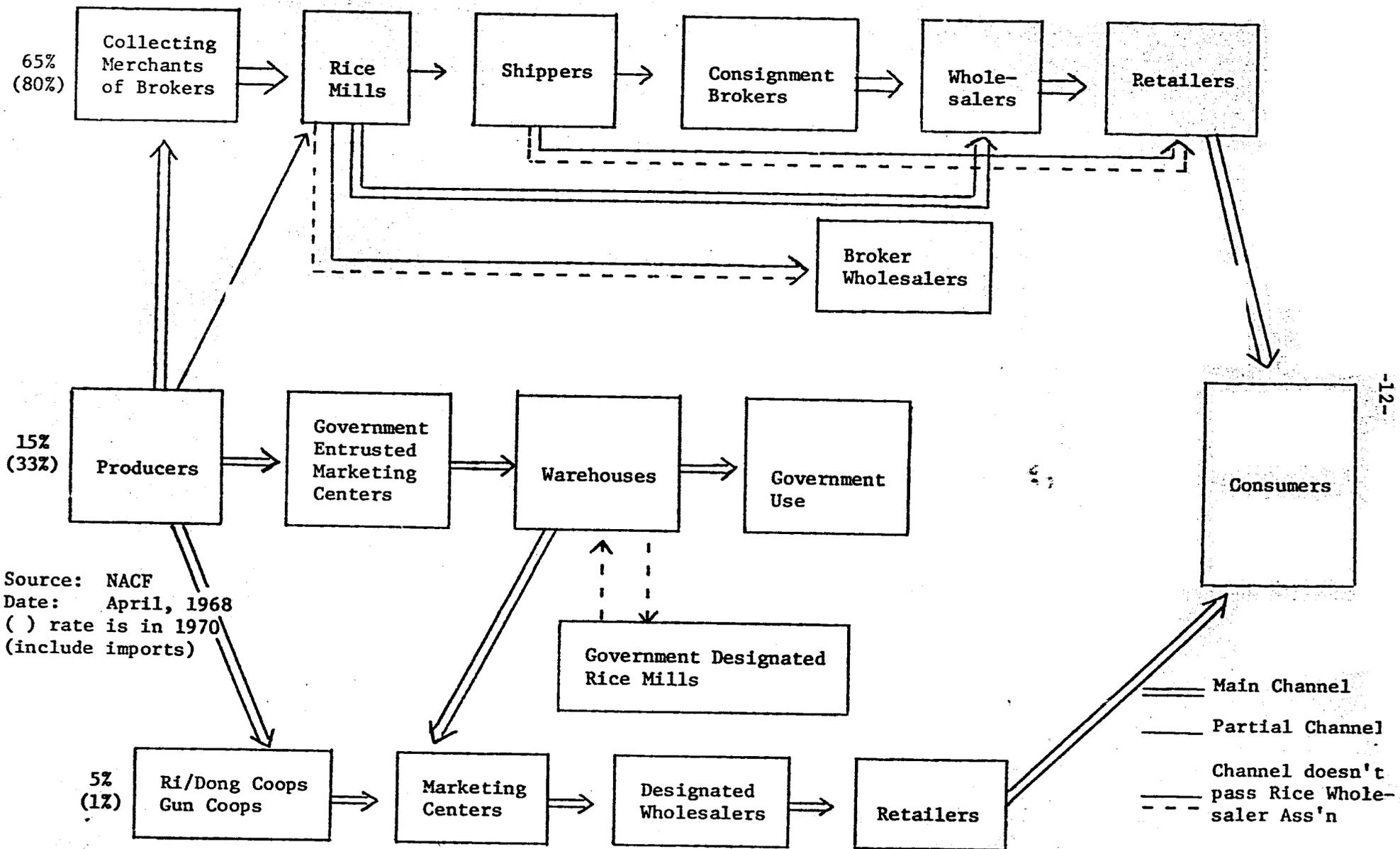
Estimates of the price spreads, however, are very misleading for four reasons:

1. The retail price used in the calculation is the official controlled price. A substantial portion of the grain, especially rice, is sold at prices above the official price; the quantity and price in this market are unknown.

2. The government grain management program releases grain, including imported rice, at prices below the market price, subsidizing consumption.
3. The government buying price for rice from farmers generally has been significantly below the farm price.
4. The price spread does not reflect typical quality and quantity margins in the trading practices in grains.

The quantity margin represents the gain in the quantity sold over the quantity purchased, and results from the use of slightly variable quantity measures rather than exact weights in trading. The quality margin represents the increased value of grain purchased resulting from shifts from a lower grade to a higher one. One study reports quality margins at a particular point in time for rice of about 2 percent and quantity margins for bulk sales of about 5 percent.

Figure III-1 shows typical marketing channels for rice. The channels for barley, wheat and corn are similar. Except for the grain handled as government entrusted business--that purchased under the grain management program, including primarily payments of loans and taxes in kind and imports, which move through National Agricultural Cooperative Federation (NACF) and cooperative channels--almost all grain moves through private channels. The cooperative system has not been competitive in marketing grain. Reasons for this seem to include strict application of grading standards by NACF, inability to take advantage of quantity and quality margins, necessity of selling at legal prices, and ties between farmers and collectors involving credit arrangements and the relative convenience of the private merchant outlet. Thus a combination of policies requiring the repayment of credit purchases of inputs to be paid in kind, price



Source: NACF
 Date: April, 1968
 () rate is in 1970
 (include imports)

Figure III-1: Rice Marketing Channels

controls, and the application of perhaps unrealistic (at least uncompetitive) grading standards all reduce the potential effectiveness of the cooperative to improve coordination and reduce distribution cost for the grain system.

Tables III-1 through III-4 give the price margins at a particular point in time. Note these data do not include the costs of storage, adjust for any possible gain from quality or quantity margins, and represent only prices in the legal market. Also note that the data represent the cost from a particular point.

Table III-1: Estimated Marketing Margins for Rice through Merchant Channel (Youngsanpo-Seoul), November 9, 1968

Classification	Selling prices	Margins			
		Marketing costs	Margins	Total	
				Value	Rate
Producer	4,742	-	-	-	(%)
Collector	4,792	14	36	50	6.6
Shipper	5,250	351	107	458	60.5
Wholesaler	5,300	25	25	50	6.6
Retailer	5,500	100	100	200	26.3
Total	-	490	268	758	100.0

Source: Rice Marketing, NACF. The rate of price spread to retail price (758/5,500) is 10.4 percent. Unit is 80 kg per bag.

Table III-2: Marketing Costs and Margins for Barley, 1970

Classification	Selling price	Total margins	Rate
			(%)
Shipper	3,125	-	-
Wholesaler	3,258	133	31.1
Retailer	3,552	294	68.9
Total	-	427	100.0

Source: NACF

Note: 1. Above is the pricing-margin. Unit is won per 76.5 kg (bag)
 2. Rate of margin (427/3,552) is 12.0

Table III-3: Marketing Costs and Margins by Function for Corn (Chunchon-Seoul), December 1968

Classification	Selling price	Marketing Margins			Rate
		Costs	Net margins	Total	
Producer	1,550	-	-	-	-
Circulating collector	1,730	150	30	180	40.9
Collector in producing area	1,870	90	50	140	31.8
Wholesaler	1,990	40	80	120	27.3
Purchasing price by processor	1,990	-	-	-	-
Total	-	280	160	440	100.0

Source: NACF

Note: Rate of marketing margins is 22.11 percent (from farmer to processor). Unit is won per 72 kg (bag).

Table III-4: Marketing Costs and Margins for Wheat Flour, 1970

Classification	Selling prices	Total margins	Rate (%)
Shipper	764	-	-
Wholesaler	786	22	36.1
Retailer	825	39	63.9
Total	-	61	100.0

Source: NACF

Note: Rate of marketing margins (61/825) is 7.4 percent. Unit is won per 22 kg (bag)

Grain is, of course, the least expensive food to market. It should be marketed at a low cost. These data indicate no great potential savings are available from improved physical distribution of grain, excluding the storage function if these data approximate reality. The exception appears to be corn; it would seem that costs could be significantly reduced in moving corn from farmers to processors.

Table III-5: Geographic Difference in Average Monthly Wholesale Prices, 1970, for the 4 Grains in 1970

Rice

City	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	Average
Seoul	5,796	5,826	5,827	5,892	5,902	6,029	6,191	6,132	6,401	6,390	7,042	6,987	6,390
Pusan	5,579	5,714	5,750	5,745	5,702	5,700	5,700	5,700	5,700	6,079	6,654	6,916	5,700
Taegu	5,704	5,800	5,800	5,754	5,800	5,800	5,800	5,922	6,460	6,267	6,555	6,879	6,267
Kwangju	5,290	5,416	5,400	5,543	5,650	5,659	5,700	5,787	5,929	6,008	6,570	6,391	5,700
Taejon	5,536	5,649	5,654	5,793	5,944	5,967	6,108	6,069	6,290	6,193	6,614	6,663	6,193
Average	5,581	5,682	5,681	5,746	5,800	5,831	5,900	5,922	6,156	6,187	6,687	6,767	5,900

Note: Unit is won per 80 kg (bag)

(c)

Table III-5: (cont.)

Barley

City	Month												Average
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	3,200	3,200	3,233	3,358	3,379	3,343	3,339	3,482	3,558	3,526	3,692	3,966	3,440
Pusan	3,180	3,152	3,167	3,197	3,261	3,252	3,253	3,237	3,245	3,433	3,629	3,740	3,312
Taegu	3,100	3,100	3,100	3,100	3,203	3,294	3,216	3,274	3,300	3,430	3,507	3,689	3,276
Kwangju	2,483	2,670	2,663	2,807	2,752	2,750	2,800	2,935	3,150	3,120	3,197	3,600	2,911
Taejon	3,100	3,100	3,100	3,227	3,374	3,378	3,402	3,402	3,450	3,492	3,587	3,645	3,352
Average	3,013	3,044	3,053	3,138	3,194	3,204	3,195	3,266	3,341	3,400	3,522	3,728	3,258

Note: Unit is won per 76.5 kg (bag)

Corn

City	Month												Average
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	2,032	2,254	2,300	2,350	2,400	2,530	3,000	3,000	3,000	2,919	2,800	2,954	2,620
Pusan	2,450	2,430	2,356	2,607	2,459	2,492	2,566	2,651	2,884	2,836	2,704	2,800	2,603
Taegu	2,257	2,300	2,341	2,400	2,477	2,489	2,509	2,658	2,750	2,699	2,740	2,750	2,531
Kwangju	2,736	2,646	2,523	2,527	2,519	2,500	2,611	2,500	2,584	2,680	2,700	2,700	2,602
Taejon	2,092	2,108	2,063	2,194	2,255	2,400	2,466	2,336	2,067	2,508	2,500	2,500	2,291
Average	2,313	2,347	2,316	2,416	2,439	2,482	2,630	2,629	2,658	2,729	2,689	2,741	2,532

Note: Above price is average wholesaler's price of five major cities in Korea; unit is won per 75 kg (bag).

Wheat

City	Month												Average
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	-	-	-	2,410	2,426	2,282	2,324	2,408	2,525	2,628	2,580	2,456	2,449
Pusan	-	-	-	2,459	2,419	2,400	2,400	2,400	2,540	2,500	2,584	2,600	2,477
Taegu	-	-	-	2,389	2,400	2,402	2,424	2,400	2,417	2,500	2,500	2,534	2,441
Kwangju	-	-	-	2,120	2,264	2,350	2,333	2,235	2,212	2,221	2,452	2,550	2,304
Taejon	-	-	-	2,415	2,556	2,650	2,383	2,344	2,499	2,492	2,467	2,500	2,478
Average	-	-	-	2,360	2,413	2,417	2,373	2,357	2,438	2,468	2,516	2,528	2,430

Source: NACF

Note: Above price is average wholesaler's price of five major cities in Korea. Unit is won per 60 kg (bag).

Samples of day-to-day fluctuations in prices of the four grains are shown in Table III-6 with averages of reported wholesale prices for the five largest cities.

Table III-6: Average Wholesale Prices in 5 Major Cities, 1971 for four grains on consecutive days.

Day	Grain			
	Rice Oct. 1-15	Barley Dec. 1-15	Corn Sept. 15-30	Wheat Dec. 1-15
1	7,800	4,660	2,600	2,530
2	7,820	4,680	2,600	2,534
3	7,820	4,680	2,600	2,534
4	7,820	4,680	2,620	2,534
5	8,100	4,680	2,620	2,534
6	8,100	4,680	2,620	2,536
7	8,140	4,660	2,620	2,534
8	8,250	4,660	2,620	2,536
9	8,460	4,660	2,620	2,536
10	8,510	4,660	2,640	2,536
11	8,540	4,680	2,620	2,536
12	8,790	4,680	2,650	2,546
13	8,830	4,700	2,650	2,546
14	8,800	4,720	2,650	2,546
15	8,780	4,720	2,650	2,546
16			2,660	
Average	8,288	4,680	2,628	2,537

Source: NACF

Notes: Above price is average wholesaler's price of five major cities in Korea. Rate of rising price for rice is 1.2 percent, unit is won per 80 kg (bag); for barley, 0.1 percent, unit is won per 76.5 kg (bag); for corn, 0.15 percent, unit is won per 75 kg (bag); for wheat, 0.05 percent, unit is won per 60 kg (bag).

Table III-7 shows estimates of seasonal price changes for the four grains. These are price indexes of reported wholesale price through the legitimate market.

Table III-7: Seasonal Price Changes for 4 Grains

Rice

Year	Month												Rate of fluctuation (%)
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	88.6	90.2	90.4	93.8	98.9	100.4	102.4	110.6	121.4	110.8	95.0	92.8	32.8
1967	85.3	88.0	88.9	101.6	107.0	109.4	110.1	108.8	106.8	100.4	97.8	96.0	24.1
1968	86.6	93.0	92.1	93.2	97.6	98.4	101.0	102.9	102.7	111.4	112.8	108.3	26.2
1969	100.5	96.5	96.7	96.6	97.6	99.2	99.8	100.0	100.0	100.6	104.5	107.3	10.8
1970	93.1	94.8	94.8	95.8	96.7	97.3	98.4	98.8	102.7	103.2	111.5	112.9	19.8
Ave.	90.8	92.5	92.6	96.2	99.6	100.9	102.3	104.2	106.7	105.3	104.3	103.5	15.9

Source: NACF

Barley

Year	Month												Rate of fluctuation (%)
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	99.8	107.1	107.9	105.6	102.7	90.2	82.3	85.0	92.7	102.6	112.2	111.1	29.9
1967	98.2	99.5	103.3	115.3	109.5	92.6	90.5	91.3	95.4	98.4	102.2	107.9	24.8
1968	100.9	104.0	102.7	96.2	94.0	92.4	93.1	98.2	93.7	97.6	110.9	114.6	22.2
1969	105.4	107.2	99.2	96.8	96.9	96.2	93.8	95.9	97.5	100.4	104.7	105.3	13.4
1970	92.5	93.4	93.7	96.3	98.0	98.3	98.1	100.2	102.5	104.4	108.1	114.4	21.9
Ave.	99.0	101.7	100.7	100.8	99.8	94.3	92.3	94.8	96.8	100.7	107.5	110.7	18.4

Corn (1970)

Price Index Number	Month												Rate of fluctuation (%)
	1	2	3	4	5	6	7	8	9	10	11	12	
	90.2	93.5	92.2	96.4	97.7	99.5	103.5	104.5	104.9	107.4	103.9	104.3	17.2

Source: NAC

(cont.)

Table III-7: (cont.)

Wheat (1970)

	Month												Average (%)
	1	2	3	4	5	6	7	8	9	10	11	12	
Index Number	99.8	99.9	101.6	99.7	96.2	95.5	95.1	95.1	96.2	101.7	106.6	112.2	100

Source: The Bank of Korea

Notes: Average prices of the years is 100.
 There is no data on corn before 1970.
 Above is average wholesaler's price index number for barley in five major cities.

Even based upon the officially reported prices, which could be expected to under-estimate price differences, the geographic price differences are great enough to suggest that performance of the market in allocating grain geographically could be improved. In contrast the data indicate only small day-to-day variations indicating well organized (or regular) markets within a city market. The exception in the data is rice, which represents a seasonal price increase near the end of the rice year.

Seasonal Prices

The seasonal price of grain, especially rice, represents both a major policy issue and a market coordination problem. It is roughly estimated that, given the prevailing interest rates and other costs, minimum storage costs would be 3 percent per month, assuming an interest rate of about 24 percent per year. Merchants appear to pay and lend at rates significantly above 24 percent and the government apparently can borrow at rates somewhat below 24 percent.

The seasonal price data indicate that it would usually be both very unprofitable to store grain privately, and risky to store grain, due to the uncertain seasonal price patterns. Since government storage represents less than one-third of marketed rice (as reported) a large amount of rice must be

stored privately. The price control and grain management program together attempt to maintain seasonal price increases below the cost of storage. The probable effects of these policies and programs is to force a significant portion of grain outside of the legal and organized markets, thus increasing the real costs of marketing grains and reducing the effectiveness of the market in allocating grains through time and space. The grain management program, as it was operated in 1969 and 1970, probably had the effect of both reducing prices to farmers at harvest time and increasing the uncertainty of prices at the farm level; and probably has resulted in lower real retail prices, especially as a result of importing rice and selling rice to retailer at below free-market prices.

By attempting to reduce the seasonal price increase, the program has made storage for the legal market unprofitable for the private merchant and reduced the demand for grain at harvest time, depressing the harvest price. At the same time, because of the government intervention, the normal price increases cannot be anticipated and storage becomes more risky. Added risk results under the anti-hoarding and speculation law, and the necessity of selling outside legitimate channels to make a profit at storage. The result to be expected is higher real storage costs.

Because it is less profitable and more risky to store grain, storage by farmers, retailers and consumers also is discouraged. This constraint reduces the availability of a considerable amount of relatively inexpensive storage space, creates need for more commercial storage, and an apparent shortage of storage space in the early part of each crop year.

Modifications

Modification in the government grain management program appears to offer the most important potential improvement in the coordination system

for grains. The concept of government participation in stabilizing grain prices and reducing uncertainty is a good one, but modest modifications in the program would seem to promise improved performance. First, a seasonal price rise for grain reflecting the real costs of storage is both desirable and legitimate. A government-managed buffer stock of domestically purchased and imported grain can provide desirable stability in supplies and prices; however, release of the grain from the buffer stock should be timed to allow a regular and predictable seasonal advance in prices, with the increase related to the real costs of storage. Since the cost of storage is closely related to the interest rate of funds available for financing storage, the credit policy on such loans could be used to influence the seasonal price rise and the level of retail grain prices. Speculative hoarding of grain would be discouraged by announcing and carrying out a policy of releasing buffer stocks, including imported grain, anytime the price for a particular month exceeded the programmed seasonal price increase. The average annual of grain prices could be set at any desired level above the world market price by adjusting the quantity of imported grain.

Both farm production and efficient storage could be encouraged by announcing both the allowable seasonal price increase and the harvest price of grain prior to planting. Given the existing level of grain imports, such a program should be relatively easily managed. The buffer stock program could be supplemented by a program of non-recourse loans to farmers based upon the announced price of grain, so that a farmer by placing the grain in approved storage, would be able to borrow the value of his grain at the announced price; if the price of grain dropped below the announced level, he could settle the loan by allowing the ownership of the grain to revert to

the government.

The current government procedure of buying domestic grain is unnecessarily complicated and costly. Figure III-2 outlines the procedure. The simplest and least expensive procedure, in terms of the cost to the system, would be to purchase the grain in the market in the same manner as a merchant buys it for storage.

Other problems and possible contributions to improved performance exist. The problem of straining facilities and depressing prices at harvest time could be relieved by improving the availability and timing of repayment of production credit to farmers. Development of commercial or cooperative storage, with warehouse receipts which could be used as collateral for loans at reasonable rates also would reduce the pressure on farmers to sell at harvest, reduce their dependence on merchants for credit, and reduce marketing ties to lenders.

Other Recommendations

Grades, standards and practices related to weights and measures could be improved. Korea has a refined code on grades and standards but apparently it is not used in ordinary trade because it does not reflect the needs of those engaged in trade. The code could better coordinate the system if it were simplified and designed to reflect those characteristics considered important in trading by market channel participants from the farmer to the consumer. A problem seems to be associated with the use of the straw bag, which is apparently difficult to standardize, as the unit of measure in trading. The straw bag also may result in unnecessary losses in shipping and handling. Apparently inspection procedures lack uniformity and are unrealistic in the view of farmers and traders; thus the procedures and service have lost credibility with farmers. The inspection fee also may be

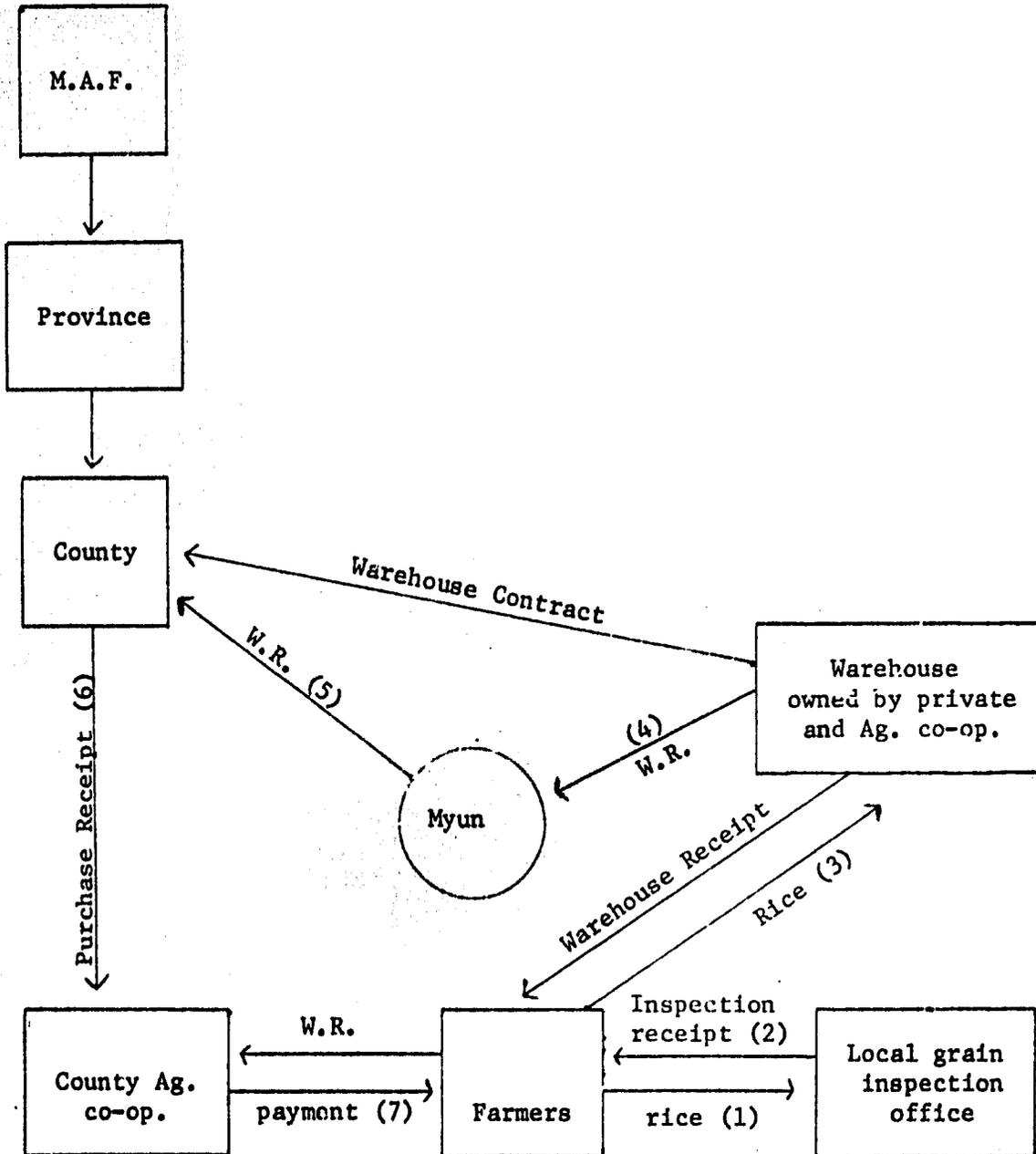


Figure III-2: Government Rice Purchase Procedures

be excessive for small lots relative to small farmers' ability to pay.

The cooperative system has been discredited with the farmers through its being used to implement government programs which farmers perceive as against their interests, and its effectiveness as a competitive force in the system has thereby been reduced. The credit program for inputs requiring repayment in grain at below market prices is an example of such questionable use. The cooperative system should be examined and modified to become more responsive to the needs of farmers, and provide an efficient and viable marketing alternative in a competitive market.

The sharply rising consumption of wheat flour (consumption in 1970 was twice that in 1967) suggests the possibility of inadequate wheat processing facilities in the near future and the advisability of a feasibility study. There also may be a need for improved and expanded facilities for processing corn. The potential of developing and introducing the new high protein (high lysine) corn varieties as a means of improving nutrition should also be investigated; for example, an infant food of high nutritive content can be formulated from the high lysine corn.

Soybeans and Other Pulses

Table III-8 shows the reported average annual farm level prices for pulses. The data are presented to show the variability and uncertainty in prices of the commodities. Only soybeans was given further consideration for this report.

Tables III-9 through III-12 show seasonal, geographic and day-to-day price differences, and estimate marketing costs for unprocessed soybeans from farmer to retailer at a particular time and place.

Table III-8: Average Annual Prices Received by Farmers

Year	Soybeans Yellow Grade B.	Red beans Red Grade B.	Green beans Dried Grade B.	Peanuts Hulled Grade B.	Kidney beans Dried Grade B.	Garden peas Dried Grade B.
1965	3,254	4,082	4,684	7,704	2,523	3,062
1966	3,699	3,445	4,460	10,048	2,562	3,128
1967	4,863	4,480	6,269	10,305	3,073	2,864
1968	3,402	5,014	7,377	10,042	3,403	3,449
1969	3,709	4,027	5,646	12,638	2,837	2,484
1970	5,847	7,275	11,335	15,046	4,098	4,275

Note: Unit is won per 75 kg (bag)

Table III-9: Marketing Costs and Margins for Soybeans (Chunchon-Seoul), August 1969

Classification	Selling prices	Total margins			Rate (%)
		Costs	Net margins	Total	
Producer	3,900	-	-	-	-
Circulating collector	4,070	140	30	170	30.1
Collector in producing area	4,180	75	35	110	19.8
Wholesaler in consumption area	4,280	15	85	100	17.9
Retailer	4,460	45	135	180	32.2
Total	-	275	285	560	100.0

Source: NACF

Note: Rate of marketing margins is 12.55 percent. Unit is won per 75 kg (bag).

About 23.6 percent of the marketed soybeans are processed commercially, and many of the processors are small. Small scale at all points in the channel

from farmer to retailer results in a complicated channel, since many different individuals handle small quantities of the beans both before and after processing.

The price data indicate not only uncertainty in annual prices but also considerable variation in the pattern of seasonal prices which would make storage risky. The geographic price pattern shows some difference greater than could be explained by transportation cost. Figure III-3 shows soybean market channels.

Table III-10: Price Variation, Seasonal Price for Soybeans

Year	Month												Rate of fluctuation (%)
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	78.2	87.8	89.3	91.6	100.1	101.2	100.2	103.2	114.9	108.7	108.6	112.9	36.7
1967	101.1	111.8	112.8	121.8	122.3	103.4	97.0	90.8	93.5	83.8	85.3	76.1	46.2
1968	106.5	106.9	99.6	95.1	95.3	95.6	98.7	99.7	103.9	102.2	102.8	93.5	13.4
1969	77.2	81.0	81.8	80.3	83.5	88.7	98.9	102.3	126.4	124.5	124.5	130.8	53.6
1970	89.9	99.1	100.3	97.1	97.2	99.5	101.4	105.6	115.6	97.0	97.8	99.1	25.7
Ave.	90.6	97.3	96.8	97.2	99.7	97.7	99.2	100.3	110.9	103.3	104.0	102.5	20.3

Source: NACF

Note: Above is average wholesaler's price index number in five major cities. Unit is won per 75 kg (bag).

Table III-11: Day-to-Day Price Variation in Soybeans, September 1-15, 1971

	Date							
	Sep.1	Sep.2	Sep.3	Sep.4	Sep.5	Sep.6	Sep.7	Sep.8
Price	6,360	6,420	6,420	6,420	6,460	6,460	6,480	6,540
	Date							
	Sep.9	Sep.10	Sep.11	Sep.12	Sep.13	Sep.14	Sep.15	
Price	6,560	6,580	6,580	6,610	6,620	6,620	6,620	

Source: NACF

Note: Average rising-rate of price by day is 0.3 percent. Unit is won per 75 kg (bag). Above price is average wholesaler's price in five major cities.

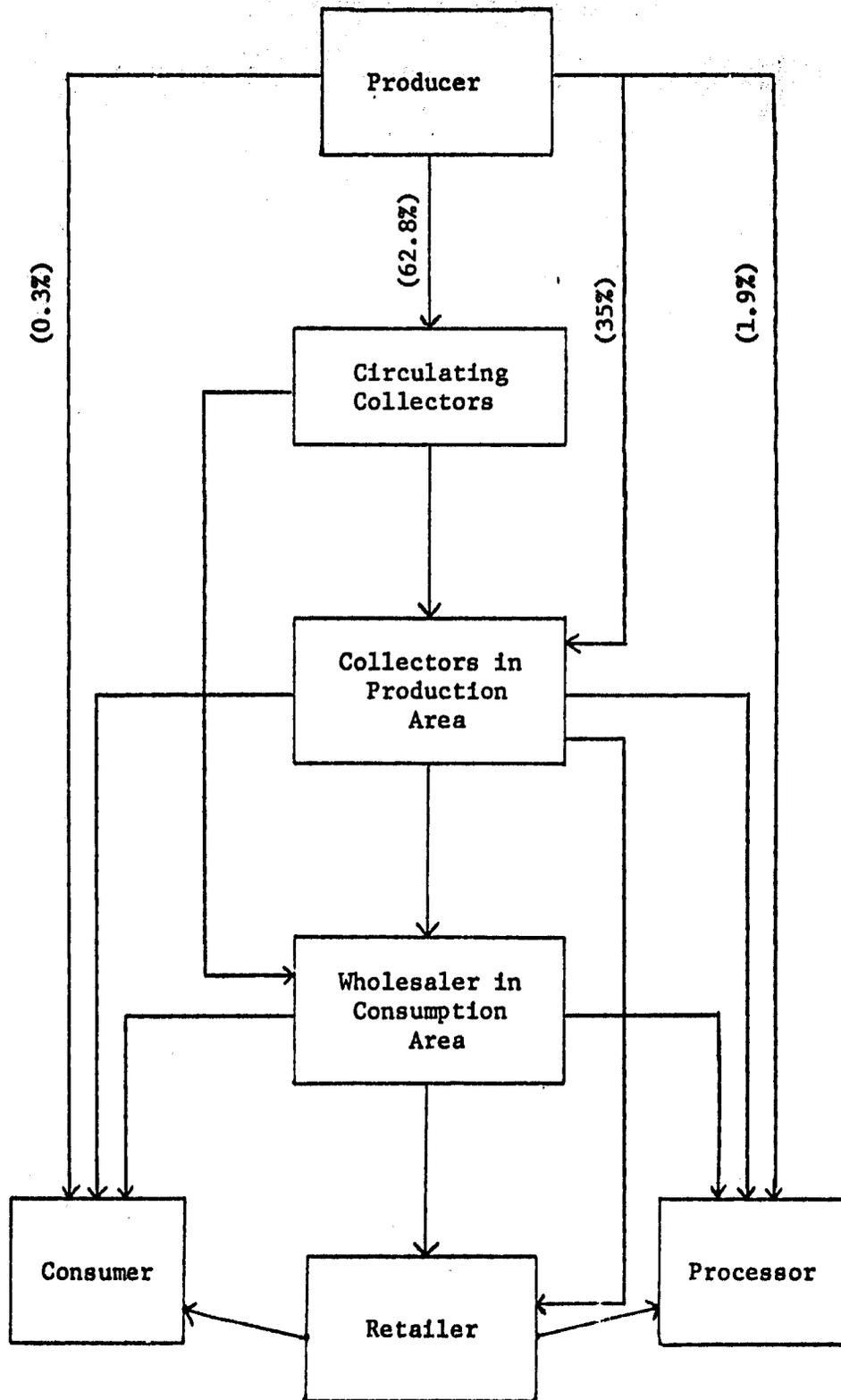
Table III-12: Geographic Price Difference in Soybeans, 1970

Cities	Month												Average
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	5,485	6,151	5,900	5,664	5,579	5,834	5,833	6,335	7,017	5,538	5,910	5,660	5,913
Pusan	5,494	6,128	5,961	5,755	5,698	5,935	5,967	6,379	7,143	5,948	5,894	5,887	6,016
Taegu	5,496	5,594	5,947	5,700	5,768	5,815	5,951	6,229	6,837	6,190	6,094	6,330	5,996
Kwangju	4,919	5,767	5,839	5,700	5,717	5,860	6,071	6,050	6,567	5,758	5,584	5,824	5,805
Taejon	5,224	5,684	6,010	5,894	6,000	6,003	6,133	6,254	6,643	5,278	5,440	5,617	5,848
Average	5,324	5,865	5,932	5,743	5,733	5,890	6,001	6,250	6,841	5,742	5,784	5,864	5,916

Source: NACF

Note: Above price is average wholesaler's price by five major cities in 1970. Unit is won per 75 kg (bag).

The problems of performance and barriers to improvement are similar to those discussed for grains except that the government has made very little effort to manage the stocks or to stabilize prices. Consideration should be given to the potential for implementing a minimum forward price at a level which would not result in an income transfer, but would add certainty to market prices. Another potential is development of a contract system between larger processors and farmers. Considerable work needs to be done on both farm technology and processing. The soybean offers considerable potential for adding quality and variety to the national diet at relatively low costs. The major use of the contract system can be to transmit technical inputs and technical knowledge to farmers while guaranteeing them a market for their output.



Date: 1968.8
Source: NACF

Figure III-3: Soybean Market Channels

Potatoes

Table III-13 shows reported average annual prices for potatoes. The data indicate that sweet potato prices have been steadily increasing since 1965 at a rate slightly greater than the wholesale price index. White potatoes, in contrast, have shown more price variability.

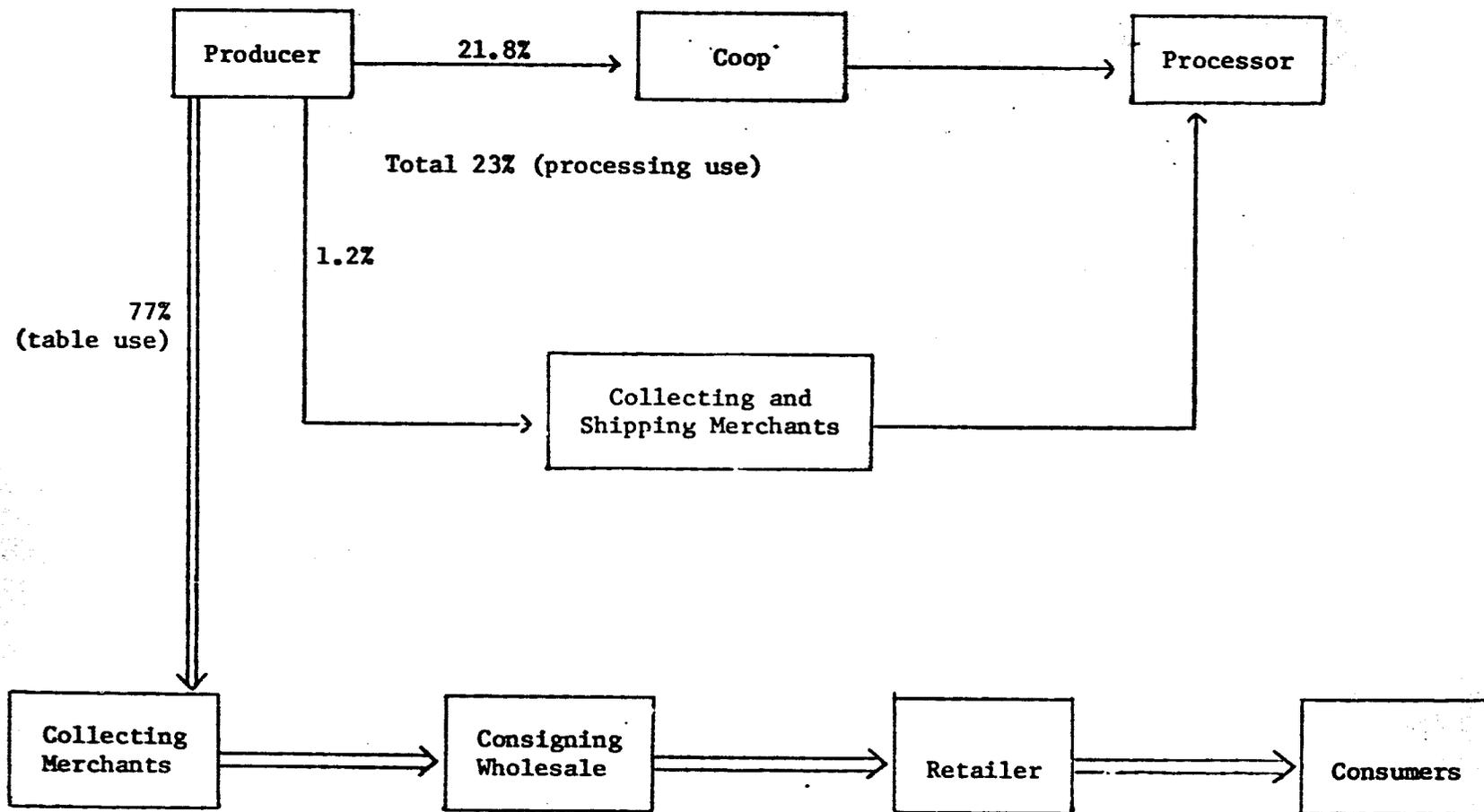
Average annual prices reported are those received by farmers.

Table III-13: Average Annual Prices for Potatoes

Year	White Potatoes Medium Quality	Sweet Potatoes Medium Quality
1965	51	31
1966	52	34
1967	61	38
1968	58	43
1969	54	48
1970	62	55

Note: Unit is won per 3.75 kg (bag)

This report is restricted to consideration of sweet potatoes. The market channel map is shown in Figure III-4 for table-use sweet potatoes. Basic statistics on margins and price differences are presented in Tables III-14 through III-17. Marketing costs, at about half the retail price for table-use potatoes, are related to the high bulk to value ratio. It is also related to the complex channel of very small traders.



Date: June 1968
 Source: NACF

==== Main channel
 == Partial channel

re III-4: Sweet Potato Market Channels

Table III-14: Marketing Cost and Margins for Table-Use Sweet Potatoes

Classification	Selling Price	Costs	Total Margins		Rate (%)
			Margins	Total	
Producer	24	-	-	-	52.4
Wholesaler	35	8	3	11	52.4
Retailer	45	3	7	10	47.6
Total	-	11	10	21	100.0

Source: NACF

Note: Areas surveyed: Suburb 8 km Kwangju. Marketing costs represent 46 percent (21/45) of retail price. Unit is won per 3.75 kg (kwan)

Date: 1968.6

Table III-15: Index of Seasonal Prices of Sweet Potatoes

Year	Month												Rate of Fluctuation
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	81.4	88.4	93.0	90.7	111.6	116.3	172.1	120.9	97.7	74.4	72.1	79.0	100.0
1967	74.4	82.9	85.1	89.4	100.0	112.7	138.3	138.3	110.6	85.1	82.9	93.6	74 73.9
1968	92.0	104.0	106.0	106.0	108.0	108.0	-	144.0	82.0	80.0	84.0	88.0	64.0
1969	83.8	93.5	101.6	101.6	111.3	127.4	-	156.4	95.2	79.0	79.0	45.2	77.4
1970	78.7	91.3	110.0	110.0	141.2	-	-	157.5	105.0	76.3	68.7	82.5	88.8
Ave.	82.6	92.0	99.5	99.5	114.4	-	-	143.2	98.3	78.9	77.3	87.7	65.9

Source: NACF

Note: Above is index number. July is just-pre-harvest time.

Table III-16: Day-to-Day Wholesale Price Variation for Sweet Potatoes, May, 1971

By Day	May 1	May 2	May 3	May 4	May 5	May 6	May 7	May 8	May 9	May 10	May 11	May 12	May 13	May 14	May 15
Price	(won) 91	(won) 92	(won) 92	(won) 91	(won) 92	(won) 90	(won) 90	(won) 92	(won) 92	(won) 92	(won) 95	(won) 95	(won) 95	(won) 98	(won) 98

Source: NACF

Note: Rate of rising price by day is 0.5 percent. Above price is average wholesaler's price of 5 major cities in Korea.

Table III-17: Geographic Wholesale Price Differences in Sweet Potatoes in 1970

City	Month												Average
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	64	74	85	93	-	-	-	114	78	61	61	73	78
Pusan	49	67	88	103	114	-	-	154	101	60	55	67	87
Taegu	84	100	105	105	120	-	-	133	99	71	67	74	96
Kwangju	47	51	60	76	-	-	-	86	68	50	43	48	59
Taejon	72	75	77	78	135	-	-	116	76	59	51	64	80
Average	63	73	83	88	113	-	-	126	84	61	55	66	80

Source: NACF

Note: Unit is won per 3.75 kg (kwan)

The price data indicate large seasonal price increases which seem to be fairly predictable. The increases reflect the high cost of storage which is considerably above the interest costs and seasonals in most other commodities. The geographic price differences reflect both a high cost of transportation and an apparent lack of an organized national market in sweet potatoes.

Uses of Sweet Potatoes

Until 1960, demand for sweet potatoes was limited mostly to use as a second-choice food in human diets and feed; there was little used for industrial purposes. But, the government adopted a policy in 1961 to replace the raw material for alcohol with sweet potatoes, thus increasing the industrial demand for sweet potatoes.

The government has encouraged cultivation under contract for the stated purposes of improving farmer's income, expanding demand for agricultural products through agricultural processing, and replacing imported raw materials.

Cultivation under contract has become a service of the agricultural cooperative.

The results of the program as of 1965 are reported by A. L. Larson and H. H. Hulbert:

In its efforts to carry out governmental instructions and directives, NACF sometimes finds itself financing processors. A case in point is the 1965 sweet potato program, now facetiously referred to as the sweet potato program that went sour. In the eyes of the farmer, NACF was responsible and freely blamed for the shortcomings of the program. Our investigation indicates, however, that there were circumstances over which NACF had no control.

We are told that in 1965 MAF, through ORD and other agencies, encouraged farmers to increase their production of sweet potatoes. The response was gratifying and figures indicate that production was nearly quadrupled over the previous year. MAF determined the price that would be paid for sweet potatoes and then directed NACF to begin buying at that price. NACF inventoried its financial resources, made an allocation of funds to be used for sweet potato purchases and began buying. As purchases were made, sales on credit were negotiated with starch, alcohol, and glucose processors. Under the terms of sale, as related to us, the processors were to pay 20% cash upon delivery of the sweet potatoes and given four months for payment of the balance. During this credit period, the sweet potatoes were to be processed and the products sold. However, the processors did not make good on their 20% cash downpayment on potatoes delivered and they have been unable to sell the processed products either domestically or for export at prices that would cover their costs of production.

NACF continued to buy sweet potatoes from farmers at the government established prices until their funds allocated for sweet potato purchases were exhausted. At the end of the season, farmers were left with a substantial volume of sweet potatoes on hand, some of which were reported to be rotting. Others were sliced and dried in order to preserve them. The prospect for a satisfactory market for the balance of the crop, however, appeared to be poor. Such experiences are bound to shake the faith of farmers in the word of their government and in the effectiveness of NACF as their marketing agent.^{1/}

The idea of contracting for desired supplies, nevertheless, appears to be basically sound. The problems appear to be inappropriate use and practices in instituting the contract program between NACF and the processors. These contracts have involved difficulties, including a substantial

^{1/}A. L. Larson and H. H. Hulbert, "Study of Agricultural Cooperatives in Korea," March, 1966.

delinquency in assessments to NACF. The NACF does not contract with farmers. Attempts have been made to offer forward prices and encourage appropriate supplies for the industrial processing.

System problems reported include delay in announcement of the "forward" price until after planting time, unrealistic prices, lack of accuracy and reliability of quoted prices, and lack of uniformity in inspection which cause discrepancies between expected and realized prices by farmers. The program could be successful in stimulating appropriate supplies by improving estimates of product needs (demands for the processed product), adequate funding and providing reliable prices.

Consideration should be given to contracting between the processors and farmers with the NACF acting as broker. The forward price could be determined by farmers' bids to supply desired quantities of raw materials by the processors. The Ministry of Agriculture and Forestry (MAF) should provide funds to assure payment on contracted supplies as long as the processors are in serious financial difficulty.

The Fruit Systems

The potential market and market coordination for fruits are especially important in the future development of Korean agriculture because of the large area of upland which seems to be well suited to fruit production. Population projections indicate that the upland areas will have surplus labor and fruit production is labor intensive.

A detailed description of fruits (apples, peaches and grapes) in the marketing system follows.

Problems of performance and barriers to improvement of the fruit system are several. While fruit farms are larger than average farms and market

almost all of their production, they do not appear to be market oriented. Varieties better adapted to the needs of the market need to be developed. The lack of good trading grades and standards make it difficult to accurately reflect consumer preferences through the price system. Packaging methods and materials need to be improved to better preserve the fruit and reduce shipping and handling costs. Some additional storage capacity is needed at harvest time. Also, more adequate credit is necessary to reduce the pressure for immediate sales at harvest, in the case of storable fruits, and the tie-in between financing and marketing at terms disadvantageous to the farmer.

The Central Wholesale Market law was designed to foster organized spot markets. However, a large portion of supplies bypass both the central markets and the NACF markets. The idea of fostering organized wholesale markets is a good one. Such markets can perform a coordinating function for the whole system by providing a system for price determination and price information. However, it is not necessary or efficient to attempt to force all supplies through these markets. This is especially true because the market centers and the central wholesale markets are operated by employees who are not under the same incentives for aggressive performance as the private merchants.

The most pressing problem in the future for the fruit systems is the problem of coordinating supplies with demands in the process of substantial growth. While fruit production has been growing rapidly in percentage terms since 1965 and demand has increased more rapidly than supply (as indicated by the fact that fruit prices have increased more than either all prices or all food prices), the fact remains that the market for fruit is very small and any substantial increase in production would result in

disastrous prices to farmers. Farm prices from 1965-70 are shown by

Table III-18.

Table III-18: Average Annual Fruit Prices Received by Farmers

Year	Fruit						
	APPLE "Gookgwang" "Mongok" Medium Quality	PERSIMMON "Bansi" Medium Quality	GRAPE Medium Quality	CHESTNUT Medium Quality	PEAR "Changsi- prang" "Mansonkil"	PEACH "Paikto" "Sumilto"	ORANGE Onju Milkam, Medium Quality
	18.75 kg	100 pieces	3.75 kg	100 l	50 pieces	3.75 kg	3.75 kg
1965	520	269	169	5,037	612	80	588
1966	502	285	199	7,808	543	73	600
1967	593	379	232	8,202	689	110	767
1968	747	472	204	9,056	783	94	870
1969	773	539	309	12,208	857	123	1,029
1970	970	788	290	14,700	1,071	124	1,094

Any successful plan to greatly expand upland fruit production will require the development of new market institutions. Consideration should be given to developing strong associations of producers to provide for effective sustained growth of the fruit systems. The associations could promote improved technology in production to develop lower cost production of commodities oriented to market demands, identify potential markets, manage supplies and provide the price security needed to stimulate investment in fruit production. Within prescribed limits the associations could have formal authority to manage supplies and to influence prices related to uses and grades in order to stimulate processing and contribute to price stability. The association could operate through contractual relationships to obtain the services needed for physical distribution and stimulate large scale

multiple product assembly, etc., while providing the coordination function for producers. Special cooperatives could provide the beginning of institutions needed to effectively develop and coordinate the fruit systems, although they are not currently performing this function.

Fruits are a minor portion of agricultural production and food consumption. Value of fruit production increased from less than 1 percent of the farm value of food crops to nearly 2 percent during the 1960s. Apples, peaches, pears, grapes, oranges, and persimmons are marketed in commercial quantities.

While Korean consumers like fresh fruits, fruits are very high priced relative to incomes, restricting consumption. Only a very small portion of fruit production is processed; again the high costs of fruit relative to income restricts the potential market for fruit for processing.

Special studies of three of the major fruits (apples, peaches and grapes) were made between 1968 and 1972. Information from these studies and related data indicate the status of marketing for fruits.

Apples

Figure III-5 shows the typical channels for apples moving from Tae-Ku to Seoul. Apple farms are relatively large, which explains the relatively large percentage (23 percent) of apples moving directly from farmers to the Seoul wholesale market. The existence of large apple production units, about 10 relatively large private merchants dealing in apples and a developed auction wholesale market in Seoul operated by NACF, has facilitated relatively simple channels and relatively large operations compared with other fruits and vegetables. Nevertheless, many small scale operators are involved in the collection of apples and in the wholesaling function in Seoul.

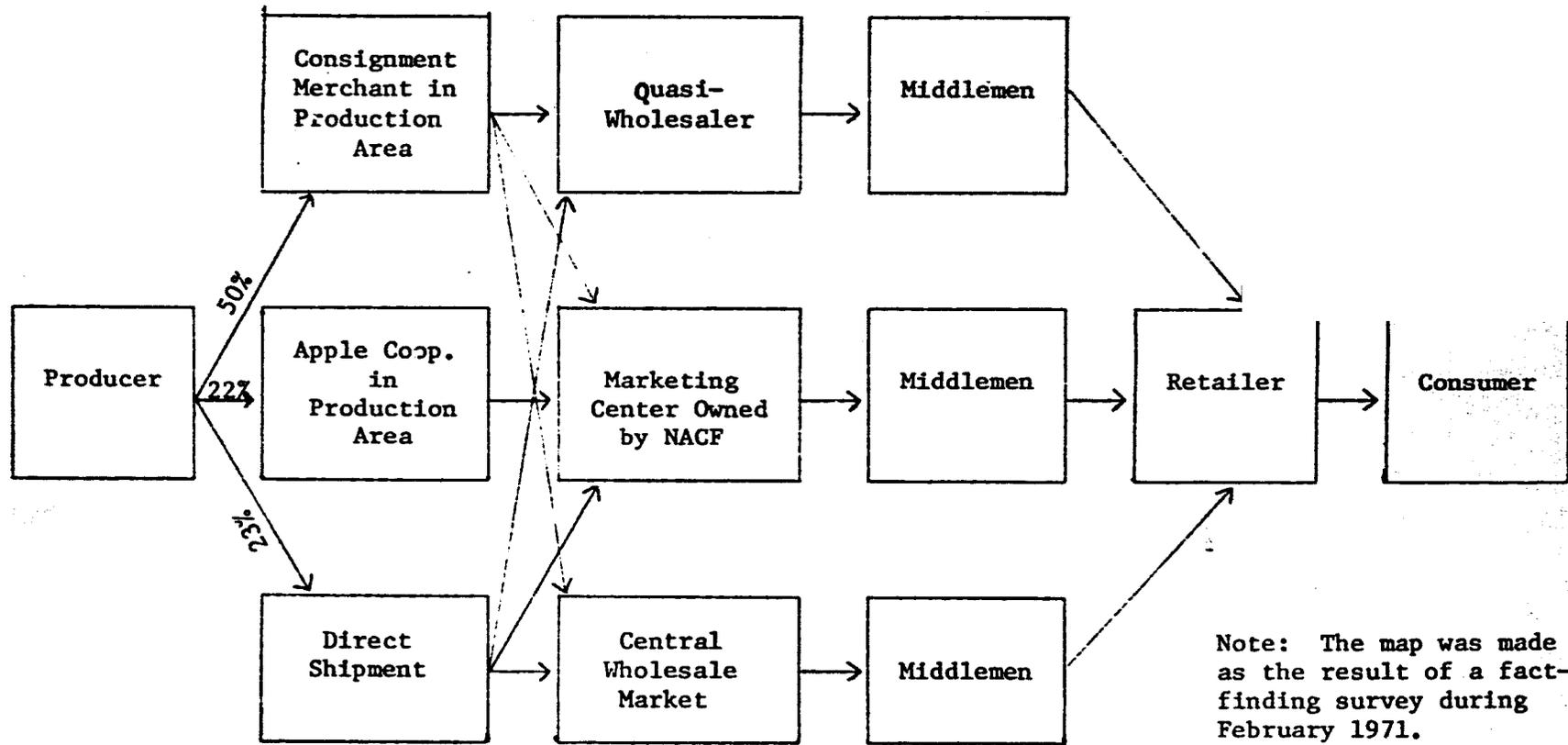


Figure III-5: Apple Market Channels from Tae-Ku to Seoul

Apple retailing is extremely small scale, including many push cart retailers specialized in apples.

Table III-19 gives some indication of the marketing margin for apples at a particular point in time in 1971 with a price spread between the farmer and consumer of about 40 percent of the retail price. Cost of storage is included in the farmer's price as is his costs of delivering to the first buyer, which may be the cooperative some distance from his farm. Thus, significantly, the price spread does not include the storage costs.

Table III-19: Marketing Margin and Prices Received by Kuchwang Apple Producers

Channel	Merchant	Selling Price	Marketing Margin					
			Marketing Cost		Interest		Total	
			Value	Rate	Value	Rate	Value	Rate
Through Coop.	Producer	1,070	-	-	-	-	-	-
	Marketing Center (NACF)	1,530	380	24.8	80	5.2	460	30.0
	Retailer	1,750	-	-	220	12.6	220	12.6
	Total	-	380	21.8	300	17.1	680	38.9
Through Merchant	Producer	1,038	-	-	-	-	-	-
	Quasi-Wholesaler	1,530	412	26.9	80	5.2	492	32.1
	Retailer	1,750	-	-	220	12.6	220	12.6
	Total	-	412	23.5	300	17.1	712	40.7

Source: NACF

Note: The interest of NACF Marketing Center is commission.

Pricing of apples at the wholesale level appears to be well organized and efficient. While grades are not used and most apples are sold by inspection of a representative box, communication of prices seems to be effective among dealers. Tables III-20 and III-21 indicate the day-to-day fluctuations in average wholesale prices in the five major urban markets. Some of the day-to-day variations may be due to differences in average quality. The table for May shows the effects of smaller volume available late in the season.

Table III-20: Day-to-Day Price Variations for Apples, November, 1971

		November							
		1	2	3	4	5	6	7	8
Price		1,183	1,217	1,217	1,200	1,213	1,213	1,213	1,238
		November							Ave.
		9	10	11	12	13	14	15	
Price		1,238	1,275	1,250	1,288	1,250	1,270	1,260	1,230

Source: NACF

Note: Unit is Won per Kuchwang Box (18.75 kg)

Table III-21: Day-to-Day Price Variations for Apples, May, 1971

		May							
		1	2	3	4	5	6	7	8
Price		1,710	1,784	1,790	1,790	1,794	1,834	1,890	1,892
		May							
		9	10	11	12	13	14	15	
Price		1,922	1,910	1,934	1,914	1,906	1,930	1,930	

Source: NACF

Note: Price is the average wholesale price of five NACF Marketing Centers located in Seoul, Pusan, Tae-Ku, Kwangju, Taijon, respectively. Unit is Won per Kuchwang Box (18.75 kg)

Table III-22 is an index of seasonal wholesale price fluctuations using the average price for each year in 5 city markets. The average harvest increase from October to May at the end of the effective storage season was from 80 to 124. The average increase in price indicates the potential for profitable storage. The price relatively large spread between October and December indicates that farmers are under pressure to sell at harvest and that a shortage of short-time storage may exist. Since on-farm storage is common and apparently effective for at least part of the season, the need for credit to keep the crops and build inexpensive on-farm storage may be a more important factor in developing a more economic apple storage system than the need for commercial storage facilities. However, the seasonal price pattern and other evidence is sufficient to justify an economic feasibility study of the potential for commercial storage facilities for apples.

Table III-22: Index of Seasonal Wholesale Price Fluctuations for Apples

Year	Month												Rate of Fluctuation
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	93.3	102.4	124.1	138.5	-	-	-	86.8	83.6	81.5	84.0	105.5	57.0
1967	94.6	97.7	108.1	120.6	114.4	-	-	-	87.2	81.5	92.1	103.8	39.1
1968	93.0	98.2	100.9	122.3	165.2	-	-	-	72.5	73.4	90.8	99.5	91.7
1969	95.0	109.3	122.1	128.7	-	-	-	-	92.2	82.6	91.2	107.5	37.5
1970	94.9	108.1	111.5	109.8	-	-	-	-	109.2	82.6	92.3	109.4	28.9
Ave.	94.2	103.1	113.3	124.0	-	-	-	86.8	88.9	80.3	88.1	105.1	50.8

Source: NACF

Note: The index is calculated on average wholesale price of five NACF Marketing Centers. The degree of price fluctuation is rather high before harvest time.

Table III-23 shows the average wholesale price differences for apples for the 5 major cities by months for period in 1970, and indicates the market

is working reasonably well in the geographic distribution of apples. Performance seems good in this respect, but coordination could be improved.

Table III-23: Geographic Price Differences for Apples in 1970

Marketing Center	Month												Ave.
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	1,234	1,258	1,358	1,485	1,714	1,963	-	-	-	-	-	1,546	1,450
Pusan	975	1,108	1,164	1,372	1,658	1,737	-	-	-	-	-	1,474	1,355
Taeku	1,158	1,232	1,249	1,445	1,533	1,716	-	-	-	-	-	1,436	1,396
Kwangju	890	965	950	1,064	1,281	1,634	-	-	-	-	-	1,217	1,143
Taejon	1,045	1,230	1,250	1,280	1,527	1,592	-	-	-	-	-	1,180	1,301
Average	1,061	1,159	1,195	1,329	1,543	1,688	-	-	-	-	-	1,371	1,335

Source: NACF

Note: One box contains about a hundred superior apples. Unit is Won per 18.75 kg box

Apples appear to be the fruit with the best export potential in the near future, based upon current production and processing technology. Barriers to expanded exports of apples include:

1. Appearance, especially in color, of Korean apples is not as appealing as that of apples exported from Japan, New Zealand, Australia, Argentina, etc., which are the main competitors in apple export.
2. Domestic prices of apples are higher than world market prices because of high production cost and marketing expenses due to the small scale of operation and inadequate technology.
3. The preservation of freshness is difficult.
4. Quality of packing materials, packing methods, packing and design technology are poor.
5. Inadequate information about the world market situation.

Table III-24 indicates exports from 1968-1970.

Table III-24: Apple Exports by Country and Year

Country	Year					
	1968		1969		1970	
	Quantity (MT)	Value (\$1000)	Quantity (MT)	Value (\$1000)	Quantity (MT)	Value (\$1000)
R. China	1,477	312	1,810	348	1,815	374
Philippines	1,534	194	1,942	244	485	55
Thailand	5	1	5	1	4	1
Singapore	-	-	400	33	307	38
Malaya	-	-	-	-	58	7
Indonesia	-	-	-	-	150	20
U.S.A.	-	-	-	-	180	19
Liberia	-	-	-	-	87	10
Total	3,105	521	5,055	737	3,085	524

Note: Figures are on the basis of entry from Office of Customs Administration, of ROK.

Apples are an important crop for the 53 special cooperatives which handled about 22 percent of the crop in 1971; thus the volume handled by each is small. The volume handled by any one coop appears insufficient to achieve any significant economies of scale and, since the coops do not coordinate their marketing, the cooperative system does not offer the potential contribution in coordinating the flow of apples to market to either maximize returns to growers or nationalize the system.

Peaches

Figure III-6 indicates market channels showing the typical flow of peaches to market. The special cooperatives are an important channel in peach marketing, accounting for more than half of total marketing. Considering

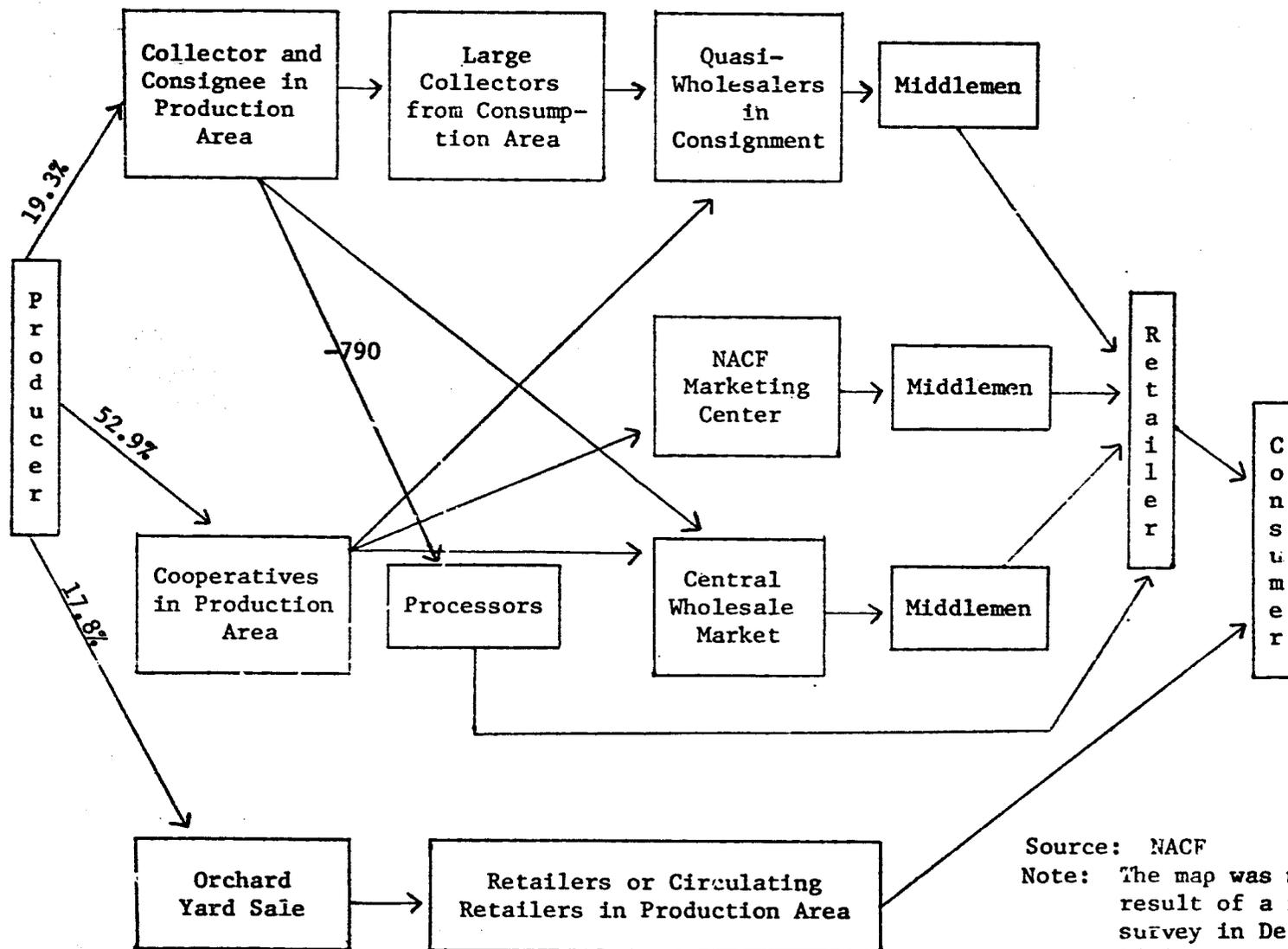


Figure III-6: Marketing Channel for Peaches

the cost of labor and the services provided, the margin indicates poor marketing performance. The margins at a point in time in 1970 are indicated by Table III-25. Processing of peaches is a minor activity utilizing about 7 percent of the crop. Peaches are highly perishable and do not store well. High prices of both raw product and of canning materials are barriers to developing an effective processing enterprise. However, if production costs could be reduced and volume expanded to achieve some economies of scale in processing, processing could become important as a means of expanding the market and adding some stability to annual price fluctuations. The development of full line wholesalers for processors can be important to effective distribution of the processed products. High costs of both wholesaling and retailing are associated with the large number and extremely small scale of wholesalers and retailers. Scale is so small that most wholesalers and retailers cannot afford the storage facilities required to keep peaches in good condition for any length of time.

Checks on price variations indicate that the day-to-day market prices are fairly rational while the geographic coordination seems to be poor. These data are indicated in Tables III-26 and III-27. The special cooperatives handle a large portion (52 percent) of the peaches but do not appear to be performing an effective coordinating function.

Grapes

Figure III-7 indicates typical marketing channels for grapes. Many grapes apparently are produced near urban centers and are sold to consumers who come to the vineyards for an outing. The special cooperatives do not handle a very large proportion of the grapes. Grapes usually are produced for processing into juice and wine. Grape processing has not been a very

Table III-25: Marketing Margins for Fresh Peaches, 1970

Channel	Merchant	Sales Price	Marketing Margin					
			Marketing Cost		Interest		Total	
			Value	Rate (%)	Value	Rate (%)	Value	Rate (%)
Through Coop.	Producer	592.5	-	-	-	-	-	-
	Marketing Center	850.0	249.0	29.3	8.5	1.0	257.5	30.0
	Retailer	1,340.0	10.0	0.8	480.0	35.8	40.0	36.6
	Total	-	259.0	19.3	458.5	36.5	747.5	55.8
Through Merchant	Producer	575.5	-	-	-	-	-	-
	Middleman	850.0	257.5	30.3	17.0	2.0	274.5	32.3
	Retailer	1,340.0	10.0	0.8	480.0	35.8	490.0	36.6
	Total	-	267.5	19.9	497.0	37.1	764.5	57.0

Source: NACF

Note: Interest of NACF is commission. Unit is Won per case (18 kg)

Table III-26: Day-to-Day Price Variations for Peaches, July 16-31, 1971

	July																Ave.
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Price	239	245	236	240	249	242	233	250	250	303	286	226	231	234	247	250	247

Note: Price is the average of wholesale price in five cities. Unit is Won per 3.75 kg.

profitable enterprise in Korea and operates at a very small scale, based apparently on low demand for processed grape products and high costs of both raw product and processing.

The small quantity of fresh grapes going through commercial channels

Table III-27: Geographic Price Variations in Peaches, 1970

City	Month											Average
	1	2	3	4	5	6	7	8	9	10	11	
Seoul	-	-	-	-	-	-	164	179	275	-	-	206
Pusan	-	-	-	-	-	-	349	375	317	-	-	347
Taeku	-	-	-	-	-	-	145	181	262	-	-	196
Kwangju	-	-	-	-	-	-	150	167	180	-	-	166
Taejon	-	-	-	-	-	-	167	133	223	-	-	174
Average	-	-	-	-	-	-	195	207	256	-	-	218

Note: Above price is wholesale average price in five cities. Unit is Won per 3.75 kg.

do not appear to be marketed efficiently, probably due to the very small scale of operations. The retail margin, indicated in Table III-28, seems to be especially high, probably indicating that retailers have difficulty in keeping grapes in salable condition. A check on daily price variations and geographical price differences indicates the market is performing poorly in pricing and allocating grapes through time and space, as shown by Tables III-29 and III-30.

Table III-28: Marketing Margin and Prices Received by Producers of Grapes, August 26, 1970 (From Ansong to Seoul)

Channel	Merchant	Sales Price	Marketing Margin					
			Marketing Cost		Interest		Total	
			Value	Rate	Value	Rate	Value	Rate
Through Coop.	Producer	1,327.5	-	-	-	-	-	-
	Mktg. Ctr.	1,650.0	306.0	18.5	16.5	1.0	322.5	19.5
	Retailer	2,349.0	10.0	0.4	699.0	29.3	699.0	29.7
	Total	-	316.0	13.4	705.5	30.1	1,021.5	43.5
Through Merchant	Producer	1,2651.5	-	-	-	-	-	-
	Middlemen	1,650.0	339.0	20.5	49.5	30.0	388.5	23.5
	Retailer	2,349.0	10.0	0.4	689.0	29.3	699.0	29.7
	Total	-	349.0	14.9	738.5	31.4	1,087.5	46.3

Source: NACF

Note: The interest of Marketing Center is commission.

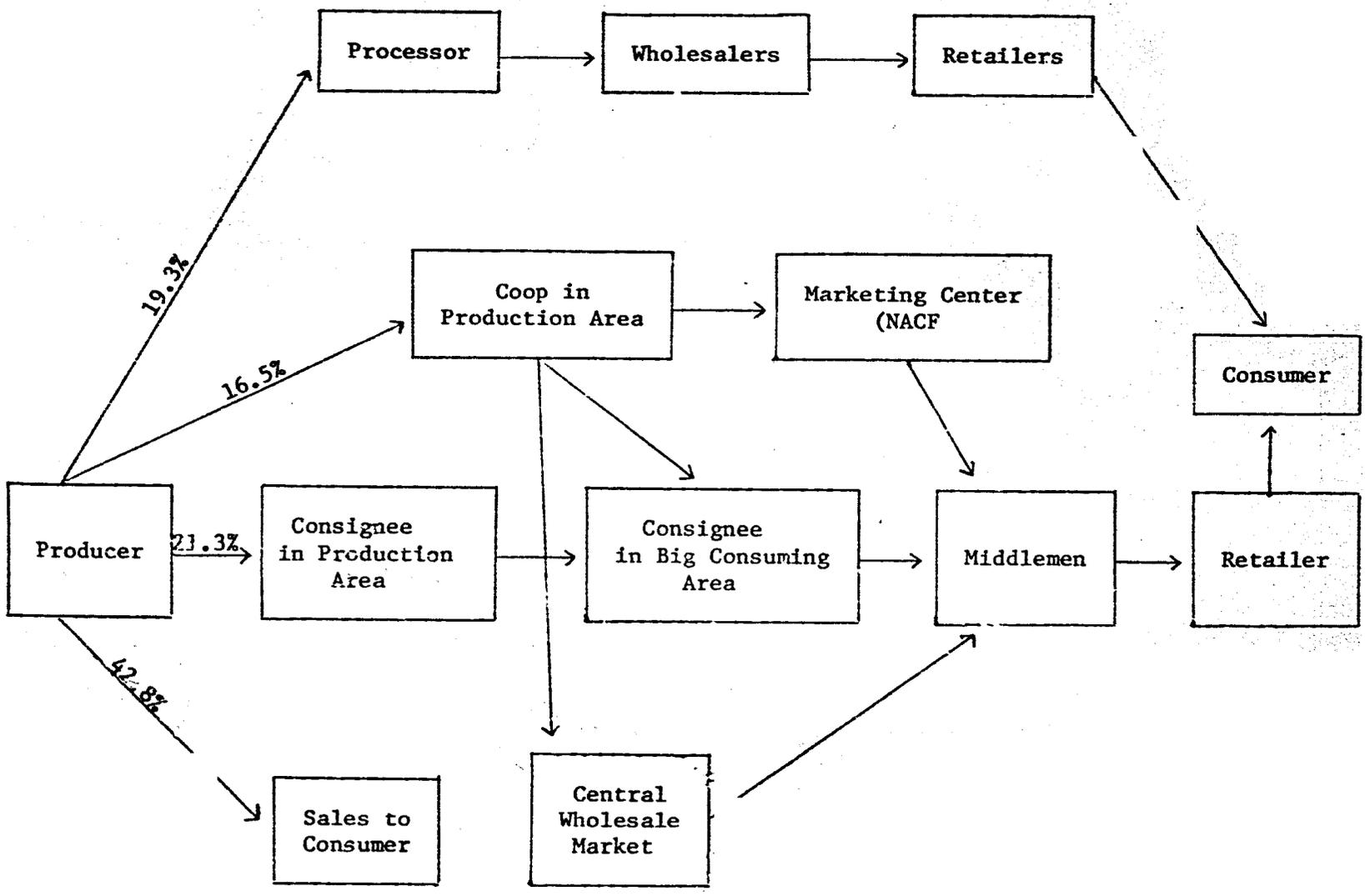


Figure III-7: Market Channel for Grapes, 1970

Table III-29: Day-to-Day Price Variations of Grapes, July 16-31, 1971

	July																A
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Price	1,283	1,100	957	897	897	1,132	1,074	1,040	1,040	1,060	1,010	980	960	970	860	828	91

Source: NACF

Note: Above price is the average of wholesaler price of five cities. Unit is won per box (3.75 kg).

Table III-30: Geographical Wholesale Price Differences in Grapes, 1970

City	Month				Average	December (cold stored)
	July	August	September	October		
Seoul	1,276	506	335	380	635	678
Pusan	1,422	560	378	377	684	-
Taeju	1,829	634	250	387	702	512
Kwangju	1,200	391	260	260	528	-
Taejon	1,050	400	320	-	590	-
Average	1,355	498	308	326	628	-

Source: NACF

Note: Unit is Won per box (3.75 kg)

Vegetables

Little research work appears to have been done on the marketing of vegetables. Since vegetables generally are produced in much smaller lots than fruits and markets appear to be less well organized, grades and standards are difficult to establish and market information is poorly developed; it can be assumed that marketing costs are relatively high and performance of the coordinating function is relatively poor. Problems in storage, packing and handling are similar.

Only a very small portion of the vegetable production is processed

commercially. Demand for commercially processed vegetables appears limited due to relatively high cost processing, limited incomes, and consumer preferences. Food processing will expand as these conditions change, but improvements in the marketing and storage of fresh vegetables seem to offer a greater potential at this time than extensive investments in vegetable processing facilities.

Table III-31 shows the year-to-year variation in average prices of 10 vegetables. Price variations for individual farmers would be much greater than the average. In some years it does not pay to harvest part of the crop.

Table III-31: Average Prices of Farm Vegetables

Year	Vegetables, Medium Quality									
	Carrot 1 kwan 3.75 kg	Cabbage 1 kwan 3.75 kg	Onion 1 kwan 3.75 kg	Cucumber 1 kwan 3.75 kg	Water Celery 1 kwan 3.75 kg	Spinach	Edible Burdock	Taro	Squash	Eggplant
1965	114	67	95	66	58	88	148	68	46	77
1966	94	47	60	68	71	86	136	104	38	64
1967	108	84	114	70	76	106	155	106	39	62
1968	160	66	119	65	-	137	181	94	39	48
1969	96	49	76	65	-	113	169	109	44	56
1970	236	81	215	73	185	188	254	161	50	65

Clearly the price uncertainty and risk in vegetable production is high. Such risk discourages specialized efficient vegetable production and results in high costs in assembling small lots with difficult market coordination. A system which could offer reasonable forward prices, announced prior to planting, could greatly stimulate vegetable production and lower costs in both growing and marketing. Marketing institutions could simultaneously

improve coordination and transmit technical information to farmers in order to improve product quality and productivity.

A system of contract farming is one potential method of coordinating vegetable marketing, adaptable to the developing Korean situation. Korea already has had experience with contracts, some successful and some not. Contracting is discussed in greater detail in Chapter 6.

Tables III-32 through III-35 show seasonal, geographic, and daily price variations for two important vegetables, radishes and Chinese cabbage. These prices indicate the market is not performing well in allocating these products through time and space.

Table III-32: Seasonal and Geographic Price Variations in Superior Quality Radishes, 1970

City	Month												Ave.
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
Seoul	90	117	142	163	104	36	34	41	56	67	66	106	85
Pusan	95	103	134	219	100	30	38	47	87	92	74	114	94
Taegu	95	104	108	156	124	49	35	45	74	90	59	106	87
Kwangju	68	85	106	153	77	35	42	63	111	99	85	105	86
Taejon	91	106	100	139	110	47	29	51	83	128	107	116	92
Average	87	103	118	166	103	39	36	49	83	96	78	109	89

Note: Price is average of five cities. Unit is Won per 3.75 kg

Table III-33: Seasonal and Geographic Price Variations in Superior Quality Chinese Cabbage

City	Month												Ave.
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
Seoul	57	75	128	245	66	33	40	52	84	102	68	129	90
Pusan	67	79	116	185	83	19	51	82	112	113	69	185	94
Taegu	65	83	87	139	86	38	40	65	104	137	68	145	88
Kwangju	47	63	63	117	59	28	45	101	161	110	70	148	84
Taejon	62	76	71	101	61	28	28	62	113	139	79	116	78
Average	60	75	93	157	65	28	41	72	115	120	71	144	87

Note: Price is average of five cities. Unit is Won per 3.75 kg.

Table III-34: Day-to-Day Price Variations for Radishes (Wholesale), August 1-15, 1970

	August															Ave.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Price	140	140	130	120	120	110	120	120	130	130	180	200	220	180	180	148

Note: Unit is Won per 3.75 kg, location is Seoul.

Table III-35: Day-to-Day Price Variations, Chinese Cabbage (Wholesale), August 1-15, 197

	August															Ave.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Price	150	150	120	110	90	75	100	100	130	125	220	280	240	230	230	157

Note: Unit is Won per 3.75 kg; location is Seoul.

Livestock and Related Products

Typical marketing channel maps, some indication of price margins and seasonal and geographic differences in reported prices in livestock and related products are reproduced in the appendix of this report. Only very general comments will be made about the organization, problems and performance of the markets for these commodities. While these commodities will become much more important as the economy develops, they are currently of relatively minor importance in both farm income and Korean diets. Also the data for livestock and meat involve especially difficult problems because of changes in form as it moves through the marketing channel, and the difficulty of getting data on comparable or equivalent products either at different stages in the channel or between points in time and space.

Cattle and hogs are produced in very small units. A preliminary report, from AERI, of the area supplying the Seoul market indicates that the average number of cattle marketed in 1971 was 1.2 head per cattle-feeding farm.

The comparable estimate for hogs was 1.3. Livestock assemblers also were very small scale operators, the majority handling less than 200 head per year.

Coordination of information in the system seems relatively poor. Many transactions in cattle are made on the basis of visual estimates rather than weight. While scales are available in the staging markets an AERI study indicated that less than 16 percent of the cattle were sold in these markets on scale-measured weight.

Scale of operations in slaughtering plants also is extremely small. A sample of 7 plants within the legitimate market found them slaughtering an average of 8.5 hogs and 3.0 cattle per operating day, which was at a rate below 20 percent of their intended operating capacity.

Seoul has a larger scale licensed slaughter plant which operates in connection with the central wholesale market. Recently, it has been slaughtering 300 cattle and 800 hogs per operating day which represents only about 20 percent of its intended capacity. The central wholesale market charges a commission equivalent to about 6 percent of the farm value of livestock and, more importantly, a tax equivalent to about another 6 percent of farm value is assessed on all livestock as they move through the central wholesale market. It is estimated that more than 50 percent of the livestock is moved outside of this legal channel in order to avoid the tax. The result is that slaughter takes place in very small plants under sanitary conditions of an unknown quality without the benefit of inspection of any kind. Removal of the tax would reduce the disincentive to use the central market, making it possible to achieve economies of scale both in the market and in slaughtering. The increased volume could permit a reduced commission at the market and certainly would improve the sanitary conditions of the meat. Apparently the

application of taxes and commissions in assembly markets also results in livestock being moved outside legal channels, with higher real costs to the system and reduced effectiveness of the coordinating function of the market.

The system does not appear to be effective in transmitting consumer preferences for particular cuts and grades of meat; a grading system for meat exists but is not used in general trade. The development and use of standardized cutting and identification of cuts, and perhaps some simple grading should be considered.

Other Products

Channel maps and some cost and price information related to markets is included in the appendix for a few additional products as representatives of a class of products. Most of the markets share the problems discussed above. Typically, there is lack of standardization in trading units, and a large number of transactions by many very small producers. Problems related to the level and timing of price announcements, and in the fair application of inspection, affect commodities involving government purchase or forward pricing arrangements.

Chapter 4

DELIVERY SYSTEM FOR TECHNICAL FORM INPUTS

Introduction

Optimum use by farmers of technical inputs requires

1. An effective and reliable delivery system for the total package of complementary inputs, including technical knowledge
2. Credit for purchasing inputs, and
3. Reliable product markets to reduce the risk associated with new methods and the acquisition of a debt.

Discussions follow on fertilizers, agricultural chemicals, improved seeds, farm implements, formulated processed feeds, and system modification.

Table IV-1 shows the price indexes for major purchased inputs. The index of prices received (1965=100) for all farm products in 1970 was estimated at 191; 182 for grain and 244 for fruits and vegetables. The index of prices for all farm supplies was 195. Prices of fertilizers and farm chemicals however, were much lower relative to farm prices than in 1965. The decreasing ratio of fertilizer and farm chemical prices to product prices can be an important factor in stimulating the use of these technical inputs.

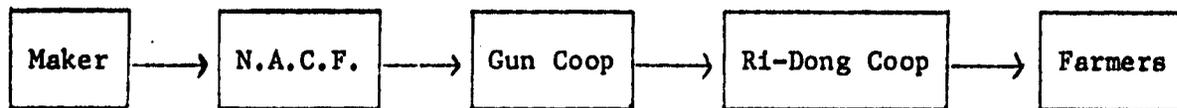
Fertilizer

Fertilizer distribution is a monopoly entrusted by the Government to NACF. The distribution channel is shown below in Figure IV-1 along with the commissions received by the different units.

Table IV-2 shows trends in the percentage of fertilizer purchased by farmers on credit. The low percentage sold on credit probably is related to

Table IV-1: Price Indexes for Major Purchased Farm Inputs

Year/Month	Commodity and Weight					
	Seeds 7.13	Livestock 88.58	Fertilizer 114.40	Farm Chemical 8.49	Farm Implements 13.50	Equipping Materials 5.12
1965	100.0	100.0	100.0	100.0	100.0	100.0
1966	110.5	124.5	100.0	103.6	112.4	110.4
1967	96.3	178.3	87.2	99.7	121.3	110.4
1968	112.3	278.6	87.2	113.7	135.5	113.7
1969	189.7	290.3	93.5	114.9	145.4	116.5
1970	273.0	335.1	96.6	109.7	168.3	125.4
1970/8	275.7	354.6	96.6	112.6	172.0	125.2
9	260.7	353.8	96.6	114.8	174.3	125.5
10	260.7	345.8	96.6	113.2	176.1	125.9
11	260.7	352.1	96.6	113.2	177.7	126.9
12	260.7	357.3	96.6	113.2	177.1	125.6
1971/1	260.7	366.5	96.6	113.2	178.3	126.2
2	268.3	377.6	96.6	113.2	177.4	125.6
3	271.3	404.5	96.6	112.0	179.2	125.5
4	266.6	463.2	96.6	113.3	184.4	125.1
5	266.6	468.0	96.6	112.8	186.0	124.1
6	266.6	461.8	96.6	112.7	186.9	124.6
7	266.6	466.0	96.6	113.4	188.4	124.0
8	316.0	478.7	96.6	113.4	186.5	123.6
9	342.6	484.7	96.6	113.7	191.4	126.6
10	342.6	498.5	96.6	113.7	191.4	128.4



Commission as of December 31, 1971

(Won per M/T)

N.A.C.F.	31.2
Gun Agr. Coop	93.6
Ri-Dong Agr. Coop	31.2
Total	<u>156.0</u>

Figure IV-1: Fertilizer Marketing Channels and Commission

the conditions of the loan agreement. Interest rates for the first 6 to 8 months are low at 8.4 percent, for the next 12 months 19 percent and for those over due (over about 1 1/2 years) the rate is 31.2 percent. (These rates are planned for 1972.)

Most significant, however, is the tie between credit purchases and the required repayment in kind which is part of the Government Grain Management Program. Credit sales require repayment in grain at prices set at 300 Won above the Government grain purchase price, which in 1969 and 1970 was usually about 1,000 Won less than the farm market price.^{1/} Thus the effective interest rate on short-term credit purchases of fertilizer was very high.

Table IV-2: Percentage of Fertilizer Sold on Credit

Year	Percentage
1966	68
1967	49
1968	47
1969	47
1970	34
1971	30

The net effect of the combination of pricing practices for fertilizers is difficult to determine. The Government has a long-term purchase agreement for nitrogen at prices apparently above the world market price. Urea is sold to NACF under this agreement at about 430 Won per ton above its selling price to farmers. NACF is then paid the 430 Won difference and the 156 Won commission by MAF. NACF then sells at an interest rate nominally below the market rate, but tied to a disadvantaged barter agreement.

^{1/} For example, in November 1969, the farm price of rice was 5,699 Won and the government purchase price was 4,200, making the repayment price 4,500 Won--nearly a 20 percent difference.

The elimination of the barter arrangement on fertilizer credit appears highly desirable, since barter probably affects fertilizer sales adversely and reduces the effectiveness of the NACF input supply program. In addition careful consideration to the price policy is required to determine if fertilizer pricing achieves optimum use of the existing fertilizer resources. Apparently excess capacity exists in production facilities. Perhaps an agreement could be made with the firm to purchase additional fertilizer, above the level of the current agreement, at a price near the marginal cost of production, to permit the reduction in the average price.

Table IV-3 shows the rates of increase in fertilizer use.

Table IV-3: Extent and Rate of Increase
in Use of Fertilizer

Year	Consumption (MT)	Rate of Increase (%)
1968	478,460	-
1969	534,689	11.8
1970	569,902	6.6
1971	605,137	6.2

Performance of the fertilizer delivery system is difficult to judge. Potential exists for a highly rational, low-cost system, but problems include inventory management and possibly poor service to farmers. Fertilizer is available only at the Gun Coops or at those Ri-Dong Coops which function; hence purchasing fertilizer and getting timely delivery may involve difficulty for the small farmer, while purchase and credit procedures may not be customer oriented.

Inventory management and storage create other problems. Inaccurate

estimates of needs have resulted in some excess stocks and storage space seems to be inadequate. Little has been done to solve the storage problem by encouraging farmers to make advanced orders or contracts for future purchase or to store fertilizer on the farm. The only incentive for the latter is that fertilizer purchased in January or February does not require the payment of interest during these months. A seasonal differential in fertilizer prices should be considered to improve the storage management. Currently no seasonal price difference exists.

Agricultural Chemicals

There are two major channels for the distribution of agricultural chemicals; through NACF and private merchants. The NACF buys from formulators and distributes to the Gun Coops, which in turn distribute to both viable Ri-Dong Coops and directly to farmers. The typical private channel is formulator-to-large wholesaler-to-small wholesaler-to-retailer. NACF sells about 14 percent of the basic agricultural chemicals (pesticides, etc.).

Consumption of agricultural chemicals, shown in Table IV-4, more than doubled from 1967 to 1970 (9,989 to 25,024 metric ton). This trend resulted from the intensive implementation of joint spray of farm chemicals for crop protection.

Table IV-4: Annual Use of Farm Chemicals

Year	Consumption (MT)	Rate of Increase (%)
1967	9,989	-
1968	9,983	0.4
1969	17,531	75.6
1970	25,024	42.7

Source: MAF

Problems exist in the pricing of chemicals through NACF with NACF staff estimating costs and MAF deciding upon retail prices. NACF receives a 1 percent commission and the Gun and Ri-Dong Coops share a commission of 4 percent. The competitive role of private merchants in setting prices is not clear.

A major problem for NACF appears to lie in estimating demand and providing the proper supplies of chemicals at the time they are needed without accumulating excessive inventories. No procedure of advanced orders by farmers to improve inventory management seems to be used. Consideration should be given to a pricing policy that offers discounts or other incentives for advanced orders. The cooperative service also may be inconvenient and service may not be customer-oriented.

While chemicals used on paddy are offered on credit at no interest if repaid at the end of the season, and 19 percent for the next 6 months, only about 20 percent of the agricultural chemicals are sold on credit. Chemicals sold for horticulture are cash sales. The low percentage sale on credit indicates a barrier to obtaining the credit, given the evidence of the level of borrowing by farmers from other sources at high rates of interest.

Given the credit sales at no interest and the costs of maintaining inventories, a 5 percent commission does not cover the costs of delivering chemicals through the NACF channel.

A regulatory and inspection system for testing content, safety and stability of both private and NACF chemicals is operated by the National Agricultural Input Inspection Office.

The performance of the private channel cannot be judged due to the lack of data other than the fact that it is presumably making a profit in a market supplied by NACF at below costs. This indicates that the private

merchants must offer services or products not supplied by the NACF channel.

Improved Seeds

The two major channels for improved seeds are 1) importer or country coop producing the seeds to NACF to Gun Coops to farmers and 2) producer, wholesaler, retailer in the private channel. The coop channel handles an unknown percentage of the improved seeds. In addition, ORD has responsibility for the development of the new rice variety (IR-667) which is distributed from MAF to Gun office to Myun office to farmers.

A certified seed program is operated by the Agricultural Products Inspection Office and certifies 80 percent of the seeds marketed by NACF and none of the seeds marketed through the private dealers.

The NACF credit terms and conditions are the same as described for agricultural chemicals. About 80 percent are sold on credit. The NACF commission on seeds is nearly the same as on chemicals. Government subsidy on NACF seeds distribution amounted to 15 percent of selling price to farmers.

Table IV-5: Supply and Rate of Increase in Sales of Improved Seeds

Year	Supply	Rate of Increase
	(Thousand Won)	(%)
1966	31,949	-
1967	228,637	615.6
1968	503,875	120.4
1969	153,421	69.6
1970	168,116	9.6

The performance problems are similar to those of other inputs, centering on inventory management and responsiveness to farmers' needs, as well as organizing the supply of domestically produced seeds.

Farm Implements

Channels, credit terms and conditions as well as problems in distribution, are the same as for agricultural chemicals, with an additional problem of supplying the servicing for equipment sold. Since service is essential to an equipment supply system this is a critical factor. About 10-20 percent of NACF sales are on credit.

Sales of equipment have expanded rapidly as shown in Table IV-6.

Table IV-6: Extent and Rate of Increase in Sales of Farm Implements by NACF

Year	Supply (Million Won)	Rate of Increase (%)
1966	472	-
1967	798	69.0
1968	920	15.3
1969	2,052	123.0
1970	2,218	8.1

Formulated Processed Feeds

Cooperative and private channels are indicated by Figure IV-2.

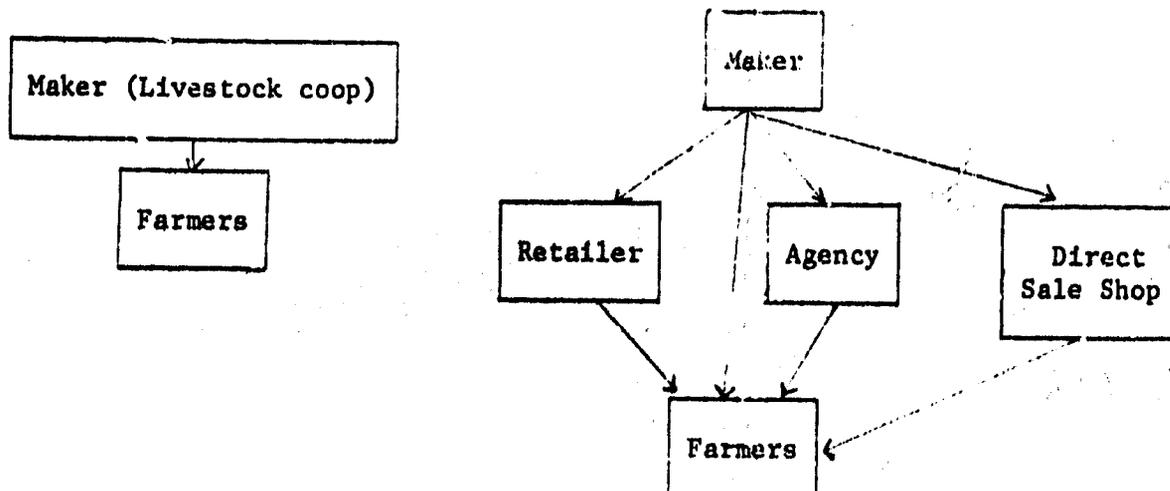


Figure IV-2: Channels for Formulated Processed Feeds

Sales through the special livestock cooperatives are offered on credit, including a barter arrangement. About 20 percent of sales have been on credit.

Use of formulated processed feeds have been increasing as indicated in Table IV-7.

Table IV-7: Extent and Rate of Increase in Use of Formulated Feeds

Year	Supply (MT)	Rate of Increase (%)
1967	16,081	-
1968	42,000	161.2
1969	59,073	40.7
1970	76,008	28.7

Table IV-8 indicates the margins at a point in time.

Table IV-8: Marketing Costs and Margins for Formulated Feed, July 1971

Kinds	Prices Received by Makers	Prices Paid by Farmers	Total	Cost	Margin of Middle Man	Rate of Margin (%)
For chicken	409	450	41	21	20	9.1
For Laying Hen	308	345	37	19	18	10.7

Source: Agricultural Economics Research Institute
 Note: Unit is Won per 10 kg

The special problem for this input involves the difficulty of obtaining adequate raw materials for processing of feeds because of poor market coordination.

System Modification

The concept of developing the delivery system for the total package of complementary technical inputs does not appear to be fully exploited. A combination of new seed varieties with the proper combination of fertilizers, use of the proper combination of chemicals timed to be most effective, with appropriate cultural practices related to the particular farm situation in regard to soils, water and climate can offer substantial increases in productivity in agriculture. With the possible exception of some contract arrangements, and some special programs with pesticides, there appears to be little effort to combine the delivery of the technical inputs with technical knowledge related to their use. In particular, delivery of fertilizers and other agricultural chemicals through NACF apparently is viewed only as an activity of physical distribution, independent of information about technical use of the inputs or potential markets for alternative commodities.

It is recommended that NACF and ORD jointly develop a program to deliver to farmers the total complementary package of technology best designed to stimulate optimum farm productivity adapted to the conditions of each agricultural area. The joint program would include the following elements:

1. Adequate supplies of each of the appropriate technical inputs-- seeds, fertilizer, chemicals, etc.--available for farmers to purchase in order to put together the optimum technical package for his farm,
2. Technical services and advice on uses of the technical inputs, related cultural practices, farm management and outlook information concerning potential markets and expected prices available as part of the inputs purchase transaction. Technical services might include soil testing. The important point is that technical services and advice would be available to the farmer at the time he is making

critical decisions. The technical inputs and technical knowledge would be delivered as a package.

3. Opportunity for the farmer to purchase the inputs on credit covering a very high percentage of their costs. The credit procedure should be a very simple transaction, available with the inputs and advice without need for separate trips and transactions by the farmer. Consideration should be given to offering supplementary production credit as part of the same transaction.

This proposal has several implications for NACF and ORD. ORD would concentrate extension resources on training and informing NACF personnel who work directly with farmers, in order that they be capable of delivering high quality technical advice. NACF would receive direct payment for performing the advisory service. NACF would simplify loan procedures for technical inputs and shift a larger portion of its credit to the direct financing of technical inputs. Currently only about 40 percent of the inputs sold by NACF are on credit, and NACF provides only about one-fourth of the total production credit used by Korean farmers.

It would appear much more important for NACF to finance a very high percentage of farmers' necessary inputs at reasonable interest rates than to finance the inputs at low interest rates.

The recommendation to expand and integrate the technical farm input supply system assumes administrative procedures can be implemented to achieve high performance from the organization providing the services. The economic advantages of a highly rationalized supply system are significant but they can easily be dissipated if the organization is not responsive to the real needs of farmers. It would appear desirable to introduce three institutional devices to encourage improved performance by the organization:

1. Some type of incentive payment structure, related to performance, for managers,
2. Performance auditing procedure, and
3. A procedure for farmers to effectively make their voices heard in expressing dissatisfaction with the services rendered by the organization.

Chapter 5

SELECTED MARKETING FUNCTIONS

Assembly

The assembly function in Korean agriculture is dominated by the very small quantities of products marketed by individual farmers; this requires many separate transactions and increases the coordination problem. A farmer with a very small quantity of a product to sell cannot afford to invest much in acquiring information about market opportunities. While there are large numbers involved in performing assembly functions, there is little evidence to indicate the effectiveness of competition and market information at the village level. However, since there appears to be few barriers to entry, one would not expect significant monopoly profits from assembly and, because of the small quantities of most products marketed from a village, large numbers of competitors would be associated with unnecessary costs. A possible barrier to entry is the tie between credit and product marketing. To the extent farmers depend upon the assembly operators for production credit and to make the marketing of commodities a condition of a loan, the lack of financial resources becomes a barrier to entry and offers potential for monopoly profit. Thus, the availability of convenient and reasonable credit, independent of tie-in conditions, may be a factor in assembly costs, though a large number of combined loan and purchase agreements do not necessarily indicate existence of monopoly and poor performance. Neither marketing charges nor interest rates can be determined independently in such arrangements. The assembly operator may use either prices or interest as a competitive practice. Given the high

interest rates, the possible losses from bad debts, and the probability of competition developing in response to high profits, it may be that the credit-purchase arrangement is not a source of monopoly profit. The major factor in credit availability for farmers is not that they use it, but that it provide an easy alternative in bargaining with the assembly operator.

Perhaps more significant is the fact that the traditional small-scale assembly operator is usually a passive actor in the marketing system, accepting what is available for sale and not giving effective information about potential market and production opportunities to the farmers in his assembly area. Or, changes in the market prices may not be effectively transmitted to farmers, because of the tie-in arrangements.

The assembly of rice is much less likely to be a problem than are minor and developing commodities. A traditional village produces enough rice to get reasonable economies of scale in assembly. However, the payoff in reduced marketing costs from achieving geographic concentration and specialization in production of specialty crops, may be significant and will become much more important as the economy develops.

One of the reasons the cooperative system has not been competitive in product marketing is that coops have not been active in first-stage assembly. The farmer must deliver his product to the cooperative which, in the case of the viable coops, is usually a considerable distance from the farm, considering the limited transportation available to most farmers. The service he receives may not be customer-oriented. Nor are the farmers' terms of sale certain when the product leaves the farm, as are terms with the traditional assembly operator. Thus, the traditional assembly operator provides a significantly different service. The practices of the cooperatives may have to be modified to provide effective competition and a viable

alternative in the assembly function.

Transportation

Transportation becomes much more important as the economy develops. Demand for transportation can be expected to exceed the increase in total food marketing because of the expected shifts in diets away from grains to more perishable and bulky products. Also, as volumes of products and wage rates increase, truck transportation can be expected to replace more traditional transport methods from the village to the local assembly markets. Increased production of perishable products also will put higher value on the quickness and reliability of transportation. This will require, in turn, improvement of roads into the villages.^{1/}

As truck transport becomes much more important, so will the potential benefits of an effective market in trucking services which operates with a system of information and brokerage for trucking services to assemble full loads and reduce empty back hauls.

Figure V-1 shows the distance (in km) between the 5 major cities, each of which has a major central wholesale market.

Processing

Future demand for food processing in Korea is difficult to assess. The consumer seems to have a strong preference for fresh products and home-processed kimchi. Existing storage techniques seem to be effective in preserving the less perishable fruits and vegetables through the winter months. The development of the plastic green house allows production of

^{1/} The AERI study of livestock marketing indicated that only about 6 percent of the local hog assembly operators used trucks, while 66 percent used bicycles and 24 percent used carts to get hogs to the local assembly markets. Most cattle were walked to the local market which averaged 7.4 kilometers from the village.

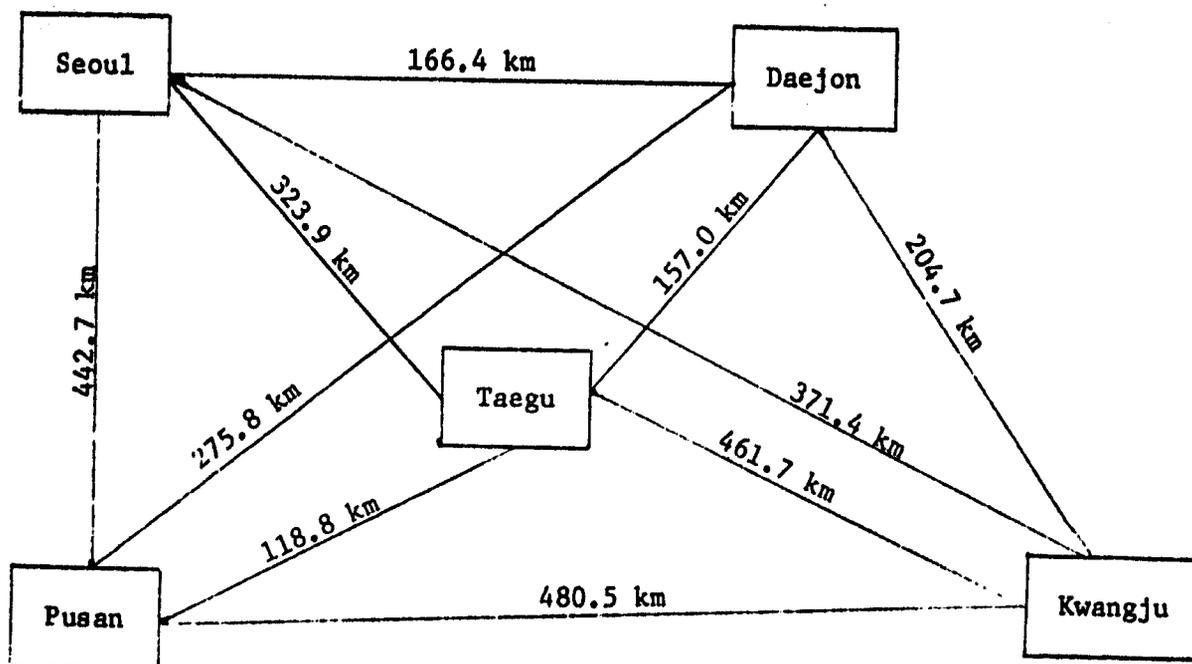


Figure V-1: Transportation Distances to Major Cities

winter and early spring vegetables and provides employment for abundant farm labor, as a complementary rather than a competitive farm enterprise. Given relatively high processing costs, costs of processed fruits and vegetables and meats will remain high in relation to incomes. These combined factors can severely limit the domestic demand for food processing services well into the 1980s.

Data from a recent loan proposal show possible increases in demand for several commodities. The proposal is to increase production above 1969 levels as follows: silk cocoons 3.1 percent; grapes 79.0 percent; peaches 29.2 percent; apples 3.6 percent; pears 18.6 percent; and mushrooms 83 percent. The anticipated proportion of these products to be processed is projected as: silk cocoons 100 percent; grapes 50 percent; peaches 30

porcent; apples 5-10 percent; pears 10-15 percent; and mushrooms 100 percent. These increases should not be expected to strain the capacity of existing processing facilities, with the exception of the proposed high increase for mushrooms.

There are exceptions involving significant potential expansion of demand for processing services and facilities. Urbanization, housing arrangements, and employment opportunities for women may create a significant demand for commercially prepared kimchi. Demand for wheat flour is likely to expand, especially if price and import policies keep the price of wheat relatively low compared to rice. A substantial potential seems to exist for low-cost products from soybeans which would serve the role of meat and milk in diets at lower costs.

Potential exists for processing some products for export. Mushrooms are the leading prospect. Plans exist to develop a frozen strawberry industry for export. The development of an export market for a product can be expected to result also in the expanded domestic use of that commodity through economies of scale in processing, and developing a reliable and lower cost supply of raw materials. The potential complementary production for the export and domestic markets needs to be considered in planning for export development.

Processing facilities for meat, fruits, and vegetables currently appear to be far in excess of current use, as shown in Tables V-1 and V-2.

Capacity data may be somewhat misleading as an indication of possible investment needs. For example, the increased total milling for projected demands, based on increased population, for rice and barley to 1985 are small, probably less than 28 percent. However, the milling capacity may be of an uneconomic scale and technology given the projected change in market

quantities. Modern facilities can reduce the losses in milling. Small-scale local mills were most economical when a large portion of the grain went from the farmer to mill and back to farmer, but with more grain marketed, it will be economical to concentrate much larger units of grain for milling. Similarly much of the capacity in livestock slaughtering facilities exists as small plants; it may be economically desirable to replace them with modern plants as demand expands and barriers to central markets and facilities are eliminated.

Table V-1: Processing Facilities for Meat, 1970

No. of Plant	Capacity (A)	Production (B)	B/A
	(MT)	(MT)	
25	20811.5	2530	12.1

Source: MAF

Table V-2: Processing Facilities for Fruits and Vegetables

Item	No. of Plant	Capacity (A)	Production (B)	B/A
		(MT)	(MT)	(%)
Canned products	138	437,294,052	30,522,161	7.0
Wine	15	21,519,024	12,542,396	58.3
Pickles	14	23,813,400	1,495,300	6.3
Pickled radish	54	32,705,512	2,812,760	8.6
Others	20	36,736,512	6,907,326	19.1

Source: MAF

Note: Unit for canned product is can of 4 hop. Unit for wine is bottle of 3 hop. Unit for pickles, pickles radish and others is kg.

Barriers to effective performance in processing include underdeveloped and expensive food technology, a high cost, unreliable product-supply system, and relatively expensive wholesale-retail product marketing. Reducing these

barriers could result in lower prices and an expanded demand for processing services.

Storage and Losses

Performance of the storage function has two important aspects, coordination and allocation of stocks through time, efficiency and effectiveness of the physical handling and maintenance of produced quality. Pricing aspects of grain storage related to the grain management program were discussed in Chapter 3.

It appears that warehouse capacity for grain is adequate in terms of total available space, but questions arise concerning the quality of facilities and management practices. A 1968 review of Korean grain storage by Kansas State University Department of Grain Science and Industry estimated losses of rice in farm and market channel storage and handling equal to about 17 percent of production. Farmers reported losses of 13 percent for storage on the farm and market channel losses were estimated at 10 percent. The last figure is consistent with loss of 10.3 percent reported for government-controlled rice in 1966, broken down as follows: unexplained disappearance 3.4 percent; spoilage 2.8 percent; ground storage loss 2.2 percent; theft 1.3 percent; and fire .6 percent. Improved storage facilities could reduce these losses, but the savings are limited. A pre-feasibility study indicates savings from improved storage facilities and practices equal to 3 percent of the quantity stored, and savings from new warehouse facilities alone at between one-half and 1 percent, assuming spoilage of about 3 percent during storage.

Tables V-3 and V-4 give estimates of losses of rice by grade of warehouse and type of on-farm storage container as reported in 1969.

Table V-3: Rate of Loss of Rice by Type of Warehouse

Condition	Quality			
	First Class	Second Class	Third Class	Under Low Temperature
	(%)	(%)	(%)	(%)
Unhulled rice	0.54	2.10	3.71	0.08
Not further prepared rice	1.71	3.50	3.92	0.05
Polished rice	1.63	3.91	3.96	0.28
Average	1.29	3.17	3.86	0.14

Source: Institute of Agricultural Industry Economy

Table V-4: Estimated Storage of Marketed Grain by Grade of Warehouse

Warehouse	Rate of Storage	Average Amounts of Grain Storage During a Year
	(%)	(1000 MT)
Low-temperature warehouse	1	15
First Class	13	190
Second Class	43	630
Third Class	43	630
Total	100	1,465

Table V-5 shows the inventory of grain warehouse units as of the end of 1970. No data are available on the percentage of utilization of total warehouse capacity. However, the latest data report 95 percent of NACF warehousing capacity was used in August, the period of barley harvest and peak use in 1971.

Losses in storage are difficult to estimate. For example, some reduction in weight results from drying of grain but does not represent a real loss.

NACF has estimated wastage rates for a number of commodities in storage in specialized storage facilities within the marketing channel. The estimates were: rice, 2.25 percent; barley, 2.0 percent; soybean, 1.0 percent; sweet potato, 5.81 percent; white potato, 8.3 percent; apple, 6.0 percent; pear, 7.5 percent; tomato, 12.5 percent; radish, 6.3 percent; chinese cabbage, 6.3 percent; cucumber, 3.3 percent; red pepper, 7.5 percent; garlic, 12.5 percent; onion, 7.5 percent; sesame, 2.25 percent; beef, 1.25 percent; pork, 1.0 percent (Source: NACF).

Table V-5: Grain Warehouses at End of 1970

Ownership	Number	Space (pyong)	Capacity (MT)
Government warehouses	15	1,700	124,500
Agri-coop warehouses	2,832	159,368	510,185
Korean Express warehouses	566	69,794	243,666
Others	1,072	76,732	255,004
Total	4,485	322,894	1,133,355

The need for NACF and government storage capacity relates to seasonal price patterns and the incentive for private storage by farmer, traders, retailers, and consumers. Any increase in NACF or government storage facilities should follow a comprehensive review of the total storage system, including policies and regulations effecting the utilization of existing capacities, and the management practices in utilization.

Wholesaling and Retailing

Each of the five major cities has a central wholesale center, legally instituted under the Central Wholesale Law. The law was designed to establish

effective central markets, and specifies that transactions at the wholesale level are to take place in these markets (an exception is markets operated under the Law for Cooperatives). The law apparently was intended to encourage scale in wholesaling since it limits purchases to designated wholesalers. In practice, most transactions take place outside of the central wholesale or NACF markets, but the central markets probably contribute to coordination by providing a central place for trading with easily available price information for those operating outside the market. It is, of course, not necessary to trade all commodities in a central place in order to achieve efficient pricing.

The wholesale market facilities of Seoul suffer from a very rapid growth in population, congestion, and inefficient facilities for handling large quantities of food. Since it is physically impossible for the Seoul central wholesale market to handle the required volume, the law requiring its use is seldom enforced. Given the size of Seoul and its projected growth, the decentralization of some of the wholesaling appears desirable to reduce costs of physical distribution. At the same time government participation in providing institutional structure for an organized market place is highly desirable.

Wholesalers are generally small-scale operators, although there are a few fairly large grain wholesalers. They appear to be highly competitive, and face few barriers to entry other than the unenforced Central Wholesales Law. It is probable, despite any hard evidence either way, that the wholesalers are not making monopoly profit, though they may gain some special return from superior market knowledge.^{1/} However, the very large numbers

^{1/} There may be some exceptions, since there is some evidence that larger retailers are able to obtain some products, especially processed ones, at significant savings by by-passing some wholesalers or making unusual deals with wholesalers.

of specialized wholesalers probably perform their functions at unnecessarily high cost. Also, the wholesalers tend to be traditional in view, providing what amounts to a brokerage service. They do not generally transmit coordinating and technical information, other than the current price, back to assembly operators or forward to retailers. Much of the discussion of commodities involved the performance of wholesale markets in directing commodities in time and space.

Food retailing is dominated also by very small scale firms. Retailers tend to be specialized, with the largest volume handled by grain retailers. A study of grain marketing by Professor Yong Kun Shim included a detailed analysis of the operations of five stores in Suwon for the year ending in October, 1967. This analysis indicated that typical grain retailers were operating at an extremely low gross margin of 169 Won per 100 liters of grain sold. This yielded a gross margin of about 15,000 Won per month. After paying for utilities, transportation, and necessary additional supplies, very little was left as a return to the operator. Even a small error in measurement would wipe out all profits. And if rent and interest on investment were changed, returns to labor would be negative. The low returns are related to the very low volume of output per worker, and the labor-intensive service provided. Release of government rice through government stores and commissioned retailers (who were compensated at 100 Won per 100 liters) reduced the sales opportunities of private retailers still further in the months of grain release.

It is no wonder that a high rate of business failures exist among these small grain retailers. A survey of a sample of permanent Seoul food retail stores, not including grain, showed the typical store was a very small operation. Of the stores, 68 percent had less than three pong of store area;

67 percent operated without hired labor and only 5 percent had more than one employee; 62 percent served less than 50 customers per day; 42 percent had sales of less than 9,000 Won per day.

Data on costs and margins previously reported, and discussions with retailers, indicate that gross margins for retailers handling other foods are much higher than for grains. Without detailed studies, the composition of these gross margins remains a matter of speculation. However, given the general lack of barriers to entry and intense competition, large profits are unlikely.

The Korea Marketing Development Center has worked with two groups of retailers to establish multi-line grocery stores, handling three or four hundred items. They do not handle grain because licenses to handle grain are restricted to grain retailers. Emphasis is on processed foods, less perishable fruits and vegetables, and meat. They appear to offer most of these products at significantly lower prices, about 10 percent below those of traditional retailers. The source of these savings was not completely analyzed, but one store operator said he is able to purchase more directly in larger quantities at significant savings. By handling a much larger volume, these stores probably can afford to stock a variety of products with much more rapid turnover than a traditional retailer, thus reducing interest and inventory costs. Sales per worker also are much higher. Problems of the retailers include difficulties and expenses of dealing with a large number of suppliers, uncertain supplies and quality of products, and lack of credit at commercial bank rates.

One of the retail groups unsuccessfully attempted to establish a central purchasing organization. Obstacles apparently included problems in dealing with suppliers, in inventory management, and in obtaining adequate

working capital. The planned scale of operation was relatively small. However, in the longer run with experiences in management, such a system could reduce acquisition costs and improve coordination of supplies between consumer and producers.

By generating larger volumes of sales and handling products which benefit from cooling, these stores may be able to afford the investment in refrigeration by spreading overhead costs, and reduce losses and preserve the quality of fresh products.

Given the wage structure and employment opportunities of the current economy, larger scale retailing is unlikely to replace traditional grain retailers or many of the other small specialty retailers. Regulations and other practices which restrict competitive development are barriers to improved performance of the food system; restriction of licenses to specialized retailers is an example. Regulations and taxes, which can be avoided by small retailers, work to the disadvantage of the larger and more efficient ones who cannot afford the risk of avoiding them. Regulations resulting in black markets work to the disadvantage of larger scale retailers. And retailers should not be discriminated against in allocating commercial credit.

Besides the money costs of performing the retail function, other questions arise. The wholesale-retail system could be organized to operate and offer improved services using only a fraction of the present labor input; productivity per worker and incomes per worker could be improved. The questions are: can the economy be organized to provide productive employment for that fraction not providing productive services? how can this excess labor be converted to needed capital equipment? assuming higher wage rates will cause the system to be altered, is this slow process conducive to development and achievement of the performance objectives?

In addition, large-scale retailing and associations of retailers could contribute to improved coordination of the food system, by dealing more directly with producers and effectively informing producers of potential market opportunities and consumers of advantageous supplies. Performance of the total system could be improved.

As a final note on retailing, it is very difficult to see how a governmental agency or any bureaucratic organization could profitably compete in the current retail market. Retailing requires long and irregular hours, aggressive attention to details, and a high degree of responsiveness to the preferences of consumers. Competitive retailing provides the incentives required, while bureaucratic organizations usually provide no such incentives.

Coordination by Contracting

The Korean agriculture system makes significant use of contracts to coordinate supplies between farmers and exporters, processors, and the armed forces. Each of these buyers needs reliable supplies of products with specified characteristics. Table V-6 lists the products and agency involved as contract buyers from farmers.

A fully developed contract system can create market and price certainty for the farmer; accurately equate supply with demand; achieve greater efficiencies in processing, farming, and assembly; and reduce transaction costs.

Contracting which offers special advantages to processors and exporters, also has a potential in fresh vegetable market if a buying organization can be developed. Contracts also can effectively transmit technical inputs and knowledge as part of the contract terms.

Korea has had problems in developing the contract system, and the full advantage of contracting has not been exploited. Contracting apparently has worked best for commodities lacking a domestic market. A major problem has

been failure to fulfill a contractual obligation when the market price deviates from the contracted price. In cases where a domestic market alternative exists, contracts could be based on a formula price tied to the market price and specifying quantities to be accepted.

Table V-6: Contract Farming Items

Section	Items
Foreign Trade Dept., National Agriculture Cooperative Federation (NACF)	1) Perilla-fruitment semen 2) Perilla-fruitment leaf 3) Burdock in Brine
Horticulture Div., NACF	1) Flax, 2) Ramie, 3) Scallion 4) Mat Rush, 5) Small eggplant 6) Yellow Dentcorn, 7) Rape
Farm Guidance Div., NACF	1) Beer Barley, 2) Castor 3) Sesame
Army Sales Dept., NACF	1) Chinese cabbage, 2) Cabbage 3) Spinach, 4) Green onion 5) Onion, 6) Radish, 7) Cucumber 8) Pumpkin, 9) Potato, 10) Red pepper 11) Garlic, 12) Carrot
AFDC	Mushrooms Planning for strawberries
Private	Sales to Armed forces of vegetables

The Korean experience in contracting generally has involved NACF and the local cooperatives as the contractor with farmers. NACF in turn has contracts to supply the export market, processor and army. The final user could be more directly involved in developing the technical package needed to supply the desired products under efficient production conditions. While NACF gives priority to contracting farmers in supplying inputs and credit,

the concept of supplying the technical package as part of the contract does not appear to be fully exploited.

High priority should be given to research designed to evaluate current and alternative conditions and practices in contracting. The situation in Korea, with highly literate farmers, may respond to a sophisticated coordination system as an instrument of agricultural development in the newer and developing commodities. Contracting does not seem an effective method of coordinating the grain system. Additional supplementary institutions, such as effective unified cooperative or other types of institutions such as commodity boards, may be necessary and desirable to extend the contracting system. Because of the many varied possibilities in terms and practices in contracting and the different requirements and potentialities of the various commodities, substantial research is vital to development of an effective system.

Chapter 6

SUMMARY COMMENTS

The economic organization and coordination as well as physical distribution of farm inputs and products will become increasingly important in the next decade, with transition of the Korean economy from traditional agriculture to a scientific industrial one. This report has been an attempt to review the organization and make some comments on the apparent performance of the existing system.

Performance necessarily was perceived in a narrow context since considerations in terms of the full range of appropriate performance goals, as discussed in the introduction, would require a much more extensive analysis. A major recommendation is that resources for this type of research be allocated to government agencies, cooperatives, and universities. Korean development would return a high payoff for this type of research and related policy and extension efforts.

Accurate and reliable statistical information is essential if the reality of the marketing situation is to be known, and policies and programs effectively evaluated.

The Korean food distribution system is basically a low-cost one, primarily because the diet is dominated by grains which can be marketed inexpensively, and because returns to labor in the system are extremely low. The apparent high costs in the distribution of grain is associated chiefly with storage costs, which in turn are dominated by very high interest rates. A grain economy with annual harvests cannot avoid the cost of storage, although it may hide it or shift it. Grain cannot be stored profitably from November

to September by a person paying 40 percent interest without a commensurate increase in price. Highest priority should be given to a review and modification of the Grain Management Program which has undesirable economic consequences, and with modest modification can become a significant factor in stimulating grain production.

The consequences of market regulations and policies need to be carefully reviewed. Such rules structure the market as an incentive system. As the economy develops, regulations which were appropriate to a previous situation become obsolete and barriers to improved performance, or may have unintended consequences. Some examples were noted in this review:

1. Taxes on livestock as it moves through the Central Market and slaughter facilities seem to create incentives to avoid the Central Market channel, resulting in losses in economies of scale and quality, and reduced effectiveness of coordination.
2. Attempts to regulate grain prices result in large quantities moving outside of established channels, increasing the real costs of marketing.
3. The pricing practice on grain in the credit program requiring repayment in kind, discourages the optimum use of agricultural inputs.
4. Pricing of goods and services below market prices, such as certain types of agriculture credit, creates incentives and opportunities for side payments that corrupt the system and reduce credibility of the agency involved.
5. The application of unrealistic and unacceptable inspection-grading codes affects the marketing channels used and creates the potential for profitable side payments, increasing marketing costs.

These are examples of a class of problems.

Considerable economies exist in development of highly rationalized

distribution systems, especially for the crops other than grain. The problem is to develop them in such a way that they are structured with effective incentives for performance. The development of effective unified specialized cooperatives responsive to the needs of their members, contracting, and perhaps new types of organizations such as properly instituted commodity boards, seem to offer potential for improved market organization for selected commodities. Improved coordination and increased labor productivity could result from larger scale operations in the private market channel. Viable cooperatives in assembly and wholesaling operations, by offering effective alternatives, could provide discipline to the private system. It is extremely unlikely that cooperatives could compete in food retailing within the Korean situation.

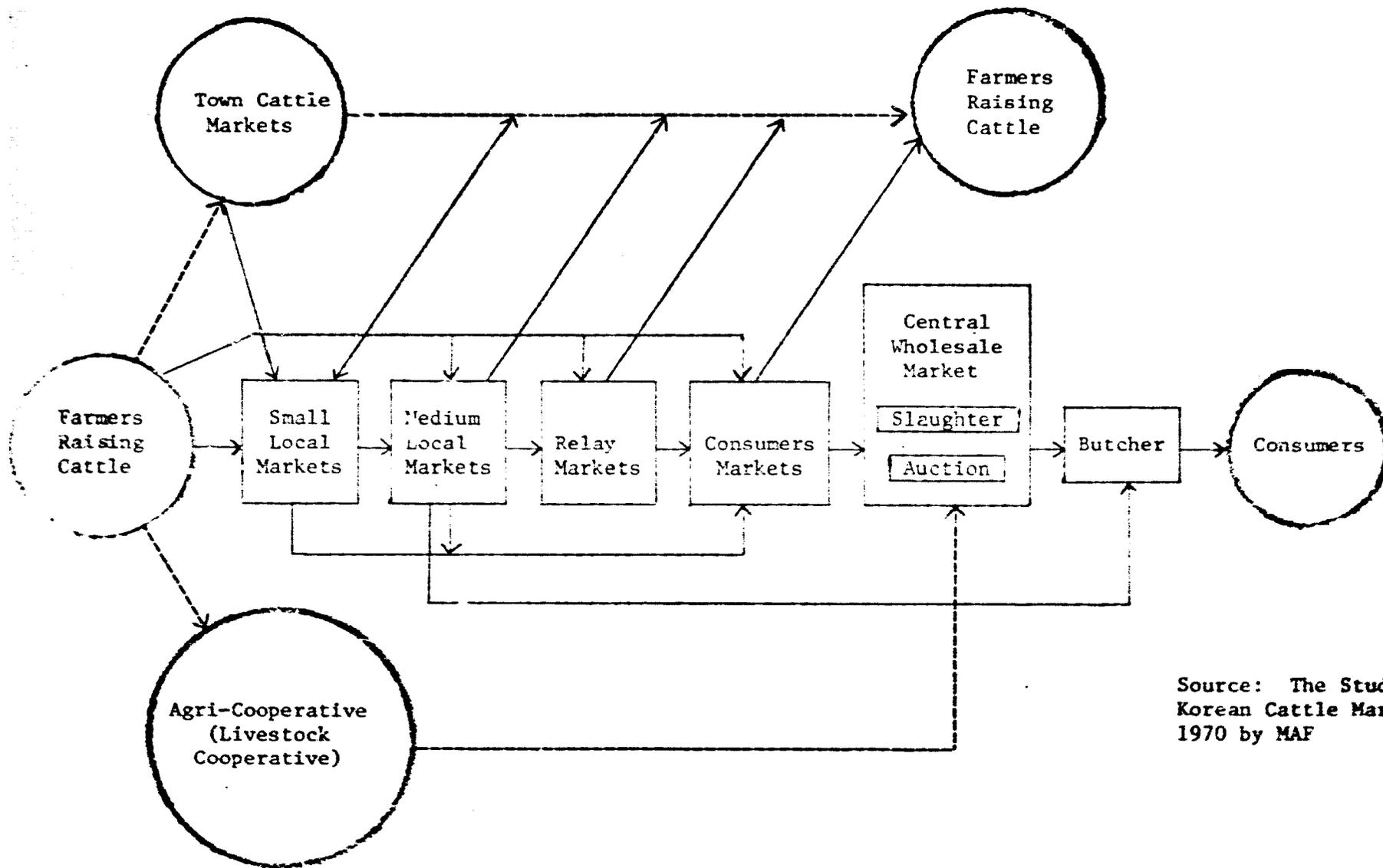
Technical inputs can be expected to become much more important in the future. It is important to develop more effective methods of delivering the total technical package, including technical knowledge and information about market potentials and, if possible, reliable markets at predictable prices to farmers. The cooperative system has a unique opportunity to improve performance in this area. Similarly, the development of contracting systems is very promising.

The demand for food marketing services in the aggregate will expand between two and four times by 1985. As wage rates increase and consumption patterns shift from grains, costs of food marketing will increase greatly, unless offset by increased productivity and other improvements in the organization of the food systems. New facilities will need to be built. Many of the urban facilities currently in use are already obsolete and otherwise inadequate. Planning for new facilities needs to be oriented to the food system which will develop in the future. It is hoped that this report will

be of value in research and planning which will contribute to the development of a high performance food system in the future.

A P P E N D I X

Typical Marketing Channel Maps, Cost and
Pricing Information on Selected
Agricultural Products and Foods



Source: The Study of Korean Cattle Marketing 1970 by MAF

Figure A-1: Main Korean Cattle and Beef Marketing Channels by Function

Table A-1: Marketing Costs and Margins by Function (from Suwon to Seoul) for Korean Cattle, November 1968

Division	Selling Price	Total Margins		
		Marketing Costs	Net Margins	Sub-Total
Farmers	97,000	530	-	530
Quasi-Wholesaler	104,000	2,120	4,880	7,000
Retailer	123,872	8,000	11,872	19,872
Total	-	10,650	16,752	27,402

Source: The Report of Beef Marketing Margins by NACF

Note: Unit is Won per head (394 kg).

Table A-2: Seasonal Price Variation in Korean Cattle for Farmers

Year	Month												Rate of Fluctuation
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	89.6	94.0	96.3	101.1	104.6	107.3	100.1	100.3	102.7	103.6	101.5	96.4	17.7
1967	78.7	84.2	91.0	100.9	109.8	105.8	101.7	102.3	104.2	106.4	108.2	106.8	31.1
1968	86.2	91.8	95.3	98.5	106.2	103.9	104.4	104.0	102.7	102.0	103.0	101.9	20.0
1969	93.7	98.0	104.4	101.7	103.2	102.6	100.6	103.2	100.3	100.2	99.3	96.9	9.5
1970	87.3	90.5	95.7	100.5	102.8	102.5	101.7	102.3	104.2	104.8	104.2	103.2	17.5
Ave.	87.1	91.7	95.7	100.5	105.3	104.4	101.7	102.4	102.8	103.3	103.2	101.0	18.2

Source: Research Department, NACF

Special Marketing Programs and Regulations

1. The government promulgated the implementation decree of the livestock industry law December 16, 1963. One section of the law prohibits butchering of Korean cows below the age of five and bulls below the age of two.
2. The retail price of beef has been settled at a negotiated level.
3. The producer-farmers usually visit the Cattle markets once or twice a year. Then, they obtain market information there from the livestock dealers and neighbourhood.

Table A-3: Retail Price Differences by Cities of Korean Beef, 1970

City	Month												Ave.	
	1	2	3	4	5	6	7	8	9	10	11	12		
Seoul	400	444	450	450	458	500	500	500	500	500	500	500	100	475
Pusan	462	470	428	432	412	402	537	539	554	556	510	480	482	
Taegu	410	420	440	450	432	420	454	480	433	480	504	510	457	
Kwang-joo	320	320	322	342	357	352	366	400	400	400	400	400	365	
Taejon	400	400	400	400	400	432	450	450	450	450	450	450	428	
Ave.	399	411	408	415	412	418	461	474	478	477	473	468	442	

Source: NACF

Note: Unit is Won per Gun (600g)

Table A-4: Marketing Costs and Margins per Pig by Merchants (from Ko-myung to Seoul), 1969

Division	Selling Price	Total Margins			
		Marketing Costs	Net Margins	Total	Rate
Producers	12,432	-	-	-	-
Collecting broker	13,350	200	718	918	17.2
Shipper	16,536	1,718	1,288	3,006	56.2
Central Wholesale market	-	-	-	(1,511)	28.3
Retailer	17,780	853	571	1,424	26.6
Total	-	2,771	2,577	5,348	100.0

Source: The Agricultural Economics Research Institute

Note: Unit is Won per head (90 kg)

Table A-5: Variation Index of Pig Price by Month

Year	Month												Rate of Fluctuation
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	106.3	104.5	102.8	103.1	99.1	98.2	95.9	93.2	95.7	101.9	100.4	98.7	13.1
1967	75.1	76.9	82.6	91.6	99.6	98.2	101.6	102.1	111.3	116.8	121.8	122.4	47.3
1968	93.1	96.8	101.6	105.7	106.3	106.0	104.6	100.7	100.2	96.6	95.2	93.3	33.2
1969	106.5	104.3	103.4	99.9	81.5	78.9	91.9	100.1	107.1	110.4	110.1	108.4	27.5
1970	86.6	87.4	91.6	96.6	96.9	98.4	99.9	101.3	107.1	109.4	110.8	114.0	24.2
Ave.	95.5	94.0	96.4	99.4	96.7	95.9	98.8	99.5	104.3	107.0	107.7	107.4	16.2

Source: Research Department, NACF

Note: This data is made of farmers' selling price per head (75 kg).

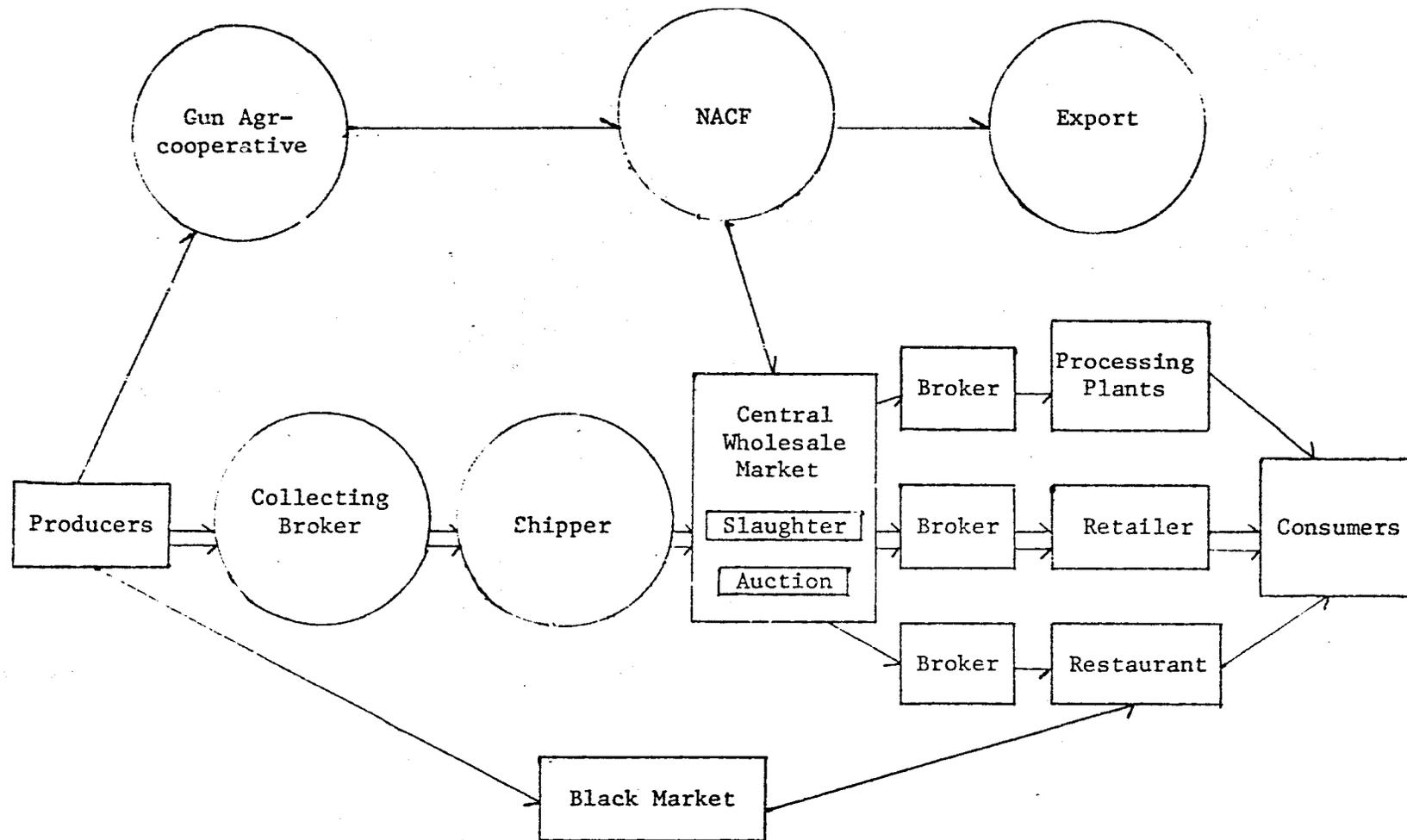


Figure A-2: Marketing Channels of Pig and Pork

Source: The Agricultural Economics Research Institute, 1970

Table A-6: Retail Price Differences of Pork by Cities, 1970

City	Month												Ave.
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	200	218	220	220	225	250	250	250	250	250	250	276	238
Pusan	207	270	238	230	229	230	240	235	254	257	304	320	251
Taegu	220	220	239	250	231	220	250	250	255	280	312	320	254
Kwang-joo	192	192	194	205	193	201	208	208	208	208	208	208	202
Taejon	200	200	205	220	220	220	230	250	250	250	250	250	229
Average	204	220	219	225	220	224	234	239	244	249	265	275	235

Source: NACF

Note: Unit is Won per gun (600 g).

Table A-7: Marketing Costs and Margins for Eggs, 1968

Price Received by Producers	Price Paid by Consumer	Total Margins		
		Marketing Costs	Net Margins	Total
98	112	2.1 (15.0)	11.9 (85.0)	14.0 (100.0)

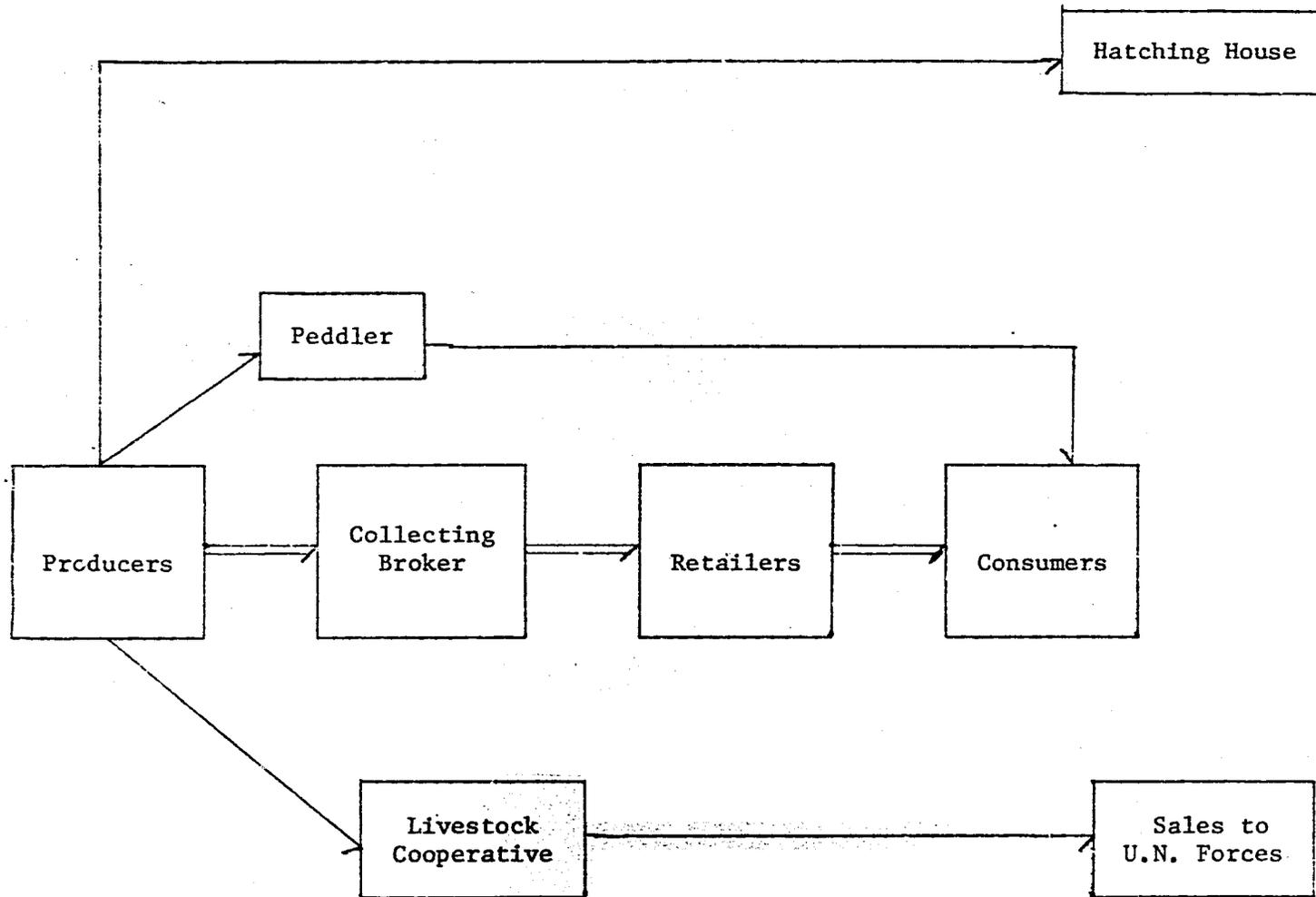
Source: The Agricultural Economics Research Institute

Note: Unit is Won per jal (10 eggs)

Table A-8: Index of Seasonal Wholesale Price Variations for Eggs

Year	Month												Rate of Fluctuation
	1	2	3	4	5	6	7	8	9	10	11	12	
1966	94.5	90.1	85.7	86.8	91.2	96.7	100.0	94.8	120.9	118.7	102.3	103.3	35.2
1967	99.0	91.9	80.8	84.8	94.9	98.0	100.0	100.0	117.2	121.2	106.1	100.0	40.4
1968	102.0	105.9	89.1	91.1	97.0	98.0	94.1	99.0	112.9	115.8	101.0	90.0	26.7
1969	86.7	84.6	87.5	85.6	88.5	94.2	95.2	99.0	119.2	123.1	120.2	117.3	38.5
1970	94.6	100.0	103.1	100.8	128.9	128.9	100.8	97.7	105.4	105.4	96.9	92.3	36.6
Ave.	95.4	94.5	89.2	89.8	100.0	103.2	98.0	98.1	115.1	116.8	105.5	100.6	35.5

Source: Research Department, NACF



Source: The Agricultural
Economics Research Institute

Figure A-3: Main Marketing Channels for Eggs

Table A-9: Wholesale Price Variations of Eggs by Cities, 1970

City	Month												Ave.
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	129	136	120	124	136	129	125	122	136	137	122	120	128
Pusan	116	139	152	144	140	135	135	128	128	136	130	130	134
Tae-gu	125	130	125	117	121	131	132	126	126	127	120	120	125
Kwang-joo	123	120	129	125	125	131	130	129	146	147	136	120	130
Tae-jon	122	124	146	143	146	145	130	130	150	141	123	110	134
Ave.	123	130	134	131	134	134	131	127	137	137	126	120	130

Source: NACF

Unit is Won per jal (10 eggs)

Table A-10: Marketing Costs and Margins for Chickens by Merchants (from Yang Joo to Seoul), 1970

Division	Selling Prices	Total Margins		
		Marketing Costs	Net Margins	Total
Producers	208	-	-	-
Peddler	228	8.40	11.60	20
Wholesaler or Retailers	285	31.20	25.80	57
Chicken Centers	450	88.20	76.80	165
Total		127.80	114.20	245

Source: Agricultural Economics Research Institute

Note: Unit is Won per kg

Table A-11: Seasonal Retail Price Variations for Chicken

Year	Month												Ave.
	1	2	3	4	5	6	7	8	9	10	11	12	
1967	-	-	-	-	-	-	-	-	-	-	-	-	-
1968	-	-	-	238	230	217	221	234	223	215	218	200	222
1969	166	179	211	213	202	216	233	220	203	203	203	203	204
1970	193	205	205	194	189	203	179	218	223	229	218	198	205

Source: 1) Korean Poultry Journal (68.4, 1969.12)

2) Monthly Poultry Management (1970, 1-12)

Note: Unit is Won per kg.

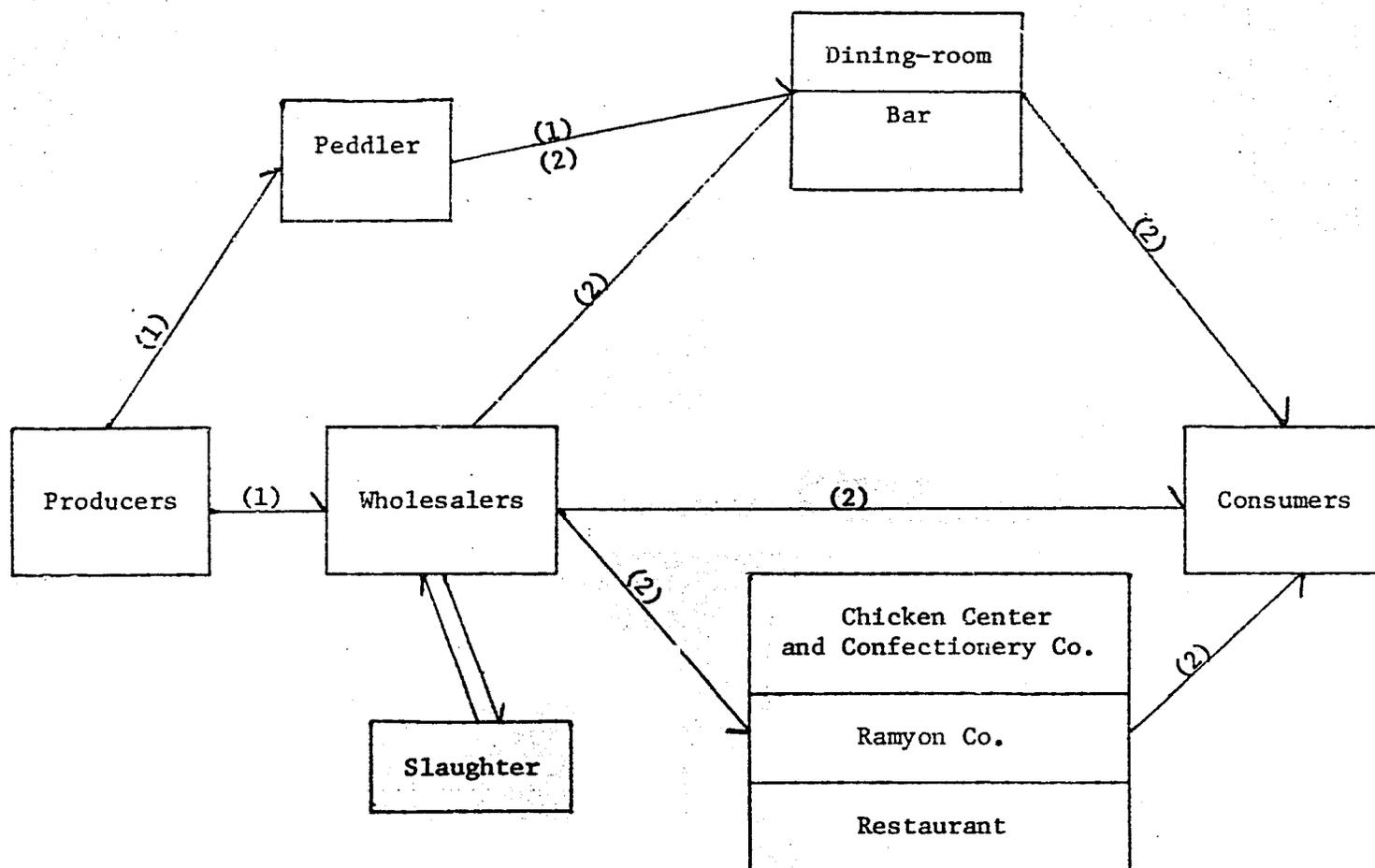


Figure A-4: Marketing Channels of Domestic Fowl and Chicken from Yang-Joo to Seoul, 1970

Source: Research Department, NACF

Note: (1) = Live Chicken Channels
 (2) = Dressed Chicken Channels

Table A-12: Retail Price Differences for Chickens by Cities, 1971

City	Month												Ave.
	1	2	3	4	5	6	7	8	9	10	11	12	
Seoul	-	-	-	-	371	318	314	442	380	401	439	420	386
Pusan	-	-	-	-	389	385	366	302	300	318	320	344	341
Tae-gu	-	-	-	-	350	360	323	300	300	328	359	362	334
Kwang-joo	-	-	-	-	380	380	380	380	380	380	380	380	380
Tae-jon	-	-	-	-	365	368	356	354	378	378	338	375	364
Ave.	-	-	-	-	371	362	348	356	348	361	367	377	361

Note: Chickens price is not available before May, 1971. Unit is Won per kg.

Table A-13: Consumer Prices of Market Milk

Feb. 1967	June 1968	Jan. 1970	July 1971	Feb. 1972
11	14	16	18	25

Source: Seoul milk cooperative

Note: Unit is Won per bottle (250 g)

Table A-14: Marketing Costs and Margins by Function (from producers to consumers), 1970

Division	Selling Prices	Total Margins			Rate
		Marketing Costs	Net Margins	Sub-Total	
Producers	50.00	1.93	-	1.93	5.1
Processing Plant	69.00	-	-	19.00	50.1
Delivery Manager	77.50	-	8.50	8.50	22.4
Delivery Man	86.00	0.71	7.79	8.50	22.4
Total	-	-	-	37.93	100.0

Source: The Agricultural Economics Research Institute (AERI)

Note: Unit is Won per kg.

Table A-15: Cocoon Prices Received by Farmers

Division	Years					
	1965	1966	1967	1968	1969	1970
Products in Spring (4th degree)	1,223	1,468	1,519	1,613	1,680	1,748
Products in Fall (4th degree)	1,140	1,255	1,389	1,463	1,566	1,620

Source: Monthly Review by NACF

Note: Unit is Won per 3.75 kg.

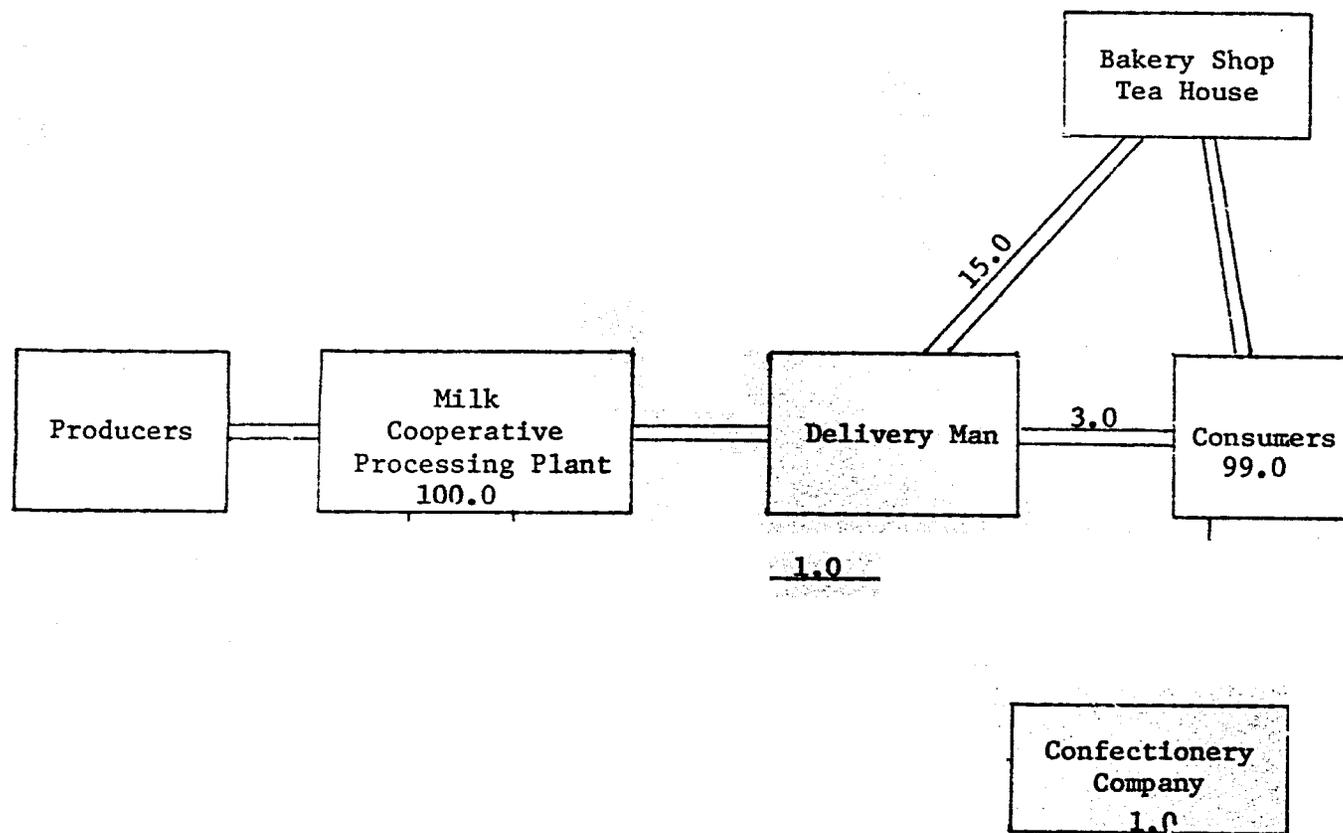


Figure A-5: Marketing Channels for Market Milk

Source: MAF, 1970

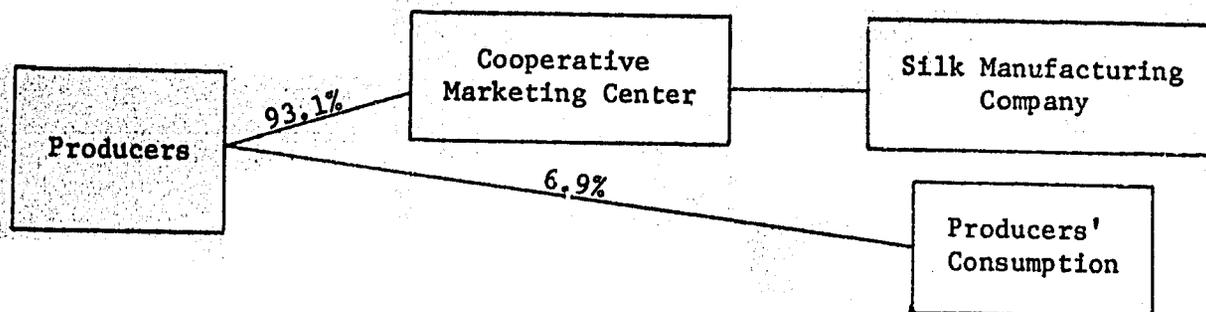


Figure A-6: Marketing Channels for Cocoons

Source: NACF

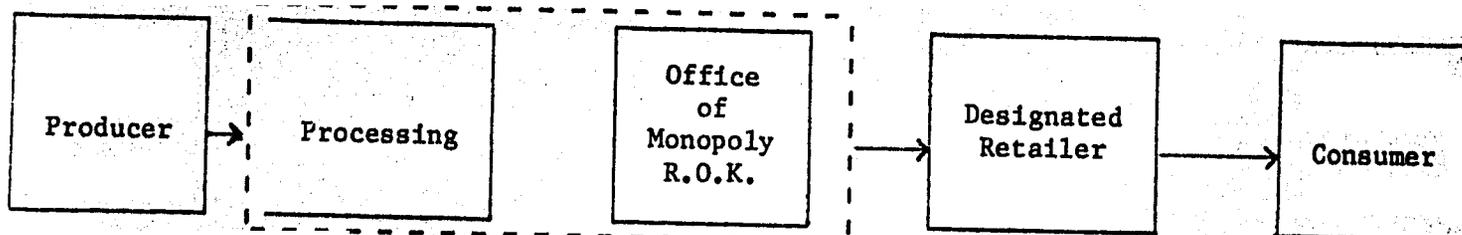


Figure A-7: Channels of Tobacco Marketing

There is no data available on marketing costs and margin. Tobacco is monopolized by government.

Table A-16: Tobacco Price Variations

Year	By Kind		
	Tobacco Flue Curing (Y.S.A.)	Tobacco Cheongju (Sun Curing)	Tobacco Hatan-Burley (Air Curing)
1968	150.39	86.43	102.09
1969	165.43	95.07	112.30
1970	210.10	120.74	142.62

Source: MAF (ROK)

Note: Above price is purchasing price of government. Unit is Won per kg.

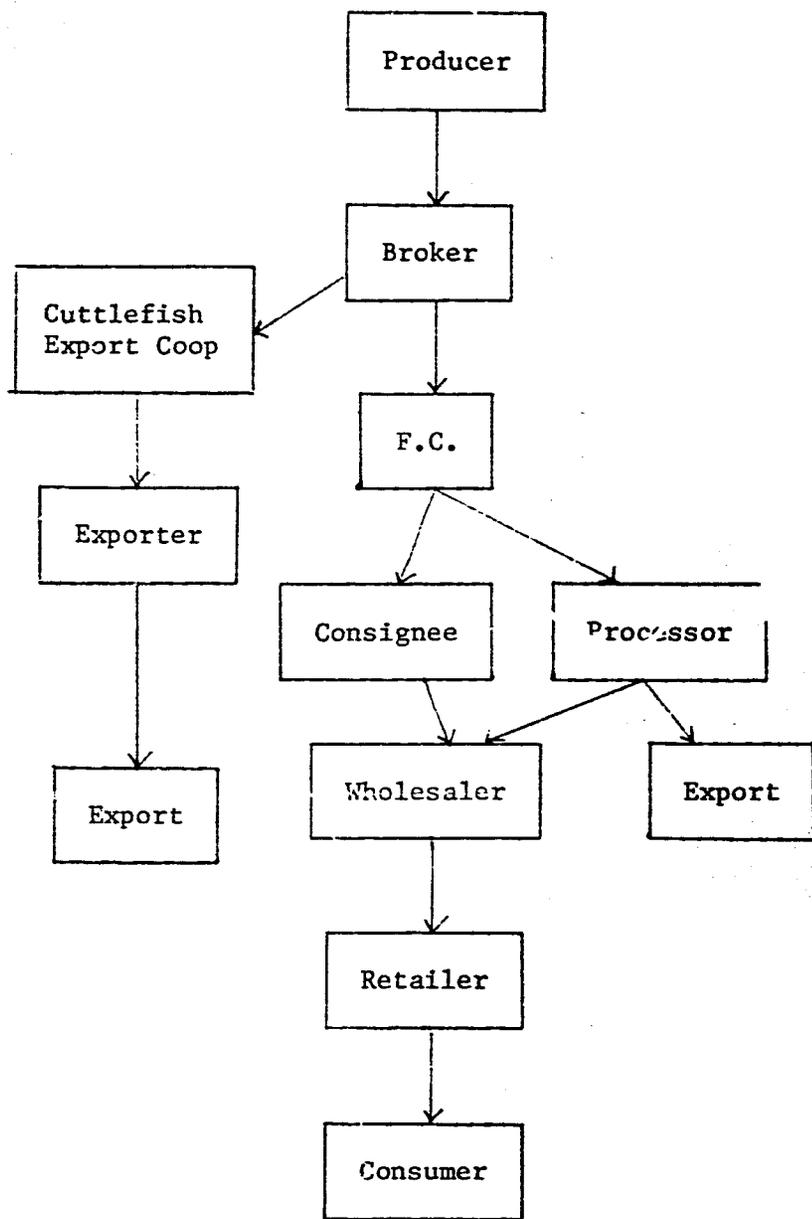


Figure A-8: Market Channels for Dried Cuttlefish

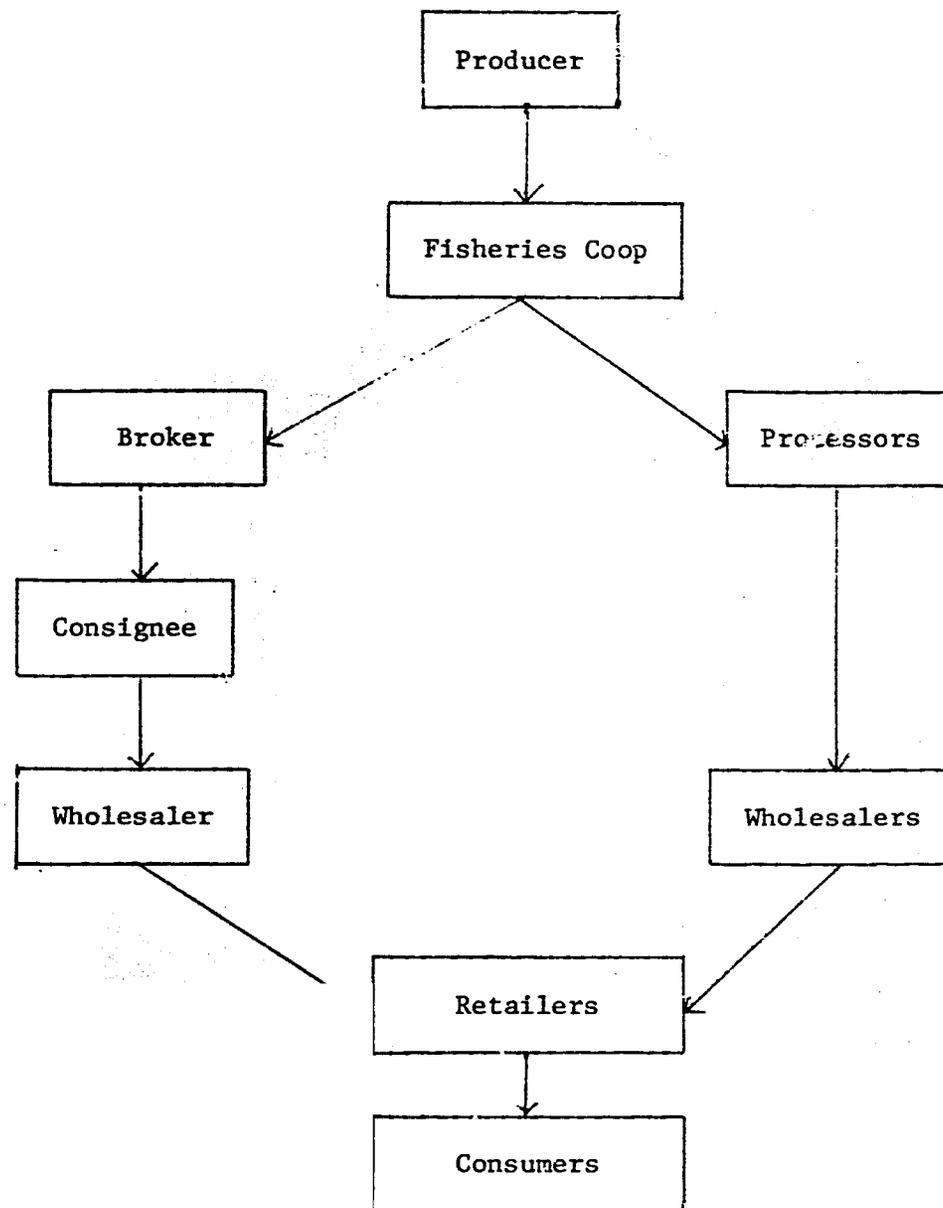


Figure A-9: Market Channels for Fresh Cuttlefish

Table A-17: Cuttlefish Marketing Margin

Item	Merchants	Classification			Total Margin (40)
		Sale Price	Marketing Margin	Ratio	
Fresh Cuttlefish	Producer	360	-	-	57.2
	Freezing Processor	650	290	60.4	
	Wholesaler	731	81	16.9	
	Retailer	840	109	22.7	
	Total	-	480	100.0	
Dried Cuttlefish	Producer	180	-	-	59.1
	Shipper	380	200	76.9	
	Wholesaler	400	20	7.8	
	Retailer	440	40	15.3	
	Total	-	260	100.0	

Note: Unit for fresh cuttlefish is Won per case of 40 cuttlefish; unit for dried is Won per 20 cuttlefish.

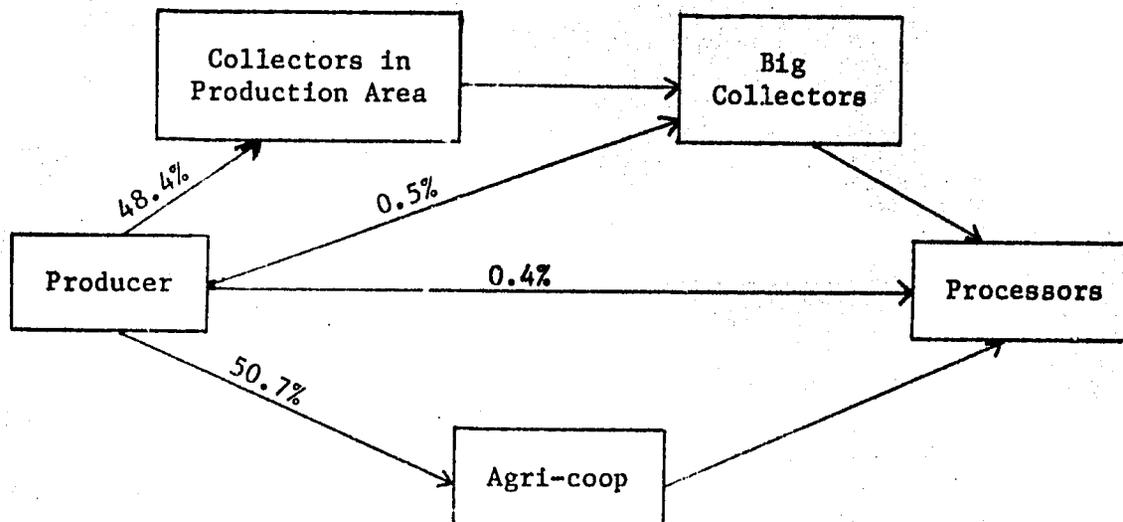


Figure A-10: Marketing Channel for Rape Seed

Table A-18: Rape Seed Marketing Margin, September 8, 1968

Channel	Merchant	Sales Price	Marketing Margin					
			Marketing Cost		Commission		Total	
			Value	Rate	Value	Rate	Value	Rate
Through Coop	Producer	3,178	62	2.0	-	-	62	2.0
	Coop	3,465	63	1.8	162	4.7	225	6.5
	Rape Oil Processor's Group	3,655	130	3.6	60	1.6	190	5.2
	Total	-	255	7.0	222	6.1	477	13.1
Through Merchant	Producer	3,120	-	-	-	-	-	-
	Middleman	3,426	152	4.4	154	4.5	306	8.9
	Rape Oil Processor's Group	3,675	249	6.8	-	-	249	6.8
	Total	-	401	10.9	154	4.2	555	15.1

Source: NACF, "Rape Marketing Research Report"

Note: Research Spot; Jeju Island, Pusan. Unit is Won per 60 kg

Table A-19: Farmer's Price Variations for Rape Seed

Classification	Year					
	1965	1966	1967	1968	1969	1970
Farmer's Price	52 (52)	62 (57)	50 (43)	58 (46)	54 (40)	60 (41)

Source: NACF

Note: Parentheses indicate fixed price of 1965. Unit is Won per kg.

Table A-20: Index of Seasonal Farm Prices for Rape Seed

Year	Month												Variations Spread
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
1968	103.8	-	93.0	101.9	93.0	94.8	101.9	101.9	103.8	110.9	-	94.8	79.9
1969	-	124.8	-	-	-	80.7	89.9	95.4	91.7	100.9	106.4	110.1	44.1
1970	90.0	-	-	-	-	88.3	90.0	95.0	113.3	108.3	108.3	108.3	25.0
Ave.	101.9	114.6	111.6	117.0	119.1	82.3	88.4	94.7	99.5	101.3	99.2	99.6	36.8

Source: NACF Note: Higher price season, Feb.-May; Lower price season, Jun.-Aug.

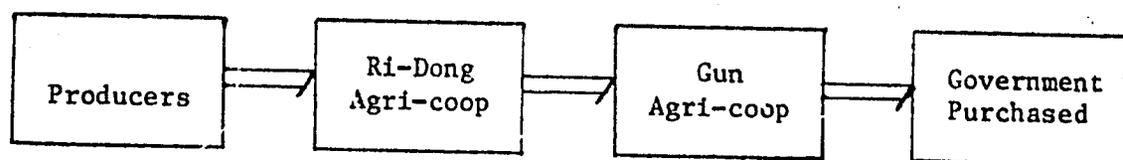


Figure A-11: Marketing Channels for Straw-Goods

Source: NACF

Table A-21: Price of Straw-goods Purchased by Government

Items	Grade	Year				
		1966	1967	1968	1969	1970
Straw bags for grain	1	37.70	40.30	50.00	62.30	70.70
	2	33.20	35.50	45.00	56.60	69.00
Straw bags for salt	1	24.00	25.60	29.00	33.20	40.60
	2	21.60	23.00	26.00	29.80	36.50
Thick straw rope	1	44.30	47.80	52.00	59.60	81.30
	2	39.90	42.50	46.00	52.70	73.20
Medium straw rope	1	46.50	49.90	54.00	66.90	81.30
	2	41.90	44.40	48.00	60.00	73.20

Source: NACF

Note: Unit in straw bags is Won per bag; in straw rope, Won per coil.

Problems

1. Straw goods prices are announced by the Minister of Agriculture and Forestry but sometimes these prices are not realistic.
2. MAF decides operation costs but these do not agree always with NACF estimating costs, resulting in loss in sales for cooperatives.

Table A-22: Bamboo Ware Prices Received by Farmers

Classification	Year					
	1965	1966	1967	1968	1969	1970
Prices Received by Farmers Index	950 100.0	1,000 105.2	1,150 121.0	1,200 126.3	1,383 142.4	1,704 179.3

Note: Unit is Won per Suk

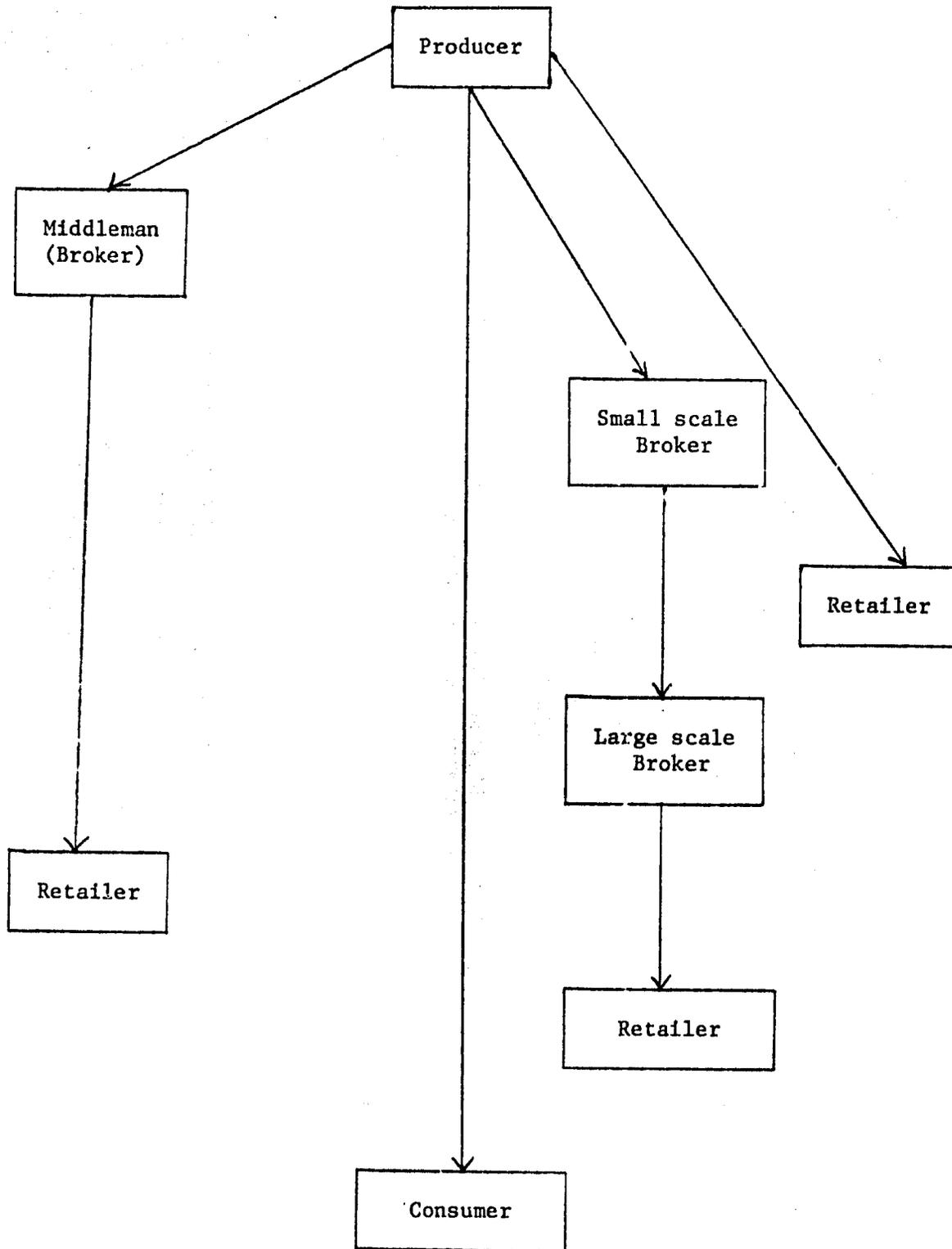


Figure A-12: Marketing Channels for Domestic Bamboo

Note: Producer-Retail Merchant-Consumer is primary channel.

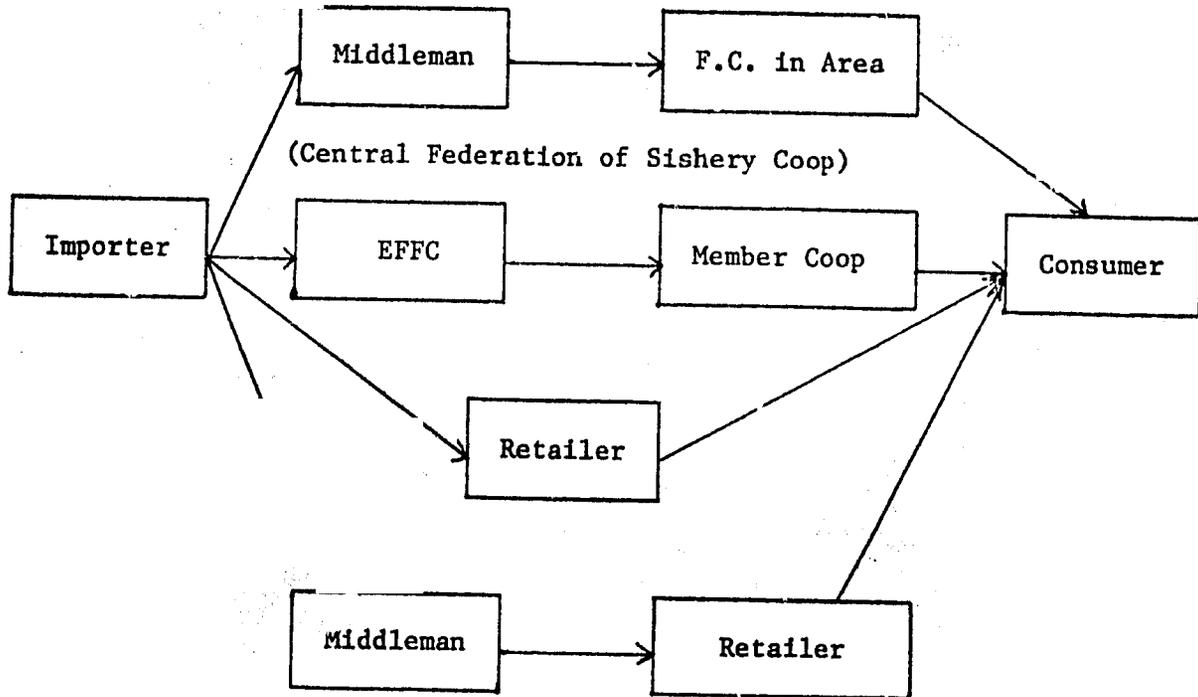


Figure A-13: Marketing Channels for Imported Bamboo

Note: Importer-Middleman-Retailer-Consumer pattern of channel is major course.

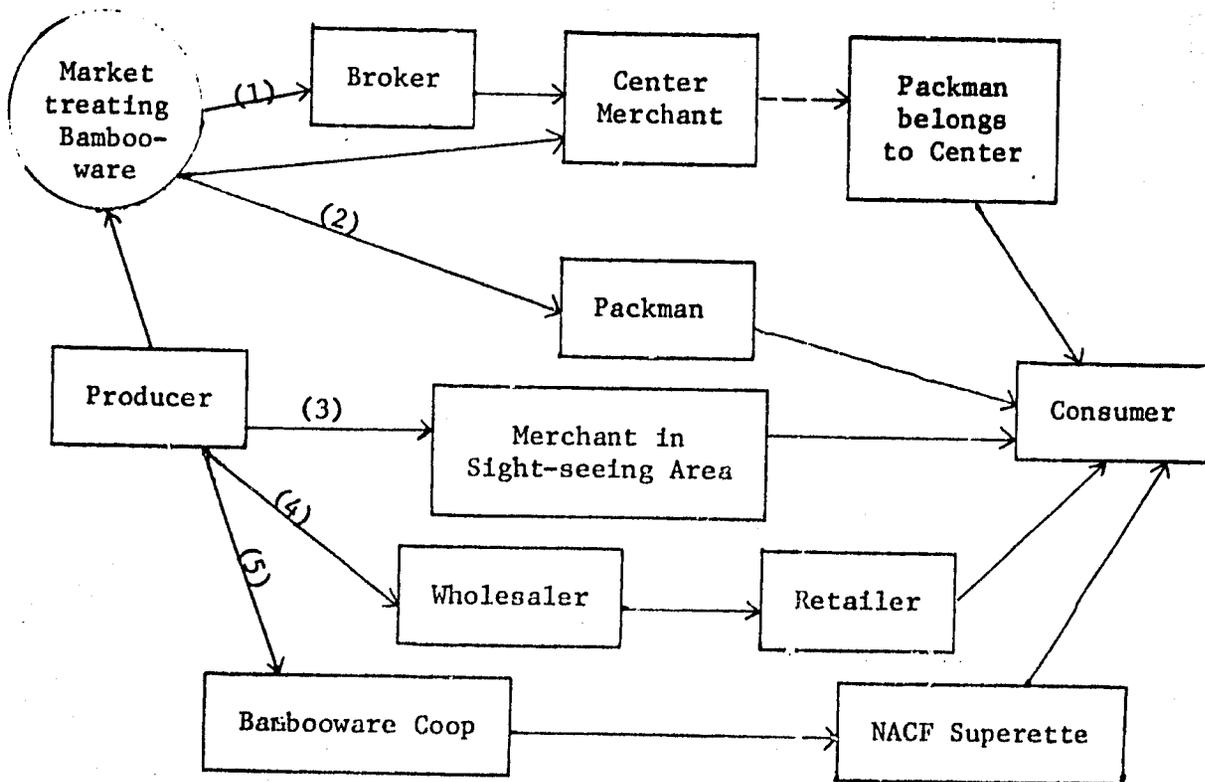


Figure A-14: Domestic Marketing Channels for Bambooware

Note: (1) and (2) are major channels.

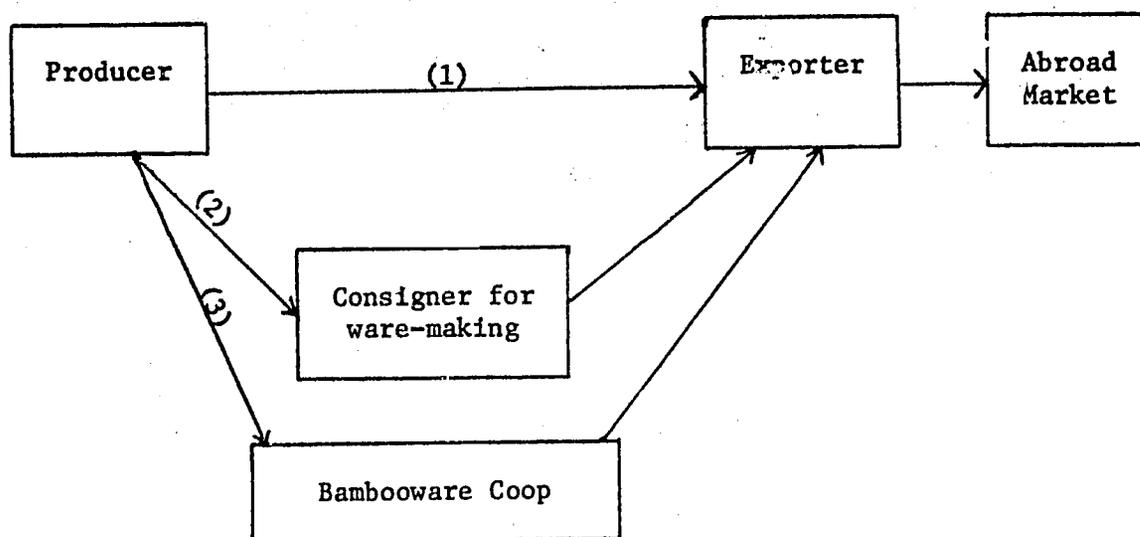


Figure A-15: Export Marketing Channels for Bambooware

Note: (2) and (3) are main channels.