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ECONOMIC IMPLICATIONS OF THE 1973 FARM PROGRAM ON WHEAT AND BEEF PRODUCTION – SOUTHERN HIGH PLAINS WINTER WHEAT AREA*

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Interrelationships among enterprises on individual farms complicates decision-making by the individual producers and efforts to estimate producer response to alternative farm programs. This is especially true for wheat producers, where wheat both competes with other field crops and can be used for grazing (an input to beef production). Acreage allocated to wheat provides little indication of the quantity of wheat grain that will be produced since stockers may be withdrawn from grazing wheat throughout the production period. Wheat output is determined by length of grazing. With sufficiently attractive cattle prices, relative to wheat prices, wheat may be used only for graze-out (no grain harvested). The actual outcome depends primarily on price of wheat, price of beef and the characteristics of the government wheat program.

The current wheat program is voluntary. A wheat producer may participate by agreeing to set-aside the number of acres that are equal to a given percent of his domestic wheat allotment (1973 national domestic wheat allotment is 18.7 million acres). In return the producer is guaranteed a loan rate of $1.25 per bushel on all production and at least 100 percent parity per bushel (approximately $3.00 per bushel) on the established yield from allotment acres. If the Secretary of Agriculture determines a further reduction in wheat acreage is necessary, additional payments can be made to producers who set aside more than the minimum number of wheat acres required to qualify for the program [9].

For 1973, the mandatory set-aside acreage was reduced from 86 to zero percent in a move to increase the supply of wheat [7]; however, producers could continue to set-aside additional acreage for payment. If a producer elected to set-aside additional acres, this placed a maximum limit on the number of acres which he could harvest during 1973. It should also be noted that if an individual elected to set-aside additional acres for payment, he was required to meet the original mandatory set-aside provisions of the 1973 farm program. The maximum additional set-aside for 1973 was 150 percent of the farm allotment [9].

Specific details of each year's wheat programs must be established in advance (ideally, before the new crop is planted). Thus, the accomplishment of a farm program's stated goals is a function of how well government farm policy decision-makers can predict individual farmer reactions to proposed changes in the wheat program.

The wheat farmer's decision-making environment has become increasingly complex recently because the wheat program can be changed from one year to the next on short notice, market prices of wheat have changed rapidly (i.e., $1.77 per bushel before the Russian wheat sale of 400 million bushels to a high of $2.95 per bushel after the purchase was announced), and cattle prices are at record-high levels [8]. Cattle price becomes an important variable if wheat is grazed by stocker steers or heifers. Cattle may be removed in time to allow grain to mature, or they may remain on the wheat pasture for total graze-out. If wheat is grazed out by late spring and the producer

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is in the government wheat program, the acre can qualify for a government payment as an additional set-aside acre [9].[1]

The objective of this study is to provide information needed by government planners and wheat farmers concerning how alternative governmental payments affect the optimal (assuming a profit maximization objective) farm organization of wheat grain and grazing production alternatives. Given an optimal farm organization, improved predictions of aggregate farmer responses to alternative wheat program payments can be achieved and possibly result in an improved accomplishment level of national farm program goals.

PROCEDURE AND INPUT DATA

This study was limited to the Northern Panhandle Region of Texas and Oklahoma as shown in Figure 1. Relative to the wheat production region of the United States, this area is referred to as the Southern High Plains Winter Wheat Region [1]. This 26 county area is fairly homogenous with respect to climate, soils, water supply and other production characteristics. The basic input data utilized for the study area were obtained from three years' research initiated at the North Plains Research Field, Etter, Texas, in 1969 [2, 3].

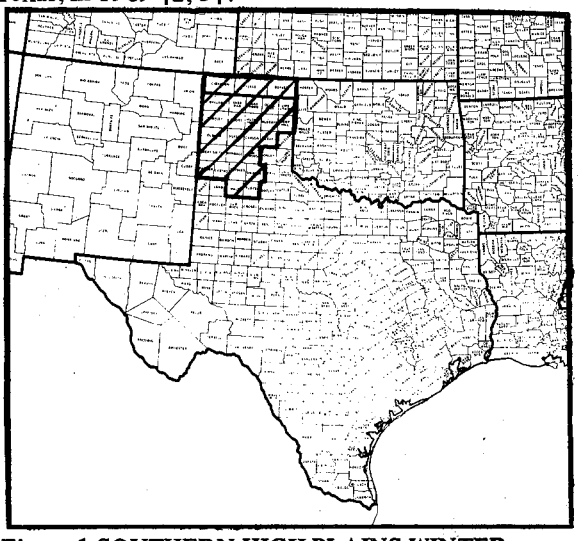

Figure 1.SOUTHERN HIGH PLAINS WINTER WHEAT AREA

Agricultural production in the study area is comprised primarily of grain sorghum, wheat and beef. Grain sorghum is produced in the summer and wheat in the winter.[2] The acreage allocated to wheat is normally planted with the decision basically being whether to produce grain, beef, or some combination.

There were 821,700 acres of irrigated wheat in the study area in 1972 [4, 5]. For the area, it has been estimated that approximately 95 percent of these wheat acres are grazed and, of this, 40 percent are grazed with owned stockers, 55 percent are grazed with a stocker month lease and five percent are grazed with a gain lease.[3] The stocker-month lease paid the wheat producer a fixed rate per hundredweight per month. The gain lease paid the wheat producer a fixed price per pound of gain.

To examine expected farmer response to alternative wheat and beef prices for changing government payments, a linear programming model was developed.[4] Two separate parametric pricing routines were utilized to estimate the cost to the government for reducing the acres of wheat and alternatively, to obtain an increase in wheat supply. This was done by estimating (1) how large the government payment must be to exclude from harvest the maximum number of wheat acres permitted by the 1970 Agricultural Act and (2) price per bushel of wheat necessary to insure harvesting maximum grain per acre.

Activities in the model include wheat production only, and seven alternative livestock removal dates associated with wheat production. The alternative grain and stocker grazing activities represent the removal of grazing livestock at approximately two-week intervals beginning March 1 and ending in early June. Grazing was initiated in early November and the pastures were stocked at the rate of 1.5 choice grade 400 pound stockers per acre. The stockers gained approximately 167 pounds per head when grazing was terminated March 1. Total gain increased as the grazing period lengthened to a maximum gain per head of 365 pounds for a June termination grazing date [2]. To account for death losses and shipping weight shrinkage, these weights were reduced four percent.

Three wheat grazing alternatives were considered.

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[1] The grazing period may be extended on set-aside acres beyond the time of mandatory livestock removal resulting in some forfeiture of government payments. The provision was not considered in this analysis since only about 30 more days of grazing could be obtained from wheat.

[2] By producing both the summer and winter crop, a given level of irrigation development (number of wells) can be extended to approximately twice the acres.

[3] These estimates are based on personal interviews and observation during the spring of 1973.

[4] The linear programming tableau is available from the authors.

These were producer-owned stockers, a gain lease arrangement by which a stockman furnished the stockers and paid a given amount for each pound of beef gained from grazing wheat, and a stocker month leasing alternative, (used predominately in the region) based on number of stockers, weight and number of months grazed.

A representative farm was assumed to have the potential to adequately irrigate 315 acres of winter wheat with a wheat allotment of 150 acres and a maximum additional set-aside acreage of 225 acres (150 percent times 150 acres).

If additional set-aside acreage was selected, 129 acres of mandatory set-aside were required. However, it was assumed that the representative farm could meet the mandatory set-aside provisions of the 1973 wheat program with other acreage available on the farm and this would not reduce the potential for producing 315 acres of wheat. However, each acre placed in the additional set-aside program reduced the maximum wheat available for harvest by one acre; i.e., of all 225 acres were placed in the set-aside program, the maximum harvestable acreage would be 90 [10].[5]

Two different price levels, high and moderate, for wheat, stockers and lease arrangements were included in the analysis. The high price levels used in this study were as follows: (a) wheat price = $2.00/bu., (b) stocker purchase price = $55.00/cwt., (c) stocker selling price ranged from $49.02/cwt. for stockers sold March 1 to $45.00/cwt. for stockers sold June 2, (d) stocker month lease rate = $1.25/ starting cwt./mo. and (e) gain lease rate = $0.15/lb. The moderate price level used in this study was 20 percent less than the high price level for all prices and lease rates.

Pre-harvest variable wheat costs were $42.80 per acre. Harvest costs added $0.15 per bushel per acre to variable costs. Fixed costs were not included in the analysis [10]. The prairie soils of this area are well adapted for the production of wheat, as evidenced by a three year yield average on the representative farm of 62 bushels per acre (non-grazed wheat). Stocker grazing activities reduced wheat yields from 13 to 40 bushels per acre, depending upon the time of removal of stockers from the pasture. Irrigation water was ample, and depending upon annual rainfall (approximately 18 inches), production of wheat required from 24 to 30 acre inches of supplemented irrigation water per year [2, 3].

The technical production relationships established by the above research in combination with selected selling prices, and costs of production allow profit maximizing farm plans to be developed. Given these profit maximizing farm plans, the farm production response to alternative government payments can be estimated.

RESULTS

The results of the study are not intended to illustrate the effect of government payments on the level and stability of farm income as a result of receiving or not receiving government payments. It is generally recognized that government payments do increase the stability of farm income and remove some of the risk and uncertainty associated with farming [6]. The purpose of this study is to indicate for 315 representative acres of wheat with grazing alternatives, implications for reducing wheat harvested and, alternatively, increasing wheat supply by use of government payments.

Reducing Harvested Wheat Acres

Estimates of set-aside payments which the government would have to pay in order to reduce the representative farm's acreage harvested for grain from 315 to 90 are presented in Table 1, 2 and 3.[6] Table 1 includes the owned stockers' grazing alternative. Illustrated in Table 2 is the stocker gain leasing alternative, and the stocker month leasing alternative is illustrated in Table 3. In all cases, the amount of the government set-aside payment on the maximum 225 acres was determined as the net revenue obtained from a non set-aside acre minus the net returns from a set-aside acre. For example, in Table 1, at the high price level, stockers selling at $0.10 per pound less than the purchase cost of $0.55 per pound, yield a $59.90 net returns per acre.[7] The maximum profit from the acreage not available for set-aside (90 acres) is $71.49 per acre. Thus, it is implied that the government must pay at least $11.59 per acre, or the 225 acres will be harvested rather than set-aside and grazed out (Table 1).

[5] The reduction in harvestable acres is based on the following assumptions concerning the 1972 crop year: 1972 wheat acres harvested equaled 265 and 1972 additional set-aside acres equaled 50. The sum of these items resulted in the 1973 set-aside base of 315 acres. Acres available for 1973 harvest were equal to the 1973 set-aside base minus 1973 additional set-aside acreage.

[6] No estimate was made on the amount of farm income that farmers would actually substitute for a dollar of government payment. Elimination of risk and uncertainty by receiving the government payment would be valued more to some farmers than to others. It is simply recognized that in most cases the substitution would be greater than one.

[7] The price per pound for beef is typically less, the larger the animal, at any given point in time. This means producers generally buy at one price and sell at a lower price after feeding the animal to a larger weight. This is referred to as price roll back.

Table 1. ESTIMATED GOVERNMENT COST REQUIRED TO REDUCE HARVESTED IRRIGATED WHEAT ACREAGE FOR ALTERNATIVE STOCKER AND WHEAT PRICES – SOUTHERN HIGH PLAINS WINTER WHEAT AREA

Item	Unit	Price Roll-Back of Stockers[a]						
		0.12	0.11	0.10	0.09	0.08	0.07	0.06
High Price Level[b]								
a. Per Acre Payment	dol.	32.73	22.16	11.59	0	0	0	0
b. Total Farm Payment[d]	dol.	7,364	4,986	2,608	0	0	0	0
Moderate Price Level[c]								
a. Per Acre Payment	dol.	53.00	53.00	37.15	26.58	16.00	5.44	0
b. Total Farm Payment[d]	dol.	11,927	11,927	8,359	5,981	3,600	1,224	0

[a]The reduction in beef price per pound due to increased size of animal. Producers typically purchase stockers at a higher price than they sell them.

[b]High price level refers to stockers purchased at $0.55 per pound and a wheat price of $2.00 per bushel.

[c]Moderate price level refers to stockers purchased at $0.44 per pound and a wheat price of $1.60 per bushel.

[d]Based on 225 maximum acres going into additional set-aside.

Table 2. ESTIMATED GOVERNMENT COSTS REQUIRED TO REDUCE IRRIGATED WHEAT ACREAGE FOR HARVEST – ALTERNATIVE STOCKER GAIN LEASE AND WHEAT PRICES – SOUTHERN HIGH PLAINS WINTER WHEAT AREA

Item	Unit	Gain Lease Rate per Pound of Gain			
		0.13	0.15	0.17	0.19
High Price Level[a]					
a. Per Acre Payment	dol.	64.33	61.28	58.03	54.88
b. Total Farm Payment[c]	dol.	14,474	13,788	13,056	12,348
Moderate Price Level[b]					
a. Per Acre Payment	dol.	36.22	33.07	29.92	26.77
b. Total Farm Payment[c]	dol.	8,149	7,441	6,732	6,023

[a]Wheat price of $2.00 per bushel.

[b]Wheat price of $1.60 per bushel.

[c]Based on 225 maximum acres going into additional set-aside.

The actual estimated set-aside payment for an additional set-aside acre on the representative farm would be about $39.60 in 1973 [10]. Since $39.60 is the approximate payment that is expected in 1973, it is useful to compare this value to the minimum estimated values in Tables 1, 2 and 3. For the 32 price/production situations included in Tables 1, 2 and 3, sixteen of the minimum government payments required less than $39.60 per acre. However, twelve of the less than $39.60 per acre payments are located in Table 1, the owned stocker alternative, and the remaining four are in the gain-leasing alternative (Table 2). Given the following 1973 estimated prices: (1) stocker, purchase price, $0.55 per pound, sale price, $0.45 per pound, (2) gain lease rate $0.15 per pound, (3) stocker month lease rate, $1.25 per initial hundredweight per month and (4) wheat prices, $2.00 per bushel, minimum government set-aside payments are $11.59, $61.28 and $77.20 per acre for owned stockers, gain lease and stocker-month lease, respectively. These differences in government payments are due to the differences in the profitability of alternative grazing methods; i.e., greater profits were obtained from owning stockers

Table 3. ESTIMATED GOVERNMENT COSTS REQUIRED TO REDUCE IRRIGATED WHEAT ACREAGE FOR HARVEST – ALTERNATIVE STOCKER MONTH LEASE AND WHEAT PRICES – SOUTHERN HIGH PLAINS WINTER WHEAT AREA

Item	Unit	Stocker Month Lease Rates per Starting Hundredweight				
		.75	1.00	1.25	1.50	1.75
High Price Level[a]						
a. Per Acre Payment	dol.	77.81	77.81	77.20	74.40	71.60
b. Total Farm Payment[c]	dol.	17,507	17,507	17,370	16,740	16,110
Moderate Price Level[b]						
a. Per Acre Payment	dol.	53.00	54.68	57.48	54.68	51.88
b. Total Farm Payment[c]	dol.	11,925	12,303	12,933	12,303	11,673

[a]Wheat price of $2.00 per bushel.
[b]Wheat price of $1.60 per bushel.
[c]Based on 225 maximum acres going into additional set-aside.

followed by gain leasing and stocker month leasing, respectively. Therefore, less government payment is needed to induce the producer with owned stockers to place wheat acres into additional set-aside, compared to wheat producers that lease the grazing rights to their wheat pasture.

Given that all beef producing alternatives are available, a situation of three representative farms, each utilizing a different grazing alternative, is developed to illustrate the effectiveness of the present farm program in reducing the acres available for harvest. The 1973 program, with the $39.60 per acre payment, is expected to induce only producers that graze owned cattle to place the maximum acres of wheat into additional set-aside. The minimum payment needed is $11.59; hence, the implication is that the government is spending $28.01 per acre ($6,302 for the 315 acres) more than necessary. If the payment is increased to $61.28, producers that lease wheat grazing on a gain weight basis would be expected to set-aside the maximum acreage (Table 2). This means the government cost would need to increase $21.68 per acre over present rates or $49.69 above that needed for producers with owned cattle, in order to attract these additional acres. A payment of $77.20 per acre would be expected to attract maximum additional set-aside from all producers.

Moderate price level solutions are presented for comparisons. For owned beef and a $0.10 price roll back, the government payment needed to bring the maximum acres into additional set-aside is $37.15 or three times that of high price levels. Conversely, for lease arrangements at the moderate price level, the government payment needed to induce the maximum acres into additional set-aside is appreciably lower (Table 2, 3). The reason that government set-aside payments increase for the owned stocker alternative (not true for stocker leasing arrangements) is the greater negative effect of the 20 percent price reduction on stocker profits than on wheat profits.

Although numerous alternative situations are presented, this discussion was limited to those that appeared most relevant at the time of the analysis. This further indicates the complexity of forecasting producer response since so many changes can occur that would significantly affect the outcome.

Wheat Prices Necessary to Increase Wheat Supply

With the current, more flexible agricultural program, there is a need to expand the analysis beyond supply reduction, to include implications for increasing supply of wheat. In considering the supply increase question, estimated 1973 government payments were eliminated from the model. When a zero price existed for wheat grain, the total wheat crop was utilized by the various stocker grazing alternatives with one exception – stocker month leasing at $1.00 per initial hundredweight per month. The variable costs of producing an acre of irrigated wheat for graze-out exceeded the gross returns in this one case; hence, there would be no production of beef or grain.

The results of parametrically increasing wheat prices, with alternative stocker production alternatives are presented in Table 4. With no wheat grain production, the maximum quantity of beef gained on the 315 acres was 166,000 pounds (527 pounds per acre). With no grazing, the maximum

Table 4. WHEAT AND BEEF SUPPLY RESPONSE TO INCREASING WHEAT PRICES – SOUTHERN HIGH PLAINS WINTER WHEAT AREA

	Owned Stockers			Gain Lease			Stocker Month Lease		
	Wheat price (bu.)	Wheat produced	Beef gain (lb.)	Wheat price (bu.)	Wheat produced	Beef gain (lb.)	Wheat price (bu.)	Wheat produced	Beef gain (lb.)
	dollar	bushel	1000	dollar	bushel	1000	dollar	bushel	1000
High price level[a]									
Points of change									
1	0	0	166	0	0	166	0	0	166
2	1.73	14,175	98	.80	14,427	103	.43	14,427	103
3	2.54	15,529	90	2.09	15,529	89	1.65	15,529	89
4	3.31	19,530	0	3.50	19,530	0	2.74	19,530	0
Moderate price level[b]									
Points of change									
1	0	0	166	0	0	166	0	0	0
2	1.29	14,175	98	.67	14,427	103	0	0	0
3	2.00	15,529	90	1.71	15,529	89	1.35	15,529	89
4	2.42	19,530	0	2.84	19,530	0	2.22	19,530	0

[a]Owned stockers were purchased at $0.55 per pound and sold at approximately $0.45 per pound. Gain lease rate is $0.15 per pound and feeder month lease rate is $1.25 per starting hundredweight per month.

[b]Owned stockers were purchased at $0.44 per pound and sold at approximately $0.35 per pound. Gain lease rate is $0.12 per pound and stocker month lease rate is $1.00 per starting hundredweight per month.

quantity of wheat produced was 19,530 bushels (62 bushels per acre) [2].

The largest price of wheat that was required to maximize wheat supply was $3.50 per bushel for the gain lease alternative, high price level. The minimum price of wheat that was required to maximize wheat supply was $2.22 per bushel for the stocker month lease alternative, moderate price level. An important consideration in the present wheat program's influence on wheat supply is the fact that an individual's wheat payments do not depend on the number of bushels of grain sold.

For this particular analysis, it is assumed that the market price of wheat is $2.00. It is further assumed that to increase supply, the government would pay the difference between wheat price required to increase supply and the market price. For example, the producer with owned stockers and at the high price level would produce about 14,175 bushels of wheat at a price of $1.73 (no government payment needed with a $2.00 market price). However, to induce this producer to increase wheat output 1,354 bushels, a price of $2.54 per bushel is needed (government payment would be $0.54 per bushel). At $3.31 per bushel, no beef is produced. This indicates the government would pay about $0.54 per bushel to increase wheat output by 1,354 bushels from the 315 acres of wheat and $1.31 per bushel to increase it 5,355 bushels. At moderate price levels, this same producer would harvest 19,530 bushels of wheat at a price of $2.42 per bushel (Table 4).

For the two stocker leasing alternatives, at the high price level, essentially no government support is required to induce production of 15,529 bushels (gain lease shows a price of $2.09 required compared to $1.65 per bushel for stocker month lease). However, to obtain an additional increase of 4,001 bushels with the stocker month lease requires a price of $2.74 per bushel. This suggests a government payment of $0.74 per bushel on 19,530 bushels. In other words, the 4,001 bushels cost the government $3.61 per bushel.

At the moderate price level, all producers would produce 15,529 bushels of wheat at $2.00 per bushel. The price per bushel to get 19,530 bushels of wheat was $2.42, $2.84 and $2.22 for owned stockers, gain

lease and stocker month lease, respectively (Table 4).

To expand the analysis, the results for the typical 315 acres of wheat with a 150 acre wheat allotment were used to estimate producer responses to alternative incentives for the broader study area. Since the study area is relatively homogenous with respect to climate, soils, water supply and other production characteristics, the use of the typical farm technique should provide reasonable aggregative estimates for the area.

For the total region, approximately 95 percent of the irrigated wheat in the study area is grazed and of this, about 40 percent of the producers graze with owned stockers, five percent use a gain lease, and 55 percent rely on a stocker month lease.[8] In 1972, there were approximately 821,700 acres of irrigated wheat in this region [4, 5]. At the high price level, this analysis suggests that with no government program and a wheat price of $2.00 per bushel, approximately 39.6 million bushels would be produced. Assuming a $2.00 per bushel market price of wheat, to increase production to 39.7 million bushels, a $0.09 per bushel subsidy would be needed or $3.6 million. With the subsidy increased to $0.54 per bushel, expected output would increase to 41.0 million bushels, and government costs would be $22.2 million. A $0.74, $1.31 and $1.50 per bushel subsidy would increase output to 46.5, 50.4 and 52.3 million bushels, respectively, with total government costs $34.4, $66.1 and $76.4 million, respectively.

Present government wheat payment per irrigated acre for the representative farm was estimated to be $58.60 per allocated acre or approximately $27.90 per planted acre.[9] Utilizing this value as an estimate of present government payments, total estimated government costs for irrigated wheat in the region are estimated to be $22.9 million. Irrigated wheat production in the region for 1972 was estimated to be 18.9 million bushels [4, 5]. This analysis suggests that a government payment based on bushels would result in 41.0 million bushels for a cost of $22.2 million. Thus, wheat production would be increased 2.17 times for approximately the same cost.

Of course, this estimate applies only to the study area, given the assumptions of the analysis. However, it does add additional insight into expected producer response to government payments as a function of bushels when stocker grazing alternatives are included in the decision-making framework.

SUMMARY AND CONCLUSIONS

A representative irrigated wheat farm located in the Southern High Plains Winter Wheat Area was used to analyze the effect of alternative price/production situations on minimum cost of acreage diversion and the development of wheat grain supply schedules. A linear programming technique was used which included a parametric pricing option. Given estimated 1973 prices, minimum government set-aside payments required to reduce the maximum number of harvestable acres were $11.59, $61.28 and $77.20 per acre for owned stockers, gain lease and stocker month lease grazing alternatives, respectively.

The positive or negative effects of government payments on the level and stability of farm income were not estimated in this analysis. It was determined that a fixed set-aside payment rate per acre may be less efficient than one established by some flexible rate setting method.

Regarding supply increase based on a $2.00 per bushel market price of wheat, from the 315 acres of wheat, producers with owned beef and gain lease would harvest 14,175 bushels of wheat while the stocker month lease producer would harvest 15,529 bushels. At a wheat price of $2.54 ($0.54 government subsidy) per bushel, all producers were harvesting 15,529 bushels of wheat. To induce all producers to forego grazing completely, the price of wheat increased to $3.50 per bushel. This indicates the cost to obtain the last incremental increase in wheat harvested would be very costly for the government. A potentially more efficient means of insuring a minimum level of wheat production was illustrated by the use of government payments based on a bushel rather than an acre. For example, the government costs for the domestic wheat certificates were an estimated $22.9 million for 18.9 million bushels in 1972, but based on this study, 41 million bushels would be produced with a government cost of $22.2 million when government payments are made on a per bushel basis.

The analysis showed that as additional set payments increase, the quantity of wheat supplied will decrease as a result of a reduction in number of acres harvested. However, this total decrease was dampened by the influence of less grazing of wheat by stockers as the price of wheat increased. The

[8] These estimates are based on personal interviews and observation during the spring of 1973. It is assumed that the estimated distribution of producers using the different grazing alternatives could be directly applied to the total irrigated wheat acreage grazed to establish acres grazed by each arrangement. If these percentages change appreciably, the results would be expected to change.

[9] These are government costs related to insuring 100 percent parity on domestic wheat allotment and are in the form of domestic wheat certificates.

inverse is true for policies designed to expand the number of acres planted to wheat.

Although this study is limited in geographic scope, it provides new insight into government alternatives for managing the supply of wheat. It could provide the basis for more inclusive studies for other regions and competing summer crops.

REFERENCES

[1] Helmers, G. A. and W. F. Lagrone, "Wheat and Feed Grains in the Great Plains and Northwest: Supply Response and Resource Use," Great Plains Agricultural Council Publication No. 37, April, 1970.

[2] Shipley, John, "Economic Alternatives With Grazing Irrigated Wheat," Presented at Symposium on Grazing Small Grains, Aug. 1, 1972, U. S. Department of Agriculture Southwestern Great Plains Research Center at Bushland, Texas, 1972.

[3] ——, "Irrigating Wheat for Forage and Grain Production," Presented at Symposium on Grazing Small Grains, Aug. 5, 1971, U. S. Department of Agriculture Southwestern Great Plains Research Center at Bushland, Texas, 1971.

[4] Telephone communication with Oklahoma Crop and Livestock Reporting Service, U. S. Department of Agriculture, Statistical Reporting Service, Oklahoma City, Oklahoma.

[5] Texas Department of Agriculture, Texas Small Grain Statistics, 1972, Austin, Texas.

[6] Tweeten, Luther G., "Commodity Programs for Agriculture," *Agricultural Policy: A Review of Programs and Needs,* National Advisory Commission on Food and Fiber, Vol. V, Technical Papers, Aug. 1967.

[7] "U. S. Department of Agriculture Eliminates Required Set-Aside from 1973 Wheat Program: Lifts Grazing Ban," Press Release, Washington, D.C., Jan. 10, 1973.

[8] U. S. Department of Agriculture, *Wheat Situation,* Economic Research Service, Feb. 1973.

[9] ——, "1973 Wheat Programs," Agricultural Stabilization and Conservation Service Leaflet, Aug. 1972.

[10] Whitson, Robert E., et. al., "Economic Analysis of Irrigated Wheat Stocker Grazing Alternatives in the Northern High Plains of Texas," (Forthcoming Texas Agri. Exp. Stat. Publication).