

A STUDY OF WHEAT MARKETING
THROUGH THE END TERMINAL
DURING THE 1939 MARKETING YEAR

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By

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Bachelor of Science

Oklahoma Agricultural and Mechanical College

1939

Submitted to the Department of Agricultural Economics

Oklahoma Agricultural and Mechanical College

In Partial Fulfillment of the Requirements

for the Degree of

MASTER OF SCIENCE

1940

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ACKNOWLEDGEMENTS

Grateful acknowledgement is made to H. N. Holmes, Federal Grain Supervisor of the Enid District, for supplying the basic data in this marketing study.

The writer is greatly indebted to Adlowe L. Larson, Assistant Professor of Agricultural Economics at Oklahoma Agricultural and Mechanical College, for his supervision in planning the study and in preparation of this thesis.

Valuable assistance in gathering the material and making the calculations was given by Thomas T. Tygart, student in the Agricultural Economics Department.

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INTRODUCTION

The production of winter wheat in Oklahoma is of major importance under the present agricultural system of our western farmers. Wheat is a crop that has been grown on our prairie farms since the opening of these lands to settlement and cultivation. The deep fertile soil with a gently rolling topography and a minimum of rainfall during the harvesting season is ideal for wheat culture. Since the eastern part of Oklahoma is unsuitable for wheat production, a result of its rough and broken terrain with liberal rainfall, this study is confined to Western Oklahoma and the extreme Northwestern counties of Texas.

In a recent publication,^{1/} issued by the United States Department of Agriculture, on the cash income of Oklahoma farmers for the calendar year 1939, it was reported that the cash farm income totaled \$194,340,000. Of this total, \$71,912,000 was derived from crops, \$94,607,000 from livestock and its products and \$27,731,000 from Government payments. Wheat produced an income of \$31,002,000 in the total crops division, which was over \$5,000,000 greater than cotton, Oklahoma's second major crop.

The most of Oklahoma's receipts of high quality hard wheat is produced on the High Plains and in West Texas under changing weather conditions and with widely fluctuating yields.

^{1/} U.S.D.A. Mimeographed Release, "Cash Income and Government Payments in 1939 Are Estimated at \$8,518,000,000." January 30, 1940, pp. 13-15.

Other regions are not adapted to producing it. Producers in the soft winter area can shift to other crops when the price relation justifies a change, but in Western Oklahoma regions there is no suitable alternative. Part of the area plowed during the 1920's is better suited to ranching. Elsewhere, however, the High Plains will continue to produce wheat despite the climate and other hazards, because the wheat grown there has exceptional milling qualities and wheat on the Plains has a marked comparative advantage over other crops.^{2/}

Oklahoma had an average wheat production of 47,054,000 bushels for the ten year period 1928-1937, and ranks third behind Kansas and North Dakota respectively in all wheat produced. But in winter wheat Oklahoma ranked second in the ten year average, as all of Oklahoma's production was winter wheat while nearly two-thirds of North Dakota's yield was spring wheat.^{3/}

The last three crop years of 1937, 1938 and 1939 were excellent for wheat production in Oklahoma, as in each instance over 60,000,000 bushels were produced, well over the ten year average (1928-1937).

Wheat production and to a large extent its marketings, are seasonal in character, therefore, great effort has been made to procure a more orderly procedure of marketing. Significant economies can be gained in efficient wheat production and a minimum of handling before wheat is finally processed

^{2/} Yearbook of Agriculture, 1937. p. 51.

^{3/} U.S.D.A. Mimeographed Release, "General Crop Report." December, 1939. pp. 48-50.

by the miller.

After emphasizing the importance of quality wheat to Oklahoma farmers, this study will attempt to familiarize producers with the general procedure in the marketing phase of their product.

The farmer's interest in marketing is less direct than his interest in production, because as an individual he must accept the marketing system as he finds it. It requires group action in most cases to affect a change. Some alternatives which the individual producers are acquainted with are: to grade his crop or sell it ungraded; market his crop at harvest time or store his product; or he can sell in local markets or at the terminal markets in cooperative groups.

Even before the depression, in the decade of the 1920's, transportation, processing and marketing absorbed about 55 cents of the consumer's food dollar. In 1933 these services absorbed about 67 cents. Since 1933 the proportion left the producer has increased, but has not yet reached the figure of 1929.^{4/} This fact is not in itself a proof that marketing and distribution are inefficient; but it is evidence indicating that the producer should be concerned with the cost of these services fully as much as with the cost of production on the farm.

This study is not an attempt to invalidate the services performed by the Enid Terminal Market, but conversely, to emphasize the additional utility created by exact and efficient processing.

^{4/} Yearbook of Agriculture, 1937. pp. 63-64.

PURPOSE OF THE STUDY

1. To determine the areas of production of various classes and grades of wheat marketed in the Enid Terminal during 1939.
 - (a). Areas of smutty, rye, mixed and other low quality wheats.
2. To show the producers the amount of processing carried on in Enid Terminal Market and the extent in which the grade is changed before further movement to milling points and export markets.
3. To acquaint the producer with the general procedure in marketing wheat, subsequent to delivery at the local elevator and to impress upon the producer the services performed by the middlemen upon the product.
4. An attempt to indicate the advantages gained by farmers through the improvement of wheat quality marketed at the major terminals throughout the Southwest.

METHOD OF STUDY

The data on which most of this study is based were compiled directly from the unpublished worksheets of the Federal Grain Supervisor's Office in Enid, Oklahoma. The information relative to the 1939 crop year was taken from nearly 24,000 individual inspection certificates each representing one car of wheat either entering or leaving Enid.

To present this study in a logical and orderly manner, it has been divided into five major divisions, each representing a phase of marketing wheat as related to the Enid Terminal.

The first chapter discusses the importance of Enid as a marketing center. This information was gathered largely from the Grain Market Review, a daily publication by the Kansas City Board of Trade, and government publications.

The second chapter is concerned with the major production areas that supply wheat to Enid. These figures were taken directly from the inspection slips as gathered by the Federal inspection office from June 1, 1939 to January 1, 1940. As time did not allow the remaining inspection slips to be recorded, figures are only available on the 1939 crop prior to January 1, 1940. Indications are, however, that most of the wheat was marketed by January 1. In 1938, 84 per cent of all the wheat coming into Enid had already been shipped and 68 per cent of all wheat had been reshipped out of Enid by the following January. Thus from these figures there is an indication that the seven month period on which this study was based gave very definite results for the greatest part of the 1939

marketing year, June 1 to May 31, inclusive.

The data pertaining to the third chapter, transportation, was gathered from various sources. The Union Equity Cooperative Terminal supplied much of the statistical information such as freight rates to destination points. Inter-market slips of the Federal Grain Inspectors Office aided greatly in determining the direction of wheat movement. This was also accomplished through the inspection slips of the Federal Grain Inspection Office by examining the slips on diverted cars passing through Enid.

Chapter four discusses the extent of processing as practiced by the Enid Terminal Elevators. This information was taken from the inspection certificates of the Federal Grain Supervision Office.

Information relative to the controllable factors was reserved until the concluding chapter. This allowed a clearer understanding of the production areas and also a better knowledge of the objectionable factors common in market wheat of the Southwest. The Kansas City Board of Trade, recent State and Federal publications on wheat quality and marketings, as well as the Enid inspection certificates, provided the sources for material in the final chapter.

TERMINOLOGY

GRADES OF HARD RED WINTER, SOFT RED WINTER AND MIXED CLASSES
OF WHEAT^{1/}

No. 1 wheat must test 60 pounds or more per bushel. Damaged kernels must not exceed two per cent with a maximum of .1 per cent heat damage. Foreign material has a maximum of one per cent with matter except other grains not exceeding .5 per cent.

No. 2 wheat has a minimum test weight of 58 pounds. The maximum limits for damaged kernels is four per cent with .2 per cent heat damage. Foreign material must not exceed two per cent and matter except other grains is limited to one per cent.

No. 3 wheat has a minimum test weight of 56 pounds. The maximum damaged kernels must not exceed seven per cent with a limit of .5 per cent heat damage. The maximum limits of foreign material is three per cent with a limit of two per cent matter except other grains.

No. 4 wheat has a minimum test weight of 54 pounds. Damaged kernels must not exceed 10 per cent with a maximum of one per cent heat damage. Foreign material has a limit of five per cent with matter except other grains not to exceed three per cent.

No. 5 wheat must not test below 51 pounds. The maximum limits of damaged kernels is 15 per cent with not over three per cent heat damage. Foreign material must not exceed seven

^{1/} U.S.D.A. Handbook of Official Grain Standards,
Form No. 90, 1937. pp. 7-9.

per cent nor more than five per cent of matter excepting other grain.

Sample grade is wheat that does not come within the above grades; or which contains more than 15.5 per cent of moisture; or which is sour, heating, musty; or which is otherwise of distinctly low quality.

Tough Wheat^{2/} contains more than 14 per cent, but not more than 15.5 per cent moisture in the Hard, Soft and Mixed classes. Tough Wheat is graded as though it were not tough, but this term is added to, and made a part of, the grade designation.

Smutty Wheat^{2/} has an unmistakable odor of smut, or contains balls, portion of balls, or spores of smut, in excess of a quantity equal to 14 balls in 250 grams of wheat.

Weevily Wheat^{3/} is infested with live weevils or other insects injurious to stored grain.

Rye Wheat^{3/} is classified as such when an excessive amount of rye is present in a particular grade to cause it to grade lower. If other more important factors have caused the lower grade, the car is not discounted on rye content.

Mixed Wheat^{4/} in this study refer only to mixtures of hard and soft wheats. The minimum requirement is 90 per cent of one class to be graded in either the hard or soft class.

Scouring is a cleaning process used by terminal elevators. A machine equipped with brushes, removes the objection-

^{2/} Ibid., p.14.

^{3/} Ibid., p.16.

^{4/} Ibid., p.12.

able discoloration on the exterior coat of the kernel. Smutty wheat is frequently scoured.

Year 1939 when referring to 1939 in this study, the figure is meant to include the months of June to December, inclusive. The wheat movements for the last five months of the 1939-1940 marketing season could not be obtained at the writing. It is estimated, however, that 85 per cent of the marketings had been completed in the first seven months.

Marketing Year begins with June and ends with May of the subsequent year.

Terminal The Enid elevators are classified as a Terminal Market. Individual elevators or firms in Enid are designated as Terminal Elevators.

CHAPTER I

ENID AS A WHEAT MARKETING TERMINAL

LOCATION OF TERMINAL

The movement of wheat to the primary concentration points and to the interior markets is an essential step in the marketing process. Enid, an industrial and distributing center with a population of over 30,000, is located in the northeastern section of Oklahoma's wheat belt. It is well situated for the concentration and processing of wheat for final shipment to the principal eastern consuming areas and southern exporting markets. This terminal is served by the major railroads of the Southwest, which is conducive to efficient and economical movement of wheat during the harvest season. As a result of its excellent location, Enid has become one of the leading interior wheat markets of the Southwest,^{1/} handling over 25,000,000 bushels for the crop years 1937 and 1938; and in the first seven months of the 1939 crop year beginning June 1, handled over 20,000,000 bushels. Total storage capacity of Enid Terminal is nearly 13,000,000 bushels.

The climate of Enid is excellent for the storage of wheat over a long period, if necessary. There were but 64 cloudy days in 1938 and southwesterly winds blow almost continually over the level plains, thus allowing a drying influence upon the stored grain. Dry wheat is a prerequisite

^{1/} In the 1938 marketing year, Fort Worth received 17,193 cars of wheat; Enid received 16,994 cars and Amarillo received 7,241 cars. These points are the largest interior grain markets of Oklahoma and Texas.

to the milling of quality flour.^{2/} Rainfall averages about
34 inches per year.^{3/}

OKLAHOMA WHEAT INSPECTION POINTS

Federal Grain Inspection offices have been set up at various strategic points in Oklahoma relative to grain production. Offices are at present operating in Enid, Oklahoma City, El Reno, Alva, Ponca City and Muskogee. Such offices may be established by any person who can present satisfactory evidence that he can grade and inspect grain to the satisfaction of the Secretary of Agriculture. No person, other than these licensed inspectors, can grade grain and attach to it in writing any one of the grades of the official grain standards of the United States, which grain is to be used for interstate or for foreign commerce. The United States Grain Standards Act also states that competition shall not exist between inspectors, as licenses shall only be issued to one person at each point or city. The inspector is to be remunerated for his services by the owner of the grain at the time of inspection. Such charge is one dollar per car for each inspection.

As to the volume of wheat inspected by the various offices in Oklahoma, there is little doubt as to the dominance of Enid as the leading wheat market in Oklahoma. Figures for the 1938 crop of Oklahoma indicate the relative importance

^{2/} United States Department of Agriculture Miscellaneous Publication Number 325, 1938. "Grain Grading Primer" p.9.

^{3/} Climological Data, 1938, Annual Report. U.S.D.A.

of these offices. (Table 1). It is evident that the wheat belt is concentrated in the northwestern portion of the state. All inspection points except Muskogee, which inspected but 1.3 per cent of all cars received in Oklahoma markets for 1938, were located there.

A total of 26,248 cars or an equivalent of 40,000,000 bushels (1500 bushels per car) were inspected out of the State total production of 61,677,000 bushels for 1938. Of the total inspections, the Enid office accounted for 16,994 cars of 64.7 per cent, which was more than all other offices combined. The other inspection points ranged from 13.5 per cent in Oklahoma City to 1.3 per cent of the State total in Muskogee. (Table 1).

Wheat that is reloaded at inspection points is also reinspected, but the total of shipments out of Oklahoma terminals in the form of raw wheat amounted to 15,075 cars which does not include cars of wheat diverted in transit. Of this amount Enid shipped 12,209 cars or 80.9 per cent of the State total. El Reno was the second largest shipping point with 1155 cars or 7.7 per cent and Muskogee the least important shipping point, handling but 0.7 per cent of the State total shipments.

Figures for the 1938 crop year are used here largely in justification of the conclusions drawn relative to the 1939 crop, since data are available for this year prior to January 1, 1940. Receipts indicate that by January 1, of the 1938 crop year, 84.3 per cent of all the wheat in Oklahoma, which was to be marketed in that year, had already moved to the terminal. (Table 1). This corresponds very closely with

TABLE 1

CARS OF WHEAT INSPECTIONS IN OKLAHOMA FOR 1938 CROP YEAR

RECEIPTS BY MONTHS

Inspection Point	J	J	A	S	O	N	D	J	F	M	A	M	Per Cent	
													Total cars	State Total
Enid	6088	4172	935	617	1087	579	722	648	352	506	486	802	16,994	64.7
Oklahoma City	1049	877	199	228	196	160	150	169	139	108	116	153	3,544	13.5
El Reno	1023	494	153	128	133	90	160	98	73	97	75	48	2,572	9.8
Alva	434	1308	92	48	58	28	37	34	31	23	56	46	2,195	8.3
Ponca City	140	248	30	18	45	22	30	22	13	19	10	23	620	2.4
Muskogee	26	266	25	19	2	3	2						343	1.3
State Total	8760	7365	1434	1058	1521	882	1101	971	608	753	743	1072	26,248	100.0
Per Cent per Month	33.4	28.1	5.4	4.0	5.8	3.4	4.2	3.7	2.3	2.8	2.8	4.1	100	

SHIPMENTS BY MONTHS

Enid	1038	2591	980	725	1083	706	1165	746	617	735	647	1176	12,209	80.9
El Reno	220	451	152	21	63	15	30	36	17	56	52	42	1,155	7.7
Alva	242	87	64	33	52	15	43	23	31	22	40	45	697	4.6
Oklahoma City	66	137	84	38	57	9	8	16	18	16	6	52	507	3.4
Ponca City	79	161	30	27	18	14	20	7	6	24	18	7	411	2.7
Muskogee	7	82	3		3	1							96	.7
State Total	1652	3509	1313	844	1276	760	1266	828	689	853	763	1322	15,075	100.0
Per Cent per Month	10.9	23.3	8.7	5.6	8.5	5.0	8.4	5.5	4.6	5.6	5.1	8.8	100	

Source: Worksheets of Federal Grain Inspector, Agricultural Marketing Service Enid, Okla,

marketing figures for the 1928 crop year with 84.5 per cent and the 1929 crop year with 87.8 per cent of total marketings by January 1.^{4/}

June and July are the months in which the largest volume of wheat reaches the Oklahoma terminals. With the advent of the combine-harvester and its almost universal use throughout the wheat belt, the harvest season has been moved forward until June is now the month of greatest wheat receipts in Oklahoma. In 1938, 33.4 per cent of the wheat marketings were made in June and 28.1 per cent in July. Only a decade ago, in 1929, less than 17 per cent of the total marketings were inspected in June and over 45 per cent occurred in July.^{5/} The figures for the June shipments in 1939 were estimated to be even larger than in 1938. Over twice as much wheat was inspected at Enid in June over July of 1939. (Appendix A).

Wheat production in Oklahoma for the last three years was far above the State average. (1928-1937). Over 60,000,000 bushels were produced in each of the three years. (Table 2). Of this amount the Enid terminal inspected over 25,000,000 bushels or over 40 per cent of the total production of Oklahoma. It appears that the capacity for bushels handled is near 27,000,000 bushels as this was the amount approximated in the three years. There is an inverse proportionate

^{4/} Reed, Otie Marion. "An Analysis of Wheat Storage Facilities in Oklahoma." Master's Thesis. Oklahoma Agriculture and Mechanical College. Library, 1931. pp. 37-40.

^{5/} Ibid. p. 40

TABLE 2

TOTAL WHEAT RECEIPTS AT ENID AND
RELATIONSHIP TO TOTAL STATE PRODUCTION

1937-1939

Year	6/ Enid Receipts		7/ State Production	Per cent of State Total
	Cars	Bushels	Bushels	
1937	17,580	26,370,000	65,462,000	40.3
1938	16,994	25,491,000	61,677,000	41.3
1939*	17,452	26,178,000	60,438,000	43.3

* These figures are estimates on basis of 85 per cent of total marketings transacted by January 1, of each crop year.

Source: 6/ Federal Grain Supervisor's Office, Enid, Oklahoma Agricultural Marketing Service, U.S.D.A.

7/ Blood, K.D. State Agricultural Statistical Agricultural Marketing Service, U.S.D.A.

relationship between the state total yield and the amount inspected at Enid for this period, although this difference may not be significant. (Table 2).

An assumption must not be made, however, that the remainder of the wheat not inspected at Enid would be inspected at the other five inspection offices. Part of these wheat crops were possibly not destined for interstate commerce, thus not subject to federal inspection or may have been shipped to an out-of-state terminal at which point the wheat was graded, but not recorded at the state inspection office. Much of Oklahoma's wheat that is produced on the periphery

of the wheat belt and especially in the Oklahoma Panhandle is shipped direct to northern markets, probably as a result of more economical and convenient railroad routes, which will be shown later in the chapter on transportation.

FEDERAL INSPECTION SERVICE

Federal Grain Inspection is a relatively recent service, in comparison to the length of time that wheat has been grown in America. Wheat culture was practiced by the colonists in the Hudson and other eastern valleys very soon after the Pilgrims landed. On down through Colonial History there were no grain problems encountered as barter was the major means of exchange. However, with the evolution of farming methods and the westward movement in 1820, great expanses of the level Mississippi Valley and the Great Plains were brought under cultivation. Gradually the capacity of the prairies gave the country a great surplus of wheat to sell in foreign markets in which there was a ready demand for the excellent bread making types grown on the Great Plains.

In the early days grain was sold by sample or the buyer looked it over personally, when possible. When the buyer could not see the grain beforehand the seller usually submitted a sample or a written statement as to the general quality and condition. This method did not prove very satisfactory and as time went on several states adopted a system of grain grading.

Grain marketing from 1880 down to the World War was one of ever mounting difficulties in grain inspection. This

variable system was burdensome on the farmer and it also led finally to serious complaints from foreign buyers who were, by the end of the World War, demanding great quantities of American wheat.

Finally on August 11, 1916, the United States Grain Standards Act was passed. Its purpose was to set up a system of uniform grading under Federal Supervision. Under this act official standards were established for wheat and other major grains.

If an owner is dissatisfied with the grade assigned to a given lot of grain by a licensed inspector, he can appeal to the Secretary of Agriculture for a reinspection. This is a privilege not commonly used, as the one who makes the appeal pays all expenses incurred if the designated grade is upheld by the Board of Reviews in Chicago. Very few grades are ever changed, but this privilege serves in controlling the state inspectors.

There are many advantages and benefits of the Federal grading system: It supplies a common language of trading; grades and inspection are uniform and dependable; fosters confidence and good will in domestic and foreign markets; it facilitates bidding and clearance in channels of trade; makes a basis for accurate market reports; facilitates storage and credit; essential to the system of buying for future delivery and it increases the price paid to the producer.^{8/}

^{8/} Miscellaneous Publication No. 328, U.S.D.A.
"Service of Federal Grain Standards", 1938 pp. 8-17.

Upon passage of the United States Grain Standards Act in 1916, offices were set up in each state, who were to enforce the regulations. Oklahoma, with its northwestern part in the wheat belt, is primarily interested in the interstate trade of wheat as no other grain is traded on as large a scale.

Mr. H.N. Holmes, Federal Grain Supervisor, is located in Enid and supervises the inspections which are recorded at the six grain inspection points in Oklahoma, previously mentioned.

This survey on wheat marketings through Enid was made possible by the Federal Grain Supervisor in allowing the inspection certificates to be used as basic material. A certificate was issued for each car inspected upon which was recorded the origin of the given lot or car of wheat, the date inspected, the transporting railroad, the car number, the name of the inspector and the grade which is determined by such factors as test weight, moisture content, foreign material, damaged kernels and other minor factors.

SUMMARY

In 1938, Enid was the second largest interior wheat market of the Southwest. Over 25,000,000 bushels was handled by the Enid elevators in each of the 1937, 1938 and 1939 marketing years. This was more than the amount handled by all other Oklahoma inspection offices combined. Other inspection points are located at Muskogee, Oklahoma City, El Reno, Alva and Ponca City. In recent years, through the almost universal use of the combine-harvester, the receipts of wheat at Enid have been greater during June than any other month. In 1938, over 60 per cent of the total marketings were recorded during June and July.

The Federal Inspection Service was authorized by Congress in 1916. Prior to its passage, serious complaints in the grain trading channels compelled an investigation to protect both buyers and sellers. The result was a universal grain grading standards act, which was highly beneficial to the grain trade, especially wheat as a result of its international character.

CHAPTER II

PRODUCTION AREAS THAT SUPPLY WHEAT TO THE ENID MARKET

TOTAL MARKETINGS

Wheat was drawn from wide areas into Enid for concentration and milling. For the former purpose, wheat was produced primarily in Oklahoma and West Texas, but for the latter, many cars of wheat were shipped from Missouri, Kansas and Central Texas. Oklahoma, predominately a hard winter area, often requires other types of wheat for blending and mixing purposes. When a high protein flour is demanded and the supply can not be filled in Oklahoma, dark hard winter wheat may be shipped into Oklahoma from Central Kansas, Northwestern Missouri, and West Texas. When there is a shortage of soft wheat for milling flour, low in protein and used in making pastries, biscuits and similar products,^{1/} shipments are received from Southeastern Kansas, where soft wheat predominates. There were, however, but ten cars of soft wheat marketed in Enid during 1939. (Table 3). Of this number only one car was produced in Oklahoma, while eight cars were shipped in from Fairview, Kansas and one car from Northwestern Missouri.

Of the total wheat shipments to the Enid Market, Oklahoma counties supply most of the volume. In 1939, 92.8 per cent came from within the State, 6.5 per cent from Texas, 0.3 per cent from Kansas and 0.4 per cent from Missouri. (Table 3).

^{1/} U.S.D.A. Miscellaneous Publication No. 325
"Grain Grading Primer" p. 6.

TABLE 3

TOTAL WHEAT MARKETINGS BY CARS INTO ENID
FROM OKLAHOMA COUNTIES AND NEARBY STATES
June, 1939 to Jan., 1940

County	Class					Total Cars	Per cent of Enid Receipts
	:Hard :	Mixed	Dark Hard	Yellow Hard	Soft: Red:		
Garfield	2182	19	77	44		2322	15.7
Grant	1711	189	25	70		1995	13.5
Alfalfa	1708		11	31		1750	11.9
Woods	867		228	1		1096	7.5
Major	922	2	3	46		973	6.6
Noble	410	404	18	1		833	5.7
Kay	225	526	26			777	5.3
Blaine	537		148	9		694	4.7
Kingfisher	590		68	12		670	4.6
Custer	358		296			654	4.5
Washita	59		399			458	3.1
Kiowa	16		292			308	2.1
Logan	175	4	10			189	1.3
Ellis	26		163			189	1.3
Caddo	27		122			149	1.0
Woodward	83		40			123	.8
Jackson	1		79			80	.5
Tillman	3		67			70	.5
Beckham	8		40			48	.3
Canadian	18		30			48	.3
Roger Mills	26		24			50	.3
Texas	2		30			32	.2
Harper	6		21			27	.2
Harmon	1		11			12	.1
Cimarron			12			12	.1
Pawnee	2	10				12	.1
Cotton	1		10			11	.1
Dewey	7		2			9	.1
Beaver			8			8	.1
Grady	2		3			5	.1
Payne		3			1	4	.1
Greer			3			3	.1
TOTAL (Sub.)	9973	1157	2266	214	1	13,611	92.8

TABLE 3 (continued)

TOTAL WHEAT MARKETINGS BY CARS INTO ENID
FROM OKLAHOMA COUNTIES AND NEARBY STATES
June, 1939 to Jan., 1940

County	Class					Total Cars	Per cent of Enid Receipts
	:Hard :	Mixed	Dark Hard	Yellow Hard	Soft: Red:		
Texas Counties							
Lipscomb	3		321			324	2.20
Ochitree	7		211			218	1.48
Hansford	3		101			104	.70
Dallan	1		13			14	.10
Moore			11			11	.07
Hutchinson			1			1	.01
Potter	7		165			172	1.20
Hemphill			5			5	.03
Gray			12			12	.08
Carson	2		62			64	.44
Roberts	1		6			7	.04
Oldham			1			1	.01
Sherman	1		6			7	.04
Ft. Worth & Unknown	8		7			15	.10
TOTAL	33		922			955	6.53
Kansas	2	1	28		8	39	.30
Missouri	23		43		1	67	.40
Grand Total	10,031	1158	3259	214	10	14,672	100.00

Source: Unpublished Worksheets, Federal Grain Supervisor's Office. Enid, Oklahoma.

Within the State, Garfield led all counties with 15.7 per cent of the total wheat marketed in Enid during 1939. Grant and Alfalfa counties followed closely with 13.5 per cent and 11.9 per cent, respectively. Together these three counties furnished over 9,000,000 bushels of wheat or nearly 45 per cent of the wheat marketed in Enid. (Table 3). This appears logical, however, since these three counties were the leading producers for 1939, producing over 18,000,000 bushels. (Appendix B).

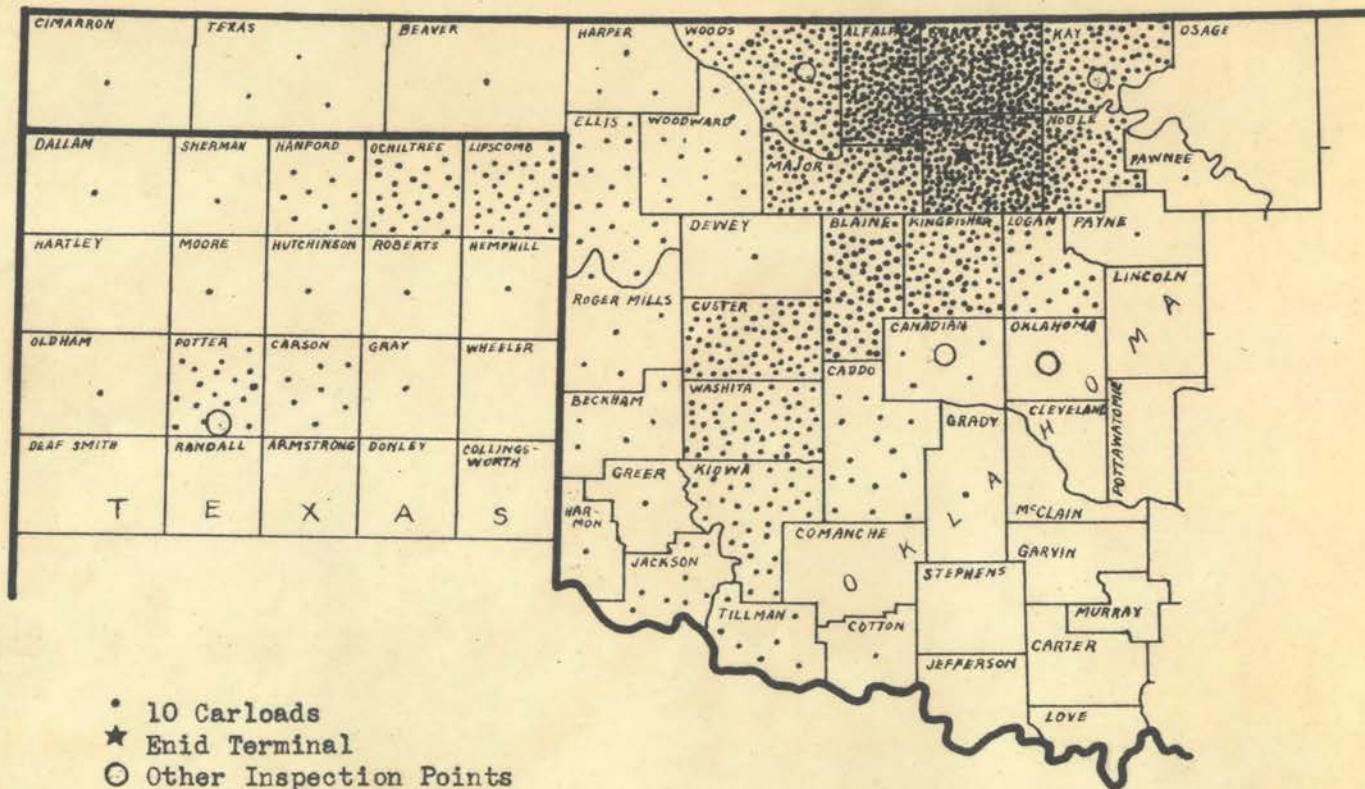
Wheat was drawn from nearly every section of the state that is suitable for grain production. Cotton County in the south, Pawnee County in the east and Cimarron in the west were the limits of local wheat marketings into this terminal for concentration purposes. The major areas of production were, however, in the north central part of the State and the southwestern tier of counties, namely, Custer, Washita and Kiowa. (Figure I). Thirty-two counties shipped wheat to Enid in 1939, which indicates the wide production area of this market and the influence this terminal has on the State's leading crop in recent years.

The movement of the new crop usually begins about the fifth of June in the southern portion of the state and gradually moves north. By the twentieth of June the entire wheat belt of Oklahoma is usually in full swing. By comparison of the monthly shipments (Table 1), there is an indication that the smaller Oklahoma markets, Alva, Ponca City and Muskogee, receive most of their grain for a single month in

FIGURE I

POINT OF ORIGIN FOR 14,672 CARS OF WHEAT MARKETED IN ENID

1939



67 Cars were inspected from Missouri; 39 cars from Kansas and 16 cars from Fort Worth.

Source: Unpublished worksheets, Grain Supervisor's Office, Enid, Oklahoma

July, whereas the three other points receive larger quantities in June. This is probably accounted for by the earlier harvests at the southern inspection points. (Figure I).

HARD WINTER WHEAT

Hard Red wheat is an important class of winter wheat grown principally in states west of the Mississippi River and to a minor extent north of the Ohio River.^{2/}

There are three subclasses of Hard Red Winter, namely, Hard Winter, Dark Hard Winter, and Yellow Hard Winter, which will be discussed in this chapter in the order named.

Hard Winter^{3/} wheat usually makes a desirable bread flour, but in some cases may be low in protein as it may be grown in the more humid areas just east of the dark hard regions, as can be seen by comparing Figures II and III. Hard Winter wheat is the most important wheat grown in Oklahoma, as over 10,000 cars or over 70 per cent of all wheat marketed in Enid during the 1939 marketing season was of this subclass. (Table 3).

Hard Winter wheat is especially adapted to the making of a bread flour or for the bakery trade.^{4/} This wheat contains a fair amount of strong elastic gluten -- an essential element in making a bread that meets with public favor in

^{2/} U.S.D.A., Miscellaneous Publication No. 325 "Grain Grading Primer". p. 7.

^{3/} Hard Winter wheat is a subclass which includes wheat of the Hard Red Winter class consisting of more than 25 per cent, but less than 75 per cent of dark, hard, and vitreous kernels and not more than 10 per cent of any other class.

^{4/} U.S.D.A., Miscellaneous Publication No. 325, "Grain Grading Primer". p. 6.

most American homes. It appears from examination of Figure II that a fair amount of rainfall^{5/} and a heavy soil^{6/} are conducive to the production of Hard Winter wheat.

The leading producing area for the Enid Market comprises Garfield, Grant and Alfalfa counties, where the rainfall is highest -- the eastern extremity of the wheat belt of Oklahoma. (Figure II). This point of concentration is bordered by such counties as Major, Woods, Kingfisher, Blaine and Noble in the order named. Custer County is a slight extension of this area into the more arid regions, but produces very little Hard Winter wheat, as compared with the aforementioned counties for the Enid Market.

All of the thirty-two represented wheat counties, with the exception of Cimarron, Beaver, Greer and Payne, marketed some Hard Winter wheat in Enid. These four counties are on the periphery of the Hard Winter wheat area which probably accounts for this lack of production.

With support of the above statement that rainfall and soil limit the hard winter area, it can be seen why West Texas counties produced such a small quantity of Hard Winter wheat for the Enid Market in 1939. A total of 33 cars of Hard Winter wheat was shipped from Texas. Eight of these were shipped from Fort Worth, presumably for blending purposes. Not a single county of the Panhandle Texas group shipped

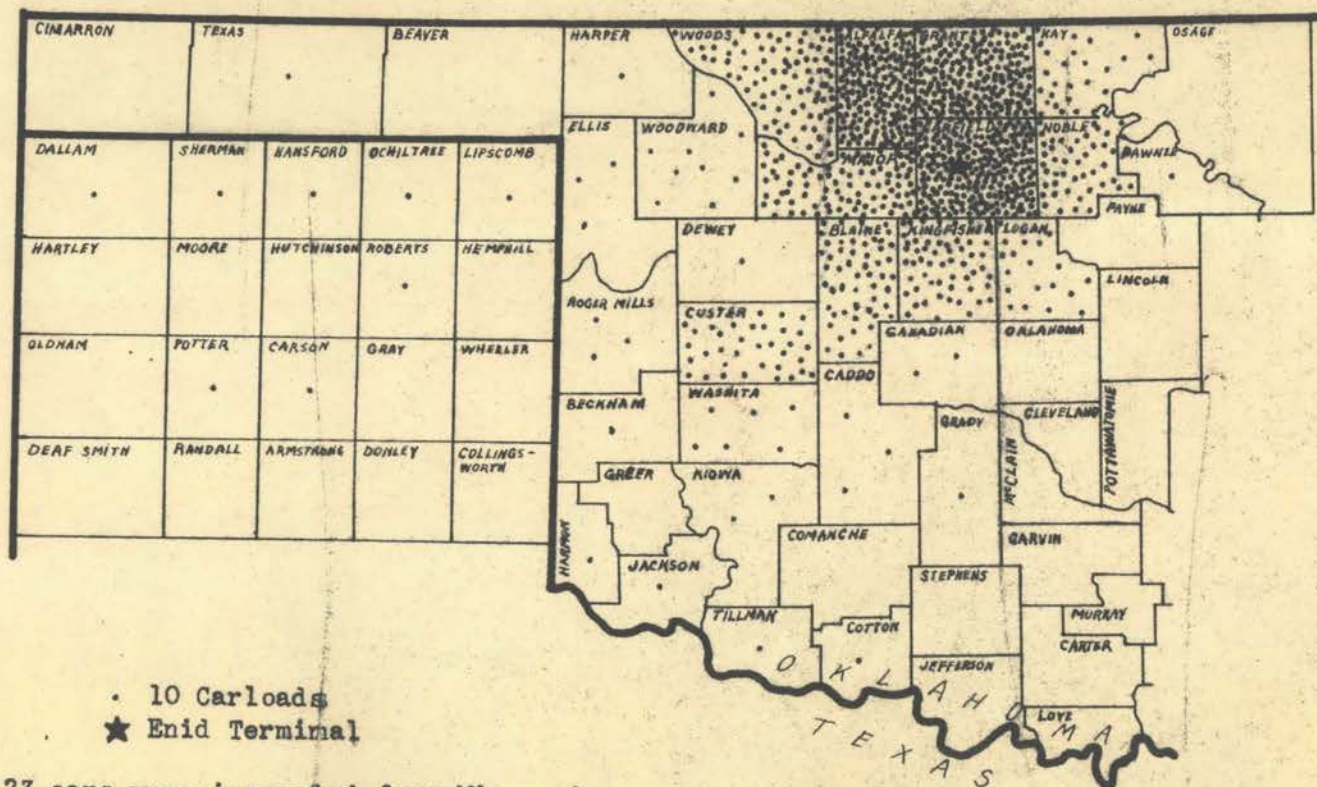
5/ Climological Data, Op. cit. Vol. 47.

6/ Horace J. Harper, "Easily Soluble Phosphorus in Oklahoma Soils" Experiment Station. Bulletin No. 205. p. 13.

FIGURE II

POINT OF ORIGIN FOR 10,031 CARS OF HARD WINTER WHEAT MARKETED IN ENID

1939



23 cars were inspected from Missouri;
 2 cars from Kansas and 8 cars from Fort Worth.

Source: Unpublished worksheets, Grain Supervisor's Office, Enid, Oklahoma

more than 10 cars of this type. (Figure II).

Other out-of-state receipts at Enid amounted to 25 cars; 23 from Missouri and two from Kansas. These were likely for milling purposes. Those shipments from Missouri were largely sent from St. Joseph and those from Kansas originated largely at Salina. This wheat may not, however, have been grown in the local vicinity, as these two points are also terminal grain markets.

DARK HARD WINTER WHEAT

Dark Hard Winter wheat ^{7/} is an especially desirable type for the milling of a bread flour. ^{8/} It generally has a high percentage of protein, in some cases as high as 18 per cent.

"Oklahoma Panhandle counties of Cimarron, Texas, Beaver, Harper and Ellis have exceptionally high protein content wheat this year. On 30 fields sampled, the average protein content was 16 per cent with only one field falling below 13 per cent." ^{9/}

Not all wheat, marketed as Dark Hard Winter under the classification of the United States Grain Standards, however, is necessarily high in protein. In recent years, Western wheat producers have been able to produce with new varieties of Blackhull and Turkey, a dark hard type that is low in protein. Thus greater emphasis is now being placed in the purchase of wheat on its protein content rather than

^{7/} This subclass shall include wheat of the Hard Red Winter class consisting of 75 per cent or more of dark, hard and vitreous kernels and not more than 10 per cent of any other class of wheat.

^{8/} U.S.D.A., Miscellaneous Publication No. 325. Op.cit. p. 6.

^{9/} Kansas City Grain Market Review, Southwest Kansas Wheat High in Protein, July 1, 1939, p. 1.

on external characteristics. Protein-content determination is a rather intricate process and can only be accomplished at the larger terminals by a chemical analysis. The Commodity Credit Corporation used protein content as the basis for loaning federal funds during the past year. At the local grain elevators it is impossible to determine the protein content except from general fields or areas in relation to the buying point. Greater emphasis may be placed on wheat protein in future productions as this factor is rapidly becoming one of the basic determinants of local wheat prices as well as in the terminal markets.

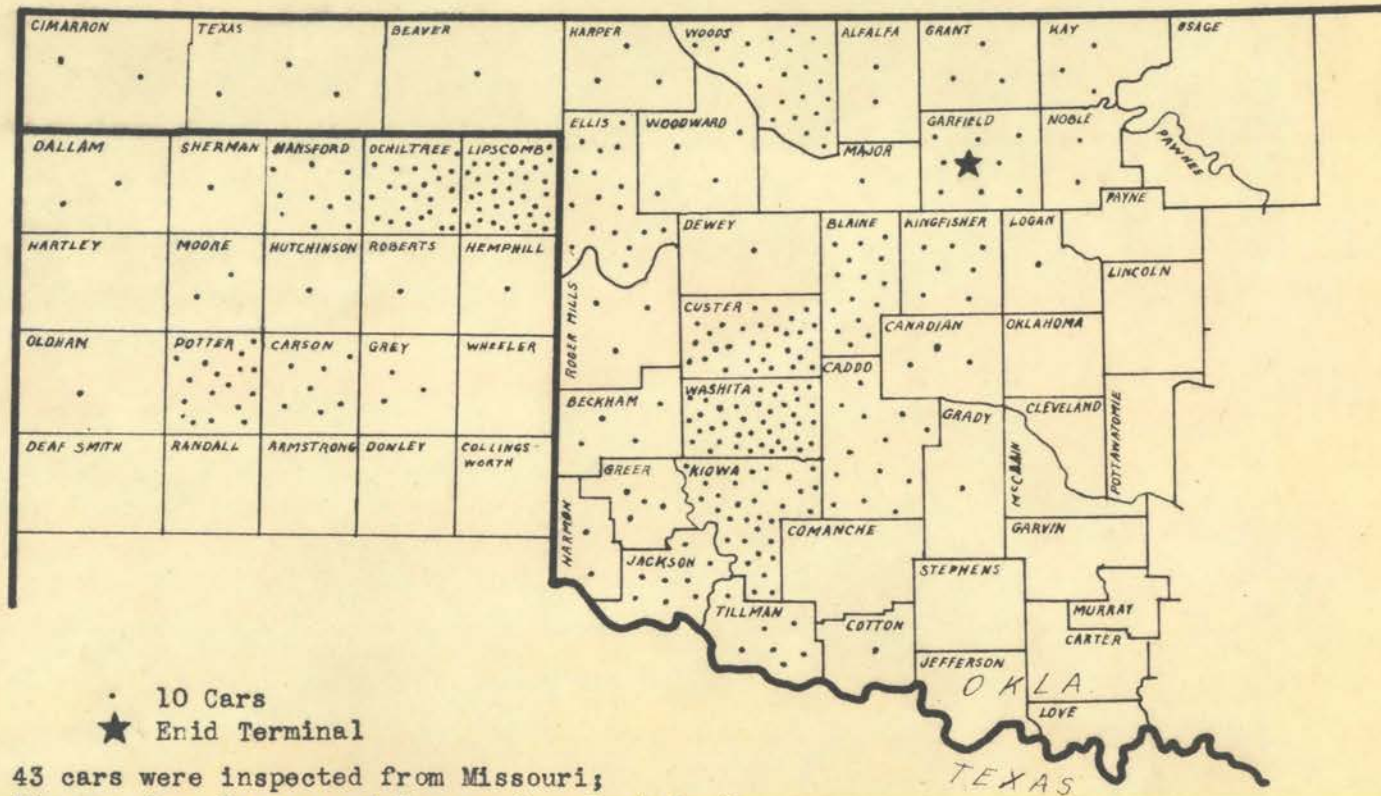
The center of dark hard winter production in Oklahoma was in Washita county with 399 cars or approximately 600,000 bushels marketed in the 1939 season at Enid. (Table 3). This area, together with Custer, Blaine, Caddo, Kiowa, Jackson and Tillman counties comprises the major dark hard winter section of Oklahoma. One other area, lying to a great extent outside the State, supplies large quantities of a high quality protein wheat to the Enid Market. This area begins in Woods County, dips down into Ellis County and extends westward into Texas, just below the Oklahoma Panhandle including the Texas counties of Lipscomb, Ochiltree, Hansford, Carson and Potter. (Figure III). This last named area has long been known to market a high protein wheat and has commanded a premium on the terminal markets in recent years because of its high reputation. ^{10/}

^{10/} This statement was given by a Dark Hard Winter wheat producer of Supply, Oklahoma.

FIGURE III

POINT OF ORIGIN FOR 3,259 CARS OF DARK HARD WINTER WHEAT MARKETED IN ENID

1939



• 10 Cars
 ★ Enid Terminal

43 cars were inspected from Missouri;
 28 cars from Kansas and 7 cars from Fort Worth.

Source: Unpublished worksheets, Grain Supervisor's Office, Enid, Oklahoma

This is one instance where competition plays a major part in determining the market for the dark hard wheat. Excellent transportation facilities extend over this area, which allows the product to be sent directly to Kansas City if the premium is over the Enid Market and sufficient to pay the extra transportation charges.

Nearly every Oklahoma county in the wheat belt shipped some dark hard wheat to Enid. Some counties shipped very little, but this is an indication that it can be grown in almost every county. A farmer should attempt to grow this type of wheat if costs of production remain equal, as the premium over hard winter wheat is usually enough to warrant dark hard winter production.^{11/}

Wheat shipments to Enid from out-of-state points were largely of dark hard type. Missouri supplied 43 cars, Kansas 28 cars and seven cars were sent from unknown Texas points. These were probably used for milling purposes. In addition to these out-of-state receipts, Texas shipped 915 cars from the Texas Panhandle which were shipped for both concentration and milling purposes.

Out of a total of 955 cars shipped from Texas, 922 cars were dark hard. This represents over 96 per cent of their entire shipments and indicates the large proportion of dark hard wheat grown in West Texas. Apparently the

^{11/} During July of 1938, the average premium of grades 1-3, of Dark Hard Winter wheat at Kansas City, was 4.8 cents per bushel above Hard Winter wheat. For 1939, the premium was 3.8 cents per bushel. In years of more favorable wheat prices the margin is larger and thus greater incentive for producing the Dark Hard Winter wheat.

climate and soil play an important role, as well as seed selection, in determining the extent of the dark hard wheat areas.

YELLOW HARD WINTER WHEAT

Yellow Hard Winter^{12/} is another subclass wheat classified under Hard Red Winter Class. This type is very uncommon in Oklahoma and according to the State Grain Supervisor, H. N. Holmes, the Yellow Hard Winter appearance in 1939 was the first in many seasons. The cause was a purely physiological condition of excessive moisture during the harvesting season.

During 1939 heavy rains fell in the wheat belt during the latter part of June and early July. This delayed combine harvesting and caused the grain to lodge and bleach. This bleaching reaction lowered the quality of the wheat in both texture and protein content and gave it an appearance similar to that of soft wheat. The price was very close to that of soft and mixed wheats in Kansas City. (Table 16).

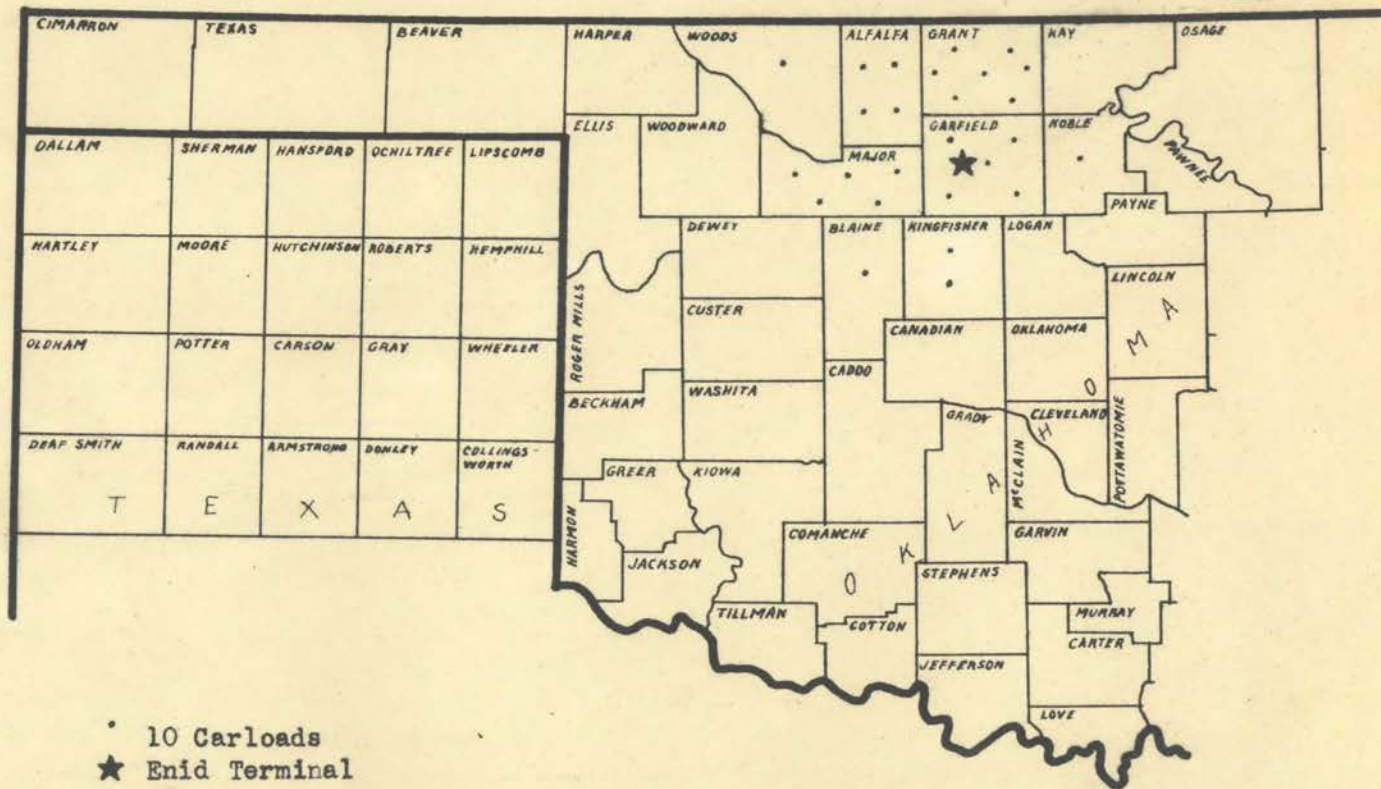
The Yellow Hard Winter area was rather limited, extending over the northeastern part of the Enid market area. (Figure IV). The four most important counties were Grant, Major, Garfield, and Alfalfa with a total of 191 cars shipped to Enid or over 89 per cent of the total Enid Yellow Hard receipts. (Table 3). Kingfisher, Blaine, Woods and Noble counties shipped the remaining 11 per cent as no shipments

^{12/} Yellow Hard Winter wheat shall consist of not more than 25 per cent of dark, hard and vitreous kernels and not more than 10 per cent of any other class.

FIGURE IV

POINT OF ORIGIN FOR 214 CARS OF YELLOW HARD WINTER WHEAT MARKETED IN ENID

1939



Source: Unpublished worksheets, Grain Supervisor's Office, Enid, Oklahoma Agricultural Marketing Service, U.S.D.A.

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were received from out-of-state points.

SOFT RED WINTER WHEAT

Soft Red Winter^{13/} wheat is grown principally in the eastern half of Oklahoma where the rainfall is greater and the soil is lighter than the western half. It is almost impossible to grow anything but soft wheat in this area because of the high rainfall and unfavorable growing conditions for a high quality wheat.

Soft Red Winter wheat is usually low in protein content and is especially suited for milling into a family flour to be used in making pastries in the home, crackers, biscuits, and cakes.^{14/}

One car of soft wheat was the extent of marketings in Enid from Oklahoma points during the first seven months of the marketing season of 1939. This car came from Cushing in Payne County, which might be included in the Soft Wheat area. One car of soft wheat was also marketed from Missouri and eight cars were shipped from Kansas.

Soft wheat was in demand at some periods of the 1939

13/ This class shall include all varieties of soft red winter wheat and may include not more than 10 per cent of wheats of other classes. There are two subclasses of soft wheat; Red Winter and Western Red. The subclass Red Winter is the only important type marketed in Enid. This subclass includes wheat of the class Soft Red Winter of both light and dark colored kernels and shall not include more than 10 per cent of Soft Red Winter wheat grown west of the Great Plains area of the United States, which comprises the Western Red type.

14/ U.S.D.A. Miscellaneous Publication No. 325, Op. cit., p. 6.

marketing season, as a result of a surplus of high protein wheat and a shortage of soft wheat for blending. In Fort Worth, soft wheat sold at a premium over hard wheat, at times as much as two or three cents per bushel.^{15/}

The fact that but one car of soft wheat was shipped to Enid from within the state does not mean, however, that no other soft wheat was grown within the Enid market area. The Bureau of Plant Industry estimated that 8.9 per cent of Oklahoma's acreage in 1939 was soft red winter wheat.

MIXED WHEAT

The Mixed wheat^{16/} area of Oklahoma is concentrated primarily in Kay, Noble and Grant counties. These three counties marketed over 1119 cars or nearly 97 per cent of all mixed wheat shipped to the Enid Terminal. Other counties of minor importance were Garfield, Pawnee, Payne, Logan and Major which shipped 38 cars to Enid. (Table 3). Only one car of Mixed wheat was received out-of-state and this came from Kansas.

Mixed wheat has long been a problem to the terminal grain buyer. Discrimination against this type of grain, shown in almost every market, resulted in great losses to the

^{15/} The Daily Oklahoman, February 28, 1940 p. 14.

^{16/} This class shall consist of all mixtures of wheat not provided for in the six other major classes of United States Standards. Mixed wheat in Oklahoma refers to admixtures of hard and soft wheats. A wheat is classified as Mixed when it contains over 10 per cent of each hard and soft types, and on the inspection slip an approximate percentage of each class will be given along with the designated grade.

producers who live in the counties so near the limits of the hard winter area.

An arbitrary division line has been set up in Oklahoma to divide the state into hard and soft areas.^{17/} (Figure V). It also extends south into Texas and north into the grain states of Kansas, Nebraska and the Dakotas. This line has been set up to fit the climatic and soil conditions suitable to the growth of a particular class of wheat.

Hard Winter wheat grows best on a rich humus soil with plenty of decayed vegetable matter, which supplies the nitrogen. This is one of the principal elements used by the wheat plant in the formation of gluten. Gluten, in turn, is essential in making a high quality bread flour.^{18/}

The type of soil and climate usually determines whether wheat will be starchy or glutenous. A short, forced growing season and a fertile soil, characteristic of West Texas and Western Oklahoma, have a tendency to produce glutenous wheat. Starchy wheat is grown on thin soils with long growing seasons similar to Eastern Oklahoma. Hard seed wheat may be sown in regions which produce starchy wheat, but within a few years its character acquires the likeness of soft starchy wheat.

Whether a wheat is hard or soft depends upon the amount and quality of its gluten. Hard wheats of the West usually contain over 12 per cent of gluten, of which 45 to 65 per cent

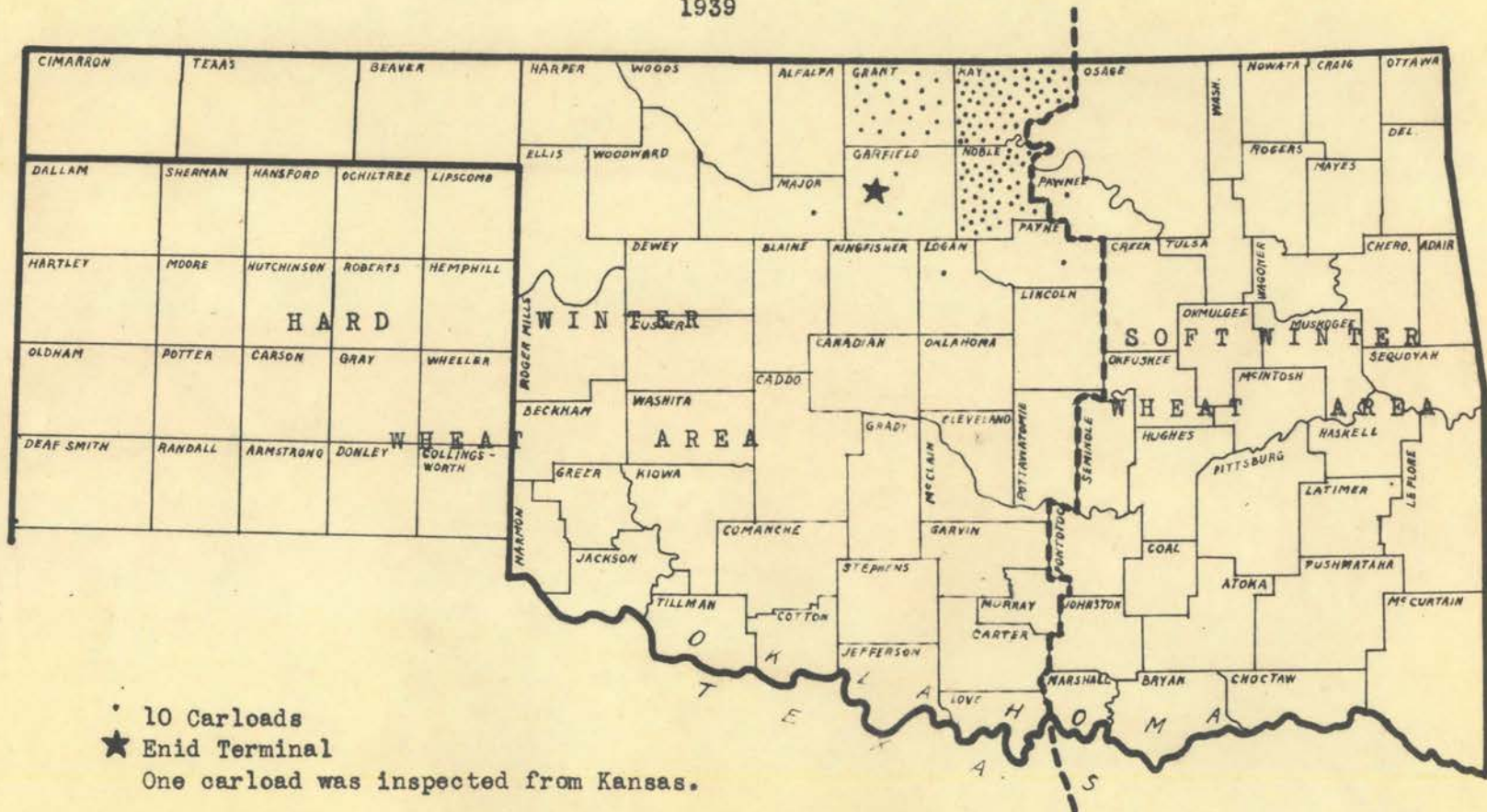
^{17/} Current Farm Economics, October, 1938, p. 106.

^{18/} The Americana, Volume 29. 1937 pp. 242-243.

FIGURE V

POINT OF ORIGIN FOR 1160 CARS OF MIXED WHEAT MARKETED IN ENID

1939



Source: Unpublished worksheets, Grain Supervisor's Office, Enid, Oklahoma

is in the form of gliadin, an alcohol soluble protein, while soft wheats contain a less amount of gluten.^{19/}

Kay and Noble Counties border on the soft wheat area and make it almost impossible for these counties to market a strictly hard wheat. A large percentage of the mixing in 1939, originated at the local elevators in this transitory area. During the harvest season, when elevator space is sorely needed, insufficient equipment, for the separate binning of hard and soft wheat, is usually the source of much mixed wheat. Many farmers, however, are unfamiliar with the losses by raising mixed wheats and thus plant the mixed classes together.

The Oklahoma Wheat Improvement Program, sponsored by various organizations of the grain trade of the state, bankers, farmers and the Oklahoma Agricultural Experiment Station at Stillwater, has aided materially in the past few years by discouraging the growing of soft wheats in the hard winter area.^{20/} Greater emphasis must be placed on the heavy monetary losses incurred by the producer to impress its great importance before the mixed wheat problems can be successfully wiped out in Oklahoma.

Some communities are so negligent and persistent in marketing mixed wheat that the grain inspectors can almost grade the wheat without a sample determination of the admixture of

^{19/} The Americana, Loc.cit.

^{20/} Quotations from an interview with the Federal Grain Supervisor, Mr. H. N. Holmes, Enid, Oklahoma.

hard and soft wheats. These communities are also discriminated against in the terminal markets in an adverse way that some communities of the West are paid a premium for high protein content wheat.

Fortunately in the past few years, the demarcation line between the hard and soft areas has gradually moved eastward, as a result of community-wide effort on behalf of the producers and the local elevator managers.

"Billings, a small town in the western part of Noble County, a decidedly mixed wheat area, marketed nearly all of its wheat in the Mixed Class until just a few years ago. Now, this community is marketing practically all of its grain in the Hard Winter Class and receiving a great profit which they had been losing in past years." 21/

The tremendous losses sustained by those who market mixed wheat is shown in Chapter V of this study.

SUMMARY

Wheat is drawn into the Enid Market primarily from Western Oklahoma and the Texas Panhandle. Several carloads are, however, marketed from Kansas and Missouri for blending and mixing purposes. The area of greatest wheat concentration within the state is in Garfield, Grant and Alfalfa counties. Over 40 per cent of the total 1939 Enid receipts came from this area.

Hard Winter wheat is grown principally in the eastern part of Oklahoma's wheat belt, comprising Alfalfa, Major, Grant, Garfield and Kingfisher counties. Over 70 per cent of Enid's receipts are of this type. The Dark Hard Winter wheat areas are located in the southwestern Oklahoma counties and also the northwestern counties. Nearly all of the wheat produced in Texas and marketed in Enid is of this subclass. Hard Winter and Dark Hard Winter wheats are exceptionally good for making a high quality flour. Yellow Hard Winter wheat is another subclass of Hard wheat. This area of production was confined to Major, Garfield and Grant counties. Excessive moisture during the harvesting season resulted in this yellow appearance in 1939. Soft Red Winter wheat was not marketed to a great extent in Enid. Much of the wheat in eastern Oklahoma is of this class, but was possibly sent to other markets. The Mixed wheat area is concentrated in Kay, Noble and Grant counties. This is a result of this region's adaptability in producing both hard and soft varieties, much to the dismay of the terminal grain buyers.

CHAPTER III

TRANSPORTATION AND ITS RELATION TO WHEAT MOVEMENT

TRANSPORTATION COSTS

Excellent railway facilities have followed closely on the development of the High Plains as a wheat producing region. A network of railroads now covers the entire wheat belt of Oklahoma, connecting the Enid Terminal with other larger terminal markets to the North and South. (Figure VI).

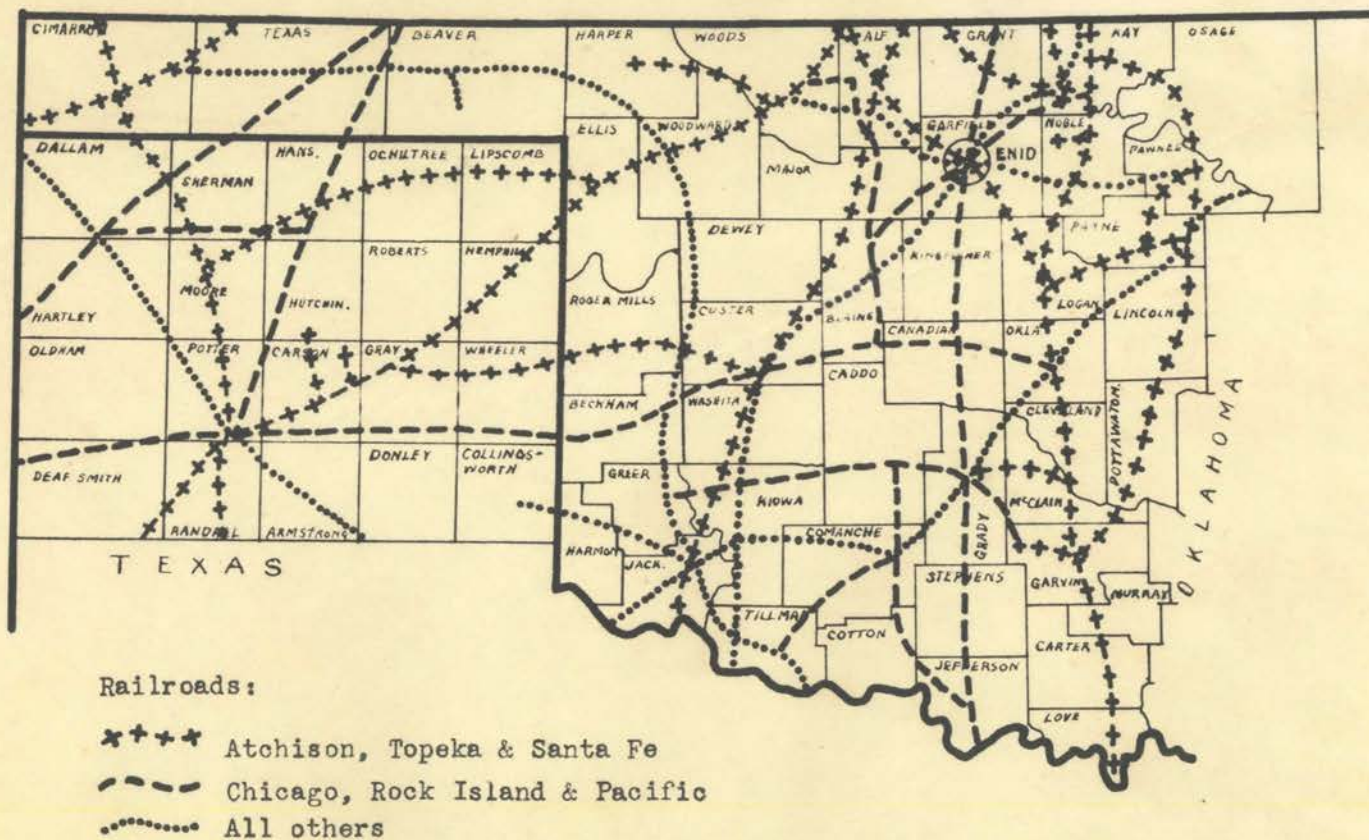
The major roads passing through Enid are the Atchison, Topeka and Santa Fe; the Chicago, Rock Island and Pacific; the Missouri, Kansas and Texas Lines and the St. Louis and San Francisco. Many communities in the Enid Market area are served by more than one railroad. This fosters better services during the harvest season as more cars can be furnished for shipment and then can also be moved with much less delay. This is a very important factor in a season when the grain is damp or wet and demands immediate movement.

Railroad transportation in the Southwest, however, has long held the reputation of having exceedingly high rates. Interterritorial Freight Rate Structures have recently been compiled for all the states of the Union. These territories are grouped according to their geographical location in such a way that five territories have been organized. The Southwestern Territory is composed of Texas, Oklahoma, Arkansas and Louisiana.

A recent survey of freight rates was made in the United

FIGURE VI

RAILROAD SYSTEMS OF WESTERN OKLAHOMA AND THE TEXAS
PANHANDLE AND THEIR RELATION TO THE ENID TERMINAL



Source: Compiled from maps furnished by the railroad companies in this area, May, 1939.

States by the Transportation Economics Division of the Tennessee Valley Authority. An index of relative freight levels was devised with the Eastern Territory representing the basis or 100. Other Territory index numbers were: Southern 139; Western Trunk-Line (states of the midwestern grain area) 147; Mountain-Pacific 171 and Southwestern Territory 175.^{1/}

This indicates that freight rates in the Southwest are the highest in the Nation and are nearly twice as much as in the Northeastern States.

Wheat shipments out of Enid to larger grain markets are subject to interterritorial rate changes. The primary destination points of Enid shipments in 1939 were Galveston and Kansas City. Galveston is in the same territory as Enid, Southwestern, and is thus subject to the highest rates. Kansas City is in the Western-Trunk Line Territory where freight rates are much lower. The freight rate on wheat per hundred pounds from Enid to Kansas City is 21 cents, whereas the rate to Galveston is 35 cents.^{2/} (Table 4). This differential is partially explained by the different territorial rates. When a car of wheat is shipped to Kansas City, the rate becomes lower after passing the northern boundary of

^{1/} J. Haden Alldredge, The Interterritorial Freight Rate Problem of The United States, p. 13. For further information regarding freight rate comparisons of various commodities in the Southwest refer to, "Supplemental Phases of Interterritorial Freight Rate Problems of the United States", J. H. Alldredge of Tennessee Valley Authority, 1939.

^{2/} Rates were effective in June, 1939.

TABLE 4

FREIGHT RATES ON WHEAT FROM ORIGIN TO VARIOUS
 TERMINAL MARKETS EFFECTIVE JUNE 10, 1939
 (cents per hundred pounds)

Oklahoma points:

Origin	Enid	Kansas City	Galves- ton	Origin	Enid	Kansas City	Gal- veston
Alva	15	21	37	Helena	11	21	37
Ames	11	24	35	Hennessey	10	22	35
Arapaho	17	27	35	Hobart	19	28	35
Banner	15	25	35	Jet	11	21	37
Bessie	18	27	35	Kingfisher	12	24	35
Billings	11	19	36	Lahoma	10	21	36
Bison	10	21	35	Lamont	12	20	36
Blackwell	13	18	36	Manchester	19-14	21	37
Buffalo	20-18*	23	41	Marland	18-14	21	36
Burlington	14	21	37	Marshall	11	22	35
Carrier	9	21	36	Medford	12	19	36
Clinton	17	27	35	Meno	10	22	36
Clyde	18-12	21	37	Mooreland	18-17	23	37
Cordell	18	27	35	Morrison	14	21	35
Custer City	17	27	35	Newkirk	19-16	21	36
Covington	10	21	35	Okarche	13	25	35
Dacoma	13	21	37	Okeene	12	24	35
Douglas	10	21	35	Perry	12	21	35
Drummond	10	21	35	Pond Creek	10	20	36
Elk City	19	28	35	Red Rock	18-14	21	36
Enid	0	21	35	Rocky	19	27	35
Fargo	19-18	26	38	Selman	19-18	23	41
Frederick	22	30	35	Synder	20	29	35
Freedom	18-17	22	39	Supply	19	25	37
Garber	10	21	36	Thomas	16	26	35
Gibbon	18-13	21	37	Wakita	13	19	37
Goltry	10	21	37	Waukomas	9	21	35
Greenfield	15	25	35	Weatherford	17	27	35

Texas points:

Amarillo	26	30	38 $\frac{1}{2}$	Lord	25	29	38 $\frac{1}{2}$
Booker	23	28	38 $\frac{1}{2}$	Morse	29	30	38 $\frac{1}{2}$
Darrrouzett	23	28	38 $\frac{1}{2}$	Perryton	25	29	38 $\frac{1}{2}$
Farnsworth	25	29	38 $\frac{1}{2}$	Spearman	29	30	38 $\frac{1}{2}$
Follett	23	28	38 $\frac{1}{2}$	Twichell	25	29	38 $\frac{1}{2}$
Huntoon	25	29	38 $\frac{1}{2}$	Waka	25	29	38 $\frac{1}{2}$

* First figure indicates rate with diversion in transit privilege included.

Source: Traffic Manager, Union-Equity Cooperative Grain Exchange Enid, Oklahoma.

Oklahoma into the Western Trunk-Line Territory.

The major wheat counties of Oklahoma, Garfield, Grant and Alfalfa, are favorably located in relation to the terminal markets. Each county is directly connected with Enid and Kansas City for the most economical movement of wheat by rail transportation.

Unfortunately, some local grain shipping points are not so favorably situated. An excellent example may be found in the Northwestern part of the state in Harper County. Buffalo has a rate of 41 cents per hundred pounds to Galveston and Supply, twenty miles south of Buffalo, has a rate of 37 cents. (Table 4). This appears to be an excessive differential for so short a distance. However, Buffalo has a two cent advantage over Supply when shipping to the Kansas City Market and the rates are practically the same when shipping to Enid. This indicates that in most periods it would be advantageous for Buffalo to ship north and Supply to ship south if the prices of the Kansas City and Galveston wheat markets are in close relation.

"Diversion in transit" is a privilege often used by shippers of grain. This implies that wheat may be sent in a general direction to market, but if at any time the wheat is sold or a particular market is sought, the grain may be stopped or sent in another direction at a small fee. An example of this privilege is shown by the freight charge of wheat to Enid from Red Rock, in central Noble County. (Figure VI). The rates listed are 18 and 14 cents per

hundred pounds to Enid. (Table 4). This means that wheat may be sent in the general direction of Galveston, but upon reaching a junction point at Guthrie, the shipper may decide to ship the wheat to Enid. This charge would be 18 cents per hundred pounds, but had the shipper originally assigned the car of grain to Enid, he would have paid only 14 cents per hundred pounds. He would thus have saved a four cent diversion in transit charge. Other shipping points in Oklahoma have similar rates for diversion charges. (Table 4).

Another privilege regularly used by terminal milling firms is "Milling in transit." This allows wheat to be billed to a particular wheat market but while enroute it may be stopped and the wheat milled into flour. An example of this privilege is as follows: a car of wheat (1500 bushels) may be shipped from Medford, Oklahoma to Galveston by way of Enid. The wheat is unloaded at Enid and milled by a firm who has paid the transportation costs. (Wheat is usually bought on track at the local elevator). The grain firm then has 1500 bushels transportation from Enid to Galveston, on the through rate of 36 cents from Medford to Galveston, to its credit. This credit on the books of the railroad company can be used for any wheat shipped by the firm from Enid to Galveston. A considerable saving is thus made as the rate from Medford to Enid would ordinarily have been 12 cents and an additional 35 cents for wheat shipped from Enid to Galveston. (Table 4). This totals 47 cents compared with 36 cents when shipped by the milling in

transit privilege.

The belief that railroad rates have been excessive in the Southwest has caused considerable agitation, concerning the movement of wheat by water from the Oklahoma Plains. This would involve dredging the Arkansas River as far as Tulsa, Oklahoma to permit barges and flatboats to traverse the distance from Little Rock to Tulsa. This project has been pushed by Tulsa as well as some grainmen, but as yet, no definite plans have been worked out.^{3/}

The major reasons for high rail rates in the Southwest are possibly the result of a lack of competition to meet the railroads and the lack of full traffic both ways. Water transportation, if available as far as Tulsa, Oklahoma, would probably cause railroad rates to decline.

Wheat, and other agricultural staples, could be transported by rail to Tulsa, then reshipped by boat down the river to New Orleans or north to St. Louis and the upper interior markets. This would permit a great saving in transportation as wheat can be shipped 8,000 miles by water as compared to only 400 miles by rail at the same cost per bushel.^{4/} This could not, however, be accomplished by an individual producer. The wheat would require shipment to Enid for concentration and reshipment to Tulsa.

^{3/} This information was obtained from Mr. H. N. Holmes, Federal Grain Supervisor, through a personal interview.

^{4/} Dummeier and Heflebower, Principles of Economics as Applied to Agriculture, p. 560.

MOVEMENT OF OKLAHOMA PANHANDLE WHEAT

The Oklahoma Panhandle section of Oklahoma, Cimarron, Texas and Beaver Counties, is fortunate in having two major railroads, directly connected with Kansas City, crossing their territory. These counties are not so favorably situated in relation to the Enid Market which probably accounts for so small a percentage of the 1939 crop marketed at the Enid Terminal. (Table 5).

TABLE 5

COMPARISON OF WHEAT SHIPMENTS
FROM THE OKLAHOMA PANHANDLE, 1939

County	Production Bushels	Marketed in Enid		Per Cent*
		Cars	Bushels	
Cimarron	461,400	12	18,000	3.9
Beaver	1,432,000	8	12,000	.8
Texas	1,304,700	32	48,000	3.7
Ellis	952,500	189	283,500	29.8

* Represents wheat marketed at Enid for first seven months of marketing season, 1939.

Source: K. D. Blood, State Statistician.

Ellis County, located near the east end of the Oklahoma Panhandle, has a direct railroad connection with Enid. This is probably one reason why Ellis County marketed nearly 30 per cent of its wheat at Enid in the first seven months of

1939 season, whereas Cimarron, Beaver and Texas counties marketed less than four per cent of their crop in Enid in 1939.

A glance at the rates indicates the disadvantage of the Texas Panhandle counties in shipping their grain. (Table 4). Rates to Enid range from 23 to 29 cents per hundred pounds and rates into Kansas City from 28 to 30 cents while the rates to Galveston were 38 $\frac{1}{4}$ cents.

Much of the West Texas wheat moves into the Amarillo Market and some drifts north along the same lines that Oklahoma Panhandle wheat moves. However, over 1,400,000 bushels of wheat were shipped to Enid from Texas during the first seven months of 1939 marketing season. Ochiltree and Lipscomb counties supplied the largest percentage of Texas wheat to Enid. These counties are favorably situated by rail connection with Enid. Moreover, several of the local elevators, are members of the Union-Equity Cooperative Grain Exchange in Enid. This partially accounts for a great number of the shipments as patronage dividends are paid member elevators by the Union-Equity.

Railroads in West Texas have in recent years been extended to include several additional points in the Enid market area. The Santa Fe Railroad is the most important carrier of wheat from Texas into Enid and has extended their lines to meet the production areas. One branch line of the Santa Fe, from Shattuck, Oklahoma to Spearman, Texas has been extended west to Etter, Texas and south to Amarillo. This "Spearman Branch", as it is called by grain men, carries most of the Panhandle

wheat.

DESTINATION OF SURPLUS WHEAT NOT MILLED IN ENID

Foreign wheat markets have long been an outlet for surplus wheat produced in Oklahoma and Texas, but foreign developments recently have almost closed the export markets.

Apparently the amount of wheat that is exported from the United States has an effect upon the direction that Oklahoma's wheat moves after concentration in Enid. For the past five years, beginning with the crop year of 1935, the greater part of Enid's wheat shipments have been to points south of Enid. The major mills and points of concentration in the South receiving Enid wheat were Galveston, Houston, Texas City, Dallas, Fort Worth, Sherman, San Antonio, Oklahoma City and El Reno.

In 1938, the year in which the United States exported over 109,000,000 bushels of wheat, Enid shipped 90.5 per cent of its wheat to southern points. (Table 6). This was also one of the largest production years for Oklahoma, well over the 1935-39 average.

There appears to be a relationship between the amount of Enid shipments sent to southern markets, the size of crop in Oklahoma and the total exports of the United States. (Table 6).

For the five year period, 1935-39, Enid's shipments show that 75.2 per cent were sent south and 24.8 per cent north. The average production in the state was 49,644,400, which was very close to the ten year average of 1928-1937.

(Page 2).

TABLE 6

ENID WHEAT SHIPMENTS AS INFLUENCED BY OKLAHOMA
PRODUCTION AND TOTAL EXPORTS OF UNITED STATES

Beginning with July	Northern ^{1/} Shipments	Per Cent	Southern ^{1/} Shipments	Per Cent	Oklahoma ^{2/} Production Bushels	United States ^{3/} exports bushels
1935	360	23.4	1327	76.6	33,080,000	7,115,000
1936	877	44.0	1119	56.0	27,520,000	12,276,000
1937	2591	33.4	5171	66.6	65,462,000	103,390,000
1938	736	9.5	7090	90.5	61,677,000	109,541,000
1939	798*	34.1	1549*	65.9	60,483,000	15,201,000
1935-1939 Av.		24.8		75.2	49,644,400	49,504,600

*Preliminary, includes only first seven months of marketing season, July to December.

Source: ^{1/} Unpublished worksheets, Federal Grain Supervisor, Enid, Oklahoma.
^{2/} K.D. Blood, Federal Statistician, Agricultural Marketing Service
Oklahoma City, Oklahoma.
^{3/} The Wheat Situation, B.A.E., U.S.D.A. February 26, 1940. Includes
all wheat shipped together with flour in terms of bushels of grain.

The most Northern points, receiving wheat from Enid, are Kansas City, Chicago, Wichita, Arkansas City, St. Joseph and Salina. For the first six months of the 1939 crop year Kansas City received more Enid wheat than any other market, but this is an exception for the past five marketing seasons.

Galveston has received nearly one-third or 6887 cars of wheat shipments from Enid for the past five years. Fort Worth and Houston received well over 2000 cars each. (Table 7).

TABLE 7

WHEAT SHIPMENTS FROM ENID BY CARS, 1935-1939

	1935:	1936:	1937:	1938:	1939*:	Total
Arkansas City	67	50	102	71	57	347
Dallas	378	387	187	856	90	1898
El Reno	43	84	14	91	129	361
Fort Worth	190	256	327	1362	216	2351
Houston	35	48	159	1419	366	2027
Hutchinson	23		44	5	22	94
Kansas City	143	157	681	99	519	1599
New Braunfels	53			10		63
Oklahoma City	104	110	135	293	110	752
Salina	23	202	233	6		464
San Antonio	146	63		59	11	279
Sherman	266	93		22	119	500
Wichita	104	226	374	82	89	875
Wichita Falls	112	35	50	99	62	358
Chicago		205	989	443	60	1697
Galveston		42	3977	2448	420	6887
Minneapolis		5	31			36
Topeka		32				32
Buffalo			34			34
Coffeyville			46	16	5	67
Des Moines			25			25
New Orleans			36	25		61
Port Arthur			167	5		172
St. Joseph			32		43	75
Texas City			119	371	26	516
Amarillo				14		14
Lubbock				13		13
Plainview				3		3
Fonca City				1		1
Sioux City				3		3
Wellington				10	3	13
All Others	38	46	80			164
TOTAL	1725	2041	7842	7826	2347	21781

* Preliminary, First six months of marketing year.

Source: Unpublished Intermarket slips, Grain Inspector's Office, Enid, Oklahoma.

SUMMARY

An excellent network of railroads covers most of the Enid market area. This condition, however, does not cause freight rates to be comparable to other sections of the United States. The Southwestern Territory, which includes Oklahoma and Texas, has the highest freight rate in the Nation.

"Milling in transit," and "Diversion in transit," are common transportation privileges often used by terminal elevators to lower marketing costs.

Much of the wheat produced in the Oklahoma Panhandle counties finds a market in the states to the north. This is a result possibly of direct rail connections with these markets and more favorable freight rates to the north.

For the five years, 1935-1939, 75.2 per cent of all shipments from Enid were shipped south of Enid, largely to Texas mills or Texas Gulf ports. There is a close relationship between the amount of Enid wheat shipped south and the quantity of wheat exported from the United States. Over the five year period, Galveston has received nearly one-third of Enid's shipments.

CHAPTER IV

PROCESSING AS PRACTICED BY ENID TERMINALS

RECEIPTS AND SHIPMENTS FOR 1937, 1938 and 1939.

Wheat receipts into Enid were relatively constant for the past three crop years, 1937-1939. Receipts for the marketing year of 1937 were 18,029 carloads or approximately 27,000,000 bushels. Receipts for 1938 totaled 16,994 cars. The total receipts for the 1939 marketing season were unavailable at this writing, however, all indications point to a similar number of cars as was marketed during the 1937 and 1938 seasons.^{1/}

By January 1, of the marketing year 1937, 85 per cent or 14,975 cars had been marketed and on the same date of the subsequent year, 84 per cent or 14,200 cars had been marketed. This compares favorably with the 1939 year which showed that 14,834 cars were marketed by January 1, 1940.

(Appendix A).

The 1937 crop of wheat was probably the highest quality produced in recent years. In that year 40 per cent of the crop marketed in Enid was graded No. 1, while 45 per cent was graded No. 2. In 1938 only 11 per cent was marketed as No. 1 wheat, 41 per cent No. 2 and 34 per cent as No. 3. This was a poor year for quality wheat, but production remained high, as over 60,000,000 bushels were produced. The

^{1/} The total receipts for 1939-1940 were found, after this writing, to be 16,777 cars. This is slightly under the 1938 figure.

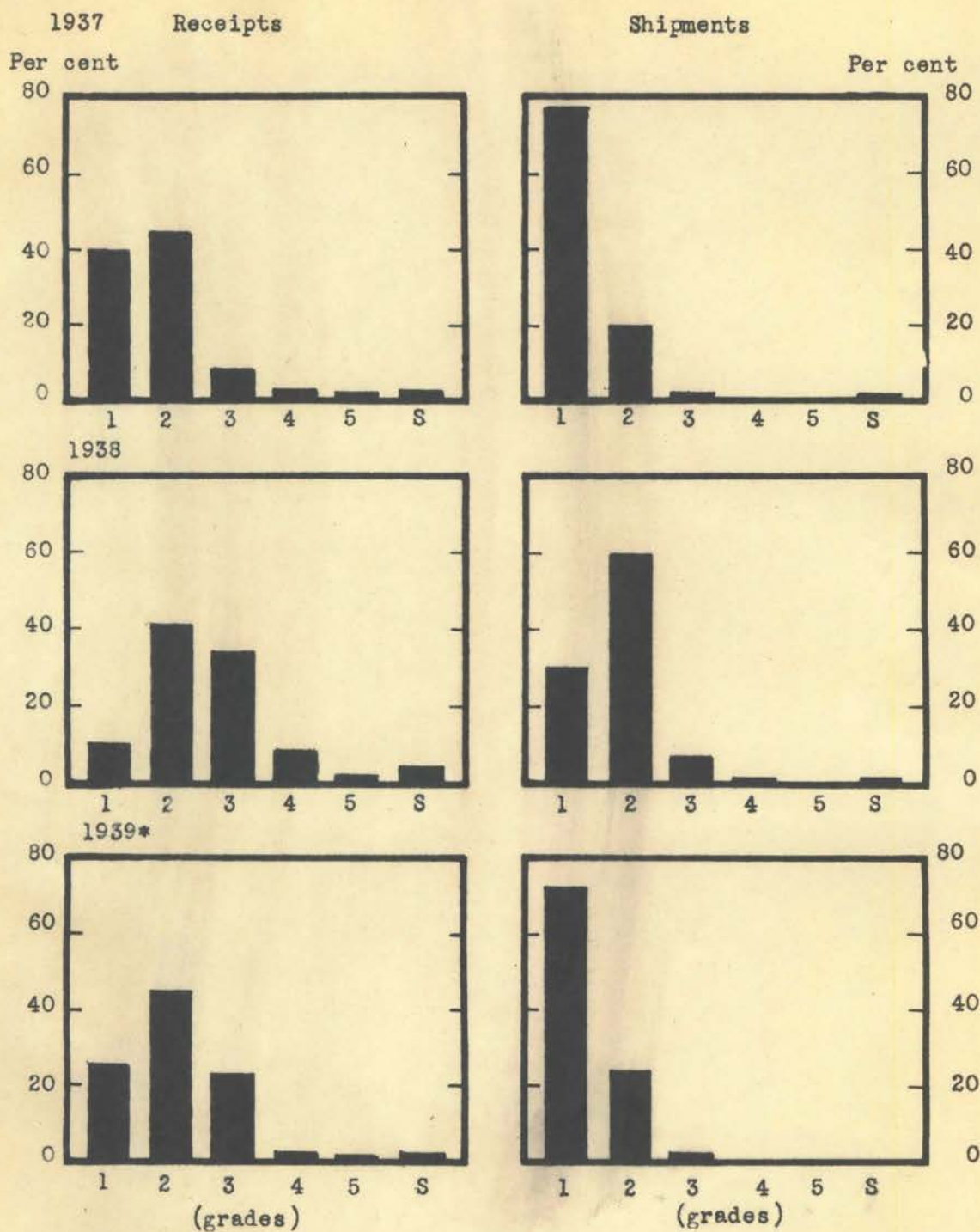
1939 crop was of fair quality and an excellent yield. The grades were recorded as 26 per cent No. 1 wheat and 46 per cent No. 2 wheat. (Figure VII).

Enid shipments are not so irregular throughout the year as are their receipts. By January 1, 1937, 59 per cent of the Enid total shipments were made and in 1938 on the same date 68 per cent were shipped. By examination of the monthly totals it is shown that the shipments are fairly well distributed during the twelve month period. (Appendix A). This is to be expected as terminal concentration and capacity permits holding grain off the market and feeding it into the trading channel as needed.

The extent in which Enid terminal elevators have processed wheat, before further shipment, can be readily seen.^{2/} In 1937, when an excellent quality wheat was produced, 77 per cent of all wheat shipped out of Enid was graded No. 1 and 20 per cent No. 2. A lower quality wheat in 1938 caused the No. 1 graded wheat shipments to fall to 31 per cent and the No. 2 wheat increased to 60 per cent. The 1939 records indicate that possibly more terminal processing was done in that year than in previous years as the incoming wheat was of lower quality than in 1937, but the shipments continued to grade high. Seventy three per cent of the shipments graded No. 1 and only 25 per cent No. 2. Figure VII.

^{2/} Some processing practices include, mixing, scouring, drying, cleaning, washing, etc.

FIGURE VII
WHEAT RECEIPTS AND SHIPMENTS BY GRADES
IN ENID FOR 1937, 1938 and 1939



* First seven months of marketing season

Source: Appendix A.

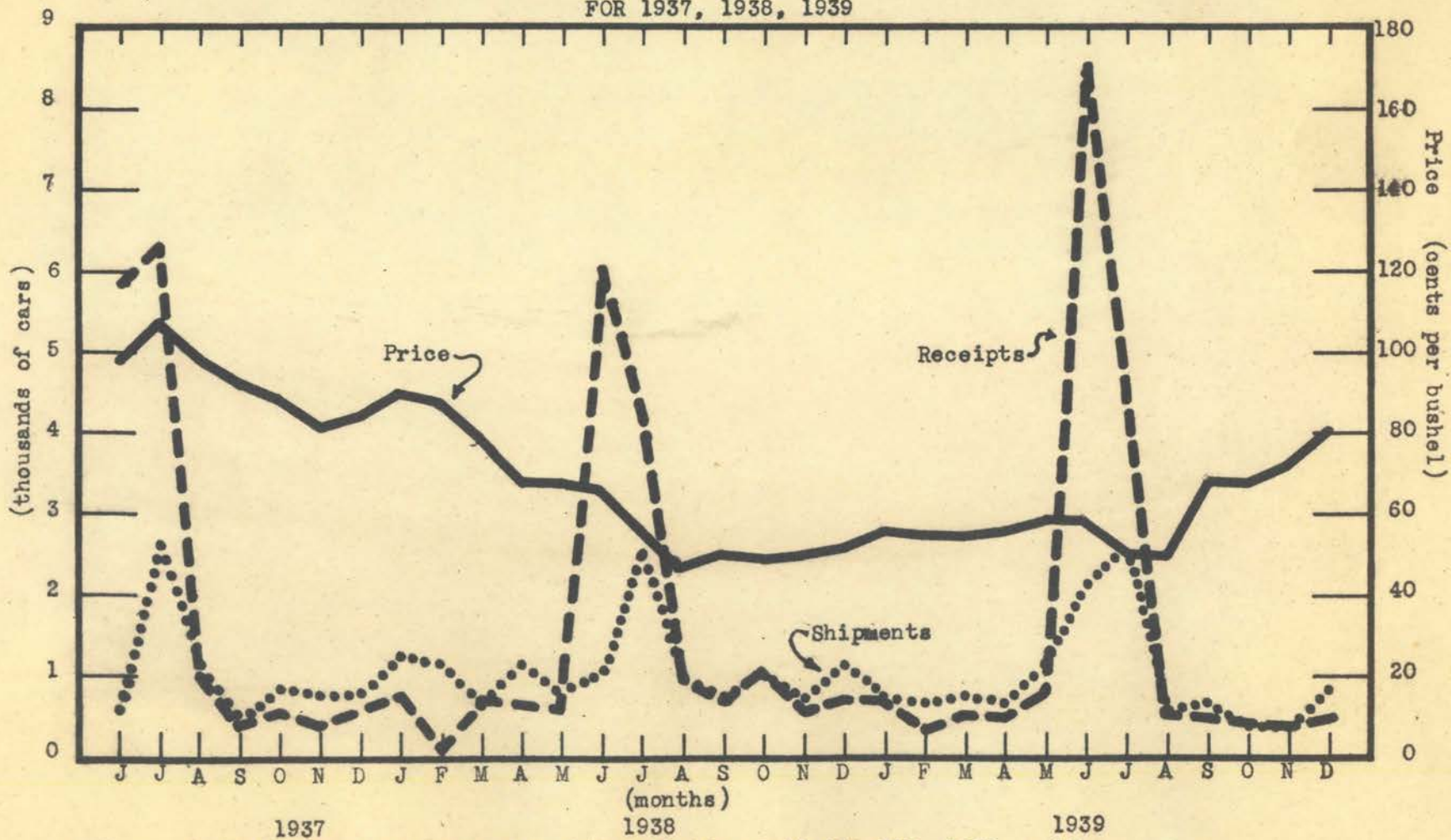
Over the three year period, 1937 to 1939, there was little indication to assume that the Oklahoma farm price for wheat has any great influence on current marketings or terminal shipments. Receipts at Enid reached their peak in June and July and for the last three seasons the farm price broke a few cents immediately following the harvest season. (Figure VIII).

This is likely the result of the seasonal price movement of wheat. Market wheat at the end of the marketing season reflects the storage costs which normally raises the price above the early season price. New wheat at the beginning of the marketing season, however, forces the removal of the storage costs and wheat prices normally slump to a low level and begin their slow upward climb in response to the storage charges.

There is close relationship between the total shipments from Enid and the Enid receipts. Shipments do not include the cars which were diverted from Enid and never unloaded at the terminal. For this reason the total receipts during June and July far out number the shipments as the diverted cars are never recorded as being shipped out of Enid, but are recorded in the receipts only. However, if the diverted cars which numbered 2,497 for 1939, were added to the shipments in June and July, the two lines indicating the incoming and outgoing wheat would be almost identical. (Table 8).

Diverted wheat appears in the Enid Terminal primarily

FIGURE VIII
 COMPARISON OF RECEIPTS AND SHIPMENTS WITH FARM WHEAT PRICE AT ENID
 FOR 1937, 1938, 1939



Source: Appendix A and Oklahoma Experiment Station Bulletin 238, 1939, p.18

TABLE 8
DIVERTED CARS THROUGH ENID, 1939*

Terminal		grades						Total cars	Per Cent of Enid Market
		1	2	3	4	5	s		
U	Number	171	540	484	22	2	10	1229	49.2
	Per Cent	13.9	43.9	39.4	1.8	0.2	0.8	100	
F	Number	150	235	76	16		6	483	19.3
	Per Cent	31.1	48.7	15.7	3.3		1.2	100	
W	Number	98	98	48	4			248	9.9
	Per Cent	39.5	39.5	19.3	1.7			100	
M	Number	61	78	77	2	3	7	228	9.1
	Per Cent	26.7	34.2	33.8	0.9	1.3	3.1	100	
S	Number	30	23	4	1			58	2.3
	Per Cent	51.7	39.7	6.9	1.7			100	
E	Number	20	44	6				70	2.8
	Per Cent	28.7	62.9	10.4				100	
R	Number	12	23	14	2			51	2.1
	Per Cent	23.5	45.1	27.5	3.9			100	
All Others:	Number	35	74	18	1		2	130	5.3
	Per Cent	26.9	56.9	13.8	.8		1.6	100	
Total	Number	577	1115	727	48	5	25	2497	100.0
	Per Cent	23.1	44.7	29.1	1.9	0.2	1.0	100	

*Preliminary estimate.

Source: Unpublished Worksheets of Federal Grain Supervisor U.S.D.A. Enid, Okla.

during the harvest season of June and July when it becomes impossible for the terminal elevators to handle the receipts adequately. It appears that one reason for shipping wheat on without unloading is because of the limited capacity of the terminal storage elevators. In 1939, the terminal elevator that handled most of the Enid receipts also diverted 49.2 per cent of all the diverted cars out of Enid and over 19 per cent of the firm's total receipts. Grain buyers in Enid with no storage space, also diverted a large part of their purchases.

A study of the grades and quality of wheat diverted from Enid also showed that it was the general average grade coming into Enid. It might be expected that only the better grades or exceptionally low grades were diverted, but this is misleading, as can be shown by comparing the quality of the total wheat receipts and that of the diverted wheat.

		Grades (per cent)						
		1	2	3	4	5	6	Total
Diverted cars	(1)	23	45	29	2		1	100
Total Wheat receipts	(2)	26	46	23	2	1	2	100

- (1) Table 8.
 (2) Figure VII.

This indicates that no special effort was made by the elevators to divert a particular grade of wheat. They diverted primarily during June and July when their storage space was filled and processing was impossible until some

stored wheat was released.

The total receipts and shipments of wheat in the Enid Market, by classes, vary considerably with the crop year. For instance, the dark hard winter receipts in the last three crop years ranged from 22 per cent to 36 per cent of each year's total receipts, while the hard winter receipts ranged from 51 per cent to 68 per cent. (Table 9). Thus, in an analysis of the quantity of each class of wheat reaching Enid, an index or ratio might be devised that would indicate the relative importance of the different classes of wheat by years. A large percentage of any particular class usually indicates that a fair crop was produced in the area producing the specified class. These areas are quite definitely defined in the production areas of a preceding chapter.

Enid shipments by classes vary much more than do the receipts. The range for dark hard winter was from 14 per cent to 57 per cent and hard winter ranged from 33 per cent to 84 per cent of the total shipments of each year. One of the important factors in determining the class of Enid wheat shipments is efficient mixing. If the demand is strongly in favor of dark hard winter wheat, the elevator can ship out a larger proportion of that class by proper mixing. If the demand is for a strictly hard wheat or a soft wheat then very little mixing is necessary.

RECEIPTS OF WHEAT RECEIVED BY INDIVIDUAL BUYERS

For the marketing year 1939, there were 24 grain buyers

TABLE 9

PERCENTAGE OF WHEAT RECEIPTS AND
SHIPMENTS BY CLASSES IN ENID
FOR 1937, 1938 AND 1939

RECEIPTS (per cent)						
Year	DHW	HW	MXW	RW	YHW	TOTAL
1937	36	51	12	1		100
1938	29	63	7	1		100
1939*	22	68	8		2	100

SHIPMENTS (per cent)						
Year	DHW	HW	MXW	RW	YHW	TOTAL
1937	57	33	10			100
1938	34	62	4			100
1939*	14	84	2			100

*Preliminary estimate.

Source: Worksheets of Federal Grain Supervisor
Enid, Oklahoma.

in Enid who purchased one or more cars of wheat from the local elevators in the wheat belt. Of this total, six purchased over 80 per cent of the Enid receipts and one terminal elevator handled over 42 per cent. (Table 10).

The grades handled by the various elevators ranged from 23.4 per cent to 32.5 per cent for grade one; 43.9 per cent to 49.6 per cent for grade two; 18.5 per cent to 30.4 per cent for grade three; .8 per cent to 4.5 per cent for grade four; 0 per cent to .8 per cent for grade five and 1.6 per cent to 3.5 per cent for sample grade wheat. These ranges are relatively narrow, indicating that almost every grade of wheat is purchased by the various buyers.

There is a trend, however, for the terminal elevators, who buy wheat for milling purposes or a subsidiary mill, to purchase a higher grade of wheat than those elevators who do no milling. Terminals S and B are milling concerns who bought 32.5 per cent and 30.5 per cent of No. 1 wheat, respectively. This is higher than the average of 26 per cent of the entire Enid receipts.

Wheat receipts in Enid for the past three marketing years, 1937-1939, averaged 16,619 cars. Of this amount, 636 cars were tough, 201 cars were graded smutty and 605 cars were sufficiently infested to be graded as weevily wheat. (Table 11).

These three factors may have been present in large enough quantities to cause the wheat to be placed in a sample grade. Even though the wheat is not graded sample,

TABLE 10

CARS OF WHEAT PURCHASED IN ENID
BY INDIVIDUAL TERMINAL BUYERS
1939*

Terminal		Total cars	grades						Per Cent of Total Receipts
			1	2	3	4	5	s	
S	Number	1558	507	695	288	31	2	35	10.5
	Per Cent	100	32.5	44.6	18.5	2.0	.01	2.3	
F	Number	1634	383	803	341	53	7	47	11.0
	Per Cent	100	23.4	49.1	20.9	3.3	0.4	2.9	
U	Number	6242	1622	2874	1502	133	13	98	42.1
	Per Cent	100	25.9	46.1	24.1	2.1	0.2	1.6	
E	Number	1370	398	679	255	11	2	25	9.2
	Per Cent	100	29.1	49.6	18.6	.8	.1	1.8	
G	Number	1240	303	471	377	56	10	23	8.4
	Per Cent	100	24.4	38.0	30.4	4.5	0.8	1.9	
P	Number	282	86	124	58	9		5	1.9
	Per Cent	100	30.5	43.9	20.6	3.2		1.8	
All Others									
	Number	2508	600	1138	618	51	12	89	16.9
	Per Cent	100	23.9	45.4	24.6	2.0	.6	3.5	
Total		14834	3899	6784	3439	344	46	322	100.0
		100	26.3	45.7	23.2	2.3	.3	2.2	

*June 1 to December 31, 1939.

Source: Worksheets of Federal Grain Supervisor's Office Enid, Oklahoma

TABLE 11

CARS OF TOUGH, SMUTTY AND WEEVILY
WHEAT RECEIPTS AND SHIPMENTS IN
ENID FOR 1937, 1938 AND 1939

RECEIPTS

Year	Tough	Smut	Weevily	Total	All Receipts	Per Cent of Total
1937	481	411	206	1098	18,029	6.1
1938	825	83	1007	1915	16,994	11.2
1939*	603	110	601	1314	14,834	8.9
3 yr. Av.	636	201	605	1442	16,619	8.7

SHIPMENTS

Year	Tough	Smut	Weevily	Total	All Shipments	Per Cent of Total
1937	31	4	22	57	11,975	.5
1938	3	4	98	105	12,209	.9
1939*	29		87	116	7,562	1.6
3 yr. Av.	21	3	69	93	10,582	.9

*Preliminary

Source: Appendix C.

the objectionable factor is attached to and becomes a part of the official grade.

Tough wheat is caused by excessive moisture. Wheat containing from 14 per cent to 15.5 per cent moisture is graded tough and wheat with over 15.5 per cent moisture is graded sample or wet wheat. Tough wheat occurs usually at the beginning of the harvest season, due to excessive spring rains at harvest time and by wheat that is combined before being thoroughly dried.

The only months that the terminal elevators may expect tough and wet wheat are June and July. After July the wheat has had sufficient time to dry and excessive moisture in the kernel has evaporated. In 1938, Enid received 700 cars of tough wheat in June, 21 cars in July and four cars in August. (Appendix C). In 1937 and 1939, tough wheat was recorded only in June and July.

Terminal elevators maintain special equipment for drying and curing tough and wet wheat that enters the market. There is no definite discount for tough wheat, but being of an inferior quality it is not demanded until dried, and thus commands a lower price than normal moisture content wheat.

Smuffy wheat also occurs most frequently during the months of greatest receipts, June and July. It usually occurs, however, during every marketing month. Smuffy wheat was common in the Enid Market in 1937, but not so pronounced in 1938 and 1939. (Table 11). Just the reverse was true of

weevily wheat in Enid for the past three years. Larger amounts being recorded in 1938 and 1939 than 1937. Weevily wheat does not appear in large quantities until the new wheat has had time to become infested with the weevil. September, October and November appear to be the months in which the largest number of cars of weevily wheat are marketed.

In 1938, 11.3 per cent of the total wheat marketings in Enid were discriminated against because of the presence of either smut, weevils or excessive moisture. The percentage was smaller in both 1937 and 1939, but the average for the three years was 8.7 per cent of total marketings. (Table 11).

TERMINAL SHIPMENTS OF WHEAT

The extent to which the terminal market processes wheat is evident by comparing the cars of smutty, weevily and tough wheat shipped in and out of Enid. An added income to the terminals can be secured by removing the objectionable factors, as the discount on smutty wheat is estimated at fifty to seventy-five dollars per car. The usual procedure is to mix damaged wheat with clean wheat. This distributes the damage throughout the entire lot and if mixed correctly will make the mixture damage-free, under the regulations established by the Official Grains Standards Act.

In 1937, only four cars of smutty wheat were shipped out while 411 cars were shipped to Enid. In the seven month period of 1939, 110 cars of smutty wheat were shipped in,

but not a single car of smutty wheat was sent out. Only three cars of tough wheat were shipped out in 1938, while 825 cars were marketed in Enid.

In the three year period, 1937-1939, the average shipments from Enid totaled 10,582 cars. Of this number only 93 were discriminated against or an average of .9 per cent. This figure is much lower than that given for the Enid receipts, which was 8.7 per cent. This indicates the tremendous importance of the terminal market in processing and enhances the utility of the product greatly by drying, scouring, cleaning and mixing off-quality wheat.

The number of terminal grain shippers was much smaller than the buyers. There were 24 buyers, while the shippers were only 10 in number for 1939. This small number of shippers is accounted for by the reason that many buyers did not have the facilities for storing their wheat in Enid, making it necessary to divert their wheat to other terminal markets. Other buyers rented storage space in Enid terminals. The identity of the owner of the shipped wheat was later lost, however, as the wheat was recorded as being shipped under the rented terminal's name.

The largest single terminal in Enid shipped out 47.8 per cent of all shipments in 1939. (Table 12). Three terminals, designated by symbols U, E and S, shipped 80 per cent of all wheat from Enid in 1939. This does not include wheat which was diverted to other markets.

Shipments by terminals ranged from 81 cars for terminal

TABLE 12

CARS OF WHEAT SHIPPED FROM
ENID BY INDIVIDUAL TERMINALS
1939*

Terminal	Total Cars	grades					Per Cent s from each Terminal	
		1	2	3	4	5		
S	Number 1404 Per Cent 100	1308 93.2	96 6.8				18.6	
G	Number 374 Per Cent 100	276 73.8	98 26.2				4.9	
P	Number 43 Per Cent 100	17 39.5	16 37.2	10 23.3			.6	
L	Number 53 Per Cent 100	33 62.4	13 24.5	3 5.6	3 5.6	1 1.9	.7	
H	Number 41 Per Cent 100	29 70.7	12 29.3				.6	
U	Number 3616 Per Cent 100	2785 77.0	768 21.2	63 1.8			47.8	
J	Number 408 Per Cent 100	114 27.9	247 60.5	36 8.8		11 2.8	5.4	
E	Number 958 Per Cent 100	787 82.2	169 17.6	2 0.2			12.6	
F	Number 585 Per Cent 100	121 20.7	451 77.1	10 1.7		3 .5	7.7	
B	Number 81 Per Cent 100	53 65.4	20 24.7	8 9.9			1.1	
	Total Per Cent	7563 100	5523 73.0	1890 25.0	132 1.6	3 .1	1 .1	14 .2
							100	

*Preliminary

Source: Worksheets of Federal Grain Supervisor's Office
Enid, Oklahoma.

B to 3616 cars for terminal U. In many cases very few shipments of raw wheat were made, thus indicating that few purchases were made or the wheat was processed and sold as flour.

The majority of terminals shipped only grades 1, 2 or 3 wheat and terminals S, G and H shipped only wheat grading 1 and 2. Terminals S and G bought many carloads of wheat grading 3, 4, and 5 and even sample grade. (Table 10). The question may arise as, "What happened to the lower grades upon entrance to the Enid Market?" The answer lies in efficient and economical processing as practiced by the major terminal elevators. These lower grades were mixed with wheat of a superior quality or surplus quality, thus lowering the average of the entire lots of wheat, but still retaining the minimum requirements for the higher grades.

Terminal elevators must be very exact in shipping wheat. If a buyer orders a car of wheat grading No. 2, but specifying that the test weight be 59 pounds per bushel or above, the terminal shipper will attempt to load a car as close to 59 as possible, but maintaining at least a 59 test weight. The terminal thus sells on a skim grade or test weight, but buys on the average grade.

Many elevators, when shipping wheat, especially in a year of low quality, often unload a car if the test weight is too far in excess of the minimum requirements of the grade specified by the buyer. Terminals, however, seldom have to unload because they usually reach the minimum test weight required on the first loading. In 1939, Enid terminals were

found to have loaded and unloaded the same car as many as four times before the desired test or grade was attained. If the terminal can possibly supply the desired quality it is to their advantage to reload the car, because a change in grade from No. 2 to No. 1 means a profit approximating fifteen to twenty dollars per car.^{3/} Terminal expense in loading and unloading is largely of a fixed nature thus affording little monetary loss in handling. The car of loaded wheat must be tested by a licensed grain inspector, however, after each reloading. This fee is one dollar an inspection. Very little adjusting is usually needed in remixing a car that grades below the requirements. Competent loaders employed by the shipping terminal know almost exactly what the wheat will test before loading in the car which assures very little remixing.

^{3/} Assuming 1500 bushels in an average carload entering Enid Market and that the loss resulting from a lowering of the grade is from 1 to 2 cents per bushel.

SUMMARY

The quantity of wheat received at Enid approximated 17,000 carloads per year for 1937, 1938 and 1939. In 1939, 26 per cent of the wheat shipped to Enid was graded No. 1 and 73 per cent of the wheat shipped out of Enid was graded No. 1. Similar changes in grades were affected in 1937 and 1938. This was accomplished by efficient mixing and other terminal processing practices.

In 1939 there were 24 terminal grain buyers in Enid. They ranged in size from local grain elevators to large mills with branch offices in other grain markets. One Enid grain firm purchased 42.1 per cent of all Enid's receipts and shipped out 47.8 per cent of the total shipments.

Over the three year period 1937-1939, 8.7 per cent of the Enid receipts were damaged by either smut, weevils or excessive moisture content. During the same period only .9 per cent of the shipments were affected by the same factors. Tough wheat arrived at the Enid market during June, July and August when the wheat was not sufficiently dried. Smutty wheat was also marketed largely during the early part of the marketing season. Weevily wheat was noticeable during the middle and later part of the marketing year, after several months of storage.

Reloading cars of wheat that fail to reach the minimum standards of the various market grades is a common practice of terminal shippers. Terminal elevators attempt to buy an average grade and sell a grade that just meets the minimum grade requirements.

CHAPTER V

CONTROLLABLE FACTORS CONFRONTING THE WHEAT
PRODUCER IN WESTERN OKLAHOMA AND TEXAS

Apparently, there are definite areas established in Oklahoma that marketed most of the low quality wheat in Enid in 1939. The three factors that farmers can control in producing wheat and which are characteristic of various production areas are "rye wheat", "smutty wheat" and "mixed wheat". Through proper procedure these objectionable factors can be almost entirely eliminated if practiced on a community or county basis. Many times the individual farmer is not at fault, but his community is discriminated against when the local elevator is careless and does not endeavor to maintain the identity of wheat of the same type and quality.

An attempt must be immediately instituted to control these objectionable factors. Mixed wheat, rye mixtures and smutty wheat must be decreased if we are to maintain a reputation among the terminal grain buyers as an excellent wheat producing area.

Wheat price differential is another factor that may be partially controlled by the producer. He has the choice of producing a high quality or a low quality wheat. However, the climatic and physical conditions must also be considered when producing for the market.

WHEAT MARKETINGS CONTAINING SMUT

There are only two kinds of smut affecting Oklahoma wheat. These are bunt or stinking smut and loose smut.

They are widespread and cause considerable damage to the wheat crop each year. In 1937, 500 carloads of Oklahoma wheat were discounted at the terminal markets because of bunt content.^{1/} The loss from bunt smut is a lower price at the market and a lower yield per acre.

If the loss from loose smut is then added to the bunt loss, we find that on an average over 1,000,000 bushels of Oklahoma wheat is annually lost by smuts. These smuts are entirely preventable at a cost of two to three cents per acre.^{2/}

Bunt smut, which is probably the most prevalent in Oklahoma, is a fungus growth which attaches itself to the crease or brush of the mature grain. It is very light and the wind can infect many acres or bins of wheat by simply blowing the black powder to nearby wheat kernels. The nature of the season at planting time determines largely the extent of smutty wheat in the following harvest. A warm moist soil is conducive to rapid germination of the wheat kernel in the fall. This rapid growth of the seedling prevents an infection of smut even if the seed is infected. A cold, dry fall contributes toward slow seed growth and thus allows the bunt spore to develop faster than the seedling.

^{1/} Wheat is only docked if it contains 14 or more bunt balls in an 18 ounce sample, but wheat with fewer than 14 balls per sample still represents a loss to the producer.

^{2/} K. Starr Chester, Control of Wheat Smuts in Oklahoma, Mimeographed Circular No. 34, 1939.

Climatological conditions thus are an important factor in determining the smut content in many fields where farmers are planting spore laden grain. However, all smut damage can be reduced to a minimum at a very low cost per acre.

From June 1 to December 31, 1939, 110 cars of wheat containing smut were marketed in Enid. This is a much smaller number than was marketed during the corresponding period of 1938.

There are definite areas that are characteristic of smutty wheat in Oklahoma. Dry planting seasons may be partially responsible for this condition, but the greatest cause probably lies with the producers in these areas. Throughout the last three crop years, ending 1939, the Southwestern counties of Custer, Washita, Kiowa, Jackson and Tillman have consistently produced large amounts of smut infected wheat. Another area is in the Northwestern part of the state, comprising Harper, Woods and Woodward counties. (Figure IX).

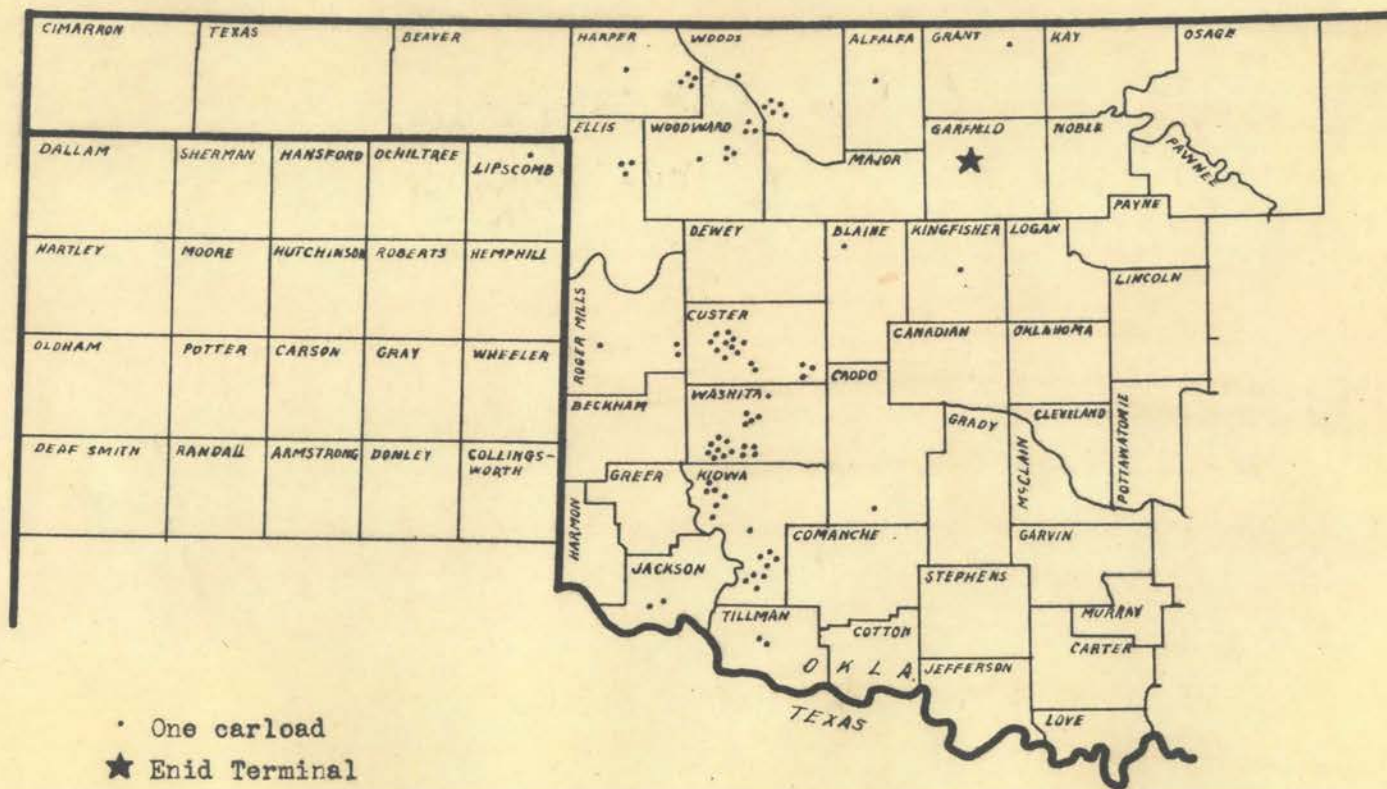
In 1939, Texas Panhandle wheat appeared almost smut-free, as only one car from Follett, Texas contained an appreciable amount of damaging smut. The remaining smut cars were marketed from the aforementioned areas.

Washita County marketed more smutty wheat in Enid than any other county, but was closely followed by Kiowa and Custer, adjacent counties. Calculated on the proportion of smutty wheat marketed in Enid with the total county production, Woodward and Harper counties probably sustained the

FIGURE IX

CARLOADS OF SMUTTY WHEAT MARKETED IN ENID

1939



Source: Unpublished worksheets of Federal Grain Supervisor's Office, Enid, Oklahoma Agricultural Marketing Service, U.S.D.A.

heaviest smut damage. It is estimated that 6.5 per cent of the total production of Woodward County was damaged by smut. Figuring the damage at five cents ^{3/} per bushel, Woodward County was discounted \$4,676 on smut damage alone in 1939. (Table 13). This is a minimum figure, however, as the point of origin was available on only 76 of the 110 cars of smutty wheat entering the Enid Market. Other counties with heavy smut infestations were Harper, Kiowa and Washita.

The total discount for the state on smut damaged kernels, as estimated by the Enid marketings, was \$19,532 in 1939. If the necessary treatment had been given the seed at planting time, at a cost of two or three cents per acre, much of this discount could have been averted.

ENID WHEAT MARKETINGS CONTAINING RYE

There is but one large rye-mixture area in Oklahoma. This area covers Blaine, Major, Woodward, Woods and Alfalfa Counties, in the northwest central part of the wheat belt.

Rye mixtures arrive in Enid largely during the period when total marketings are greatest, but may appear irregularly throughout the year. For the first seven months of the 1939 marketing year, Enid received 353 cars of wheat that exceeded the maximum quantity of rye. ^{4/}

^{3/} U.S.D.A., Mimeographed Circular, Bureau of Agricultural Economics and Extension Service, Estimated Losses Due To Smut In Oklahoma Wheat Received At Enid, Oklahoma City, Wichita, and Kansas City. Chicago, Illinois, Jan., 1938.

^{4/} The maximum amounts of rye in wheat shall be:

Grade No. 1	-----	1% rye
Grade No. 2	-----	2% rye
Grade No. 3	-----	3% rye
Grade No. 4	-----	5% rye
Grade No. 5	-----	7% rye

TABLE 13

ESTIMATED DISCOUNTS CAUSED BY SMUT, 1939*

County	Smut Cars ^{1/}	Cars Marketed in Enid ^{1/}	Per Cent Marketed in Enid	Total County Production ^{2/}	Estimated Bushels Affected	Estimated Discount per County ^{3/}
Washita	18	458	3.90	1,459,600	56,924	\$ 2,846
Kiowa	15	308	4.90	1,252,500	61,373	3,068
Custer	11	654	1.70	1,957,400	33,276	1,664
Woodward	8	123	6.50	1,438,600	93,509	4,676
Harper	5	27	18.50	367,700	68,025	3,401
Woods	4	1096	.36	2,828,400	10,182	508
Caddo	2	149	1.30	614,600	7,990	400
Tillman	2	70	2.90	946,100	27,436	1,372
Roger Mills	2	50	4.00	343,300	13,732	687
Ellis	2	189	1.10	952,500	10,478	524
Kingfisher	2	670	0.30	3,612,200	1,083	54
Grant	1	1995	0.01	7,444,800	745	37
Alfalpa	1	1750	0.01	5,422,800	542	27
Blaine	1	694	0.01	2,371,700	237	12
Jackson	1	80	1.20	426,000	5112	256
Total	75	8113	0.90	31,438,200	390,644	\$ 19,532

*Preliminary

^{1/} Federal Grain Supervision Worksheets^{2/} Federal Crop Statistician, K.D. Blood^{3/} Discounts due to smut calculated at five cents per bushel, by Bureau of Agricultural Economics and Extension Service. Chicago, Illinois.

The extent of rye mixed wheat is determined solely by the individual producers in a community and by the local elevators who are careless in mixing rye-free wheat with the mixed wheat, thus contaminating the entire car or lot.

Many farmers are unaware of the discounts sustained in planting wheat with a slight mixture of rye. The rye content is magnified in the resulting harvested crop and causes entire communities to be discriminated against. Other farmers in the rye area have in the past years planted entire fields to rye, and through inadequate handling and feeding practices have caused whole communities to become affected with rye. Once a field is planted to rye it becomes difficult to rid the field of it unless the field is planted to another crop besides wheat or clean imported seed is used until there is little danger of the rye seedlings' continuing to volunteer and mature. Rye plants grow a little taller than wheat, but ripens about the same time. It is readily distinguishable in the field, but the ripened grain is very similar to wheat and it is impossible for ordinary elevator equipment to separate the rye kernels. Rye, when present in significant quantities, in wheat usually results in darkening the flour. Flour yield from rye-mixtures is also greatly reduced, which justifies the discount of rye mixed wheat.

The production of rye mixtures has increased slightly during the past few years.^{5/}

^{5/} U.S.D.A., Mimeographed Release. Bureau of Agricultural Economics and Extension Service, Estimated Losses Due To Rye Mixtures in Oklahoma Wheat Received at Enid, Wichita, Fort Worth, Kansas City, Omaha and Oklahoma City, 808 Post Office Building, Chicago, Illinois.

This may possibly be the result of our current Agricultural Adjustment Program which allows rye to be grown for pasture on land that was formerly growing wheat. Rye does afford a more abundant fall pasture than wheat and is an excellent green manure, but extreme care should be taken to prevent any of the rye from maturing and reseeding itself on land that may be planted to wheat in the future.

Very little rye mixed wheat was shipped to Enid from out-of-state points. Texas shipped four cars and Missouri two cars in 1939.

The average discount for rye mixtures has been estimated at the rate of two cents per bushel.^{6/}

Records are available on 347 cars of rye mixtures shipped to Enid in 1939. The largest number of cars was marketed from Major County, which also sustained the greatest total damage, estimated at over \$5,000 on rye mixtures. (Table 14). This county had over nine per cent of its total production damaged by rye. Other counties, however, had a higher percentage of rye mixtures. Woodward County allowed over twelve per cent of its entire yield to be mixed with rye in sufficient quantities to be objectionable. Roger Mills County followed closely with twelve per cent, but did not meet with such a heavy loss as only 343,300 bushels of wheat

^{6/} Frederic T. Dines, "Crop Testing Plan For Oklahoma Wheat Improvement," Current Farm Economics, Vol. II, October, 1938. p. 107.

*Rye discount has been estimated at $1\frac{1}{2}$ cents per bushel by the Bureau of Agricultural Economics and Extension Service, Chicago, 1938.

TABLE 14

ESTIMATED DISCOUNTS CAUSED BY RYE MIXTURES
1939*

County	^{1/} Rye Cars	^{1/} Cars Marketed in Enid	Per Cent Marketed in Enid	^{2/} Total County Production	Estimated Bushels Affected	^{3/} Estimated Discount per County
Major	89	973	9.1	2,849,800	259,332	\$ 5,187
Alfalfa	80	1750	4.6	5,422,800	249,449	4,989
Blaine	66	694	9.5	2,371,700	225,312	4,506
Woods	57	1096	5.0	2,828,400	141,420	2,828
Woodward	15	123	12.2	1,438,600	175,509	3,510
Grant	9	1995	0.5	7,444,800	37,224	744
Ellis	6	189	3.2	952,500	30,480	610
Roger Mills	6	50	12.0	343,300	41,196	824
Custer	5	654	0.8	1,957,400	15,659	513
Kingfisher	4	670	0.6	3,612,200	21,673	433
Kay	4	777	0.5	4,279,900	21,400	428
Garfield	3	2322	0.1	6,995,800	6,996	140
Caddo	2	149	1.3	614,600	7,990	160
Beckham	1	48	2.0	244,600	4,892	98
Total	347	11490	3.0	41,356,400	1,238,532	\$ 27,770

*Preliminary

- ^{1/} Federal Grain Supervision Worksheets
^{2/} Federal Crop Statistician, K. D. Blood
^{3/} Discounts due to Rye, calculated at two cents per bushel.

were produced in 1939.

The total rye discount in the Enid market area was calculated at over \$27,000, which was not widely scattered over the area, but localized in four or five counties. (Figure X).

MIXED WHEAT MARKETINGS

Mixed wheat ^{7/} constitutes one of most serious discounts to Oklahoma wheat producers. The area marketing this class of wheat is limited, however, and concentrated in the north central part of the State. Kay County marketed 526 cars in 1939 and together with Noble County produced over 80 per cent of all the mixed wheat marketed in Enid. Mixed wheat comprised nearly eight per cent of the total marketings. (Table 3). All marketings, except one car, came from Oklahoma producers. A glance at Figure V in the second chapter indicates the major mixed wheat areas.

Mixed wheat marketings are strictly a result of human error and carelessness. Some of the mixed wheat originates in the local elevator that is not equipped for separated storage bins of the hard and soft varieties during the harvest season. The greater portion of mixed wheat occurs along the line of demarcation between the hard and soft areas. (Figure V). This area produces both the hard and soft varieties and although the individual farmer may produce one variety, the community is discriminated against by mixing at

^{7/} Wheat that contains more than 10 per cent each of two or more classes is commonly designated mixed wheat. The predominate admixture in the Enid market consists of hard red winter and soft red winter wheats.

the local elevator. All mixtures are not obtained in this manner, however. Many farmers plant large quantities of mixed wheat and are unaware of the discount at the terminal elevator or have no desire to improve the quality of wheat produced in their community.

The amount of mixed wheat in the Enid Terminal Market has been gradually decreasing attributed to the continual eastward movement of the mixed wheat areas.^{8/}

According to estimates calculated from the Enid receipts of the 1939 season, the counties producing the greatest percentages of mixed wheats were Pawnee with 83 per cent, Payne 75 per cent, Kay 68 per cent, and Noble with 48 per cent of the total county productions. (Table 15). Kay marketed the largest number of mixed cars in Enid and also had the greatest estimated discount of \$58,194 in 1939.^{9/} The total discount due to mixed wheat from counties marketing in the Enid Terminal was over \$100,000. This could have been held to a minimum through strict seeding practices and careful binning at local elevators.

The Oklahoma wheat harvest of 1939 was composed largely of hard varieties. Over 90 per cent of the yield was hard varieties. The most popular hard variety was Black-hull which accounted for 40.4 per cent of all Oklahoma's

^{8/} According to H. N. Holmes, Federal Grain Supervisor, Enid, Oklahoma.

^{9/} Loss estimated at 2 cents per bushel. (Table 16).

TABLE 15

ESTIMATED DISCOUNTS CAUSED BY MIXED WHEAT, 1939*

County	^{1/} Mixed Cars	^{1/} Cars Marketed In Enid	Per Cent Marketed	^{2/} County Production Bushels	Estimate Of Bu. Affected	^{3/} Estimated Discount per County
Kay	526	777	68	4,279,000	2,909,720	\$ 58,194
Noble	404	833	48	2,295,600	1,101,888	22,038
Grant	189	1995	9	7,444,800	670,032	13,401
Garfield	19	2322	0.8	6,995,800	55,966	1,119
Pawnee	10	12	83	208,700	173,221	3,464
Logan	4	189	2.1	891,000	18,711	374
Payne	3	4	75	224,100	168,075	3,362
Major	2	973	0.2	2,849,800	5,700	114
Total	1157	7105	16.2	25,188,800	5,103,313	\$102,066

*Preliminary

^{1/} Federal Grain Supervision^{2/} Federal Crop Statistician, K. D. Blood^{3/} Discounts due to Mixed wheat, calculated at two cents per bushel.

hard wheat.^{10/} Other prominent hard varieties were Turkey and Tenmarq, which are in the greatest demand by the millers. Blackhull, however, gives the most abundant yield and for that reason ranks over the latter two in the farmers estimation. These three varieties constituted over 80 per cent of Oklahoma's total hard varieties in 1939, although there were at least thirteen other hard varieties planted.

Important soft wheat varieties in the eastern part of the state and over-lapping into the hard area were Fulcaster, Currell and Harvest Queen.

Excellent work sponsored by the Oklahoma Wheat Improvement Program has been accomplished in improving the status of the mixed wheat area.^{11/} This agency has estimated the average discount in a community marketing mixed wheat to be two cents per bushel. Very similar information was obtained by this analysis. (Appendix D).

WHEAT PRICE DIFFERENTIALS

The price of wheat to the Oklahoma producer is based either on the Kansas City or Galveston Market. Price data was unavailable for the Galveston Market which necessitated prices used in this study to be based on the Kansas City quotations.

Prices may not fall directly within the category of factors directly controlled by the producer, but he can

^{10/} Mimeographed Release, Wheat Varieties in Oklahoma, 1939/ Bureau of Plant Industry, U.S.D.A. Grain Supervision Office, Enid, Oklahoma.

^{11/} Statement by H. N. Holmes, Federal Grain Supervisor, Enid, Oklahoma.

determine to a great extent what class or variety of wheat he will produce and can also partially control the grade marketed.

In 1939,^{12/} the average difference between the five official grades of Dark Hard Winter wheat, sold at Kansas City, was one cent. The other sub-classes indicated similar differentials. The Hard Winter average was .8 cents a grade; Yellow Hard Winter 1 cent; Soft Red Winter 1.3 cents and Mixed Wheat 1.1 cents. The average difference for the five classes and subclasses was 1.04 cents per grade for 1939.^{13/}

Figures for 1938 show a much larger differential than for 1939. The average between grades for that year was 2.8 cents. Apparently there was a greater discrimination for the lower grades in 1938 because of the scarcity of high quality wheat. There was an abundant supply of quality wheat in 1939, however, which likely caused the discount to be narrowed.

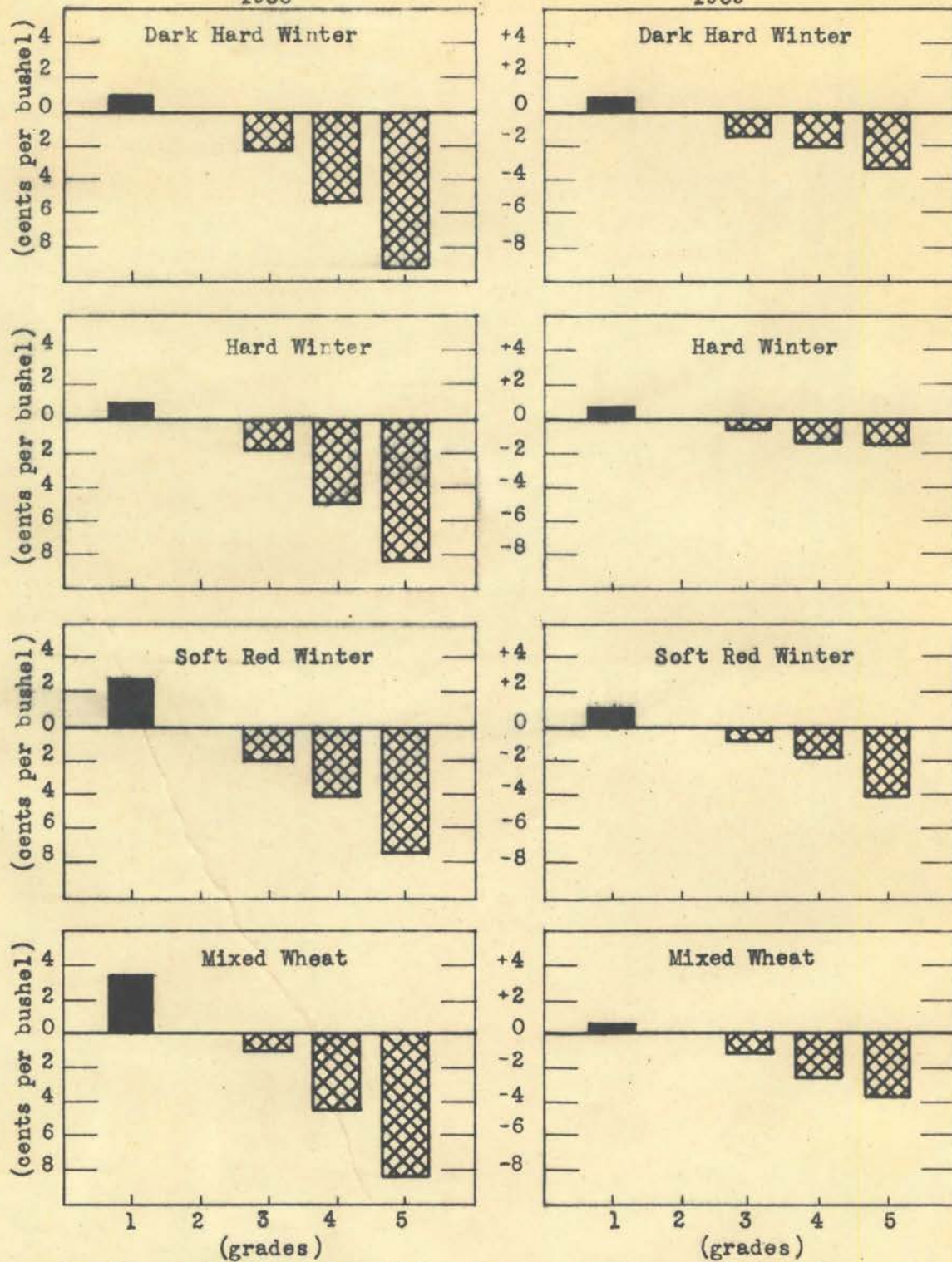
Figure XI indicates the premiums and discounts paid on the major classes and subclasses at Kansas City in July of 1938 and 1939. These differentials are based on grade No. 2.

The differentials between classes at Kansas City are

^{12/} This estimate for 1939 was calculated for the daily receipts for the month of July only. July receipts are larger than those for any other month.

^{13/} Appendix D.

FIGURE XI
 PRICE DIFFERENTIALS ON WINTER WHEAT AT KANSAS CITY
 BY CLASSES AND GRADES FOR JULY, 1938 and 1939
 1938 1939



Premiums and discounts within classes based on grade No. 2.

Source: Kansas City Grain Review July, 1938 and 1939

significant enough to be observed by Oklahoma producers. The Dark Hard wheat consistently commanded a higher price than other market classifications.

The differential between classes was greater in 1938 than 1939. This distinction was also apparent in grade differentials for the same years at Kansas City.

In July of 1939, Hard Winter wheat, grades one to three, sold at an average of 3.8 cents per bushel under Dark Hard wheat. Mixed wheat sold at 5.5 cents under Dark Hard; Yellow Hard at 6.4 cents under Dark Hard and Red Winter sold at 6.8 cents per bushel less than Dark Hard. (Table 16).

Figures for July of 1938 at Kansas City are quite similar. Identical positions in the price schedule were maintained by the market classes. Dark Hard commanded the highest price followed in order by Hard Winter, Mixed wheat and Red Winter. Such a small quantity of Yellow Hard Winter wheat entered the Kansas City Market in 1938 that an average price could not be calculated.

A comparison of the July prices in 1938 and 1939 reveal the lower prices received by producers in the Enid Market Area who are producing a Hard Winter or a Mixed wheat when they could market a Dark Hard or a Hard Winter wheat at a premium.

TABLE 16

PRICE DIFFERENTIALS AT KANSAS CITY
DURING JULY OF 1938 AND 1939
(cents per bushel)

1938			1939		
Grade and Class			Grade and Class		
No. 1	Price	Differ- ential	No. 1	Price	Differ- ential
Dark Hard	75.7		Dark Hard	71.3	
Hard	70.9	4.8	Hard	67.3	4.0
Mixed	73.5	2.2	Mixed	65.8	5.5
Soft Red	68.3	7.5	Yellow	64.9	6.4
			Soft Red	64.6	6.7
No. 2			No. 2		
Dark Hard	75.0		Dark Hard	70.6	
Hard	70.0	5.0	Hard	66.6	4.0
Mixed	67.4	7.6	Mixed	65.1	5.1
Soft Red	65.7	9.3	Yellow	64.4	6.2
			Soft Red	63.5	7.1
No. 3			No. 3		
Dark Hard	72.7		Dark Hard	69.3	
Hard	68.1	4.6	Hard	66.1	3.2
Mixed	66.5	6.2	Mixed	64.0	5.3
Soft Red	63.7	9.0	Yellow	62.8	6.5
			Soft Red	62.8	6.5
Average: No. 1-3			Average: No. 1-3		
Dark Hard	74.5		Dark Hard	70.4	
Hard	69.7	4.8	Hard	66.6	3.8
Mixed	69.1	5.4	Mixed	64.9	5.5
Soft Red	65.9	8.6	Yellow	64.0	6.4
			Soft Red	63.6	6.8

*No Yellow Hard Winter marketed at Kansas City in 1938.

*Prices for 1938 were calculated from 11,567 cars of cash wheat in July. Prices for 1939 were calculated from 9,357 cars of cash wheat in July.

Source: Kansas City Grain Market Review July, 1938 and July, 1939.

SUMMARY

Definite areas have consistently produced a low quality wheat for the Enid market for the past three years, ending 1939. Custer, Washita, Kiowa, Jackson and Tillman counties in the Southwest and Harper, Woods and Woodward counties, in the Northwest, market the largest quantities of smutty wheat in Enid. Estimated discount caused by smut in Western Oklahoma and Texas was nearly \$20,000 in 1939. A region centered in Major, Woods and Alfalfa counties produced most of the rye mixed wheat. In 1939 the rye discount was calculated at over \$27,000 for western Oklahoma. The production of rye mixtures has increased slightly during the past few years. Mixed wheat constitutes one of the most serious discounts to Oklahoma wheat producers. Kay and Noble counties marketed over 80 per cent of all mixed wheat in Enid for 1939. The total discount in producing mixed wheat in Western Oklahoma was estimated at over \$102,000.

Wheat price differentials between classes at Kansas City for July of 1938 and 1939 were apparently large enough to warrant producer consideration as to type grown. In 1939, Hard Winter wheat sold at an average of 3.8 cents per bushel under Dark Hard wheat. Mixed wheat sold at 5.5 cents under Dark Hard. Similar differentials resulted in 1938. The average price differential between grades was 1.04 cents a bushel in 1939. For 1938, the differential was 2.8 cents a bushel.

SUMMARY AND CONCLUSIONS

Enid has recently become one of the leading interior grain terminals of the Southwest. Over 25,000,000 bushels of wheat, or over 40 per cent of the State production passed through Enid in each of the 1937, 1938 and 1939 seasons. The amount handled approximates twice the terminal storage capacity.

In 1939, 92.8 per cent of the Enid receipts originated in Oklahoma, 6.5 per cent from Texas, .3 per cent from Kansas and .4 per cent came from Missouri. Texas markets a typical Dark Hard Winter wheat. Oklahoma, predominantly a Hard Winter area, markets a variety of winter wheats. Thirty-two of Oklahoma's 77 counties shipped one or more cars of wheat to Enid in 1939.

Definite areas of production by classes and subclasses have been set up in the Enid market area. Hard Winter wheat was the dominant subclass of wheat marketed in Enid. Over 70 per cent represented this type. The center of production was in Garfield, Grant and Alfalfa counties. Dark Hard Winter wheat was produced in Custer, Kiowa and Washita counties of Texas. This subclass represented 22 per cent of the Enid receipts. Yellow Hard Winter wheat was a result of the excessive moisture conditions in 1939. This particular wheat had not made its appearance in Enid until that year. Over 89 per cent of the total Yellow Hard receipts came from Garfield, Grant, Major and Alfalfa counties. Soft Red Winter wheat was not grown extensively for the Enid Market in 1939.

Less than one per cent of the total marketings were classed as soft wheats. The Mixed wheat area was concentrated in Kay, Noble and Grant counties. Ninety-seven per cent of the Mixed wheats were shipped from this area.

The Enid Market area is engulfed in a region that has exceedingly high freight rates. Index figures reveal that rates for the Southwest Territory are 175 as compared on a basis of 100 for the Northeastern States.

Available foreign markets largely determine the direction that wheat moves from the Enid terminal. For the seasons 1935-1939, an average of 75.2 per cent of Enid shipments were sent to southern mills and Texas Gulf ports. Galveston and Houston, most important destination points, received over 40 per cent of Enid shipments during the five year period.

Six of the largest Enid firms purchased over 80 per cent of the total Enid receipts. One firm accounted for 42.1 per cent of the total receipts and 47.8 per cent of the total shipments.

Producers of the Enid area in 1939 suffered heavy discounts as a result of marketing wheat with objectionable inter-mixed factors. Smut discounts amounted to nearly \$20,000; rye discounts over \$27,000 and mixed wheat discounts aggregated \$102,000 for counties marketing wheat in Enid.

The average price differential between grades of wheat at Kansas City for July of 1938 was 2.8 cents per bushel. The differential in 1939 was 1.04 cents per bushel. The

difference between years may be accounted for in the quality of wheat produced throughout the wheat states. A higher quality wheat was produced in 1939 than in 1938.

The average differential between classes ranged from 0 to 8.6 cents per bushel for wheat of the same grade in 1938 and 1939. Dark Hard Winter wheat commanded the highest price with Hard Winter, Mixed Winter, Yellow Hard Winter and Soft Red Winter arranged in order of buyer preference based on Kansas City market quotations.

Terminal processing was responsible for the small amount of wheat graded tough, smutty or weevily, that was shipped from Enid. Over the three year period, 1937-1939, 8.7 per cent of all wheat marketed was discounted because of excessive quantities of the above factors. Only .9 per cent of the total shipments were graded down for the same period. The Enid Market apparently renders a valuable service by reclaiming damaged wheat and improving the general quality of grain through efficient processing practices.

In 1939, 26 per cent of the receipts were graded No. 1 and 46 per cent graded No. 2. Corresponding shipments for grades one and two were 73 per cent and 25 per cent respectively. Similar differences were obtained by comparing the receipts and shipments for 1937 and 1938. These figures indicate the results of extensive terminal processing.

APPENDIX

APPENDIX A

CARS OF WHEAT RECEIVED IN ENID BY MONTHS IN 1937-1938

Months	grades						Total
	1	2	3	4	5	s	
J	2584	2724	333	17		193	5851
J	2681	3014	462	106	41	68	6372
A	326	265	107	73	124	42	937
S	143	153	27	9	26	19	377
O	131	231	58	85		26	531
N	101	161	39	54	5	9	369
D	101	204	158	54	1	20	538
J	239	371	85	14	10	20	739
F	173	216	36	19	5	15	464
M	270	276	59	31	13	43	692
A	274	244	36	28	2	24	608
M	245	225	28	17	5	31	551
Total	7268	8084	1428	507	232	511	18029
Per Cent	40	45	8	3	1	3	100%

CARS OF WHEAT SHIPPED FROM ENID BY MONTHS IN 1937-1938

Months	grades						Total
	1	2	3	4	5	s	
J	480	60	8			9	557
J	2358	263				1	2622
A	841	187	4				1032
S	387	40	5			2	434
O	606	205	15			2	828
N	530	130	92	5			757
D	412	294	70	1		1	778
J	826	386	2	1		2	1217
F	803	343	3	1		1	1151
M	542	129	4			3	678
A	929	207	30			1	1167
M	560	172	22				754
Total	9274	2416	255	8		22	11975
Per Cent	77	20	2			1	100%

Source: Worksheets of Federal Grain Supervision
Enid, Oklahoma.

APPENDIX A (continued)

CARS OF WHEAT RECEIVED IN ENID BY MONTHS IN 1938-1939

Months	grades						Total
	1	2	3	4	5	s	
J	988	3084	1748	169	20	79	6088
J	292	1547	1653	583	54	43	4172
A	46	219	345	134	119	72	935
S	18	217	268	58	8	48	617
O	65	399	420	87	11	105	1087
N	69	186	227	51	9	37	579
D	54	228	298	90	17	35	722
J	69	251	207	61	25	35	648
F	46	107	146	30	9	14	352
M	40	170	203	43	14	36	506
A	77	213	114	38	10	34	486
M	164	397	188	16	3	34	802
Total	1928	7018	5817	1360	299	572	16994
Per Cent	11	41	34	8	2	4	100%

CARS OF WHEAT SHIPPED FROM ENID BY MONTHS IN 1938-1939

Months	grades						Total
	1	2	3	4	5	s	
J	512	486	37	1		2	1038
J	1262	1167	141	16		5	2591
A	150	696	128			6	980
S	128	523	73			1	725
O	211	717	146	4		5	1083
N	84	511	105	2	2	2	706
D	203	907	54			1	1165
J	117	570	58			1	746
F	111	480	25			1	617
M	234	457	42	1		1	735
A	332	286	24	3		2	647
M	436	687	53				1176
Total	3780	7487	886	27	2	27	12209
Per Cent	31	60	7	1		1	100%

Source: Worksheets of Federal Grain Supervision
Enid, Oklahoma.

APPENDIX A (continued)

CARS OF WHEAT RECEIVED IN ENID BY MONTHS IN 1939-1940

Months	grades						Total
	1	2	3	4	5	s	
J	3388	4364	553	54	14	145	8518
J	152	1179	2451	219	18	36	4055
A	60	314	142	24	2	18	560
S	32	263	90	16	5	25	431
O	57	263	64	11	4	31	430
N	59	193	54	9	3	31	349
D	151	208	85	11		36	491
J							
F							
M							
A							
M							
Total	3899	6784	3439	344	46	322	14834
Per Cent	26	46	23	2	1	2	100%

CARS OF WHEAT SHIPPED FROM ENID BY MONTHS IN 1939-1940

Months	grades						Total
	1	2	3	4	5	s	
J	1817	277	12			7	2113
J	1793	741	95			5	2634
A	420	142	11	1			574
S	519	169	1			1	690
O	322	77	5	2	1	1	408
N	231	106	1				338
D	420	378	7			1	806
J							
F							
M							
A							
M							
Total	5522	1890	132	3	1	15	7563
Per Cent	73	25	2				100%

Source: Worksheets of Federal Grain Supervision
Enid, Oklahoma.

APPENDIX B

YIELD AND PRODUCTION OF WHEAT IN THE
OKLAHOMA WHEAT BELT, 1939

County	Yield Planted per acre (bu.)	Production (bu.)	Per Cent of State Total Production
Alfalfa	22.4	5,422,800	9.0
Beaver	5.7	1,432,000	2.4
Beckham	10.2	244,600	.4
Blaine	15.0	2,371,700	3.9
Canadian	10.2	1,540,700	2.5
Caddo	9.5	614,600	1.0
Cimarron	3.2	461,400	.8
Comanche	3.7	147,800	.2
Cotton	3.7	216,300	.4
Custer	12.7	1,957,400	3.2
Dewey	14.1	1,635,700	2.7
Ellis	7.3	952,500	1.6
Garfield	20.7	6,995,800	11.4
Grant	21.6	7,444,800	12.3
Greer	8.5	254,400	.4
Harper	2.8	367,700	.6
Harmon	6.2	245,400	.4
Jackson	5.9	426,000	.7
Kay	18.5	4,279,900	7.1
Kingfisher	14.8	3,612,200	5.9
Kiowa	8.3	1,252,500	2.1
Logan	13.2	891,000	1.5
Major	16.3	2,849,800	4.7
Noble	16.7	2,295,600	3.8
Pawnee	10.6	244,600	.4
Payne	10.4	224,100	.4
Roger Mills	10.4	1,459,600	2.4
Texas	3.9	1,304,700	2.2
Tillman	9.5	946,100	1.6
Washita	11.1	1,459,600	2.4
Woods	14.0	2,828,400	4.7
Woodward	10.8	1,438,600	2.4
All Others		3,874,100	6.4
State Total	12.5	60,438,000	100.0

Source: K. D. Blood, Agricultural Statistician,
Oklahoma City, Oklahoma.

APPENDIX C

CARS OF WHEAT RECEIVED IN ENID THAT
WERE GRADED TOUGH, SMUTTY OR WEEVILY
1937-1938

Months	Tough	Smutty	Weevily	Total
J	465	99		564
J	16	235		251
A		19		19
S		1	10	11
O		5	15	20
N		12	23	35
D		1	15	16
J		5	19	24
F		7	8	15
M		11	33	44
A		9	37	46
M		7	46	53
Total	481	411	206	1098
Per Cent of each factor	44	38	18	100
% of total Enid Receipts	2.7	2.3	1.1	6.1

CARS OF WHEAT SHIPPED FROM ENID THAT
WERE GRADED TOUGH, SMUTTY OR WEEVILY
1937-1938

Months	Tough	Smutty	Weevily	Total
J	31			31
J				
A		1		1
S				
O				
N			2	2
D			7	7
J			12	12
F				
M				
A				
M		3	1	4
Total	31	4	22	57
Per Cent of each factor	54	8	38	100
% total Enid Shipments	.27	.03	.18	.48

Source: Worksheets of Federal Grain Supervision, Enid, Okla.

APPENDIX C (continued)

CARS OF WHEAT RECEIVED IN ENID THAT
WERE GRADED TOUGH, SMUTTY OR WEEVILY
1938-1939

Months	Tough	Smutty	Weevily	Total
J	700	52	29	881
J	121	14	4	139
A	4	6	31	41
S		2	107	109
O		2	332	334
N		1	180	181
D		1	100	101
J			69	69
F		1	19	20
M			37	37
A		3	29	32
M		1	70	71
Total	825	83	1007	1915
Per Cent of each factor	43	4	53	100
% of total Enid Receipts	4.8	.5	5.9	11.2

CARS OF WHEAT SHIPPED FROM ENID THAT
WERE GRADED TOUGH, SMUTTY OR WEEVILY
1938-1939

Months	Tough	Smutty	Weevily	Total
J		2	2	4
J	3	2		5
A				
S			6	6
O			18	18
N			25	25
D			37	37
J			5	5
F			2	2
M				
A			1	1
M			2	2
Total	3	4	98	105
Per Cent of each factor	3	4	93	100
% total Enid Shipments	.1	.1	.7	.9

Source: Worksheets of Federal Grain Supervision, Enid, Okla.

APPENDIX C (continued)

CARS OF WHEAT RECEIVED AT ENID THAT
WERE GRADED TOUGH, SMUTTY OR WEEVILY
1939-1940*

Months	Tough	Smutty	Weevily	Total
J	514	58	76	648
J	89	42	10	141
A		6	28	34
S		2	86	88
O		2	171	173
N			136	136
D			94	94
J				
F				
M				
A				
M				
Total	603	110	601	1314
Per Cent of each factor	46	8	46	100
% of total Enid Receipts	4.1	.7	4.1	8.9

CARS OF WHEAT SHIPPED FROM ENID THAT
WERE GRADED TOUGH, SMUTTY OR WEEVILY
1939-1940*

Months	Tough	Smutty	Weevily	Total
J	29		1	30
J				
A				
S			11	11
O			15	15
N			14	14
D			46	46
J				
F				
M				
A				
M				
Total	29		87	116
Per Cent of each factor	25		75	100
% total Enid Shipments	.4		1.2	1.6

*Preliminary

Source: Worksheets of Federal Grain Supervisor, Enid, Okla.

APPENDIX D

CASH CARLOT SALES OF WHEAT AT KANSAS CITY
 JULY, 1938
 (cents per bushel)

Class & cars	1	2	3	4	5	Av. differential Between grades
Dark Hard						
657	75.7					
1358		75.0				
1107			72.7			
541				69.4		
203					65.8	
3866						2.5
Hard Winter						
139	70.9					
618		70.0				
1721			68.1			
1313				65.0		
629					61.4	
4320						2.4
Red						
4	68.3					
177		65.7				
929			63.7			
926				61.5		
605					58.1	
2641						2.6
Mixed						
1	73.5					
97		67.4				
320			66.5			
222				62.9		
100					58.9	
740						3.8
* Total:						
11,567						2.8

*No Yellow Hard Winter cash sales recorded during July, 1938.

Source: Kansas City Grain Market Review July, 1938.

APPENDIX D (continued)

CASH CARLOT SALES OF WHEAT AT KANSAS CITY
 JULY, 1939
 (cents per bushel)

Class & cars	1	2	3	4	5	Av. differential Between grades
Dark Hard						
478	71.3					
1095		70.6				
677			69.3			
58				68.4		
4					67.2	
2312						1.0
Hard Winter						
171	67.3					
1889		66.6				
1085			66.1			
166				65.2		
20					64.9	
3331						.8
Yellow Hard						
3	64.9					
8		64.4				
8			62.8			
*						
19						1.0
Soft Red						
56	64.6					
1136		63.5				
1430			62.8			
208				61.7		
12					59.3	
2842						1.3
Mixed Wheat						
22	65.8					
458		65.1				
353			64.0			
18				62.5		
2					61.5	
853						1.1
Total:						
9,357						1.04

*No Cash Sales for Grades 4 and 5 during July, 1939.

Source: Kansas City Grain Market Review, July, 1939.

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STRAFMORE PAPER

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