



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

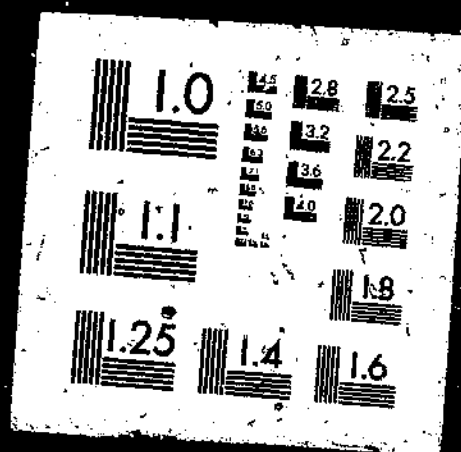
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

• (FOREIGN AGRICULTURAL ECONOMIC REPT.) / T. A. VANKAI
RESEARCH SERVICE, WASHINGTON, DC. SEP 76

1 OF 1
PB 84
133982



PB84-133982

**Feed-Livestock Economy of
East Germany: Prospects to 1980**

(U.S.) Economic Research Service, Washington, DC

Sep 75

U.S. Department of Commerce
Foreign National Information Service

NOTES

REPORT DOCUMENTATION PAGE		1. REPORT NO. FAER-110		2.		3. Recipient's Accession No. PB84 133982	
4. Title and Subtitle The Feed-Livestock Economy of East Germany: Prospects to 1980				5. Report Date September 1975			
7. Author(s) Thomas A. Vankai				8. Performing Organization Rept. No. FAER-110			
9. Performing Organization Name and Address Economic Research Service U.S. Department of Agriculture Washington, D.C. 20256				10. Project/Task/Work Unit No.			
				11. Contract(s) or Grant(s) No. (C) (G)			
12. Sponsoring Organization Name and Address				13. Type of Report & Period Covered			
				14.			
15. Supplementary Notes							
16. Abstract (Limit: 200 words) Meat consumption in East Germany could increase about 2.3 percent annually to 1980, based on the rising trend of per capita income and stable retail food prices. Human consumption of cereals and potatoes will decrease. Domestic meat production will keep up with demand, assuring self-sufficiency in livestock products. Total feed consumption in grain equivalent (GE) might go up about 1.9 percent annually. Production of grain and oilseeds will not catch up with consumption. Annual concentrated feed imports, averaging 2.8 million tons GE in 1966-70, are projected to increase to 3.7 million tons by 1980, ignoring reexports or stockpiling. The U.S. share of grain and oilmeal imports will rise.							
17. Document Analysis a. Descriptors Agriculture Grains Imports Foreign trade Consumption Costs b. Identifiers/Open-Ended Terms East Germany Agricultural projections c. COSATI Field/Group 02-B; 05-C							
18. Availability Statement National Technical Information Service 5285 Port Royal Road, Springfield, VA 22161				19. Security Class (This Report) Unclassified		21. No. of Pages 73	
				20. Security Class (This Page) Unclassified		22. Price	

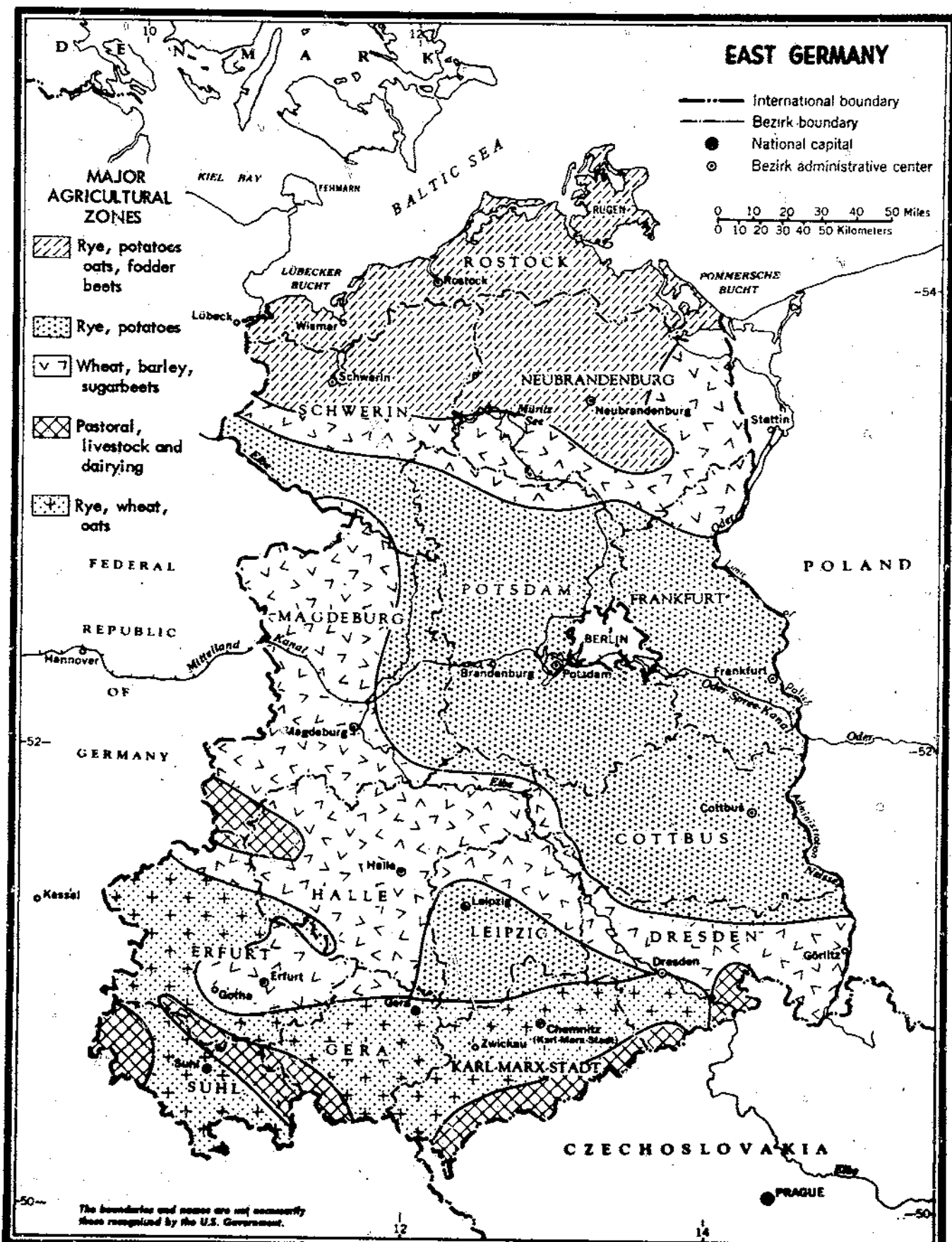
PB84-133982

THE FEED-LIVESTOCK ECONOMY OF EAST GERMANY: PROSPECTS TO 1980

FOREIGN AGRICULTURAL ECONOMIC REPORT NO. 110
ECONOMIC RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE



REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161



THE FEED-LIVESTOCK ECONOMY OF EAST GERMANY: PROSPECTS TO 1980,
by Thomas A. Vankai. Economic Research Service, U.S. Department of Agriculture. Foreign Agricultural Economic Report
No. 110.

ABSTRACT

Meat consumption in East Germany could increase about 2.3 percent annually to 1980, based on the rising trend of per capita income and stable retail food prices. Human consumption of cereals and potatoes will decrease. Domestic meat production will keep up with demand, assuring self-sufficiency in livestock products. Total feed consumption in grain equivalent (GE) might go up about 1.9 percent annually. Production of grain and oilseeds will not catch up with consumption. Annual concentrated feed imports, averaging 2.8 million tons GE in 1966-70, are projected to increase to 3.7 million tons by 1980, ignoring reexports or stockpiling. The U.S. share of grain and oilmeal imports will rise.

No radical change is expected in East German agricultural and price policies. Increasing amalgamation of farms, production specialization, and vertical integration will contribute to gains in production efficiency. It is unclear yet how the trade relationship between East and West Germany will fare in the future.

KEYWORDS: East Germany, Livestock products, Grains, Oilseeds, Food consumption, Feed consumption, Agricultural projections.

EXPLANATORY NOTES

Units

Metric units are used throughout:

One metric ton = 2,204.6 pounds.
One quintal = 100 kilograms.
One kilogram = 2.205 pounds.
One hectare = 2.471 acres.

Definitions

* Eastern Europe--Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, Yugoslavia.

Agricultural land--Cultivated land, gardens, orchards, meadows, and pasture.

Arable land--Cultivated land, gardens, and orchards.

Grain equivalent--Starch equivalent x 1.0 + protein x 2.4 (each type of grain equals 1 grain equivalent).

Starch--Chief carbohydrate in plants.

Concentrates--Grain and protein meal.

Coarse grain--All grains except wheat and rice.

Abbreviations

GDR = East Germany or German Democratic Republic.

FRG = West Germany or Federal Republic of Germany.

Ton = Metric ton.

GNP = Gross national product.

FAO = Food and Agriculture Organization of the United Nations.

OECD = Organization for Economic Cooperation and Development.

GE = Grain equivalent (Getreide-Einheit).

CEMA = Council of Mutual Economic Assistance.

EC = European Economic Community.

ERS = Economic Research Service, U.S. Department of Agriculture.

Symbols

Underscored numbers in parentheses refer to items in Literature Cited at the end of this report. Unless otherwise specified, a dash (--) used in tables means zero or negligible quantities. NA means not available. NP means not projected. Sums of individual items in tables may not equal totals because of rounding.

PREFACE

The U.S. Department of Agriculture released a comprehensive study on the East European livestock economy in October 1973 (30). Since then, new policy decisions, economic measures, and published data have necessitated studies on individual countries to reexamine past research results.

The objective of this study is to project East German demand for and imports of concentrated feed. All factors relevant to consumption and production of concentrated and other feed and of livestock products are analyzed.

East Germany is the most industrialized country in Eastern Europe. In 1972, per capita GNP of \$2,540 was the highest among the East European countries. The 7-percent contribution of agricultural sector to the total GNP in 1971-73, lowest in the region, reflects the high level of industrial production rather than the backwardness of agriculture. During this period, agricultural products accounted for about 28-percent of total imports.

Official East German statistics provided most of the historical data for this report. But the analyst often had to make a judgment when data were not available. For example, estimates had to be made of feed consumption, feed distribution by type of livestock, food and feed reserves; grain milling rates, production waste, and seed and industrial uses of grains, potatoes, and oilseeds. The official East German statistics give livestock products only in live weight; the conversion to meat in dressed weight is arbitrary.

For projections, the following general assumptions were made: (1) current political alliances and trade patterns will continue; (2) worldwide acceleration in inflation is temporary, and adequate economic measures will assure continuation of consumption and production trends in the longer run; (3) price relationships and wholesale, retail, and world market prices will return to their historical range; (4) world feed supplies will be adequate; and (5) weather will be normal.

Despite the availability of more recent data and, in some instances, use of different projection methodology, this research did not reveal any major discrepancies with the 1973 publication referred to earlier.

Summary charts appear in the appendix.

CONTENTS

SUMMARY	Page vii
DEMAND FOR LIVESTOCK PRODUCTS, GRAIN, POTATOES, AND OTHER FEED	1
Human Consumption of Livestock Products, Grain, and Potatoes	1
Animal Consumption of Feed	10
Seed, Waste, and Industrial Use of Grain and Potatoes	17
PRODUCTION OF LIVESTOCK PRODUCTS AND FEED	19
Livestock Products	19
Grain, Potatoes, Protein Feed, and "Other Feed"	27
TRADE IN LIVESTOCK PRODUCTS, GRAIN, OILSEEDS, AND PROTEIN MEAL	38
Policies	38
Inter-German Trade	39
Livestock Products	39
Grain	39
Oilseeds, Oilseed Meal, and Fishmeal	44
Trade with the United States	44
APPENDIX	47
Soils and Climate	47
Institutional Constraints	47
Methodology	57
LITERATURE CITED	63

TABLES

	<u>Page</u>
1--Per capita consumption of livestock products, grains, and potatoes, East Germany, 1955-72 and projections to 1980	2
2--Grain balance, East Germany, 1955-71 and projections to 1980	3
3--Potato balance, East Germany, 1955-72 and projections to 1980	4
4--Population and labor force, East Germany, 1955-72 and projections to 1980 ..	6
5--Indexes of crop and livestock producer prices, and of total, food, and meat retail prices, East Germany, 1955-72	7
6--Disposable income and distribution of expenditures of wage and salary earners from average households, East Germany, 1960-72	8
7--Oilseed meal balance and fishmeal supply, East Germany, 1955-72 and projections to 1980	11
8--"Other feed" production, East Germany, 1956-72 and projections to 1980	13
9--Feeding rates by livestock product or livestock unit, East Germany, averages 1956-60, 1961-65, 1966-70, and 1969-71 and projections to 1980	15
10--Feed distribution by livestock product or livestock unit, East Germany, averages 1956-60, 1961-65, 1966-70, and 1969-71 and projections to 1980	18
11--Livestock inventory, East Germany, 1955-72, and projections for sheep and horses to 1980	20
12--Livestock inventory in the socialized sectors, East Germany, 1955-72	21
13--Production of meat, milk, and eggs, East Germany, 1955-72 and projections to 1980	22
14--Meat production, trade, and consumption, East Germany, averages 1956-60, 1961-65, and 1966-70 and projections to 1980	24
15--Number of livestock slaughtered and average and total live weight, East Germany, 1955-72	25
16--Livestock numbers, meat production and productivity, milk and egg production, and rate of growth, East Germany, averages 1956-60, 1961-65, and 1966-70	26
17--Meat production, East Germany, 1955-72 and projections to 1980	28
18--Grain production, East Germany, 1955-72 and projections to 1980	29
19--Grain area harvested, East Germany, 1955-72 and projections to 1980	30
20--Grain yields, East Germany, 1955-72 and projections to 1980	31
21--Potato and rapeseed area, yield, and production, East Germany, 1955-72	33

TABLES--Continued

	<u>Page</u>
22--Average state purchase prices of selected grains and producer price indexes of crops, East Germany, 1955-72	35
23--Production and availability of mineral fertilizers, East Germany, 1955-72, and consumption projections to 1975 and 1980	36
24--Arable land, agricultural labor force, and number of tractors by size, East Germany, 1955-72	37
25--Principal agricultural trade between East and West Germany, fiscal years 1956-71	40
26--Meat balance, East Germany, 1956-70 and projections to 1980	41
27--East German beef and pork trade by principal origins and destinations, averages 1956-60, 1961-65, and 1966-70	42
28--East German grain imports by country of origin and by type of grain, 1955-72	43
29--Oilseed, oilseed meal, and fishmeal trade by principal countries of origin and destination, East Germany, averages 1956-60, 1961-65, 1966-70, and 1971-72	45
30--Value and quantities of East German agricultural imports from the United States, total value and values and quantities of selected commodities, 1960-73	46

APPENDIX TABLES

1--Total agricultural and arable land, and number and size of farms by type of ownership, East Germany, 1955, 1960, 1965, 1970, and 1972	49
2--Agricultural land distribution by use, East Germany, averages 1956-60, 1961-65, and 1966-70 and projections to 1980	50
3--Average state purchase prices of selected livestock products and average livestock product producer price indexes, East Germany, 1955-72	53
4--State purchases of selected livestock products and grain and their share of total production, East Germany, averages 1956-60, 1961-65, 1966-70, and 1971-72	54
5--Net national income and agriculture's share, 1950-72	55

APPENDIX CHARTS

1--Feed use in East Germany, projections for 1980	60
2--Meat in East Germany, production and net trade, projections for 1980	61
3--Grain and protein meal in East Germany, production and net imports, projections for 1980	62

SUMMARY

East Germany, continuing past trends, will remain a net importer of concentrated feed in 1980. Total annual imports of 2.8 million tons of grain equivalent (GE) during 1966-70 are projected to increase to 3.7 million tons GE by 1980, ignoring grain reexports or stockpiling. Protein meal imports are projected to rise from 0.8 million to close to 2 million tons GE. Net grain imports, however, may decline from 2 million to 1.75 million tons. This relationship could deviate from the projection depending upon the relative prices of meal and grain.

East Germany achieved self-sufficiency in livestock products during 1966-70. It will remain close to the self-sufficient level through 1980. Increased domestic grain production, diversion of grain from human consumption to feed, a continuous decline in horse population, and improved feeding efficiency will offset added feed requirements generated by growth in livestock production.

Increasing yields and also shifts from producing lower yielding rye and oats to higher yielding wheat and barley form the basis for predicting a 2.4-percent annual rise in grain output from 1966-70 to 1980. Area sown to grain will likely increase at an annual rate of 0.4 percent. Projected oilseed (principally rapeseed) production will edge up slightly, with greater yields compensating for a reduced sown area.

Total feed consumption is projected to rise 1.9 percent a year through 1980. The share of concentrates (in GE) in total feed consumption will rise from 36 percent in 1966-70 to 42 percent by 1980. The share of oilmeal (in GE) in total concentrates fed will increase from 15 to 22 percent. Use of grain for feed will rise 2.5 percent a year, and protein meal, 6.5 percent.

Annual growth in meat production (2.5 percent) will outstrip rising consumption (2.3 percent). The rate of increase will be slightly faster in carcass meat production than in live weight production of meat animals (2.5 percent versus 2.4 percent), due to improvements in breeds and feeding practices.

Meat consumption is projected at 83 kilograms by 1980. Its composition will change from the pork:beef:poultry ratio of 61:30:7 during 1966-70 to 58:30:10 by 1980.

The USSR has been the dominant supplier of imported grains to East Germany, and West Germany has supplied most of the imported oilmeals. U.S. grain exports to East Germany reached about 300,000 tons a year during 1966-70. About the same amount of grain was reexported to West Germany, probably to West Berlin.

It is expected that grain imports by 1980 will mostly be corn, of which the United States will remain a competitive supplier. Soybean meal, currently supplied by West Germany principally from meals processed from U.S. soybeans, may be purchased directly from the United States by 1980. After the present contracts between East and West Germany expire, West Germany, by obligation to other Common Market members, will probably not be able to completely maintain its preferential treatment of East Germany. Also, the trade relationship between the United States and East Germany is expected to improve.

East Germany's agricultural policy will most probably not change radically. Increasing the scale of production through enlarging production units or through cooperation by enterprises will likely continue, together with more specialized production.

Producer price changes will continue to be used as an economic lever to influence production. But consumer prices are frozen until 1976, and any increases after 1976 will likely not change current consumption trends.

Population growth is stagnant. Personal disposable income--both total and per capita--is projected to rise 4 percent annually. Spending will follow traditional income elasticities of demand for consumer products, assuming no change in retail price relationships.

THE FEED-LIVESTOCK ECONOMY OF EAST GERMANY: PROSPECTS TO 1980
by Thomas A. Vankai
Agricultural Economist

DEMAND FOR LIVESTOCK PRODUCTS, GRAIN, POTATOES, AND OTHER FEEDS

Human Consumption of Livestock Products, Grain, and Potatoes

Trends

Each person in East Germany (GDR) consumes about 3,000 calories of food per day, including 76 grams of protein (53 percent of animal origin).^{1/} The share of protein has been increasing annually. Per capita consumption of about 71 kilograms of meat in 1972 was the highest in East Europe (table 1). From 1961-65 to 1966-70, consumption rose at rates of 2.2 percent annually for meat, 1.4 percent for milk, and 2.5 percent for eggs. During this period, contrary to the expected pattern observed in some highly developed countries, per capita consumption of pork and poultry rather than that of beef increased. As a result, the share of beef in total meat consumption declined from 32 to 30 percent.

Per capita grain consumption, the lowest in East Europe, after dropping sharply from 160 kilograms in 1956 to 128 kilograms in 1960, has declined moderately since. During 1966-70, declining rye consumption was partially offset by increasing wheat consumption. While until 1961 it accounted for less than half of the total quantity of grain used for bread, wheat's share had reached 57 percent by 1970.

Parallel with grain, per capita potato consumption also trended down; the sharpest single-year declines occurred in 1961 and in 1972.

During 1966-70, people consumed 31 percent of the grain and 21 percent of the potatoes produced (tables 2 and 3). Owing to the change in human consumption patterns between 1956-60 and 1966-70, an additional 400,000 tons of grain and 400,000 tons of potatoes were released annually for feed use.

As shown below, for 1966-70, each East German ate less meat and eggs but more milk, grain, and potatoes than did each West German. And East German potato consumption was much higher than in any of the other selected countries:

Country	Meat ^{1/}	Milk ^{2/}	Eggs ^{3/}	Grain	Potatoes
<u>Kilograms per capita in 1966-70</u>					
Czechoslovakia	60.8	115.8	13.6	155.4	109.3
East Germany	63.1	101.1	12.3	125.2	152.9
West Germany	67.9	74.8	15.2	87.3	108.1
France	69.9	105.6	12.6	109.3	97.3
Italy	41.0	66.3	9.4	175.8	43.6

^{1/} Does not include fats, offals, or minor quantities of horsemeat or game.

^{2/} 1 liter = 1.031 kg.

^{3/} 1 egg = .055 kg.

Source: (30).

Influencing Factors

Demand for food is influenced by the size and age of the population, retail prices, price relationships among consumer goods and services, disposable personal

^{1/} 1964-66 data (10).

Table 1--Per capita consumption of livestock products, grains, and potatoes, East Germany, 1955-72 and projections to 1980

Year	Meat 1/						Milk 2/	Grains 3/	Potatoes	Eggs	
	Total	Beef and veal	Pork	Mutton	Poultry	Other					
----- Kilograms -----											Number
1955	45.0	8.9	30.7	0.8	3.4	1.2	93.5	152.8	174.6	116	
1956	4/	4/	4/	4/	4/	4/	4/	159.6	4/	4/	
1957	4/	4/	4/	4/	4/	4/	4/	149.0	4/	4/	
1958	50.2	4/	4/	4/	4/	4/	98.4	146.0	167.9	176	
1959	53.7	4/	4/	4/	4/	4/	110.2	140.1	170.7	177	
1960	55.0	15.9	33.3	.8	3.7	1.3	97.4	128.5	173.9	197	
1961	56.3	17.2	33.5	.9	3.8	.9	90.5	125.7	160.0	203	
1962	53.5	20.5	27.5	.9	3.8	.8	89.8	129.4	154.5	181	
1963	56.0	18.5	31.5	.8	4.2	1.0	98.0	120.7	158.5	189	
1964	58.0	17.9	34.2	.7	4.1	1.1	96.8	126.8	155.9	205	
1965	58.7	17.1	36.2	.7	4.0	.7	97.0	127.7	156.5	211	
Average	56.5	18.2	32.6	.8	4.0	.9	94.4	126.1	157.1	198	
1966	60.1	18.1	36.6	.8	4.0	.6	98.7	126.9	155.7	213	
1967	61.4	17.4	38.0	.9	4.4	.7	99.5	126.8	156.3	216	
1968	63.0	18.1	39.0	.6	4.6	.7	102.3	124.0	150.0	220	
1969	65.1	19.2	39.7	.6	4.9	.7	103.3	125.0	148.8	230	
1970	66.1	20.9	38.7	.6	5.1	.8	101.6	123.3	153.5	239	
Average	63.1	18.7	38.4	.7	4.6	.7	101.1	125.2	152.9	224	
1971	67.8	18.8	41.5	.6	5.7	1.2	103.3	123.3	150.4	244	
1972	70.8	18.3	44.5	.5	6.3	1.2	101.7	123.3	133.6	244	
1980	82.9	24.9	48.0	.7	8.6	.7	116.8	116.0	120.0	259	
----- Annual rate of growth--Percent -----											
1961-65 to 1966-70	2.2	0.6	3.3	0	2.8	-4.1	1.4	-0.2	-0.5	2.5	
1966-70 to 1980	2.3	2.4	1.9	0	5.4	0	1.2	-.6	-1.6	1.2	

1/ Meat and meat products in carcass weight equivalent.

2/ In 2.5 percent fat content converted from liters: 1 liter = 1.631 kgs.

3/ Calculated from flour using constant milling rates: 77 percent for wheat, 82 percent for rye, and 65 percent for other grains, rice excluded.

4/ Available data are inconsistent.

Source: (29)

Table 2--Grain balance, East Germany, 1955-71 and projections to 1980

Year	Production	Imports 1/	Exports 2/	Net imports	Total supply 3/	Domestic utilization				
						Food	Seed	Industrial use	Waste	Feed
Million tons										
1955	6.17	1.68	0.03	1.65	7.82	2.80	0.39	0.26	0.31	4.06
1956	5.75	2.01	.09	1.92	7.67	2.86	.38	.23	.29	3.91
1957	5.82	1.86	.02	1.84	7.66	2.64	.39	.30	.29	4.04
1958	6.31	1.84	.06	1.78	8.09	2.56	.40	.28	.31	4.54
1959	5.95	2.08	.34	1.74	7.69	2.48	.39	.29	.30	4.23
1960	6.38	1.92	.13	1.79	8.17	2.31	.38	.31	.32	4.85
Average	6.04	1.94	.13	1.81	7.85	2.57	.39	.28	.30	4.31
1961	4.84	2.24	.20	2.04	6.88	2.12	.36	.32	.24	3.84
1962	5.94	1.68	.19	1.49	7.43	2.19	.37	.32	.30	4.25
1963	5.54	1.93	.19	1.74	7.28	2.10	.36	.34	.28	4.20
1964	6.18	1.72	.14	1.58	7.76	2.13	.37	.34	.31	4.61
1965	6.73	1.99	.37	1.62	8.35	2.16	.37	.35	.34	5.13
Average	5.85	1.91	.22	1.69	7.54	2.14	.37	.33	.29	4.41
1966	5.92	1.76	.43	1.33	7.25	2.17	.37	.36	.30	4.05
1967	7.35	1.74	.24	1.50	8.85	2.16	.38	.37	.37	5.57
1968	7.83	1.89	.29	1.60	9.43	2.11	.38	.36	.40	6.18
1969	6.92	3.34	.23	3.11	10.03	2.12	.38	.37	.34	6.82
1970	6.46	2.73	.42	2.31	8.77	2.10	.38	.39	.32	5.58
Average	6.89	2.29	.32	1.97	8.86	2.13	.38	.37	.35	5.64
1971	7.74	3.75	.23	3.52	11.26	2.10	.38	.39	.39	8.00
1980	9.12	NP	NP	1.75	10.87	1.98	.37	.46	.46	7.60

NP = Not projected.

1/ Imports are advanced by 1 year (1956 imports are added to 1955 production); rice is excluded.

2/ First year of FY exports.

3/ Excluding stock changes.

Table 3--Potato balance, East Germany, 1955-72 and projections to 1980

Year	Production	Imports	Exports <u>1/</u>	Total supply	Domestic utilization				
					Seed <u>2/</u>	Industrial use <u>3/</u>	Food <u>4/</u>	Waste <u>5/</u>	Feed <u>6/</u>
Million tons									
1955	11.19	0.03	--	11.22	1.86	0.50	3.13	1.46	4.28
1956	13.56	.04	0.02	13.59	1.72	.50	3.12	1.77	6.49
1957	14.53	.02	.02	14.53	1.78	.50	3.06	1.89	7.30
1958	11.50	.03	.01	11.52	1.69	.50	2.91	1.50	4.92
1959	12.44	.04	.02	12.46	1.70	.50	2.95	1.62	5.69
1960	14.82	.06	.01	14.87	1.69	.50	3.00	1.93	7.75
Average	13.37	.04	.02	13.39	1.72	.50	3.01	1.74	6.43
1961	8.43	.09	.02	8.50	1.50	.50	2.74	1.10	2.67
1962	13.28	.13	--	13.41	1.63	.50	2.64	1.73	6.91
1963	12.89	.13	--	13.01	1.64	.50	2.72	1.68	6.48
1964	12.87	.41	--	13.28	1.64	.50	2.65	1.67	6.82
1965	12.86	.08	--	12.94	1.60	.50	2.66	1.67	6.51
Average	12.07	.17	--	12.24	1.60	.50	2.68	1.57	5.88
1966	12.82	.09	--	12.92	1.53	.50	2.66	1.67	6.50
1967	14.06	.11	--	14.17	1.51	.50	2.67	1.83	7.66
1968	12.64	.14	--	12.78	1.48	.50	2.56	1.64	6.59
1969	8.83	.14	--	8.97	1.33	.50	2.54	1.15	3.45
1970	13.05	.21	--	13.26	1.47	.50	2.62	1.70	6.98
Average	12.28	.14	--	12.42	1.46	.50	2.61	1.60	6.25
1971	9.41	.06	--	9.47	1.45	.50	2.56	1.22	3.74
1972	12.14	.11	--	12.25	1.42	.50	2.27	1.58	6.48
1980	11.83	--	--	11.83	1.17	.50	2.05	1.54	6.57

-- = Less than 5,000 tons.

1/ Inter-German trade data from 1955 to 1972.

-- = Less than 5,000 tons.

1/ Inter-German trade data for fiscal years: 1956 = 1955/56, etc.

2/ 2,200 kg./ha.

3/ Estimate.

4/ Calculated from per capita consumption.

5/ 13 percent of production.

6/ Residual.

income, and taste. However, GDR food supply and distribution, controlled through state and cooperative marketing systems, often do not respond to demand.

The aspects of demand dependent on size and age of the population have been stable. Population declined only slightly between 1955 and 1962 and it increased less than 1 percent during the following 10 years (table 4).

The retail food price index dropped 15 percent between 1955 and 1960 but it remained fairly stable over the next 12 years (table 5). Prices of staple foods have been fixed during 1971-75, despite the high cost of subsidies. Retail food price subsidies accounted for 4.6 billion marks in 1970, close to 7 percent of the entire state budget, and they increased to 10.1 billion marks--10 percent of the budget--in 1973 (29).

It is difficult to compare price levels in relation to incomes between countries because of variations in product quality. Nevertheless, the Peasant Union (Bauern Verband) in West Berlin attempted to compare 1970 GDR and FRG prices and work time used for obtaining identical foods:

Item	Unit	GDR marks <u>1/</u>	FRG Deutsche marks <u>1/</u>
<u>Cost</u>			
Price:			
Rye bread	1 kg.	0.52	1.30
Potatoes	5 kg.	.85	2.58
Meat cutlet	1 kg.	8.00	8.40
Eggs	1 unit	.34	.19
Butter	1 kg.	10.00	7.50
Milk	1 ltr.	.72	.75
<u>Minutes</u>			
Work time:			
Rye bread	1 kg.	8.3	13.9
Potatoes	5 kg.	13.6	27.6
Meat cutlet	1 kg.	128.0	89.8
Eggs	1 unit	5.4	2.0
Butter	1 kg.	160.0	80.2
Milk	1 ltr.	11.5	8.0

1/ Average hourly wage for workers was 3.75 marks in GDR and DM6.09 in FRG; DMI equaled 1.20 marks at the official exchange rate.

Source: (3).

According to these comparisons, East Germans work less time to earn a unit of bread or potatoes but more to earn livestock products than their West German neighbors. Because retail prices of nonfood items have also been fixed and stabilized, price effects have not influenced eating habits.

Rising personal disposable income has been the leading cause of shifts toward consumption of more meat, less starchy food, and more highly processed food. Between 1960 and 1972, the index of real income increased 50 percent, but despite the upgraded diet the income share spent for food declined from 33 to 27 percent (table 6). According to an FAO study, income elasticity of consumption in 1965 in the GDR was 1.0 for

Table 4--Population 1/ and labor force 2/, East Germany,
1955-72 and projections to 1980

Year	Total population	Labor force	
		Total	Agricultural
		<u>1,000</u>	
1955	17,832	8,749	1,864
1956	17,607	8,742	1,818
1957	17,370	8,761	1,778
1958	17,206	8,713	1,725
1959	17,132	8,681	1,675
1960	17,058	8,534	1,604
1961	16,938	8,472	1,550
1962	16,903	8,449	1,504
1963	16,951	8,339	1,443
1964	16,988	8,343	1,399
1965	17,020	8,366	1,347
1966	17,058	8,378	1,315
1967	17,082	8,409	1,287
1968	17,084	8,403	1,252
1969	17,076	8,404	1,219
1970	17,058	8,417	1,204
1971	17,061	NA	NA
1972	17,043	NA	NA
1980	17,100	NP	NP

NA = Not available; NP = Not projected.

1/ Midyear data provided by the U.S. Bureau of the Census (31).

2/ As defined by the U.S. Bureau of the Census.

Table 5--Indexes of crop and livestock producer prices,
and of total, food, and meat retail prices, East Germany, 1955-72

(1960 = 100)

Year	Producer prices		Retail prices		
	Crop	Livestock	Total	Food	Meat and meat products
1955	70.6	90.8	111.7	115.3	113.5
1956	76.3	87.4	NA	NA	NA
1957	91.6	93.7	NA	NA	NA
1958	93.7	96.7	NA	NA	NA
1959	112.8	95.5	NA	NA	NA
1960	100.0	100.0	100.0	100.0	100.0
1961	105.2	100.2	NA	NA	NA
1962	106.6	100.4	NA	NA	NA
1963	105.9	109.8	NA	NA	NA
1964	118.1	115.9	NA	NA	NA
1965	115.5	118.4	99.9	100.0	99.3
1966	119.9	121.1	NA	NA	NA
1967	122.1	123.2	99.7	100.7	99.4
1968	124.3	125.8	99.9	101.4	99.2
1969	121.3	140.3	99.8	101.5	99.3
1970	123.3	141.6	99.6	101.5	99.5
1971	131.2	149.0	99.9	102.0	99.6
1972	126.4	149.4	99.5	101.2	99.4

NA = Not available.

Source: (29).

Table 6--Disposable income and distribution of expenditures of wage and salary earners from average households, East Germany, 1960-72

Year	Disposable income <u>1/</u>	Food	Beverages and tobacco	Industrial goods	Housing and furniture	Services (including rent)	Taxes, savings, and contributions
	(1960 = 100)				Percent		
1960	100.0	33.1	8.0	25.1	3.1	11.2	19.5
1961	NA	31.5	8.2	25.0	2.5	12.2	20.6
1962	103.2	30.5	9.0	24.5	2.4	12.2	21.5
1963	107.8	30.5	9.2	24.5	2.4	12.2	21.5
1964	110.2	30.5	9.2	24.6	2.3	12.4	20.9
1965	115.0	29.7	9.0	25.0	2.4	12.7	21.2
1966	119.8	31.0	9.1	24.4	2.5	12.7	20.3
1967	123.7	29.2	9.2	23.9	2.4	12.6	22.6
1968	127.9	28.1	9.3	25.0	3.1	12.7	21.9
1969	134.5	27.7	9.4	25.0	3.0	12.4	22.5
1970	140.6	27.1	9.3	25.4	3.4	12.3	22.6
1971	144.0	27.5	8.6	25.1	3.4	11.9	23.5
1972	149.9	26.9	8.5	23.5	5.6	12.1	23.4

NA = Not available.

1/ Per average household in constant prices.

Source: (29).

poultry, 0.4 for pork, milk, and eggs, and -0.17 for total grains (9). ERS derived income elasticity of demand based on linear projections of grain consumption is -0.15, slightly less than the -0.17 found in the FAO study. ERS projection of potato consumption based on GDR plans indicated -0.40 income elasticity of demand.

The marketing system for staple food is under strict state control. Marketing associations supervised by the State Committee for Procurement and Purchases (Volkseigene Erfassungs- und Aufkauf Betriebe) channel the products from farmers to customers. Compulsory deliveries assured grain and potato supply until 1964 and meat supply until 1969. Since those dates, more flexible contract purchases have replaced the compulsory delivery system.

Private retailers play a small role in the GDR economy. The retail outlets are owned either by the state or by consumer cooperatives; private retailers' gross turnover including restaurants reached 12 percent of total retail sales in 1967, the latest year for which data are available (29).

Plans and Projections

GDR per capita consumption plans for 1980 as given by West German sources allow for a substantial range, and the plans seem to represent goals rather than projections. ERS projections, based on actual consumption data for later years than the data base used for GDR figures, differ somewhat from the plans. We project higher meat and lower milk consumption for 1980.

As meat prices have been frozen until 1976, price effects on future food consumption have been ignored in this study. However, official complaints on the increased subsidy, drastic price increases on the world raw material market, and the renegotiation of trade agreements within the CEMA every 5 years suggest that when the current 5-year plan ends in early 1976, a complete price realignment will occur. Meat consumption afterwards will depend on the change in the average retail price level compared with disposable income, and the change in the price ratio of meats to other products. Until an announcement is made in this respect, price impact on food consumption cannot be measured. Per capita consumption plans for 1980 and ERS projection are given as follows:

Commodity	GDR plan 1/	ERS projection 2/
	<u>Quantity</u>	
Total meat	70-80 kg.	83 kg.
Beef and veal	24-28 kg.	25 kg.
Pork	34-43 kg.	48 kg.
Poultry	7-8 kg.	8-9 kg.
Milk	3/125-165 kg.	4/117 kg.
Eggs	230-270 units	259 units
Flour	88-92 kg.	5/91-92 kg.
Potatoes	115-125 kg.	120 kg.

1/ Data from (18).

2/ Data from table 1.

3/ Fat content 3.5 percent.

4/ Fat content 2.5 percent.

5/ Projected grain consumption converted to flour at 79-percent milling rate.

Total meat consumption was projected by regression analysis. A time trend and the annual 4-percent increase in disposable income experienced in the past 10 years were applied as independent variables. Observations of recent consumption patterns, the FAO elasticity study (9), and supply projections influenced the consumption allocation by types of meats.

Animal Consumption of Feed

Classification of Feeds

Comprehensive statistical data on East German feed consumption are not available. Using feed norms or feed utilization samples from individual enterprises would not prove satisfactory in calculating aggregate feed uses. Feeding practices differ not only by countries but also between regions of a country and even between neighboring farms. For this reason, aggregate feed use was estimated with the help of grain, potato, and oilmeal balances (tables 2, 3, and 7). After allowances for the supply for food, industrial uses, seed, and waste had been deducted, the residual was assumed to be livestock feed. For this study, feed is divided into four categories: grains, protein feeds, potatoes, and "other feeds." "Other feeds" include bran, pulses for feed, hay, green forage and silage, and root crops except potatoes. Milk, straw, and byproducts of sugar-processing plants, such as molasses and sugarbeet tops, are not included in "other feeds," owing to lack of adequate data. Although bran and pulses are concentrates, they are not traded and their share in total feed is not significant. Therefore, they have been included in "other feed."

Trends

According to our figures for the grain balance, during 1956-60 an average of 4.31 million tons of grain were fed annually. This quantity remained almost the same during 1961-65, but it rose 28 percent to 5.64 million tons during 1966-70. Substantial production increases in 1967 and 1968 and greater net imports in 1969 and 1970 contributed to the sharp upturn in grain supply (table 2). Feed availability was enhanced also through a gradual shift in grains from food to feed use. The share of feed rose from 55 percent of total grain use in 1956-60 to 58 percent in 1961-65 and 65 percent in 1966-70.

The composition of grain used for feed, reflecting partly the shift in production pattern and partly the increase in corn imports, shifted from rye and oats to wheat, barley, and corn:

Commodity	1956-60	1961-65	1966-70
	<u>Percent</u>		
Wheat	27	27	37
Barley	18	22	28
Rye	20	15	9
Oats	23	16	11
Corn	3	7	8
Other	9	12	8

Five-year averages of potato consumption for feed varied from 5.9 million to 6.4 million tons, fluctuating highly between individual years. Because consumption of potatoes for food declined, the share used for feed increased from 48 percent during 1961-65 to 50 percent in 1966-70 (table 3).

Table 7--Oilseed meal balance and fishmeal supply, East Germany, 1955-72 and projections to 1980

Year	Oilseed production 1/	Seed and waste 2/	Exports 3/	Domestic seed supply	Oilseed imports 4/	Total oilseed supply	Total oilseed supply in oilmeal equivalent 5/	Imports of oilseed meal	Total oilseed meal supply	Total fishmeal supply
1,000 tons										
1955	234	16	--	218	265	483	266	1	267	--
1956	195	14	--	181	269	450	248	2	250	2
1957	194	14	1	179	320	499	274	4	278	2
1958	146	14	--	132	314	446	248	8	256	3
1959	199	10	2	187	268	455	248	7	255	3
1960	200	14	--	186	282	468	257	74	331	6
Average ...	187	13	1	173	291	464	255	19	274	3
1961	186	13	--	173	127	300	165	46	211	32
1962	189	13	--	176	108	284	156	60	216	27
1963	141	10	--	131	137	268	147	126	273	64
1964	186	13	--	173	155	328	180	214	394	46
1965	228	16	1	211	140	351	193	199	392	99
Average ...	186	13	--	173	133	306	168	129	297	54
1966	226	16	20	190	164	354	195	236	431	106
1967	286	20	17	249	148	397	218	345	563	101
1968	275	19	57	199	132	331	182	379	561	124
1969	173	12	24	137	130	267	147	456	603	(120)
1970	183	13	1	169	204	373	205	525	730	(130)
Average ...	229	16	24	189	156	345	190	388	578	(116)
1971	202	14	NA	188	210	(398)	(219)	637	(856)	(210)
1972	243	17	NA	226	197	(423)	(233)	834	(1,067)	(80)
1980	235	16	NP	219	NP	219	120	6/1,194	1,314	190

-- = None or less than 1,000 tons; () = Estimate; NA = Not available; NP = Not projected.

1/ Rape, turnip, mustard, and flaxseed.

2/ 7 percent of production.

3/ Rapeseed as reported in (10).

4/ About 50 percent is sunflower.

5/ 55 percent of total supply (30).

6/ Includes oilmeal equivalent of net oilseed imports.

Total oilseed-meal supply rose 4.8 percent a year from 1956-60 to 1961-65, 14.6 percent from 1961-65 to 1966-70, and 42 percent from 1970 to 1972. Of the concentrated protein fed during 1956-60, fishmeal was insignificant. Its share increased to 15 percent by 1961-65 and to 17 percent by 1966-70, but declined in 1972 because of shortages in world supply (table 7).

"Other Feed"

"Other feed" consumption, except bran, was developed from published production figures which were reduced by a 10-percent loss factor (table 8). Bran consumption was calculated from data on grain milled for human use. As all "other feed" produced is consumed, it is discussed only in the production section of this report.

Influencing Factors

The composition of feed consumed depends on the types of livestock, the types of feed available from domestic production, feeding technology, and the price relationship among the concentrated feed ingredients.

The importance of concentrated feeding grew as hog and poultry populations rose and sheep and horse numbers fell. But the share of concentrates in total feed began to increase only after the mid-1960's, when domestic grain production trended sharply up. The GDR Government was then able and willing to spend hard currency for concentrated feed not available in adequate quantity from soft-currency sources. Imports of protein-rich feed components facilitated development of the mixed-feed industry, which in turn helped spur improvements in feeding efficiency. The mixed-feed industry grew between 1955 and 1973 from production of just over 100,000 tons to 3.7 million tons:

Year	1,000 tons
1955	127
1958	553
1960	704
1961	836
1963	1,096
1965	1,665
1966	1,697
1968	2,175
1970	2,909
1971	3,070
1973	3,700

Sources: (6, 27).

Consumption of mixed feeds is distributed as follows:

Animal	1963	1965	1970	1971
	Percent			
Hogs	53.5	55.1	48.6	46.9
Cattle	12.2	15.5	20.7	21.0
Poultry	28.3	24.0	26.8	28.6
Horses	2.7	1.8	0.8	0.5
Miscellaneous	3.3	3.6	3.1	3.0

Source: (27).

Table 8--"Other feed" production, East Germany, 1956-72 and projections to 1980

Year	Bran 1/	Pulses for feed	Forage roots	Sugar- beets for feed	Fame hay	Wild hay	Pasture	Green forage	Corn silage	Green catch crops
1,000 tons										
1956	429	68	11,317	(600)	(2,434)	(3,607)	(1,778)	(3,343)	967	(9,627)
1957	396	56	12,990	(600)	(2,434)	(3,607)	(1,778)	(3,343)	2,286	(9,627)
1958	384	68	11,652	(500)	2,606	3,841	1,791	4,098	6,574	9,773
1959	372	37	7,871	(800)	2,274	3,362	1,501	2,803	6,146	7,018
1960	346	64	10,276	(500)	2,423	3,618	2,043	3,128	15,331	12,091
Average	385	59	10,821	(600)	2,434	3,607	1,778	3,343	6,261	9,627
1961	318	74	7,069	(500)	3,041	3,681	2,356	2,587	9,582	9,569
1962	328	89	7,078	(600)	2,285	2,931	2,269	2,785	9,972	6,963
1963	315	66	8,589	(600)	3,072	3,413	2,725	2,780	8,536	8,809
1964	320	78	8,644	(500)	2,552	2,802	2,408	5,260	8,482	10,237
1965	324	115	9,153	(600)	3,366	3,243	2,815	5,990	8,721	12,008
Average	321	84	8,107	(560)	2,863	3,214	2,515	3,880	9,059	9,517
1966	326	88	10,661	(800)	3,822	3,375	3,116	6,814	10,339	12,063
1967	324	92	11,672	(1,000)	3,735	3,378	3,297	8,257	10,973	11,443
1968	316	73	11,867	(1,000)	3,926	3,537	3,571	7,717	9,791	11,474
1969	318	66	8,117	(400)	3,764	3,389	3,553	4,225	9,565	8,649
1970	315	60	8,675	(600)	3,918	3,516	3,940	5,314	11,721	10,481
Average	320	76	10,198	(760)	3,833	3,439	3,495	6,465	10,478	10,822
1971	312	76	6,014	(500)	3,345	3,392	3,711	4,241	7,750	9,434
1972	312	60	7,961	(700)	4,086	3,956	4,351	5,364	14,641	11,836
1980	280	73	8,682	(760)	4,354	3,618	5,804	7,344	13,838	12,137

() = Estimated by author.

1/ Based on table 2, 15 percent of grain used for human consumption.

Source: (29).

Although hogs use the most mixed feed, the relative share fed to cattle has increased.

The Government enforces the standard of mixed feed produced. Feed norms have been established for livestock of each type and development stage. Because of mixing regulations, adherence to feeding norms, and internal price structure independent of world market prices, the growth of the mixed-feed industry is insulated from the effect of world price fluctuations.

Advantageous livestock product-grain price ratios have also stimulated animal husbandry:

Price ratio	1956-60	1961-65	1966-70
Beef/barley	8.5	8.0	10.7
Pork/barley	12.7	11.6	13.3
Poultry meat/barley	18.7	14.4	14.9
Milk/barley	1.8	1.6	1.9

Source: (30).

These ratios are most advantageous for livestock production among East and West European countries.

While concentrated-feed consumption is a function of the number and type of animals, mixed feed produced, and prices, none of these factors provided a significant relationship for projecting feed consumption. Of factors influencing past feeding practices, feeding rates were selected as the basic one to project future requirements.

Projection

To establish historical feeding rates, the following step-by-step approach was taken:

- (a) All individual feed components included in our "total feed" concept were converted to GE ^{2/} to allow for some degree of substitution.
- (b) Feeding rates required to produce a unit of livestock product, and rates per sheep and horse, were based on an OECD study (24) and on West German data (4).
- (c) Feeding rates were adjusted so that the total feed derived from multiplying products by feeding rates equaled the total feed supply in the GDR during each selected time period.

Based on the three steps, feeding rates were established by type of output for 1956-60, 1961-65, and 1966-70 (table 9). It was assumed that use of 5-year averages would eliminate any discrepancy inherent in year-to-year grain and livestock inventory changes. These derived feeding rates are slightly inflated and they do not indicate actual feeding efficiency, because no feed was allocated for livestock

^{2/} Grain 1, oilmeal 1.40, fishmeal 1.60, bran 0.80, pulses 1.50, potatoes 0.25, root crops except potatoes 0.15, hay 0.45, green forage and silage 0.15 (3). GE is a common denominator in both West and East Germany to compare input and output in the livestock economy and to measure net and gross agricultural production.

Table 9--Feeding rates by livestock product or livestock unit, East Germany, averages 1956-60, 1961-65, 1966-70, and 1969-71 and projections to 1980 ^{1/}

Period and type of feed	(Grain equivalent) ^{2/}						
	Pork	Beef and veal	Poultry meat	Milk	Eggs	Sheep	Horses
	----- Kilograms -----				--- 1,000 ---		
1956-60							
Grain	2.83	1.01	3.04	0.10	4.05	13	350
Protein meal...	.27	.10	.36	.01	.37	--	--
Potatoes	1.90	--	--	--	--	--	--
Other feed	--	5.93	.18	.72	.18	293	2,106
Total	5.00	7.04	3.58	.83	4.60	306	2,456
1961-65							
Grain	2.84	.94	2.79	.08	3.78	13	350
Protein meal...	.34	.12	.35	.01	.41	--	--
Potatoes	1.72	--	--	--	--	--	--
Other feed	--	5.97	.12	.75	.21	293	2,106
Total	4.90	7.03	3.26	.84	4.45	306	2,456
1966-70							
Grain	2.98	1.12	2.91	.08	3.94	13	350
Protein meal...	.60	.22	.45	.01	.49	--	--
Potatoes	1.47	--	--	--	--	--	--
Other feed	--	6.16	.10	.80	.22	293	2,106
Total	5.05	7.50	3.46	.89	4.65	306	2,456
1969-71 ^{3/}							
Grain	3.23	1.80	3.06	.11	4.02	13	350
Protein meal...	.84	.27	.56	.01	.74	--	--
Potatoes	1.29	--	--	--	--	--	--
Other feed	--	5.85	.08	.79	.20	293	2,106
Total	5.36	7.92	3.70	.91	4.96	306	2,456
1980							
Grain	2.86	1.52	2.64	.14	3.55	13	350
Protein meal...	.88	.40	.82	.02	1.10	--	--
Potatoes	1.31	--	--	--	--	--	--
Other feed	--	5.58	--	.73	--	293	2,106
Total	5.05	7.50	3.46	.89	4.65	306	2,456

-- = Assumed none.

^{1/} Live weight of meat, number of horses and sheep.

^{2/} Grain, 1.0; oilseed meal, 1.4; fishmeal, 1.6; potatoes, 0.25; bran, 0.8; pulses, 1.5; hay, 0.45; root crops, green forage, and silages, 0.15. Source: (4).

^{3/} Based on FY livestock units and calendar year feed availability.

maintenance. The sole purpose of establishing feeding rates was to create a comparative base to observe trends and make projections. Feeding rates in GE, both total and concentrate, declined from 1956-60 to 1961-65 but increased during 1966-70. One explanation for this irrational trend is that during 1961-65, a period of short supply of concentrates, compared with the other periods, relatively more products not included in the "total feed" were fed--like straw, corn stover (stalks), byproducts of the food industry, and garbage.

The change in livestock inventory did not significantly distort the calculation because of the upward trend:

Period	Hogs	Cattle	Poultry
		<u>1956-60 = 100</u>	
1961-65	108	111	111
1966-70	116	122	118

Inconsistency in past trends made it hard to project feeding rates. Those calculated for 1956-60 remained relatively stable in 1961-65 but rates increased about 6 percent in 1966-70 and another 6 percent in 1969-71.

It is an anomaly that increased livestock product output, larger scale operations, better technological conditions, and improved balance in diet are associated with a decrease in efficiency. In other words, with all these improvements, more and more feed continues to be needed to produce a livestock product unit. Some probable reasons for this phenomenon are that use of roughages is excessive during a shift from extensive forage feeding to more concentrated feeding techniques, the thrift prevailing under personalized private handling of livestock is eliminated with the mass production, and potatoes suffer greater losses in large-scale treatment than when they are fed close to the house. Another reason for the apparent decline of feeding efficiency lies in comparing quantity of production and neglecting to consider quality improvement in the type of meats produced.

Increasing total GE fed per unit produced raises production costs. Yet increased use of grain in feeding rations is not unique to East Germany. More grain is also being used in the United States and in industrialized West European countries (1, 26). In Czechoslovakia grain use per unit produced increased 20 percent in recent years, a trend viewed with alarm by the Czechoslovak Government.

Although a gradual increase of concentrates in feeding rations is a rational development, the total feeding rate is not expected to increase further in East Germany. An OECD study (24) projected declining feeding rates from 1963 to 1985, ranging from an annual rate of 0.5 percent for cattle to 1 percent for poultry.

In this report, it is assumed that the present trend of feeding rate increase will soon subside, that by 1980 it will return to the 1966-70 level which was relatively high.

To allocate feed components in 1980, all "other feed" supply was assigned to cattle, sheep, and horses, and all feed potatoes to hogs. The feeding rates for concentrates are derived from the total projected feeding rates less the feeding rates for "other feeds" and potatoes as calculated from the domestic supply.

The projected feeding rates multiplied by the projected livestock products, or numbers in the case of sheep and horses, equal the nation's total feed requirements (table 10).

Expressed in GE, the share of protein feed in total concentrates is projected at 22 percent in 1980. Total protein feed in total concentrates was:

Period	Percent
1956-60	8.4
1961-65	10.4
1966-70	15.2
1969-71	15.6

Of the total feeds, the projected share of concentrates will be 33 percent GE in 1980, up from 30-31 percent between 1956 and 1970, but below 1969-71 average when unfavorable growing conditions reduced potato and forage production.

Total feed consumption in GE between 1966-70 and 1980 is projected to increase annually at 1.9 percent, of which grain consumption will gain 2.5 percent; oilmeals, 6.5 percent; potatoes, 0.4 percent; and "other feeds," 1.1 percent.

The continuing increase in the share of oilmeals in the total feed supply is based on the relatively stable soybean-corn price ratio, as shown in one of Europe's leading markets:

Year	United Kingdom		
	Import prices		Price ratio
	Corn <u>1/</u>	Soybeans <u>2/</u>	Soybeans/corn
	----- Cents/kgs. -----		
1967	6.2	11.4	1.8
1968	5.6	11.2	2.0
1969	6.1	10.7	1.8
1970	7.1	11.9	1.7
1971	6.8	13.1	1.9
1972	6.8	14.3	2.1

1/ American, No. 3, yellow c.i.f.

2/ American, No. 2, yellow.

Source: (10).

Feeding more grain to cattle would increase the cattle sector's share in feed grain consumption from 21 percent in 1966-70 to about 33 percent in 1980 while reducing the hog sector's share from 56 to 47 percent.

Seed, Waste, and Industrial Use of Grain and Potatoes

Seed, waste, and industrial use of grain and potatoes are referred to here as "other use." In preparing grain and potato balances and uses, for seed 5-percent

Table 10--Feed distribution by livestock product or livestock unit, East Germany, averages 1956-60, 1961-65, 1966-70, and 1969-71 and projections to 1980

Period and type of feed	(Grain equivalent) 1/							Feed supply				
	Pork	Beef and veal	Poultry meat	Milk	Eggs	Sheep and goats	Horses	Domestic	Net imports	Total	Percent of total	
----- Million tons -----												Percent
1956-60												
Grain	2.40	0.31	0.17	0.53	0.66	0.03	0.21	2.50	1.81	4.31	30.6	
Protein meals .....	.23	.03	.02	.05	.06	--	--	.14	.25	.39	2.8
Potatoes	1.61	--	--	--	--	--	--	1.61	--	1.61	11.4	
Other feed	--	1.82	.01	4.00	.03	.75	1.17	7.78	--	7.78	55.2	
Total	4.24	2.16	.20	4.58	.75	.78	1.38	12.03	2.06	14.09	100.0	
1961-65												
Grain	2.42	.39	.24	.48	.73	.03	.12	2.72	1.69	4.41	30.3	
Protein meals .....	.29	.05	.03	.06	.08	--	--	.14	.37	.51	3.5
Potatoes	1.47	--	--	--	--	--	--	1.47	--	1.47	10.1	
Other feed	--	2.47	.01	4.26	.04	.67	.71	8.16	--	8.16	56.1	
Total	4.18	2.91	.28	4.80	.85	.70	.83	12.49	2.06	14.55	100.0	
1966-70												
Grain	3.16	.62	.30	.58	.89	.03	.06	3.67	1.97	5.64	30.8	
Protein meals .....	.64	.12	.05	.08	.11	--	--	.15	.85	1.00	5.5
Potatoes	1.56	--	--	--	--	--	--	1.56	--	1.56	8.5	
Other feed	--	3.41	.01	5.66	.05	.58	.39	10.10	--	10.10	55.2	
Total	5.36	4.15	.36	6.32	1.05	.61	.45	15.48	2.82	18.30	100.0	
1969-71												
Grain	3.52	1.07	.38	.79	.98	.02	.04	3.82	2.98	6.80	35.3	
Protein meal .....	.77	.16	.07	.08	.18	--	--	.14	1.12	1.26	6.6
Potatoes	1.18	--	--	--	--	--	--	1.18	--	1.18	6.1	
Other feed	--	3.47	.01	5.67	.05	.57	.25	10.02	--	10.02	52.0	
Total	5.47	4.70	.46	6.54	1.21	.59	.29	15.16	4.10	19.26	100.0	
1980												
Grain	3.59	1.27	.54	1.21	.95	.02	.02	5.85	1.75	7.60	33.1	
Protein meals	1.11	.33	.17	.23	.30	--	--	.17	1.97	2.14	9.3	
Potatoes	1.64	--	--	--	--	--	--	1.64	--	1.64	7.1	
Other feed	--	4.65	--	6.33	--	.47	.13	11.58	--	11.58	50.5	
Total	6.34	6.25	.71	7.77	1.35	.49	.15	19.24	3.72	22.96	100.0	

-- = Assumed none.

^{1/} Grains, 1.0; oilseed meal, 1.4; fishmeal, 1.6; potatoes, 0.25; bran, 0.8; pulses, 1.5; root crops, 0.15; hay, 0.45; green forage, 0.15.

Source: (4).

waste of total grain and 13-percent waste of total potatoes produced were estimated (tables 2, 3).

Past use of grain for alcohol amounting to 50,000 to 60,000 tons a year is estimated to remain at the same level until 1980. Use of barley for producing malt increased from 230,000 tons in 1960 to 340,000 in 1970. According to the 1971-75 plan, no new beer factories are scheduled to be built; production growth will be stimulated only through factory modernization and shift work. Assuming no policy changes until 1980, a linear extrapolation of barley use for industrial production was used. Industrial use of potatoes for producing alcohol and starch is estimated to remain stable until 1980.

Total "other use" of grain reached an estimated average of 16 percent of total production annually between 1956 and 1970. Projected other use for 1980 will decline to about 14 percent of estimated production (table 2). Total other use of potatoes is expected to decline by 1980 from the historical 30 percent to 27 percent of production.

PRODUCTION OF LIVESTOCK PRODUCTS AND FEED

Livestock Products

Trends

Between 1956-60 and 1966-70, cattle numbers increased by 900,000, but cow numbers gained only 38,000 (table 11). Consequently, the share of cows in the herd declined from 52 to 43 percent, and to 40 percent by 1972. This points to a shift from dairy to beef industry as well as to a decrease in the number of cows in private households. During 1956-60, and 1966-70, hog numbers increased 1.3 million head; the number of sheep, goats, and horses declined; and the poultry flock went up 6.1 million birds, including 2.4 million more layers.

All livestock in the state and collectivized sector increased gradually, both in absolute numbers and in relation to private holdings. By 1966-70, about two-thirds of the cattle and hogs and one-third of the poultry were either collectively or state owned (table 12).

Total East German livestock holdings per 100 hectares of agricultural land are at very high levels, exceeding those of West Germany in 1970:

Livestock	GDR	FRG
	<u>No./100 hectares</u>	
Hogs	154	72
Cattle	83	74
Laying hens	405	325

Though beef production increased steadily during the past 15 years, pork production suffered a serious setback in 1962, following a disastrous grain and potato harvest in 1961, and 1961-65 average production fell almost to the previous 5 years' level. But since 1963, except for 1970, pork production has risen each year (table 13). Beef and pork accounted for most of the increase in 1966-70 compared with 1956-60. Milk production stagnated during 1958-64, but substantial growth has occurred since.

Table 11--Livestock inventory, East Germany, 1955-72, and projections for sheep and horses to 1980

Year	(End of year)										
	Cattle			Hogs		Sheep	Goats	Horses	Poultry		
	Total	Cows	Other	Total	Sows and gilts				Total	Hens	Other
						1,000					
1955	3,760	2,100	1,660	9,029	700	1,807	860	669	27,300	22,033	5,267
1956	3,718	2,115	1,603	8,326	622	1,893	764	641	28,732	14,934	13,798
1957	3,744	2,113	1,631	8,255	622	2,019	694	624	31,391	16,014	13,798
1958	4,145	2,134	2,011	7,504	663	2,111	625	607	33,138	26,390	6,748
1959	4,465	2,158	2,307	8,283	764	2,115	547	560	38,604	29,094	9,510
1960	4,675	2,175	2,500	8,316	885	2,015	439	447	36,910	28,121	8,789
Average..	4,149	2,138	2,010	8,137	711	2,031	614	576	33,755	22,911	10,529
1961	4,548	2,170	2,378	8,864	735	1,930	1/446	403	35,878	22,880	12,998
1962	4,508	2,092	2,416	8,045	831	1,792	388	369	35,626	21,668	13,958
1963	4,614	2,102	2,512	9,288	810	1,899	396	341	39,580	22,398	17,182
1964	4,682	2,132	2,513	8,759	758	1,972	353	306	38,210	24,558	13,652
1965	4,762	2,169	2,593	8,878	824	1,963	302	272	37,988	26,008	11,980
Average..	4,623	2,133	2,482	8,767	792	1,911	377	338	37,456	23,502	13,954
1966	4,918	2,196	2,722	9,312	853	1,928	278	250	37,070	25,366	11,704
1967	5,018	2,188	2,830	9,254	860	1,818	236	219	37,976	25,275	12,701
1968	5,109	2,166	2,943	9,523	898	1,794	204	188	38,802	24,980	13,822
1969	5,171	2,167	3,004	9,237	877	1,696	158	148	42,565	25,266	17,299
1970	5,190	2,163	3,027	9,684	988	1,598	135	126	43,034	25,470	17,564
Average..	5,081	2,176	2,905	9,402	895	1,767	202	186	39,889	25,271	14,618
1971	5,293	2,173	3,120	9,995	1,020	1,607	113	106	43,343	24,907	18,436
1972	5,379	2,169	3,210	10,361	1,067	1,657	96	94	43,748	24,872	18,876
1980	NP	NP	NP	NP	NP	1,600	NP	63	NP	NP	NP

NP = Not projected.
1/ Midyear.

Source: (29).

Table 12--Livestock inventory in the socialized sectors, East Germany, 1955-72 ^{1/}

Year	(End of year)						
	Cattle			Hogs		Sheep	Poultry
	Total	Cows	Other	Total	Sows and gilts		
				<u>1,000</u>			
1955	584	245	339	1,755	161	1,807	1,696
1956	664	300	364	1,806	163	1,893	2,182
1957	712	329	383	1,844	171	2,019	2,567
1958	1,177	464	713	2,158	264	2,111	3,915
1959	1,706	619	1,087	3,071	350	2,115	7,166
1960	2,542	977	1,565	4,195	537	2,015	10,141
Average	1,360	538	822	2,615	297	2,031	5,186
1961	2,541	1,039	1,502	4,885	502	1,930	9,858
1962	2,662	1,072	1,590	4,760	585	1,792	11,394
1963	2,775	1,110	1,665	5,363	576	1,899	12,077
1964	2,952	1,186	1,766	5,246	568	1,972	10,316
1965	3,100	1,276	1,824	5,401	625	1,963	9,838
Average	2,806	1,137	1,669	5,131	571	1,911	8,729
1966	3,296	1,357	1,939	5,757	650	1,928	9,576
1967	3,504	1,430	2,074	5,904	670	1,818	10,363
1968	3,753	1,506	2,247	6,334	713	1,794	10,484
1969	3,997	1,611	2,386	6,830	730	1,696	2/16,389
1970	4,198	1,688	2,510	7,390	840	1,278	2/17,228
Average	3,450	1,518	2,231	6,443	721	1,703	12,808
1971	4,432	1,772	2,660	7,866	890	1,297	2/18,702
1972	4,565	1,824	2,741	8,108	925	1,328	2/20,165

^{1/} Total on collective and state farms, excludes animals individually owned.^{2/} Includes industrial production.

Source: (29).

Table 13--Production of meat, milk, and eggs, East Germany, 1955-72 and projections to 1980

Year	Meat ^{1/}						Cow milk	Eggs
	Pork	Beef and veal	Mutton and goat	Poultry	Other	Total		
	----- 1,000 tons live weight -----						1,000 tons	Million units
1955	829	261	36	44	32	1,202	4,962	2,043
1956	834	257	34	42	31	1,199	4,986	2,400
1957	876	283	32	49	31	1,271	5,286	2,742
1958	882	280	30	56	33	1,280	5,656	3,027
1959	801	337	30	62	36	1,266	5,826	3,127
1960	843	376	26	73	45	1,363	5,930	3,512
Average	847	307	30	56	35	1,276	5,537	2,962
1961	845	421	30	80	32	1,407	5,612	3,602
1962	672	415	31	81	27	1,225	5,215	3,100
1963	813	385	26	88	33	1,346	5,569	3,250
1964	936	408	24	90	36	1,494	5,750	3,696
1965	997	440	25	90	26	1,578	6,371	3,935
Average	853	414	27	86	31	1,410	5,703	3,517
1966	1,022	499	27	91	22	1,660	6,728	3,894
1967	1,052	539	21	96	23	1,731	6,904	3,995
1968	1,093	559	20	102	23	1,798	7,227	4,046
1969	1,094	574	21	110	25	1,825	7,232	4,194
1970	1,040	600	19	114	27	1,800	7,091	4,442
Average	1,060	554	22	103	24	1,763	7,036	4,114
1971	1,090	585	19	132	41	1,867	7,150	4,504
1972	1,184	612	20	144	40	2,000	7,515	4,425
1980	1,254	833	20	204	25	2,336	8,672	4,899

^{1/} Includes live animal exports.

Source: (29).

Between 1961-65 and 1966-70, the growth rate for production of all meat except poultry exceeded that of consumption, particularly for beef (table 14). The annual growth rate of milk and egg production also outdistanced consumption, which led to self-sufficiency by 1966-70.

Prices and Productivity

Producer prices have been adjusted annually to reflect production priorities. Besides the setting of reasonable relationships between input-output prices, profitability of livestock production has been enhanced through economies of scale, investment in livestock shelters, and improved veterinary, breeding, and feeding practices.

Between 1955-60 and 1966-70, prices for cattle for slaughter increased more rapidly than for hogs and poultry. As a result, production of beef rose faster than that of other meat (tables 13 and 14). Between these two periods, prices for slaughter cattle jumped 65 percent; hogs, 40 percent; poultry, 6 percent; milk, 39 percent; and eggs, 6 percent. The index of producer prices for livestock, up 10 percent in 1971, rose slightly in 1972 and 1973 compared with preceding years. For hogs, the highest prices have been fixed for animals weighing between 105 and 125 kilograms. Slaughter cattle prices have been distinguished by quality differentiations, and surcharges increase with slaughter weight.

Average slaughter weight for hogs declined from 121 kilograms in 1956-60 to 117 kilograms in 1961-65, remaining at that level in 1966-70. The slaughter weight for cattle decreased from 345 kilograms in 1956-60 to 325 in 1961-65 but increased to 381 in 1966-70 (table 15).

Calf slaughter dropped from 716,000 to 269,000 head while the average slaughter weight rose from 61 to 91 kilograms between 1956-60 and 1966-70.

The ratio of output per head trended upward throughout the past 18 years, except for pork production in 1961-65 because of excessive hog slaughter induced by feed shortages (table 16).

Plans and Projections

Current livestock policy and plans are best expressed in the speeches of George Ewald, the late Minister of Agriculture. He saw a growth potential in beef production through increasing average slaughter weight of cattle to 400 kilograms; in pork production, through greater farrowing rate and, if possible, an average slaughter weight of 120 kilograms. Both administrative measures and economic incentives have been designed to achieve these goals. One such measure is the investment subsidy: low-interest loans are given to industrialized enterprises which are easier to keep under Government supervision than are numerous small production units (2, 6/9/72), (22, 9/29/72).

During 1971-75 gross agricultural production is slated to increase 2.4 percent annually, compared with 1.8 and 1.9 percent during 1961-65 and 1966-70, respectively (11). ERS estimates an annual increase of 3 percent during 1971-74.

Government plan targets in the GDR exclude products kept on the farm. For Government livestock product purchases, the following targets were set for 1975:

(1970 = 100)

Slaughter animal purchases	115.1
Milk purchases	110.9
Egg purchases	1/102.7

1/ (14).

Table 14--Meat production, trade, and consumption, East Germany,
averages 1956-60, 1961-65, and 1966-70 and projections to 1980 ^{1/}

Period and utilization	Pork	Beef and veal	Mutton and goat	Poultry	Other meats	Total meats
	<u>1,000 tons</u>					
1956-60						
Production.....	542	162	15	40	18	777
Net trade	-12	94	--	8	--	90
Consumption	530	256	15	48	18	867
1961-65						
Production	546	216	13	62	15	852
Net trade	7	87	--	6	--	100
Consumption	553	310	13	68	15	959
Error		7				7
1966-70						
Production	679	289	11	74	12	1,064
Net trade	-21	21	--	4	--	4
Consumption	658	320	11	78	12	1,078
Error		10				10
1980						
Production	815	441	10	147	12	1,425
Net trade	5	-12	--	--	--	-7
Consumption	820	429	10	147	12	1,418

-- = Exports; -- = Negligible.

^{1/} See table 17, p. 28, for conversion factors from live weight to meat.

Table 15--Number of livestock slaughtered and average and total live weight, East Germany, 1955-72

Year	Number ^{1/}			Average live weight			Total live weight		
	Hogs	Cattle	Calves	Hogs	Cattle	Calves	Hogs	Cattle	Calves
	----- 1,000 -----			----- Kilograms -----			----- 1,000 tons -----		
1955	6,988	598	1,072	118	349	53	829	202	59
1956	7,088	585	1,083	119	355	53	834	199	58
1957	6,885	632	1,023	125	355	53	876	228	55
1958	7,053	684	633	122	360	54	882	245	35
1959	6,675	903	528	120	331	72	801	299	38
1960	7,059	1,089	311	119	324	73	843	353	23
Average	6,952	779	716	121	345	61	847	265	42
1961	7,405	1,261	444	114	309	69	845	390	31
1962	6,215	1,264	304	108	311	70	672	394	21
1963	6,800	1,148	303	120	318	67	813	365	20
1964	7,815	1,134	459	120	333	64	936	378	30
1965	8,125	1,161	487	123	353	62	997	410	30
Average	7,272	1,194	399	117	325	66	853	387	26
1966	8,682	1,253	423	118	372	76	1,022	466	32
1967	9,117	1,372	330	115	371	90	1,052	510	30
1968	9,316	1,412	225	117	381	95	1,093	538	21
1969	9,501	1,428	190	115	390	96	1,094	556	18
1970	8,900	1,493	179	117	390	100	1,040	582	18
Average	9,103	1,392	269	116	381	91	1,060	530	24
1971	9,398	1,460	188	116	388	103	1,090	566	19
1972	9,856	1,500	201	120	394	105	1,184	591	21

^{1/} Includes household slaughter.

Source: (29).

Table 16--Livestock numbers, meat production ^{1/} and productivity, milk and egg production, and rate of growth, East Germany, averages 1956-60, 1961-65, and 1966-70

averages 1956-60, 1961-65, and 1966-70

 of GDR, East Germany,

Period	Hogs	Pork		Cattle	Beef		Poultry meat			Milk per cow	Eggs per laying hen
		Production:	Production:		Production:	Production:	Poultry	Production:	Production:		
		per head	per head		per head	per head	Production:	per bird	per bird		
	<u>1,000</u>	<u>1,000 tons</u>	<u>Kgs.</u>	<u>1,000</u>	<u>1,000 tons</u>	<u>Kgs.</u>	<u>1,000</u>	<u>1,000 tons</u>	<u>Kgs.</u>	<u>Kgs.</u>	<u>Number</u>
1956-60 ...	8,137	847	104	4,149	307	74	33,755	56	1.6	2,585	130
1961-65 ...	8,767	853	97	4,623	414	90	37,456	86	2.3	2,675	134
1966-70 ...	9,402	1,060	113	5,081	554	109	39,889	103	2.6	3,255	158
<u>Indexes (1956-60 = 100)</u>											
1961-65 ...	108	101	93	111	135	122	111	154	144	103	103
1966-70 ...	116	125	109	122	180	147	118	184	162	126	122

1/ Live weight.

^{1/} Live weight.

According to West German sources, the following production plan indexes are known for 1980:

(1967 = 100)

Total meat production	140.0
Beef and veal	151.9
Pork	120.8
Poultry and rabbits	490.0

Milk production per cow is planned at 4,500-5,000 kilograms (18).

ERS projects meat production to reach 1.4 million tons by 1980--a 2.5-percent annual increase from 1966-70 to 1980. This is a 36-percent rise from 1967 against the planned 40 percent. Though ERS beef and pork projections are almost identical with the plan, the projected growth rate for poultry is lower. Beef and poultry production will have the highest rate of growth, but pork output will continue to dominate (table 17).

Official milk production policy called for stabilizing cow numbers at the present level and at a milk yield of 3,500-3,600 kilograms per cow by 1975 (2, 6/9/72). This modest goal, below the trend line, was based probably on the stagnation in milk yield increases between 1968 and 1971. But the objective was reached in 1972. ERS projected milk production at 8.7 million tons by 1980 would require a yield of 3,985 kilograms per cow, assuming no change in cow numbers, and such an output falls considerably below the East German 1980 plan. The ERS linear projection of eggs produced is also out of line with East German targets. Instead of accepting this projection, we based our best production estimate of 4.9 million units for 1980 on the East German 1975 procurement targets of 3.6 million units. The planned procurement growth rate of 1.4 percent was extended until 1980 and applied to the total eggs produced (30).

Grain, Potatoes, Protein Feed, and "Other Feed" 3/

Total grain production declined 0.6 percent annually from 1956-60 to 1961-65, but it increased 3.4 percent a year from 1961-65 to 1966-70. The rise in output by 1966-70 came from greater yields, since harvested grain area declined 128,000 hectares from 1956-60 levels. The upward production trend in the 1960's hides the annual fluctuations. During 1961-65, the best and worst years deviated by 2 and 23 percent, respectively, from the trend; during 1966-70 the deviations were 14 and 12 percent. Wheat and barley production increased, exceeding the decline in rye and oat output. Until 1966 rye was the leading grain; since then, wheat and barley have become the leaders. Wheat, barley, rye, and oats contribute more than 90 percent to total grain production (table 18).

Average area sown to grain declined 5 percent from 1956-60 to 1966-70. Area fell 9 percent during 1961-65 but a reversal began in the mid-1960's. Barley area increased 245,000 hectares and wheat, 130,000 hectares, from 1956-60 to 1966-70 (table 19).

New varieties of grain, more use of chemicals, and timely cultivation and harvest have been the principal factors boosting yields. Total grain yields increased 4 percent from 1956-60 to 1961-65 and 16 percent from 1961-65 to 1966-70 (table 20). While yields increased in every grain type, those for rye, oats, and "other" grains remained lower than for wheat and barley. These smaller yields and the decline in horse numbers justify the continuous substitution of wheat and barley for rye and oats.

3/ Other feeds include bran, pulses for feed, hay, green forage, and feed root crops except potatoes.

Table 17--Meat production, East Germany, 1955-72 and projections to 1980 ^{1/}

Year	Pork	(Carcass weight)				Total meats
		Beef and veal	Mutton and goat	Poultry	Other meats	
1,000 tons						
1955	530	140	18	32	16	736
1956	534	138	17	30	16	734
1957	561	151	16	36	16	778
1958	564	148	15	40	16	783
1959	512	177	15	45	18	767
1960	539	197	13	53	22	823
Average	542	162	15	41	18	777
1961	541	220	15	58	16	848
1962	430	217	15	58	14	732
1963	520	201	13	64	16	814
1964	599	213	12	64	18	907
1965	638	230	12	64	13	957
Average	546	216	13	62	15	852
1966	654	260	14	65	11	1,005
1967	673	282	10	69	11	1,045
1968	700	291	10	74	11	1,086
1969	700	299	10	79	12	1,101
1970	666	312	10	82	14	1,083
Average	679	279	11	74	12	1,064
1971	698	305	10	95	20	1,128
1972	758	319	10	104	20	1,211
1980 2/	815	441	10	147	12	1,425

^{1/} Converted from live weight: pork, 0.64; beef, 0.517; veal, 0.60; mutton and goat, 0.50; poultry, 0.72; other meats, 0.50. Source: (28).

^{2/} Estimated conversion factors: pork, 0.65; beef and veal, 0.53; all else unchanged.

Table 18--Grain production, East Germany, 1955-72 and projections to 1980

Year	Wheat	Coarse grains					Total grain
		Barley	Oats	Rye	Other 1/	Total	
1,000 tons							
1955	1,211	924	1,362	2,337	335	4,958	6,169
1956	1,086	834	1,112	2,299	415	4,660	5,746
1957	1,259	896	999	2,230	445	4,570	5,829
1958	1,363	930	1,144	2,368	507	4,949	6,312
1959	1,371	1,039	966	2,132	438	4,575	5,946
1960	1,456	1,269	1,007	2,126	521	4,923	6,379
Average	1,307	994	1,046	2,231	465	4,735	6,042
1961	1,038	946	856	1,504	498	3,804	4,842
1962	1,315	1,164	1,054	1,726	678	4,622	5,937
1963	1,280	1,197	807	1,675	576	4,255	5,535
1964	1,348	1,496	775	1,890	675	4,836	6,184
1965	1,802	1,651	758	1,910	610	4,929	6,731
Average	1,357	1,291	850	1,741	607	4,489	5,846
1966	1,521	1,525	703	1,642	526	4,396	5,917
1967	2,012	1,927	845	1,986	584	5,342	7,354
1968	2,377	2,121	864	1,936	532	5,453	7,830
1969	1,987	2,067	840	1,544	483	4,935	6,922
1970	2,132	1,925	558	1,483	357	4,323	6,455
Average	2,006	1,913	762	1,718	496	4,890	6,896
1971	2,490	2,286	807	1,754	403	5,250	7,740
1972	2,744	2,592	890	1,904	406	5,792	8,536
1980	3,544	3,256	716	1,228	373	5,573	9,117

1/ Almost entirely mixed grains; contains negligible quantities of corn.

Source: (29).

Table 19--Grain area harvested, East Germany, 1955-72 and projections to 1980

... converted, East Germany, 1955-72 and projections to 1980							
Year	Wheat	Coarse grains					Total grain
		Barley	Oats	Rye	Other 1/	Total	
1,000 hectares							
1955	400	336	536	1,074	137	2,083	2,483
1956	380	322	449	1,110	176	2,057	2,437
1957	420	321	455	1,097	210	2,090	2,503
1958	440	337	427	1,094	210	2,068	2,508
1959	435	354	410	1,031	212	2,007	2,442
1960	418	389	359	946	207	1,901	2,319
Average	419	345	420	1,056	203	2,025	2,442
1961	377	432	351	825	248	1,856	2,233
1962	423	374	372	811	266	1,823	2,246
1963	426	424	315	820	253	1,812	2,238
1964	433	464	295	823	272	1,854	2,287
1965	491	497	260	822	234	1,813	2,304
Average	430	438	319	820	255	1,832	2,262
1966	484	521	261	771	231	1,784	2,268
1967	533	553	270	746	212	1,781	2,314
1968	570	595	256	735	189	1,775	2,345
1969	560	642	272	690	183	1,787	2,347
1970	598	640	210	680	159	1,639	2,287
Average	549	590	254	724	195	1,763	2,312
1971	633	656	230	668	135	1,689	2,322
1972	690	618	247	646	129	1,640	2,330
1980	784	850	193	467	123	1,633	2,417

1/ Almost entirely mixed grains; contains negligible quantities of corn.

Source: (29).

^{1/} Almost entirely mixed grains; contains negligible quantities of corn.

Source: (29).

Table 20--Grain yields, East Germany, 1955-72 and projections to 1980

Germany, 1955-12 and projections to 1980							
Year	Wheat	Coarse grains				Total	Total grain
		Barley	Oats	Rye	Other 1/		
<u>Quintals/hectare</u>							
1955	30.3	27.5	25.4	21.8	24.4	23.8	24.8
1956	28.6	25.9	24.8	20.7	23.6	22.6	23.6
1957	30.0	27.9	21.9	20.3	21.2	21.9	23.3
1958	31.0	27.6	26.8	21.6	24.1	23.9	25.2
1959	31.5	29.4	23.6	20.7	20.7	22.8	24.3
1960	34.8	32.6	28.1	22.5	25.2	25.9	27.5
Average	31.2	28.8	24.9	21.1	22.9	23.4	24.7
1961	27.5	21.9	24.4	18.2	20.1	20.5	21.7
1962	31.1	31.1	28.3	21.3	25.5	25.4	26.4
1963	30.0	28.2	25.6	20.4	22.8	23.5	24.7
1964	31.1	32.3	26.2	23.0	24.8	26.1	27.0
1965	36.7	33.2	29.2	23.2	26.1	27.2	29.2
Average	31.6	29.5	26.6	21.2	23.8	24.5	25.8
1966	31.4	29.3	26.9	21.3	22.8	24.6	26.1
1967	37.8	34.9	31.4	26.6	27.5	30.0	31.8
1968	41.7	35.6	33.8	26.3	28.1	30.7	33.4
1969	35.5	32.2	30.9	22.4	26.4	27.6	29.5
1970	35.6	30.1	26.6	21.8	22.4	25.6	28.2
Average	36.5	32.4	30.0	23.7	25.4	27.7	29.8
1971	39.3	34.8	35.1	26.3	29.9	31.1	33.3
1972	39.8	42.0	36.1	29.5	31.5	35.3	36.6
1980	45.2	38.3	37.1	28.9	30.3	34.1	37.8

1/ Almost entirely mixed grains; contains negligible quantities of ...

^{1/} Almost entirely mixed grains; contains negligible quantities of corn.

Fall-sown grains occupy about two-thirds of the grain area. Fall-sown varieties of wheat, barley, and rye have generally higher yields than the corresponding spring-sown varieties; thus, their share in the total sown area has expanded gradually. Wheat and rye have been predominantly winter grains. Of the total barley sown, winter barley's share increased from about one-third in 1956-60 to one-half in 1966-70. Of total wheat, spring wheat area in 1961-65 rose above previous levels but its share declined to 11 percent in 1966-70.

East Germany, in cooperation with the other CEMA member countries, has put great effort into research for better quality, higher yielding varieties. The leading East German wheat varieties are Poros and Pilot, both relatively soft wheats. The Soviet hard-wheat variety, Mironovskaya 808, was introduced in 1970. This variety is resistant to winter kill and, owing to its high protein content, has better baking quality than that of the local varieties. In the first 2 years of use, Mironovskaya yielded 10-20 percent more than the other varieties. By 1972, two-fifths of the wheat area of GDR was sown to this variety (23, 5/28/72). The Polish winter rye, Dankowskie Zlote, was added to the local Danae variety in 1971. This new strain has greater drought resistance and yields more than the local variety on sandy soils. Xenia and Vogelsanger Gold are the most recommended winter barley varieties; Xenia for its superior protein content, the Vogelsanger Gold for higher yields. In 1972 the Elgina spring barley replaced Alsa, the dominant spring grain in 1971 (34).

Both acreage and yield of potatoes declined between 1956-60 and 1961-65. Although acreage continued to decline in the next 5-year period, yields increased, and the 1966-70 production was about equal to that of 1961-65 (table 21). About 10 percent of the potato area and production are early, edible potatoes used for human consumption only. The rest is used primarily for feed.

An intensive labor requirement is the principal reason for the reduced acreage. While considerable progress has been made in increasing mechanical potato harvesting, from 30 percent of the area in 1965 to 75 percent in 1970, the degree of mechanization compares unfavorably with a completely mechanical grain harvest and a 90-percent mechanical sugarbeet harvest (11).

In 1966-70, rapeseed accounted for 95 percent of total oilseed production and occupied 111,000 hectares. Average annual production held stable between 1956-60 and 1961-65, but during 1966-70 it rose almost 30 percent above that of 1961-65 because of increased yields (table 21). Of total oilseed meal consumed in 1966-70, only one-third was derived from domestic crushing. Rapeseed accounted for half the ingredients; imported seed, the other half.

Production of all forage crops except wild hay and catch crops gained in each 5-year period; also, hay equivalent of pasture increased. Forage root production declined during 1961-65 but it recovered during 1966-70 to regain the 1956-60 level. Pulses for feed were available in a relatively stable quantity in all three 5-year periods. Availability of bran, a byproduct of milling, declined. Sugarbeets in East Germany are primarily grown for sugar production, but sugarbeets are also fed to livestock, if production surpasses the quota allocated to sugar factories (table 8).

Prices and Inputs

In addition to the structural changes in sown area and improvement in the biological qualities of seeds, other important stimulants for increasing agricultural production were prices, the supply of chemicals, the upgraded standards of mechanization, and land improvement.

Based on 1956-60 prices, the producer price index for all crops rose 16 percent in 1961-65 and 29 percent in 1966-70. Price increases for grains in 1961-65 ranged

Table 21--Potato and rapeseed area, yield, and production, East Germany, 1955-72

Year	Potatoes			Rapeseed		
	Area	Yield	Production	Area	Yield	Production
	1,000 hectares	Quintals/ hectare	1,000 tons	1,000 hectares	Quintals/ hectare	1,000 tons
1955	843	132.8	11,194	124	16.0	197
1956	782	173.4	13,565	119	14.0	166
1957	810	179.3	14,529	136	13.2	179
1958	769	149.5	11,498	134	9.6	128
1959	771	161.3	12,436	130	14.6	189
1960	770	192.4	14,821	118	15.4	182
Average	780	171.4	13,370	127	13.3	169
1961	682	123.7	8,430	123	14.1	173
1962	742	179.0	13,284	105	15.8	165
1963	747	172.6	12,886	107	11.9	128
1964	745	172.8	12,872	118	14.9	176
1965	725	177.2	12,857	112	19.1	214
Average	728	165.7	12,066	113	15.1	171
1966	694	184.8	12,823	114	18.5	211
1967	686	205.0	14,065	117	23.3	273
1968	672	188.1	12,639	120	22.2	265
1969	604	146.2	8,832	106	15.5	164
1970	667	195.7	13,054	98	18.4	180
Average	665	184.7	12,283	111	19.7	219
1971	658	143.0	9,412	103	19.0	196
1972	646	187.8	12,140	111	21.1	234
1980	531	222.8	11,830	91	24.9	227

Source: (29).

from 23 percent for wheat to 48 percent for brewer's barley, and in 1966-70 from 33 percent for feed barley to more than 100 percent for corn (table 22). Prices of wheat, feed barley, and rye rose also in 1971. The price policy was geared to ensure a growing feed base for the expanding livestock industry. Despite grain price increases, faster price gains for livestock products widened the livestock-grain price ratio between 1966-70, compared with that of 1961-65.

Greater use of fertilizer, according to estimates made by East German experts, accounted for half the increased yields during 1966-70 (13). Total fertilizer application, trending upward historically, grew 5.7 percent annually between 1955 and 1965 and 3.5 percent between 1965 and 1972 (table 23). Fertilizer consumption of 258 kilograms per hectare of agricultural land in 1971/72 ranks the GDR high among countries that lead in fertilizer use. According to calculations made in the mid-1960's, application of phosphate to grain exceeded the optimum level and use of potash about reached it. For grain, further increase only in nitrogen application is needed (13). The application of fertilizer, herbicides, and pesticides has been gradually turned over in the past 5 years to Agro-Chemical Centers. The present network of 200 centers serves about half the agricultural land, and by 1975, 300 centers are to be in operation (17).

With the help of a new nitrogen plant at Piesteritz, domestic production of nitrogen by 1975 will be about one-third above the 1970 output, somewhat reducing import requirements. The GDR currently must supplement its nitrogen and phosphate production with imports, but a surplus over domestic needs enables large exports of potash. According to a 1971 estimate, manure contributed about one-third to the total nutrients applied, a share expected to decline in the future (19).

Mechanization also had an important impact on production by enabling cultivation in optimal time and by reducing harvest losses. East Germany had one tractor for every 32 hectares of arable land in 1970 and enough equipment for the complete mechanization of grain cultivation. Tractors historically increased not only in numbers but also in average horsepower. Mechanization and technical innovations have been especially important and continue to be important because of the rapidly declining and aging farm population. In 1971 and 1972, a considerable number of 40-60 horsepower tractors were replaced by larger tractors, but the ratio of tractors per land unit remained almost unchanged (table 24).

Besides programs involving extensive use of chemicals and mechanization, soil improvement through irrigation and drainage works is in progress. The GDR had irrigation or drainage installation on 1.6 million hectares, or on about one-third of all arable land by the end of 1972 (23, 12/28/72). The 1973 plan called for irrigation of an additional 67,000 hectares and drainage of 104,000 (23, 1/19/73). Some 13,000 workers in 181 specialized cooperatives conduct soil improvement (29).

Plans and Projections

Since 1964 the cooperative farms were allowed to develop their own production plans, but local plans in aggregate had to meet state targets for leading crops like grains and potatoes, for fertilizer uses, and for capital investments (22, 7/14/67).

East German plans for 1975, compared with 1966-70 average production, call for an annual average growth rate of 2.5 percent for grains, 2.4 for oilseeds, 2.6 for potatoes, and 2.35 for sugarbeets. To achieve these goals, plans are that by 1975 total use of nitrogen fertilizer will have increased at an annual rate of 8.2 percent; phosphate, 5.65 percent; and potash, 2.3 percent--from use levels in 1966-70 (2, 1/30/72). Farm machinery output is to go up 70 percent (14).

Table 22--Average state purchase prices of selected grains and producer price indexes of crops,
East Germany, 1955-72

Year	Wheat	Feed barley	Brewer's barley	Oats	Rye	Other grains ^{1/}	Price index of crops
	----- Marks/quintal -----						1960 = 100
1955	23.37	24.07	33.62	20.74	21.18	21.60	70.6
1956	25.86	23.98	34.68	21.04	24.00	20.82	76.3
1957	25.39	24.68	34.85	23.39	24.81	22.08	91.6
1958	25.22	25.12	39.92	23.04	26.71	21.00	93.7
1959	25.98	29.05	49.10	23.76	27.59	22.41	112.8
1960	30.65	31.63	61.44	25.30	34.42	24.99	100.0
Average	26.62	26.89	44.01	23.31	27.51	22.26	94.9
1961	30.38	32.13	58.81	26.03	33.00	27.93	105.2
1962	30.57	34.06	68.30	26.58	32.92	29.46	106.6
1963	29.69	34.82	70.88	25.09	32.32	28.28	105.9
1964	36.30	35.40	63.71	35.17	41.23	33.96	118.1
1965	37.26	37.06	63.90	38.28	42.19	36.99	115.5
Average	32.84	34.69	65.12	30.23	36.33	31.32	110.3
1966	36.06	36.16	63.50	43.85	41.21	44.24	119.9
1967	36.37	35.82	63.82	44.32	41.53	47.82	122.1
1968	37.20	35.58	63.88	44.15	42.20	50.31	124.3
1969	36.95	35.95	57.02	44.33	41.25	44.05	121.3
1970	36.80	35.60	56.69	44.30	41.05	43.82	123.3
Average	36.68	35.82	60.98	44.19	41.45	46.05	122.2
1971	38.87	36.33	55.95	44.21	42.32	43.81	131.2
1972	38.64	36.00	56.62	44.03	41.79	43.85	126.4

^{1/} Includes corn.

Source: (29).

Table 23--Production and availability of mineral fertilizers, East Germany, 1955-72, and consumption projections to 1975 and 1980

Year 1/	(Nutrient basis)									
	Production				Supply to farms					
	Nitrogen	Phosphate	Potash	Total	Nitrogen	Phosphate	Potash	Total	Lime	
					1,000 tons					
1955	293	84	1,552	1,929	200	152	458	810	697	
1956	300	112	1,556	1,968	225	184	460	869	742	
1957	305	129	1,604	2,038	224	184	493	901	747	
1958	320	136	1,650	2,106	226	215	512	953	784	
1959	329	139	1,644	2,112	244	210	529	983	823	
1960	334	166	1,666	2,166	247	226	528	1,001	752	
1961	330	172	1,675	2,177	254	211	494	959	757	
1962	338	181	1,752	2,271	273	224	527	1,024	884	
1963	340	196	1,845	2,381	308	263	543	1,114	1,169	
1964	334	198	1,857	2,389	397	334	545	1,276	1,286	
1965	348	232	1,926	2,506	421	302	588	1,311	1,435	
1966	344	254	2,006	2,604	444	326	621	1,391	1,574	
1967	336	304	2,206	2,846	445	372	592	1,409	1,376	
1968	351	346	2,293	2,990	502	370	582	1,454	1,206	
1969	439	395	2,346	3,105	495	410	640	1,545	1,116	
1970	395	429	2,419	3,200	526	404	623	1,553	1,243	
1971	388	414	2,445	3,247	631	415	580	1,626	1,297	
1972	428	409	2,458	3,295						
1974/75 2/	NP	NP	NP	NP	800	523	710	2,033	NA	
1979/80	NP	NP	NP	NP	1,274	607	710	2,591	NP	

NA = Not available; NP = Not projected.

NA = Not available; NP = Not projected.

1/ Production is given for calendar year, supply for fiscal year (i.e., 1955 in stub is 1955/56 for supply).

2/ Plan (14).

Source: (29) for 1955-72; (14) for 1974/75.

Table 24--Arable land, agricultural labor force, and number of tractors by size, East Germany, 1955-72

Year	Arable land 1/	Labor force		Tractors 2/					
		Total 3/	Female	Total	0.6-25 HP	26-40 HP	41-60 HP	Over 60 HP	Total in 15 HP units
	1,000 hectares	1,000	Percent	----- 1,000 -----					
1955	5,218	1,741	50.8	NA	NA	NA	NA	NA	NA
1956	5,209	1,637	49.4	NA	NA	NA	NA	NA	NA
1957	5,181	1,506	48.4	NA	NA	NA	NA	NA	NA
1958	5,148	1,454	46.8	NA	NA	NA	NA	NA	NA
1959	5,089	1,380	46.6	NA	NA	NA	NA	NA	NA
1960	5,058	1,240	45.1	70.6	10.6	32.8	20.6	6.6	88.0
1961	5,014	1,215	46.1	89.9	17.5	34.2	31.2	6.9	114.6
1962	4,969	1,218	46.8	99.9	20.5	37.8	34.4	7.2	126.0
1963	4,930	1,192	47.1	111.2	28.6	40.0	34.6	8.0	139.0
1964	4,932	1,143	46.2	117.7	30.3	43.3	34.9	9.2	149.0
1965	4,922	1,122	47.8	124.3	32.6	44.7	37.4	9.5	156.9
1966	4,898	1,092	47.0	132.8	35.4	44.8	41.7	10.9	NA
1967	4,882	1,070	46.8	138.7	35.9	43.8	47.3	11.7	NA
1968	4,863	1,016	46.1	144.3	34.8	42.1	55.3	12.2	NA
1969	4,841	976	46.0	145.8	33.3	45.5	55.0	12.0	NA
1970	4,817	946	45.8	148.9	34.4	48.1	55.3	11.1	NA
1971	4,822	921	45.8	148.7	34.9	52.9	35.0	26.0	NA
1972	4,839	882	44.7	146.4	34.2	47.1	37.2	27.9	NA

NA = Not available.

1/ Cultivated land plus orchards and vineyards.

2/ End of year.

3/ As of September 30, includes nonworking members of collectives, excludes apprentices.

Source: (29).

In the first 3 years of the plan period for 1971-75, actual annual rates of production increases were 3.7 percent for grains, 0.3 percent for oilseeds, and 0.1 percent for sugarbeets; potato production declined 2 percent. Nitrogen application increased 5.7 percent and phosphate, 3.3 percent; potash use, however, declined 0.2 percent. Thus, only grain production goals were met.

The ERS projection is for 9.12 million tons of grain production by 1980, based on normal weather conditions, past trends, and planned fertilizer application (30). Grain output by 1980 would be 2.2 million tons above 1966-70 average annual production, with an annual growth rate of 2.3 percent between 1966-70 and 1980. Most of the growth will be due to greater yields since grain area is projected to increase only 0.4 percent a year. Fastest yield increases are expected for wheat; slowest, for "other grains." This assumption may not prove out if the GDR succeeds in expanding corn area to 50,000-100,000 hectares as planned. Corn area averaged less than 2,000 hectares during 1955-70, reached 5,200 in 1970 and 8,800 in 1972, but it declined to 3,900 hectares in 1973. Because of the relatively insignificant area planted to corn in the past, corn has been included among "other grains" in this report.

The oilseed projection of 235,000 tons by 1980 is based on reduced area and increased yields; the increase is less than 0.2 percent a year since 1966-70.

Potato projection of 11.8 million tons by 1980 is based on linear area and yield projection; the result represents an approximate 4-percent decline in total output compared with the 1966-70 average crop. Projections of "other feeds" were based on linear area and yield trends. The results were readjusted to fit the constraints on total agricultural land. Projected bran production, based on estimated human consumption of grain, will decline accordingly.

TRADE IN LIVESTOCK PRODUCTS, GRAIN, OILSEEDS, AND PROTEIN MEAL

Policies

Foreign trade is a Government monopoly. The Minister of Foreign Trade issues licenses to enterprises created for exporting and importing certain commodities. Trade with CEMA members is coordinated with the 5-year plans.^{4/} For trade with countries outside CEMA, an "Office for Foreign Economic Relations," formed in 1970, handles the task of clarifying procedures and concluding agreements.

About three-quarters of the GDR's trade is with CEMA members. In 1966-70 these countries took 75 percent of total East German exports and provided 72 percent of imports. The USSR share in exports reached 42 percent; imports, 40 percent. The EC took 13 percent of GDR exports and provided 14 percent of imports; the U.S. share was only 0.2 for exports and 0.7 for imports (21). This pattern has remained unchanged during 1971-75. Foreign Trade Minister Horst Soelle said in an interview that "CEMA and other socialist countries' share will continue to be 70-75 percent" (8).

The CEMA Bank for International Economic Cooperation, in operation since 1964, serves as a clearinghouse among members if bilateral trade does not balance annually. The accounting unit is the transfer ruble. In the past, credit was granted only for 1 year at 1 to 1-1/2 percent interest. Since 1971, credit can be extended beyond 1 year, but at gradually higher interest rates.

East Germany would prefer 5-year bilateral agreements with all trading partners to assure balanced trade and to make it an accessory to the plans.

^{4/} Bulgaria, Czechoslovakia, GDR, Hungary, Poland, Romania, USSR, Mongolia, and Cuba.

Inter-German Trade

Until West German recognition of the GDR as a state, trade between the two was called "interzonal trade" ^{5/} by West Germany and foreign trade by East Germany. The 1951 Berlin Agreement, which covers the terms of inter-German trade and was acknowledged by the EC member states in 1960, remains in effect. West Germany designated a Trust Agency in West Berlin to handle agreements to avoid Government-level relations with the East Germans.

Trade between the FRG and GDR is strictly controlled. Payments are in accounting units corresponding to the value of the West German mark. The GDR has had a constantly negative balance. Credits are not granted, but a limit on interest-free trade deficit, a "swing," has been approved and it is carried by the West Germans. This agreement on "swing," which cannot exceed 25 percent of total contracted import value, will expire in 1975.

During 1966-70, the FRG had a 9-percent share of GDR exports, making it the third most important importer of East German goods after the USSR and Czechoslovakia. With a 10-percent share in imports, the FRG was surpassed only by the USSR as an exporter to East Germany (21). This special trade relationship between the FRG and GDR may become complicated after present contracts expire because it runs counter to the joint trade policy of EC countries effective since January 1973.

Since the mid-1960's oilmeal has been the leading agricultural import from the FRG. A large part of it has been crushed and processed in the FRG from U.S. soybeans (table 25). Grain has been the principal GDR agricultural export to the FRG, averaging 320,000 tons annually in FY 1967-71. Average annual meat exports of 15,000 tons in FY 1961-66 doubled during FY 1967-71 while imports declined from 7,000 to 5,000 tons, respectively.

Livestock Products

Annual net imports of meats, meat products, and meat equivalent of live animals averaged close to 100,000 tons between 1956 and 1965, but they began to decline in 1964. During 1966-70, East Germany became self-sufficient in meat supply (table 26). Beef was the principal meat imported during each 5-year period, but in 1966-70 beef imports were balanced by exports of pork and live cattle. The USSR was the principal supplier of beef, in declining amounts down to less than 10,000 tons by 1970. West Germany has been the principal importer of meat, mainly pork; and Italy has taken the most live cattle from the GDR (table 27). According to ERS meat consumption and production projections, East Germany will remain close to self-sufficiency in meat supply in 1980.

Grain

During 1956-69, the GDR's grain imports ranged from 1.7 million-2.2 million tons. Unfavorable weather conditions caused a decline in domestic feed production during 1969-71; consequently, grain imports ranged from 2.8 to 3.8 million tons during 1970-72. Wheat accounted for 55-75 percent of grain imports during 1957-72.

The USSR supplied the most grain to the GDR in 1955-69 (table 28). The Soviet New Lands Program of 1954-56 generated increased amounts of grain for export and, during 1957-63, Soviet exports to East Germany ranged from 1.6 million-2.2 million tons. USSR grain crops fell significantly below trend in 1963, 1965, 1967, and 1972; and Soviet annual exports to the GDR dropped below 1.3 million tons during 1964-68

^{5/} Renamed "inter-German trade" in 1972.

Table 25--Principal agricultural trade between East and West Germany, fiscal years 1956-71

Year	Imports from FRG								Exports to FRG				
	Grain	Meat 1/	Cheese	Fats and tallow	Fish and fish products	Fishmeal	Oilmeal	Vegetable oil	Grain	Malt	Potatoes	Sugar	Meat
	1,000 tons												
1955/56	14	5	1	7	58	4	2	--	14	--	16	51	4
1956/57	69	10	1	5	20	5	4	--	78	--	19	*	11
1957/58	56	13	2	--	36	5	8	--	4	--	13	50	20
1958/59	7	12	1	*	24	6	7	--	55	2	20	29	16
1959/60	6	23	2	*	18	6	--	--	177	5	6	43	17
1960/61	--	11	3	4	22	2	--	--	43	7	17	38	16
1961/62	--	8	1	3	12	--	--	--	61	2	--	43	14
1962/63	--	25	4	1	18	7	11	27	112	7	--	31	2
1963/64	--	*	4	--	15	2	64	35	156	8	2	17	14
1964/65	--	--	4	--	13	5	150	33	111	5	3	40	17
1965/66	--	2	2	--	7	5	276	61	359	5	2	40	30
1966/67	--	3	1	--	5	17	315	54	424	4	8	63	27
1967/68	--	5	*	--	5	21	197	26	240	7	1	37	29
1968/69	--	4	*	--	6	24	314	23	284	5	*	51	28
1969/70	--	11	*	--	7	9	389	27	231	13	*	52	26
1970/71	--	8	*	--	2	3	393	18	420	17	--	36	35

-- = None; * = 500 tons or less.

1/ Includes carcass weight of live animals.

Source: (4).

Table 26--Meat balance, East Germany, 1956-70 and projections to 1980 1/

Year	Gross production	Live animal exports	Meat exports	Live animal imports	Meat imports	Net trade	Domestic supply	Domestic consumption	Error
<u>1,000 tons</u>									
1956	734	--	11	2	96	87	821	(806)	
1957	778	--	34	3	114	83	861	(807)	
1958	783	--	43	4	63	24	807	864	
1959	767	--	20	2	193	175	942	920	
1960	823	--	22	2	104	84	904	938	
Average:	777	--	26	2	114	90	867	867	
1961	848	--	18	8	108	98	946	954	
1962	732	--	2	13	202	213	945	904	
1963	814	--	25	3	139	117	931	949	
1964	907	1	51	1	106	55	962	985	
1965	957	4	52	3	77	24	981	999	
Average:	852	1	30	5	126	100	952	959	7
1966	1,005	18	44	--	78	16	1,021	1,025	
1967	1,045	30	47	--	75	-2	1,043	1,049	
1968	1,086	29	39	--	69	1	1,087	1,076	
1969	1,101	23	48	--	67	-4	1,097	1,112	
1970	1,083	30	42	--	86	14	1,097	1,126	
Average:	1,064	26	44	--	75	4	1,068	1,078	10
1980	1,425	NP	NP	NP	NP	-7	1,418	1,418	

-- = Less than 1,000 tons; () = Estimate; - = Exports; NP = Not projected.

1/ First of the split years were used as calendar year if data for calendar year were not available. All data were converted to meat equivalent.

Sources: (4, 12, 29).

Table 27--East German beef and pork trade by principal origins and destinations,
averages 1956-60, 1961-65, and 1966-70 ^{1/}

Item	1956-60			1961-65			1966-70		
	Total ^{2/}	Beef	Pork	Total ^{2/}	Beef	Pork	Total ^{2/}	Beef	Pork
<u>1,000 tons</u>									
Country of origin:									
Total imports	116	--	--	131	--	--	75	--	--
USSR	--	55	--	--	52	--	--	20	9
FRG	14	14	--	7	7	--	6	2	4
China	--	--	5	--	--	--	--	--	--
Bulgaria	--	--	4	--	--	--	--	--	--
Hungary	--	--	4	--	--	6	--	--	--
Denmark	--	--	--	--	6	10	--	6	5
Sweden	--	--	--	--	--	4	--	--	--
Argentina	--	--	--	--	--	--	--	6	--
Uruguay	--	--	--	--	--	--	--	4	--
Country of destination:									
Total exports	26	--	--	30	--	--	70	--	--
France	--	--	--	--	--	--	--	--	9
FRG	--	--	16	--	--	15	--	--	29
Italy	--	--	--	--	--	--	--	--	--
Net imports	90	--	--	101	--	--	5	24	--

-- = Not available.

^{1/} Includes meat equivalent of live animals.

^{2/} Breakdown by country or type of meats does not add up because of insufficient data.

Sources: (4, 12, 25, 29).

Table 28--East German grain imports by country of origin and by type of grain, 1955-72 1/

Year	Origin								Type of grain	
	USSR	United States 2/	France	Canada	Australia	Hungary	Undetermined	Total	Wheat	Coarse grain
	1,000 tons									
1955 ...	1,015	--	--	--	--	--	333	1,348	555	793
1956 ...	836	--	--	--	--	--	849	1,685	606	1,079
1957 ...	1,839	--	--	--	--	--	175	2,014	1,078	936
1958 ...	1,741	--	--	--	--	--	120	1,861	1,292	569
1959 ...	1,653	--	--	--	--	--	184	1,837	1,335	502
1960 ...	1,866	--	--	--	--	--	213	2,079	1,520	559
1961 ...	1,848	--	--	--	--	--	76	1,924	1,250	674
1962 ...	2,158	--	--	--	--	--	81	2,239	1,238	1,001
1963 ...	1,593	82	--	--	--	--	6	1,681	1,023	658
1964 ...	1,236	174	368	155	--	--	--	1,933	1,303	630
1965 ...	1,004	109	385	208	12	--	--	1,718	1,225	493
1966 ...	1,160	308	--	--	--	--	525	1,993	1,350	643
1967 ...	1,262	257	--	--	--	--	288	1,807	1,184	623
1968 ...	1,216	527	--	--	--	--	30	1,773	1,075	698
1969 ...	1,435	455	--	--	--	--	45	1,935	1,311	624
1970 ...	1,694	389	--	--	--	19	1,241	3,343	2,084	1,259
1971 ...	1,707	489	--	--	135	90	350	2,771	1,867	904
1972 ...	1,209	749	--	240	497	129	952	3,776	2,040	1,736

-- = Less than 1,000 tons, none or not available.

1/ Rice excluded.

2/ Includes transshipments since 1968.

Sources: (4, 12, 29, 32).

and in 1972. The United States--followed by France, Canada, and Australia--took up most of the slack in those years. Nevertheless, until 1972, U.S. exports never exceeded 0.5 million tons.

By 1980 East Germany will have to import about 3.7 million tons GE of concentrated feed; our projections are about 2 million tons in protein meal and roughly 1.75 million tons of net grain imports (table 3). A substitution effect, depending on prices and availability of concentrates from foreign sources, may alter the projected import ratio between grain and protein feed. The GDR will probably begin to accumulate grain reserves, and it may continue the 0.3 million tons of reexports to West Berlin; in this case, imports would climb above the projected level.

Oilseeds, Oilseed Meal, and Fishmeal

The GDR is a net importer of oilseeds and an importer of oilseed meal and fishmeal (table 29).

Oilseed imports declined sharply during 1961-65 but recovered somewhat during 1971/72. Sunflowerseed accounts for about half the imported oilseeds, principally from the USSR. East Germany exported rapeseed to Western Europe during 1966-70; these exports are now insignificant.

Oilseed-meal imports, scant during 1956-60, rose sharply in subsequent periods. Soymeal, supplied mainly by the FRG, has been the principal oilmeal import, followed by peanut meal from India. The bulk of FRG soymeal is from U.S. beans.

Fishmeal imports of more than 100,000 tons during 1966-70 doubled those of 1961-65 but they increased only moderately during 1971/72, owing to Peruvian supply problems.

Oilseed-meal imports in 1980 are projected at 1.19 million tons (1.67 million GE), including oilseeds in meal equivalent; projected fishmeal imports are 0.19 million tons (0.30 GE) (table 7). Obviously, if there is a shortage of fishmeal on the world market, it will have to be substituted in grain equivalent.

Trade with the United States

Though U.S. agricultural imports from East Germany have been insignificant, agricultural exports rose steadily from \$1 million in 1960 to nearly \$30 million in 1968, including transshipments through the FRG, the Netherlands, and Canada. The value of exports leveled off in 1969 and 1970, but resumed its upward trend in subsequent years, passing \$100 million in 1973 (table 30).

Coarse grains have been the principal U.S. export to the GDR. In 1963, 1965, and 1972, the USSR--chief supplier of wheat to East Germany--had very poor grain crops and the United States sold some wheat to East Germany during those periods.

Future U.S. grain exports to the GDR will depend on the availability from other sources and on U.S. competitiveness in prices and credit terms. They will also depend on whether the USSR decides to retain its position as major supplier of grain to the GDR.

The United States will remain the principal source of imported soybeans, either directly or indirectly. The GDR has occasionally bought U.S. meal, and it is a regular indirect buyer of meal processed from U.S. soybeans in West Germany or the Netherlands (32).

Table 29--Oilseed, oilseed meal, and fishmeal trade by principal countries of origin and destination, East Germany, averages 1956-60, 1961-65, 1966-70, and 1971-72

Period and country of origin	Oilseeds	Oilseed meal	Fishmeal	Period and country of destination	Rapeseed
	1,000 tons				1,000 tons
1956-60				1956-60	
Total imports ...	291	19	3	Total exports ...	*
1961-65				1961-65	
Total imports ...	133	129	54	Total exports ...	*
USSR	61	--	--		
U.S.	2	--	--		
FRG	--	46	--		
Peru	--	--	29		
1966-70				1966-70	
Total imports ...	156	388	(116)	Total exports ...	24
USSR	82	--	--	U.K.	17
U.S.	--	--	--	France	4
FRG	--	238	17	Italy	3
India	--	71	--		
Syria	--	13	--		
Netherlands ...	--	16	--		
Peru	--	--	73		
Denmark	--	--	4		
1971-72				1971-72	
Total imports ...	204	736	(145)	Total exports ...	--
USSR	79	--	--		
FRG	--	480	--		
India	--	89	--		
Netherlands ...	--	43	--		
Syria	--	34	--		

-- = Not available or nil; * = Less than 500 tons; () = Estimate.

Sources: (12, 25, 30).

Table 30--Value and quantities of East German agricultural imports from the United States,
total value and values and quantities of selected commodities, 1960-73

Year	Total imports		Wheat			Coarse grains			Soybeans		
	Including : trans- shipments :	Direct	Total	Direct	Trans- shipments	Total	Direct	Trans- shipments	Total	Direct	Trans- shipments
Million dollars											
1960	1.01	1.01	--	--	--	--	--	--	--	--	--
1961	2.58	2.58	--	--	--	--	--	--	--	--	--
1962	1.16	1.16	--	--	--	--	--	--	--	--	--
1963	6.07	6.07	--	--	--	4.20	4.20	--	0.40	0.40	--
1964	17.37	16.67	9.75	8.55	0.70	2.26	2.26	--	1.06	1.06	--
1965	10.87	10.87	2.61	2.61	--	3.40	3.40	--	.56	.56	--
1966	21.01	21.01	--	--	--	16.31	16.31	--	--	--	--
1967	22.29	22.29	--	--	--	14.85	14.85	--	--	--	--
1968	29.86	24.12	--	--	--	26.13	21.72	4.41	1.33	--	1.33
1969	26.54	24.60	--	--	--	23.73	21.79	1.94	.60	.60	--
1970	25.55	12.24	--	--	--	23.08	9.96	13.12	--	--	--
1971	33.68	19.37	--	--	--	30.17	15.87	14.30	1.70	1.66	0.04
1972	43.65	14.17	8.82	5.03	3.79	33.17	7.48	25.69	--	--	--
1973	113.46	24.53	33.76	3.78	29.98	65.39	6.44	58.95	--	--	--
1,000 tons											
1960	--	--	--	--	--	--	--	--	--	--	--
1961	--	--	--	--	--	--	--	--	--	--	--
1962	--	--	--	--	--	--	--	--	--	--	--
1963	--	--	--	--	--	82	82	--	4	4	--
1964	--	--	132	121	11	42	42	--	10	10	--
1965	--	--	45	45	--	64	64	--	5	5	--
1966	--	--	--	--	--	308	308	--	--	--	--
1967	--	--	--	--	--	257	257	--	--	--	--
1968	--	--	--	--	--	527	435	92	13	--	13
1969	--	--	--	--	--	455	421	34	5	5	--
1970	--	--	--	--	--	389	166	223	--	--	--
1971	--	--	--	--	--	489	254	235	15	15	--
1972	--	--	145	84	61	604	147	457	--	--	--
1973	--	--	418	64	354	663	61	602	--	--	--

Blank spaces in the total import column indicate not applicable.
-- = Less than 5,000 tons or nil.

Source: (32).

APPENDIX

Soils and Climate

About two-thirds of East Germany is part of the North European Plain, which continues eastward into the Plains of Poland. The northern part of the plain is characterized by heavy clay; the southern part, located in central East Germany, has a series of poorly drained valleys with "islands" of sand and gravel. The third major region, south of the Elbe River, contains light and fertile soil, some of the best in Europe. Rye and oats dominate in the northern part of the country, rye in the sandy soil of the middle region, and wheat in the southern region.

Climate resembles that of West Germany with somewhat more pronounced continental than maritime influence. Annual precipitation, highest in summer, averages 20-25 inches in the farming region. Average daily maximum temperatures range between 70° and 75°F.; daily minimum temperatures fall between 20° and 30°F.

Institutional Constraints

Under centrally planned and controlled economies, the institutional factors influence production more than in a free enterprise economy where individual, flexible adjustments are made to changing economic conditions. In the GDR, Government agencies have substantial power in inducing farm management to adhere to Government guidelines.

The Council of Agricultural Production and Food Industry (Rat fuer landwirtschaftliche Production und Nahrungsgueterwirtschaft) is the top executive agency for supervising fulfillment of agricultural plans. The Council has a wide-ranging responsibility which includes all aspects of production, processing, and marketing of farm products. It operates through several subordinated special agencies such as the State Committee for Procurement (Staatliche Comitee fuer Aufkauf), State Committee for Soil Improvement (Melioration), and District Councils for Agricultural Production and Food Industry; and it also uses the help of scientific institutions.

In the GDR, land trading among private citizens is not permitted; land use is under Government control; producer prices are fixed; the marketing system is centralized; credit terms and priorities are predetermined; and reinvestment of a certain share of income from cooperative farms is regulated.

A so-called industrialization of agricultural production has been vigorously promoted for several years to achieve three goals:

- Mold the previously individual farm operators into the mainstream of the general economic system
- Tighten controls over the actions of often small agricultural units
- Gain the advantages of larger scale production

Landownership and Structure

Of socialized enterprises, occupying 94 percent of agricultural land, 86 percent is managed and owned by cooperatives and 8 percent, by the state; 6 percent of agricultural land is principally owned by the church and, to a lesser extent, by individuals. The cooperatives (Landwirtschaftliche Productiongenossenschaft, LPG) are classified in three categories; I, II, and III according to their stage of collectivization. In type I cooperatives, the arable land is cultivated collectively but livestock and the means of production are individually owned; in type II cooperatives, livestock is individually owned, but machinery is collectively owned; in type III

cooperatives, all property is collectively owned. Type III cooperatives comprise the majority, both in units and membership.

Over time, lower stage cooperatives have been gradually absorbed into the third type. Also, the amalgamation of state farms is in progress. As a result, the size of single cooperative units and state farms is slowly increasing while the number of units is decreasing (appendix table 1). From 1960 to 1972, the number of state farms declined from 669 to 500, and the number of cooperative farms, from 19,313 to 7,575. During the same period, the average size of the state farm increased from 591 to 893 hectares, while that of the cooperative farm rose from 281 to 714 hectares.

Due mainly to new buildings and roads, the agricultural land area dropped 124,000 hectares from 1956-60 to 1966-70 to a total of 6.33 million hectares. The loss was larger for arable land, some of which was returned to pasture and forest (appendix table 2). For the first time in 20 years, agricultural area grew 4,400 hectares in 1972, achieved partly through the reclamation of abandoned mines. This reversal of the trend resulted from growing concern of the leadership. To convert more arable or grassland area to nonagricultural uses, Government approval must be secured, and it is given only in exceptionally justified cases. Permission to remove land from production is required for agricultural construction projects as well. A land use fee charged for land removed from agricultural production serves as an economic disincentive (20). To assure rational use of every square meter of soil, a worker-peasant inspection team formed in 1971 provides on-the-spot supervision. The extra care taken to preserve current land structure is explained by the unfavorable ratio of agricultural land to the population, lower than in any other East European country. The GDR's share of arable land in agricultural land compares more favorably with the other East European countries:

Country	Agricultural land/ population ratio	Arable land as share of agricultural land
	<u>Hectares</u>	<u>Percent</u>
East Germany	0.37	77
Bulgaria .....	.68	79
Czechoslovakia .....	.50	75
Hungary .....	.67	81
Poland .....	.61	79
Romania .....	.73	71
Yugoslavia .....	.72	56

From 1961-65 to 1966-70, despite the decline of arable land, grain and forage crop area increased at the expense of potatoes and industrial crops. The area of pasture trended upward throughout the past 15 years.

Labor and Labor Productivity

In addition to the scarce land situation, common to all industrial countries, East Germany has undergone a steady exodus of labor from agriculture. By 1970 agriculture accounted for 14 percent of the total economically active population, a drop from 19 percent in 1960 (table 4). From the beginning of collectivization until 1967, the percentage of young people on farms continuously decreased. This trend was halted in 1967, especially in the highly mechanized enterprises. Easier work through more mechanization, social reforms like regulated working time, guaranteed leave, and social security insurance, and a living standard approaching that of industry helped stem the outflow.

Appendix table 1--Total agricultural and arable land, and number and size of farms by type of ownership,
East Germany, 1955, 1960, 1965, 1970, and 1972

Item	1955	1960	1965	1970	1972
	<u>Million hectares</u>				
Agricultural land	6.48	6.44	6.37	6.29	6.29
Arable land	5.22	5.07	4.94	4.82	4.84
	<u>Number</u>				
State farms	540	669	572	511	500
Cooperative farms	5,879	19,313	15,139	9,009	7,575
64 Private farms	780,990	30,202	13,839	<u>1/</u> 11,170	NA
	<u>Hectares</u>				
Average size of state farm	525	591	743	866	893
Average size of cooperative farm	211	281	360	598	714
Average size of private farm	6	16	28	<u>1/</u> 33	NA

NA = Not available.

1/ 1968.

Source: (29).

Appendix table 2--Agricultural land distribution by use, East Germany,
averages 1956-60, 1961-65, and 1966-70 and projections to 1980

Land use	1956-60	1961-65	1966-70	1980	Annual growth rates	
					1956-60	1966-70
					to	to
					1966-70	1980
	----- 1,000 hectares -----				----- Percent -----	
Agricultural land	6,452	6,397	6,328	6,157	-0.2	-0.2
Arable land	5,139	4,983	4,876	4,607	-.5	-.4
Grain	2,443	2,261	2,315	2,417	-.5	.4
Oilseeds <u>1/</u>	127	113	111	91	-1.2	-1.4
Potatoes	780	728	665	531	-1.4	-1.5
Forages <u>2/</u>	888	985	1,051	949	1.7	-.8
Other crops	901	896	734	619	-1.7	-1.2
Pasture	432	528	592	743	3.2	1.9
Meadows	881	886	860	807	-.2	-.5

1/ Rapeseed only.

2/ Feed beets, corn for silage, green forage excluding catch crops.

Source: (30).

Women contribute significantly to agriculture in East Germany. Accounting for 44 percent of cooperative farm membership in 1960, they increased their share to 47 percent by 1971.

Modernized production technology has reduced reliance on manual labor, particularly in grain production:

Task	1950's	1960's	1970's
<u>Labor hours/hectare</u>			
Soil preparation	8:0	5:7	1:8
Seedbed preparation and sowing	6:9	3:6	2:8
Fertilization and plant protection	14:2	8:5	3:5
Harvest and threshing	116:9	33:7	9:5
Total	146:0	51:5	17:6
<u>Quintals/hectare</u>			
Yield	24.0	27.0	33.0

Source: (2, 6/9/72).

Together with growing agricultural productivity and a declining number of workers engaged in agriculture, the gap in average per capita earnings between agriculture and industry is gradually closing:

Year	Agricultural wages as percent of industrial wages
1955	70
1960	83
1965	87
1970	92
1973	98

Source: (29).

The narrowing gap in wages makes it less attractive to exchange farm employment for work in the industry. Incomes of cooperative farmers, which are not published, derive from the distributed farm income and earnings from household area cultivation, and small private livestock holdings.

Price Policy

All prices are fixed and enforced in East Germany by a price office under direct Government control. A dual price system existed until 1964 for grains and potatoes and until 1969 for livestock products. Under this system, a lower price was paid for compulsory quota deliveries and a higher sum for contract purchases.

Average crop prices received by farmers increased significantly after abolishment of the dual price system. But livestock product price increases usually followed feed price increases, and by 1966-70 the livestock product grain price ratio had widened, thus increasing the profitability of livestock production (table 22, appendix table 3).

After the abolishment of compulsory deliveries, the traditional role of prices as production incentives gained strength; and, through shifting price relationships among products, new production priorities were established. Prices served to promote production in short supply and retard output of items less in demand. On top of fixed prices, bonuses were paid for above-contract deliveries or above-standard qualities. Bonus payments were also used to alleviate short-term supply fluctuations.

A "Resolution" proclaimed by the Council of Ministers in September 1972 simplified the price system by terminating the bonus payments which were tied to complicated formulas (23, 9/26/72). According to the "Resolution," all future economic regulations including those on prices must be simple, clear, and understandable by everyone.

Procurement

Most livestock products and crops reach the market through Government procurement. As total livestock production has grown, the Government share has also increased. During 1966-70, the Government bought 90 percent of total meat produced, compared with 76 percent during 1956-60 (appendix table 4). Among the type of meats procured, beef, mutton, and horses had the highest share and poultry the lowest. In 1966-70, Government purchases accounted for 76 percent of eggs and 90 percent of milk produced.

From their crops, farmers have been obligated to deliver planned and contracted quantities of grains, potatoes, and sugarbeets to the state. For both livestock products and selected crops, a regional and countrywide plan fulfillment index is distributed to local authorities, and adherence to plans is supervised. Since 1957 no detailed plan has been issued to individual farms for sown area, just for the quantity to be sold to the Government. The shift from compulsory to contract sales did not reduce state grain purchases and it improved the terms of sales to farmers.

The Government purchased about 33 percent of all grain produced in 1961-65; this share declined 1 percent during 1966-70 and another 1 percent during 1971-72. The Government, through contract buying and imports, secures raw material for food milling, the mixed-feed industry, and for other industrial uses, and it also redistributes grains to farms in scarce supply and to commercial feedlots.

Heavy emphasis is placed on quantities procured from the farms. In many instances, instead of total production, only Government procurement is targeted or planned.

National Income and Investment

Despite the decline in agricultural land and labor, net national income deriving from agriculture increased 18 percent between 1961-65 and 1966-70. In the same period, net national income from all sources rose 27 percent, reducing agriculture's share in the total national income from 14 to 13 percent, and by 1972 to 11 percent (appendix table 5).

After the mid-1960's, policymakers realized that land and labor losses must be compensated through stepped-up investments. New technology introduced--embodied in capital goods--primarily has substituted for labor while biochemical innovations--new seed varieties, fertilizer, and plant protection agents which boosted yields--mainly have substituted for land. Compared with other East European countries, the share of investment in agriculture has been relatively high: it was 12.2 percent in

Appendix table 3--Average state purchase prices of selected livestock products and average livestock product producer price indexes, East Germany, 1955-72 ^{1/}

Year	Cattle	Hogs	Poultry	Milk	Eggs	Price indexes of animal products
	<u>Marks/quintal</u>				<u>Marks/100</u>	<u>1960 = 100</u>
1955	139.84	397.88	300.65	47.28	24.46	90.8
1956	155.19	336.75	492.82	44.76	30.02	87.4
1957	205.93	348.11	516.40	46.29	32.89	93.7
1958	236.11	340.37	490.54	49.97	31.16	96.7
1959	271.76	319.43	489.73	49.27	29.37	95.5
1960	281.80	341.46	500.00	51.76	29.29	100.0
Average	230.16	337.22	497.90	48.41	30.55	94.7
1961	255.43	339.54	497.22	54.22	29.12	100.2
1962	255.71	346.49	494.41	53.45	29.48	100.4
1963	280.05	410.46	508.27	54.04	34.32	109.8
1964	286.20	440.91	494.67	59.15	32.10	115.9
1965	312.22	453.92	503.07	59.36	31.26	118.4
Average	277.92	398.26	499.53	56.04	31.26	108.9
1966	330.37	450.10	519.29	61.64	31.75	121.1
1967	335.02	457.16	536.81	62.74	32.37	123.2
1968	360.61	463.61	542.20	63.68	32.25	125.8
1969	437.27	490.70	516.61	73.82	32.55	140.3
1970	440.16	494.52	531.40	74.56	32.90	141.6
Average	380.69	471.22	529.26	67.29	32.36	130.4
1971	451.43	522.12	531.12	79.92	33.33	149.0
1972	457.30	522.90	537.50	79.90	33.30	149.4

^{1/} Bonuses paid since 1964 are not included.

Source: (29).

Appendix table 4--State purchases of selected livestock products and grain and their share of total production, East Germany, averages 1956-60, 1961-65, 1966-70, and 1971-72

Period	Meats				Milk	Grain	Eggs
	Pork	Beef, mutton, and horse	Poultry	Total meats			
	<u>1,000 tons</u>						<u>Million</u>
1956-60	664	291	13	967	4,127	1,958	1,656
1961-65	721	415	44	1,180	5,057	1,949	2,437
1966-70	950	563	72	1,585	6,366	2,238	3,126
1971-72	1,046	612	119	1,778	6,777	2,502	3,634
	<u>Percent</u>						
1956-60	78	78	23	76	74	32	56
1961-65	84	88	51	84	89	33	69
1966-70	90	94	70	90	90	32	76
1971-72	92	99	86	92	92	31	81

Source: (29).

Appendix table 5--Net national income and agriculture's share, 1950-72

Year	Indexes of net national income		Agriculture's share <u>1/</u>
	Total	Agricultural	
	(1960 = 100) (1967 prices)		Percent
1950	38	74	28.4
1955	71	91	20.2
1960	100	100	16.4
1961	102	85	13.7
1962	104	84	13.2
1963	108	93	14.0
1964	113	95	13.7
1965	118	101	13.8
1961-65	109	92	13.7
1966	124	106	13.8
1967	131	113	13.9
1968	138	112	13.1
1969	145	104	11.7
1970	153	110	11.6
1966-70	138	109	12.8
1971	160	105	10.6
1972	169	116	11.1

1/ Forestry included.

Source: (29).

1961-65, and increased to 14.3 percent in 1966-70 (30). During 1971-72, however, agriculture's share in total investments declined to 13.1 percent.

For the 1971-75 plan period, 26.5 billion marks--about 15 percent of total planned investment--have been earmarked for the agriculture and food industry.^{1/} Investments of 8.5 billion marks are planned for livestock production, including shelter construction and reconstruction, and technological improvement; 4.7 billion marks for mechanization of crop production; 4 billion marks for soil improvement; and 4.5 billion marks for the food industry (5).

Some of the specific programs for 1971-75 include irrigation of 310,000 hectares and drainage of 506,000 hectares. Continued construction of agrochemical centers and concentration of agricultural machinery repair in specialized enterprises are also part of the investment programs. The result of investments in the mixed-feed industry will be a 50-percent increase in mixed-feed production between 1970 and 1975. At present, the mixed-feed industry produces 80 percent of all mixed feed prepared in the country.

The share of agricultural investment covered by the state budget is declining; it accounted for 2.7 percent of the total budget outlay in 1972 and for only 2.3 percent in 1973. The bulk of the investment funds must be generated from the enterprises' income (7). Income allocation in cooperatives for reinvesting is prescribed in the cooperatives' statutes.

Industrialization of Agriculture

To take advantage of higher labor productivity and a yield on capital investment in large specialized enterprises greater than on the traditional farms, a drive toward horizontal and vertical cooperation has been pursued since the mid-1960's. Research concentrated in 14 Agricultural Chemical Centers showed that specialized use of chemicals has cut costs. Fertilizer supply and application costs on farms serviced by the Centers were reduced from 40 marks/ton to 26.40 marks/ton. Fertilizer loss, ranging from 4 to 10 percent in the past, has been reduced to 1 to 3 percent (2, 11/9/72).

Cooperation among the farms (horizontal) and between the farms and industry (vertical) is part of the program of industrialization of agricultural production, which is expected to be a long-range project. Gerhard Grueneberg, politbureau member responsible for agriculture, listed the following criteria for describing industrialization:

- Replacing single machines with entire machinery systems and using machines in shift work.
- Planned concentration and specialization of agricultural production.
- Steady production to eliminate fluctuation in animal fattening.
- Interlocking of production steps like storage, transport, and processing.
- Swift application of recent scientific advances.
- Use of specialized units like the agrochemical centers.
- Vocational training on several educational levels (15).

^{1/} One dollar = about 3 marks.

Dr. Ewald added to the Grueneberg criteria the development of class consciousness of cooperative farmers and their convergence with the working class (2, 6/9/72).

A significant number of cooperative members come from the working class; they joined the cooperatives without contributing either land or livestock. Many mechanics and tractor drivers have no roots in agriculture. Through continuous mixing of industrial and agricultural workers in various cooperative undertakings, the differentiation between peasants and workers is expected to disappear in the not too distant future.

As an illustration of results from improved production methods, Mr. Grueneberg quoted the reduction of per-hectare cost of grain production from 628.20 marks in the 1950's to 521.50 marks in the 1960's and to 444.40 marks in recent years. Concurrently, the production cost of 1 quintal has dropped from 26.17 marks to 19.31 marks and 13.89 marks (15).

According to an East German list, the following livestock enterprises qualified as being industrialized by 1972:

- 12 dairy establishments with 1,000 cows each
- 55 heifer production establishments with shelters for over 1,000 capacity
- 5 hog-fattening factories with over 10,000 capacity
- 14 hog-breeding establishments with capacity for over 800 sows (2, 11/21/72)

In the future, allocation of investment funds from the budget will be used to the criteria of industrialization; only projects leading to industrialization will get official approval for credits or subsidies (2, 6/9/72). As an incentive to farmers to heed official policy, interest rates have been reduced since 1972 to 2 percent for investment projects leading toward industrial production.

Methodology

East and West German official statistical publications are the principal sources of historical data. Most of the projections are adopted from the recent USDA economic report on the East European feed economy (30). Their validity was reexamined in view of new developments since completion of that study, and a few projections were changed when new information warranted it.

Projected meat consumption was altered because the official time series was revised to include horse and rabbit meats (29, 1973). Consequently, these have been added to ERS projections. To project total meat consumption, time and disposable personal income were used as independent variables. A 4-percent annual rate of increase in disposable income achieved in the past 10 years was assumed to continue until 1980. The projection result seemed feasible and it was statistically substantiated.^{2/} Individual components of total meats were estimated, based on East German plans, recent consumption patterns, and projected availability from domestic production.

In this report, rice is excluded from total grain production, consumption, and trade. All imported rice is used for human consumption and it has no impact on the feeding. Per capita human consumption of grain, milk, and eggs was projected on the basis of income elasticity of demand calculated by FAO (9) and ERS (30). For per

^{2/} For observations 1960-69: $R^2 = .94$, standard error of estimate = .97, constant terms = .32, regression coefficient = 52.19, and elasticity = .46.

capita milk consumption, a linear projection with time as an independent variable provided results identical with the projection based on 0.3 elasticity. Potato consumption projections were based on East German plans.

Since meat production is published officially in live weight only, the following conversion factors were used to obtain carcass weight: for pork, 0.64; beef, 0.517; veal, 0.60; poultry, 0.72; mutton and other meats, 0.50. These estimates, based on an East German publication (28), were substantiated by the construction of a meat balance. In 1966-70, a 1-percent error in the conversion rate would have changed the availability of beef by 5,000 tons; pork, 10,000; and poultry, 1,000. Although the conversion rates change annually, a constant rate was assumed for past years because of lack of information. Nevertheless, by 1980, some improvement is expected in the amount of meat and milk obtained per animal. Projected livestock production in live weight (30) was converted to meat, using a coefficient of 0.65 for pork, and 0.53 for beef and veal. For poultry and other meats, the historical conversion factor was maintained.

"Other feed" consumption is based on projected production of each feed category. A linear production projection was used for pulses, wild hay, pasture hay, silage corn, green forage, catch crops, and root crops excluding potatoes. The linear projection of silage corn resulted in an unrealistically low figure; this was corrected by using 1966-70 average production as the best estimate.

The projection of feed requirements was developed as follows:

1. The available feed supply of grains, protein meal, and potatoes was calculated for three 5-year periods--1956-60, 1961-65, and 1966-70--through balances prepared for each commodity. Bran supply was calculated from grains used for human consumption. Other feed produced was estimated as all consumed except for sugarbeet feeding, which was based on production above the sugar industry requirement. Production of other feeds was reduced by a 10-percent loss factor.
2. Available feed in each category was converted to grain equivalent (see definition at the beginning of this report).
3. Feeding rates were estimated for 1961-65 in grain equivalent of grain, protein meal, potatoes, and "other feeds" needed to produce 1 kilogram of beef, veal, pork, poultry, milk, and eggs (24) and to feed 1 horse and 1 sheep for 1 year (4).
4. Estimated feeding rates were multiplied in each feed category by East German output and inventory data.
5. The difference between the sum of derived feed requirement and actual feed available was established, and estimated feeding rates per units were increased or reduced by the percentage difference of derived and actual feed. For horses and sheep, constant estimated feeding rates were used; the adjustments were made in cattle, hog, and poultry sectors.
6. The first estimates for 1956-60 and 1966-70 were based on the adjusted 1961-65 feeding rate corrected as shown in step 5.

The feeding rates calculated for 1966-70 were projected to 1980. Feeding efficiency was assumed to improve after an increase in feeding rates between 1969-71. The gradual increase of the share of protein in feeding rations plus technological and

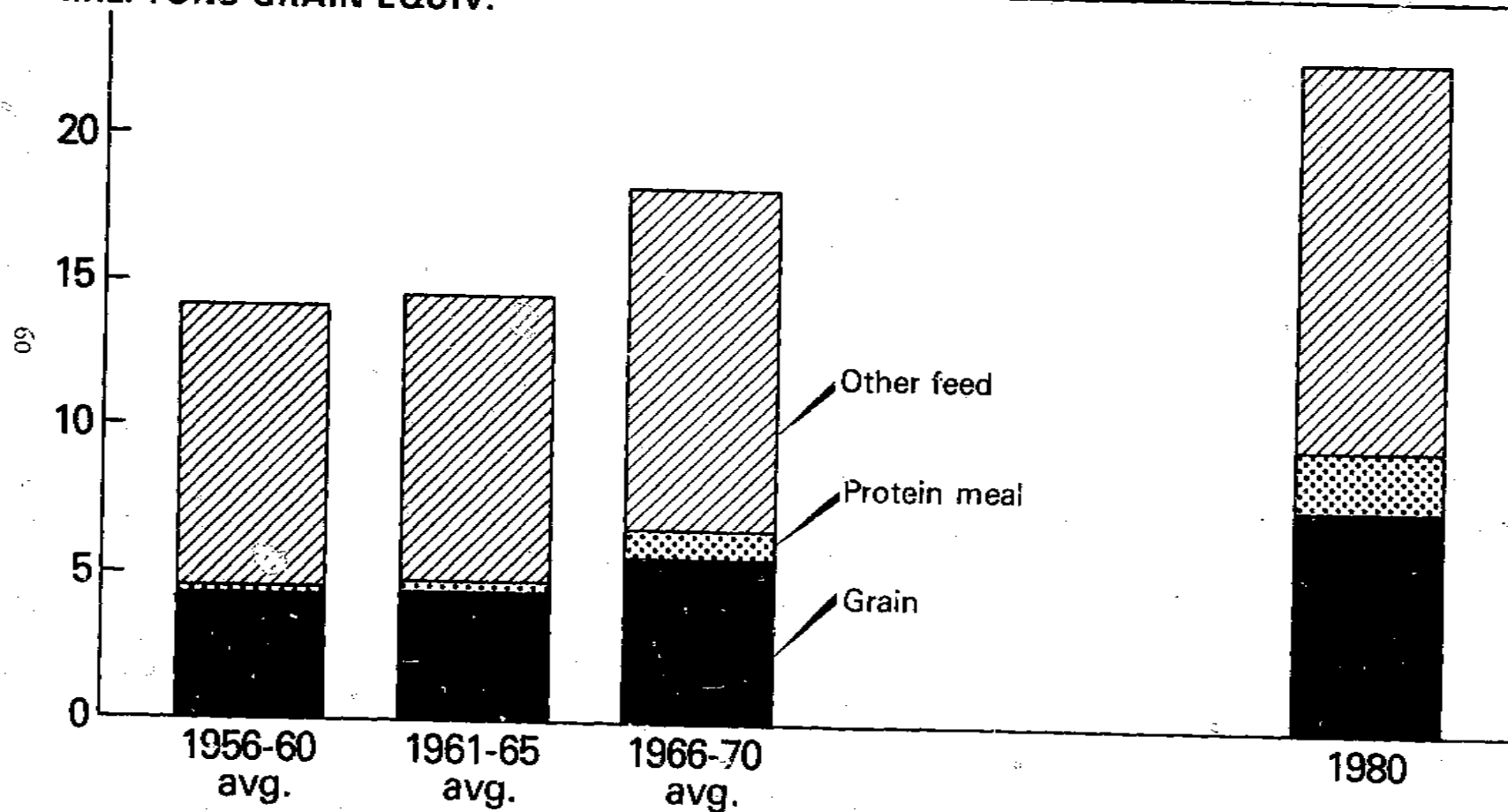
biological innovations in animal husbandry should be vindicated through gains in productivity.

Import projections were based on feed requirements expressed in grain equivalent. Imports are the difference between projected feed consumption and projected domestic feed supply. All feed imports were assumed to be grain or protein meal. Grain equivalent of projected protein meal consumption is arbitrary--22 percent of grain equivalent of total concentrated feed. Of total concentrates fed in 1970, U.S. protein meal consumption in GE was 28 percent (1). In 1968, in the United Kingdom, of total mixed feed produced, the share of protein meal was 32 percent GE (16). In East Germany, the share of protein meal increased 5.4 percent annually between 1956-60 and 1969-71. The estimated increase from 1966-70 to 1980 is about 3.3 percent annually.

FEED USE IN EAST GERMANY

PROJECTIONS FOR 1980

MIL. TONS GRAIN EQUIV.



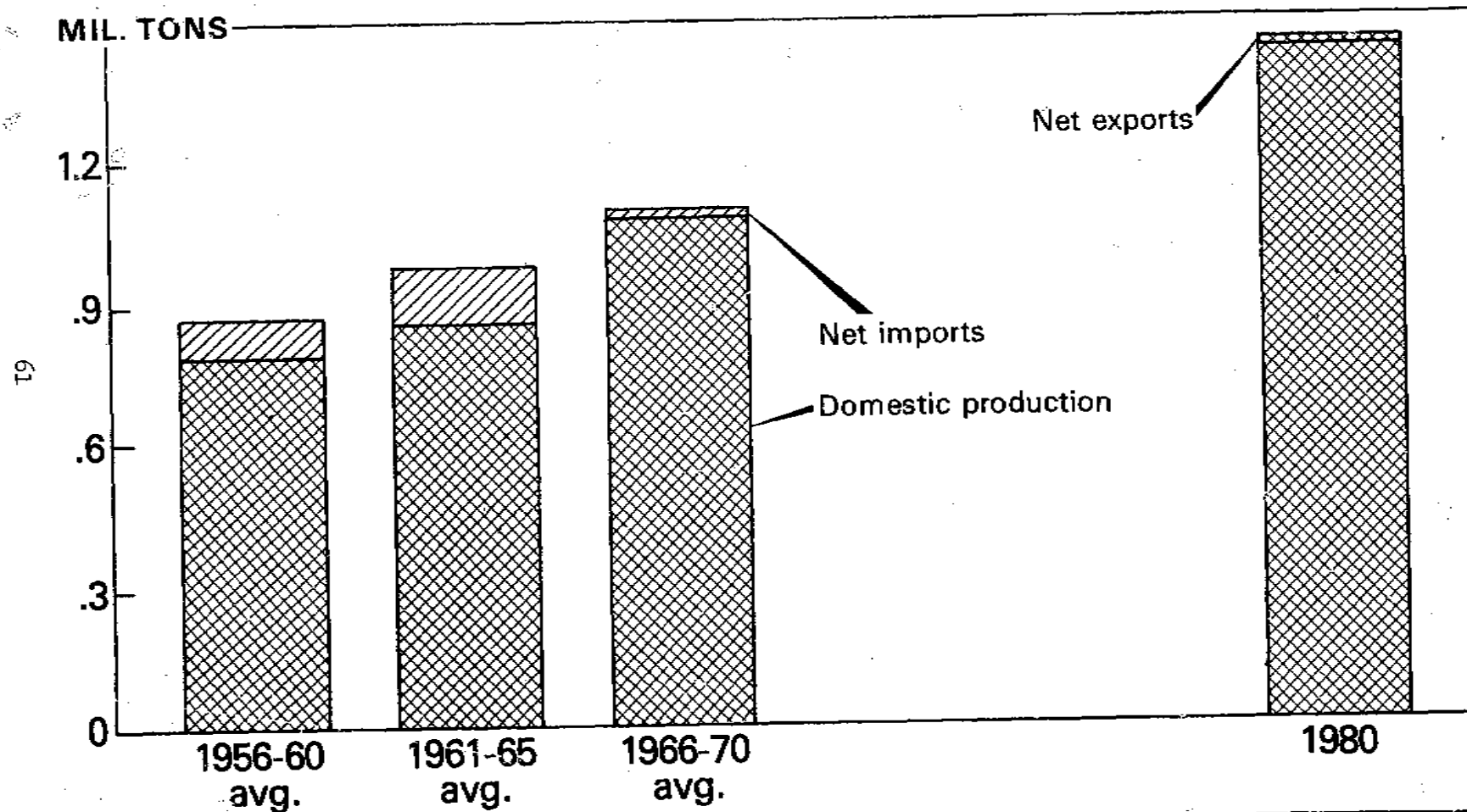
USDA

NEG. ERS 2002 - 75 (8)

Chart 1

MEAT IN EAST GERMANY

PRODUCTION AND NET TRADE, PROJECTIONS FOR 1980



USDA

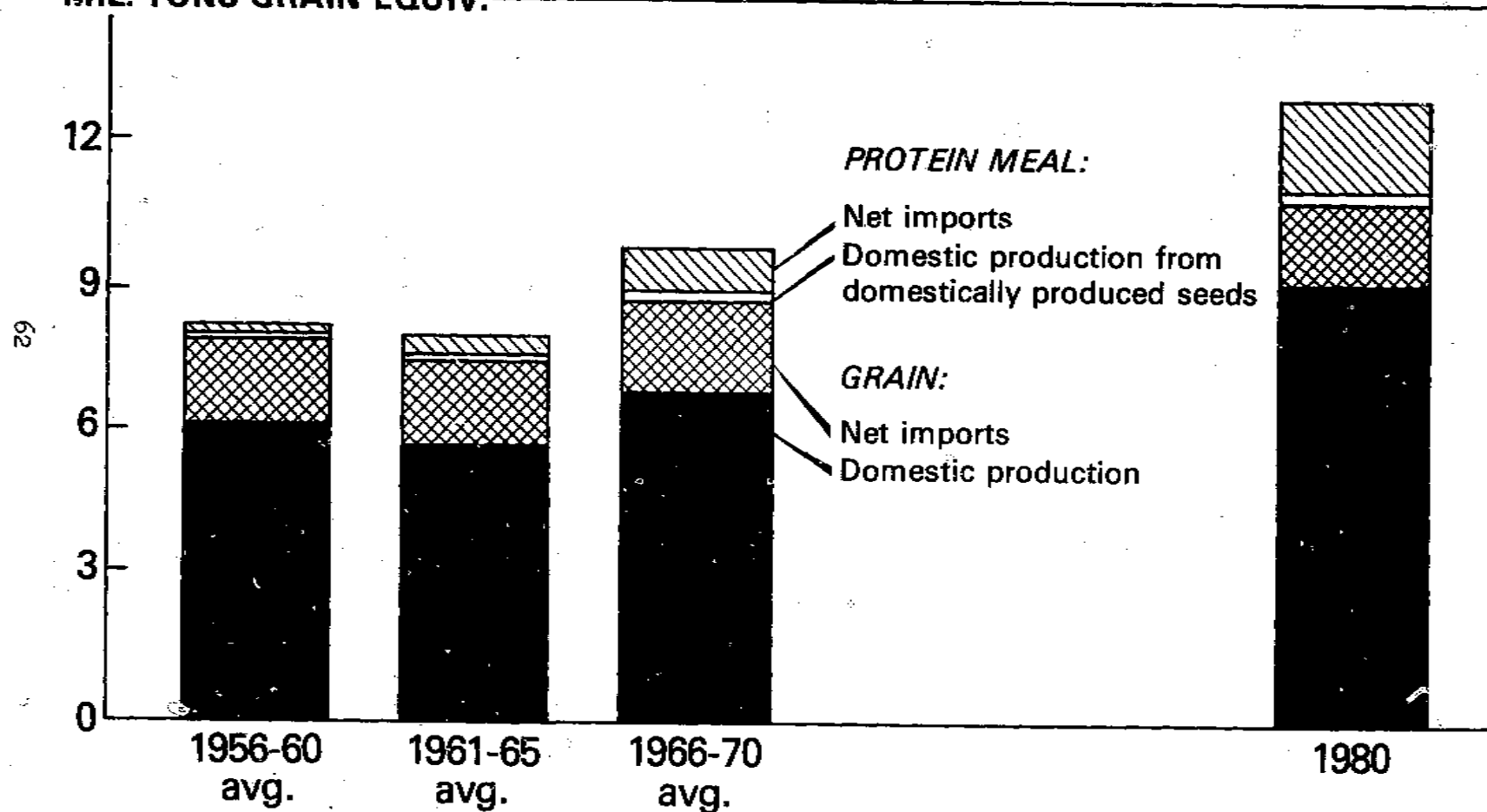
NEG. ERS 2001 - 75 (8)

Chart 2

GRAIN AND PROTEIN MEAL IN EAST GERMANY

PRODUCTION AND NET IMPORTS, PROJECTIONS FOR 1980

MIL. TONS GRAIN EQUIV.



USDA

NEG. ERS 2000 - 75 (8)

Chart 3

LITERATURE CITED

1. Allen, George C.; Hodges, Earl F.; and Margaret Devers
National and State Livestock-Feed Relationships, U.S. Dept. Agr. Econ. Res.
Serv., Supplement for 1972 to Stat. Bul. No. 446, Wash., D.C. 1972.
2. Bauern Echo
(Daily). East Berlin. Selected issues.
3. Bauernverband, Berlin
Nachrichten ueber die Landwirtschaft in der DDR, West Berlin/ad hoc report
8/20/71.
4. Bundesministerium fur Ernaehrung, Landwirtschaft und Forsten
Statistisches Jahrbuch ueber Ernaehrung, Landwirtschaft und Forsten--various
annual issues--Verlag Paul Parey. Hamburg und Berlin. 1963-71.
5. Cesarz, Wilhelm
Areas of Agricultural Investment Emphasis Enumerated, Presse-Informationen.
East Berlin. Apr. 25, 1972.
6. Die Wirtschaft
(Weekly). East Berlin. 12/5/73.
7. DIW Wochenbericht
1973 State Budget Plan Analyzed. East Berlin. 2/1/73.
8. East Berlin Domestic Television Service
Soelle, Others Discuss GDR Trade Policy. East Berlin. Jan. 23, 1971.
9. Food and Agricultural Organization of the United Nations
Agricultural Commodity Projections, 1970-80. Vols. I and II, Rome. 1971.
10. Production Yearbook. Rome. Selected years.
11. State of Food and Agriculture. Rome. 1972.
12. Trade Yearbook. Rome. Selected years.
13. Fornacon, G., and H. Schuetze
Mechanization of Agriculture: Some 1966-70 Data, Prospects, Deutsche
Agrartechnik (Monthly). East Berlin. Apr. 1972.
14. Gesetzblatt der Deutschen Demokratischen Republik
Law on 1971-75 Five-Year Plan of 20 December 1971. East Berlin. Dec. 24, 1971.
15. Grueneberg, Gerhard
The Tasks Arising from the Further Intensification of Agricultural Production
Methods in Agriculture and Problems Connected with the Development of Coopera-
tive Relations. A lecture, Dietz Verlag. East Berlin. 1972.
16. Horst, James R.
Compound Feeds in the United Kingdom. U.S. Dept. Agr. Econ. Res. Serv.,
ERS-For. 324. Wash., D.C. 1972.

17. Huebner, B. and W. Roennebeck
Performance, Costs of Agrochemical Center Processes Detailed, Agrartechnik
(Monthly). East Berlin. Feb. 1973.
18. Immler, Hans
Agrarpolitik in der DDR. Verlag Wissenschaft und Politik, Berend von Nottbeck.
Koln. 1971.
19. Koriath, H.; Specht, G.; Goerlitz, H.; Beer, K.; and H. Ansorge
Efficient Use of All Fertilizers for 1971-1975 Crop Production Urged,
Feldwirtschaft (Monthly). East Berlin. Sept. 1971.
20. Lindner, Gottfried
Protection, Economical Use of Land Emphasized, Presse-Informationen. East
Berlin. Apr. 28, 1972.
21. Machowski, Heinrich; Bethkenhagen, Jochen; and Maria Lodahl
Economic Development in CEMA Countries during 1971-1975 Plan Period, DIW
Vierteljahrsheft (Quarterly). West Berlin. Jan. 1973.
22. Neue Deutsche Bauernzeitung
(Weekly). East Berlin. Selected issues.
23. Neues Deutschland
(Daily). East Berlin. Selected issues.
24. Organization for Economic Cooperation and Development
Agricultural Projections for 1975 and 1985. Paris. 1967.
25. Trade by Commodities. Paris. Selected years.
26. Regier, Donald W.
Growth in Demand for Feed Grains in the EEC, U.S. Dept. Agr. Econ. Res. Serv.,
ERS-For. 158. Wash., D.C. 1967.
27. Roehnsch, H. G.
Development of GDR Mixed Feed Production Outlined, Monatshefte fuer
Veterinaermedizin (Monthly). Jena, East Germany. Oct. 15, 1972.
28. Rosenkranz, O.
Handbuch des Genossenschafts Bauern. Deutscher Bauernverlag. East Berlin.
1959.
29. Staatlichen Zentralverwaltung fuer Statistik
Statistisches Jahrbuch. East Berlin. 1958-72. Selected years.
30. Urban, Francis S.; Collins, H. Christine; Horst, James R.; and Thomas A. Vankai
The Feed-Livestock Economy of Eastern Europe: Prospects to 1980, U.S. Dept.
Agr. Econ. Res. Serv., For. Agr. Econ. Rpt. No. 90, Wash., D.C. 1973.
31. U.S. Bureau of Census, Foreign Demographic Analysis Division
Estimates and Projections of the Population of the Communist Countries,
1950-1970. Wash., D.C. Apr. 1971.
32. U.S. Department of Agriculture, Economic Research Service
Foreign Agricultural Trade of the United States. Various issues.

33. U.S. Department of Commerce, Bureau of East-West Trade
Selected U.S.S.R. and East European Economic Data. Wash., D.C. June 1973.
34. Witt, H. and A. Schowtka
Status, 1971-75 Development of Grain Variety Assortment Detailed,
Feldwirtschaft (Monthly). East Berlin. Nov. 1971.

Note: Foreign journal articles with titles shown in English have appeared in English translation in various issues of Translations in Eastern Europe, published by the Joint Publications Research Service, U.S. Department of Commerce.

END
FILMED

DATE

2-7-84

NTIS