

PRODUCTION AND EXPORT PATTERNS FOR
HARD RED SPRING WHEAT, 1970-1985*

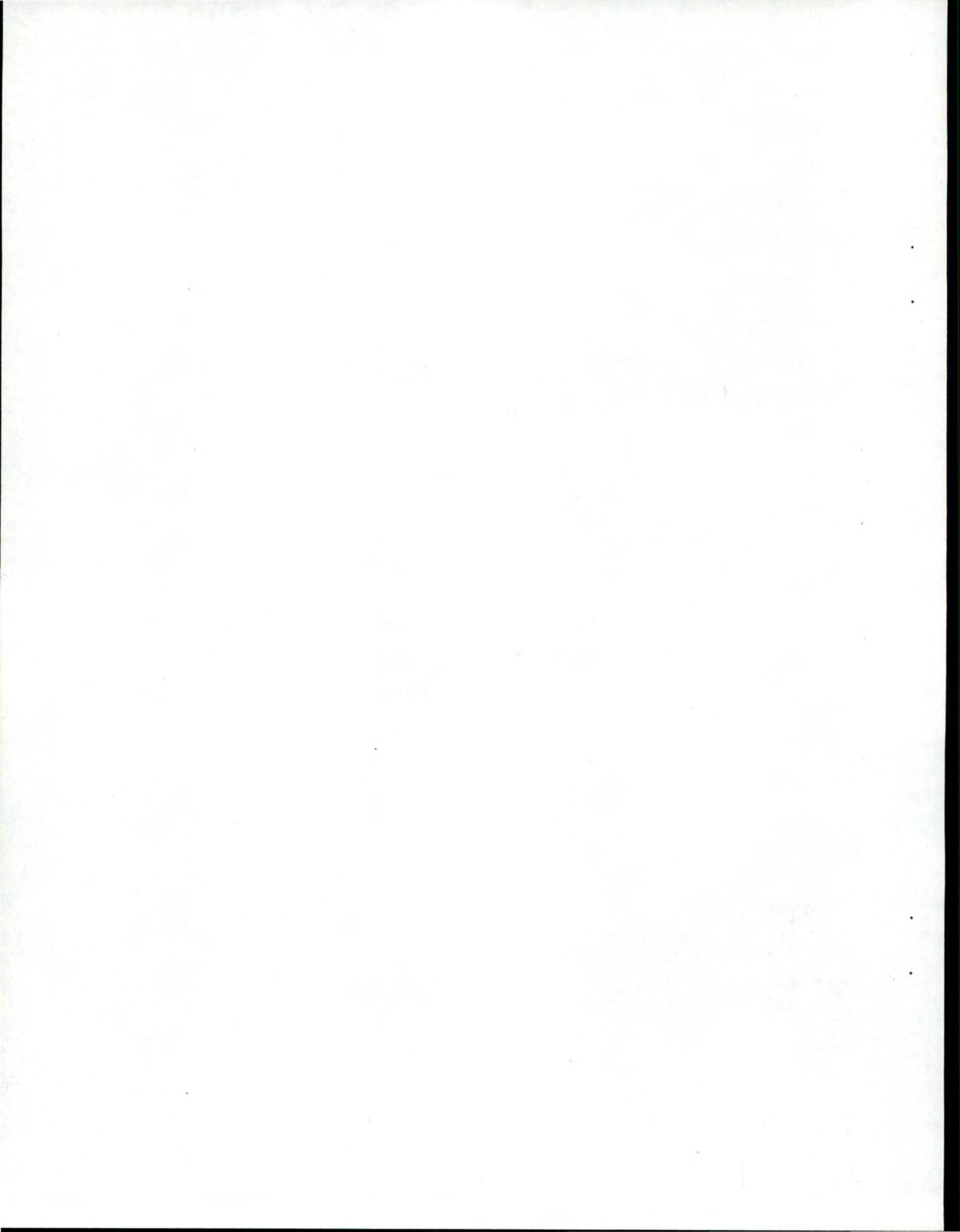
by
Larry D. Makus**
Associate Professor

A. E. Research Series #255

January 1987

* Research Reported in this paper was supported by the Idaho Agricultural Experiment Station under Project R-814 and the Oklahoma Agricultural Experiment Station under Project H-1762.

** Larry D. Makus is an Associate Professor in the Department of Agricultural Economics at the University of Idaho.



PRODUCTION AND EXPORT PATTERNS FOR
HARD RED SPRING WHEAT, 1970-1985

Highlights

The recent drop in U.S. wheat exports and related price impacts illustrate the importance of international markets to domestic wheat producing and marketing firms. Several factors indicate U.S. wheat exports will continue to face substantial competition from other major wheat exporting countries. Thus, additional effort is needed to assess forces responsible for reductions in shipments to traditional U.S. wheat markets, and to identify export markets with potential for future growth. This study represents an initial step to begin this assessment process by analyzing historic export flows for U.S. hard red spring (HRS) wheat from 1970 to 1985. The 15 year study period is further divided into three 5-year periods. Export shipment data by wheat class and country of destination from Grain and Feed Market News are used in the analysis. This paper is one in a series of publications analyzing export shipments for the five major classes of wheat exported from the United States.

Hard red spring wheat is an important part of U.S. wheat exports, accounting for just over 15 percent of the total during the 1970 to 1985 time period. During the analyzed time period, the rate of increase for HRS wheat export shipments was 8.3 percent annually. All wheat increased an average of 8.5 percent per year. Accordingly, the share of total U.S. wheat exports associated with HRS wheat consistently declined during the study period.

Japan was the major destination country for U.S. HRS wheat export shipments during the entire period. Japan accounted for about 17 percent

of total export shipments. Other major destination countries included the Netherlands, Venezuela, and the Philippines. These four countries received just over one-half of total U.S. HRS wheat export shipments from 1970 to 1985. Asia was the dominant destination region for U.S. HRS wheat export shipments throughout the study period. Asia accounted for almost one-half of total shipments, while Europe and Latin America each accounted for about one-fourth. Asia's export share trended upward, Europe's share trended downward, and Latin America's share varied with no definite trend. However, two regions in Latin America (Central America and the Caribbean) had large increases in receipts and consistently increased their export share.

Receiving countries were also classified according to economic/political status and categorized as developed, less developed, or centrally planned. Countries classified as less developed accounted for just over 50 percent of total U.S. HRS wheat export shipments during the 1970 to 1985 period. Export share for less developed countries increased steadily throughout the study period. Developed countries accounted for about 45 percent of total shipments, but their export share declined consistently. Centrally planned countries received about 5 percent of total shipments. However, their share declined from about 10 percent in the early 1970's to less than one percent in the early 1980's.

The importance of less developed countries as receivers of U.S. HRS wheat export shipments was clearly established from the analysis. Growth markets have been countries in the less developed category, and are located in Asia and Latin America. Efforts to increase exports of U.S.

HRS wheat may need to focus on these less developed countries if other economic forces have not reduced the potential for growth. The developed category (primarily the EC-10 countries) declined in relative importance, but variation existed between individual countries. Some EC-10 countries reduced receipts of U.S. HRS wheat substantially, while other countries within the EC-10 actually increased shipments. Such results suggest potential may exist for increasing shipments to the EC-10. Efforts should focus on identifying forces behind major reductions in receipts to countries within the EC-10.

CONTENTS

Highlights	i
Introduction	1
Source of Data	8
Results	8
Export Shipments by Major Class	8
Geographic Distribution of HRS Wheat Export Shipments	11
Economic and Political Grouping of HRS Wheat Export Shipments	18
Summary	21
References	27
Appendix	28

PRODUCTION AND EXPORT PATTERNS FOR
HARD RED SPRING WHEAT, 1970-1985

Introduction

Rapid increases in U.S. wheat exports during the 1970's placed the wheat industry in a position of relying on exports as an important source of market demand. The recent decline in U.S. wheat exports and the corresponding impact on domestic wheat prices illustrate the importance of the world market to U.S. wheat producing and marketing sectors. An analysis of changes in world trade flow patterns for food grain was recently conducted by Mackie, Hiemstra, and Rosen. Their analysis focused on examining changes in world trade flow patterns for wheat, wheat flour, and rice to provide basic data necessary to identify market potential for U.S. food grain exports. Mackie, Hiemstra, and Rosen provide excellent data on major wheat importers and illustrate aggregate changes in world trade flow patterns.

In addition to identifying major importers and potential growth areas, a need exists to examine existing flow patterns specifically for U.S. wheat exports. Since increased emphasis is being placed on distinguishing wheat by class, analyzing export patterns by class seems appropriate. The traditional importance of hard red spring (HRS) wheat to the Northern Plains states and its increasing importance to the Pacific Northwest suggests HRS wheat is an appropriate class for analysis.

Hard red spring wheat is one of the major classes of wheat produced in the United States. Other major classes include hard red winter (HRW), soft red winter (SRW), white, and durum. Hard red spring wheat production in the U.S. varies substantially on an annual basis (Table 1). However,

Table 1. Production of Wheat by Major Class in Million of Bushels and Percent of Total Production in Each Class, United States, 1970-1985

Crop Year	Major Classes of Wheat					All Wheat
	Hard Red Spring	Hard Red Winter	Soft Red Winter	White	Durum	
	million bushels (percent of total)					
1970	197.8 (14.6)	755.1 (55.9)	174.2 (12.9)	171.7 (12.7)	52.8 (3.9)	1,351.6 (100.0)
1971	366.4 (22.6)	747.8 (46.2)	211.9 (13.1)	200.7 (12.4)	91.8 (5.7)	1,618.6 (100.0)
1972	275.9 (17.8)	761.7 (49.3)	226.4 (14.6)	209.3 (13.6)	72.9 (4.7)	1,546.2 (100.0)
1973	328.2 (19.2)	961.2 (56.2)	161.4 (9.4)	181.5 (10.6)	78.5 (4.6)	1,710.8 (100.0)
1974	293.1 (16.4)	882.6 (49.5)	272.7 (15.3)	252.3 (14.2)	81.2 (4.6)	1,781.9 (100.0)
1975	327.3 (15.4)	1,054.8 (49.6)	330.9 (15.5)	290.5 (13.7)	123.4 (5.8)	2,126.9 (100.0)
1976	411.9 (19.2)	977.4 (45.5)	337.4 (15.7)	287.2 (13.4)	134.9 (6.3)	2,148.8 (100.0)
1977	399.0 (19.5)	996.4 (48.7)	349.1 (17.1)	221.0 (10.8)	80.0 (3.9)	2,045.4 (100.0)
1978	379.7 (21.4)	829.9 (46.8)	188.9 (10.6)	243.7 (13.7)	133.3 (7.5)	1,775.5 (100.0)
1979	368.8 (17.3)	1,091.6 (51.1)	309.6 (14.5)	257.4 (12.1)	106.7 (5.0)	2,134.1 (100.0)
1980	311.4 (13.1)	1,181.3 (49.6)	441.8 (18.6)	338.0 (14.2)	108.4 (4.5)	2,380.9 (100.0)
1981	463.7 (16.7)	1,112.1 (39.9)	678.0 (24.3)	348.6 (12.5)	183.0 (6.6)	2,785.3 (100.0)
1982	492.7 (17.8)	1,243.6 (45.0)	588.9 (21.3)	294.0 (10.6)	145.8 (5.3)	2,765.0 (100.0)
1983	322.7 (13.3)	1,197.9 (49.5)	504.2 (20.9)	322.0 (13.3)	73.0 (3.0)	2,419.8 (100.0)
1984	408.8 (15.7)	1,250.6 (48.2)	531.4 (20.5)	301.0 (11.6)	103.4 (4.0)	2,595.2 (100.0)
1985	460.3 (19.0)	1,230.1 (50.7)	368.0 (15.2)	253.9 (10.5)	112.5 (4.6)	2,424.8 (100.0)

Source: U.S. Department of Agriculture, Wheat Outlook and Situation Yearbook, Washington, D.C., Economic Research Service, WS-274, February 1986.

total production of HRS wheat has trended upward at about the same rate as total U.S. wheat production since 1970. Thus, the relative importance of HRS wheat production remained fairly constant. Since 1970, HRS wheat production as a percent of total U.S. wheat production varied from a low of 13.1 percent in the 1980 crop year to a high of 22.6 percent in 1971. Hard red spring wheat production in the U.S. was 460.3 million bushels in 1985 compared with 197.8 million bushels in 1970. The highest level of HRS wheat production occurred in 1982, when 492.7 million bushels were produced in the U.S. (Table 1).

The Northern Plains region produces most of the HRS wheat in the United States. North Dakota, South Dakota, Minnesota, and Montana are the major producing states. Hard red spring accounts for about three-fourths of total wheat acreage in California, but California is not a major wheat producing state. Hard red spring wheat is also produced in several western states and Texas (Figure 1).

Between 1970 and 1985, annual domestic usage of all wheat ranged from a low of 672 million bushels in the 1974/75 marketing year to a high of 1,154 million bushels in 1984/85 (Table 2). Domestic usage represented from 56.9 to 30.4 percent of annual production for all classes of wheat. During the 1970 to 1985 period, annual domestic usage of HRS wheat varied from a low of 118 million bushels (1970) to a high of 209 million bushels (1973). Domestic usage of HRS wheat as a percent of total HRS wheat production varied from a low of 36.6 percent to a high of 65.9 percent. Hard red spring wheat represented from 14.8 to 27.7 percent of total annual domestic wheat usage during the analyzed time period (Table 2).

Hard Red Spring Wheat—1979

14,883,388 Acres Seeded

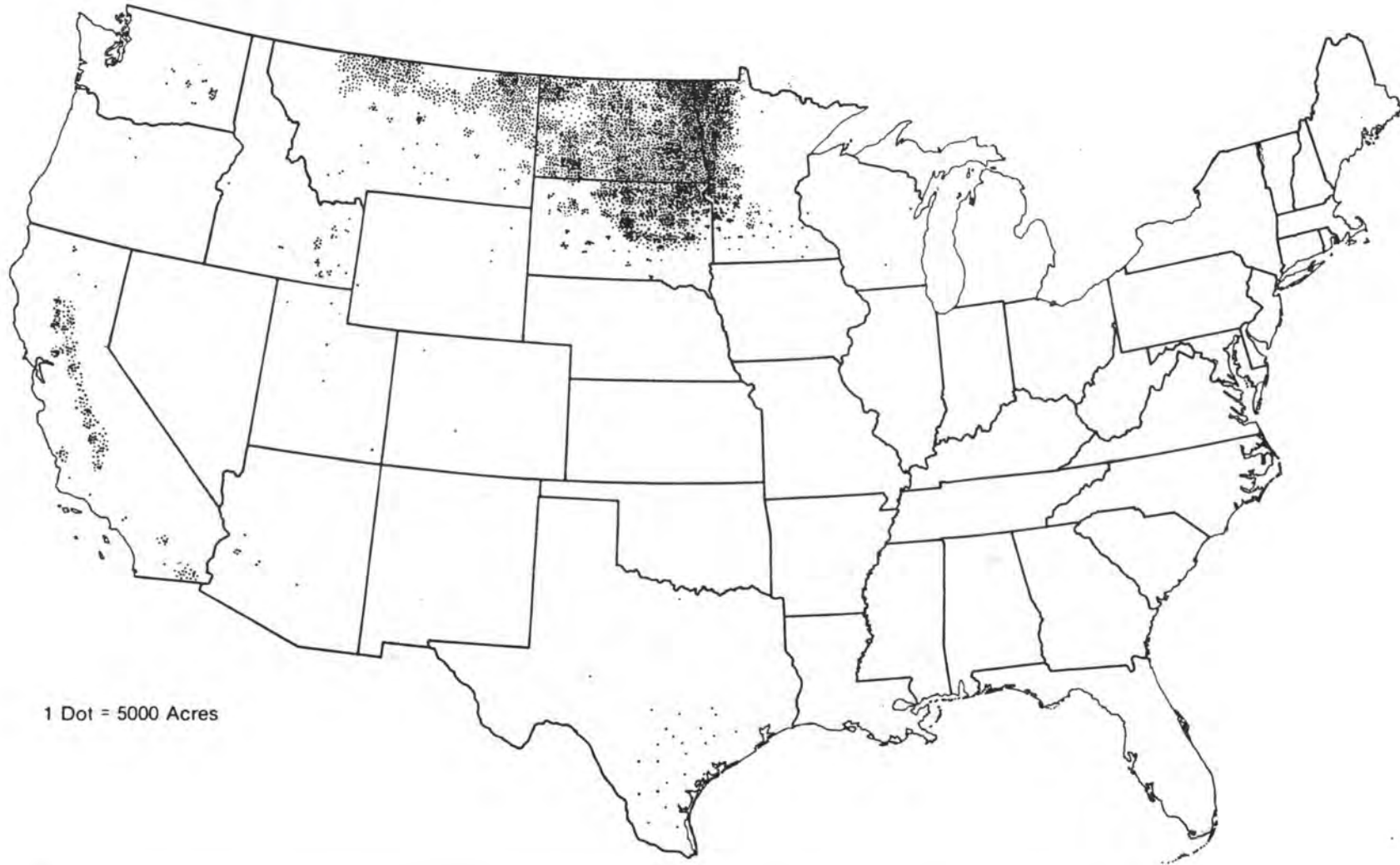


Figure 1. Location of Production for Hard Red Spring Wheat in the United States.

Source: Briggie, L.E. et al.

Table 2. Domestic Usage for Hard Red Spring Wheat and All Classes of Wheat, Marketing Years 70/71 through 84/85.

Marketing Year	DOMESTIC USAGE				
	All Classes of Wheat		Hard Red Spring Wheat		
	Million Bushels	% of Total Wheat Prod. (All Classes)	Million Bushels	% of Total HRS Wheat Production	% of Total Domestic Use (All Classes)
1970/71	769	56.9	118	59.6	15.3
1971/72	856	52.9	134	36.6	15.6
1972/73	799	51.7	182	65.9	22.8
1973/74	754	44.1	209	63.7	27.7
1974/75 ^a	672	38.7	148	50.5	22.0
1975/76	725	34.1	156	47.7	21.5
1976/77	754	35.1	155	37.6	20.6
1977/78	859	42.0	159	39.8	18.5
1978/79	837	47.2	163	42.9	19.5
1979/80	783	36.7	188	50.9	24.0
1980/81	783	32.9	153	49.0	19.5
1981/82	847	30.4	171	36.8	20.2
1982/83	908	32.8	195	39.6	21.5
1983/84	1,111	45.9	197	61.0	17.7
1984/85	1,154	44.4	171	41.8	14.8

^aMarketing year beginning 1 July until 1974 and 1 June thereafter. Thus, the 74/75 marketing year includes only 11 months (1 July 74 - 31 May 75).

Source: U.S. Department of Agriculture, Wheat Outlook and Situation Yearbook, Washington, D.C., Economic Research Service, WS-274, February 1986.

Flour milling is the primary component in domestic usage of HRS wheat. Since HRS wheat is typically higher in protein content than other classes of wheat, it produces a flour higher in gluten. Hard red spring wheat is generally milled and blended with other wheat flours (generally hard red winter) to produce a flour used in baking bread or other highly leavened bakery products (Heid).

Significant amounts of wheat are fed to livestock in the United States, depending on the price of wheat relative to feed grains. Since 1970, feed usage of wheat varied from a low of 34.9 million bushels in the 1974/75 marketing year to a high of 411 million bushels in 1984/85. Feed usage currently represents about one-third of total domestic wheat usage (U.S. Department of Agriculture, 1986). The soft classes of wheat (soft red winter and white wheats) are more typically used in livestock feed, since soft wheats are generally priced below hard wheats (Heid).

Between 1970 and 1985, exports of HRS wheat (including exports in the form of flour) ranged from a low of 104 million bushels in the 1971/72 marketing year to a high of 245 million bushels in 1973/74. Exports represented from 28.4 to 74.7 percent of annual HRS wheat production from 1970 to 1985 (Table 3). Exports of wheat from all classes ranged from 632 million bushels in 1971/72 to 1,771 million bushels in 1981/82. Hard red spring wheat's percentage of total wheat exports varied from 11.6 to 20.1 percent during the 1970 to 1985 time period (Table 3).

To more closely analyze export patterns for HRS wheat in the United States, the specific objectives of this paper are to; 1) examine historic export flow patterns for U.S. HRS wheat from 1970 to 1985, 2) identify countries and regions which appear to be potential growth areas, and 3) identify the importance of developed versus less developed and centrally

Table 3. Exports of Hard Red Spring Wheat and All Classes of Wheat, Marketing Years 1970/71 through 1984/85.

Marketing Year	EXPORTS				
	All Classes of Wheat		Hard Red Spring Wheat		
	Million Bushels	% of Total Wheat Prod. (All Classes)	Million Bushels	% of Total HRS Wheat Production	% of Total Wheat Exports (All Classes)
1970/71	738	54.6	113	57.1	15.3
1971/72	632	39.0	104	28.4	16.5
1972/73	1,135	73.4	187	67.8	16.5
1973/74	1,217	71.1	245	74.7	20.1
1974/75 ^a	1,018	57.1	130	44.4	12.8
1975/76	1,173	55.1	160	48.9	13.6
1976/77	950	44.2	124	30.1	13.0
1977/78	1,124	54.9	156	39.1	13.9
1978/79	1,194	67.3	232	61.1	19.4
1979/80	1,375	64.4	217	58.8	15.8
1980/81	1,514	63.6	188	60.3	12.4
1981/82	1,771	63.6	205	44.2	11.6
1982/83	1,509	54.6	239	48.6	15.8
1983/84	1,429	59.0	221	68.4	15.5
1984/85	1,424	54.9	183	44.7	12.8

^a Marketing year beginning 1 July until 1974 and 1 June thereafter. Thus, the 74/75 marketing year includes only 11 months (1 July 74 - 31 May 75).

Source: U.S. Department of Agriculture, Wheat Outlook and Situation Yearbook, Washington, D.C., Economic Research Service, WS-274, February 1986.

planned countries as importers of U.S. HRS wheat. This paper is one in a series of publications looking at production and export patterns for U.S. wheat by major class (Makus and Abdulrazak; Makus, 1986a, 1986b, 1987).

Source of Data

The Agricultural Marketing Services (AMS) of the U.S. Department of Agriculture reports federally inspected shipments for export by major class of wheat. These inspections for export are identified by country of destination and published periodically in Grain and Feed Market News. Data for HRS wheat export shipments were obtained for 15 marketing years (1970/71 through 1984/85) by country of destination. These data are summarized into three five-year periods to complete the analysis (Period 1 = 1970/71 to 1974/75; Period 2 = 1975/76 to 1979/80; Period 3 = 1980/81 to 1984/85).

Since data used in this analysis reflect shipments inspected for export during designated periods, they do not correspond directly with data based on export sales. Discrepancies occur when export shipments take place in a marketing year different from the time of sale and when shipments are redirected to an alternative location after leaving the U.S. port. These discrepancies are typically minor and should not substantially alter observed trade flow patterns.

Results

Export Shipments by Major Class

To identify HRS wheat export patterns relative to other classes, export shipments for major wheat classes and mixed wheat are summarized in Table 4. This summary also identifies relative share of export shipments

Table 4. Analysis of Wheat Export Shipments from the U.S. by Major Class of Wheat for Designated Periods.

Wheat Class	Period 1 ^a			Period 2 ^a			Period 3 ^a			All Periods ^a		
	Average Annual Exports Mil. Bu.	Share of Exports (%)	Annual ^b Growth Rate (%)	Average Annual Exports Mil. Bu.	Share of Exports (%)	Annual ^b Growth Rate (%)	Average Annual Exports Mil. Bu.	Share of Exports (%)	Annual ^b Growth Rate (%)	Average Annual Exports Mil. Bu.	Share of Exports (%)	Annual ^b Growth Rate (%)
Hard Red Spring	148.776	16.9	11.5	169.824	15.5	15.5	197.060	13.6	-2.1	171.887	15.1	8.3
Hard Red Winter	493.733	56.2	16.9	532.123	48.6	11.6	657.197	45.3	0.2	561.018	49.1	9.5
Soft Red Winter	55.556	6.3	121.9	148.000	13.5	8.8	303.549	20.9	23.8	169.035	14.8	51.5
White	131.091	14.9	18.8	182.241	16.6	1.2	228.974	15.8	3.5	180.770	15.8	7.8
Durum	46.603	5.3	8.2	58.798	5.4	14.5	58.594	4.0	-1.4	54.665	4.8	7.1
Mixed	3.097	0.4	143.8	4.696	0.4	453.2	5.812	0.4	-8.9	4.535	0.4	196.1
All Wheat	878.856	100.0	15.1	1,095.682	100.0	8.5	1,451.186	100.0	1.9	1,141.910	100.0	8.5

^aPeriod 1 = marketing years 70/71-74/75. Period 2 = marketing years 75/76-79/80. Period 3 = marketing years 80/81-84/85. All Periods includes marketing years 70/71-84/85. Marketing year beginning 1 July until 1974 and 1 June thereafter. Thus, the 74/75 marketing year includes only 11 months (1 July 74 - 31 May 75).

^bThe annual growth rate for each period is determined by calculating the annual rates of increase (or decrease) for each year and averaging these rates over the entire period. The growth rate for Period 1 does not include an observation for the 70/71 marketing year, since export shipments for 69/70 were not used in the analysis. The average growth rate was negative even though the average shipment levels increased for HRS wheat. This was due to increasing growth in the earlier period and rapid decline late in the current period.

Source: U.S. Department of Agriculture, Grain and Feed Market News, Washington, D.C.: Agricultural Marketing Service, various issues 1971-1985.

(export share) and average annual growth rates for each class during designated periods.

The average annual growth rate for HRS wheat export shipments varied between time periods. Export shipments increased an average of 11.5 percent per year during Period 1, increased 15.5 percent per year during Period 2, and decreased an average of 2.1 percent annually during Period 3. The average annual growth rate during the entire period (1970-1985) was 8.3 percent, just below the 8.5 percent annual rate of increase in export shipments for all wheat (Table 4).

Hard red spring wheat accounted for 15.1 percent of total U.S. wheat export shipments during the entire time period. The export share of HRS wheat decreased steadily, beginning with 16.9 percent in Period 1 and dropping to 13.6 percent in Period 3. Hard red spring wheat ranked second in the level of export shipment for major classes of wheat in Period 1, third in Period 2, and ranked fourth during Period 3. The only class of wheat exhibiting a consistent increase in export share was soft red winter (SRW). The export share of SRW wheat increased steadily from 6.3 percent in Period 1 to 20.9 percent in Period 3.

In general, export shipments of HRS wheat accounted for a consistently declining share of U.S. wheat export shipments. Total export shipments of HRS wheat increased during the period, but at a rate below the rate for all wheat. Both HRW and SRW wheats experienced growth rates above the rate for all classes of wheat for the period analyzed (mixed wheat is ignored due to its large variability and minor contribution to total wheat exports). Hard red winter (the other major class of hard wheat) experienced a growth rate in export shipments slightly above the rate for all wheat during the analyzed time period. Even though HRW wheat remains

in a dominant position relative to total U.S. wheat export shipments, its export share also exhibited a declining trend. Additionally, the annual growth rate in HRW wheat export shipments declined between time periods (Table 4). Hard wheats still dominate U.S. wheat export shipments, but the rapid growth in SRW wheat shipments increased the relative importance of soft wheats.

Geographic Distribution of HRS Wheat Export Shipments

Export shipments of HRS wheat are summarized by destination in Table 5. Marketing years 1970/71 through 1984/85 are included and divided into the three equal time periods. This summary is used to indicate major geographic markets and identify changes occurring over time. Destinations for export shipments of U.S. HRS wheat are divided into five major geographic regions and 15 subregions. A single country may be defined as a subregion in some cases. Countries within each subregion are listed in the Appendix. Average annual export shipments of HRS wheat (in millions of bushels) to the five top countries within each subregion are included where applicable.

Japan was the largest destination country for U.S. HRS wheat over the entire period analyzed. Hard red spring wheat export shipments to Japan averaged 28.491 million bushels annually over the 15-year period. Growth in export shipments of HRS wheat to Japan was steady. During Period 1, shipments averaged 23.944 million bushels per year, increasing steadily to 27.046 million in Period 2 and 34.485 million bushels annually during Period 3.

The Netherlands was the major destination country in Periods 1 and 2, with average annual shipments of 25.487 and 27.187 million bushels,

Table 5. Hard Red Spring Wheat Export Shipments From the United States to Alternative World Geographic Regions, Annual Average for Designated Periods.

REGION ^a Subregion Major Countries	Period 1 ^b Annual Avg. Mil. Bu.	Period 2 ^b Annual Avg. Mil. Bu.	Period 3 ^b Annual Avg. Mil. Bu.	All Periods ^b Annual Avg. Mil. Bu.
LATIN AMERICA	35.031	34.854	48.600	39.495
South America				
Venezuela	14.924	18.372	21.118	18.138
Peru	3.417	0	0	1.139
Ecuador	3.286	0.023	0.033	1.114
Chile	0	0.020	2.405	0.809
Guyana	0.408	0.142	0.031	0.194
Other S. America	1.025	0.084	0.807	0.638
TOTAL	23.060	18.641	24.394	22.032
Central America				
El Salvador	1.711	2.692	2.830	2.411
Costa Rica	1.548	1.616	2.535	1.900
Guatemala	0.966	1.568	2.403	1.645
Panama	1.194	1.428	1.736	1.453
Honduras	0.567	0.522	1.204	0.764
Other Cen. America	0.964	1.099	0.109	0.724
TOTAL	6.950	8.925	10.817	8.897
Caribbean				
Dominican Republic	2.015	3.121	4.432	3.189
Haiti	0.447	1.610	3.307	1.788
Jamaica	1.376	0.916	1.403	1.232
Trinidad	0.619	0.767	1.855	1.080
Lee- and Windward Is.	0.048	0.175	0.793	0.339
Other Caribbean	0.198	0.600	1.405	0.734
TOTAL	4.703	7.189	13.195	8.362
Mexico	0.318	0.099	0.194	0.204
EUROPE	44.390	49.039	47.577	47.002
European Community (EC-10)				
Netherlands	25.487	27.187	21.636	24.770
Italy	2.133	7.059	13.384	7.525
United Kingdom	6.692	4.175	4.330	5.066
Belgium	3.829	2.357	3.162	3.116
West Germany	2.828	4.970	1.242	3.013
Other EC-10	0.048	0.623	0.911	0.527
TOTAL	41.017	46.371	44.665	44.017
Western Europe (non-EC-10)				
Norway	1.456	0.558	0.331	0.782
Finland	0.073	0.594	1.282	0.650
Malta	0.267	0.764	0.673	0.568
Spain	0.328	0.271	0.386	0.328
Portugal	0.656	0.262	0	0.306
Other Western Europe	0.166	0	0.085	0.067
TOTAL	2.896	2.449	2.757	2.701
Eastern Europe				
Yugoslavia	0.338	0	0	0.113
Romania	0	0.024	0.122	0.049
East Germany	0	0.074	0.033	0.036
Poland	0	0.041	0	0.013
Other Eastern Europe	0	0	0	0
TOTAL	0.338	0.139	0.155	0.211
Soviet Union				
TOTAL	0.139	0.080	0	0.073
AFRICA	6.129	7.676	8.103	7.302
Africa, Sub-Saharan				
Nigeria	2.094	3.441	5.418	3.651
Ghana	1.579	1.227	0.548	1.118
Sierra Leone	0.781	0.334	0.019	0.378
Togo	0	0.125	0.716	0.280
Zaire	0.039	0	0.668	0.236
Other Sub-Sah. Africa	0.255	0.772	0.272	0.433
TOTAL	4.748	5.899	7.641	6.096

Table 5. (continued)

REGION ^a Subregion Major Countries	Period 1 ^b Annual Avg. Mil. Bu.	Period 2 ^b Annual Avg. Mil. Bu.	Period 3 ^b Annual Avg. Mil. Bu.	All Periods ^b Annual Avg. Mil. Bu.
AFRICA, continued				
North Africa				
Algeria	0.497	0.575	0.461	0.511
Moroco	0.595	0.456	0	0.350
Egypt	0.101	0.746	0	0.282
Tunisia	0.188	0	0	0.063
Other North Africa	0	0	0	0
TOTAL	1.381	1.777	0.461	1.206
ASIA	63.088	78.255	92.386	77.910
East and Southeast Asia (excluding Japan)				
Philippines	9.370	16.620	21.977	15.989
Indonesia	2.637	8.714	9.592	6.981
China, Taiwan	4.417	5.961	7.259	5.879
South Korea	4.968	3.366	6.700	5.012
China, Mainland	5.851	3.302	0.906	3.353
Other E. & S.E. Asia	4.580	6.247	6.831	5.866
TOTAL	31.823	44.210	53.265	43.100
Japan				
TOTAL	23.944	27.046	34.485	28.491
Middle East				
Saudi Arabia	0.073	3.256	3.197	2.175
Iraq	0.758	2.240	0	0.999
Israel	0.208	0	0.555	0.254
Cyprus	0.229	0.101	0.119	0.150
Turkey	0.173	0.082	0	0.085
Other Middle East	0.273	0.027	0.193	0.165
TOTAL	1.714	5.706	4.064	3.828
South Asia				
Bangladesh	2.727	0.128	0	0.952
Pakistan	0.870	1.125	0.139	0.711
India	2.010	0.040	0.081	0.711
Sri Lanka	0	0	0.330	0.110
Nepal	0	0	0.022	0.007
Other South Asia	0	0	0	0
TOTAL	5.607	1.293	0.572	2.491
OCEANIA				
Other Pacific Islands	0	0	0.143	0.048
Okinawa	0.137	0	0	0.046
Other Oceania	0	0	0	0
TOTAL	0.137	0	0.143	0.094
DESTINATION UNKNOWN	0	0	0.251	0.084
ALL DESTINATIONS	148.775	169.824	197.060	171.887

^aAll countries associated with each geographic region are listed in the Appendix.

^bPeriod 1 = marketing years 70/71-74/75. Period 2 = marketing years 75/76-79/80. Period 3 = marketing years 80/81-84/85. All Periods includes marketing years 70/71-84/85. Marketing year beginning 1 July until 1974 and 1 June thereafter. Thus, the 74/75 marketing year includes only 11 months (1 July 74 - 31 May 75).

Source: U.S. Department of Agriculture, Grain and Feed Market News, Washington, D.C.: Agricultural Marketing Service, various issues 1971-1985.

respectively. Since the Netherlands is a major European transshipment point, the ultimate destination for shipments to the Netherlands cannot be determined. Shipments of U.S. HRS wheat to the Netherlands dropped substantially to 21.636 million bushels in Period 3, and Japan became the largest receiver for Period 3 and for "All Periods" (Table 5).

Other important destination countries included Venezuela, Philippines, Italy, and Indonesia. Each of these countries averaged over 7.0 million bushels per year of U.S. HRS wheat for the entire time period. Export shipments of HRS wheat to all of the major destination countries mentioned can generally be characterized as increasing consistently between time periods. The exception to this general rule is the Netherlands, which experienced a substantial decline from Period 2 to Period 3.

Asia was the most important geographic region in terms of total shipments for the entire time period, averaging 77.910 million bushels per year. Asia's dominant position was consistent during each separate time period. Annual shipments of U.S. HRS wheat to Asia averaged 63.088 million bushels in Period 1, and increased steadily to 92.386 million in Period 3. Almost all of the Asian shipments went to east and southeast Asian countries, including Japan.

The European region was also a major receiver of U.S. HRS wheat during the fifteen year period analyzed. Annual shipments of HRS wheat to Europe increased from 44.390 million bushels in Period 1 to 49.039 in Period 2, and then declined to 47.577 in Period 3. Even though all subregions of Europe received some U.S. HRS wheat, the EC-10 countries consistently accounted for 90 to 95 percent of total shipments to the European region.

Latin America was another important receiving region, averaging over

39.495 million bushels per year. During Period 3, shipments to Latin America were slightly larger than shipments to Europe. Latin American shipments decreased slightly from Period 1 to Period 2, but then grew rapidly from Period 2 to Period 3. The South American subregion dominated shipments to Latin America. However, all of the subregions in Latin America except Mexico were important receivers of U.S. HRS export shipments. Additionally, the Central American and Caribbean subregions had steady and fairly rapid increases in export shipments between time periods.

The African region experienced a slight increase in receipts of U.S. HRS wheat export shipments, going from 6.129 million bushels per year in Period 1 to 8.103 million in Period 3. Most of the African shipments were associated with the Sub-Saharan subregion, and Nigeria was responsible for most of the growth. The North African subregion was a declining market for U.S. HRS wheat export shipments.

Percentage shares of total U.S. HRS wheat export shipments to the five major regions and 15 subregions are presented in Table 6. Asia accounted for 45.3 percent of total U.S. HRS wheat shipments from 1970 to 1985. Asia's export share increased steadily between the three time periods, going from 42.4 percent in Period 1 to 46.9 percent in Period 3. Japan accounted for almost 37 percent of total Asian shipments, with other countries in the East and Southeast Asian subregion accounting for the bulk of remaining Asian-destined shipments.

The European region ranked second in total share of U.S. HRS wheat export shipments for the 1970 to 1985 period. However, Europe's export share declined steadily between periods. Beginning with 29.8 percent in Period 1, Europe's export share dropped slightly to 28.9 percent in Period 2, and then declined substantially to 24.2 percent in Period 3. During

Table 6. Hard Red Spring Wheat Export Shipments From the United States to World Regions and Subregions as a Percentage of Total Shipments During Designated Periods.

REGION ^a	Percent of Total Hard Red Spring Export Shipments				
	Subregion	Period 1 ^b	Period 2 ^b	Period 3 ^b	All Periods ^b
LATIN AMERICA		23.6	20.5	24.6	23.0
South America		15.5	11.0	12.4	12.8
Central America		4.7	5.2	5.5	5.2
Caribbean		3.2	4.2	6.6	4.9
Mexico		0.2	0.1	0.1	0.1
EUROPE		29.8	28.9	24.2	27.4
Eur. Community (EC-10)		27.6	27.3	22.7	25.6
W. Europe (non-EC-10)		1.9	1.4	1.4	1.6
Eastern Europe		0.2	0.1	0.1	0.1
Soviet Union		0.1	0.1	0.0	0.1
AFRICA		4.1	4.5	4.1	4.2
Africa, Sub-Sahara		3.2	3.5	3.9	3.5
North Africa		0.9	1.0	0.2	0.7
ASIA		42.4	46.1	46.9	45.3
East & Southeast Asia (excl. Japan)		21.4	26.0	27.0	25.1
Japan		16.1	15.9	17.5	16.6
Middle East		1.1	3.4	2.1	2.2
South Asia		3.8	0.8	0.3	1.4
Oceania		0.1	0.0	0.1	0.1
Destination Unknown		0.0	0.0	0.1	0.0

^aAll countries associated with each geographic region are listed in the Appendix.

^bPeriod 1 = marketing years 70/71-74/75. Period 2 = marketing years 75/76-79/80. Period 3 = marketing years 80/81-84/85. All Periods includes marketing years 70/71-84/85. Marketing year beginning 1 July until 1974 and 1 June thereafter. Thus, the 74/75 marketing year includes only 11 months (1 July 74 - 31 May 75).

Source: U.S. Department of Agriculture, Grain and Feed Market News, Washington, D.C.: Agricultural Marketing Service, various issues 1971-1985.

Period 3, the European export share was below the share associated with Latin America. The EC-10 was the only important subregion in the European region.

Latin America accounted for 23.0 percent of total U.S. HRS wheat export shipments for the entire time period. Latin America's export share was variable, dropping from 23.6 to 20.5 percent from Period 1 to Period 2, and then increasing to 24.6 percent for Period 3. South America was the most important subregion, typically accounting for almost one-half of total shipments to Latin America. However, South America was also responsible for most of the variation in export share for Latin America. The remaining two important subregions in Latin America (Central America and the Caribbean) had a steady increase in their export share between time periods. The Caribbean subregion experienced the most rapid growth in export share of U.S. HRS wheat, and more than doubled its share from Period 1 to Period 3.

Africa had 4.2 percent of total U.S. HRS export shipments from 1970 to 1985. The export share associated with Africa was variable, increasing from 4.1 to 4.5 percent from Period 1 to Period 2, and then dropping back to 4.1 percent from Period 3. The North African subregion was responsible for the decrease in export share for Africa. Sub-Saharan Africa had a steadily increasing export share and accounted for the bulk of shipments to Africa.

Two significant geographic shifts occurred in the pattern of export shipments for U.S. HRS wheat. First was a consistent decline in the relative importance of the European region. This shift involved a decrease in export share from Period 1 to Period 2, and then a decrease in absolute quantity from Period 2 to Period 3. This consistent decrease in

export share for the European region resulted from a reduction in shipments to the EC-10 countries. The second major shift was a steady increase in the relative importance of the Asian region. This increase reflected absolute growth in HRS wheat export shipments to all major receiving countries in east and southeast Asia (including Japan). The greatest level of growth was associated with the Philippines.

In an aggregate sense, the overall pattern of U.S. HRS wheat export shipments did not change drastically. Asia remained as the major destination region and increased its relative importance. The European region (primarily the EC-10 countries) continued as an important destination, but its export share declined steadily. Latin America's export share was somewhat variable between periods, but did reflect a slight growth trend. This trend is especially noticeable in the Central American and Caribbean subregions. Africa's export share was fairly constant throughout the time period.

Economic and Political Grouping of HRS Wheat Export Shipments

Export shipments of U.S. HRS wheat are summarized by grouping each receiving country according to whether it is categorized as a less developed country, centrally planned country, or developed country (see Appendix A). Results are presented in Table 7 for each of the three periods and for the entire 15-year time period.

Export shipments to countries in the less developed category consistently increased throughout the time period analyzed. Additionally, export share for less developed countries also grew steadily. During Period 1, less developed countries accounted for 49.0 percent of total U.S. HRS wheat export shipments (Table 7). Their share increased to 53.1

Table 7. Hard Red Spring Wheat Export Shipments From the United States to Economic and Political Regions, Annual Average in Millions of Bushels and as a Percentage of Total Shipments During Designated Periods.

Economic and Political Regions ^a	Average Annual Export Shipments			
	Period 1 ^b	Period 2 ^b	Period 3 ^b	All Periods ^b
	Million bushels (percent)			
Less Developed Countries	72.956 (49.0)	90.187 (53.1)	113.497 (57.6)	92.213 (53.7)
Centrally Planned Countries	7.705 (5.2)	3.770 (2.2)	1.061 (0.5)	4.179 (2.4)
Developed Countries	68.115 (45.8)	75.867 (44.7)	82.502 (41.9)	75.495 (43.9)
All Countries	148.776 (100.0)	169.824 (100.0)	197.060 (100.0)	171.887 (100.0)

^aCountries associated with each geographic region are listed in the Appendix.

^bPeriod 1 = marketing years 70/71-74/75. Period 2 = marketing years 75/76-79/80. Period 3 = marketing years 80/81-84/85. All Periods includes marketing years 70/71-84/85. Marketing year beginning 1 July until 1974 and 1 June thereafter. Thus, the 74/75 marketing year includes only 11 months (1 July 74 - 31 May 75).

Source: U.S. Department of Agriculture, Grain and Feed Market News, Washington, D.C.: Agricultural Marketing Service, various issues 1971-1985.

percent in Period 2, and then increased to 57.6 percent in Period 3. Over the entire time period, countries in the less developed category received an average of 92.213 million bushels of U.S. HRS wheat. Less developed countries accounted for 53.7 percent of total shipments. Major receivers in the less developed country category were in the Asian and Latin American regions.

Hard red spring wheat export shipments to centrally planned countries declined between each time period. The export share associated with centrally planned countries declined from 5.2 percent in Period 1 to 0.5 percent in Period 2. Centrally planned countries received an average of 4.179 million bushels of U.S. HRS wheat annually, accounting for 2.4 percent of total U.S. export shipments from 1970 to 1985. Mainland China was the only major receiving country in the centrally planned category.

The average level of annual shipments to countries classified as developed increased about 7 million bushels between each time period. However, their export share declined steadily from 45.8 percent in Period 1 to 41.9 percent in Period 3. Export shipments to developed countries averaged 75.495 million bushels annually and accounted for 43.9 percent of total U.S. HRS wheat shipments during the 1970-1985 period. Japan and the EC-10 countries were the major receivers categorized as developed. Japan accounted for almost 50 percent of the developed country receipts and the EC-10 countries as a group accounted for the remainder.

Analyzing export shipments by grouping destinations according to economic and political status provides additional focus on the importance of developing countries. Developing countries currently account for almost 60 percent of total U.S. export shipments of HRS wheat, and their relative importance is trending upward. Export shipments to developed

countries remain as a significant share of total HRS wheat exports from the United States. However, most of the countries falling in the developed category appear to be slow growth markets. As a result, the growth in export shipments to developed countries is below the level of growth in total shipments, and their export share is declining over time. Centrally planned countries are not an important market for U.S. HRS wheat, and the level of exports to centrally planned countries is declining over time.

Summary

Hard red spring wheat is a major class of wheat produced in the U.S. and an important cash crop for the Northern Plains region of the United States. Additionally, HRS wheat is produced in several states within the western and mountain regions. Production of HRS wheat increased at about the same rate as total U.S. wheat production. Hard red spring currently accounts for about 19 percent of total U.S. wheat production and about 15 percent of total domestic wheat consumption.

Rapid growth of wheat exports during the 1970's established export demand as a major component of market demand for U.S. wheat, including hard red spring. Recent declines in export levels for wheat suggest a need to further explore existing markets and identify potential growth markets for U.S. wheat exports. Since the major classes of wheat are generally viewed as having different uses, analyzing export patterns for each class is valuable to initially assess market potential for wheat exports.

This paper specifically examines historic export shipments for hard red spring wheat by country of destination for 15 marketing years (1970/71

to 1984/85). This time period is further divided into three five-year time periods (Period 1 = 1970/71 to 1974/75; Period 2 = 1975/76 to 1979/80; Period 3 = 1980/81 to 1984/85). Destination countries are initially grouped into five major geographic regions and 15 subregions. Additionally, countries are categorized as less developed, centrally planned, or developed. Export shipments for each destination category are summarized to assess absolute changes in U.S. HRS wheat flows. Additional analysis is conducted to compare the relative importance of alternative country groupings as receivers of U.S. HRS wheat export shipments.

Hard red spring wheat continues to be an important part of U.S. wheat export shipments, accounting for just over 15 percent of total shipments during the 1970 to 1985 time period. Export shipments of HRS wheat increased at a rate slightly below the rate of increase for total U.S. wheat exports. The average annual rate of growth for HRS wheat export shipments from 1970 to 1985 was 8.3 percent compared with 8.5 percent for all wheat. Thus, the share of total wheat export shipments associated with HRS wheat decreased from 16.9 percent in the early 1970's to 13.6 percent in the early 1980's. Two other major wheat classes (SRW and HRW) had average annual growth rates above the growth rate for HRS wheat, and two classes (durum and white) were below. However, these relative growth rates varied substantially between periods, especially for SRW wheat.

During the most current period analyzed (1980 to 1985), hard red spring wheat ranked fourth in export shipments among major classes of wheat exported from the United States. Hard red spring wheat ranked second in the earliest period analyzed (1970 to 1975). The two classes of hard wheat (HRW and HRS) still dominate U.S. wheat export shipments, but both types have declined in importance relative to the soft wheat classes.

Japan was the major destination country for HRS wheat export shipments over the entire period. However, the Netherlands was the major receiving country during Periods 1 and 2. Asia was consistently the largest geographic region receiving U.S. HRS wheat export shipments. In addition to Japan, important receiving countries in the Asian region included the Philippines, Indonesia, Taiwan, South Korea, and Mainland China. Other major destination countries outside of the Asian region were the Netherlands, Venezuela, and Italy. All of these countries averaged over 7 million bushels in annual receipts of U.S. HRS wheat over the 15-year period analyzed.

Countries categorized as less developed accounted for just over one-half of HRS wheat export shipments from 1970 to 1985. Export shipments to less developed countries increased steadily throughout the time period. During the most recent time period (Period 3), developing countries accounted for 57.6 percent of total shipments. The most important countries falling in the less developed category were located in Asia and Latin America.

The export share associated with developed countries declined from 45.8 percent in the early 1970's (Period 1) to 41.9 percent in the early 1980's (Period 3). All of the major destinations countries in the developed category except Japan were located in the EC-10 subregion of Europe.

The centrally planned countries (primarily Mainland China) accounted for 5.2 percent of total shipments during Period 1. The level of exports to centrally planned countries consistently declined. During the most recent time period (1980 to 1985), centrally planned countries accounted for less than one percent of total U.S. HRS wheat export shipments.

Some important considerations are identified from the analysis. First, the Asian region is increasing in relative importance as a destination for U.S. HRS wheat. Even though Japan and the Philippines are the primary destination countries in Asia, several additional countries within east and southeast Asia are important destinations. Many of these Asian countries fell into the developing country category and had a rapid increase in receipts of U.S. HRS wheat export shipments. Both of these factors suggest potential exists for the Asian region to continue as a growth market for U.S. HRS wheat.

Another important characteristic of U.S. HRS wheat exports involves the decline in export shipments to the EC-10 countries. A slight decrease in export share occurred between Periods 1 and 2, and then the absolute level of shipments declined substantially between Periods 2 and 3. The Netherlands was the primary receiving country for the EC-10 subregion, and consistently accounted for about 60 percent of shipments during Periods 1 and 2. The Netherlands was also the primary source of the decrease in shipments to the EC-10 during Period 3. Since the Netherlands is a major European transshipment point, patterns associated with the Netherlands likely reflects behavior of other European countries. No consistent pattern existed for shipments to the other major receivers in the EC-10 subregion. Some increased shipments substantially (Italy, for example), while export shipments to others decreased or remained essentially unchanged.

The pattern of U.S. HRS wheat export shipments to Latin America is another characteristic of interest. South America was consistently the primary subregion in Latin America, and experienced declining export shipments between Periods 1 and 2. South American shipments recovered

during Period 3, and moved back up to a level slightly above Period 1. However, Venezuela was the primary receiving country in South America and shipments to Venezuela consistently increased between time periods. The smaller receivers in South America were responsible for the decline in HRS wheat export shipments. Additionally, two other important Latin American subregions (Central America and the Caribbean) accounted for an increasing share of shipments. Both subregions reflected a steady and rapid increase in annual export shipments. The Caribbean, for example, experienced almost a threefold increase (from 4.703 to 13.195 million bushels) in the level of average annual export shipments from Period 1 to Period 3. Much of this growth reflected increases in shipments to several of the developing countries within the Caribbean region.

In general, countries in the less developed category accounted for a major share of U.S. HRS wheat export shipments. The relative importance (measured by export share) of countries falling into this category increased rapidly. The important less developed receiving countries are located in Latin America and Asia, and may offer potential for future growth. Market development programs for HRS may need to focus on the less developed countries, and specifically target east/southeast Asia and Latin America.

The developed country category is still important for HRS wheat exports, but its role is declining. This is especially true of the Netherlands, where a major reduction in receipts occurred in the early 1980's. Due to its role as a major transshipment point, changes in shipments to the Netherlands also reflect actions by other European countries. During the same time period, U.S. HRS wheat export shipments

to Italy almost doubled. Thus, it would appear that some potential exists to reestablish export shipments to the EC-10. However, additional effort is needed to determine the cause of the decline in export shipments to several EC-10 countries.

References

- Heid, Walter G. U.S. Wheat Industry. Washington, D.C.: U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service, Agricultural Economic Report No. 432, August 1979.
- Mackie, Arthur B., Stephen W. Heimstra and Stacey L. Rosen. World Food Grain Trade, 1962-83. Washington, D.C.: U.S. Department of Agriculture, Economic Research Service, Statistical Bulletin Number 734, October 1985.
- Briggle, L.W., et al. Distribution of the Varieties and Classes of Wheat in the United States in 1979. Washington, D.C.: U.S. Department of Agriculture, Agricultural Research Service, Statistical Bulletin Number 676, February 1982.
- Makus, Larry and Nashwan Abdulrazak. Production and Export Patterns for Hard Red Winter Wheat, 1970-1985. Oklahoma State University, Department of Agricultural Economics Paper AE-85158, December 1985.
- Makus, Larry D. Production and Export Patterns for White Wheat, 1970-1985. Oklahoma State University, Department of Agricultural Economics Paper AE-8643, May 1986a.
- Makus, Larry D. Production and Export Patterns for Soft Red Winter Wheat, 1970-1985. Oklahoma State University, Department of Agricultural Economics Paper AE-8651, June 1986b.
- Makus, Larry D. Production and Export Patterns for Durum Wheat, 1970-1985. University of Idaho, Agricultural Economics Research Series AE-256, 1987.
- U.S. Department of Agriculture. Grain and Feed Market News. Washington, D.C.: Agricultural Marketing Service, various issues 1971-1985.
- U.S. Department of Agriculture. Wheat Outlook and Situation Yearbook. Washington, D.C.: Economic Research Service, WS-274, February 1986.

APPENDIX

Regional Groupings
Economic and Political Groupings

REGIONAL GROUPINGS

The world (excluding North America which does not import U.S. wheat) is divided into five major regions and 15 subregions. The countries included in each region and subregion are as follows:

A. Latin America

1. South America Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Falkland Islands, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, and Venezuela
2. Mexico
3. Caribbean Antigua, Bahamas, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherland-Antilles, St. Kitts, St. Lucia, St. Vincent, Trinidad and Tobago, and Turks and Caicos Islands
4. Central America Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama (including Canal Zone)

B. Europe

5. Soviet Union USSR, Estonia, Latvia, Lithuania
6. European Community (EC-10) Belgium-Luxembourg, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Netherlands, and United Kingdom
7. Eastern Europe Albania, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania, and Yugoslavia
8. Western Europe (non EC-10) Andorra, Austria, Faeroe Islands, Finland, Gibraltar, Greenland, Iceland, Malta, Norway, Portugal, Spain, Sweden, and Switzerland

C. Africa

9. Sub-Sahara Africa Angola, Benin, Botswana, British Indian Ocean Territory, Burkina-Faso (Upper Volta), Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Djibouti, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malwai, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Reunion, Republic of South Africa, Rwanda, Sao Tome, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Uganda, Zaire, Zambia, and Zimbabwe

- | | |
|--|--|
| 10. North Africa | Algeria, Libya, Morocco, Spanish North Africa, Western Sahara, Tunisia, and Egypt |
|
 | |
| D. Asia | |
| 11. E. & S.E. Asia
(excluding Japan
and Philippines) | Brunei, Burma, China, Democratic Republic of Campuchea, Democratic Republic of Korea, East Timor, Hong Kong, Indonesia, Laos, Macao, Malaysia, Mongolia, Republic of Korea, Singapore, Taiwan, Thailand, and Vietnam |
| 12. Japan | |
| 13. Philippines | |
| 14. Middle East | Bahrain, Cyprus, Gaza Strip, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Democratic Republic of Yemen, Syria, United Arab Emirates, Turkey, and Arab Republic of Yemen |
| 15. South Asia | Afghanistan, Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, Pakistan, and Sikkim |
|
 | |
| E. Oceania | Australia, American Samoa, British Antarctic Territory, Solomon Islands, Christmas Island, Cocos Islands, Cook Islands, Fiji, French Polynesia, French Antarctic Territory, Kiribati, Guam, Johnston Island, Midway Islands, Nauru, New Caledonia, New Zealand, Papua New Guinea, Niue, Norfolk Island, Pacific Islands, Ryukyu Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wake Island, Wallis Tutuna, and West Samoa |

ECONOMIC AND POLITICAL GROUPINGS

- | | |
|----------------------|--|
| A. Developed | Australia, Israel, Japan, New Zealand, Republic of South Africa, and all countries in subregions 6 and 8 |
| B. Centrally Planned | Mainland China, USSR, Cuba, Mongolia, Vietnam, North Korea, and all countries in subregion 7 |
| C. Less Developed | All countries not included in A or B |