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# Wheat Problems and Programs In the United States

Agricultural Experiment Stations of Illinois, Indiana,  
Iowa, Kansas, Michigan, Minnesota, Missouri,  
Nebraska, North Dakota, Ohio, South Dakota, and  
Wisconsin, Cooperating.

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## FOREWORD

This is the final report of the subproject entitled "Wheat Price and Income Policy" of the research project, "Measuring and Appraising the Impact of Agricultural Price and Income Policy on Producers, Distributors and Consumers," initiated by the North Central Regional Technical Committee. NCM-11. Both were begun in 1954, and grew partly out of studies and reports requested by the Secretary of Agriculture in connection with a review of national farm policies in 1953.

Research under the wheat sub-project was centered at the Kansas Agricultural Experiment Station, and supplementary research was conducted at the University of Nebraska, North Dakota State Agricultural College, South Dakota State College, and Ohio State University. The original sub-project committee was: George Montgomery, Kansas (project leader); Clyde Mitchell, Nebraska; Rainer Schickele, North Dakota; M. G. Smith, Ohio; and Max Myers, South Dakota.

B. J. Bowlen began studies of wheat supply response in 1954-55, and published his findings separately.

J. O. Bray coordinated a series of surveys of wheat farmers' views of farm programs in 1955-56 which resulted in publications at cooperating stations as listed below, and which were useful in all phases of the study.

John A. Schnittker served as project leader from March 1957 to completion of the sub-project, except for leave of absence from Kansas State University in 1958-59. Mrs. Jeanne E. Dost made an important contribution to the project from 1956 to 1958. Robert Rizek, Carroll Spencer, Patrick Smythe, and Lee Ruggels completed M.S. theses under project support at Kansas State University. Mrs. Lorena Burnette, Mrs. Ruh Clifton, and Leo Mayer were of much assistance, and Miss Margie Jaedicke was responsible for secretarial work.

The following published and unpublished works, in addition to this report and unpublished studies contributing to this report, resulted primarily from the sub-project.

### Kansas

1. B. J. Bowlen, "The wheat supply function," *Journal of Farm Economics*, December, 1955.

2. Leo Cohen, *A suggested reformulation of the objectives of agricultural policy*, Kansas agricultural experiment station, Agricultural economics report no. 81, 1958.

3. Mrs. Jeanne E. Dost, *An interregional analysis of the three major wheat producing regions in the United States*, Unpublished Ph.D. thesis, Harvard University, 1958.

4. John A. Schnittker, "Response of wheat production to price," *Journal of Farm Economics*, December, 1958.

5. John A. Schnittker, J. O. Bray, B. J. Bowlen, *Kansas farmers' views on the wheat price support and acreage control program*, Kansas agricultural experiment station, Agricultural economics report No. 77, 1957.

6. John A. Schnittker and Patrick E. Smythe, *An appraisal of the acreage reserve program for wheat*, Kansas agricultural experiment station, Agricultural economics report No. 79, 1958.

7. John A. Schnittker and W. Lee Ruggels, *Advertising and promotion of wheat and other foods*, Kansas agricultural experiment station circular 353, 1958.

8. Patrick E. Smythe, *Alternative bases for allocation of wheat allotments*, Unpublished M.S. thesis, Kansas State University, 1958.

9. Carroll D. Spencer, *Impact of acreage allotments and marketing quotas on central and western Kansas farms*, Unpublished M.S. thesis, Kansas State University, 1957.

## Nebraska

1. Ivan H. Auer, *An analysis of the effect of price and other factors on acreages of winter wheat planted in Nebraska, 1931-55*, Unpublished M.S. thesis, University of Nebraska, 1958.

2. Donald L. Winkleman, *Some factors affecting the wheat supply in Nebraska*, Unpublished M.S. thesis, University of Nebraska, 1957.

## North Dakota

1. Perry V. Hemphill and Donald E. Anderson, *The effects of wheat support programs on North Dakota agriculture*, N. D. Agricultural experiment station, 1958.

## Ohio

1. M. G. Smith, et al., *An analysis of Ohio farmers' views and responses to the wheat price support and control program*, Ohio mimeo bulletin, No. A. E. 258, 1955.

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## South Dakota

1. Richard H. Kruse, *Acreage response of South Dakota wheat producers to expected price changes, 1955*. Unpublished M.S. thesis, South Dakota State College, 1958.

2. Allen Severson, "South Dakota wheat farmers and the 1957 Acreage Reserve Program", *South Dakota farm and home research*. May, 1958.

3. Allan M. Severson, *Acreage reserve participation in South Dakota wheat areas*. South Dakota State College Agricultural economics pamphlet No. 98, December, 1958.

Members of the NCM-11 Technical Committee listed below provided suggestions useful in the study.

Illinois	Vincent West
Indiana	J. Carroll Bortum
	John Dunbar*
Iowa	Geoffrey Shepherd*
Kansas	C. P. Wilson, Adm. Adviser*
	George Montgomery
	John A. Schnittker*
Michigan	Dale Hathaway
	William Cromarty*
Minnesota	Willard W. Cochrane
	Elmer Learn*
Missouri	O. R. Johnson
	Elmer R. Kiehl
	Jerry West*
Nebraska	C. Clyde Mitchell
	Don Kanel
	James Hassler*
North Dakota	Rainer Schickele
	Perry Hemphill*
Ohio	Mervin G. Smith
	Dick Newberg*
South Dakota	Max Myers
	Dick Newberg
	Philip W. Van Vlack*
Wisconsin	Harlow Halvorson

\*Member of technical committee when manuscript was approved for publication.

# Wheat Problems and Programs In the United States\*

1933-1960

JOHN A. SCHNITTKER\*\*

Over-production of many farm commodities, persistent downward pressure on farm prices, and high price support costs rank among the most difficult domestic issues of the 1960's. How to dispose of surplus stocks of wheat and to reduce wheat marketings without seriously reducing farm incomes or increasing the production of other crops is one of the most serious aspects of the farm problem.

Farm output in the U.S. is a small and decreasing share of total national output. Per capita consumption of cereals is low and declining; farm population is relatively small and decreasing. Productivity of farm resources continues to rise under the stimulus of research and development and the individual farmer's need to match lower prices with lower costs.

That the economic structure of U. S. agriculture differs from that of much of the rest of the economy is no longer seriously debated. Chronic surpluses, and depressed prices and incomes follow from the small-unit organizational pattern of agriculture, from its modern technological framework, and from the nature of farm commodities. It is not surprising that the economic condition of agriculture should be a matter of public concern in the U. S. It is, in fact, only in such an economy that the public can afford to take a leisurely and costly approach to eventual solutions of such problems.

Public patience with the wheat program may be far from exhausted in 1960, but it is not inexhaustible. In a world where war and hunger are daily possibilities, large stocks of wheat may once more be as valuable as they were a few years ago. But wheat is not the only product making claims on our productive resources and the public treasury, nor is agriculture in the atomic age so clearly a "defense industry" as it once was. Even in a rich country, we cannot have more of everything. People in the U.S. are increasingly aware that they have too much wheat.

\*Contribution No. 333, Department of Agricultural Economics, Kansas Agricultural Experiment Station, Manhattan.

\*\*Associate Agricultural Economist, Kansas Agricultural Experiment Station, Manhattan.

Wheat is a global commodity; wheat problems and policies of the U.S. are of world concern, just as production goals and consumption trends in other countries are the concern of wheat producers in the U.S. While this study is focused on the domestic wheat situation, international implications of U.S. wheat programs and foreign farm policies are also discussed.

The study is in four parts: (1) the goals, methods, and effects of past wheat policies and programs; (2) economic factors determining the production and consumption of wheat in the U.S.; (3) global economic factors affecting the U.S. wheat industry; (4) alternative public policies and programs.

## I.

### **GOALS, METHODS, AND EFFECTS OF WHEAT POLICIES AND PROGRAMS**

Agricultural policy is inherently economic and social policy. Early agricultural policies and programs in the U.S. promoted internal improvements, speeded land distribution, and encouraged domestic and foreign trade. The establishment of land-grant colleges and extension services made education and experimentation important aspects of farm policy.

These early policies promoted national economic growth as well as individual achievement. There was also a strong undertone of democratic idealism in the land distribution policies of the 19th century, foreshadowing the goals of parity prices and incomes, which in the 1930's became the intent of Congress according to law.

Objectives of agricultural policy ought to be consistent with the objectives of general economic policy and of the political community. One such objective is order, established or harmonious relation, a universal but not exclusive goal of the state. In modern democracies, personal freedom is of nearly equal rank. Freedom and order are not mutually exclusive, however. Each may be substituted for, or may complement the other. The extent of order in a society is clearly greater when that pure freedom to do exactly as one wishes in all matters is denied.

The major economic counterpart of order is stability. Relative stability of prices, of production, of employment at a high rate of the labor force, and of economic institutions (such as the family farm) are major economic goals of every developed democratic country in the world. No political organization which must answer to the people can profitably retreat from those goals.

Economic stability conflicts with economic freedom in many ways. But the U.S. society has chosen the goal of relative stability, and has established institutions to insure its pursuit if not its complete attainment. Thus it has implicitly rejected a measure of individual economic freedom in favor of limited control by government over individual affairs.

Only the means and extent of that control are open to question in a democratic society. If farmers or all voters jointly and freely choose a measure of order in their markets and reject a bit of managerial freedom, they may be criticized as unwise by dissenters who seem to see a better way, or who reject the pursuit of economic stability itself. But they should not be called undemocratic for such conventional democratic behavior.

Justice is a third major goal of democratic societies with economic content. The roots of economic justice in free societies are in the concept of the worth of the individual person. Justice as an economic goal is neither clearly defined nor measurable. Yet society has continued to dispense pragmatic distributive justice, largely by enacting laws to lessen the inequality of income distribution. The slogans of modern agrarian agitation—"equality for agriculture" and "parity" are rooted in the objective of economic justice, and cannot be lightly dismissed.

Finally, people continue to be interested in their level of consumption. They want to produce as much as possible, subject to the limitations self-imposed by other goals. In short, we want to be reasonably efficient, but do not reject all other aspirations in favor of efficiency.

## OBJECTIVES AND MEANS

There are countless lists of objectives of agricultural policy; there are many slogans stating specific goals of an era or a group. Yet only one objective of recent farm agitation and legislation stands out—to raise farm prices and incomes. The farm agitation of the 1920's which led to the agricultural policies and programs of the 1930's is almost fully explained by widespread dissatisfaction with the results of the prevailing economic order in agriculture, especially with the price system, the mechanism for income distribution.

Farm prices fell sharply after 1928 and aggregate net farm income was nearly zero by 1932 (11). With those developments, the immediate goals of farm people crystallized. To re-establish their income position by creating conditions in agricultural markets which would raise farm prices became almost an exclusive goal of farm policy. If a bit of individual freedom was about to be lost, few took note in 1933; fewer still mourned its loss. Lack of income had imposed its own unique restraints on farmers for the preceding decade.

### 1933-36: The Agricultural Adjustment Act

The Agricultural Adjustment Act<sup>1</sup> was Title I of "An Act to relieve the existing national emergency by increasing agricultural purchasing power. . .," one of many emergency measures enacted to revive the U.S. economy. The idea that national recovery would come about largely through agricultural recovery, though widespread, was not taken seriously by economists even then.<sup>2</sup> A report explaining the Act after its adoption stressed the interaction between farm and nonfarm sectors, but made only small claims for its effect on national recovery (11).

<sup>1</sup>Approved May 12, 1933, 48 Stat. 31.

<sup>2</sup>Presidential candidate Roosevelt had said: "I believe that we can restore prosperity here in this country by re-establishing this gigantic purchasing power of half of the people. . ." As quoted by Davis (7, p. 2).



It was declared to be the policy of Congress to establish and maintain conditions so that farm prices would be at levels at which agricultural commodities would have purchasing power equivalent to their purchasing power in the period August, 1909, to July, 1914. Reduced farm production was called an intermediate objective of the Act but was properly a necessary condition for achievement of the real objectives, increased farm prices and incomes.

It was also declared to be the policy of Congress to protect consumers despite action to raise farm prices. Farm production was to be cut and prices raised only to such levels as would not increase farmers' share of the consumers' retail expenditures above the share the farmer got in the prewar base period. Consumers were to expect food prices higher than in the years just prior to 1933, but not higher relative to other prices than they were from 1910-14, except where marketing charges had risen.

Clearly, the architects of farm policies and programs in 1933 had in mind an economy with market characteristics and an income distribution different from what had been in existence. Farm prices, whose level and instability had been the major source of agrarian discontent since 1920, were the key issue (34, Ch. 13). Parity prices (meaning 100 percent of parity) were the main symbol, but they were not a serious objective in 1933 nor were they to become one. Unspecified higher farm prices and higher farm incomes were the goals.

The Agricultural Act of 1933 authorized the Secretary of Agriculture to reduce acreage, production, or both, of any basic agricultural commodity, to enter into agreements with and to license processors of agricultural commodities, and to obtain revenues by levying taxes to be paid by the processor.

For wheat, the objectives of the law were to be pursued through the voluntary domestic allotment plan (52, pp. 48-49): (1) payments were to be offered on the 1933, 1934, and 1935 wheat crops to producers entering into contracts to reduce acreage only 1934 and 1935 (since the 1933 crop was nearly ready for harvest when the Act was passed). (2) Payments were to be 30 cents per bushel on about 54 percent of the national production, (the proportion of the total crop which had been used as food in the U.S. in immediately preceding years), and the pro rata share of each contracting wheat producer. (3) Contracting producers were to reduce acreage by not more than 20 percent from plantings in 1930-32. (4) To provide funds for payments to producers, a processing tax was to be levied on the first domestic processing of wheat for domestic human consumption.

Output reduction was the heart of the program (11, pp. 21-62). Comparatively large price increases were expected to follow relatively small reductions in output, and farm income from wheat was expected to increase accordingly.

The processing tax was to provide a fund from which to make payments to producers who had reduced acreage. It was feared that without such an incentive to reduce plantings, few producers would cooperate, and the potential price increase would either be dissipated by noncooperators who overplanted, or if it materialized, would benefit noncooperators more than others. In the first

year of the program (1933), the processing tax was set at 30 cents per bushel, about 40 percent of the average market price received by farmers that crop year, as shown in table A1 of the Appendix.

Consumers were theoretically, if not materially, protected under the 1933 Act. Few doubted that the processing tax would raise prices paid by consumers for wheat products. To keep food prices from rising more than justified by the processing tax, the Secretary of Agriculture was to make public the relationship between the processing tax and the price paid to producers, and the effect of the processing tax on prices to consumers. No penalties were provided to enforce the policy in respect to consumer prices. Instead, the Office of Consumers' Counsel was established in the Department of Agriculture to provide information on prices and margins. Public opinion was counted on to do the rest.

### **1936-38: The Soil Conservation and Domestic Allotment Act**

Superficially, the goals of agricultural policy changed when the AAA was declared unconstitutional (January 6, 1936) and was replaced by the Soil Conservation and Domestic Allotment Act.<sup>3</sup> A USDA publication stated: "Whereas prior to the Supreme Court decision, adjustment of acreage and production had been the primary objective defined by law, and soil conservation and farm management had been by-products, after the decision, the latter became the primary function under the law, with production adjustments as the by-product" (53, p. 11).

The provisions of the Act do not support that statement. Cash payments were to be made directly to producers, as under the voided 1933 law. Major crops called "basic" in 1933 were designated "soil-depleting" in 1936. Producers could share in the receipts of the processing tax under the 1933 law only if they had reduced their acreage of basic crops; they were required to shift a designated acreage out of soil-depleting and into soil-conserving crops to become eligible for payments from general tax funds under the 1936 Act.

The speed with which the 1936 Act was passed also contradicts the apparent change in goals. Support for conservation is not likely to have produced the 1936 Act in such a short time. The 1936 Act was a product of a depressed agriculture in a depressed economy—the same conditions which produced the 1933 Act. Maintenance and improvement of farm prices and incomes were its main, though not its avowed, objectives. A renewed national concern with resource conservation, born of the "dust bowl" and related circumstances surrounding the adoption of the Soil Erosion Act of 1935, was an important and durable by-product.

### **The Agricultural Adjustment Act of 1938**

No significant changes in farm policy objectives were made in the 1938 Act;<sup>4</sup> the "Declaration of Policy" specified both the end in view and the means by which it was to be pursued.

<sup>3</sup>Approved February 29, 1936, 49 Stat. 1148.

<sup>4</sup>Approved February 16, 1938, 52 Stat. 31.

"Sec. 2. It is hereby declared to be the policy of Congress to continue the Soil Conservation and Domestic Allotment Act, as amended, for the purpose of conserving national resources, preventing the wasteful use of soil fertility, and of preserving, maintaining, and rebuilding the farm and ranchland resources in the national public interest; to accomplish these purposes through the encouragement of soil-building and soil-conserving crops and practices; to assist in the marketing of agricultural commodities for domestic consumption and for export; and to regulate interstate and foreign commerce in cotton, wheat, corn, tobacco, and rice to the extent necessary to provide an orderly, adequate, and balanced flow of such commodities in interstate and foreign commerce through storage of reserve supplies, loans, marketing quotas, assisting farmers to obtain, insofar as practicable, parity prices for such commodities and parity of income, and assisting consumers to obtain an adequate and steady supply of such commodities at fair prices."

Parity prices, in 1938 as in 1933, meant only higher prices in practice. Parity income was defined more idealistically:

"'Parity,' as applied to income, shall be that per capita net income of individuals on farms from farming operations that bears to the per capita net income of individuals not on farms the same relation as prevailed during the period from August, 1909, to July, 1914." (58, p. 25)

Cash incomes for farmers as high relative to nonfarmers as in 1910-14 were the stated intent of Congress. But statements of policy do not generate programs spontaneously, nor were the programs adopted in 1938 tailored to income parity as defined. Income parity was not, in fact, a serious goal of the 1938 Act, but a symbol of the period. The 1938 Act established means of preventing prices of specified crops from falling to levels which would have prevailed without the Act, but the price goal was modest, only 52 to 75 percent of parity. The parity income doctrine, the relationship between per capita net income of persons on farms from farming operations to the per capita net income of persons not on farms, was left to take care of itself.<sup>5</sup>

The basic mechanism for supporting the price of wheat and the incomes of wheat producers was established in 1938 and has not changed materially to 1960.

1. National and farm marketing quotas were to be announced and put into effect upon approval by producers whenever it was determined that the prospective total supply of wheat would exceed the normal supply by more than 20 percent, or if, in the absence of such an excess, the price was depressed. Penalties were specified for failure to comply with acreage allotment and marketing quota provisions.
2. National, state, and farm acreage allotments were defined, together with conditions under which they were to be in effect.
3. The Commodity Credit Corporation was directed to make available nonrecourse price support loans on wheat for the first time, whereas such loans had previously been limited to cotton and corn. The level of loans ranged from 52 to 75 percent of parity (37, pp. 40-76).

The method of operation was to divert enough wheat (and other commodities) from market channels to storage when necessary to keep prices at or near pre-announced levels. The acreage reduction was designed to minimize the

<sup>5</sup>Per capita income of the farm population was slightly less than half the per capita income of the total population in the 1910-14 base period; about the same relationship prevailed in the 1950's (49, pp. 34-35).

quantities thus diverted. Grain was to be alternately removed from, and returned to market channels in a stabilizing operation, a hope which did not materialize fully.

### Wartime Amendments

Three legislative acts passed during World War II had marked effects on the postwar wheat program. Previously, wheat prices could be supported only from 52 to 75 percent of parity, and had been supported at only 52 to 57 percent of parity from 1938 to 1941 (table A1). The Agricultural Act of 1938 was amended to support the 1941 wheat crop (nearing harvest), at 85 percent of parity, more than 50 percent above the previous level.<sup>6</sup>

At the same time, producers with not more than 15 acres of wheat were exempted from marketing quota penalties, an amendment which was to be unimportant until 1954, but which has since been a key barrier to remedial wheat legislation.

The Steagall Amendment (July 1, 1941) required price support at 85 percent of parity for all commodities for which the Secretary of Agriculture had asked for increased production.<sup>7</sup>

The Stabilization Act of October, 1942, provided price support at 90 percent of parity for wheat and other basic commodities for at least two years after the official end of World War II.<sup>8</sup> This price support level, subsequently extended through 1954, is often cited as a major cause of the wheat problems in the postwar period, a contention examined later. The objective of the increased support levels was closely related to the almost exclusive real goal of all basic farm legislation to date, to maintain (postwar) farm prices and incomes above levels which would otherwise have prevailed. A general expectation of unemployment and depression after the war was later instrumental in the enactment of the Employment Act of 1946,<sup>9</sup> and contributed to passage of the higher price support.

### The Agricultural Acts of 1948 and 1949

No change in the objectives of wheat programs or of general farm policy was indicated in the 1948 and 1949 Acts, which were amendments to the 1938 Act. Nor was the mechanism by which farm prices were to be maintained altered significantly. The 1948 Act<sup>10</sup> extended price supports at 90 percent of parity through June 30, 1950, established a new system of computing parity prices, and set up a schedule of price supports for basic crops (including wheat) related to the level of the total supply of the commodity. The "flexible" price support program, although adopted in principle in 1948, was repeatedly postponed, and has never been thoroughly tested, although with modifications it has been in effect since 1954.

The key feature of the 1948 and 1949 Acts was the following schedule relating price supports to commodity supplies.<sup>11</sup>

<sup>6</sup>May 26, 1941, 55 Stat. 205.

<sup>7</sup>55 Stat. 498.

<sup>8</sup>56 Stat. 767.

<sup>9</sup>60 Stat. 23.

<sup>10</sup>62 Stat. 1248.

<sup>11</sup>62 Stat. 1253.

If the supply percentage is<sup>12</sup>

The level of support shall be not less than the following percentage of parity prices:

	<i>1948 Act</i>	<i>1949 Act</i>
Not more than 70	90	
More than 78 but not more than 80	85	
More than 88 but not more than 90	80	
More than 98 but not more than 102	75	90
More than 110 but not more than 112	70	85
More than 120 but not more than 122	65	80
More than 130	60	75

The price support schedule of the 1949 Act<sup>13</sup> raised the levels of support 15 percent above those in the 1948 Act. However, the 1948 Act had also specified that if acreage allotments were in effect, or if producers had approved a marketing quota for wheat (and certain other crops), the price support would be 120 percent of the level provided in the schedule, but not more than 90 percent of parity. The 1948 and 1949 Acts thus provided nearly identical price support schedules for wheat and other basic crops when acreage allotments and marketing quotas were in effect; neither became effective until 1955.

### **Agricultural Act of 1954**

This Act<sup>14</sup> set into motion the price support program adopted in principle but not in fact in 1948. As shown in table A1, 90 percent of parity price supports for wheat ended with the 1955 crop. The statutory minimum support of 75 percent of parity was reached in 1958, and was continued for the 1959 and 1960 crops.

Price supports falling as wheat stocks mounted were the only substantial change in the wheat program under the 1954 Act. Acreage allotments continued to be tied to a long planting history, a minimum national acreage allotment was again established, and producers continued to be eligible to harvest up to 15 acres of wheat without penalty even though their acreage allotment was below 15 acres. Diversion of wheat into government ownership continued to be the method of supporting wheat prices.

The 1954 schedule of price supports was from the untried 1949 Act, but it was not permitted to become fully effective. The support price for wheat, which would have been 75 percent of parity for the 1955 crop apart from exceptions to the price support formula, did not fall that low until 1958 (table A1).

## **EFFECTS OF WHEAT PROGRAMS**

### **Emergency Program: 1933-36**

The 1933 wheat program was based on almost universal agreement that the U.S. demand for wheat was inelastic (see page 43). That is, any decrease in wheat output was expected to be followed by a relatively greater price increase. Gross income from wheat would rise, therefore, and production outlays (on fewer

<sup>12</sup>Supply percentage was the percentage total supply was of the normal supply, the latter being defined for wheat as the estimated domestic consumption plus exports plus 15 percent of the sum of the two.

<sup>13</sup>63 Stat. 1051.

<sup>14</sup>68 Stat. 899.

acres) would surely not increase. Net farm income was expected to be greater as a result.

Contracts to reduce wheat acreage were not applicable to 1933 crop wheat, nearly ready for harvest when the 1933 Act was passed. Although wheat production was down by 310 million bushels (36 percent) from 1930-32, it was the result of drought, not the wheat program. Incomes of cooperating producers from wheat production were directly increased during the 1933 crop year only by the "adjustment payment" of 30 cents per bushel (28 cents net) on 54 percent of their base period production.<sup>15</sup> However, with the short crop, the price received by farmers for 1933 crop wheat was twice the 1932-33 level (table A1).

According to Johnson (52, p. 53) wheat planted for harvest in 1934 was reduced by 7.6 million acres, 12 percent of the base acreage. Davis (8, p. 350) estimated later that wheat seeded for harvest in 1934 was reduced only 3.5 million acres, as noncomplying farmers increased plantings somewhat. The wheat price recovery was well under way by the time the 1933-34 wheat program was announced. The reduction in output attributable to the program, whether 30 million (Davis) or 60 million bushels (USDA), contributed positively but modestly to the price strength, and probably contributed little to the 1933-34 economic recovery.

The acreage reduction required for 1935 crop wheat (to be eligible for incentive payments) was only 10 percent. As the drought continued, this restriction was removed, and the 1934-35 program reduced production and increased price negligibly. Thus, in three years of the AAA, the major gains to wheat producers came from funds distributed out of proceeds of the processing tax. Drought decreased production and caused most of the price recovery.

The processing tax paid to the CCC by millers of wheat for consumption in the U.S., increased the cost of wheat for milling by nearly \$150 million in each of the crop-years in which the law was effective (1933-34, 1934-35, and half of 1935-36). Cereal consumption, then as now, did not decline measurably as a result of increased prices (see table A14). Millers and bakers had no fear then, and need have none in the 1960's, that flour or bread sales would fall if the increased cost of wheat was passed on to consumers. In the first report on the 1933 wheat program, it was stated without qualification that ". . . the wheat processing tax is not borne by the millers . . . It consequently appears that the entire processing tax has been passed on to the wholesale price of flour" (52, p. 221). Davis (8, p. 365) estimated that the increase in the price of bread, resulting from the 1933-35 processing taxes, may have been slightly greater than justified by the processing tax.

The experience of 1933 to 1935 is especially relevant to discussions of an appropriate administered price for wheat under future government programs. Thirty years ago, it was the consumer who paid directly for increased farm prices. This is still the case. Neither justification of higher farm prices on equity grounds, nor the possibility of ultimate public benefits, should cloud the issue of the short-run incidence of farm price increases.

<sup>15</sup>Of 1.2 million producers, 550,000 with 77 percent of all wheat acreage signed contracts to reduce 1934 acreage up to 20 percent, and received payments totaling \$95 million during the 1933 crop year (52, pp. 52-53).

## **A Stop-Gap: 1936-38**

There was no identifiable wheat program in effect for the 1937 and 1938 crops. No serious effort was made under the 1936 Soil Conservation and Domestic Allotment Act to reduce wheat acreage and production, as soil conservation payments were not tied directly to wheat acreage reduction. Payments were made from federal funds to supplement farm incomes from 1936 to 1938, but wheat acreage increased sharply as higher prices followed the poor crops of 1933 to 1936, and as the drought ended (53, pp. 253-301).

## **Permanent Legislation: 1938-60**

Higher farm prices were the major tangible objective of the 1938 Act. For wheat, price objectives were to be met both by reducing acreage and production, and by removing wheat from the market.

*Wheat prices and incomes of wheat producers were higher from 1939 to 1943 than they would have been without any wheat program.* U. S. farmers seeded nearly 80 million acres of wheat in 1937 and 1938, the last two crops before enactment of basic wheat legislation in force through 1960. Under pressure of a 62 million acre allotment from 1939 to 1941, seeded acreage was reduced nearly 18 million acres each year. The average yield per seeded acre was near 12 bushels in each of those years, so wheat production was reduced nearly 200 million bushels each year by the wheat allotment program. In 1942, wheat acreage was cut even more by a national allotment of 55 million acres.

Small increases in barley, sorghum grain, and hay acreages were recorded in major wheat areas in those years. But total land used for crops was reduced; not all land taken out of allotment crops was planted to an alternative crop. Reduced wheat output and higher wheat prices were not fully offset by greater output and lower prices for other farm products in that period.

In the postwar era, this was not the case. The acreage allotment program reduced total farm output after 1954 only insofar as alternative crops planted on acreage taken out of wheat and other allotment crops were less productive than the preferred crop of the area. Most alternatives to wheat, corn and cotton (major allotment crops) were also supported, but at lower levels than the basic crops. Shifting acreage to other crops either pushed their prices toward support levels, or helped to keep them there, thus requiring the Commodity Credit Corporation (CCC) to purchase additional quantities of minor commodities. The acreage allotment program of 1954-60 affected the composition of CCC stocks a great deal, but reduced their quantity very little.

Reduced acreages of wheat were not enough to keep wheat prices at the modest goal levels of 1939 to 1941—52 to 57 percent of parity. Wheat prices were raised (or kept from declining) also by the second price support mechanisms of the 1938 Act—nonrecourse loans made commercially, but guaranteed by the CCC, and which could be paid by delivery of the commodity collateral to the CCC.

The method of operating the direct price support program for wheat since 1938 has been an implicit offer by the CCC to buy all wheat produced in excess of the quantity that would sell during the marketing year at the established support price. Producers use that option when the market price falls far enough below the support price to make the small inconvenience of the price-support loan transaction worthwhile.

Any year in which substantial quantities of wheat were put under loan or purchase agreements,<sup>16</sup> prices must have been below the support level for a time or perhaps for the entire marketing period. Had producers offered additional wheat for sale instead of using the loan or purchase agreement, prices would have declined further. Large quantities of wheat pledged for CCC loans are, therefore, direct evidence that producers would have taken lower prices at some point in the year if the loan option had not been available.

Large quantities delivered to CCC at the end of the marketing year show a substantial and sustained difference between the price support and the average prices which would have prevailed in the absence of a diversion program.

As shown in table A1 more than 10 percent of the wheat crop was placed under loan in all but four years from 1938 to 1960, and more than 20 percent in all but seven years. In each year except 1946-47 and 1947-48, the wheat program caused wheat prices during a part of the year to be higher than they would have been. In some years (1950-51, for example) large quantities were placed under loan but little was delivered to CCC. In those years, large price gains from the loan program did not exist throughout the year, since producers were able to market their wheat and repay the loan. Since 1952, the average U.S. farm price has seldom been above the loan rate (table A2), and there were few opportunities to sell grain, pledged under a price support loan, at a profit in the market. About eighty-five percent of all wheat placed under loan or purchase agreement since 1952 has been delivered to the CCC (table A1).

The wheat program has prevented not only price declines but also price increases. Conditions for substantial price increases existed in two periods in the 22-year history of the present wheat program, both in connection with war. CCC holdings were reduced from 320 million bushels to zero between 1942 and 1946, helping to restrain wartime price increase. This was repeated on a smaller scale during the Korean war when CCC stocks were reduced sharply even though prices received by farmers were seldom above support levels.

Only the direction, not the size of the price effects can be accurately estimated. From 1938 to 1942, when 14 percent of all wheat produced went into stocks, wheat prices would have been much lower, perhaps as much as 50 percent below the actual price, had the loan and storage program not been in operation. Without either the loan program or acreage allotments, wheat prices would probably have been very low until 1942.

From 1942 to 1948, effects of the wheat program on prices were either negative or negligible. Addition of wheat to CCC stocks in 1949 and 1950 again prevented price declines.

<sup>16</sup>Since 1948, producers have been able to assure themselves of the support price without the inconvenience and cost of borrowing with a warehouse receipt as collateral—by entering into a purchase agreement in which the CCC offers to buy at a certain date, if the producer is willing to sell on that date, a specified amount of wheat at the support price.



From the great 1952 crop through 1959, when from 15 percent (1956-57) to 41 percent (1953-54) of production was delivered to CCC each year, wheat prices would have fallen sharply any time the program was ended. If the wheat program had been abandoned, or marketing quotas for wheat rejected in producer referendums while the corn price support program was continued, wheat prices would have fallen to near the level of corn prices.

This would not have forced an immediate drop in corn prices if the corn loan program had remained in operation. But with wheat added to feed supplies, more corn would have been acquired by CCC as producers declined to take the lower corn prices dictated by the addition of large amounts of wheat to the feed supply.<sup>17</sup> Given the historic level of support for U.S. corn, recent national average prices for wheat and corn if both were set chiefly by the corn program, would have been about as shown in Column 3 below.

<u>Year</u>	<u>Actual wheat price</u>	<u>Estimated wheat price*</u> (dollars per bushel)	<u>Actual corn price</u>
1952-53	2.09	1.62	1.51
1953-54	2.04	1.58	1.48
1954-55	2.12	1.52	1.42
1955-56	1.99	1.44	1.35
1956-57	1.97	1.38	1.29
1957-58	1.93	1.19	1.11
1958-59	1.72	1.19	1.11

\* Assuming equal feeding values per pound of wheat and corn, and no location differences.

If wheat and corn price supports had both been terminated in any year, wheat price declines would have been immediate, sharp, and probably sustained, even with CCC inventories withheld. Foote and Weingarten (14, pp. 40-41) estimated that if both programs had been terminated in 1956 and surplus stocks impounded, the price of wheat for 1956 would have fallen from near \$2 per bushel (table A2), to \$1.65, while the price of corn would have fallen from \$1.29 to \$1.19 per bushel in the first year; 1959 prices were estimated as \$1.24 and \$1.15 per bushel, respectively, under those conditions.

If grain stocks had been made a part of the total supply, and price supports and production controls ended in 1956, with annual wheat exports limited to 400 million bushels, wheat and corn prices were estimated, respectively, as \$0.56 and \$0.76 in 1956, and \$1.15 and \$1.14 in 1959 (14).<sup>18</sup> Such estimates are quickly out of date, but they tend to confirm the judgment that grain price support levels have been and remain well above the level of prices that would prevail if price supports were ended.

*Effects of wheat programs on the location of wheat production.* Most of the arable land in the United States is physically suited to wheat production. Wheat is produced in nearly every state, and in recent years 39 states have had allotments of 25,000 acres or more (table A5). That little wheat is grown in

<sup>17</sup>See also Foote and Weingarten (14, p. 36).

<sup>18</sup>Output was assumed to not be affected by the lower price in the brief period considered.

many areas with the highest yields is explained by the relatively greater productivity of other crops in those areas, and by price relationships among wheat and other crops.

By any historic comparison, wheat programs have only minor effects on the location of wheat production. Small shifts in location caused by the program have not been an important cause of our most serious wheat problems.

The wheat problem of the late 1950's and early 1960's is primarily a hard red winter wheat problem. To a lesser degree, it is a problem of potential surplus production of most classes of wheat. Major wheat problems are closely related to the wartime expansion of crop acreage which occurred almost exclusively in the Great Plains—the hard red winter and spring areas.

Looking back, the Cornbelt and adjoining states produced two thirds of all wheat by 1869, having assumed production leadership from eastern states (table A4). By 1899, nine Great Plains and northern states produced 46 percent of all wheat, and four western states produced 12 percent. The broad outlines of regional specialization in wheat as it exists in 1960 were established by 1918-20. The Cornbelt share of the wheat acreage was to decline after 1920 and the southern plains and northwestern areas to expand, but the aggregate changes made in the 40 years (to 1959) were minor. By 1928-30, the Cornbelt, the northern and southern plains together, and the Northwest had reached almost the identical acreage shares they held in 1959 and in most intervening years (table A3). Important changes were yet to occur in acreages and shares of U.S. acreage in several states after wheat programs were begun but not because of the wheat programs.

It is often contended that wheat prices support and/or acreage allotments produced or maintained a pattern of wheat production location different from that which would have developed under the free market, a matter extremely difficult to evaluate.

Certainly no large changes in production location can be ascribed to the 1933-38 programs. Acreage limitations scarcely operated in those years. Nor were wheat programs the most influential factor in wheat production during those years of drought and depression. Neither the 1933-36 nor the 1937-38 programs operated long enough to leave any lasting mark on the wheat economy.

The wheat program established by the Agricultural Act of 1938 was the first which might have influenced production location. At that time, corn production was becoming favorable relative to wheat in the Midwest as hybrids were adopted. Corn acreage allotments were also in effect, causing pressure to put idle corn acreage to wheat. *However, producers without wheat allotments could not harvest wheat at that time without penalty.* This fact, and the limited period in which the prewar wheat program was effective, would have prevented any major acreage shifts among regions under the 1938 Act before World War II, had they been indicated by economic conditions.

The distribution of wheat acreage allotments, in 1938 and subsequently, was based directly on acreage in the previous ten years, adjusted for abnormal conditions which affected wheat planting. Beginning with the 1942 crop, an amendment to the Agricultural Act of 1938 exempted from marketing quotas producers planting up to 15 acres. This provision became effective at a time when the wheat program was virtually suspended as a major factor in market price determination or the allocation of farm resources, and was not widely used until 1954.

Speculation concerning locational changes which might have taken place between 1938 and 1942 under a free market is not very useful. Extreme stability of the location of wheat plantings and expected production prior to federal wheat programs and the absence of large changes in the technological relationship of wheat production to other farm production in the immediate prewar period suggest that such shifts would have been small. In the brief prewar span of wheat legislation (1938-42) there was too little time for major changes in production location from any cause. Free market wheat prices would have been far below the range of 49 to 82 percent of parity which prevailed, as shown above. But corn prices were similarly low and would have been lower had there been no price support. Neither technology nor prices would have exerted a marked influence on production location, then, in the immediate prewar period. *The location of wheat production, stable under the farm programs, would have been rather stable without farm programs.*

*The greatest changes in the location of wheat production in the U.S. in many years took place from 1943 to 1953, when federal farm programs were seldom a major factor in the market.* From 1943 to 1949, wartime demands kept wheat prices above support levels most of the time (tables A1 and A2); acreage controls were not in effect. In 1950 acreage allotments were announced but were not enforced. Neither acreage allotments nor marketing quotas were effective through the 1953 crop because of increased demands arising from the Korean War.

Large decreases in absolute acreage of wheat from 1938-40 to 1944-46 occurred in Indiana, Illinois, Iowa, Missouri, and Minnesota (table A3). Soybean acreage in these states expanded as war-derived demand raised oil and meal prices. This pattern of decreased wheat acreage and a smaller share of U.S. acreage persisted in some of those states through 1948-50. More wheat was planted in Ohio, Indiana, and Michigan in 1948-50 than a decade earlier, but only Michigan increased her share of U.S. acreage. *In 1954, when the wheat acreage control and price support program became effective for the first time in 12 years, the Cornbelt share of seeded acreage was only 12.9 percent, compared with 15.1 percent in 1938; Cornbelt acreage allotments were 12.3 percent of the U.S. total compared with 15.4 percent in 1938 (table 1).* Eastern wheat producing states also incurred a small decline in their share of U.S. acreage from 1938 to 1954, while minor producing areas of the South and West had gained slightly (table 1).

While Cornbelt and Eastern states reduced wheat plantings during World War II, plains and western states expanded cropland and wheat acreages. By

TABLE 1-REGIONAL DISTRIBUTION OF U.S. WHEAT ACREAGE, PRODUCTION, AND ACREAGE ALLOTMENTS.

	1938 <sup>a</sup>	1954	1955	Crop years				1960
				1956	1957	1958	1959	
	% of U. S. total							
<b>Seeded acreage</b>								
Eastern states	2.9	2.3	2.2	2.2	2.3	2.0	2.0	
Cornbelt	15.1	12.9	13.3	13.3	16.5	14.3	14.4	
Northern	26.6	26.7	26.3	27.6	27.4	25.2	25.9	
Southern plains	44.0	46.1	46.0	44.0	40.1	46.0	45.6	
Northwest	7.9	8.1	8.0	8.6	8.6	8.3	8.0	
Total - major regions	96.5	96.1	95.8	95.7	94.9	95.8	95.9	
All other states	3.5	3.9	4.2	4.3	5.1	4.2	4.1	
<b>Production</b>								
Eastern states	4.4	3.9	3.6	3.4	3.0	2.3	2.5	
Cornbelt	21.8	22.3	23.4	23.2	19.1	16.2	17.2	
Northern	22.9	19.3	27.6	23.8	27.0	22.6	19.6	
Southern plains	34.0	36.4	28.1	32.0	30.7	45.5	42.8	
Northwest	12.9	14.7	13.4	13.2	15.4	10.2	13.6	
Total - major regions	96.0	96.6	96.1	95.6	95.2	96.9	95.7	
All other states	4.0	3.4	3.9	4.4	4.8	3.1	4.3	
<b>Allotments</b>								
Eastern states	2.9	2.2	2.2	2.2	2.2	2.2	2.3	2.2
Cornbelt	15.4	12.3	12.3	12.5	12.5	12.6	12.9	12.8
Northern	29.5	28.4	28.2	26.9	27.0	27.0	26.7	26.9
Southern plains	41.4	45.4	45.7	46.5	46.6	46.5	46.2	46.2
Northwest	7.2	7.9	8.2	8.1	8.0	8.1	8.0	8.0
Total - major regions	96.4	96.2	96.6	96.2	96.3	96.4	96.1	96.1
All other states	3.6	3.8	3.4	3.8	3.7	3.6	3.8	3.8

Source: See tables A3, A4, A5 for composition of regions and original sources.

a. Seeded acreage and production, 1938-40.

1954, acreage history (which determines acreage allotments) had shifted to such an extent that *five Southern Plains states, which had 41.4 percent of the national acreage allotment in 1938 had 45.4 percent.* Nothing since the widespread adoption of mechanical power was more important to the location of wheat production in the U.S. than events of that period. Between 1938-40 to 1948-50, four Northern and five Central and Southern Plains states increased their wheat plantings by nine million acres, and their share of total U.S. plantings by 2.8 percent. *Colorado and Texas increased plantings by two million acres each in that period, Oklahoma by 1.7 million acres, Montana by 1.2 million, and Kansas and Nebraska by smaller amounts (table A3).*

Three factors accounted for these increases:

1. War-derived demands and resulting higher absolute and relative prices for wheat, together with public appeals to producers in late war years to expand wheat production.
2. The end of the drought of the 1930's, and the appearance of a long if somewhat broken period of above-average precipitation in the Great Plains.
3. Passage of the Stabilization Act of October, 1942, which guaranteed price supports at 90 percent of parity beginning with the 1944 crop and continuing

for at least two years after January 1 following the official end of the war. When this legislation was passed, the price support level for basic crops was 85 percent of parity, but during most of the history of price supports, it had been at the discretion of the Secretary of Agriculture and much lower (table A1).

*Wheat prices.* Sharply higher wheat prices beginning in 1942 (table A2) were the immediate result of war, not of price supports. When the price of any product rises relative to prices of materials used in production, or relative to the prices of other products which might have been produced with the same resources, the output of that product tends to rise. Large changes in both relationships occurred in the war and postwar years; almost without exception, they favored increased wheat production.

From 1940 to 1945, the national average price received by farmers for wheat rose by 121 percent, while the index of prices paid by farmers for production items increased only 43 percent. By 1947, these two price indexes had increased by 240 percent and 82 percent, respectively (table 2). Clearly, the margin between the cost of inputs and the price of wheat widened, favoring more intensive use of farm resources.

Changes in the average prices received by farmers for wheat relative to prices for competitive products from 1939 to 1949 (table 2) also favored greater wheat production. Soybean prices were increasingly favorable in the 1940's, helping to explain decreased wheat acreage in the Cornbelt. But sorghum grain, barley, and grass are the important competitive crops in the largest wheat producing areas. Of these, only barley was generally priced as favorably as wheat throughout the mid-1940's. Beef cattle prices lagged far behind wheat prices in the general rise of farm prices from 1939 to 1948 (table 2).

*Weather conditions.* Climate was a powerful, if unpredictable, ally of changing relative prices in altering land use in the Great Plains between 1940 and 1950 from grass to wheat production. Rainfall is the crucial factor limiting crop production there; sustained heavier than average precipitation would have caused shifts from grass to crops even without changes in relative prices favorable to grain production. Jointly, the war emergency, high wheat prices relative to costs and to other farm products, and favorable weather provided ideal conditions for the expansion of cropland and wheat acreage.

Examples of precipitation in the areas that accounted for most of the increased wheat acreage in the 1940's are as follows (70):

1. Kansas, 1940-49; locations in Seward county (southwest), Wichita county and Wallace county (west central), and Cheyenne county (northwest) had average *annual* net surpluses above normal precipitation of 1.6, 2.0, 4.0, and 2.8 inches, respectively, for the 10 years. These were from 10 to 40 percent of average precipitation. For the same locations, precipitation was below average in three, four, three, and two years respectively; it was far above average in several years.

TABLE 2-PRICE RELATIONSHIPS AMONG FARM COMMODITIES, 1939-49.

Year	Season average price received by farmers					Prices paid by farmers <sup>a</sup>						
	Wheat	Corn	Sorghum grain	Barley	Soybeans	Cattle	Pw/Pc <sup>b</sup>	Pw/Psg	Pw/Pb	Pw/Psb	Pw/Pca	
	cents per bushel					dollars per cwt.						
1939	69	57	57	41	81	7.14	121	121	121	168	85	.097
1940	68	62	48	40	90	7.56	123	110	142	170	76	.090
1941	94	75	55	53	155	8.82	130	125	171	177	61	.107
1942	110	92	78	63	161	10.70	148	119	141	175	68	.103
1943	136	112	114	99	181	11.90	164	121	119	137	75	.114
1944	141	109	91	102	205	10.80	173	129	155	138	69	.131
1945	150	127	119	102	208	12.10	176	118	126	147	72	.124
1946	191	156	139	136	257	14.50	191	122	137	140	74	.132
1947	229	216	183	170	333	18.40	224	106	125	135	69	.124
1948	199	130	128	115	227	22.20	250	153	155	173	88	.089
1949	188	125	112	104	216	19.80	238	150	168	180	87	.095

Source: (55, 1945-53).

- a. Index of prices paid by farmers for commodities used in production.  
 b. Pw/Pc is the price of wheat divided by the price of corn; other abbreviations are for sorghum grain, barley, soybeans, and cattle.

TABLE 3-TOTAL CROPLAND ACREAGE, SELECTED KANSAS; COLORADO, TEXAS, AND OKLAHOMA CROP REPORTING DISTRICTS, 1940-54.

Year	Kansas District			Colorado District		Texas District		Oklahoma District	
	(1) Northwest	(4) west central	(7) southwest	(6) east central	(9) southeast	(1 N) northwest	(1 S) northwest	(1) west	(4) west
	(million acres)								
1940	2.9	2.5	4.6	3.8 <sup>b</sup>	1.4 <sup>b</sup>	5.5	3.9	2.1	1.6
1945	3.0	2.6	4.7	3.9	1.4	6.2	3.9	2.3	2.0
1950	3.1	3.1	5.0	5.4	2.1	6.5	4.4	2.4	2.0
1956	3.1 <sup>c</sup>	3.2 <sup>c</sup>	5.1 <sup>c</sup>	5.6	2.2	6.6	4.7	2.4	2.0

- a. Reports and letters from state offices, U.S.D.A., A.S.C.  
 b. 1938.  
 c. 1954.

2. Oklahoma, 1940-49: locations in Cimarron, Woodward, and Harmon counties (west) had average annual net surpluses of 1.0, 2.7, and 0 inches of precipitation, respectively. In fewer than half the years at these locations was precipitation below normal; there were several very large annual surpluses.
3. Colorado, 1940-49: locations in Kit Carson (east) and Baca county (south-east) each had annual net surpluses of 1.0 inch of precipitation for the 10 years, 1940-49; each had four below-average years and several years of very high precipitation.
4. Locations in Nebraska and Montana did not have a precipitation pattern from 1940 to 1949 as uniformly favorable as that of the Southern Plains. However, in Kimball county, (western) Nebraska, the average annual surplus was 2.5 inches; only two years were below the longtime average. In Dawson county, (eastern) Montana, precipitation was just at the long-time average, with four of the 10 years below average.

These examples are not conclusive evidence of favorable weather in the Great Plains in the 1940-50 era of cropland expansion. But data from most stations show a similar pattern.<sup>19</sup> This was a "golden" climatic era in the Great Plains. Increased cultivation was an almost inevitable consequence.

*Price certainty and farm output.* As noted earlier, producers of "basic" crops, including wheat, were assured in 1942 that for at least two years after the end of the war emergency, prices would be supported at 90 percent of parity. This guarantee has often been cited as the chief cause of the farm surplus problems of the 1950's.

The effect of the price support guarantee on output was surely positive, but there is no way to estimate its effect on the location of wheat production. One can only guess on the basis of experience, whether or not the remote guarantee against future price declines was of major importance among the far more powerful pull of already high prices and exceptionally favorable weather working to expand Great Plains wheat acreage in the war and early postwar years. In my opinion, the 90 percent of parity price guarantee which eventually ran through 1955 was a minor factor in the early postwar expansion of wheat acreage and output in the U.S. From the standpoint of the war effort, it was largely unnecessary; other factors increased wheat output adequately. If it expanded output a little, it was a fortunate policy in that era of wheat shortages.

*Cropland expansion in the Great Plains.* Nauheim (68), reported that land for crops in the Great Plains (including North Dakota, South Dakota, Montana, Nebraska, Wyoming, Kansas, Colorado, and 93 counties in Oklahoma, Texas, and New Mexico) increased 4.2 million acres from 1939 to 1945 and 12.4 million acres from 1939 to 1949. Wheat seeded in the same area increased by 5.1 and 14.6 million acres in the same two periods. Pasture acreage declined 9.2 million from 1945 to 1949.

Data from state offices of the Agricultural Stabilization and Conservation Services, USDA, give a somewhat more detailed picture of the wartime and post-

<sup>19</sup>Nauheim, Bailey, and Merrick (68, pp. 21-24), report the same conclusion based on percentages of abandonment of seeded acreage in the hard winter and spring wheat areas over time, and on the correlation between above average yields with above average annual precipitation in Kansas and North Dakota in most years between 1940 and 1950.

war expansion of crop acreage in the Plains, especially the concentration in the less humid parts of each state.

1. Three crop reporting districts in western Kansas added 1.1 million acres to cropland between 1940 and 1950, but largely after 1945 (table 3).
2. Two eastern Colorado districts added 2.3 million acres to cropland from 1938 to 1950, mostly after 1945 (table 3).
3. Two northwest Texas districts increased cropland by 1.5 million acres from 1940 to 1950 (table 3).
4. Two districts in western Oklahoma increased cropland by .7 million acres from 1940 to 1950 (table 3).
5. Cropland increased 2.8 million acres in four Montana districts and 3.3 million acres in the state from 1938 to 1950 (table 4).
6. Comparable data from North Dakota, South Dakota, and Nebraska were not available from A.S.C. records, but wheat and total crop acreage data indicate that much new land was put to crops in those states between 1940 and 1950.

These data support census indications that at least 12 to 15 million acres of new land were taken out of range and placed under cultivation under the influence of wartime appeals, incentives, and favorable weather. Colorado, Texas, and Oklahoma of the hard red winter states and Montana of the hard red spring producing states expanded new lands and wheat acreage (tables A7 and A8) by the largest amounts. As a result, those states increased their shares of the national wheat acreage allotment substantially from 1942 to 1954. Washington and Idaho also increased their base acreage and share of the national allotment considerably from 1942 to 1954 (table A5).

TABLE 4-TOTAL CROPLAND ACREAGE, MONTANA CROP REPORTING DISTRICTS.<sup>a</sup>

Year	District				State
	1	2	3	4	
	million acres				
1938	.5	3.0	2.9	1.6	10.2
1945	.6	3.6	3.3	1.7	11.7
1950	.7	4.5	3.7	1.9	13.5
1955	.7	5.1	4.0	1.9	14.5

a. Letter from Montana State Office, U.S.D.A., A.S.C. Committee, 1957.

*Classes of wheat in relation to the wheat program.* There were important changes in the seeded acreage and the location of production of major classes of wheat in the war and early postwar years. Like the increases in total wheat production, they were caused chiefly by factors other than the price support program.

The location of lands first plowed in the 1940's explains the large increase in total wheat acreage and the greater share of total U.S. wheat acreage planted to hard red winter wheat in the war and postwar period (table 5). Colorado almost tripled her acreage of wheat (all hard red winter) between 1939 and 1949,



TABLE 5-ACREAGE SEEDED AND PRODUCTION OF CLASSES OF WHEAT, AND PERCENTAGES OF U.S. TOTALS

		1919	1929	1934	1939	1944	1949	1954	1958
Hard red winter	Acres (million)	24.8	29.2	28.8	29.9	31.0	45.5	34.9	
	% of total	32.0	43.5	44.6	47.6	46.8	54.2	55.9	
	Production (mil. bu.)	330.8	372.8	207.5	315.1	467.8	541.5	489.0	838.0
	% of total	34.7	45.2	39.4	42.5	44.1	49.3	49.7	57.1
Hard red spring	Acres (million)	18.7	14.8	14.9	13.1	15.9	17.5	13.4	
	% of total	24.2	22.0	23.2	20.9	24.0	20.8	21.4	
	Production (mil. bu.)	141.8	145.6	53.1	116.4	235.8	169.2	145.0	233.0
	% of total	14.8	17.7	10.1	15.7	22.2	15.4	14.7	15.9
Soft red winter	Acres (million)	23.3	11.9	13.4	12.3	12.0	10.9	7.4	
	% of total	30.1	17.7	20.9	19.6	18.2	13.0	11.9	
	Production (mil. bu.)	356.9	165.3	100.1	194.9	202.9	202.7	185.0	195.0
	% of total	37.5	20.1	35.8	26.3	19.1	18.4	18.8	13.5
White	Acres (million)	5.7	5.0	4.3	4.1	5.1	6.5	5.2	
	% of total	7.3	7.4	6.7	6.6	7.7	7.8	8.3	
	Production (mil. bu.)	90.0	83.4	70.6	81.7	123.4	145.4	160.0	174.0
	% of total	9.5	10.1	18.4	11.0	11.6	13.2	16.3	12.0
Durum	Acres (million)	5.0	6.3	2.9	3.3	2.2	3.5	1.6	
	% of total	6.4	9.4	4.6	5.3	3.3	4.2	2.5	
	Production (mil. bu.)	33.1	57.2	6.8	33.0	30.3	39.5	5.0	22.0
	% of total	3.5	6.9	1.3	4.5	2.9	3.6	0.5	1.5

Source: Acres by classes (10); seeded acres and production (67,55,69).

almost doubling her share of U.S. hard red winter wheat production. Texas, Oklahoma, and Montana also increased their percentages of total hard red winter wheat acreage from 1939 to 1949 (table 6).

At the same time, Illinois and Missouri tended toward increased acreages and shares of hard red winter wheat, although both states had reduced their acreages during the war. This transition of certain areas of the central Cornbelt to hard red winter from soft red winter wheat was far advanced by 1954 when the wheat program again became effective. It took place largely when the wheat program was not a major price-determining factor in the market, and when acreage restrictions were not in effect.

*The growing importance of hard red winter wheat in Illinois and Missouri between 1944 and 1954 was largely the result of the development of adapted hard winter wheat varieties with higher yields than soft wheat varieties.*<sup>20</sup> In Illinois, Pawnee variety is reported to have yield capabilities about one fourth above Fultz, the leading soft wheat until 1944, but only equal to Vigo, a soft wheat introduced about 1949. Pawnee yielded roughly 10 percent more per acre than leading soft wheats in Missouri until the introduction of Vigo. Between 1944 and 1949 in Missouri, Pawnee virtually replaced all other hard wheats, and all soft varieties except Clarkan (60).

Total acreage of soft red winter wheat decreased sharply from 1939 to 1954 (table 5), mostly in Cornbelt states where hard wheat acreage expanded. Soft wheat acreage fell 0.7 million acres in Missouri, and 1 million acres in Kansas from 1939 to 1949. In Illinois, it fell 0.6 million from 1949 to 1954. Only Ohio and Indiana of major producing states increased soft red wheat acreage from 1939 to 1949 (table A9).

The wheat program was not an important factor in these changes. The market demanded wheat, and the emphasis was on quantity. Producers met the demands of a market dominated not by the price support program, but by a world wheat shortage. *The location of hard red winter and soft red winter producing areas was not significantly affected by federal wheat programs before 1954.* Improvements in hard red winter wheats not matched by soft wheat improvements were at the root of the movement of hard wheats into the Cornbelt in the early postwar era. Improvements in soft red winter wheat yields per acre were beginning to turn the tide against hard wheats in the Cornbelt by 1960.

*Wheat production and its location, 1954-60.* Wheat acreage allotments and marketing quotas were effective in 1954 for the first time since 1942. The distribution of allotments was based on acreage from 1944-53 (adjusted for unusual weather and other circumstances). It reflected, therefore, a geographic distribution of production dictated largely by market forces under pressure of war demands and concurrent with technological developments in wheat breeding and accidents of weather which were independent of the war and the price support program.

Three questions merit examination for this period:

1. Would some areas have been withdrawn from cultivation right after the war

<sup>20</sup>The rapid spread of Nebred and Pawnee, the two important hard wheats planted in the Cornbelt in the last decade is shown by maps of their distribution in 1949 and 1954, shortly after their release (60, 57).

TABLE 6—PERCENTAGES OF SEEDED ACREAGE OF U.S. HARD RED WINTER WHEAT IN SELECTED STATES, 1939, 1949, AND 1954.

State	1939	1949	1954
Kansas	41.3	35.0	33.5
Oklahoma	14.6	16.4	15.0
Texas	12.1	15.3	13.4
Colorado	3.9	7.1	9.0
Montana	2.7	3.6	4.5
Illinois	2.7	1.8	3.0
Missouri	0.8	2.2	2.5
Total	78.1	81.4	80.9
All other states	21.9	18.6	19.1

Source: Table A7

if price supports had not been continued at 90 percent of parity? Lands plowed after 1940 in the Great Plains appear the best possibility here.

2. Have federal wheat programs since 1954 resulted in a predictable schedule of overproduction and surplus accumulation?
3. Have the wheat programs caused a unique geographic pattern of production which seriously aggravated the wheat problem of 1960?

Wartime price supports too long continued have often been blamed for the wheat surplus problems of 1954-60. The implication is that if other policies had been followed, wheat or other farm commodity surpluses would not have existed or would have been less serious.

There were prospects in 1948 that price support levels might have been reduced beginning with 1949 crops, according to the schedule in Title II of the Agricultural Act of 1948 (see page 13). Both political parties once supported this approach, but a congressional majority could not be mustered to start the price reductions.

Had the support schedule of the 1948 Act become law, the wheat price support for the 1949 crop would have been about 78 percent of parity, or \$1.70 per bushel, instead of \$1.95, the actual support price. This estimate is based on a total supply of 120 percent of normal and the assumption that acreage allotments and marketing quotas would have been in effect. Roughly the same percentage of the (defined) normal supply was on hand the next year, so the 1950 support would have been little changed.

The farm price for 1949 crop wheat under those circumstances would have been about \$1.65 per bushel, well below \$1.88, the actual price (table A1). More than 100 million bushels of 1949 crop wheat were added to CCC stocks at the higher price support of \$1.95. Nearly the same amount would have been acquired by CCC at a price support of \$1.70. Wheat producers would have had in the lower prices of 1949, the announced price support for 1950, and the price expectations for later years, an apparent modest incentive to reduce wheat output.

But the prospective supply of corn in 1949 was also one fourth above the normal supply. If the wheat support had been reduced as indicated, that for corn (and other grains) would have been reduced also. *Therefore, conditions for any*

*substantial absolute decline in wheat acreage either in the Great Plains or the Corn-belt would not have existed.* The relationship between price supports and, presumably, prices of food grains and feed grains, the major alternative crops, would have been largely unchanged. However, for 1950 crops, wheat supports would have been slightly less favorable than for corn, since the 1950 supply of corn was less excessive than the wheat supply.

The Korean War would have ended these modest price declines. With stocks reduced, the flexible formula would have brought price supports back near 90 percent of parity for 1953. So if the 1948 Act had been law during the Korean War, producers would have had slightly lower price expectations for immediate postwar years but not immediate lower prices. Some production expansion during that period might have been avoided.

Paradoxically this may be an argument against the 1948 Act and in favor of the guarantee of 90 percent of parity price supports. Who will argue that farm production should have been discouraged by reduced price expectations when we were engaged in a war of indeterminate length and scope, and when U.S. food stocks were below acceptable emergency levels?

It seems rather clear that neither the capacity for production nor the location of wheat production by 1954 would have been noticeably affected had the Agricultural Act of 1948 been law from 1948 to 1954. There was little prospect for changes in relative prices of major crops under the flexible support formula and the conditions of 1948-50; there were few alternatives to wheat production in much of the wheat-producing area (discussed on pages 36 to 42), and the Korean War began only a year after the earliest possible effective date of the flexible price-support experiment. These factors help absolve the postwar wheat program of major blame for the emerging wheat surplus of 1953-54.

There can be no question that wheat programs in effect since 1953 made excess production and carryover predictable and virtually unavoidable. When acreage control for wheat was re-established in 1953 (for 1954 crop wheat), Congress set a national minimum allotment of 62 million acres, superseding a formula which would have reduced the national allotment adequately, but would have left growers with little production or income (58, p. 47). After 1954, the minimum national allotment was 55 million acres. The marketing quota exemption for producers harvesting 15 or fewer acres was adding about 4 million acres to the effective national wheat acreage allotment by 1955 (table 7). So when the 1960 wheat stock-pile was being built, the effective national acreage allotment (the potential harvested acreage) was near 60 million acres. At the same time, the expected average yield per seeded acre under the planting restrictions of the wheat program was moving from near 16 bushels in the 1940's to more than 20 bushels per acre in the late 1950's.

*Congress thus set a postwar minimum acreage allotment which was much too high for the U.S. wheat market at established price support levels.* Expected production with normal weather conditions in the 1950's was roughly 1.1 billion bushels

TABLE 7-PRODUCTION ON ACREAGE IN EXCESS OF FARM ALLOTMENTS  
ON NONCOMPLYING FARMS WITH ALLOTMENTS OF 15 ACRES  
OR LESS, 1957.

State	Excess acres (000)	Production	Number of farms
New York	62.5	2,061.8	12,046
New Jersey	8.0	235.7	1,562
Pennsylvania	108.1	2,809.6	31,148
N. Atlantic	178.6	5,107.1	44,756
Ohio	280.7	6,174.5	62,906
Indiana	363.9	9,279.3	54,359
Illinois	564.7	11,858.5	69,783
Michigan	273.4	7,929.9	49,744
Wisconsin	21.2	541.8	4,002
Minnesota	130.5	2,949.5	14,271
Iowa	52.3	1,396.5	5,549
Missouri	725.0	16,675.7	80,262
North Dakota	6.2	117.4	840
South Dakota	29.9	603.4	3,139
Nebraska	107.7	2,898.3	13,300
Kansas	203.7	3,871.1	26,699
N. Central	2,759.2	64,295.9	384,854
Delaware	2.5	55.0	394
Maryland	18.4	395.1	3,927
Virginia	82.1	19.0	18,877
West Virginia	37.7	791.8	1,303
North Carolina	163.7	3,109.8	35,696
South Carolina	122.1	2,197.7	20,829
Georgia	60.4	97.3	10,075
S. Atlantic	486.9	6,665.7	91,101
Kentucky	19.1	372.2	9,330
Tennessee	82.2	1,397.7	12,617
Arkansas	143.8	2,876.7	13,592
Oklahoma	209.7	2,621.6	21,752
Texas	77.8	1,128.5	15,268
S. Central	532.6	8,396.7	72,559
Montana	13.3	264.0	1,877
Idaho	67.5	2,497.3	10,801
Wyoming	28.3	624.7	360
Colorado	49.2	1,206.1	1,646
New Mexico	2.8	45.0	632
Utah	17.9	420.0	3,627
Washington	26.3	960.5	3,282
Oregon	39.6	1,426.8	5,230
California	7.6	168.2	762
West	252.5	7,612.6	28,217
U.S.	4,209.8	92,078.0	621,487

Source: USDA, Commodity Stabilization Service.

per year, the average of the decade under a wide range of growing conditions. Four crops reached that size, despite the severe Great Plains drought (1953 to 1957) and the soil bank (1956 to 1960). As yields rose, the expected normal crop from a 55 million acre allotment increased, and is about 1.2 billion bushels a year as the 1960's begin.

Disappearance of U.S. wheat was not regularly above 1 billion bushels a year in the late 1950's, and may not exceed that level substantially in the early 1960's (as discussed on pages 59 to 66). *Clearly, the addition of 100 to 200 million bushels of wheat to CCC stocks each year, despite extensive foreign aid and scattered land retirement, was predictable.* As shown conclusively by the USDA (61), wheat acreage controls, like those for other crops, simply caused shifts in production location—a little more wheat in the traditional Cornbelt, more coarse grains in the wheat belt, and more of many crops in the cotton belt. Reduction of aggregate output was negligible.

A third proposition deserves examination: that program-induced changes in the location of wheat production have been a major cause of postwar wheat surpluses. Strong convictions have matured on this score, the commonest being that Cornbelt and eastern wheat growers have increased their acreages and allotments since 1954 at the expense of other areas, chiefly the Great Plains, and have "caused" the surplus. As shown in table 1, acreages have increased, but Cornbelt and eastern allotments have increased little.

The provision in law, effective with the 1942 crop, permitting any producer to plant and harvest up to 15 acres of wheat without penalty even though he had a smaller acreage allotment (or none at all) has contributed to a small shift in the location of wheat production since 1954 and to increased wheat output (tables 1, A3, A4). The number of producers planting under this provision in 1954 is not available but was probably above 500,000. In 1955, there were 723,000 and in 1956, 685,000. In 1957, 621,487 producers used this provision (48, p. 66), seeding 4.2 million acres in excess of their allotments, and adding 92 million bushels to wheat output (table 7). In 1958, 134 million bushels were harvested on 4.5 million nonallotment acres on about 600,000 farms with allotments smaller than 15 acres (table 8).

With the 1954-60 wheat program less the "15-acre exemption", about 4 million fewer acres of wheat would have been planted and roughly 100 million bushels less wheat would have been produced each year after 1954 *by farmers not complying with wheat allotments.* The "opportunity" to plant wheat from 1954 to 1960 would have been limited by acreage allotments, set by wheat acreage in the 10 years preceding any current year.

Southern states could not have increased plantings by more than a quarter million acres from 1954 to 1959. Fifteen minor producing states could not have increased their share of total wheat seeded in the U.S. from 3.9 to 4.1 percent (table 1 and A6). And the very small changes in the distribution of the national acreage allotment since 1954 would have been still smaller (table 1).

But there is another important aspect of this matter. *Not only were large acreages planted without benefit of acreage allotments; a large part of the national allotment also was not planted.* This occurred chiefly in areas where acreage allotments were exceeded under the marketing quota exemption.

TABLE 8--PRODUCTION OF ALL WHEAT AND SOFT RED WINTER WHEAT ON ACREAGE IN EXCESS OF FARM ALLOTMENTS ON NONCOMPLYING FARMS WITH ALLOTMENTS OF 15 ACRES OR LESS, 1958.

State	Excess acres	Estimated Production	
		All wheat	Soft red winter wheat <sup>a</sup>
Thousands of bushels			
New York	77.2	2,664	53
New Jersey	12.0	408	392
Pennsylvania	153.1	4,592	4,363
N. Atlantic	242.3	7,664	4,808
Ohio	315.4	9,778	9,680
Indiana	404.9	12,957	12,439
Illinois	570.4	17,968	8,625
Michigan	359.6	13,665	2,596
Wisconsin	33.7	1,124	247
Minnesota	235.9	7,408	74
Iowa	59.4	2,051	41
Missouri	635.6	17,796	6,940
North Dakota	15.3	353	---
South Dakota	83.5	1,995	---
Nebraska	160.7	5,304	11
Kansas	221.6	6,094	12
N. Central	3,096.0	96,493	40,665
Delaware	3.1	78	78
Maryland	23.2	591	591
Virginia	81.4	2,116	2,116
West Virginia	4.3	119	117
North Carolina	149.1	3,503	3,503
South Carolina	83.8	1,843	1,843
Georgia	34.9	802	802
S. Atlantic	379.7	9,052	9,050
Kentucky	48.0	1,127	1,048
Tennessee	47.2	943	915
Arkansas	72.8	1,456	1,223
Oklahoma	195.3	5,077	15
Texas	158.5	3,486	209
S. Central	521.7	12,089	3,410
Montana	24.4	564	---
Idaho	90.0	3,095	---
Wyoming	5.2	140	---
Colorado	24.4	577	---
New Mexico	4.1	80	---
Utah	25.5	508	---
Washington	45.0	1,611	8
Oregon	62.7	2,138	2
California	17.1	376	---
West	296.7	9,089	10
U.S.	4,536.3	134,387	57,943

a. Estimate based on 1954 survey of production by classes, adjusted to reflect subsequent shifts in production.

Source: Grain Division, Commodity Stabilization Service, USDA, Washington

Producers complying with acreage allotments in nine Cornbelt states of table A3 had only 3.5 million acres of wheat for 1958 harvest although they had allotments of 5.1 million acres. Complying producers (those not exceeding their allotment) in four eastern states planted only about half their acreage allotment in 1958. In the U.S. in 1958, 1.1 million producers who did not overplant their acreage allotments had only 39.2 million acres of wheat but 47.8 million acres of the national allotment of 55 million acres (51). Much of that difference was the result of the acreage reserve of the soil bank program. *Yet in 1959 when the acreage reserve was inoperative, 514,000 farms with 4.3 million allotment acres planted no wheat.*<sup>21</sup> These farms were mostly in the eastern Cornbelt. The failure to plant wheat is explained partly by the conservation reserve. But much of the potential acreage was not planted by choice. *Only in the specialized producing states of Kansas, Nebraska, North Dakota, Montana, Idaho, Washington, and Oregon were wheat acreages on complying farms greater than 85 percent of allotment acres in 1958 (51).*

Wheat acreage on all noncomplying farms was 13.2 million in 1958, about twice the allotment of 6.8 million acres on those farms. Excess plantings on all noncomplying farms were thus a little greater than the acreage deficit on complying farms in 1958. *Allotments not planted and plantings in excess of allotments were both concentrated in the Cornbelt and southeastern states.*

*The chief significance of these developments is that they affected mostly soft red winter eastern and white wheats, classes not seriously in surplus since 1954 (table A12).* Had substantially less of either kind of wheat been produced, shortages would probably have developed. Producers not planting their allotments would have been encouraged to plant to meet the demand. One effect of the marketing quota exemption was, therefore, to maintain an adequate supply of wheats produced in the eastern Cornbelt and Northeast. The exemption may have been more important in changing the identity of wheat producers than in changing the location of wheat production or increasing output substantially.

*No class of wheat can be set off as not related to the perennial wheat surplus. However, two classes—hard red winter and hard red spring—stand out in the wheat statistics.* The growth of wheat stocks since 1952 has been in those classes with minor exceptions. As the wheat program reaches the latest of a long series of crises in 1960, supplies of only those two classes are excessive or likely to be in the early 1960's.

Excess supplies are not chiefly a result of geographic effects of the farm program. In 1958, 43 percent of all wheat produced under the marketing quota exemption was soft red winter (table 8). About 15 percent was white wheat (60), and the remainder was hard winter and spring wheat. The pattern of acreage by classes has changed little since 1954, so the distribution of classes of wheat on nonallotment acreages in other years since 1954 must have been similar. Sixty percent of the wheat produced on that acreage had different characteristics and uses from hard red winter and spring wheat characteristics and

<sup>21</sup>U.S.D.A. Commodity Stabilization Service, 1959, wheat allotment compliance and diversion report.



uses. Only 40 percent of the wheat produced under the exemption contributed directly to the supply of hard winter and spring wheats (51).

*Inroads made in wheat production by states outside specialized regions have also been relatively small, and not a major cause of the wheat surplus.* There have been spectacular but relatively unimportant changes, such as the 50,000 percent increase in Mississippi's acreage allotment between 1939 and 1960 (from 74 to 37,000 acres). Fifteen minor wheat states had 3.5 percent of the seeded acreage in 1938 and 4.1 percent in 1959 (table 1 and A6). The same 15 states increased their share of the national acreage allotment from 3.6 to 3.8 percent between 1938 and 1960 (table 1). Arkansas, Alabama, and Mississippi jointly increased their wheat plantings by 300,000 acres from 1954 to 1958 (table A6), and their share of the national allotment from 0.2 percent to 0.3 percent, a negligible change from a national standpoint (table A5). This adds little to the argument that the location of wheat production in 1958-60 is significantly different from what it would have been had there been no exemptions to the acreage allotments program, 1954-60. Scattered wheat fields in the South may surprise the traveler, but they are not a national problem.

There are other exceptions to the idea that wheat seeded under the marketing quota exemption has been largely responsible for the wheat surplus. In the states in which the excess acreages have been seeded, a high percentage of the wheat is grown to be fed (55). Also, Cornbelt and eastern states have placed little wheat under price support loans and have added scarcely any to CCC stocks, even though many producers there had access to the price support program. Areas producing chiefly hard red winter and spring wheats have contributed regularly and substantially to CCC stocks as shown in table 9.

Finally, lacking the marketing quota exemption since 1954, wheat disappearance as well as production might have been reduced. Either decreased feeding or a shortage of soft red winter wheat for export could have occurred if producers had not planted most of their available allotments in the Cornbelt and East, thus reducing soft red winter wheat production below the actual outturn. Exports of soft red winter wheats have averaged nearly 50 million bushels a year since 1954, mostly cash sales (made possible by export subsidies). Perhaps less soft wheat would have been fed or wheat from other areas might have been

**TABLE 9—PERCENTAGE OF TOTAL WHEAT PRODUCTION DELIVERED TO CCC IN CONNECTION WITH PRICE SUPPORT OPERATIONS, BY REGIONS.**

Regions	1954	1957	1958
Eastern states	17	3	5
Cornbelt states	30	5	8
Northern states	21	25	23
Southern plains	50	28	48
Western states	61	10	24
United States	39	18	31

Source: USDA Commodity Stabilization Service; regions from table A3.

shipped into Cornbelt and eastern areas for feeding if wheat production had been smaller in those areas, thus retaining enough soft red winter for the domestic and export market. A more likely outcome is that less wheat would have been fed and less exported each year. Other grains would have replaced much of the wheat formerly fed, but under the hypothetical conditions assumed here, needed for milling or export.

It is not clear, therefore, that if the marketing quota exemption had not existed, wheat stocks would be appreciably smaller or of a substantially different composition from what they are in 1960.

## II.

### **ECONOMIC FACTORS THAT DETERMINE PRODUCTION AND CONSUMPTION OF WHEAT IN THE UNITED STATES**

Comprehensive descriptions and analyses of U.S. wheat production and domestic demand problems have been published recently by the U.S.D.A. (68, 29). Also, Nerlove discussed general and geographic characteristics of wheat production as a prelude to statistical analysis of the relation of wheat prices and production (32). Those aspects of the U.S. wheat economy are only briefly reviewed here.

#### **WHEAT PRODUCTION**

Two aspects of the relationships among farm prices and farm output are fundamental. The first is the ratio of product prices to the prices of materials used in production. The second is the relationships among the prices of farm products.

Farm production, barring disturbances (such as unusual weather), tends to increase when farm product prices rise relative to the costs of resources used in their production; it tends to decline when product prices decline relative to costs.

This follows from an elementary principle of economics: that production is a process by which resources are changed into products, that production is motivated by the prospect of gain, and that gain accrues from the margin between cost of production and selling price. Perceptive producers will note that when product prices rise, the value of output attributable to any operation performed in production (including the least productive or most dispensable operation), is increased. By increasing inputs on given land, thus increasing output per acre, when product prices rise, producers can increase net returns.

This is so conventional it scarcely needs to be stated. Yet a major qualification is required to make it relevant to the sub-humid and semi-arid plains, where

few opportunities exist to increase the intensity of resource use on a given land area in dryland production of small grains. There certain cultivations must be performed in a rather uniform sequence to produce a grain crop; any major lapse seriously jeopardizes crop prospects. Once the essential group of cultivations has been performed, no amount of additional cultivation or other inputs will add appreciably to yield per acre, and they may decrease it.

Producers who have about exhausted this range of highly productive cultivations cannot respond to increased product prices by increasing output per acre. Further operations would add to costs but not to returns. In such areas, output can be increased significantly only by planting additional land. And since the yield of grain is severely jeopardized by any major decrease in cultivations, producers will tend to cultivate rather uniformly within a wide range of product prices. Output can be reduced appreciably only by retiring land from wheat production. The nature of the climate and of wheat production preclude reducing cultivations fractionally.

This should not be taken to mean that low product prices relative to costs cannot reduce farm output in these areas. Rather, output reductions will not come from successive small reductions in inputs as product prices become unfavorable relative to costs. *Production will persist through a long unfavorable period, and will decline sharply or stop when producers either can no longer produce, or when they find income earning opportunities more favorable than those in agriculture.*

Price relationships among farm products are important to the composition of farm output, but not to its aggregate level. Few economists doubt that an increase in the price of one crop relative to another will tend to shift producers from the lower priced to the higher priced crop, other conditions unchanged. Again, when applied to wheat production in the U.S., the statement demands qualification.

The relationship of wheat prices to the prices of other products which can be produced in the Great Plains, was once (1910-14, for example) very favorable to wheat production. That price relationship came to be widely considered as normal, and its maintenance became one of the goals of farm policy. Wheat prices have been more nearly maintained at this goal level by farm programs than have prices of other grains, making wheat production even more favorable in recent years.

Price relationships which became price goals have been so favorable to wheat, given the yields of wheat and alternative crops, that wheat has been far more profitable than other crops. In Kansas, the 1947-56 average yield per acre of wheat was 90 percent of the average yield for sorghum grain; in Oklahoma it was 98 percent; in Colorado it was 128 percent. Wide variations existed within states and among years. But the national average support prices in 1958-59 were \$1.82 per bushel of wheat and \$1.02 per bushel of sorghum grain, and these prices are representative of relative prices for those two grains the past 20 years. *With sorghum at \$1.02 per bushel* (and assuming no differences in production

costs), *wheat prices that would have made sorghum production as profitable as wheat would have been \$1.13 in Kansas, \$1.04 in Oklahoma, and \$0.79 in Colorado.*

These examples are far from conclusive but they help to point up the fact that the *response of wheat production to lower relative wheat prices in much of the country would be extremely sluggish.* The output of wheat in the Great Plains may, in fact, be relatively unaffected over a wide range of wheat prices. Collins stressed this point with respect to western Kansas, stating that “. . . product price variation may be relatively unimportant in inducing a farmer to readjust his operation” (5, p. 2).

Spencer (40, pp. 32-38) found that at 1945-54 yields of wheat and sorghum in western Kansas, conditions for a general shift from wheat to grain sorghum would not have existed in any county in the western two-thirds of Kansas without a decline of 25 to 40 percent in the price of wheat, if the price of sorghum grain had remained unchanged.

This was confirmed by a sample survey conducted in the same area of Kansas in 1958 when the wheat price support was \$2 and the sorghum grain price about \$1 per bushel. Farmers indicated that only when the price of wheat fell to 50 to 60 percent of parity (\$1.20 to \$1.45 per bushel), other prices and yields constant, would they consider shifting toward other crops, chiefly sorghum grain.

In four Nebraska crop reporting districts from west to east, Winkleman found that with wheat acreage controls ended, and prices constant at 1955 levels, producers would have increased wheat plantings even though they expected the wheat price to be \$1.20 per bushel (table 10).

The elasticity of supply<sup>22</sup> computed from responses of Nebraska farmers to questions on what they would do if faced with changing wheat prices while other prices held at 1955 levels, was greater in eastern districts in nearly all cases. In the western district, a distinctly Great Plains area, acreage response was minor. (table 11).

Most producers questioned by Winkleman indicated that if the price of wheat had fallen to \$1.25 while other prices remained at 1955 levels and allotments were ended, they would have planted as many acres of wheat as they had planted before allotments (table 12). Inter-area differences show that producers faced with lower prices would have shifted from wheat most readily in humid areas.

From 12 to 40 percent (east to west) of the Nebraska producers indicated that they would have tried to increase wheat acreage by buying or renting more land if the wheat price were reduced sharply. However, total acreage in the Nebraska areas studied might not have been greater at a price of \$1.25 than at the 1955 price near \$2 per bushel, since most producers could have expanded only if someone else were to reduce acreage.

Results of two Ohio surveys confirm the Kansas and Nebraska conclusions. Of 147 farmers in Ohio wheat areas questioned between the 1954 and 1955 har-

<sup>22</sup>Defined as the indicated percentage change in production (acreage) divided by the percentage change in the price of wheat.

TABLE 10—ACRES OF WHEAT PLANTED IN 1955 AND ACRES OF WHEAT THE SAME FARMERS WOULD PLANT AT FIVE DIFFERENT WHEAT PRICE LEVELS, NEBRASKA CROP REPORTING DISTRICTS.

Districts (west to east)	Acres planted in 1955	\$2.00 per bushel	\$1.80 per bushel	\$1.60 per bushel	\$1.40 per bushel	\$1.20 per bushel
2	34,910	39,455	39,449	38,254	35,704	33,059
4	11,569	18,437	17,872	16,745	14,772	12,781
5	9,755	14,364	13,581	12,414	10,291	9,052
7	5,627	8,174	7,613	6,893	5,793	4,478

Source: (73).

TABLE 11—AVERAGE ELASTICITIES OF SUPPLY AT INDICATED RANGES OF THE PRICE OF WHEAT, NEBRASKA CROP REPORTING DISTRICTS.

Districts (west to east)	\$2.00-1.80	\$1.80-1.60	\$1.60-1.40	\$1.40-1.20
2	.00	.26	.47	.49
4	.29	.55	.82	.93
6	.53	.76	1.41	.83
7	.68	.86	1.21	1.66

Source: (73).

TABLE 12—PERCENTAGE OF RESPONDENTS INDICATING THAT THEY WOULD TAKE THE FOLLOWING ACTION IN CASE THE PRICE OF WHEAT FELL TO \$1.25 PER BUSHEL WHILE ALL OTHER PRICES AND COSTS REMAINED THE SAME (NEBRASKA), 1955.

Districts (west to east)	Plant the same amount of wheat as without allotments	Increase wheat acres by buying or renting more land	Decrease acres in wheat and increase acres in other crops
2	78	40	26
4	72	23	33
5	60	11	55
7	70	12	47

Source: (73).

vests, only 8 percent indicated they would plant a smaller acreage than in 1955 (when acreage controls were in effect) if the price had fallen to \$1.50 (by 25 percent), other prices unchanged; 23 percent would have planted a larger acreage under such circumstances. This should not be taken to mean they would have seeded a larger acreage at \$1.50 per bushel than at \$2 per bushel. The acreage they would have seeded in 1955, had there been no allotments, was not ascertained (38, p. 15).

A sample of Ohio farmers was also questioned in 1956; again most producers said they would not have reduced wheat acreage in response to large hypothetical wheat price changes. Producers interviewed were asked how many acres of wheat would be seeded if the expected price (1) decreased from \$1.80 to \$1.20 per bushel; (2) increased from \$1.80 to \$2.50 per bushel, assuming in both cases that other farm prices were unchanged and that production controls would not be in effect.

The results of a year earlier were confirmed; 71 percent would have planted as much wheat at \$1.20 per bushel as at \$1.80. Only 22 percent of farmers questioned would have cut acreage below the 1955 level because of the lower price. Total acreage of wheat would have been reduced 13 percent by the price cut of 33 percent (39, p. 11).

Wheat producers in North Dakota were asked similar questions in 1955. Hemphill and Anderson (20), found that 61 percent of producers questioned would have planted an acreage as large or larger than the restricted acreage planted in 1955 if the price had been reduced about one fourth, other prices unchanged. One third of the producers would have planted less than they had planted in 1955, a larger group than in any state studied (table 13).

Kansas producers indicated the smallest shifts to other crops in response to a hypothetical reduction of one fourth in the wheat price (from \$2 to \$1.50 per bushel). At the lower price, 55 percent would have planted a larger acreage than they were permitted to plant under the 1955 allotment program. Only 10 percent would have reduced acreage below the 1955 level, while 32 percent would have planted their 1955 acreage. The distribution of replies of Kansas farmers confirms the idea previously expressed that the drier areas would change from wheat production most slowly if wheat prices became relatively lower (table 14).

These results suggest that declines in the wheat price of roughly 25 to 50 percent from 1954-60 levels (other prices constant) might start a *small shift* from wheat to alternative crops over a wide area of the Plains and Cornbelt. However, in choosing to specialize in one crop or another, producers weigh not only yields and prices of alternative crops, but the certainty with which they are expected. Producers intuitively consider yield certainty as a partial substitute for yield level. Yield expectations of less certain crops are discounted, therefore.

In western Kansas and Oklahoma and probably in adjoining areas, price and yield uncertainty have made grain sorghum production less attractive, further increasing the wheat price decline required to achieve substantial shifts to grain sorghum. In only two counties of 54 in the western half of Kansas is the ratio of the standard deviation to the mean of the annual yields of wheat (a measure of uncertainty) greater than for grain sorghum over a long time span. In most counties, this ratio, and implicitly yield uncertainty, is sharply lower for wheat.

Second, of producers questioned in western Kansas and Oklahoma in 1958, 75 percent said that their best alternative crop, chiefly grain sorghum, was less certain than wheat. Eighty percent indicated that they considered the price of sorghum grain more uncertain than the wheat price.

These indicators add evidence that in the Great Plains, where 60 to 70 percent of the hard red winter wheat and nearly half of all wheat is produced in most years, *significant changes in wheat acreage are unlikely without large changes in relative prices or yields.*

Yield changes are under way, and wheat surplus problems may shift slowly to feed grains as a result. Hybrid sorghum production is promising. In dryland

TABLE 13-CHANGES IN 1955 SEEDED WHEAT ACREAGE WITH NO PRODUCTION CONTROLS AND WHEAT PRICE AT ABOUT \$1.50 PER BUSHEL WHILE OTHER FARM PRICES REMAIN THE SAME (NORTH DAKOTA).

Response	Number of sample farmers	Red River Valley	Durum area	General wheat area	Sample average
Percentages					
More	50	32	11	21	21
Less	80	18	30	38	33
Same	97	45	57	35	40
Don't know	13	5	2	6	6
Total	240	100	100	100	100

Source: (20).

TABLE 14-CHANGES IN 1955 SEEDED WHEAT ACREAGE WITH NO PRODUCTION CONTROLS AND WHEAT PRICE AT \$1.50 PER BUSHEL WHILE OTHER FARM PRICES REMAIN THE SAME (KANSAS).

Change in acreage	% of farmers			
	Eastern (40 farmers)	Central (80 farmers)	Western (80 farmers)	Total (200 farmers)
Higher	28	72	52	55
Lower	17	3	13	10
The same	48	25	31	32
Don't know	7	0	4	3

yield tests at Kansas State University in 1957, hybrid yields were from 10 to 50 percent above other grain sorghums (3.1). The increase in grain sorghum yields would have to be 25 to 40 percent to overcome the present disadvantage, mostly a matter of price. But if future grain sorghum prices were to be about equal to wheat prices, and if technological improvements in wheat do not keep pace, grain sorghum may compete seriously with wheat in the central plains.

Similar advantages for wheat production exist in much of the hard red spring wheat area. Rainfall is an important limitation, making production problems similar. Output cannot be increased much through additional cultivation or fertilizer. In the driest part of this area, largely in Montana, conditions that would induce a considerable change in the crop balance are about like those required in the southern plains. In a recent U.S.D.A. study, net income per acre of barley in north central Montana, was placed at 48 percent of income from wheat, (1955 prices); *barley yields would have to double or wheat prices be halved, to make barley as attractive as wheat* (68).

The Northwest wheat area also has characteristics that give a slow output response to lower prices in the Great Plains. Net income per acre from barley and peas in the Washington Palouse area has been estimated, respectively, at only 36 percent and 59 percent of net income from wheat (68).

These data offer little support to the notion that small reductions in wheat prices, would induce a shift from wheat, especially in the Great Plains and Northwest—even if other prices did not fall similarly.

## WHEAT UTILIZATION

World political and economic conditions are major factors determining total disappearance of wheat from the United States. This becomes clear when the data of table A13 are viewed in the context of recent history. The extreme range of exports is in sharp contrast to the monotony of the quantities in the food and seed columns.

The world-wide depression is evident in wheat exports. Had the small crops of 1932-36 been accompanied by even the annual prewar export level of near 100 million bushels, the price problems of that era would have been significantly reduced. Exports again rose sharply after World War II, largely because of grants to aid war-torn countries. If there are prospects for major increases or declines in the utilization of U.S. wheat for food in the next decade, they are likely to be found in the export market, not in the U.S. (except at feed grain prices). Greater U.S. wheat disappearance depends heavily, therefore, on trends in world wheat production and consumption, and even more on world-wide political relationships.

Although the population of the United States increased from 90 million to 178 million between 1909 and 1959, total wheat processed for domestic food consumption was virtually unchanged (table A13). This stable consumption pattern resulted from a decline in per capita consumption just proportional to the population increase (table A14). Deviations from trend were small and brief. From 1909 to 1956, the computed consumption *trend* was -1.78 pounds flour per person per year; for the same period, the *trend* in total disappearance of wheat as human food in the U.S. was -2.71 pounds per year.

Per capita consumption of wheat as food in the U.S. is falling at a rate slower than a generation ago. A curved line fitted to the consumption trend and projected to show future per capita consumption if the 1909 to 1956 trend were to continue, puts flour consumption at 106 pounds per person and falling about 1.5 pounds per year by 1970. Total per capita disappearance of wheat as food would be about 147 pounds and falling by fewer than 2 pounds a year by 1970. With per capita consumption of wheat foods at those levels by 1970, total disappearance of wheat as food in the 1960's would rise if population growth continues at the present rate. By 1970, with a population of 210 to 220 million, wheat milled for food in the U.S. would be near 550 million bushels, up 10 percent in a decade.

### Wheat Consumption and Per Capita Income

High and increasing per capita disposable income is a principal mark of the Western world; it is a major determinant of per capita wheat consumption. Bennett (1, p. 380) suggested that:

The normal curve of per capita food use of wheat, in countries where living standards rise continuously, where wheat is a strongly preferred cereal, and where the level of food use of wheat and living standards is initially low, is an advance fol-



lowed by a decline. The level to which the *decline* may extend in such a country is problematical, but may even be as low as 2 bushels (per person per year).

Gray *et al.* (18, pp. 16-21) show that by 1870 the U.S. had moved into a stage of food consumption in which neither potatoes nor wheat were of overriding importance in the diet. The close substitution relationship between potatoes and wheat in diets in very poor countries has never existed in the U.S. The part of Bennett's hypothesis applicable to the U.S. is the link between living standards and declining wheat consumption.

The link between per capita income and consumption is quantified in the concept of income elasticity, defined as the percentage change in the quantity of a product purchased for consumption concurrent with a 1 percent change in the income of the person or group studied. A negative income elasticity means lower consumption with higher income.

Malenbaum concluded that a world-wide negative income elasticity for cereals was apparent by 1940 (28). Meinken estimated a positive income elasticity for the U.S. of 0.20 for 1921-29 and 1931-38 (29). Jureen examined the role of income in determining consumption levels for various classes of food, and concluded that income levels were the crucial factor explaining differing consumption habits (25). His estimates of income elasticities for cereal foods are shown in table 15.

TABLE 15—PREWAR AND POSTWAR INCOME ELASTICITIES FOR CEREALS AT VARYING INCOME LEVELS.<sup>a</sup>

Income level per capita in U.S. dollars	Prewar	Postwar
80	(.15)	(.21)
110	(.03)	.08
160	-.10	-.05
240	-.23	-.18
320	-.31	-.25
400	-.37	-.29
480	-.40	-.32
640	-.45	-.34
800	-.47	-.35
960	-.48	-.35
1,280	(-.49)	-.33
1,920	(-.46)	(-.29)

Source: (25), table V.

a. Numbers in parentheses are estimates outside the interval covered by consumption data. Income data were per capita national income in current U.S. dollars.

Jureen reiterated Bennett's point with respect to cereal consumption. "Here consumption shows . . . three phases: (a) rising demand in countries with very low levels of living; (b) constant demand in countries with still rather low levels; and (c) falling demand in countries with medium or high levels . . . Thus—assuming constant real food prices—the peak in cereal consumption is reached at a rather low income level." Jureen's estimates are related to world per capita income levels in 1953 in later pages, and show only two countries,

India and Egypt (of those with per capita wheat consumption and income data available) which have per capita incomes so low that income elasticities for wheat are positive.

When per capita consumption of wheat flour was related to per capita income in the U.S. from 1929-53, the income elasticity was  $-0.27$ , interpreted to mean that a 1 percent rise in income was associated with a 0.27 percent decline in per capita consumption of wheat flour in that period. This estimate is consistent with Jureen's figure of  $-0.29$  for countries (like the U.S.) with average per capita incomes near \$2,000 per year.

The 1955 Food Consumption Survey (63.1) of the U.S. Department of Agriculture provides the most recent evidence of a continued negative relationship between per capita income and per capita cereal consumption in the U.S. Wetmore *et al.* (72, p. 58) estimated from the U.S.D.A. data that if the per capita incomes of all persons in the U.S. in 1955 had been raised to at least \$500, cereal consumption would have declined by 3.6 percent; had per capita incomes been raised to at least \$1,000, cereal consumption would have been 4.6 percent less.

From the same data, Lavell (27, p. 30) attributed nearly half the decline in total cereal consumption per person from 1942 to 1955 to higher incomes, especially the sharp decline in the proportion of families with incomes of less than \$2,000 per year.<sup>23</sup> Another major factor was the change from farm to urban residence. Both these changes are expected to continue. Real per capita incomes in the U.S. may be 50 percent higher in 1975 than in 1955 (6); by 1975 farm population may be only 7 to 8 percent of a total population of nearly 240 million, compared with 12 percent of the 1959 population (2). Continued downward pressure on per capita cereal consumption may be expected.

Wheat has not been giving way to other cereals in the U.S. diet, but to animal products; per capita consumption of all grains has declined (table 16).

TABLE 16-U.S. PER CAPITA CONSUMPTION OF CORN AND CEREALS OTHER THAN WHEAT, 1910-56.

Period	Corn products (lbs.)	Other products <sup>b</sup> (lbs.)	Period	Corn products (lbs.)	Other products (lbs.)
1910-14	55	19	1935-39	27	14
1915-19	50	21	1940-44	26	14
1920-24	41	18	1945-49	22	12
1925-29	35	19	1950-54	16	12
1930-34	32	18	1955-56	14	11

Source: (65)

a. Does not include sugar and syrup from corn.

b. Rye, buckwheat, rice, oats, and barley.

## Wheat Consumption and Price Changes

Economic theory views consumers as trying to get maximum personal satisfaction from limited outlays for consumption, by considering relative prices of various products in a framework of their own preferences for goods and services. As one food product becomes relatively cheaper, (either because its price falls or

<sup>23</sup>Other analyses based on the survey appear in U.S.D.A. publications such as *The National Food Situation* and *The Wheat Situation*.

others rise), consumers shift toward the cheaper food. This is a basic economic principle—the substitution effect of changing relative prices. If one price declines while others remain constant, consumers can buy as high a living standard as they formerly enjoyed with a smaller outlay, or a higher living standard at no greater cost.

Cereal foods have become slightly more costly relative to other foods the past 20 years largely as a result of increased costs of processing and distribution (table A15). But estimates of the effect of price changes on cereal consumption lend little support to the idea that slightly higher prices are a major reason for declining cereal consumption, or that cereal consumption would rise (or fall more slowly) if relative prices of cereals were to fall.

There remains almost no disagreement about the response of wheat consumption to changing relative prices. Schultz estimated an elasticity coefficient between  $-0.17$  and  $-0.25$  for total domestic demand with respect to the deflated farm price of wheat in the United States, 1921-34 (36, p. 397). Fox estimated  $-0.07$  to be the price elasticity of demand for flour (15, p. 69). Montgomery, using the same variables as Schultz but more recent data, found a lower coefficient of elasticity,  $-0.12$  (30). Meinken estimated a coefficient of  $-0.04$  (29, p. 43). Malenbaum summarized by saying that an elasticity of demand of zero, or no response of wheat consumption to price changes, is the best conclusion for the United States in recent pre-World War II years, the period covered by most of the studies cited (28, p. 72).

Wetmore *et al.* estimated that if prices of all foods except cereals, potatoes, and fats and oils, fell 20 percent, consumption of that group would fall only 2 percent (72, p. 72). The practical conclusion to be drawn is that wide swings in the prices of other foods, while wheat and bread prices are stable, cannot be expected to cause consumers to change cereal product purchases measurably, with existing pattern of tastes in the United States.

Only negligible increases in domestic per capita wheat consumption would occur at extremely low wheat prices, and negligible declines in domestic per capita wheat consumption would occur at prices much above historic levels. *There is no reason to assume, therefore, that changes in prices of bread or flour resulting from changes in the price of wheat have had or will have any measurable effect on per capita or total wheat consumption in the U.S.* The cost of wheat in a loaf of bread at 1958 prices was only 16 percent of the cost of the loaf (64, p. 5). A 20 percent increase in the price of wheat would indicate only a 3 percent increase in the price of bread (six-tenths of a cent on a 20-cent loaf).

If bread consumption were responsive to price, wheat producers would have a clear interest in minimizing bread price increases not related to wheat price increases. Such increases (labor costs, for example) would have a marked negative effect on bread sales. But bread consumption does not respond to price; it is not seriously reduced by moderate price increases from any source. This low price elasticity for bread and other final forms of wheat makes it possible for

wheat producers to profit from higher wheat prices which are passed on in the price of bread, just as others who contribute goods or services toward the production of a loaf of bread can and do pass on increased charges to the consumer without important reductions in the amounts of their goods and services (transportation, wrappers, etc.) purchased.

### **Wheat as Animal Feed**

While relative prices of wheat and other foods appear to be minor factors in human consumption, relative prices of wheat and other grains are major factors in livestock feeding. Meinken (29) showed the importance of another variable, poultry numbers, in determining the amount of wheat fed. However, with poultry numbers, especially laying hens, relatively constant, the wheat-corn price relationship remains as the significant factor related to use of wheat as feed. Under recent and current government support programs, this relationship also has been fairly constant. As seen in table A13, large quantities of wheat have been fed only during war years, when wheat prices were made competitive with corn prices.

No major changes in the technical substitution rates between wheat and other feed grains appear imminent. A pound of wheat is about 5 percent more nutritious than a pound of corn for hogs, beef cattle and poultry, equal to corn for dairy cattle, but about 15 percent less nutritious than corn for sheep (35). Lowering the wheat price to coarse grain prices appears to be the only way to increase wheat feeding, since technical substitution rates are most inflexible.

### **Wheat as an Industrial Raw Material**

Data in table A13 show the discouraging history of wheat utilization in industrial processes. Only under pressure of war, when the motivation and, consequently, the choice indicators (price ratios) differed from usual patterns, has wheat found significant industrial outputs. Estimates of the value of alcohol and by-products which can be derived from a bushel of grain vary, but tend to be about one half to one third 1959 grain prices (47, p. 106), probably below the cost of producing wheat.

Widespread support for expanded research in this area should not be taken as an indication that important advances are near at hand. At best, such research may benefit future generations, although the Presidential Commission studying the problem in 1957 took a shorter range view of the situation and visualized an end to farm surpluses if enough money were invested in research (47, p. 13). The nature of basic research suggests that research in industrial uses for wheat is not likely to be relevant to the wheat problems of the 1960's, but to the basic raw material demands of a more distant future.

### III.

## WORLD WHEAT TRADE, PRODUCTION, AND CONSUMPTION: IMPLICATIONS FOR U.S. EXPORTS

Any major increase in the use of U.S. wheat for food in the next decade is likely to be from increased exports. However, other nations competing for the world wheat trade are under much pressure to export large quantities of wheat each year, and would try to do so even at extremely low prices because they need the foreign exchange earned selling wheat to buy imports. U.S. exports in the years ahead do not depend chiefly on world wheat prices, but on trends in wheat consumption and production in other countries and on world political relationships.

### DIVISION OF THE WORLD WHEAT MARKET

National claims to rights in the total world wheat trade, like farmers' claims to production rights, are not to be taken lightly. Shares in the world wheat trade depend heavily on the base period, as shown in table 17. During the 1930's the U.S. averaged only 11 percent of a reduced world wheat trade, down sharply from one fourth of the trade in each of three preceding decades. Canada averaged nearly one third of the world wheat trade from 1920 to 1940, from 1945 to 1949 and from 1950 to 1954. Major exceptions were immediately after World War II, when the world wheat trade was expanded sharply by U.S. foreign aid, and after 1954, when U.S. wheat exports were swelled by shipments under Public Law 480<sup>24</sup> (table 17).

With noncash sales by the U.S. subtracted from U.S. exports and the world wheat trade, the U.S. share is down sharply and the Canadian share up (table 18). This alternative view of the world wheat market is shown for two reasons. First, U.S. cash wheat exports made possible by our export subsidy program are competitive chiefly with Canadian exports managed by the Canadian Wheat Board. Second, there are virtually no wheat exports in the world competitive with U.S. shipments under the Marshall Plan and P.L. 480 (table 19). The U.S. takes precautions to avoid any but the most scrupulous encroachment on the cash market of other countries, as required by the language of P.L. 480.

*If P.L. 480 were ended and no substitute provided in the 1960's, there is little doubt that U.S. wheat exports would fall sharply. If sales under special programs are not displacing our own cash sales or those of foreign competitors, the world and the U.S. wheat trade might be expected to fall by nearly the amount of special program sales and grants. As the 1960's begin, two thirds of U.S. wheat exports depend directly on continuation of those programs (table 19). There is little likelihood that this situation will soon change.*

<sup>24</sup>The Agricultural Trade Development and Assistance Act of 1954, as amended; 83rd Cong., 68 Stat. 454. For a concise review of laws pertaining to exports and surplus removal see (58).

TABLE 17-WHEAT AND FLOUR: EXPORTS AND SHARES OF WORLD EXPORTS BY INDICATED COUNTRIES AND WORLD TOTALS.

Period (July-June)	U.S.A.		Canada		Australia		Argentina		Other countries <sup>a</sup>		World million bushels
	million bushels	(%)	million bushels	(%)	million bushels	(%)	million bushels	(%)	million bushels	(%)	
1930-39	75	11	201	28	114	16	130	18	190	27	710
1945-49	415	47	252	29	83	9	76	9	52	6	878
1950-54	330	34	300	31	98	10	81	8	159	16	960
1954	274	28	253	26	93	10	132	14	219	23	971
1955	346	33	289	27	102	10	115	11	213	20	1,065
1956	549	41	282	21	126	10	98	7	273	21	1,328
1957	403	34	316	27	61	5	77	7	333	28	1,190
1958 <sup>b</sup>	443	34	300	23	75	6	103	8	387	30	1,308

Source: (69, August 1959); qualifications and explanations appear there.

a. Includes U.S.S.R.

b. Preliminary

TABLE 18-AN ALTERNATIVE VIEW OF THE DIVISION OF THE WORLD WHEAT MARKET.

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	million bushels										
World wheat trade	992	830	937	1,066	987	879	971	1,065	1,328	1,190	1,308
Less U.S. noncash sales	376	257	173	159	30	101	158	241	375	252	301
Remainder	616	574	764	907	957	778	813	824	953	938	1,007
United States cash exports											
Quantity	127	42	193	315	288	116	116	105	174	150	141
% of adjusted world trade	21	7	25	35	30	15	14	13	18	16	14
Canadian exports											
Quantity	222	236	221	347	392	288	253	289	282	316	300
% of adjusted world trade	36	41	29	38	41	37	31	35	30	34	30

Source: (69)

TABLE 19-WHEAT, INCLUDING FLOUR (GRAIN EQUIVALENT): TOTAL EXPORTS AND GOVERNMENT EXPORTS BY PROGRAMS, UNITED STATES, 1948-58.

Item	Year beginning July										
	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958 <sup>a</sup>
	1,000 bushels										
Total exports:	502,559	298,470	365,573	474,715	317,190	216,512	273,634	345,564	548,558	403,000	443,000
Under government programs:											
Quantity	376,011	256,790	172,968	159,341	29,605	100,544	158,025	240,700	375,000	252,091	301,331
% of total	75	86	47	34	9	46	58	70	68	63	68
For dollars:											
Quantity	126,548	41,680	192,605	315,374	287,585	115,968	115,609	104,864	173,558	149,671	140,475
% of total	25	14	53	66	91	54	42	30	32	37	32
Government exports by programs:											
Public Law 480 <sup>b</sup>											
Title I	---	---	---	---	---	---	23,801	94,300	200,500	179,069	230,023
Title II	---	---	---	---	---	---	15,991	11,900	12,200	14,300	10,861
Barter	---	---	2,619	16,924	3,938	9,964	46,458	66,700	86,900	9,501	20,154
Donations (Sec. 416) <sup>c</sup>	---	---	---	---	---	---	---	2,788	11,735	17,993	20,231
Marshall Plan <sup>d</sup>	208,503	137,945	138,856	137,163	22,965	89,063	70,811	65,000	63,600	31,228	20,062
Army-civilian supply <sup>e</sup>	167,508	118,845	31,493	5,254	2,702	1,517	963	---	---	---	---
Total	376,011	256,790	172,968	159,341	29,605	100,544	158,025	240,700	375,000	252,091	301,331

Source: (69, Feb. 1960).

- a. Preliminary.
- b. Public Law 480, 83rd Congress, as amended.
- c. Shipments by U.S. charity and relief agencies as authorized under Title III of P. L. 480.
- d. P. L. 472 (4/3/48), Foreign Assistance Act of 1948. Original Act establishing Economic Cooperation Administration (now known as International Cooperation Administration). Includes, in part, exports under Greek-Turkish Aid, China Aid, Yugoslav, India and Pakistan Relief programs. In most years data represent procurement authorizations, and are not strictly comparable in time to actual exports of wheat and wheat flour.
- e. Shipments for civilian feeding in occupied areas.

## PRINCIPAL IMPORTERS OF UNITED STATES' WHEAT

Historic continental destinations of United States' wheat are shown in table 20 for 1952 to 1959. The Asian market is seen to have grown rapidly, almost

TABLE 20-WHEAT AND FLOUR: CONTINENTAL DESTINATIONS OF U.S. EXPORTS.

Destination	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59
	Millions of bushels					
Europe	87	146	154	245	118	117
Asia	91	82	101	223	221	221
Western Hemisphere	27	38	58	63	52	57
Africa	14	9	32	15	10	26
Others	1					20

Source: (66); also current U.S.D.A. reports.

equaling the European market in 1956-57, and exceeding it since then. Countries taking more than 2 percent of United States' wheat exports are shown in table 21. Reasons for the striking change in the destinations of wheat exports appear with the identity of Asian countries, which could increase wheat imports in late years only under the U.S. aid program.

TABLE 21-COUNTRIES IMPORTING MORE THAN 2 PERCENT OF TOTAL U. S. WHEAT EXPORTS.<sup>a</sup>

Country	1953-54	1955-56	1956-57	1957-58	1958-59
	Percentages				
Europe					
United Kingdom		7.2	7.3	5.6	5.8
Netherlands	5.3	6.8	3.9		2.9
Belgium-Luxembourg		2.1	3.3		
France		2.3	5.7		
West Germany	10.7	4.9	6.5	5.2	3.6
Italy		2.1	2.4	2.3	
Yugoslavia	6.5	11.0	6.9	5.2	6.9
Greece	2.2	3.8	3.6		
Spain	9.2				
Poland				5.0	2.1
Asia					
Turkey		2.6	4.0	2.7	
Israel		2.5		2.3	
India		2.6	12.2	19.2	27.4
Pakistan	10.4		4.1	6.1	4.2
Korea			3.0	4.4	
Taiwan	5.4	2.2		2.2	
Japan	21.3	11.9	9.1	12.8	7.7
Philippine Republic				2.3	
Other					
Brazil		5.1	2.5	2.7	4.0
Cuba	2.1				
Mexico	3.1				
Egypt	4.1				3.2

a. (69, Oct. 1955, Oct. 1957, and Aug. 1959).



The incentive for this change was the combination of foreign policy and farm policy implemented in P.L. 480. Although this country had such export programs previously, nothing like the program of the late 1950's had ever been tried except directly in the wake of war. Asian imports of wheat in 1956-57 were almost three times the 1954-55 total. Through mid-1959, wheat made up 43 percent of the export market value of all products shipped under Title I, as shown in table 22.

TABLE 22-COMMODITY COMPOSITION OF ALL TITLE I AGREEMENTS SIGNED THROUGH JUNE 30, 1959.

Commodity	Unit	Approximate quantity	Export market value	Estimated
				CCC cost
			Million	
Wheat and wheat flour	bushel	842,635,000	\$1,410.3	\$2,268.8
Feed grains	bushel	210,054,000	237.3	388.6
Rice	cwt.	33,465,000	213.2	338.9
Cotton	bale	3,978,800	616.0	824.5
Cotton linters	bale	7,000	.3	.3
Meat products	pound	120,872,000	39.2	39.2
Tobacco	pound	250,100,000	181.3	181.3
Dairy products	pound	285,526,000	48.2	84.3
Fats and Oils	pound	3,631,270,000	526.2	533.4
Poultry	pound	17,410,000	5.4	5.4
Dry edible beans	cwt.	591,000	4.4	4.4
Fruits and vegetables	pound	176,159,000	15.3	15.3
Seeds	cwt.	10,000	.4	.4
Total			3,307.5	4,684.8
Ocean transportation			393.7	393.7
Total, including ocean transportation			\$3,701.2	\$5,078.5

Source: (46).

## WORLD WHEAT CONSUMPTION

Future demands on the U.S. wheat supply depend heavily on trends in world wheat consumption. These, in turn, depend on the growth of the world's population and on the trend of per capita income. Projections of either are hazardous. Disagreement is intense on the present state of world food consumption. According to Lord John Boyd-Orr "A lifetime of malnutrition and actual hunger is the lot of at least two thirds of mankind" (3, p. 11). The Food and Agriculture Organization of the U.N. has reported that "Taking a daily food intake of 2,200 calories as an approximate yardstick of the minimum energy requirements . . . about one half of the world population fell below or barely reached this level" (42, p. 5).

On the other hand, Jureen (25, p. 19) stated that "An improvement in food standards no longer calls for appreciable increase in calorie supply (i.e. total calorie supply need not rise much more than is required to keep pace with population growth)." According to Mrs. Farnsworth (12, p. 57), food supply and consumption estimates now in existence are inadequate for judging the nutritional status of many countries of the world, and may seriously understate food

supplies, especially of underdeveloped countries, of which India is the best example. If Mrs. Farnsworth is correct, the shortage of calories is less serious than often pictured. According to most recent FAO reports, surplus food supplies now exist not only in the U.S. but in much of the world (71). World food production on a per capita basis increased by 7 percent from 1948-52 to 1955-57, according to the U.S. State Department (71).

As shown in table 23, only India, Pakistan, Japan, the Philippines and Peru (of countries for which per capita consumption data are available) had diets with fewer than 2,200 calories in mid-1950's. Of these, only India and Pakistan typically are cited as countries where near-famine conditions sometimes prevail; the Japanese diet of 2,110 calories in 1955 was not considered seriously inadequate in Japan.

Viewed against the standard of the National Research Council (144), whose recommended minimum calorie allowance is about 2,750 per day for all ages and both sexes, the diets shown in table 23 are much less satisfactory. But only Chile, Venezuela, Brazil, and Honduras, plus the countries just cited, are distinctly below the NRC standard (table 22). If food supplies are underestimated, as Mrs. Farnsworth argues, these countries are not properly a part of the group with diets clearly below the NRC standard, and India and Pakistan may be somewhat closer to those standards than is indicated in table 23.

Whatever the number of hungry people and the intensity of their need, no one can deny the existence of widespread hunger and malnutrition in the world, conditions which can be alleviated either by increased food production or by increased imports. Neither can be accomplished soon without help from the developed countries of the world. *It is extremely important to U.S. farm producers that U.S. food exports be increased; it is also extremely important to underdeveloped countries to increase their own food production and decrease food imports.* U.S. policy to assist underdeveloped nations to achieve their food production objectives is, implicitly, policy to reduce our exports of staples such as wheat and rice. *If we are "successful" in increasing our grain exports the next decade it may be the result of failure of foreign countries to meet their production goals and, therefore, of our own failure to meet important foreign policy objectives.*

## PROJECTION OF WORLD WHEAT CONSUMPTION

The long-time trend in per capita consumption of both coarse grains and wheat is downward in the world and in most countries of the world for which data are available. This is a fairly recent development. Malenbaum (28, appendix tables 4, 5, and 6) showed that from 1885 to 1935-39, world per capita wheat consumption was fairly stable at an average of 2.5 to 2.75 bushels per year for 36 countries for which data were available. He grouped 36 countries of the world according to consumption patterns in 1935-39 (table 24). Only 10 countries showed clear downward per capita consumption trends at that time. In a second group, per capita wheat consumption was erratic; a third group was in

TABLE 23-NET CEREAL AND TOTAL FOOD SUPPLY PER PERSON IN CALORIES.

Country	Calories per person per day			
	Prewar		1956-57	
	Cereals	Total	Cereals	Total
<u>Europe</u>				
Austria	1,252	2,930	1,126	2,950
Belgium-Luxembourg	1,106	2,820	996	2,990
Denmark	912	3,420	878	3,360
Finland	1,238	2,990	1,157	3,190
France	1,186	2,870	1,041	2,920
Germany (West)	1,083	3,040	953	3,000
Greece	1,567	2,600	1,421	2,600
Ireland	1,316	3,400	1,267	3,560
Italy	1,571	2,520	1,425	2,570
Netherlands	1,014	2,840	879	2,950
Norway	1,172	3,210	942	3,310
Portugal		2,100	1,046	2,550
Sweden	907	3,120	766	2,970
Switzerland	1,050	3,140	964	3,150
United Kingdom	925	3,110	859	3,270
Yugoslavia		3,020	1,825	2,710
<u>North America</u>				
Canada	923	3,010	756	3,140
United States	893	3,220	699	3,150
<u>Latin America</u>				
Argentina	1,057	2,730	984	2,980
Brazil			875	2,350
Chile	1,233	2,240	1,343	2,420
Honduras			1,200	2,250
Peru			1,001	2,080
Uruguay			979	2,990
Venezuela			850	2,270
<u>Far East</u>				
India		1,970	1,229	1,880
Pakistan		1,970	1,672	1,990
Japan	1,527	2,180	1,421	2,110
Philippines			1,287	1,940
<u>Africa and Near East</u>				
Egypt	1,752	2,450	1,842	2,590
Israel			1,463	2,860
Fed. S. Rhodesia			1,948	2,630
Turkey	1,855	2,450	1,939	2,670
Union S. Africa	1,518	2,340	1,460	2,650
<u>Oceania</u>				
Australia	1,010	3,300	898	3,190
New Zealand	867	3,260	863	3,350

a. Finland, 1955-56; Ireland, 1956; Portugal, 1956; Yugoslavia, 1953-54; U.S., 1956; Argentina, 1955; Brazil, 1952; Honduras, 1954-55; Peru, 1952; Uruguay, 1955; Venezuela, 1951; India, 1954-55; Pakistan, 1954-55; Japan, 1955; Philippines, 1954-55; Egypt, 1955-56; Israel, 1954-55; Rhodesia, 1953; S. Africa, 1956; Australia, 1955; New Zealand, 1956.

Source: (45, tables 90-91).

TABLE 24-PER CAPITA WHEAT CONSUMPTION, SELECTED COUNTRIES AND YEARS.

Countries	Annual per capita consumption	
	1935-39	1951-52 <sup>a</sup>
	(bushels)	
<b>A. Declining consumption pattern</b>		
Australia	4.62	3.50
Belgium and Luxembourg	5.80	3.53
Canada	3.98	2.62
France	6.50	4.14
New Zealand	4.11	2.88
Spain	4.95	----
Switzerland	4.80	3.42
U. K. and Ireland	4.90	3.44
United States	3.62	2.22
Group A (8 countries, 1951-52)	(4.60)	(2.85)
<b>B. Intermediate consumption pattern</b>		
Denmark	2.57	1.70
Finland	2.13	----
Germany	2.51	2.29
Netherlands	3.86	3.01
Norway	3.11	2.93
Sweden	2.55	2.92
Group B (5 countries, 1951-52)	(2.70)	(2.44)
<b>C. Increasing consumption pattern, wheat a preferred cereal</b>		
Argentina	5.57	3.80
Bulgaria	6.41	----
Chile	5.78	4.36
Greece	5.34	4.98
Hungary	5.42	----
Italy	5.95	4.85
Rumania	3.42	----
Uruguay	4.73	3.05
Yugoslavia	4.39	3.85
Group C (6 countries, 1951-52)	(5.20)	(4.40)
<b>D. Increasing consumption pattern, wheat not a preferred cereal</b>		
French Morocco	2.59	----
Tunis	2.59	----
Poland	1.75	----
Portugal	2.08	----
Egypt	2.45	2.69
India	0.79	0.69
Japan	0.60	0.91
Group D (3 countries, 1951-52)	(0.93)	(0.82)
<b>Other</b>		
Austria	2.70	3.81
Turkey	5.12	5.01
Union of South Africa	1.66	1.75

Source: Country grouping and 1935-39 data from Malenbaum, (28); 1951-52 data (23).

a. Consumption figures are net; that is, they represent only that extracted portion of wheat milled, or about 70 percent of total wheat milled for human consumption. They are comparable to the U.S. flour consumption data, table A14.

the stage in which diets were improved by substituting wheat for other grains and potatoes. A fourth group was made up mainly of countries with low per capita rates of wheat consumption based on preferences for other cereals (table 24, column 1). Only five countries (Sweden, Egypt, Japan, Austria, South Africa), of 25 for which 1951-52 data are available, had higher per capita wheat consumption rates in the postwar period than in 1935-39 (table 24).

Goreux (16) estimated for Sweden that per capita cereal consumption in 1965 would drop to 81 percent of 1955 consumption with an annual per capita income increase of 2 percent or to 72 percent of 1955 with a 3 percent per capita income increase. This appears to be an exceptionally sharp decline in a country where cereal consumption is not now high.

Daly estimated annual per capita consumption of wheat in the U.S. by 1975 as 89 percent of 1953 of 161 pounds, assuming that per capita income increases by 2.5 percent yearly. This is well above the projection of 147 pounds by 1970, based on the trend of per capita consumption from 1910 to 1953 (p. 58). But it is consistent with the slower rate of decline in per capita wheat consumption in the U.S. in the latter part of that period.

Hanau and Krohn (19) estimated that per capita wheat consumption in Germany in 1964-65 will be almost unchanged from 1954-55, whether per capita income increases are as low as 2.3 percent, or as high as 3.8 percent per year. This implies a zero income elasticity, and is not consistent with Jureen's analysis (25), with the recent trend in German wheat consumption (table 24), or with an F.A.O. report on grain consumption (43).

Dayal (9, pp. 468-88) estimated that a 10 percent increase in per capita purchasing power in India would result in an increase of 4 to 6.5 percent in per capita wheat use, implying an income elasticity for wheat of about 0.5, much above the results of an F.A.O. study, which indicated that the income elasticity for food was about 0.5, but for wheat only about 0.2 (44, p. 52). The lower figure is near Jureen's estimate for countries (like India) with per capita income below \$100.

Projections of per capita and total wheat consumption are shown in table 26 for countries for which data are available. The 25 countries listed have recently imported 70 to 80 percent of all U.S. wheat exports (24). Brazil, Spain, Cuba, and Mexico, which have taken considerable U.S. wheat recently, are the important omissions.

All steps in these projections are open to criticism. Population projections (table 25) are notably inexact. Use of the same income elasticity for countries as different as Japan and Yugoslavia, for example, may be questioned, even though per capita incomes are similar. Although consumers in different countries with varying levels of per capita wheat consumption *may* tend to react similarly to increases in income as argued by Jureen, wide variations in national cultures and in income distributions are not considered in the projections of table 26.

TABLE 25-ESTIMATED POPULATION, AND PER CAPITA INCOME, SELECTED COUNTRIES.

Country	Population (millions)		Per capita income (dollars)
	1955	1975	1953
<u>Europe</u>	289.1	330.5	
Austria	7.0	7.5	290
Belgium-Luxembourg	9.2	10.4	1,417
Denmark	4.5	5.1	740
France	43.3	49.1	600
Germany	71.0	80.5	482
Greece	8.0	9.7	174
Italy	48.0	56.1	307
Netherlands	10.8	12.8	600
Norway	3.4	4.0	717
Sweden	7.3	8.3	910
Switzerland	5.0	5.9	995
U. K. and Ireland	53.9	58.5	903
Yugoslavia	17.7	22.6	200
<u>North America</u>	181.9	239.3	
United States	166.0	217.0	1,908
Canada	15.9	22.3	1,318
<u>South America</u>	28.5	39.5	
Argentina	19.3	27.2	366
Chile	6.6	8.8	250
Uruguay	2.6	3.5	425
<u>Asia</u>	499.1	719.0	
India	386.0	563.0	60
Japan	89.1	116.0	197
Turkey	24.0	40.0	221
<u>Other</u>	48.2	76.2	
Australia	9.3	13.0	921
New Zealand	2.2	3.0	968
Egypt	23.0	38.3	112
Union of South Africa	13.7	21.9	283
Total (listed countries)	1,046.8	1,404.5	

Source: Population; medium growth assumption from U. N. studies (41); Income, Kindleberger (26).

Finally, the benchmark per capita consumption data of table 24, from which projections were computed, may be very uneven.

Income elasticities applicable to the per capita annual incomes shown for all countries in table 25 are in table 26, column 1. Also shown are the percentage changes estimated for wheat consumption by 1975 under alternative assumptions of annual per capita income increases of 1 and 2 percent. The higher annual income increase (2 percent) involves the greater decrease in per capita consumption in most countries, since income elasticity is negative in most countries shown.

Total wheat consumption projected for 1975 in the countries listed is 400 to 500 million bushels higher (20 to 25 percent) than in 1955 (columns 7-8, table 26). The projected downward trend in per capita consumption under either of the income increases assumed is too small to offset the projected population increases, which on the basis of experience, may be too low.

TABLE 26-ESTIMATED PER CAPITA WHEAT CONSUMPTION IN 1975 FOR TWO INCOME SITUATIONS, AND TOTAL FOOD WHEAT REQUIREMENTS FOR SELECTED COUNTRIES IN 1975, BASED ON PROJECTED INCOME AND POPULATION INCREASES.

Country	Income elasticity <sup>a</sup>	% change per capita wheat consumption 1953-75 <sup>b</sup>		Bushels per capita 1975 <sup>c</sup>		Wheat for food <sup>d</sup> (million bushels)			
		(*)	(**)	(*)	(**)	1955	1975		
						(actual)	(*)	(**)	(***)
Europe						1,014	1,092	1,007	1,165
Austria	-.25	-6	-12	3.6	3.4	27	27	25	29
Belg.-Lux.	-.33	-7	-14	3.3	3.0	32	34	32	37
Denmark	-.35	-8	-16	1.6	1.4	8	8	7	9
France	-.34	-7	-14	3.9	3.6	179	189	175	203
Germany (all)	-.32	-7	-14	2.1	2.0	163	171	159	184
Greece	-.05	-1	- 2	4.9	4.9	40	48	47	48
Italy	-.25	-6	-12	4.6	4.3	231	256	240	272
Netherlands	-.34	-7	-14	2.8	2.6	33	36	33	39
Norway	-.35	-8	-16	2.7	2.5	10	11	10	12
Sweden	-.35	-8	-16	2.7	2.4	21	22	20	24
Switzerland	-.35	-8	-16	3.2	2.9	17	19	17	20
U.K. and Ireland	-.35	-8	-16	3.2	2.9	185	185	169	201
Yugoslavia	-.05	-1	- 2	3.8	3.2	68	86	73	87

TABLE 26-CONTINUED

Country	Income elasticity <sup>a</sup>	% change per capita wheat consumption 1953-75 <sup>b</sup>		Bushels per capita 1975 <sup>c</sup>		Wheat for food <sup>d</sup> (million bushels)			
		(*)	(**)	(*)	(**)	1955	1975		
						(actual)	(*)	(**)	(***)
North America						410	508	473	540
United States	-.29	-6	-12	2.1	2.0	368	454	423	482
Canada	-.33	-7	-14	2.4	2.2	42	54	50	58
South America						110	144	135	152
Argentina	-.29	-6	-12	3.6	3.3	73	97	91	103
Chile	-.18	-4	-18	4.2	4.0	29	37	35	38
Uruguay	-.29	-6	-12	2.9	2.7	8	10	9	11
Asia						467	701	715	694
India	.21	+5	+10	0.7	0.8	266	405	428	388
Japan	-.05	-1	- 2	0.9	0.9	81	104	103	106
Turkey	-.18	-4	- 8	4.8	4.6	120	192	184	200
Other						125	191	188	196
Australia	-.35	-8	-16	3.2	2.9	33	42	38	46
New Zealand	-.35	-8	-16	2.7	2.4	6	8	7	9
Egypt	.08	+2	+ 4	2.7	2.8	62	105	107	103
U. of S. Africa	-.25	-6	-12	1.6	1.6	24	36	36	38
Total, listed countries						2,126	2,636	2,518	2,747

a. From table 15.

b. Computed from 1953 income (table 25) and income elasticity (column 1), under two assumptions for income change: (\*) 1 percent per year increase in per capita income; (\*\*) 2 percent per year increase in per capita income.

c. Computed from 1951-52 per capita consumption (table 24) and projected per capita consumption changes (columns 2 and 3).

d. Per capita consumption times population (table 25); column headed (\*\*\*) represents projected wheat food use with 1975 population but 1951-52 per capita consumption rates. Computations made with unrounded per capita projections.



Failure to achieve gains in per capita incomes by 1975 would tend to hold per capita wheat consumption at 1951-52 levels. Total wheat consumption might increase by one third if population growth were as projected. Another possibility is that wheat consumption will no longer fall as incomes rise, making the historical income elasticity estimates inapplicable—an event not expected.

Major increases in wheat consumption among countries now active in the world wheat trade appear likely to occur in Asia (India, Japan, Turkey). These countries have positive or barely negative income elasticities, and high projected rates of population growth. Estimates for Europe range from a little more to a little less wheat consumption in 1975 compared with 1955, depending on gains in income. A similar pattern prevails for North America and South America, although South America is poorly represented in table 26 because of lack of consumption data.

## **ANOTHER VIEW OF WORLD GRAIN CONSUMPTION TRENDS**

United Nations economists grouped 23 countries (for which individual consumption projections were shown in table A20) on the basis of food habits, income levels, rates of income growth, export-import balance and other factors to make a 10-year projection of bread grain consumption (43). Population, income, and wheat consumption history in the countries studied are in table A16. Income elasticities applicable to groups of countries and estimated population and income growth are in table A17.

According to these estimates, bread grain consumption in 1965 in 23 countries listed would be 210 million bushels or 8 percent larger in 1965 than in 1954-55. Their population increases are estimated at 11 percent, and a 5 percent annual rate of per capita income growth is assumed for group (E) made up of countries with a *positive* income elasticity of demand for bread grains (Egypt, India, Japan, and the Union of South Africa).

Virtually all the increased demand would arise from group (E), while population increase would about offset declining per capita consumption in the more developed countries of groups A to D.

This estimate, done independently of the 1975 projection reported in the preceding section, but including most of the same countries, confirms the lack of prospects for large increases in total world consumption of wheat. Unexpected population changes or failure to achieve substantial per capita income gains, especially in Asia, would make the projections less applicable.

## **WORLD GRAIN PRODUCTION TRENDS**

It is technologically possible in both developed areas such as western Europe and less developed areas like Asia to get the production of food grains up to consumption levels projected for 1965 or 1975.

A U.N. study cited earlier concluded that "... while demand for wheat and coarse grains in 23 countries is expected to increased by 29 million tons in the next 10 years, production of wheat, rice, and coarse grains would increase by as much as 36 million tons in the same countries by 1965 (43). Given continued peace, population and income growth, and technological gains, prospects for an increased world trade in bread grains in 1965 did not appear to be bright.

A 1959 report of the U.S. State Department concluded that "*Despite the projected population explosion, reasoned projections of 1975 wheat and rice production provided little basis for expecting export markets to absorb significantly larger amounts of U.S. produced wheat and rice, unless it is assumed that efforts for balanced economic development in the underdeveloped areas will be largely ineffective*" (71).

Nine western European countries have taken nearly one half U.S. wheat exports until recent years (table 20). Most of them have national policies protecting agriculture and encouraging internal wheat production as shown below (54, except as noted). Even a modest level of achievement of their production goals is discouraging news for U.S. wheat producers and exporters, hopeful of a larger wheat export market.

**United Kingdom:** Until recently, the main emphasis here was on expanding output from domestic resources, to 60 percent above prewar, a goal almost achieved last season, according to official estimates (1956). This goal has been modified, but the emphasis is still on minimizing food imports, and especially on the use of home grown feedstuffs to lessen the pressure on the balance of payments (42.1).

**Netherlands:** No major production targets, but a modest expansionary policy and research aids for grain production.

**Belgium:** Increased farm productivity is a major policy goal.

**France:** "French agriculture and trade policy gives high protection to home agriculture first and French overseas agriculture second. The aim is to expand production, decrease imports, and increase exports. . . ."

**West Germany:** "... the most important policy goal is to increase and maintain the income derived from agricultural pursuits . . ."

**Italy:** "Italy's agricultural policy lays emphasis on increasing productivity . . . in order to increase farm income, reduce underemployment in the farm sector, expand exports, and reduce imports of agricultural commodities." (33, p. 145)

**Greece:** Reducing imports of food products is a major goal. Wheat from the United States has made up 35 percent of all Greek food imports, in recent years averaging near 20 million bushels annually. Measures recently taken appear likely to lead to an overproduction of wheat in Greece (33, p. 130).

**Yugoslavia:** Most of the U.S. food products sent to Yugoslavia recently have gone under aid programs. Despite reclamation, credit and other programs, output is not expected to increase greatly.

**Spain:** An intermittent customer for U.S. wheat, Spain has a goal of self-sufficiency in grain which has now been largely achieved.

In Asia, four countries (Turkey, India, Pakistan, and Japan) stand out as importers of U.S. wheat (table 21). Production policies and prospects include:

*Turkey:* Historically a food exporter, Turkey has required some food grain imports because of recent droughts and increases in domestic consumption. Her goal of improving her trade balance and her efforts to improve production make Turkey a poor prospect as a dollar customer for wheat. She may, instead become a net exporter of wheat (54).

*India:* India has taken the largest share of U.S. wheat exports in recent years, almost exclusively under P.L. 480 programs. She may need similar or larger quantities for many years even to maintain her per capita calorie supply. A 33 percent increase by 1965-66 over expected maximum food grain production in 1960-61, would provide only a slight increase in calorie supply per person, given current population estimates (17, p. 12). If this goal (table 27) is not approached, the alternatives are larger shipments of U.S. food grains to India or a decline in the nutritional level of the Indian people.

TABLE 27-PRODUCTION OF FOOD GRAINS, INDIA (MILLION METRIC TONS)

Year	Rice	Wheat	Other cereals	Total cereals	Total pulses	Total food grains
1949-50	23.8	6.6	18.0	48.4	9.5	57.9
1950-51	21.0	6.6	16.1	43.7	8.7	52.4
1951-51	21.5	6.2	16.6	44.3	8.6	52.9
1952-53	23.1	7.4	19.0	49.5	9.3	58.8
1953-54	28.3	7.9	22.1	58.3	10.6	68.9
1954-55	25.1	8.8	22.2	56.1	11.0	67.1
1955-56	26.9	8.6	19.0	54.5	10.8	65.3
1956-57	28.1	9.1	20.1	57.3	11.4	68.7
1957-58	24.8	7.7	20.3	52.8	9.2	62.0
1958-59	29.7	10.0				70.0 <sup>a</sup>
1960-61						75.0 <sup>b</sup>
1965-66						80.5 <sup>c</sup>
1965-66						110.0 <sup>d</sup>

a. Preliminary estimate.

b. Anticipated.

c. Target.

d. Proposed target.

Source: (17, p. 14).

The required increase in output is probably technologically possible. The average yield per acre of wheat was only 10.4 bushels from 1950 to 1958. Her rice yield is among the lowest of the major rice producers. A recent report by a Ford Foundation team studying the prospects for improving India's dietary level concurrent with a sharp population increase, is cautiously optimistic about the possibilities for reaching the output goal, but only if a higher priority is given to chemical fertilizers and their distribution (17, pp. 170-179).

That report gave no estimates of the amount of additional grain production to be expected in India per unit of fertilizer, but it implies that the figure is high. In the U.S., additional returns per ton of nitrogen on wheat above pres-

ent levels of application remain high despite relatively heavy fertilizer use in some areas. Each ton of nitrogen shipped to India from the U.S. might represent many tons of added wheat or rice production.

If aid to underdeveloped countries in the form of food reduces other potential aid, such as fertilizer and fertilizer plants, *the short-range U.S. goal of surplus disposal may conflict with the long-range goal of fostering economic development* in those countries. The urgent need for current food supplies in such countries and the desire to reduce our own commodity stockpile should not obscure the extreme need for rapid technological improvement in grain production, if gratuitous shipments of U.S. foods are not to be permanent.

*Pakistan* is an important potential buyer of U.S. wheat, but plans increased production. A 17 percent increase in wheat production and a 13 percent increase in total food grains was programmed for 1959-60 compared with 1948-55, to be met by increased yields. If the goal is met, slight increases in per capita consumption will be possible with present population trends and imports. According to Pike ". . . it is doubtful if any of the major goals will be reached within the period of the Five-Year Plans" (56). Wheat goals are more likely to fail than are rice goals, since much wheat land is being lost because of wetness. Yet self-sufficiency in food grains is possible a few years ahead; yields in Pakistan are also extremely low, and should respond to increased fertilizer and other technical improvements.

*Japan* alone of the four major Asian importers of wheat does not have a goal of self-sufficiency. She has exploited her productive potential far more than the others, and further yield gains may be slow. However, her policy continues to be to produce 80 percent of her food requirements at home by increasing output as population grows. By reclamation, increased inputs, and other measures, Japan may hold the line on the percentage of food imported. Total food imports may increase slowly with population. Since Japan is in a reasonably strong dollar position, she may continue to be one of the best buyers of U. S. wheat.

## IV. ALTERNATIVE WHEAT POLICIES AND PROGRAMS

Crop production potential in the U.S. in the 1960's stands out in bold contrast to utilization prospects. Few crops have better technical production prospects or poorer utilization prospects in traditional markets than wheat. If producers were to react to a termination of production controls as they indicated they would in 1955 (tables 10 to 14), wheat acreage and output would be increased sharply at prices substantially below the late 1950's. If the domestic demand for wheat as food is as inelastic as represented, no measurable increase in U.S. wheat food consumption would occur at any price. Population growth, coupled with the approach of a long-term minimum per capita wheat consumption offers the best hope for increased total wheat use in the U.S.

This was the wheat situation after the 1960 harvest:

1. The national acreage allotment under the wheat program effective for the 1961 crop was 55 million acres; about 4 million additional acres are harvested each year under a marketing quota exemption, while several million allotment acres are not planted. The expected harvest is 53 to 55 million acres each year.
2. This acreage at national average yields now expected (roughly 18 to 25 bushels per acre), will produce from 1.0 billion to 1.4 billion bushels of wheat each year.
3. The demand for U.S. wheat at 1959-60 prices and at prices up to one fourth below the 1959-60 level (to \$1.30 per bushel) is about 500 million bushels for food, 150 to 200 million cash exports, 60 million bushels for seed, 50 to 100 million bushels for feed, plus shipments for foreign aid.

Total domestic and cash foreign demand in the price range of \$1.30 to \$2.40 per bushel (at the farm) is thus 750 to 850 million bushels per year.

In addition, there is a demand for from 250 to 400 million bushels for P.L. 480 each year. *The highest prospective total annual disappearance is about equal to the lowest probable annual output under the wheat program of 1954-61.*

4. An average of 10 to 20 percent of yearly wheat production (100 million to 250 million bushels) should be expected to be added to government owned stocks each year the 1954-61 wheat program is continued.
5. Wheat stocks at the 1961 harvest are expected to be about 1.5 billions bushels, nearly 1 billion bushels above the widely accepted reserve requirement of 500 million bushels. Stocks of soft red winter, durum, and white wheat were exceptionally low, and stocks of hard red winter and hard red

spring very high relative to annual production and disappearance. The potential output of hard red winter wheat remains most seriously out of harmony with utilization prospects (table A12).

Feed grains and wheat are inseparable from the standpoint of public policy; they are the major alternative crops on most of the land in crops (other than hay) in the U.S. With respect to feed grains:

1. Stocks at the start of 1960 harvests were near 80 million tons, 55 million tons (the equivalent of 2 billion bushels of corn) in excess of an adequate carryover.
2. Feed grain stocks have been accumulated since 1952 by excesses of production over disappearance of from 5 to 10 million tons annually.
3. Since 1953, from 10 to 15 million acres have been diverted from wheat to coarse grains each year by enforcement of wheat acreage allotments and marketing quotas (61). Annual production from these acres has been about equal to the average annual additions to feed grain stocks.
4. There have been two periods of relatively low prices for meat animals, especially hogs, concurrent with the recent buildup of feed grain and wheat stocks. Had the stocks been fed, meat animal prices would have been somewhat lower the past six years. Estimates of those prices if all grains had been fed vary somewhat. Shepherd estimated hog prices nearly 20 percent below the 1952-58 level if higher feed grain stocks had been avoided; gross income from all livestock and livestock products was estimated at 6 percent below the actual, even though production would have been about 4 percent higher (37.1). Halcrow and Hieronymus estimated that all the coarse grains added to stocks from 1952 to 1956 could have been fed to hogs with only a 5 to 10 percent decline in hog prices and virtually no decline in gross income from sales (18.1).

## **TWO ALTERNATIVES FOR WHEAT PRICE POLICY**

There are two basic alternatives for public farm policy in the 1960's. One is to reduce farm marketings to levels consistent with publicly-chosen price policies, primarily through government action. The other is to end effort to control marketings, and to permit prices to fall to long-run equilibrium levels. In each case, public storage programs might be ended, or used to stabilize prices by spreading the supply of commodities over short periods, and to maintain necessary reserves for public emergencies.

Limiting the alternatives to two implies that it will become politically impossible in the 1960's to continue a farm policy which adds regularly to government stocks as in the 1950's. There is surely some upper limit to the expenditures the American people will make to support farm prices. Some level of physical stocks of farm commodities would finally produce a genuine revolt at the futility of the farm output policy followed during the 1950's.

Price policy is the heart of public policy toward commercial agriculture in the 1960's; choices with respect to it will be made at two levels. The question of whether to choose, as policy, to keep farm prices at levels higher than they would be without such policy must be answered first. Basically, this reduces to: shall the U.S. continue extensive government intervention in the farm economy? If the answer is "No," the price policy is given: we shall accept farm prices, not choose them. In that case, problems of equity among groups of people in the U.S. may require action by Congress, and may be as difficult as the choice of price policies.

However, if the people in the U.S. in the 1960's choose to raise farm prices above the levels of the late 1950's (as both political parties promised in 1960) or to maintain them above levels to which they might fall in the absence of a positive price policy, two further choices arise. The first is the price level itself—for farm products generally and for wheat. Choices there will be guided not only by the demands of wheat growers for income, but also by opinions of other groups about the proper level of prices to be administered by the government. *These choices will have important ethical undertones, but will be made partly on the basis of political power.*

Choice of a farm price level cannot be neatly separated from the second problem—the means by which it is to be achieved. *With indefinite public acquisitions of farm commodity stocks ruled out, a positive price policy must be implemented by a conscious output policy.* Specific arrangements such as two-price plans or forms of land retirement are not the main issue in output policy, although the choice of administrative framework is important. The quantity of wheat to be produced or marketed each year from current production is the critical issue. In the early 1960's, this quantity must be less than the quantity which can be used for all purposes, if wheat stocks are to be reduced.

If the price policy for other farm commodities, especially feed grains, is not to be disrupted by the expected shift of resources from wheat, resources which have been producing surplus wheat must be turned to nonuse, to less intensive uses, or to nonfarm production. *The means by which output policy for wheat and farm production generally may be implemented are either to adopt direct marketing restrictions, or to retire enough resources to reduce farm output to levels which would give the desired prices.* Clearly, the two could be used jointly—selective marketing quotas, and land retirement keyed to commodities or regions.

*Differences between these two approaches to output policy are not fundamental. One would limit marketings; the other, production. Each would aim at achievement of farm price goals without accumulating stocks.* Results from the use of either, although broadly predictable, will remain unknown until tested. *Both can be carried on in a framework of traditional freedom of managerial decision and a minimum of federal regulation.*

Cochrane has estimated that direct control of about two thirds of all farm marketings—some 20 to 30 farm commodities—would be sufficient to implement a consistent price policy (4).

Bottrum estimated that if 40 to 60 million crop acres were taken from cultivation, the price level of the late 1950's could be maintained without chronic excess output (22). The 1960 farm program proposals of the President called for a land retirement program of 60 million acres by 1963, implicitly to keep farm prices from falling, or to raise them.

The problem of the early 1960's, however, is not the choice of the ideal arrangement to control all farm output. It is rather to discover politically feasible ways to begin effective control.

## **A WHEAT SUPPLY CONTROL PROGRAM**

The major flaw of the wheat program of the 1950's was the open-end commitment by the federal government to support the price of all wheat which could be produced on a specified acreage at a pre-announced level. An equally important flaw was the failure to reduce total farm resource use, insuring increased feed grain production. If prices are to be maintained but stocks not accumulated, the wheat supply must be limited to the quantity which can be sold in the market near the support price. If other commodity supply and price problems are not to be worsened by improvement in the wheat program, wheat resources must be retired from use with the change in the wheat program.

### **The Marketing Quota**

For wheat prices from \$1.30 to \$2.40 per bushel (55 to 100 percent of parity), the expected demand is no greater than 700 million bushels a year for U.S. food and cash exports. It may be less. This quantity of wheat can be produced on 33 million harvested acres at the 1954-58 national average yield (21.3 bu. per acre). Only the public acting through Congress can determine what the national acreage and marketings should be if a supply control program is adopted. A bill introduced in the second session of the 86th Congress specified a marketing quota of 150 million bushels less than total domestic used and exports (S.3159). This appeared to be near 800 to 850 million bushels for the early 1960's, and would have permitted the disposal of surplus stocks in about five years.

A marketing quota distributed according to the 1958 acreage allotment and 1954-58 averaged yields by states is shown in table 28. Producers would be permitted to market 800 million bushels for milling and export, 73 percent of average yearly production from 1955 to 1959. In addition, about 100 million bushels would be used for seed and feed if the wheat price were somewhat above feed value. The expected U.S. wheat acreage would be near 42 million; about 38 million acres would be needed to produce the annual sales quota at 1954-58 yields (table 28).

On several counts, wheat is an ideal commodity with which to start an experimental supply control program in the early 1960's. Congress has debated bills including bushel quotas for several years. The total wheat supply may be



TABLE 28—WHEAT: HYPOTHETICAL ACREAGE ALLOTMENTS AND MARKETING QUOTAS, IF QUOTAS WERE DISTRIBUTED TO STATES ACCORDING TO THE 1958 DISTRIBUTION OF ACREAGE ALLOTMENTS AND AVERAGE WHEAT YIELDS, 1954-58.

	Acreage allotments			Marketing quota		Potential diversion <sup>d</sup> thousand acres
	1958 <sup>a</sup> thousand acres	1961 <sup>b</sup> thousand acres	% of U.S. allotment	Million bu. <sup>c</sup>	%	
Calif.	445	300	.8	6.5	.8	145
Colo.	2,705	1,840	4.9	32.1	4.0	865
Idaho	1,153	795	2.1	26.8	3.4	358
Ill.	1,387	939	2.5	29.2	3.7	448
Ind.	1,137	783	2.1	23.6	3.0	354
Kansas	10,638	7,249	19.3	140.5	17.6	3,389
Mich.	965	676	1.8	21.5	2.7	289
Minn.	730	488	1.3	11.0	1.4	242
Mo.	1,274	864	2.3	25.3	3.2	410
Mont.	4,058	2,779	7.4	57.8	7.2	1,279
Nebr.	3,228	2,216	5.9	56.1	7.0	1,012
New Mex.	474	338	.9	4.3	.5	136
N. Y.	316	225	.6	7.4	.9	91
N. C.	283	192	.5	4.3	.5	91
N. Dak.	7,310	4,995	13.3	85.1	10.6	2,315
Ohio	1,553	1,052	2.8	29.1	3.6	501
Okla.	4,860	3,305	8.8	52.6	6.6	1,555
Oregon	816	563	1.5	18.0	2.3	253
Penn.	588	413	1.1	11.5	1.4	175
S. Dak.	2,736	1,878	5.0	28.9	3.6	858
Texas	4,164	2,854	7.6	39.6	5.0	1,310
Utah	316	225	.6	4.7	.6	91
Va.	259	175	.5	4.3	.5	84
Wash.	2,014	1,390	3.7	46.2	5.8	624
Wyo.	292	197	.5	3.9	.5	95
Other states	1,283	827	2.2	29.7	3.6	456
Total, U.S.	54,984	37,558	100.0	800.0	100.0	17,426

- a. Table A5; states with less than one half of one percent of national allotment omitted.
- b. For illustration only; percentages in column 3, times implicit national acreage allotment of 37,558,000 harvested acres required to produce the sales quota at 1954-58 average yield of 21.3 bushels.
- c. Acreage allotment, column 2, times 1954-58 average yields by states.
- d. Column 1 minus column 2. About 4 million acres of this land would be used to produce wheat for seed and feed (at 1954-58 average level of wheat feeding), leaving 13 to 14 million acres to be taken from production.

three times needed carryover by the time a new program could begin, since the 1962 crop is the earliest which can be limited. High public costs of acquisition and storage add to the urgency of effective supply control. In addition, much land producing wheat in the Great Plains was first cultivated under the pull of wartime demands, as shown earlier. There is public support to return much of

that land to less intensive uses for conservation purposes, as well as to cut wheat production.

Since wheat harvested was near 55 million acres in the late 1950's, about 14 million acres recently producing wheat would be available for other uses after all market demands for wheat were met and 150 million bushels sold out of stocks (table 28, column 4 less 3 to 4 million acres for feed and seed). This acreage to be retired from cultivation would be located roughly as shown in table 28 (column 6), if marketing quotas were distributed on the basis of historic acreage or production. It would be concentrated in Kansas, Oklahoma, Texas, Montana, Nebraska, and Colorado, the states in which much new land was plowed in the 1940's. *But the retired acreage would be located in long-established wheat areas such as central Kansas, as well as in new producing areas, unless special methods were prescribed to concentrate the land diverted from wheat in the western-most areas of the Great Plains—those first cultivated in the last 20 years. Studies have indicated the desirability (for economic efficiency) of concentrating retired land in those areas (21). There are also important objections, from the standpoint of community problems arising out of changing land use.*

## **Farm Income**

If the aggregate income from wheat production were to be maintained or increased by a program such as detailed in table 28, either a higher wheat price or payments for land retirement would be required to offset reduced marketings. Without substantial direct treasury payments, either for land retirement or as outright income supplements, the price of wheat would have to be increased to near 100 percent of parity or \$2.40 per bushel if the aggregate gross income from wheat production were not to decline under the program outlined in table 28.

Yearly gross income from wheat other than seed, based on 1954-58 production and 1958-60 prices (table A1), has been about \$1,800 million. At the same price (\$1.75), gross income from an 800 million bushel marketing quota would be \$1,400 million, 78 percent of the recent average. Land excluded from producing wheat for sale would add to gross income through 50 to 70 million bushels fed annually (\$75 to \$100 million). About 14 million acres retired from cultivation for an average payment of \$15 per acre (for example) for a specified period would add \$210 million yearly to gross farm income.

Total gross income from wheat would thus be about \$1,700 million, 94 percent of the average in the late 1950's. If Congress did not authorize price increases to offset reduced marketings, wheat producers would absorb a small decrease in gross income and net income. *With an 800 million bushel quota and land retirement at \$15 per acre, a wheat price of about \$1.90 per bushel (80 percent of parity) would maintain aggregate incomes of wheat producers at about the level of the late 1950's.* If income from wheat production were to be increased, either larger treasury payments for land retirement, a substantially higher price for wheat, a

larger annual marketing quota, or some combination of these methods would be required.

### **Disposition of Stocks**

With a marketing quota of 800 million bushels, about half the annual demand to be shipped under Public Law 480, would be met from government-owned stocks. In five years stocks could be reduced to 500 million bushels if current rates of P.L. 480 shipments were continued. A larger marketing quota would lengthen the period of carryover reduction and increase the cost of its maintenance.

### **The Price Level**

The choice of a price level to go with the marketing quota described would rest with Congress, representing producers and consumers. It cannot be decided chiefly by formula, but a formula can be written to describe a price level negotiated politically which represents a compromise between divergent interests and includes a presumption of fairness in income distribution.

These points are relevant to the choice of a price level.

1. Wheat producers and their representatives will be reluctant to accept a cut in gross income from wheat, and will prefer a price support increase to offset the cut in marketings.
2. Consumers may expect that any substantial price increase will result in higher prices for cereal products at least equal to the increased cost of wheat to processors. This is confirmed by the 1933-35 experience and is not now seriously questioned. Consumer representatives may be expected, on the basis of experience, to oppose large and general farm price increases. An increase of one fourth in all farm prices (to 100 percent of parity as now defined) would cause food prices to rise about 10 percent and the consumer price index, a fairly sensitive indicator of consumer real income, to go up 2 or 3 percent.

There are far more significant forces producing inflation in the economy than farm prices, long deflationary. Yet, a public which lacks the ability to prevent most price increases, may be expected to try to exercise some of the authority it has over farm prices in order to hold food prices down.

3. A higher price for wheat with an excess supply equal to one year's needs is a major but not unprecedented contradiction. Clearly, higher wheat prices would be more defensible if the wheat surplus were gone.
4. Low-income people would pay a disproportionate share of the small added food cost resulting from a higher wheat price, since they eat more cereal foods (63.1). A few wheat producers with relatively large acreages (and possibly with relatively high incomes) would receive a large share of the proceeds. *Yet the increased cost per consumer per year would amount to less than \$2 even if the wheat price were raised one third (to 100 percent of parity). And only a small percentage of U.S. wheat is produced on what are commonly classed as "very large" farms.*

## An Alternative Allocation of Marketing Quotas

To allocate marketing quotas on the basis of past allotments (table 28), and without regard to the demand for wheat produced in different locations is an unsatisfactory procedure, but one now established. Marketings of soft red and white wheats would be cut at least as much as other classes even though they are not in surplus supply.

An alternative method of allocating the national marketing quota among states (and producers) would be on the basis of production history, not acreage allotments. Producers who did not use their acreage allotments under the program of the 1950's would not receive marketing quotas, for they would lack production history. Producers planting under the marketing quota exemption of the 1950's would receive marketing quotas based on credit for production under the exemption. This method of quota allocation shown in table 29 appears to

TABLE 29-WHEAT: HISTORIC PRODUCTION AND PROJECTED MARKETING QUOTAS IF QUOTAS WERE DISTRIBUTED ACCORDING TO UNADJUSTED PRODUCTION HISTORY; STATES WITH MORE THAN 0.5 PERCENT OF 1958 WHEAT ACREAGE ALLOTMENT.

	Average production 1950-59 <sup>a</sup> (thousand bu.)	Percent of production	Marketing quota (million bu.) <sup>b</sup>
California	9,793	.8	6.4
Colorado	37,818	3.5	28.0
Idaho	41,404	3.8	30.4
Illinois	45,025	4.1	32.8
Indiana	35,461	3.3	26.4
Kansas	180,356	16.6	133.0
Michigan	33,498	3.1	24.8
Minnesota	17,223	1.6	12.8
Missouri	35,951	3.3	26.4
Montana	92,709	8.5	68.0
Nebraska	80,380	7.4	59.2
New Mexico	1,758	.2	1.6
New York	10,305	.9	7.2
North Carolina	7,833	.7	5.6
North Dakota	112,717	10.3	82.4
Ohio	44,502	4.1	32.8
Oklahoma	66,618	6.1	48.8
Oregon	27,643	2.5	20.0
Pennsylvania	17,337	1.6	12.8
South Dakota	33,970	3.1	24.8
Texas	32,697	3.0	24.0
Utah	6,988	.6	4.8
Virginia	6,954	.6	4.8
Washington	71,521	6.6	52.8
Wyoming	5,979	.6	4.8
Other states	33,200	3.1	24.8
Total U. S.	1,089,640	100.0	800.0

a. (55) and (69); see also footnotes to table 28.

b. Column 3 times 800 million bushels.

cut Texas marketings by 40 percent (from the hypothetical quota of table 28), Colorado by 13 percent, and Kansas, Oklahoma, South Dakota and North Dakota by smaller amounts. Illinois, Michigan, Indiana, Ohio, Oregon, and Washington, chiefly soft red and white wheat states, would have larger shares of the marketing quota (tables 28 and 29 compared). Adjustments for abnormal conditions in the base years would change these results numerically, especially for Texas which had a sustained drought in the base period.

### **Negotiable Marketing Certificates**

The marketing quota distribution of table 29, however, would not key the location of marketing permits to demand. It would permit roughly the following wheat sales by classes (according to the 1954 distribution of production by classes):

1. Hard red winter: 400 million bu.; twice domestic food use, and far above food use plus cash exports.
2. Hard red spring: 155 million bu.; 125 percent of domestic food use.
3. Soft red winter: 110 million bu.; about 10 million bushels greater than domestic use but less than domestic use and cash exports.
4. White: 115 million bushels; more than double recent domestic food use, and enough for domestic use plus cash exports.
5. Durum: 15 million bushels; about 60 percent of usual domestic use.

Clearly, with an 800 million bushel marketing quota not transferable among farms and regions, a considerable acreage shift to soft red winter wheat, or substitution in use of other classes for soft red and durum, would be necessary. But if marketing certificates were made negotiable among producers and regions, the system could quickly adjust to the demand for wheat, even though the initial distribution did not conform to it. A wide array of suggestions for doing this have appeared, ranging from complete negotiability of privately-owned marketing rights at a price, to a requirement that the government own and assign such rights from year to year (21).

*It is important that some of the flexibility inherent in negotiable marketing rights be written into wheat legislation, if Congress chooses the supply control method.* Local and regional interests may find this difficult to accept, but safeguards to prevent immediate large-scale transfer of marketing rights among communities and states could be provided.

### **Multiple Price Plans**

Multiple-pricing plans for wheat, long proposed by several farm organizations, originally included unlimited production and marketing, and an administered price only on wheat used for food in the U.S. (13). In theory, the U.S. price would fall to the world price, and wheat produced in excess of domestic needs would be exported or fed. *In practice, neither the world nor the feed market can absorb appreciable quantities of wheat without stress. To avoid extremely low prices*

*and possible underselling of the International Wheat Agreement, any multiple-pricing plan for wheat in the early 1960's would have control of market supplies as its key feature.* This was recognized in the revised versions of the domestic parity (multiple-price) plan for wheat proposed to the 86th Congress as the Wheat Stabilization Plan (S.1484).

This version of the two-price plan for wheat included an 840 million bushel wheat marketing quota to be sold in the market at a price administered near \$1.55 per bushel. Five hundred million bushels would have been processed as food, and processors would have paid an additional \$0.80 per bushel to a government agency, which would have sent it to producers with domestic marketing quotas; producers would have received 100 percent of parity on about 60 percent of their marketings—65 percent of parity as the market price at the point of sale and 35 percent from processors via government. The average price for all sales under the marketing quota would have been about 85 percent of parity. Producers would have been paid to retire 10 to 12 million acres from production; they would have netted more from the reduced sales plus cash payments than from larger sales at lower prices in the late 1950's. Stocks would have been reduced by an expected 100 million bushels per year, since the proposed marketing quota was large enough to provide only part of the annual requirements of P.L. 480.

The benefits claimed for this program can be gained without reference to multiple pricing of the kind proposed and with only a small increase in the cost of wheat for milling. A single price support of 85 percent of parity (\$2.00) on marketing quota wheat, up only 20 cents per bushel or about 10 percent of parity from the 1958-60 price support, would yield about the same gross income as the two-price arrangement without the administrative complications of multiple pricing. This was recognized in S.3159 (86th Congress, second session), drafted by major farm groups which had formerly advocated other approaches.

A major objection to earlier multiple-pricing proposals, the size of the increase in the price of flour and bread, would have been only partly overcome by S.3159 since price increases would be passed on to consumers in any case. Also, the export subsidy for wheat, which would have continued and increased under S.3159, would be more costly under the single price proposal described here than under the 1954-60 wheat program.

### **Direct Treasury Payments to Wheat Producers**

Control of market supplies would also be the essential feature of any administrative arrangement built around direct payments to producers. If such payments were not to be a record burden on the treasury, marketings would need to be limited to prevent large price declines. Otherwise, the per unit payment required to bring returns to producers up to goals set by congress would be large and the total cost high. With marketings limited and prices maintained near goal levels, the role of treasury payments would be to compensate for large errors in setting marketing quotas resulting in large deviations from the goal

price. *Treasury payments would be occasional and minor in such a program; supply control would be the key factor.*

An alternative approach would be to control marketings only to the extent needed to hold prices near world levels—near \$1.20 per bushel on midwestern farms. The subsidy required now on cash exports would be ended, and the cost of wheat for food reduced by one third. Treasury payments would be used as major income supplements, and could be very costly. To provide an average return of about \$2 per bushel to farmers would require payments of about \$0.80 per bushel or from \$800 to \$900 million per year. Savings of \$100 million yearly on the export subsidy, \$200 to \$400 million per year on CCC acquisitions, and over \$300 million per year on wheat storage and handling, would partly offset the cost of direct payments.

## **A FREE MARKET FOR AGRICULTURE**

If the wheat program were ended, it would probably be as part of a general retreat from government activity in U.S. agriculture, not an isolated case of disillusionment with a commodity program. So many variations in procedure can be foreseen, it is useless to project a specific timetable of returning farm price setting to the market. Instead, a report prepared in 1960 for the Committee on Agriculture and Forestry of the U.S. Senate under a set of stated assumptions is summarized (50).

Major assumptions included both a stable general price level, no rise in prices paid by farmers and continued increases in population and personal income at rates of the late 1950's.

Important agricultural assumptions were that price supports would be reduced to levels which would permit stock reductions in 7 to 10 years, that foreign aid using farm products would continue at recent levels, and that 30 million acres would be in the conservation reserve. Both the conservation reserve and foreign aid tend to hold farm prices up, while reducing stocks (through sales) would reduce prices.

Effects on wheat production and prices were estimated as follows:

"Under the assumption of no acreage controls, the acreage seeded to wheat is projected to increase to 64 million acres in 1960 and then gradually decline to 61 million by 1965. The 61 million acres would be 8 percent above 1955-57 and 4 percent above 1959. These figures are not greatly different from those of other periods when acreage controls were not in effect, such as the 10-year period 1923-32 which preceded the inauguration of production-adjustment and price support programs or those of 1939, 1940, and 1943-45, years in which no marketing quotas were in effect and before the postwar increase in export demand. Harvested acreage is projected at 89 percent of seeded acreage and ranges from 57 million acres in 1960 to 54.3 acres in 1965. Projected yields per harvested acre increase from 21 bushels in 1960 to 23 in 1965. The resulting production figure for 1965 is 1,250 million bushels, compared with 963 million bushels in 1955-57.

age and ranges from 57 million acres in 1960 to 54.3 acres in 1965. Projected yields per harvested acre increase from 21 bushels in 1960 to 23 in 1965. The re-

sulting production figure for 1965 is 1,250 million bushels, compared with 963 million bushels in 1955-57.

"Including projected imports of 8 million bushels in 1960 and 2 million per year thereafter, total supply reaches a peak of 2,668 million bushels in the 1961 crop marketing year and then declines to 1,988 for the 1965 marketing year.

"Projected exports increase from 450 million bushels in 1960 to 550 million bushels in 1964 and 1965. This latter figure is 27 percent higher than 1955-57. These export projections assume that at competitive prices, the United States would capture most of the increase in the world export trade in wheat during the 1960-65 period. Total world trade in wheat and flour has been expanding at a rate of about 3 percent annually.

"Per capita food use is projected at present levels and total food use increases in line with the increase in population.

"Projected use of wheat as livestock feed increases sharply from current levels of 60 million bushels to 385 million bushels in 1965. The increase stems from the projected prices which are based on the price of wheat for export without subsidy. Producer prices at 90 cents per bushel during the 1961-65 period would be competitive with corn and would encourage large-scale feeding of wheat. The projected prices would be less than one half of the average for 1955-57.

"Projected cash receipts from wheat at \$976 million for 1965 would be about 56 percent of the 1955-57 average."

Applied to individual farm situations, those conditions would have the following results:

"Specialized wheat producers would be affected most adversely. A southern plains winter wheat farm with 335 acres of cropland which in 1955-57 produced 200 acres of wheat, 80 acres of sorghum grain, and 55 acres of other crops, under the conditions outlined above, would be expected to increase its wheat acreage 30 percent and reduce its acreage of other crops. Because of the lower prices, however, gross cash receipts *would drop by one third and net cash receipts by about 60 percent.*

"A wheat-fallow farm in the Pacific Northwest with 935 acres of cropland in 1955-57 producing 300 acres of wheat and 150 acres of feed crops, under the 1960-65 conditions outlined above would increase wheat production to about 400 acres and decrease feed grain production. However, the lower prices would cause a 40-percent drop in gross cash receipts and *a drop in net cash receipts of about 75 percent.*"

Other studies done in 1959-60 support these conclusions for wheat and farm products in general. No known studies dissent from them. Lacking recent experience with the free market situation assumed, we must rely on expert testimony of the type presented or choose public policy in the dark.



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TABLE A1-PRICE SUPPORT OPERATIONS.

Year begin- ning July 1	Production (all wheat) 1	Owned by CCC on July 1 2	Price support operation					National average price support level			Nat. av. price recd. by farmers comp. w/par.	
			Under price support			% of crop 6	Deliveries to CCC 7	Parity for price support <sup>a</sup> 8	Support rate per bushel 9	Support rate as % or parity 10	Season av. price recd. by farmers <sup>b</sup> 11	Price recd. by farmers as % of parity 12
			Loans 3	Purchase agreements 4	Total 5							
	(1000 bu.)	(1000 bu.)	(1000 bu.)	(1000 bu.)	(1000 bu.)	(%)	(1000 bu.)	(%)	(%)	(%)	(%)	
1932-33	756,307							1.10			.375	34
1933-34	552,215							.911			.736	81
1934-35	526,052							1.08			.839	78
1935-36	628,227							1.12			.827	74
1936-37	629,880							1.10			1.02	93
1937-38	873,914							1.21			.959	79
1938-39	919,913		85,745		85,745	9.3	15,723	1.14	.59	52	.556	49
1939-40	741,210	6,043	167,702		167,702	22.6	7,700	1.12	.63	56	.686	61
1940-41	814,646	1,605	278,430		278,430	34.2	173,661	1.13	.64	57	.674	60
1941-42	941,970	169,159	366,326		366,326	38.9	269,807	1.15	.98	85	.939	82
1942-43	969,381	319,689 <sup>c</sup>	408,136		408,136	42.1	184,031	1.34	1.14	85	1.09	81
1943-44	843,813	259,804 <sup>c</sup>	130,170		130,170	15.4	287	1.45	1.23	85	1.35	93
1944-45	1,060,111	99,075	180,413		180,413	17.0	72,858	1.50	1.35	90	1.41	94
1945-46	1,107,623	103,728	59,680		59,680	5.4	166	1.53	1.38	90	1.49	97
1946-47	1,152,118		21,987		21,987	1.9		1.65	1.49	90	1.90	115
1947-48	1,358,911		31,239		31,239	2.3	4	2.03	1.84	90	2.29	113
1948-49	1,294,911	1	254,027	111,996	366,023	28.3	290,865	2.22	2.00	90	1.98	89
1949-50	1,098,415	227,178	335,343	45,467	380,810	34.7	247,524	2.17	1.95	90	1.88	87
1950-51	1,019,344	327,654	188,372	8,575	196,947	19.3	41,891	2.21	1.99	90	2.00	90
1951-52	988,161	196,427	199,538	13,371	212,909	21.5	91,298	2.42	2.18	90	2.11	87
1952-53	1,306,440	143,333	398,639	61,305	459,944	35.2	397,731	2.45	2.20	90	2.09	85
1953-54	1,173,071	470,021	493,955	61,115	555,070	47.5	486,120	2.46	2.21	90	2.04	83
1954-55	983,900	774,613	401,173	28,856	430,029	43.8	391,617	2.49	2.24	90	2.12	85
1955-56	934,731	975,948	277,142	43,107	320,249	34.3	276,677	2.52	2.08	82.5	1.99	79
1956-57	1,004,272	950,723	234,888	18,344	253,232	25.2	148,000 <sup>e</sup>	2.42	2.00	82.6	1.97	81
1957-58	950,662	823,946	223,561	32,770	256,331	27.0	193,000 <sup>e</sup>	2.51	2.00	79.7	1.93	77
1958-59	1,461,714	834,921	564,127 <sup>d</sup>	44,897 <sup>d</sup>	609,499 <sup>d</sup>	41.7	515,000 <sup>e</sup>	2.43	1.82	75	1.72 <sup>d</sup>	71
1959-60	1,128,151 <sup>d</sup>	1,146,576	297,127 <sup>d</sup>	19,904 <sup>d</sup>	317,031 <sup>d</sup>	28.1	235,000 <sup>e</sup>	2.41	1.81	75	1.75 <sup>d</sup>	73 <sup>d</sup>

APPENDIX

(a) Generally mid-June parity prices. (b) State average prices weighted by sales to obtain national average. Prices for years in which there was substantial volume of deliveries to CCC from loans and purchase agreements include an allowance for such deliveries valued at average loan rates, (c) Mostly supply-program inventory. Records do not show price support and supply inventories separately. (d) Preliminary. (e) Estimated. SOURCE: U.S.D.A., CSS, Washington, June, 1959.

TABLE A2-AVERAGE PRICE PER BUSHEL RECEIVED BY FARMERS AND SUPPORT PRICE OF WHEAT, 1939-59.<sup>a</sup>

Year beginning	Price received by farmers													12 month average	Support price
	July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	July		
	(dollars)														
1939	.56	.54	.73	.70	.73	.82	.84	.84	.85	.89	.81	.67	.69	.63	
1940	.61	.60	.63	.68	.72	.72	.73	.68	.72	.76	.79	.83	.67	.64	
1941	.86	.88	.96	.91	.93	1.02	1.06	1.05	1.05	1.00	1.00	.96	.94	.98	
1942	.95	.95	1.03	1.04	1.04	1.10	1.18	1.20	1.23	1.22	1.23	1.24	1.09	1.14	
1943	1.26	1.27	1.30	1.35	1.37	1.43	1.46	1.46	1.46	1.47	1.47	1.43	1.35	1.23	
1944	1.39	1.35	1.35	1.42	1.43	1.45	1.46	1.47	1.48	1.49	1.49	1.50	1.41	1.35	
1945	1.46	1.45	1.45	1.51	1.53	1.54	1.54	1.55	1.58	1.58	1.70 <sup>b</sup>	1.74	1.49	1.38	
1946	1.87	1.78	1.79	1.88	1.89	1.93	1.91	1.99	2.44	2.40	2.39	2.18	1.90	1.49	
1947	2.14	2.10	2.43	2.66	2.74	2.79	2.81	2.12	2.21	2.29	2.22	2.11	2.29	1.84	
1948	2.03	1.96	1.97	1.98	2.04	2.05	2.02	1.94	1.98	2.00	2.00	1.86	1.98	2.00	
1949	1.82	1.79	1.87	1.89	1.90	1.93	1.92	1.93	1.98	2.01	2.04	1.93	1.88	1.95	
1950	1.99	1.97	1.94	1.90	1.94	2.02	2.09	2.21	2.12	2.14	2.11	2.08	2.00	1.99	
1951	2.05	2.05	2.07	2.10	2.19	2.22	2.20	2.18	2.20	2.18	2.13	2.06	2.11	2.18	
1952	1.98	2.04	2.09	2.07	2.13	2.12	2.10	2.04	2.10	2.08	2.06	1.88	2.09	2.20	
1953	1.87	1.86	1.92	1.94	2.00	2.01	2.03	2.06	2.09	2.06	2.00	1.91	2.04	2.21	
1954	2.00	2.03	2.07	2.08	2.12	2.12	2.14	2.13	2.12	2.09	2.13	2.06	2.12	2.24	
1955	1.97	1.90	1.92	1.94	1.94	1.95	1.95	1.95	1.97	2.03	2.00	1.93	1.99	2.08	
1956	1.90	1.93	1.95	1.98	2.05	2.07	2.09	2.07	2.07	2.05	1.98	1.91	1.97	2.00	
1957	1.91	1.90	1.90	1.92	1.93	1.94	1.90	1.92	1.96	1.95	1.93	1.70	1.93	2.00	
1958	1.64	1.64	1.69	1.73	1.74	1.73	1.71	1.74	1.76	1.77	1.77	1.69	1.75	1.82	
1959	1.70	1.75	1.72	1.76	1.79	1.79	1.78	1.80							

Source: U.S.D.A.

- a. U.S. monthly prices are the result of weighting monthly State prices by production through May 1957. Beginning June 1957, monthly. State prices are weighted by estimated sales for the month. U.S. marketing-year prices are the result of (1) weighting; State monthly prices by monthly sales to obtain State marketing-year averages and (2) weighting the State marketing-year average by total sales for each State. Includes an allowance for unredeemed loans at average loan values.
- b. Does not include bonus payment of 30 cents per bushel delivered under the Government purchase program.

TABLE A3-THE DISTRIBUTION OF SEEDED ACREAGE OF WHEAT IN THE UNITED STATES  
AMONG STATES AND REGIONS.

State and region	1918-20		1928-30		1938-40		1944-46		1948-50		1954	
	Acres (000)	% of U.S.	Acres (000)	% of U.S.	Acres (000)	% of U.S.	Acres (000)	% of U.S.	Acres (000)	% of U.S.	Acres (000)	% of U.S.
Virginia and W. Va.	1,226	1.7	756	1.1	731	1.1	632	0.9	568	0.7	364	0.6
New York	463	0.6	275	0.4	304	0.4	312	0.5	436	0.6	361	0.6
Pennsylvania	1,401	1.9	1,038	1.5	960	1.4	937	1.4	937	1.2	725	1.1
Eastern states	3,090	4.2	2,069	3.0	1,995	2.9	1,881	2.7	1,941	2.5	1,450	2.3
Ohio	2,819	3.9	1,973	2.9	2,134	3.1	2,019	2.9	2,309	3.0	1,759	2.8
Indiana	2,624	3.6	1,908	2.8	1,650	2.4	2,436	2.1	1,730	2.2	1,332	2.1
Illinois	3,806	5.2	2,666	3.9	2,030	3.0	1,341	2.0	1,753	2.3	1,608	2.6
Michigan	1,026	1.4	806	1.2	827	1.2	955	1.4	1,297	1.7	1,036	1.7
Wisconsin	444	0.6	104	0.1	101	0.1	75	0.1	111	0.1	66	0.1
Missouri	3,950	5.4	1,754	2.6	2,169	3.2	1,443	2.1	1,900	2.5	1,583	2.5
Iowa	1,042	1.4	486	0.7	471	0.7	170	0.2	338	0.4	132	0.2
Kentucky	732	1.0	271	0.4	512	0.8	473	0.7	400	0.5	316	0.5
Tennessee	614	0.8	315	0.4	435	0.6	395	0.6	327	0.4	261	0.4
Cornbelt states	17,057	23.3	10,283	15.0	10,329	15.1	8,307	12.1	10,165	13.0	8,093	12.9
Minnesota	3,260	4.5	1,521	2.2	1,932	2.8	1,283	1.9	1,124	1.5	754	1.2
North Dakota	10,108	13.9	10,594	15.4	8,588	12.7	10,204	14.9	10,056	13.0	8,201	13.1
South Dakota	3,760	5.2	3,813	5.6	3,258	4.8	3,455	5.0	3,990	5.1	2,812	4.5
Montana	3,677	5.1	4,663	6.8	4,215	6.3	4,310	6.3	5,463	7.0	4,935	7.9
Northern states	20,805	28.7	20,591	30.0	17,993	26.6	19,252	28.0	20,633	26.6	16,702	26.7
Nebraska	3,774	5.2	4,095	6.0	4,159	6.1	3,840	5.6	4,510	5.8	3,750	6.0
Kansas	11,115	15.3	13,198	19.2	14,335	21.1	13,752	20.0	14,895	19.2	11,738	18.8
Oklahoma	4,332	6.0	4,135	6.0	5,269	7.8	6,085	8.9	6,931	8.9	5,294	8.5
Texas	2,017	2.8	3,448	5.0	4,576	6.8	5,685	8.3	6,616	8.5	4,840	7.7
Colorado	1,000	1.4	2,047	3.0	1,493	2.2	1,818	2.6	3,420	4.4	3,204	5.1
S. Plains states	22,238	30.7	26,923	39.2	29,832	44.0	31,180	45.4	36,372	46.8	28,826	46.1
Idaho	1,157	1.6	1,319	1.9	1,094	1.6	1,174	1.7	1,501	1.9	1,305	2.1
Washington	2,556	3.5	2,975	4.3	2,279	3.4	2,647	3.9	2,969	3.8	2,313	3.7
Oregon	1,082	1.5	1,113	1.7	959	1.4	999	1.5	1,101	1.4	928	1.5
California	957	1.3	781	1.1	1,030	1.5	649	0.9	78	0.1	488	0.8
Western states	5,752	7.9	6,188	9.0	5,262	7.9	5,468	8.0	5,649	7.2	5,034	8.1
All other states	3,766	5.2	2,575	3.8	2,357	3.5	2,613	3.8	2,891	3.8	2,434	3.9
United States	72,708	100	68,629	100	67,868	100	68,702	100	77,651	100	62,539	100

State and region	1955		1956		1957		1958		1959	
	Acres (000)	% of U.S.	Acres (000)	% of U.S.	Acres (000)	% of U.S.	Acres (000)	% of U.S.	Acres (000)	% of U.S.
Virginia and W. Va.	328	0.5	335	0.6	302	0.6	289	0.5	324	0.5
New York	332	0.6	329	0.6	260	0.5	283	0.5	291	0.5
Pennsylvania	645	1.1	619	1.0	563	1.2	580	1.0	563	1.0
Eastern states	1,305	2.2	1,283	2.2	1,125	2.3	1,152	2.0	1,178	2.0
Ohio	1,513	2.6	1,604	2.6	1,524	3.1	1,532	2.7	1,578	2.7
Indiana	1,199	2.1	1,211	2.0	1,308	2.6	1,321	2.3	1,361	2.4
Illinois	1,592	2.7	1,639	2.7	1,787	3.6	1,742	3.1	1,777	3.0
Michigan	953	1.6	1,058	1.7	1,005	2.0	1,106	2.0	1,206	2.1
Wisconsin	57	0.1	57	0.1	57	0.1	64	0.1	68	0.1
Missouri	1,805	3.1	1,895	3.1	1,876	3.8	1,688	3.0	1,705	2.9
Iowa	111	0.2	141	0.2	148	0.3	162	0.3	169	0.3
Kentucky	291	0.5	297	0.5	294	0.6	250	0.4	275	0.5
Tennessee	243	0.4	243	0.4	243	0.5	160	0.3	206	0.4
Cornbelt states	7,764	13.3	8,145	13.3	8,242	16.5	8,025	14.3	8,345	14.4
Minnesota	645	1.1	755	1.2	727	1.5	816	1.4	1,018	1.8
North Dakota	7,350	12.6	7,551	12.4	6,545	13.1	6,512	11.6	6,751	11.6
South Dakota	2,542	4.4	2,737	4.5	2,047	4.1	2,425	4.3	2,686	4.6
Montana	44,774	8.2	5,757	9.5	4,341	8.7	4,497	8.0	4,586	7.9
Northern states	15,311	26.3	16,800	27.6	13,660	27.4	14,250	25.3	15,041	25.9
Nebraska	3,484	6.0	3,549	5.9	3,294	6.6	3,620	6.4	3,444	5.9
Kansas	10,799	18.5	10,907	18.0	7,199	14.4	10,870	19.3	10,870	18.7
Oklahoma	4,923	8.5	4,972	8.2	4,276	8.6	4,661	8.3	5,034	8.7
Texas	4,308	7.4	4,050	6.7	3,159	6.3	3,696	6.5	4,287	7.4
Colorado	3,266	5.6	3,139	5.2	2,054	4.1	3,006	5.4	2,842	4.9
S. Plains states	26,780	46.0	26,617	44.0	19,982	40.1	25,853	46.9	26,477	45.6
Idaho	1,267	2.2	1,343	2.2	1,223	2.4	1,333	2.4	1,247	2.2
Washington	2,076	3.6	2,550	4.2	1,964	3.9	2,065	3.7	2,115	3.6
Oregon	876	1.5	919	1.5	786	1.6	861	1.5	853	1.5
California	439	0.8	413	0.7	301	0.6	391	0.7	407	0.7
Western states	4,658	8.0	5,225	8.6	4,274	8.6	4,650	8.3	4,622	8.0
All other states	2,423	4.2	2,588	4.3	2,569	5.1	2,339	4.2	2,380	4.1
United States	58,241	100	60,658	100	49,852	100	56,269	100	58,043	100

Sources: (67, 55, 59).

TABLE A4-THE DISTRIBUTION OF WHEAT PRODUCTION IN THE UNITED STATES AMONG STATES AND REGIONS.

State and region	1869	1899	1918-20	1928-30	1938-40		1944-46		1948-50		1954	
	Percentage of U.S.				Million bushels	% of U.S.	Million bushels	% of U.S.	Million bushels	% of U.S.	Million bushels	% of U.S.
Virginia and W. Va.	3.4	2.0	1.6	1.3	9.9	1.2	10.7	1.0	9.7	0.8	8.2	0.8
New York	4.2	1.6	0.9	0.5	7.4	0.9	7.8	0.7	11.9	1.0	10.7	1.1
Pennsylvania	6.8	3.1	2.5	2.4	19.1	2.3	20.1	1.8	19.5	1.7	19.3	2.0
Eastern states	14.5	6.7	5.0	4.3	36.4	4.4	38.6	3.5	41.0	3.5	38.2	3.9
Ohio	9.7	7.6	5.1	2.7	42.2	5.1	50.9	4.6	54.7	4.7	47.0	4.8
Indiana	9.6	5.3	4.5	2.6	27.6	3.3	30.3	2.7	36.5	3.2	40.2	4.1
Illinois	10.5	3.0	6.5	3.9	40.0	4.8	22.8	2.1	38.5	3.3	47.8	4.9
Michigan	5.7	3.1	1.8	2.0	17.9	2.2	24.5	2.2	33.7	2.9	29.9	3.0
Wisconsin	8.9	1.4	0.9	0.3	1.6	0.2	1.7	0.2	2.5	0.2	1.6	0.2
Missouri	5.0	3.5	5.9	2.2	32.4	3.9	19.5	1.8	32.7	2.8	41.2	4.2
Iowa	10.2	3.5	1.9	1.0	8.0	1.0	3.0	0.3	6.7	0.6	2.1	0.2
Kentucky	2.0	2.2	1.0	0.3	5.9	0.7	5.7	0.5	4.7	0.4	5.4	0.5
Tennessee	2.2	1.8	0.6	0.4	4.7	0.6	5.1	0.4	4.3	0.4	4.1	0.4
Cornbelt states	63.8	31.4	28.2	15.4	180.3	21.8	163.5	14.8	214.3	18.5	219.3	22.3
Minnesota	6.6	14.5	4.9	2.5	30.1	3.7	23.0	2.1	18.0	1.6	10.4	1.1
North Dakota	--	9.1	9.4	13.7	80.4	9.7	152.0	13.7	126.0	10.9	69.2	7.0
South Dakota	--	6.4	4.3	4.2	24.2	2.9	47.2	4.2	39.4	3.4	27.1	2.8
Montana	0.1	0.3	3.6	5.9	54.2	6.6	64.9	5.8	83.1	7.2	82.9	8.4
Northern states	6.7	30.3	22.2	26.3	188.9	22.9	287.1	25.8	266.5	23.1	189.6	19.3
Nebraska	0.7	3.8	6.0	7.8	41.8	5.1	69.7	6.3	75.3	6.5	60.1	6.1
Kansas	0.8	5.9	14.2	18.4	131.3	15.9	204.2	18.4	191.2	16.5	176.2	17.9
Oklahoma	--	3.1	5.9	5.3	60.1	7.3	82.7	7.4	76.7	6.6	70.8	7.2
Texas	0.1	1.9	2.4	3.4	32.2	3.9	60.9	5.5	59.5	5.1	32.8	3.3
Colorado	0.1	0.8	2.3	2.3	14.5	1.8	30.4	2.7	50.4	4.4	18.6	1.9
S. plains states	1.7	15.5	30.8	37.2	279.9	34.0	447.9	40.3	453.1	39.1	358.5	36.4
Idaho	--	0.8	2.2	3.2	27.5	3.3	32.6	2.9	37.0	3.2	37.3	3.8
Washington	0.1	3.2	4.1	5.2	47.7	5.8	67.6	6.1	68.8	6.0	72.0	7.3
Oregon	0.8	2.2	2.2	2.7	18.4	2.2	23.4	2.1	25.6	2.2	26.2	2.7
California	5.8	5.5	1.4	1.6	12.8	1.6	11.2	1.0	11.9	1.0	9.2	0.9
Western states	6.7	11.7	9.9	12.7	106.4	12.9	134.8	12.1	143.3	12.4	144.7	14.7
All other states	6.6	4.4	3.9	4.1	33.2	4.0	39.2	3.5	40.0	3.4	33.9	3.4
United States	100	100	100	100	825.3	100	1,111.1	100	1,158.0	100	983.9	100



State and region	1955		1956		1957		1958		1959	
	Million bushels	% of U.S.	Million bushels	% of U.S.	Million bushels	% of U.S.	Million bushels	% of U.S.	Million bushels	% of U.S.
Virginia and W. Va.	7.6	0.8	8.1	0.8	5.3	0.6	6.9	0.5	7.0	0.6
New York	10.3	1.1	9.6	1.0	8.1	0.9	9.2	0.6	7.7	0.7
Pennsylvania	16.0	1.7	15.6	1.6	14.2	1.5	16.9	1.2	14.0	1.2
Eastern states	33.9	3.6	33.3	3.4	27.6	3.0	33.0	2.3	28.7	2.5
Ohio	43.4	4.6	39.7	4.0	32.9	3.5	46.3	3.2	33.0	2.9
Indiana	34.4	3.7	36.2	3.6	32.7	3.5	41.0	1.8	32.6	2.9
Illinois	52.0	5.6	60.9	6.1	36.5	3.8	53.4	3.7	42.3	3.8
Michigan	28.0	3.0	31.3	3.1	28.7	3.0	41.8	2.8	35.1	3.1
Wisconsin	1.4	0.1	1.4	0.1	1.4	0.1	2.1	0.1	1.9	0.2
Missouri	48.1	5.1	50.6	5.0	37.8	4.0	40.5	2.8	38.0	3.4
Iowa	3.6	0.4	2.4	0.2	3.9	0.4	4.8	0.3	2.9	0.2
Kentucky	4.0	0.5	5.5	0.6	4.0	0.4	3.9	0.3	4.5	0.4
Tennessee	3.4	0.4	4.7	0.5	3.5	0.4	2.7	0.2	3.7	0.3
Cornbelt states	218.3	23.4	232.7	23.2	181.4	19.1	236.5	16.2	194.0	17.2
Minnesota	12.2	1.3	17.2	1.7	15.8	1.7	25.3	1.7	23.3	2.1
North Dakota	109.3	11.7	118.8	11.8	119.2	12.5	147.4	10.1	97.2	8.6
South Dakota	17.5	2.9	16.5	1.6	40.0	4.2	55.7	3.8	18.2	1.6
Montana	109.4	11.7	87.0	8.7	81.9	8.6	101.9	7.0	82.1	7.3
Northern states	258.4	27.6	239.5	23.8	256.9	27.0	330.3	22.6	220.8	19.6
Nebraska	78.3	8.4	64.7	6.4	78.7	8.3	113.5	7.8	69.7	6.2
Kansas	128.4	13.7	143.3	14.4	100.1	10.5	296.5	20.2	209.7	18.6
Oklahoma	24.2	2.6	69.3	6.8	43.0	4.5	115.4	7.9	89.2	7.9
Texas	14.3	1.5	26.4	2.6	33.7	3.5	73.0	5.0	59.9	5.3
Colorado	17.7	1.9	17.7	1.8	36.5	3.8	67.2	4.6	54.8	4.8
S. plains states	262.9	28.1	321.4	32.0	292.0	30.7	665.6	45.5	483.3	42.8
Idaho	38.2	4.1	39.0	3.9	42.3	4.4	42.5	2.9	42.7	3.8
Washington	55.8	6.0	59.8	6.0	71.0	7.5	70.0	4.8	73.3	6.5
Oregon	21.9	2.3	25.6	2.5	26.8	2.8	28.0	1.9	28.5	2.5
California	8.9	1.0	8.3	0.8	6.2	0.7	8.2	0.6	8.7	0.8
Western state	124.8	13.4	132.7	13.2	146.3	15.4	148.7	10.2	153.2	13.6
All other states	36.8	3.9	44.8	4.4	46.3	4.8	47.5	3.1	48.2	4.3
United States	934.7	100	1,004.3	100	950.7	100	1,461.7	100	1,128.2	100

Sources: 1869 and 1899, from Grain Production and Marketing, USDA, P.M.A., Misc. Pub. No. 692, Oct., 1949; 1918-20, to 1956, from Agricultural Statistics, USDA; 1957-59, from Crop Production, Annual Summary, 1958 and 1959, USDA.

TABLE A5-WHEAT ACREAGE ALLOTMENTS AND PERCENTAGE OF NATIONAL ALLOTMENT IN EACH STATE, 1938-60.

State	1938		1942		1954		1958	1959	1960	
	Acres (000)	%	Acres (000)	%	Acres (000)	%	%	%	Acres (000)	%
Alabama	5.7	*	4.9	*	17.5	*	*	.1	35.2	.1
Arizona	35.4	*	33.1	*	22.6	*	*	*	30.0	.1
Arkansas	77.1	.1	57.2	.1	56.5	*	*	.1	57.6	.1
California	708.7	1.1	633.9	1.1	562.4	.9	.8	.8	429.0	.8
Colorado	1,504.6	2.4	1,303.2	2.3	2,899.1	4.6	4.9	4.9	2,677.0	4.9
Connecticut	**	**	**	**	.9	*	*	*	.6	*
Delaware	77.5	.1	65.3	.1	50.5	*	*	.1	34.2	.1
Florida	**	**	**	**	.8	*	*	*	4.1	*
Georgia	139.7	.2	139.4	.2	124.1	.2	.2	.2	109.1	.2
Idaho	1,011.6	1.6	865.2	1.6	1,277.4	2.0	2.1	2.1	1,164.9	2.1
Illinois	2,039.4	3.3	1,676.2	3.0	1,541.2	2.5	2.5	2.6	1,434.5	2.6
Indiana	1,690.0	2.7	1,411.5	2.5	1,324.3	2.1	2.1	2.1	1,137.1	2.0
Iowa	456.0	.7	372.7	.7	209.8	.3	.3	.3	143.1	.3
Kansas	12,519.9	20.0	11,371.8	20.4	11,874.8	18.9	19.3	19.2	10,636.3	19.3
Kentucky	382.5	.6	373.8	.7	222.4	.4	.4	.4	216.5	.4
Louisiana	**	**	**	*	3.9	*	*	*	14.7	*
Maine	6.0	*	4.0	*	1.7	*	*	*	1.4	*
Maryland	395.0	.6	340.9	.6	238.8	.4	.3	.3	179.2	.3
Massachusetts	**	**	**	**	.9	*	*	*	.7	*
Michigan	765.8	1.2	660.7	1.2	1,093.6	1.7	1.8	1.8	965.6	1.8
Minnesota	1,609.2	2.6	1,488.9	2.7	956.0	1.5	1.3	1.3	720.4	1.3
Mississippi	.1	*	**	*	27.8	*	*	.1	37.0	.1
Missouri	1,938.4	3.1	1,568.3	2.8	1,311.8	2.1	2.3	2.4	1,335.9	2.4
Montana	3,973.9	6.4	3,346.3	6.0	4,635.3	7.4	7.4	7.3	4,009.4	7.3
Nebraska	3,466.1	5.5	3,146.6	5.6	3,662.4	5.8	5.9	5.8	3,181.9	5.8
Nevada	13.1	*	13.7	*	16.0	*	*	*	12.4	*
New Hampshire	**	**	**	**	.1	*	*	*	.1	*
New Jersey	53.0	*	50.2	*	63.8	.1	*	.1	52.5	.1
New Mexico	356.7	.6	316.2	.6	502.7	.8	.9	.9	478.7	.9
New York	246.8	.4	218.7	.4	344.0	.5	.6	.6	320.6	.6
North Carolina	413.0	.7	364.7	.7	320.4	.5	.5	.5	295.9	.5

North Dakota	9,431.4	15.1	7,982.4	14.3	9,029.9	14.4	13.3	13.2	7,337.2	13.3
Ohio	1,870.4	3.0	1,636.3	2.9	1,758.4	2.8	2.8	2.8	1,535.7	2.8
Oklahoma	4,291.8	6.9	4,004.4	7.2	5,245.8	8.4	8.8	8.9	4,865.2	8.8
Oregon	867.9	1.4	756.3	1.4	898.6	1.4	1.5	1.5	833.4	1.5
Pennsylvania	873.1	1.4	757.6	1.4	723.1	1.2	1.1	1.1	568.5	1.0
Rhode Island	**	**	**	**	.7	*	*	*	.5	*
South Carolina	125.6	.2	136.3	.2	157.2	.3	.2	.3	138.2	.2
South Dakota	3,345.4	5.4	2,886.7	5.2	3,188.3	5.1	5.0	4.9	2,727.3	5.0
Tennessee	382.0	.6	337.0	.6	212.6	.3	.4	.4	193.1	.4
Texas	4,146.2	6.6	3,748.1	6.7	4,817.4	7.7	7.6	7.4	4,092.3	7.4
Utah	239.7	.4	211.2	.4	360.0	.6	.6	.6	309.3	.6
Vermont	.1	*	**	**	.4	*	*	*	.5	*
Virginia	546.7	.9	469.3	.8	318.7	.5	.5	.5	256.2	.5
Washington	1,912.5	3.1	1,656.7	3.0	2,264.9	3.6	3.7	3.6	1,997.5	3.6
West Virginia	130.1	.2	119.4	.2	56.5	*	*	.1	37.7	.1
Wisconsin	108.0	.2	86.1	1.5	73.5	.1	*	.1	47.1	.1
Wyoming	344.0	.6	295.9	.7	338.6	.5	.5	.5	285.0	.5
National reserve	.1	--	--	--	---	--	--	--	.1	.1
United States***	62,500.1	100.0	54,910.1	100.0	62,809.0	100.0	100.0	100.0	55,000.0	100.0

Source: U.S.D.A., Commodity Stabilization Service.

\*Less than .1 percent.

\*\*No allotment

\*\*\*The national allotment for 1938 was 62 million acres, but certain exceptions added about half a million acres. In 1954, an additional allotment of 8 or 9 million acres was made for durum wheat, above the announced allotment of 55 million acres.

TABLE A6-DISTRIBUTION OF SEEDED ACREAGE AND WHEAT PRODUCTION IN MINOR WHEAT-PRODUCING STATES,<sup>a</sup>

States	Average 1945-54				1954		1957		1958		1959			
	Acres		Prod.		Acres	Prod.	Acres	Prod.	Acres	Prod.	Acres		Prod.	
	(000)	(%)	(mill. bu.)	(%)	(000)	(mill. bu.)	(000)	(mill. bu.)	(000)	(mill. bu.)	(000)	(%)	(mill. bu.)	(%)
Delaware	62	.1	1.1	.1	37	.9	32	.6	31	.7	29	.1	.7	.1
Maryland	318	.4	5.8	.6	210	5.0	172	3.4	179	4.2	179	.3	4.0	.4
North Carolina	428	.6	7.0	.7	370	7.4	392	6.9	337	7.2	431	.7	9.4	.8
South Carolina	182	.2	2.8	.3	158	2.8	204	3.5	149	3.1	200	.3	3.9	.4
Georgia	154	.2	2.2	.2	127	2.2	124	1.8	77	1.6	122	.2	2.3	.2
New Jersey	103	.1	1.8	.2	85	1.7	62	1.5	67	1.8	66	.1	1.6	.1
East and Southeast	1,247	1.6	20.5	2.1	987	20.0	986	17.7	840	18.6	1,027	1.7	21.9	1.8
Alabama	18	.0	.3	.0	30	.5	162	2.3	133	2.3	80	.1	1.4	.2
Mississippi	26	.0	.4	.0	45	.8	190	3.5	162	1.9	50	.1	.9	.1
Arkansas	54	.1	.7	.1	84	1.7	210	3.3	155	2.3	186	.3	3.6	.3
Louisiana	--	--	--	--	--	--	132	1.3	70	.7	84	.1	1.2	.1
Southern states	98	.1	1.4	.1	159	7.8	694	10.4	520	7.2	400	.7	7.1	.8
Wyoming	378	.5	6.1	.6	355	2.9	317	6.4	533	8.1	293	.5	5.5	.5
New Mexico	615	.8	2.9	.3	528	.8	194	2.2	233	3.8	285	.5	3.8	.3
Arizona	25	.0	5.5	.5	17	.4	69	2.3	130	3.9	109	.2	3.7	.3
Utah	406	.6	8.0	.8	374	6.5	291	6.6	273	5.1	244	.4	5.4	.5
Nevada	19	.0	.5	.1	14	.3	18	.6	20	.8	22	.1	.8	.1
Western states	1,443	1.9	23.0	2.3	1,288	10.9	889	18.1	979	21.7	953	1.6	19.2	1.7
All minor states	2,788	3.5	44.9	4.5	2,434	33.9	2,569	46.3	2,339	47.5	2,380	4.1	48.2	4.3
United States	75,126	100	983.9	100	62,539	983.9	49,852	950.7	56,269	1,461.7	58,043	100	1,128.2	100

Source: (59).

a. Seven states (of 48) do not produce wheat, according to U.S.D.A. data.

TABLE A7-ESTIMATED HARD RED WINTER SEEDED ACREAGE, BY STATES,  
AT FIVE-YEAR INTERVALS, 1919-1954.

State	1924		1934		1944		1954	
	Seeded acreage (1000 acres)	% of total	Acreage	% of total	Acreage	% of total	Acreage	% of total
United States	22773	100.0	28731	100.0	30596	100.0	34959	100.0
Arizona	a	b	a	b	5	b	5	b
Arkansas	2	b	7	b	1	b	10	b
California	7	b	5	b	3	b	---	---
Colorado	1163	5.1	1319	4.6	1405	4.6	3137	9.0
Idaho	240	1.1	307	1.1	396	1.3	560	1.6
Illinois	1396	6.1	861	3.0	294	1.0	1034	3.0
Indiana	232	1.0	303	1.1	195	.6	53	.2
Iowa	402	1.8	343	1.2	143	.5	112	.3
Kansas	9725	42.7	11962	41.6	12317	40.3	11714	33.5
Kentucky	a	b	5	b	4	b	11	b
Maryland	---	---	---	---	---	---	---	---
Michigan	3	b	6	b	*	*	11	b
Minnesota	103	.5	175	.6	152	.5	43	.1
Mississippi	---	---	---	---	2	b	---	---
Missouri	193	.8	102	.4	111	.4	863	2.5
Montana	637	2.8	747	2.6	1246	4.1	1589	4.5
Nebraska	2953	13.0	3059	10.7	3575	11.7	3705	10.6
Nevada	4	b	2	b	3	b	---	---
New Jersey	---	---	---	---	---	---	2	---
New Mexico	197	.9	345	1.2	307	1.0	518	1.5
New York	a	b	---	---	---	---	.4	---
North Dakota	17	.1	18	.1	*	*	41	.1
Ohio	10	b	6	b	6	b	7	b
Oklahoma	3304	14.5	3687	12.8	4987	16.3	5257	15.0
Oregon	254	1.1	234	.8	117	.4	47	.1
Pennsylvania	1	b	1	b	3	b	12	b
South Dakota	84	.4	173	.6	202	.7	419	1.2
Tennessee	---	---	---	---	---	---	5	b
Texas	1121	4.9	4185	14.6	4103	13.4	4704	13.4
Utah	112	.5	133	.5	158	.5	250	.7
Virginia	---	---	---	---	---	---	---	---
Washington	543	2.4	585	2.0	666	2.2	509	1.5
West Virginia	---	---	---	---	---	---	.4	---
Wisconsin	50	.2	18	.1	37	.1	6	b
Wyoming	19	.1	143	.5	158	.5	296	.8

\* Indicates the class was grown but occupied less than 1/10 of 1 percent of the states state's total wheat acreage.

a Less than 500 acres.

b Less than 1/10 of 1 percent

TABLE A8-ESTIMATED HARD RED SPRING SEEDED ACREAGE, BY STATES,  
AT FIVE-YEAR INTERVALS, 1919-1954.

State	1924		1934		1944		1954	
	Seeded acreage (1,000 acres)	% of total	Acreage	% of total	Acreage	% of total	Acreage	% of total
United States	11875	100.0	14652	100.0	15794	100.0	13383	100.0
Arizona	1	b	1	b	---	---	---	---
Arkansas	---	---	---	---	---	---	---	---
California	5	b	---	---	---	---	---	---
Colorado	218	1.8	288	2.0	178	1.1	64	.5
Idaho	128	1.1	58	.4	54	.3	95	.7
Illinois	35	.3	18	.1	8	b	5	b
Indiana	2	b	*	*	1	b	---	---
Iowa	54	.5	25	.2	6	b	18	.1
Kansas	*	*	25	.2	13	.1	---	---
Kentucky	---	---	1	b	---	---	---	---
Michigan	2	b	3	b	2	b	1	b
Minnesota	1477	12.4	1401	9.6	1114	7.1	692	5.2
Missouri	---	---	---	---	---	---	2	b
Montana	2383	20.1	2885	19.7	3045	19.3	3311	24.7
Nebraska	92	.8	254	1.7	89	.6	38	.3
Nevada	2	b	a	b	1	b	---	---
New Jersey	---	---	---	---	---	---	---	---
New Mexico	9	.1	15	.1	23	.1	10	b
New York	4	b	4	b	3	b	---	---
North Dakota	5864	49.4	7175	49.0	8363	53.0	6692	50.0
Ohio	2	b	4	6	---	---	2	b
Oklahoma	---	---	---	---	---	---	21	.1
Oregon	54	.5	36	.2	10	b	20	.1
Pennsylvania	---	---	*	*	*	*	1	b
South Dakota	1279	10.8	2206	15.1	2757	17.5	2326	17.4
Tennessee	---	---	---	---	---	---	1	b
Texas	18	.2	5	b	---	---	14	.1
Utah	7	.1	4	b	---	---	---	---
Virginia	---	---	---	---	---	---	---	---
Washington	75	.6	38	.2	13	b	2	b
West Virginia	---	---	---	---	---	---	---	---
Wisconsin	60	.5	102	.7	30	.2	45	.3
Wyoming	104	.9	105	.7	84	.5	47	.3

\* Indicates the class was grown but occupied less than 1/10 of 1 percent of the state's total wheat acreage.

a Less than 500 acres.

b Less than 1/10 of 1 percent.

TABLE A9—ESTIMATED SOFT RED WINTER SEEDING ACREAGE, BY STATES,  
AT FIVE-YEAR INTERVALS, 1919 - 1954.

State	1924	1934		1944		1954		
	Seeded acreage (1,000 acres)	% of total	Acreage	% of total	Acreage	% of total	Acreage	% of total
United States	12884	100.0	12874	100.0	11329	100.0	7442	100.0
Alabama	8	b	10	b	18	2	30	4
Arkansas	32	.2	66	.5	64	.6	74	1.0
California	---	---	---	---	---	---	---	---
Colorado	4	b	2	b	*	*	*	*
Delaware	102	.8	83	.6	68	.6	37	.5
Georgia	121	.9	177	1.4	243	2.1	127	1.7
Idaho	43	.3	35	.3	14	.1	*	*
Illinois	1279	9.9	1216	9.4	1024	9.0	555	7.5
Indiana	1624	12.6	1580	12.3	1141	10.1	1268	17.0
Iowa	7	b	1	b	---	---	2	b
Kansas	491	3.8	711	5.5	773	6.8	23	.3
Kentucky	284	2.2	435	3.4	51	.4	305	4.1
Maryland	505	3.9	416	3.2	401	3.5	210	2.8
Michigan	586	4.5	415	3.2	339	3.0	175	2.4
Minnesota	*	*	2	b	---	---	4	b
Mississippi	6	b	---	---	23	.2	45	.6
Missouri	1703	13.2	1574	12.2	1473	13.0	709	9.5
Montana	16	.1	26	.2	4	b	*	*
Nebraska	44	.4	37	.3	37	.3	8	.1
New Jersey	55	.4	53	.4	74	.6	81	1.1
New Mexico	1	b	---	---	---	---	*	*
New York	31	.2	53	.4	26	.2	8	.1
North Carolina	346	2.7	494	3.8	574	5.1	370	5.0
Ohio	2030	15.8	1986	15.4	2037	18.0	1734	23.3
Oklahoma	533	4.1	630	4.9	219	1.9	16	.2
Oregon	25	.2	33	.2	2	b	1	b
Pennsylvania	1163	9.0	988	7.7	920	8.1	697	9.4
South Carolina	58	.4	163	1.3	290	2.6	158	2.1
Tennessee	360	2.8	435	3.4	491	4.3	254	3.4
Texas	255	2.0	323	2.5	258	2.3	106	1.4
Utah	5	b	4	b	4	b	---	---
Virginia	632	4.9	617	4.8	574	5.1	310	4.2
Washington	404	3.1	147	1.1	70	.6	12	.2
West Virginia	124	1.0	160	1.2	113	1.0	54	.7
Wisconsin	6	b	1	b	2	b	15	.2
Wyoming	1	b	1	b	1	b	.4	b

\*Indicates the class was grown, but occupied less than 1/10 of 1 percent of the state's total wheat acreage.

<sup>a</sup>Less than 500 acres.

<sup>b</sup>Less than 1/10 of 1 percent.

TABLE A10-ESTIMATED WHITE SEEDED ACREAGE, BY STATES, AT FIVE-YEAR INTERVALS, 1919 - 1954.

State	1924		1934		1944		1954	
	Seeded acreage (1,000 acres)	% of total	Acreage	% of total	Acreage	% of total	Acreage	% of total
United States	3798	100.0	4824	100.0	5053	100.0	5191	100.0
Arizona	32	.8	56	1.2	20	.4	12	.2
Arkansas	a	b	---	---	---	---	---	---
California	807	21.2	843	17.5	593	11.7	488	9.4
Colorado	32	.8	43	.9	8	.2	3	b
Delaware	---	---	a	b	---	---	---	---
Idaho	451	11.9	606	12.6	592	11.7	650	12.5
Illinois	*	*	---	---	9	.2	14	.3
Indiana	2	b	4	b	---	---	11	.2
Iowa	---	---	2	b	a	b	---	---
Kansas	*	*	---	---	---	---	---	---
Kentucky	---	---	*	*	1	b	---	---
Michigan	218	5.7	476	9.9	656	13.0	848	16.3
Minnesota	*	*	14	.3	---	---	---	---
Missouri	---	---	---	---	---	---	9	.2
Montana	35	.9	49	1.1	30	.6	15	.3
Nebraska	6	.2	---	---	*	*	---	---
Nevada	8	.2	10	.2	13	.2	14	.3
New Jersey	a	b	---	---	1	b	2	b
New Mexico	18	.5	9	.2	4	b	---	---
New York	305	8.0	228	4.7	308	6.1	353	6.8
North Carolina	14	.4	15	.3	14	.3	a	b
North Dakota	*	*	18	.4	*	*	---	---
Ohio	21	.6	49	1.0	14	.3	16	.3
Oklahoma	---	---	---	---	---	---	---	---
Oregon	626	16.5	756	15.7	847	16.8	859	16.5
Pennsylvania	9	.2	1	b	17	.3	15	.3
South Dakota	5	.1	79	1.6	39	.8	---	---
Tennessee	---	---	---	---	---	---	.8	b
Texas	1	b	4	b	*	*	---	---
Utah	91	2.4	102	2.1	130	2.6	124	2.4
Virginia	---	---	---	---	---	---	a	b
Washington	1116	29.4	1455	30.2	1753	34.8	1790	34.5
West Virginia	a	b	---	---	a	b	---	---
Wisconsin	---	---	a	b	---	---	a	b
Wyoming	1	b	4	b	3	b	11	.2

\*Indicates the class was grown but occupied less than 1/10 of 1 percent of the state's total wheat acreage.

<sup>a</sup>Less than 500 acres.

<sup>b</sup>Less than 1/10 of 1 percent.



TABLE A11-ESTIMATED DURUM WHEAT SEEDED ACREAGE, BY STATES, AT FIVE-YEAR INTERVALS, 1919 - 1954.

State	1924	1934		1944		1954		
	Seeded acreage (1,000 acres)	% of total	Acreege	% of total	Acreege	% of total	Acreege	% of total
United States	4370	100.0	2866	100.0	2180	100.0	1563	100.0
Arizona	a	b	a	b	---	---	---	---
California	8	.2	*	*	---	---	---	---
Colorado	87	2.0	13	.4	---	---	---	---
Idaho	*	*	---	---	---	---	---	---
Illinois	*	*	*	*	---	---	---	---
Indiana	*	*	---	---	---	---	---	---
Iowa	5	.1	3	.1	a	b	---	---
Kansas	10	.2	---	---	---	---	---	---
Kentucky	---	---	---	---	---	---	---	---
Michigan	---	---	---	---	---	---	---	---
Minnesota	136	3.1	144	5.0	64	2.9	15	1.0
Missouri	---	---	---	---	2	b	---	---
Montana	128	2.9	30	1.0	30	1.4	20	1.3
Nebraska	86	2.0	34	1.2	4	.2	---	---
New Mexico	11	.2	2	b	---	---	---	---
New York	---	---	---	---	---	---	---	---
North Dakota	2793	63.9	1999	69.7	1799	82.5	1468	93.9
Oklahoma	---	---	---	---	---	---	---	---
South Dakota	1049	24.0	577	20.1	257	11.8	67	4.3
Texas	30	.7	32	1.1	18	.8	14	.9
Utah	---	---	---	---	---	---	---	---
Washington	*	*	---	---	---	---	---	---
Wisconsin	2	b	2	b	a	b	1	b
Wyoming	24	.5	30	1.0	6	.3	---	---

\*Indicates the class was grown but occupied less than 1/10 of 1 percent of the state's total wheat acreage.

<sup>a</sup>Less than 500 acres.

<sup>b</sup>Less than 1/10 of 1 percent.

TABLE A12-ESTIMATED SUPPLY AND DISTRIBUTION OF WHEAT, BY CLASSES,  
CONTINENTAL UNITED STATES, 1952-59.

Item	Year beginning July							
	1952	1953	1954	1955	1956	1957	1958	1959 <sup>a</sup>
	(million bushels)							
<b>All wheat</b>								
Stocks, July 1	256	606	934	1,036	1,033	909	881	1,295
Production	1,306	1,173	984	935	1,004	951	1,462	1,128
Imports	22	6	4	10	8	11	8	7
Supply	1,584	1,785	1,922	1,981	2,045	1,871	2,351	2,430
Exports <sup>b</sup>	321	220	278	350	549	406	447	516
Carryover	606	934	1,036	1,033	909	881	1,295	1,313
Domestic disappearance	657	631	608	598	587	584	609	601
<b>Hard red winter</b>								
Stocks, July 1	97	395	560	677	691	648	613	940
Production	723	504	489	416	446	425	838	619
Supply	820	899	1,049	1,093	1,137	1,073	1,451	1,559
Exports <sup>b</sup>	184	78	124	164	251	219	259	296
Carryover	395	560	677	691	648	613	940	999
Domestic disappearance	241	261	248	238	238	241	252	264
<b>Soft red winter</b>								
Stocks, July 1	16	38	70	50	17	10	6	21
Production	193	231	185	173	187	159	195	163
Supply	209	269	255	223	204	169	201	184
Exports <sup>b</sup>	40	56	62	69	60	30	43	41
Carryover	38	70	50	17	10	6	21	11
Domestic disappearance	131	143	143	137	134	133	137	132
<b>Hard red spring</b>								
Stocks, July 1	117	128	195	172	185	196	203	251
Production	181	217	145	184	178	167	233	152
Imports	22	6	4	10	8	11	8	7
Supply	320	351	344	366	371	374	444	410
Exports <sup>b</sup>	17	11	28	29	35	38	46	50
Carryover	128	195	172	185	196	203	251	225
Domestic disappearance	175	145	144	152	140	133	147	135
<b>Durum</b>								
Stocks, July 1	15	7	5	2	7	13	25	18
Production	23	14	5	20	39	40	22	21
Imports	---	---	---	---	---	---	---	---
Supply	38	21	10	22	46	53	47	39
Exports <sup>b</sup>	3	---	---	1	11	1	1	1
Carryover	7	5	2	7	13	25	18	13
Domestic disappearance	28	16	8	14	22	27	28	25
<b>White</b>								
Stocks, July 1	11	38	104	135	133	42	34	65
Production	186	207	160	142	154	160	174	173
Supply	197	245	264	277	287	202	208	238
Exports <sup>b</sup>	77	75	64	87	192	117	98	128
Carryover	38	104	135	133	42	34	65	65
Domestic disappearance	82	66	65	57	53	50	45	45

Source: (69, Aug. 1959 and Feb. 1960).

a. Preliminary.

b. In addition to wheat grain, includes grain equivalent of flour made from U.S. wheat; also semolina and macaroni (in terms of wheat) for years beginning July, in million bushels, as follows: 1944, 2; 1945, 1; 1946, 3; 1947, 6; 1948, 1; 1949-55, less than 1 and 1956-58, 1. Also includes shipments to territories of the United States.

TABLE A13-WHEAT: SUPPLY AND DISAPPEARANCE, UNITED STATES, 1909-59.

Year beginning July	Supply				Disappearance						
	Carryover	Production	Imports <sup>a</sup>	Total	Continental United States					Exports	Total disappearance
					Processed for food <sup>b</sup>	Seed	Industrial <sup>a</sup>	Feed or residual	Total		
						Million bushels					
1909	55	684	4	743	483	70		- 5	543	89	633
1910	110	625	4	739	485	73		-15	543	71	614
1911	125	618	5	748	492	75		- 7	557	81	638
1912	110	730	4	841	492	73		10	574	145	719
1913	125	751	5	882	498	76		47	618	148	767
1914	115	897	2	1,015	501	81		30	612	336	948
1915	67	1,009	7	1,083	503	80		27	612	246	858
1916	225	635	25	884	510	79		29	598	206	804
1917	80	620	31	731	453	87		19	558	133	691
1918	40	904	11	955	455	97		25	583	288	870
1919	85	952	6	1,043	525	90		81	650	222	873
1920	170	843	58	1,071	407	89		31	578	370	947
1921	124	819	11	954	485	88		9	582	277	858
1922	96	847	11	953	482	86		37	605	216	821
1923	132	759	14	906	491	74		56	622	146	769
1924	137	842	1	979	491	80		42	615	256	871
1925	108	669	2	779	510	79		- 3	588	94	683
1926	97	832		929	513	83		14	613	207	820
1927	109	875	1	985	514	90		76	680	192	873
1928	113	914		1,027	517	84		53	656	144	801
1929	227	824		1,051	512	83		22	619	141	760
1930	291	887		1,178	501	81		170	754	112	866
1931	313	942		1,254	499	80	3	172	756	123	879
1932	375	756		1,132	510	84		128	722	32	754
1933	378	522		930	466	78		87	731	26	657
1934	273	526	14	813	476	83		97	657	11	667
1935	146	628	35	809	493	87		83	664	4	668
1936	140	630	35	805	496	96		100	693	10	702
1937	83	874	1	958	497	93		115	704	100	805
1938	153	920		1,073	500	74		142	716	107	823

TABLE A13-CONTINUED

Year beginning July	Supply				Disappearance						
	Carryover	Production	Imports <sup>a</sup>	Total	Continental United States			Total	Exports	Total disappearance	
					Processed for food <sup>b</sup>	Seed	Industrial <sup>a</sup>				Feed or residual
1939	250	741		992	492	73		101	667	45	712
1940	280	815	4	1,098	493	74		112	679	34	713
1941	385	942	4	1,330	492	62	2	114	672	28	700
1942	631	969	1	1,601	529	65	54	306	955	28	982
1943	619	844	136	1,599	536	77	108	511	1,240	43	1,283
1944	317	1,060	42	1,419	537	80	83	300	996	144	1,140
1945	279	1,108	2	1,389	498	82	21	297	998	391	1,289
1946	100	1,152		1,252	508	87		178	771	397	1,168
1947	84	1,359		1,443	488	91	1	178	761	486	1,247
1948	196	1,295	2	1,492	481	95		105	681	504	1,185
1949	307	1,098	2	1,408	492	81		111	684	299	983
1950	425	1,019	12	1,456	493	88		109	690	366	1,056
1951	400	988	32	1,420	496	88	1	102	688	475	1,164
1952	256	1,306	22	1,584	489	89		82	661	317	978
1953	606	1,173	6	1,784	487	70		77	634	217	851
1954	934	984	4	1,922	486	65		60	611	274	885
1955	1,036	935	10	1,981	482	68	1	51	601	346	947
1956	1,033	1,004	8	2,046	483	58	1	47	587	550	1,137
1957	909	951	11	1,870	484	63		39	587	403	989
1958	881	1,462	8	2,351	493	65		54	612	443	1,055
1959	1,295	1,128	7	2,430	492	64		49	605	512	1,117

Source: U.S.D.A.

a. Less than one half million bushels imported or used by industry where no quantity shown.

b. Includes shipments to territories and military uses but not military relief feeding.

TABLE A14-PER CAPITA CONSUMPTION OF WHEAT FLOUR, AND TOTAL PER CAPITA WHEAT DISAPPEARANCE FOR CIVILIAN FOOD, 1910-56.

Year	Disappearance		Year	Disappearance	
	Flour (lbs. per capita)	for food		Flour (lbs. per capita)	for food
1910	216	310	1935	159	225
1911	214	310	1936	164	235
1912	211	306	1937	159	228
1913	209	302	1938	161	229
1914	207	301	1939	159	225
1915	205	299	1940	156	220
1916	204	298	1941	156	221
1917	191	272	1942	157	223
1918	179	247	1943	164	229
1919	193	277	1944	150	211
1920	180	263	1945	162	230
1921	167	245	1946	157	214
1922	181	259	1947	140	196
1923	181	260	1948	138	194
1924	180	256	1949	137	193
1925	181	260	1950	136	192
1926	183	259	1951	134	190
1927	181	260	1952	133	188
1928	179	255	1953	129	182
1929	178	254	1954	127	178
1930	172	247	1955	124	174
1931	169	240	1956	122	170
1932	170	242	1957	120	167
1933	164	232	1958	120	167
1934	157	222	1959	119	166

Sources: (65, 69) Consumption figures for most items are measured at the processing level; quantities used in alcoholic beverages excluded; civilian consumption only, beginning in 1941.

TABLE A15-CONSUMER PRICE INDEX: AVERAGE ANNUAL INDEXES FOR ALL FOODS, AND FOR FOOD GROUPS, 1923-56 (1923=100).

Year	Food for Home Use					
	All foods	Meats poultry, and fish	Eggs	Dairy products	Fruits and vegetables	Cereals and bakery products
1923	100	100	100	100	100	100
1924	99	101	102	96	94	102
1925	107	110	111	99	109	110
1926	111	116	104	98	124	110
1927	107	114	98	101	108	107
1928	106	122	101	101	95	104
1929	107	125	106	101	100	102
1930	102	118	89	93	105	99
1931	84	100	70	79	74	87
1932	70	78	60	66	61	78
1933	68	68	57	64	67	80
1934	76	78	65	70	70	93
1935	81	99	77	75	59	96
1936	82	98	76	78	62	95
1937	85	104	74	81	64	98
1938	79	98	74	77	55	95
1939	77	95	67	74	56	90
1940	78	94	69	78	57	92
1941	85	106	82	87	61	93
1942	100	124	100	97	77	100
1943	111	132	119	104	100	102
1944	110	128	112	103	99	103
1945	112	130	121	103	104	103
1946	129	159	124	128	108	118
1947	156	214	148	144	118	147
1948	170	243	153	158	121	162
1949	163	230	148	144	123	161
1950	165	240	128	143	118	164
1951	183	269	155	159	128	179
1952	187	266	142	166	141	183
1953	183	252	150	163	137	187
1954	182	248	126	158	135	191
1955	179	233	130	158	137	194
1956	179	223	129	162	143	197

Source: (65, p. 58).

TABLE A16-POPULATION, REAL PER CAPITA INCOMES, PER CAPITA CONSUMPTION OF BREAD GRAINS AND TOTAL BREAD GRAIN REQUIREMENTS IN SELECTED COUNTRY GROUPS, PREWAR, 1950-51, AND 1954-55.

Country groupings<sup>a</sup>

	A	B	C	D	E	Total 23 countries
<u>Population (millions)</u>						
Prewar <sup>b</sup>	140.9	168.5	66.5	24.6	399.9	800.4
1950-51	165.2	188.9	76.2	29.7	477.5	937.5
1954-55	176.7	193.8	80.1	32.4	504.6	987.6
<u>Per capita incomes (1953 U.S. dollars)</u>						
Prewar <sup>b</sup>	--	--	--	--	--	--
1950-51	1,712	623	230	716	73	--
1954-55	1,798	717	267	650	93	--
<u>Per capita consumption bread grain (60 pound bushels per year)</u>						
Prewar <sup>c</sup>	3.74	4.73	6.17	4.84	0.73	2.72
1950-51	3.23	4.55	6.20	4.95	1.06	2.68
1954-55	3.01	4.29	6.17	4.51	1.06	2.57
<u>Total bread grain requirements (million bushels per year)</u>						
Prewar	525.4	801.0	411.5	117.6	301.3	2,156.9
1950-51	536.5	859.8	470.3	147.0	514.4	2,528.0
1954-55	532.8	834.1	496.0	147.0	536.5	2,546.4

Source: (43, p. 8).

a. (A) Canada and the United States; (B) Austria, Belgium-Luxembourg, Denmark, France, the Netherlands, Sweden, Switzerland, the United Kingdom and Western Germany; (C) Greece, Italy and Turkey; (D) Argentina, Australia, New Zealand and Uruguay; (E) Egypt, India, Japan and the Union of South Africa.

b. 1937.

c. Average 1934-38 except for Australia 1936-37 and 1938-39; Egypt 1934-35 and 1938-39; Greece and Western Germany 1935-38; Canada, New Zealand and U. South Africa 1935-39; and the United States 1937-41.

TABLE A17-PROJECTED DEMAND FOR BREAD GRAINS AS HUMAN FOOD IN  
SELECTED COUNTRY GROUPINGS (TARGET YEAR 1965).<sup>a</sup>

	Country groupings <sup>a</sup>					Total 23 countries
	A	B	C	D	E	
1) Estimated income elasticity	-0.2	-0.3	0.0	-0.4	+0.3	---
2) Percent increase in real incomes 1955-1965	+28.0	+20.0	+20.0	+25.0	+50.0	---
3) Population growth 1955-1965 (percent)	+13.0	+4.0	+8.0	+18.0	+11.0	---
4) Net effect of income and population growth on bread grain consumption 1955-1965 (percent)	+7.0	-2.0	+8.0	+8.0	+26.0	---
5) Total consumption of bread grains in 1954-55 (million bushels grain)	532.8	834.1	496.0	147.0	536.5	2,546.4
6) Total consumption of bread grains in 1965 (million bushels grain)	569.5	815.7	536.5	158.0	676.1	2,756.0
7) Population in 1965 (millions)	202.0	201.6	86.9	38.9	565.6	1,095.0
8) Per capita consumption of bread grain in 1965 (bushels grain per year)	2.79	4.04	6.17	4.04	1.21	2.50

a. For source and country groupings, see table A16.