Grain Flows in Kentucky 1982 & 1983

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GRAIN FLOWS IN KENTUCKY: 1982 AND 1983

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GRAIN FLOWS IN KENTUCKY: 1982 AND 1983

Throughout the 1970s and early 1980s, Kentucky's grain industry has continually become more commercial. Grain storage capacity (both on-farm and off-farm) and the volume of Kentucky-produced grain flowing through commercial channels have continued to expand due to production increases and decreased on-farm use of grain. However, the expansion of Kentucky's grain sector has slowed tremendously since 1982 in terms of grain production (Kentucky Crop Reporting Service) and number of grain handling firms (Kentucky Feed Grain Association).

One objective of the regional research project S-176, "Marketing Systems for Grains and Soybeans," is to identify and analyze structural characteristics and market flows of grain marketing firms in a ten state region (Alabama, Arkansas, Delaware, Georgia, Illinois, Kentucky, Louisiana, Mississippi, Ohio, and Tennessee). The first step in this project is to ascertain grain flow origins and destinations for each state. This paper meets this objective for Kentucky.

Monitoring changes taking place in Kentucky's grain marketing sector cannot be accomplished by analyzing secondary data. The United States Department of Agriculture does not collect statistics on grain receipts and shipments between firms at any level in the marketing system. The Market News Service reports ranges of elevator bid prices each day for various marketing areas in Kentucky, but one does not know the volume of grain handled at those prices. Obviously, little can be said about grain market structure without knowing about grain flows between marketing levels.

This report examines grain movements in Kentucky, sources and destinations of grain, modes of transportation, and types of firms handling the grain. The results were obtained from a survey of Kentucky grain handling firms which was conducted in 1984 for operations in calendar years 1982 and 1983.

The state has been broken into three regions for the purposes of this study. Figure 1 shows these areas of the state with county detail. Area 18 includes Kentucky Crop Reporting Districts (CRDs) 1 and 2, the state's primary cash grain area. Area 19 includes CRDs 3, 4, and 5, where most of the state's beef enterprises are located, but also has substantial numbers of cash grain farmers. Area 20 is CRD 6, which includes the foothills and mountains of Eastern Kentucky.

Grain Production and Use

Tables 1 through 3 show production and use of whole grain (plus malted barley) in Kentucky for the years relevant to the grain flows reported. Because the grain flows are reported by calendar year, production in the previous calendar year is the major determinant of grain flow levels (i.e., production in 1981 helps determine grain flows in calendar year 1982).

Use estimates are for whole grain (plus malted barley) used in livestock feed, human food, distilled spirits, and soybeans for crushing. These estimates are based on a combination of survey results and feed use estimates of livestock inventories for various classes of livestock. Use estimates do not include corn grits used by breweries or other processed inputs. The largest single use for grain is livestock feed, with corn being the principal feed grain. Soybean

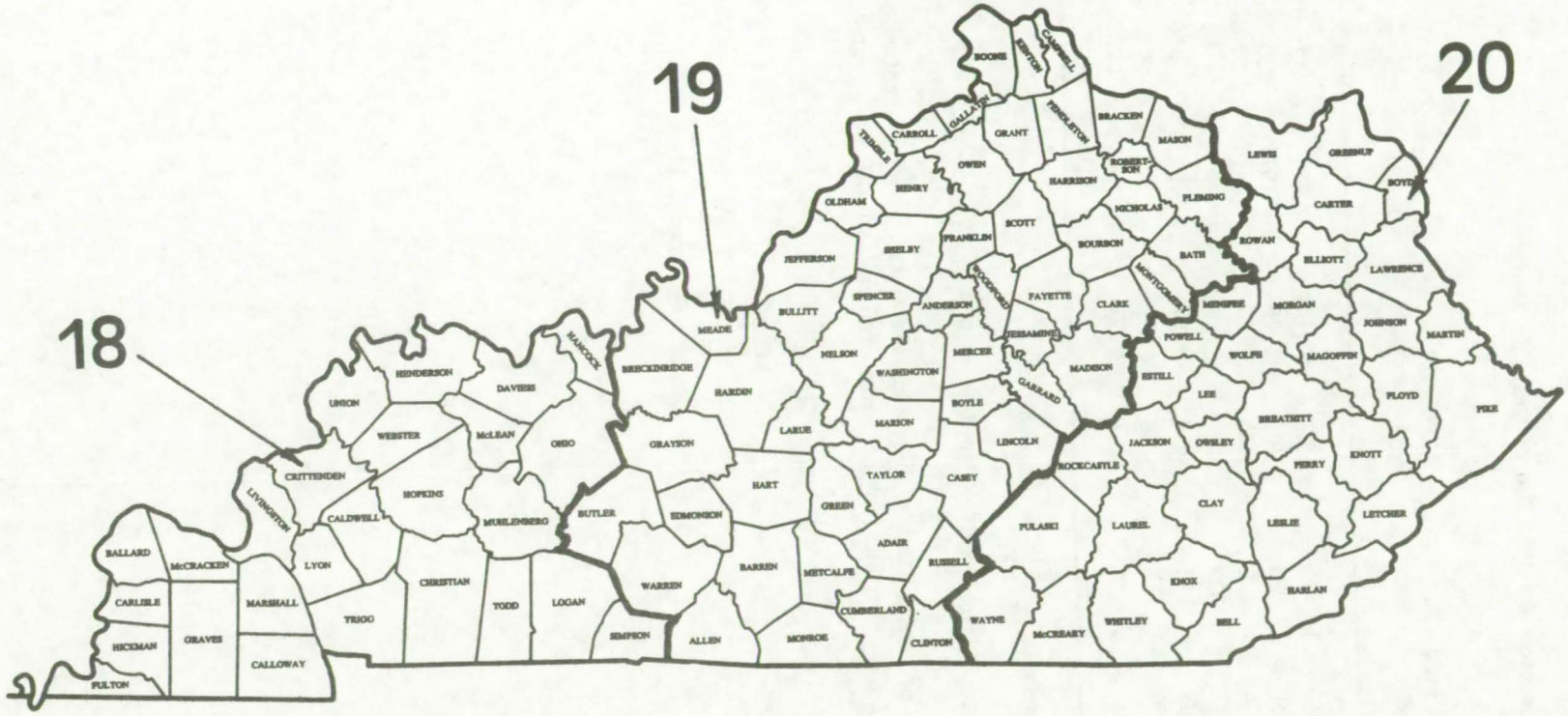

Fig. 1. S-176 Areas of Kentucky. (Numbers are market areas used in S-176 study).

Table 1. 1981 Production and 1982 Use of Grain in Kentucky[a]

Grain	Area 18		Area 19		Area 20		State	
	Prod	Use	Prod	Use	Prod	Use	Prod	Use
Corn	75,950	13,418	65,379	57,141	7,671	6,451	149,000	77,010
Wheat	22,950	2,980	5,413	2,253	197	230	28,560	5,463
Soybeans	39,574	b	7,745	--	531	--	47,850	b
Sorghum	2,177	332	73	524	--	61	2,250	917
Barley	1,583	162	418	2,142	15	29	2,016	2,333
Oats	226	11	60	369	2	15	288	395
Rye	64	--	17	2,586	1	--	81	2,586

[a]Data are in 1,000 bushels

[b]Not reported to avoid disclosure of individual firm operations.

Source: Production of corn, wheat, soybeans, sorghum, barley (Kentucky Livestock and Crop Reporting Service). Production of oats and rye (U.S.D.A.), with estimates by area proportional to barley.

Table 2. 1982 Production and 1983 Use of Grain in Kentucky[a]

Grain	Area 18		Area 19		Area 20		State	
	Prod	Use	Prod	Use	Prod	Use	Prod	Use
Corn	84,359	13,466	62,249	57,707	6,861	6,802	153,469	77,975
Wheat	18,694	2,820	4,728	2,110	144	217	23,566	5,463
Soybeans	42,113	b	8,607	--	626	--	51,346	b
Sorghum	2,552	294	108	489	--	57	2,660	840
Barley	1,117	145	264	1,973	28	27	1,409	2,145
Oats	244	11	58	380	6	10	308	401
Rye	44	--	10	2,412	1	--	56	2,412

[a]Data are in 1,000 bushels

[b]Not reported to avoid disclosure of individual firm operations.

Source: Production of corn, wheat, soybeans, sorghum, barley (Kentucky Livestock and Crop Reporting Service). Production of oats and rye (U.S.D.A.), with estimates by area proportional to barley.

Table 3. Production of Grain in Kentucky, 1983[a]

Grain	Area 18	Area 19	Area 20	State
Corn	28,918	13,729	3,433	46,080
Wheat	12,162	3,848	110	16,120
Soybeans	20,519	3,598	363	24,480
Sorghum	1,841	86	--	1,927
Barley	673	135	16	825
Oats	252	50	6	308
Rye	68	14	1	84

[a]Data are in 1,000 bushels

Source: Production of corn, wheat, soybeans, sorghum, barley (Kentucky Livestock and Crop Reporting Service). Production of oats and rye (U.S.D.A.), with estimates by area proportional to barley.

use only reflects use of raw soybeans, not use of soybean oil and soybean meal.

Areas 18 and 19 are net surplus in corn and wheat for 1982 and 1983. All areas of the state have increased production of corn and wheat relative to use from 1977, the date of the last survey of grain handling firms. In 1977, area 19 was net deficit for wheat and area 20 was net deficit for corn (Reed et al.). Production of corn, wheat, soybeans, sorghum, and barley, the major grain crops in the state, increased by 12.6, 181.7, 16.9, 23.3, and 75.0 percent, respectively, between 1977 and 1981.

Production of all crops in 1983 decreased substantially because of the Payment-in-Kind (PIK) program of the Federal government and the drought in the summer of 1983. Substantially reduced production is the major reason that grain flows were so small in 1983 relative to 1982. For crops harvested in the fall, only three to four months of the marketing year of the 1983 crop were in calendar year 1983. However, most of the movement to and from grain handling firms occurs in this three to four month span (Reed et al.).

The Survey

Kentucky grain handling firms were surveyed through personal interviews in 1984 concerning their operations in calendar years 1982 and 1983. Information was collected on corn, wheat, soybeans, sorghum, barley, oats, and rye.

Only firms that either receive or ship raw grain were interviewed. Firms that deal exclusively with processed grain or grain products were not contacted. For example, feed stores which sell feed manufactured by other firms and other firms which receive no raw grain

were not surveyed.

Table 4 reports the types of firms surveyed, the estimated number of each type in the state, and the number of each type in the sample. All river elevators and soybean processors were sampled because these firms account for a large percentage of grain movements. Firms in the other groups were randomly sampled. The sample was stratified so that large grain handling firms were sampled at a higher percentage.

All subsequent results in this report are "expanded." They are estimates of the results which would have been obtained if all firms had been interviewed. The expansion factors depend on the information available for the different types of firms. For example, expansion factors for distillers are reciprocals of the sampling fractions; if one-third of the firms were sampled, the expansion factor is three. For elevators, estimates of storage capacity were available, and the expansion factors were based on that information. If the elevators interviewed in a group account for one-half of the storage capacity in the group, the expansion factor is two. Although some sampling error is inevitable in a survey of this kind, if the firms within a group are similar, and if the number of firms interviewed is reasonably large, the sampling error should be small.

Only commercial grain marketing firms were interviewed. Thus, reported grain flows reflect only grain moving through commercial channels. Grain retained on farms where it is produced, grain sold from one farmer to another, direct shipments to farmers from outside the state, and direct shipments by farmers to destinations outside the state are not included in the flow estimates.

Table 4. Types and Number of Firms Surveyed

Type of Firm[a]	State Total	Number Surveyed
Elevators		
less than 500,000 bu storage	26	9
500,000 bu storage or more	24	20
Feed Mills	103	15
Soybean Processors	1[b]	1
Distilleries	10	6
Other Processors[c]	6	6

[a]Definitions of the types of firms are given in Appendix.

[b]The soybean processing plant in Louisville was not operational in 1982 and 1983.

[c]Includes ethanol plants, flour mills, and poultry operations.

Some flows are aggregated to avoid disclosure of information on individual firm operations. Only one soybean processor crushed soybeans in the state during 1982 and 1983 (the soybean processing plant in Louisville was not operational); its flows are aggregated with those of river elevators. Also, only one distiller was interviewed in area 18 (the only one operational in the area), so its grain flows are reported under processors to avoid disclosure.

Grain Receipts From Farmers

Tables 5 and 6 report grain receipts from farms by origin for 1982 and 1983, respectively. In both years, Kentucky farms accounted for about 80 percent of total grain receipts from farms. Grain from non-Kentucky farms enters the state because many handling firms are close to the border and have access to either the Ohio, Tennessee, or Mississippi River. Reference is often made to results of the 1977 study, so the 1977 receipts by area are reported in Table 7 for comparison to 1982 and 1983.

Corn- In both years more than 90 percent of the corn handled by area 18 firms was locally produced. Substantial quantities are also brought in from Tennessee and Illinois farms. The 1983 quantities reflect the tremendous production decrease caused by the PIK program and the drought, but the 1982 figures are still well below the corn receipts from farms estimated for 1977. In 1977, more than 67 million bushels of corn were received by area 18 firms (over 65 million alone from area 18 farms). Because corn production in area 18 remained constant between 1977 and 1982, and corn use in area 18 has fallen since 1977, the obvious conclusion is that Kentucky farms transport

Table 5. Grain Receipts from Farms by Area and Origin - 1982[a]

Area	Grain	Ohio	Ind.	KY 18	KY 19	KY 20	Ill.	Tenn	Total
18	Corn	-	80	42,297	-	-	970	3,419	46,766
	Wheat	-	9	12,311	-	-	96	1,914	14,330
	Soybeans	-	45	20,902	-	-	560	2,506	24,013
	Sorghum	-	-	904	-	-	-	4	908
	Barley	-	-	457	-	-	-	173	630
19	Corn	882	6,897	2,402	10,533	-	-	-	20,714
	Wheat	170	1,219	595	1,222	-	-	-	3,206
	Soybeans	1,700	4,036	2,050	1,686	-	-	-	9,472
	Sorghum	-	-	-	300	-	-	-	300
20	Corn	772	-	-	678	905	-	-	2,355
	Wheat	-	-	-	-	193	-	-	193
	Soybeans	-	-	-	329	314	-	-	643
	Barley	-	-	-	-	16	-	-	16

[a] Data are in 1,000 bushels

Table 6. Grain Receipts from Farms by Area and Origin - 1983[a]

Area	Grain	Ohio	Ind.	KY 18	KY 19	KY 20	Ill.	Tenn	Total
18	Corn	-	38	24,268	-	-	660	1,365	26,331
	Wheat	-	5	8,716	-	-	70	1,300	10,091
	Soybeans	-	27	16,985	-	-	382	1,716	19,110
	Sorghum	-	-	1,174	-	-	3	82	1,259
	Barley	-	-	270	-	-	-	61	331
19	Corn	449	5,036	1,316	6,592	-	-	-	13,393
	Wheat	85	995	532	1,436	-	-	-	3,048
	Soybeans	850	2,300	1,150	903	-	-	-	5,203
	Sorghum	-	-	-	310	-	-	-	310
20	Corn	962	-	-	877	921	-	-	2,760
	Wheat	-	-	-	-	173	-	-	173
	Soybeans	-	-	-	270	206	-	-	476
	Barley	-	-	-	-	16	-	-	16

[a] Data are in 1,000 bushels

Table 7. Expanded 1977 Grain Receipts in Kentucky by Area by Origin[a]

Area	Grain	Local Farmers	Corn Belt					KY 18	KY 19	Tenn.	Minn. Wisc.	Grand Total
			Ill.	Ind.	Mo.	Ohio	Total					
18	Corn	65,484	331	422	66	7	826	-	-	785	-	67,095
	Wheat	9,556	-	-	-	-	-	-	-	137	-	9,693
	Barley	-	-	-	-	-	-	-	-	-	654	654
	Rye	-	-	-	-	75	75	-	-	-	315	390
	Soybeans	29,662	-	-	-	-	-	-	-	743	-	30,405
19	Corn	2,943	1,874	19,535	372	3,103	24,884	-	-	-	-	27,827
	Wheat	219	-	776	-	-	776	-	-	-	-	995
	Barley	-	-	-	-	-	-	-	-	-	3,701	3,701
	Oats	-	-	1,905	-	-	1,905	-	-	-	-	1,905
	Rye	-	-	-	-	427	427	-	-	-	1,782	2,209
	Soybeans	763	-	474	-	-	474	-	-	-	-	1,237
20	Corn	-	-	-	-	302	302	-	-	-	-	302
	Wheat	-	-	-	-	64	64	-	-	-	-	264

[a]Shipments between grain-handling firms in the same area are excluded. Data are in units of 1,000 bushels.

Source: Reed et al.

Table 8. Grain Receipts from Elevator by Area and Origin - 1982[a]

Area	Grain	Ohio	Ind.	KY 18	KY 19	KY 20	Wis.	Ill.	Tenn.	Minn.	Total
18	Corn	-	30	327	160	-	-	41	1,037	-	1,595
	Wheat	-	-	259	89	-	-	9	689	-	1,046
	Soybeans	-	-	10,532	70	-	-	-	753	-	11,355
	Sorghum	-	-	29	-	-	-	6	-	-	35
	Barley	-	-	-	-	-	326	-	-	-	326
19	Corn	48	3,872	3,786	5,648	-	-	-	-	-	13,354
	Wheat	-	381	243	93	-	-	-	-	-	717
	Soybeans	-	943	150	215	-	-	-	-	-	1,308
	Barley	-	-	-	-	-	716	-	-	1,176	1,892
	Rye	-	-	448	474	-	-	-	-	1,664	2,586
20	Corn	219	-	-	15	40	-	-	-	-	274
	Oats	5	-	-	-	-	-	-	-	-	5

[a] Data are in 1,000 bushels

Table 9. Grain Receipts from Elevator by Area and Origin - 1983.[a]

Area	Grain	Ohio	Ind.	KY 18	KY 19	KY 20	Wis	Ill	Tenn	Minn.	Total
18	Corn	-	715	638	90	-	-	275	207	-	1,925
	Wheat	-	190	306	59	-	-	16	281	-	852
	Soybeans	-	-	3,312	7,254	-	-	-	367	-	10,933
	Sorghum	-	-	28	-	-	-	6	12	-	46
19	Corn	44	3,522	2,293	5,419	-	-	-	-	-	11,278
	Wheat	-	265	171	97	-	-	-	-	-	533
	Soybeans	-	468	62	131	-	-	-	-	-	661
	Barley	-	-	-	-	-	661	-	-	1,078	1,739
	Rye	-	-	388	430	-	-	-	-	1,596	2,414
20	Corn	220	-	-	9	50	-	-	-	-	279
	Oats	5	-	-	-	-	-	-	-	-	5

[a] Data are in 1,000 bushels

elevators in 1983. The higher percentage in 1983 is attributable to PIK and the drought. The flow of soybeans for crushing and corn for distilling continued, but total receipts were down because of lower production.

Corn- Area 18 firms handled some corn from Tennessee and local elevators, but these quantities are dwarfed by receipts of corn from farms. Distillers in area 19 get most of their corn from elevators because that corn is more likely to meet their quality standards. Note that substantial quantities of corn are pulled into area 19 from Indiana and area 18 elevators, though area 19 elevators accounted for almost 50 percent of receipts in 1982 and 1983.

Wheat- Tennessee elevators shipped 689,000 and 281,000 bushels of wheat to area 18 elevators in 1982 and 1983, respectively. Some Kentucky elevators not only have better access to Gulf locations than Tennessee elevators, but also to the Tennessee River which leads to some major flour mills is Central and East Tennessee.

Soybeans- In 1982, more than 10 million bushels of soybeans were shipped between area 18 grain handling firms. Tennessee elevators shipped more than 750 thousand bushels. When the drought hit in 1983, coupled with some shipments due to the PIK program, many more soybeans came in from area 19 elevators. Most receipts from other elevators in area 19 were from Indiana in 1982 and 1983 (accounting for over 70 percent of the receipts from elevators). Area 18 and 19 elevators accounted for the rest of area 19 receipts.

Other Grains- Substantial amounts of barley and rye are received by area 19 distillers from Minnesota (and Wisconsin for malted barley). Elevators in area 18 and 19 also supply some rye to the distillers, but Kentucky-produced barley is too low in quality for distillers.

Grain Receipts by Type of Firm

Grain receipts from farms by type of firm are presented in Tables 10 and 11 for 1982 and 1983, respectively. Tables 12 and 13 present grain receipts from elevators by type of firm. River elevators and soybean processors are combined to avoid disclosure of individual firm information. Processing firms include feed mills, flour mills, and poultry operations. Distillers are included as processing firms for area 18 to avoid disclosure problems.

Receipts by type of firm in 1982 and 1983 are similar, proportionately, to receipts in 1977 for all areas. The only exception is that processing firms received much less grain, especially in area 19, in 1982 and 1983 because of reduced livestock numbers.

Area 18 - Country elevators are the leading destination for most farm grain in area 18, though more soybeans and nearly as much corn and wheat go to river elevators/soybean processors. Country elevators received 50 percent of farm shipments of corn, 49 percent of wheat, and 47 percent of the soybeans. In area 18, almost all farm shipments of sorghum and barley went to country elevators (except in 1983 when almost 40 percent of the barley went to river elevators). River elevators/soybean processors essentially received the rest of the grain delivered by farms.

Table 10. Grain Receipts From Farm by Type of Firm, 1982[a]

Area	Grain	Type of Firm[b] CE	RE/SP	PROC	DIST	Total
18	Corn	23,169	21,843	1,754	c	46,766
	Wheat	7,064	6,005	1,261	c	14,330
	Soybeans	11,310	12,703	-	-	24,013
	Sorghum	701	-	207	-	908
	Barley	572	58	-	-	630
19	Corn	4,557	10,536	3,941	1,680	20,714
	Wheat	458	2,192	556	-	3,206
	Soybeans	834	8,314	324	-	9,472
	Sorghum	-	-	300	-	300
20	Corn	731	-	1,624	-	2,355
	Wheat	60	-	133	-	193
	Soybeans	424	-	219	-	643
	Barley	-	-	16	-	16

[a]Data are in 1,000 bushels

[b]CE is country elevator; RE is river elevator; SP is soybean processor; PROC is other processors; and DIST is distillers.

[c]Receipts by distillers are grouped with other processors to avoid disclosure problems.

Table 11. Grain Receipts From Farm by Type of Firm, 1983[a]

Area	Grain	Type of Firm[b] CE	RE/SP	PROC	DIST	Total
18	Corn	12,414	12,038	1,879	c	26,331
	Wheat	4,403	4,361	1,327	c	10,091
	Soybeans	8,720	10,390	-	-	19,110
	Sorghum	720	372	167	-	1,259
	Barley	201	130	-	-	331
19	Corn	1,332	7,055	3,086	1,920	13,393
	Wheat	672	1,760	616	-	3,048
	Soybeans	283	4,600	320	-	5,203
	Sorghum	-	-	310	-	310
20	Corn	1,007	-	1,753	c	2,760
	Wheat	40	-	133	-	173
	Soybeans	330	-	146	-	476

[a]Data are in 1,000 bushels

[b]CE is country elevator; RE is river elevator; SP is soybean processor; PROC is other processors; and DIST is distillers.

[c]Receipts by distillers are grouped with other processors to avoid disclosure problems.

Table 12. Grain Receipts From Elevators by Type of Firm[a] 1982

Area	Grain	Type of Firm[b] CE	RE/SP	PROC	DIST	Total
18	Corn	-	1,428	167	c	1,595
	Wheat	156	835	55	-	1,046
	Soybeans	305	11,050	-	-	11,355
	Sorghum	13	-	22	-	35
	Barley	326	-	-	-	326
19	Corn	262	3,134	1,260	8,698	13,354
	Wheat	-	673	44	-	717
	Soybeans	4	1,304	-	-	1,307
	Barley	-	-	-	1,892	1,892
	Rye	-	500	-	2,086	2,586
20	Corn	60	-	214	-	274
	Oats	-	-	5	-	5

[a]Data are in 1,000 bushels

[b]CE is country elevator; RE is river elevator; SP is soybean processor; PROC is other processors; and DIST is distillers.

[c]Receipts by distillers are grouped with other processors to avoid disclosure problems.

Table 13. Grain Receipts From Elevators by Type of Firm[a] 1983

Area	Grain	Type of Firm[b] CE	RE/SP	PROC	DIST	Total
18	Corn	150	754	1,021	c	1,925
	Wheat	79	426	347	-	852
	Soybeans	173	10,760	-	-	10,933
	Sorghum	10	18	18	-	46
19	Corn	86	1,701	1,238	8,253	11,278
	Wheat	23	465	45	-	533
	Barley	-	-	-	1,739	1,739
	Rye	-	500	-	1,914	2,414
	Soybeans	11	650	-	-	661
20	Corn	60	-	169	-	229
	Oats	-	-	5	-	5

[a]Data are in 1,000 bushels

[b]CE is country elevator; RE is river elevator; SP is soybean processor; PROC is other processors; and DIST is distillers.

[c]Receipts by distillers are grouped with other processors to avoid disclosure problems.

River elevators/soybean processors received most of the grain from other elevators, though processing firms were relatively important in 1983 because of the reduced flow of corn due to PIK and the drought. The leading grain shipped between elevators/processors was soybeans.

Area 19- River elevators (no soybean processor was operational during 1982 and 1983) were the dominant destination for farmer deliveries in area 19. They received over 50 percent of the corn, 88 percent of the soybeans, and between 58 and 68 percent of the wheat in both years. Processing firms (mostly feed mills) and distillers were also more important receivers of farm grain than in area 18.

Distillers were the leading receiver of grain from other elevators in this area during both years. They accounted for over 65 percent of the corn, 100 percent of the barley, and 80 percent of the rye.

Area 20- Processing firms were even more important receivers of grain from farms and other elevators in area 20, receiving over 60 percent of deliveries of corn from both farms and elevators. Country elevators received the rest of the farm deliveries, since there are no river elevators, soybean processors, or distillers in area 20.

Grain Receipts by Mode of Transportation

All receipts from farms in all areas were delivered by truck. Grain receipts from other elevators by transportation mode are presented in Tables 14 and 15, respectively, for 1982 and 1983. Most

Table 14. Grain Receipts from Elevators by Mode of Transportation, 1982[a]

Area	Grain	Mode of Transportation		
		Rail	Truck	Total
18	Corn	40	1,555	1,595
	Wheat	-	1,046	1,046
	Soybeans	-	11,355	11,355
	Sorghum	-	35	35
	Barley	-	326	326
19	Corn	907	12,447	13,354
	Wheat	67	650	717
	Soybeans	186	1,122	1,308
	Barley	1,492	400	1,892
	Rye	1,248	1,338	2,586
20	Corn	-	274	274
	Oats	-	5	5

[a]Data are in 1,000 bushels

Table 15. Grain Receipts from Elevators by Mode of Transportation, 1982[a]

Area	Grain	Mode of Transportation		
		Rail	Truck	Total
18	Corn	950	975	1,925
	Wheat	190	662	852
	Soybeans	-	10,933	10,933
	Sorghum	-	46	46
19	Corn	738	10,540	11,278
	Wheat	48	485	533
	Soybeans	98	563	661
	Barley	1,407	332	1,739
	Rye	1,230	1,184	2,414
20	Corn	-	279	279
	Oats	-	5	5

[a]Data are in 1,000 bushels

shipments between grain handling firms were by truck in areas 18 and 20, though rail shipments of corn and wheat were substantial in 1983 due to PIK and the drought.

Distillers accounted for most of the grain received by rail in area 19. Large amounts of corn, barley, and rye were railed into area 19 distillers from out-of-state sources. However, receipts by truck were still the most common transportation mode for distillers.

In 1977, proportionately more corn was received by rail in areas 18 and 19 than during 1982 and 1983. The reason for the change in area 18 is that most of those distillers have gone out of business. In area 19 the change could be due to distillers relying more on local elevators to supply their corn needs. This reduces the amount of corn inventory that must be held by distillers because of the shortened delivery lag.

Grain Shipments by Destination

Tables 16 and 17 report grain shipments by area and destination for 1982 and 1983, respectively. Generally, most corn goes to the Southeast for poultry feeding, most soybeans go to export destinations (New Orleans), and wheat shipments are split between export destinations and southeastern flour mills. Table 18 reports grain shipments by area and destination for 1977 to facilitate comparisons.

Corn- Southeastern poultry feeders are the destination for most corn shipped from area 18, and Alabama, Georgia, and Tennessee are the leading states. Other important southeastern destinations were Mississippi and Florida. The total southeastern market accounted for over 60 percent of area 18 corn shipments in 1982 and 1983. Export destinations accounted for approximately one-third of the corn

Table 16. Grain Shipments from Kentucky by Area and Destination, 1982[a]

Grain	N.C.	S.C.	Ga.	Fla.	Ohio	Ind.	KY 18	KY 19	KY 20	Ill.	Tenn.	Miss.	Ala.	Mo.	Export	Total
Area 18																
Corn	-	-	7,512	2,083	-	-	2,450	-	-	-	5,042	3,358	10,750	-	15,259	46,454
Wheat	-	-	144	-	-	1,436	778	-	-	134	5,250	326	1,229	56	4,610	13,963
Soybeans	-	-	1,175	-	-	557	4,404	-	-	691	5,468	-	3,494	-	18,612	34,401
Sorghum	-	-	67	-	-	-	256	-	-	-	171	188	35	-	-	717
Barley	-	-	-	674	-	-	-	-	-	-	-	-	215	-	29	918
Area 19																
Corn	2,063	1,463	3,999	754	100	137	272	6,501	-	-	891	-	1,063	-	6,417	23,660
Wheat	-	-	150	-	290	112	5	143	-	-	1,000	-	-	-	1,888	3,588
Soybeans	1,200	-	2,080	-	90	125	69	645	-	-	-	-	-	-	8,983	13,192
Rye	-	-	-	-	-	-	-	500	-	-	-	-	-	-	-	500
Area 20																
Corn	-	-	407	34	156	-	-	-	139	-	7	-	237	-	-	980
Wheat	-	-	-	-	50	-	-	-	10	-	-	-	-	-	-	60
Soybeans	-	-	-	-	71	-	-	-	138	-	434	-	-	-	-	643

[a]Data are in 1,000 bushels

Table 17. Grain Shipments from Kentucky by Area and Destination, 1983[a]

Grain	N.C.	S.C.	Ga.	Fla.	Ohio	Ind.	Ky. 18	Ky. 19	Ky. 20	Ill.	Tenn.	Miss.	Ala.	Mo.	Export	Total
Area 18																
Corn	-	-	3,744	1,240	-	-	1,015	-	-	-	2,306	1,390	6,362	-	9,154	25,211
Wheat	-	-	204	-	-	549	344	-	-	83	4,931	430	874	36	3,098	10,549
Soybeans	-	-	651	-	-	71	6,609	-	-	561	4,223	-	2,742	-	15,186	30,043
Sorghum	-	-	44	-	-	-	160	-	-	-	111	109	23	-	387	834
Barley	-	-	-	121	-	-	65	-	-	-	65	-	119	-	-	370
Area 19																
Corn	1,236	1,241	2,952	578	5	32	279	3,695	-	-	959	-	1,006	-	3,101	15,084
Wheat	392	132	455	-	103	180	3	255	-	-	675	-	-	-	655	2,850
Soybeans	-	-	280	-	45	-	723	2,313	-	-	180	-	-	-	3,735	7,276
Rye	-	-	-	-	-	-	-	500	-	-	-	-	-	-	-	500
Area 20																
Corn	-	-	526	307	104	-	-	-	106	-	7	-	44	-	-	1,094
Wheat	-	-	-	-	32	-	-	-	8	-	-	-	-	-	-	40
Soybeans	-	-	-	-	33	-	-	-	112	-	331	-	-	-	-	476

[a]Data are in 1,000 bushels

Table 18. Expanded 1977 Grain Shipments from Kentucky by Area by Destination[a]

Area	Grain	South												
		Ala.	Fla.	Ga.	KY 18	KY 19	Miss.	N.C.	S.C.	Tenn.	Total South	Export	Other[b]	Grand Total
18	Corn	6,361	1,172	3,471	-	-	1,382	95	-	11,842	24,323	38,000	1,494	63,817
	Wheat	604	192	410	-	-	112	112	-	2,566	3,996	3,733	652	8,381
	Soybeans	4,815	-	360	-	162	179	-	-	1,078	6,594	11,414	-	18,008
19	Corn	59	-	175	871	-	-	3,600	45	567	5,317	5,640	173	11,130
	Wheat	-	-	-	116	-	-	-	-	454	570	-	-	570
	Soybeans	300	-	300	281	-	-	-	-	300	1,181	-	-	1,181
20	Corn	-	-	-	-	60	-	-	-	-	60	-	-	60
	Wheat	-	-	-	-	60	-	-	-	-	60	-	-	60
	Soybeans	-	-	-	-	-	-	-	-	50	50	-	-	50

[a]Shipments between grain-handling firms in the same area are excluded. Data are in units of 1,000 bushels.

[b]Illinois, Indiana, Iowa, Missouri, Virginia and West Virginia.

Source: Reed et al.

shipments in both years. Shipments to export in 1982 were less than one-half those in 1977, and 1983 was even more depressed than 1982. Decreased shipments to export locations are attributable to lower overall U.S. corn exports and increased poultry production in the southeast.

Southeastern markets were less important for area 19 corn shippers, accounting for 44 and 53 percent of shipments in 1982 and 1983, respectively. Georgia and North Carolina were the leading destinations in the southeast. Stronger local corn markets prevailed in area 19 due to the distillers and feed mills. Export destinations received 27 and 21 percent of the corn shipments in 1982 and 1983, respectively. This pattern is similar to the one in 1977, except the volumes were larger in 1982 and 1983.

Georgia was the leading destination of corn shipments from area 20, accounting for over 70 percent in both years. Alabama, Ohio, and local destinations were also relatively important.

Wheat- Tennessee flour millers are important destinations for area 18 wheat, receiving 38 and 47 percent of the area's shipments in 1982 and 1983, respectively. The southeast in total accounted for over 50 percent of area 18's shipments in both years (61 percent in 1983). Approximately 30 percent of the wheat shipments went to export destinations in both years. The wheat shipment pattern in 1977 was quite similar to the pattern in 1982, though less volume was shipped.

The wheat shipment pattern for area 19 firms differed markedly from 1982 to 1983. Much more wheat went to export destinations in 1982 (53 versus 23 percent), while much more went to the southeast in 1983 (58 versus 32 percent). The PIK program might have forced

southeastern flour mills to increase their receipts of wheat due to lower production in their area. Very little wheat was shipped from area 19 in 1977; what was shipped went to Tennessee and area 18.

Soybeans- Export destinations accounted for most soybean shipments for both years in areas 18 and 19, as was the case in 1977. Over 50 percent of the soybeans went to export locations in 1982 and 1983. Over 25 percent of the soybean shipments went to the southeast in both years. Tennessee was the leading destination, particularly the Chattanooga area where there is a great deal of soybean crushing capacity. Local destinations also received substantial quantities of soybeans, especially in 1983. In 1977, Alabama was a much more important destination, relatively, than in 1982 or 1983.

Area 19 firms shipped most of their soybeans to export in both years. By contrast soybeans went directly to export from area 19 in 1977. Southeastern markets were important, especially in 1982 to Georgia and North Carolina, as well as transshipments to other area 19 elevators along the Ohio River in 1983.

Most of area 20's shipments of soybeans went to Tennessee for crushing.

Other Grains- A small amount of sorghum is shipped from area 18 to feed mills throughout the southeast. Most barley from area 18 is shipped to Florida and Alabama. Finally, area 19 elevators supply some rye to local distillers.

Grain Shipments by Mode of Transportation

The mode of transportation used for grain generally reflects the final destination. All grain shipped to export destinations goes by water, while essentially all grain shipped to southeastern poultry feeders goes by rail. Tennessee destinations are sometimes reached by water from area 18 origins (via the Tennessee River), while the rest is delivered by truck. Finally, trucks are used for short hauls. Tables 19 and 20 report grain shipments by mode of transportation.

Summary, Conclusions, and Implications

This paper reports the results of a survey of 57 grain handling firms in Kentucky concerning their operations for the 1982 and 1983 calendar years. Even though Kentucky grain production expanded in 1982 relative to 1977, less grain was received and marketed through Kentucky facilities in 1982 (1983 figures were distorted due to PIK and the drought). This reduced volume was probably due to Kentucky grain producers shipping directly to out-of-state firms.

Kentucky grain handlers still rely on local farms to provide most of their grain volume -- very little grain is shipped between elevators. River elevators handle the majority of the grain volume in area 19, while country elevators and river elevators / soybean processors handle approximately equal volumes in area 18.

Grain handlers in the state shipped less grain to export markets in 1982 and 1983 than they did in 1977, especially corn. Southeastern poultry markets accounted for most of the corn flowing out of the state in 1982 and 1983. Over 50 percent of the raw soybeans from

Table 19. Grain Shipments From Kentucky by Mode of Transportation- 1982[a]

Area	Grain	Mode of Transportation			
		Rail	Truck	Water	Total
18	Corn	14,600	11,295	20,559	46,454
	Wheat	2,586	3,245	8,132	13,963
	Soybeans	6,090	4,579	23,732	34,401
	Sorghum	290	427	-	717
	Barley	860	29	29	918
19	Corn	11,700	5,494	6,467	23,661
	Wheat	1,497	198	1,893	3,588
	Soybeans	3,350	814	9,028	13,192
	Rye	-	500	-	500
20	Corn	678	302	-	980
	Wheat	-	60	-	60
	Soybeans	329	314	-	643

[a]Data are in 1,000 bushels

Table 20. Grain Shipments From Kentucky by Mode of Transportation- 1983[a]

Area	Grain	Mode of Transportation			Total
		Rail	Truck	Water	
18	Corn	8,746	5,161	11,304	25,211
	Wheat	1,803	3,297	5,449	10,549
	Soybeans	4,283	7,318	12,442	30,043
	Sorghum	176	271	387	834
	Barley	240	130	-	370
19	Corn	9,448	2,506	3,130	15,084
	Wheat	1,817	375	658	2,850
	Soybeans	2,060	858	4,358	7,276
	Rye	-	500	-	500
20	Corn	877	217	-	1,094
	Wheat	-	40	-	40
	Soybeans	270	206	-	476

[a]Data are in 1,000 bushels

Kentucky went to New Orleans, while the majority of wheat shipments went to New Orleans and southeastern flour markets.

Results of the survey have important implications for future research into grain marketing in Kentucky. A very important question is why so many Kentucky farms chose to market their grain to firms outside the state? Is this due to establishment of new firms in neighboring states which offer better prices than Kentucky firms? Are farms getting large enough that it is profitable to transport their grain to more distant locations which offer higher prices? Do Kentucky grain handling firms transfer price changes to their own bids at a faster or slower rate than non-Kentucky firms?

Such questions are crucial to the Kentucky grain industry, especially if the Federal government succeeds in reducing grain production throughout the U.S. Certainly part of this reduction will occur in Kentucky -- possibly forcing a sizable retrenchment in the grain handling industry.

APPENDIX

Country elevator (CE)- A firm whose primary activity is collecting and merchandising raw grain. It will be classified as a country elevator if it cannot receive or ship grain by barge. At least 50% of the raw grain received must be shipped out as raw grain.

River elevator (RE)- A firm whose primary activity is collecting and merchandising raw grain, and can either ship or receive grain by barge. At least 50% of the raw grain received must be shipped out as raw grain.

Soybean Processor (SP)- A firm whose primary activity is extracting oil and meal from soybeans. At least 50% of its revenue must come from the sale of processed soybean products.

Distillery (DIST)- A firm whose primary activity is distilling grain in the manufacture of distilled spirits.

Other Processor (PROC)- This category includes the following types of firms:

Flour mill- A firm whose primary activity is flour production for human consumption. At least 50% of its revenue must come from the sale of flour and/or flour products.

Feed mill- A firm whose primary activity is any type of feed manufacturing, including such activities as production of complete feed, production of feed ingredients and premixes, and feed grinding. At least 50% of its revenue must come from the sale of feed or feed ingredients.

Ethanol manufacturer- A firm whose primary activity is distilling grain in the manufacture of ethanol.

Poultry operation- A firm whose primary activity is feeding poultry.

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