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Texas - Agric.

A REGIONAL PROFITABILITY ANALYSIS OF FIELD CROP PRODUCTION IN TEXAS

by

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Jesse Reyes
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Introduction

This study is a continuation of on-going efforts to analyze financial stress in the farm sector of the Texas economy. It updates and extends previous studies which were conducted in response to the generally depressed conditions in agriculture, e.g., real net farm income at levels of the 1930's. Previous work in this area addressed the relationships between current market prices, shut-down prices, and break-even prices of major field crops in Texas (Ethridge and Sudderth, Hughes and Ethridge). In a 1985 study, Hughes and Ethridge found that current (1985) market prices failed to cover total costs of production (excluding management) for all of the major crops in 16 of the 22 regions in the state, and market prices were below the shut-down level for at least one major crop in 13 of the regions.

Since completion of the 1985 studies, economic conditions in the farm sector have changed. In addition to changes in crop prices and production costs, farmers are now operating under the provisions of the Food Security Act of 1985. Thus, there was a need to re-evaluate the profitability of Texas crop production in light of these and other changes in the economic environment of agriculture.

The general objective of this study was to provide a regional analysis of the current profitability for production of the major field crops in Texas. Specific objectives were to (a) estimate regional short- and long-run shut-down prices for the major crops in Texas, (b) estimate regional break-even prices for the study crops, (c) compare regional shut-down and break-even prices to recent market prices for the study crops, and (d) analyze potential adjustments in Texas crop production.

Methods and Procedures

The methods and procedures in this study are generally consistent with those of the previous studies (Ethridge and Sudderth, Hughes and Ethridge). However, earlier studies did not estimate long-run shut-down prices, i.e., shut-down prices in those studies are equivalent to short-run shut-down prices in this study.

Regions and Crops

The number of regions (shown in Figure 1) has been reduced from previous studies. These regions are aggregations of the crop reporting districts used by the Texas Crop and Livestock Reporting Service, generally coinciding with regions suggested by the Texas Economic Data Improvement Taskforce in "Understanding Texas Agriculture."

Major crops selected for inclusion in the study are corn, cotton, rice, sorghum, soybeans, and wheat. These crops accounted for over two-thirds of the cash receipts from crops in Texas in 1984 (Texas Crop and Livestock Reporting Service 1985). The analysis of profitability of each study crop was limited to those regions with significant acreage of the particular crop. However, if the crop accounted for over 10 percent of the field crop acreage in a given region, the crop was included in the analysis, even if the regional acreage was relatively small compared to the total state acreage of the

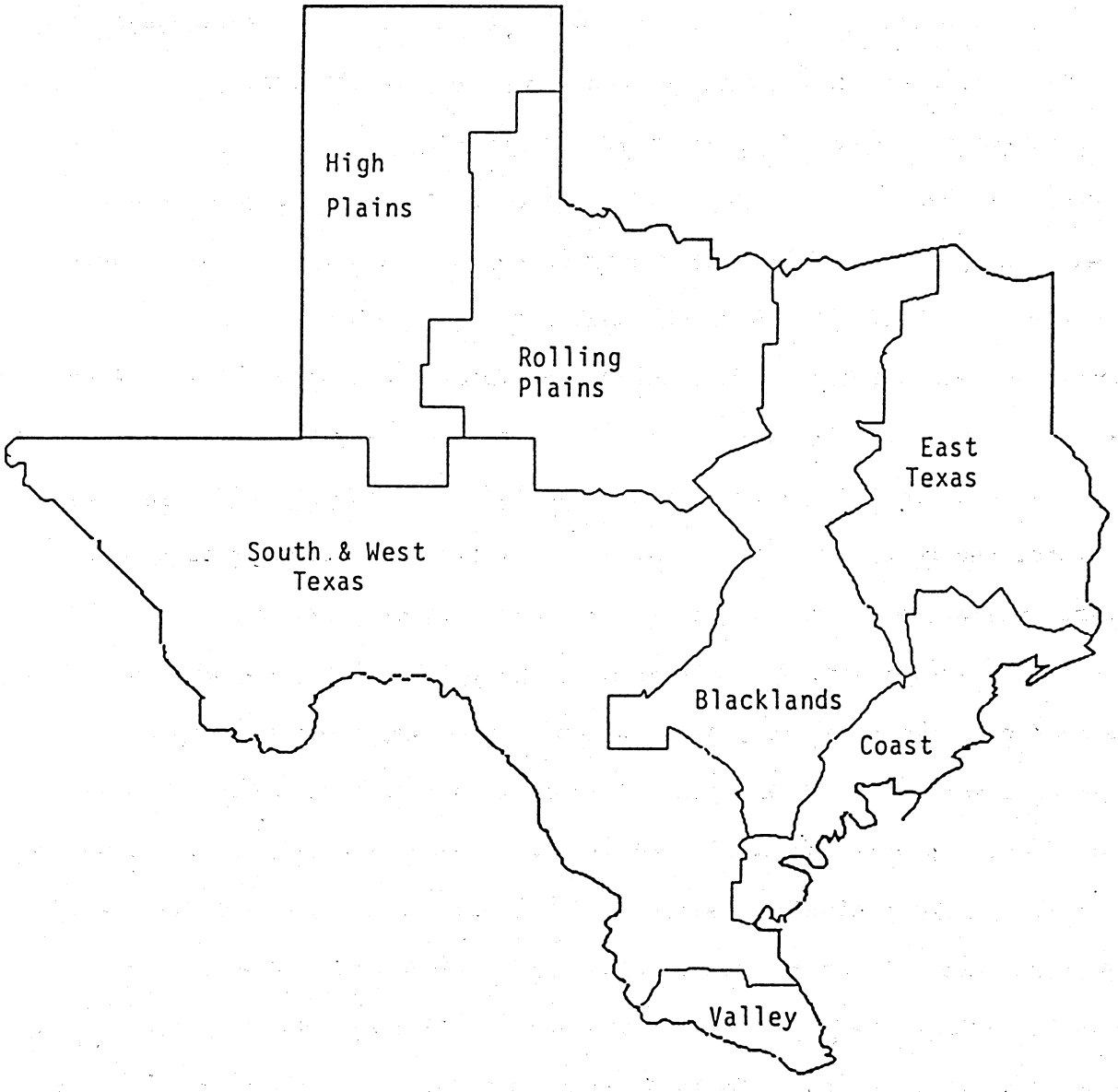

Figure 1. Major Crop Production Regions in Texas.

the crop. Even with the exclusion of small acreages, the study included at least 90 percent of the acreage of each study crop in the state.

Recent Market Prices and Government Program Benefits

Recent market prices, as opposed to historical averages, were used to estimate the profitability of crop enterprises. This approach was selected because recent changes in the government farm program have substantially reduced the meaningfulness of historical averages. However, profitability is very sensitive to the level of crop prices, and individual crop prices are subject to substantial variation beween periods and within a given period. Therefore, the results of this study, while valid for recent price levels, must be interpreted in the light of any changes in crop prices.

Market prices reported in "Texas Grain Market News" for November 8, 1986, were used as current market prices for corn, sorghum, soybeans, and wheat (Texas Crop and Livestock Reporting Service). Market prices for cotton produced under provisions of the government program were assumed to equal the loan rate for the predominant grade, staple, and micronaire in a given region (U.S. Department of Agriculture 1986e). Prices reported in "Daily Spot Cotton Quotations" for November 6, 1986 were used as recent market prices for cotton ineligible for the loan (U.S. Department of Agriculture 1986c). The projected price, based on expected supply and demand, was used for cottonseed (U.S. Department of Agriculture 1986d). The market price for rice was assumed to equal loan value. Market prices for corn, rice, sorghum, soybeans, and wheat were assumed to be the same, whether produced under the government program or not.

Loan rates, deficiency payments, and other program benefits assumed for all crops were based on the announced 1986 provisions of the Food Security Act of 1985 (Glaser). However, decreases in benefits associated with budget reduction activities under the Gramm-Rudman-Hollings Act were not considered.

Since 1987 provisions are generally anticipated to be less favorable than those used in this study, the following results may be optimistic in terms of government support.

Production Costs and Yields

The 1986 Texas Crop Budgets, developed by the Texas Agricultural Extension Service, were used as the basis for estimation of per-acre production costs for the study crops in each crop reporting district (Extension Economist-Management). While these costs and returns budgets were developed as a planning tool and do not represent "the costs and returns from any one particular farm," the budgets are recognized as the best available estimate of current per-acre production costs for crops within the various regions of the state.

Energy costs for machinery operations and operating interest costs were reduced to reflect decreases in these production costs since development of the budgets (U.S. Department of Agriculture 1986a and 1986b). However, no adjustments were made for possible reductions in irrigation fuel costs and interest on machinery and equipment investment. Thus, to whatever extent there have been decreases in these cost items, the production costs in this study may be overstated.

Five-year average yields (1981-85) from each region were used as representative yields for the study crops (Texas Agricultural Statistics Service). In regions where cotton is predominately grown in a skip-row planting pattern, yields were adjusted to reflect cotton produced per acre of land.

It is important to note that an effort was made to maintain the integrity of the Texas Crop Budgets by minimizing changes in per-acre production costs. For this reason, changes were limited to adjustments in yields, energy costs for machinery operations, and operating interest expenses.

It is also important to remember that level of management ability, productivity of cropland, and size of operation varies significantly within a given region. Therefore, while these estimates are thought to be representative of the typical costs of production, any given farm may have higher or lower costs of production than the typical situation.

Short-run Shut-down Prices (SRSDP's)

The short-run shut-down price (SRSDP) is the market price required to cover the variable costs of production. The SRSDP was estimated for each major crop in each study region by subtracting government payments and secondary crop receipts (e.g., cottonseed) from variable costs and dividing the remaining costs by representative yield. SRSDP's were also estimated under alternative assumptions concerning government farm program benefits. First, "participating" SRSDP's were estimated as if the producer had a program base for the given crop, had complied with the program provisions, and had not exceeded the $50,000 payment limitation. Then, "non-participating" SRSDP's were estimated as if production was outside the program and no benefits were available.

Variable costs change with the level of production (e.g., seed, fertilizer, fuel, etc.) and represent those costs which are incurred only if a crop is produced. If the land is left idle, these costs can be avoided. This contrasts with fixed costs, which are incurred whether a crop is produced or not (e.g., depreciation, etc.).

Land was assumed to be a fixed cost item in this study. However, depending on tenure arrangements, land can also be a variable cost item. While land is a fixed cost item for the owner-operator and the cash-renter, rent is a variable cost item for the share-renter because it is paid on the crop produced. If no crop is produced, no rent is paid. Since land was assumed to be a fixed cost, the SRSDP's estimated in this study do not

include a charge for use of the land and more nearly represent an owner-operator situation. SRSDP's for a share-renter would be higher than those reported in this study.

If the farmer does not "shut-down" production when expected market prices will not cover variable costs, losses will be greater from producing than if the land were left idle. That is, if a crop is produced, a portion of variable costs will be lost in addition to all of the fixed costs. If the land is left idle, only the fixed costs will be lost. If the market price is higher than the SRSDP, the farmer should produce because returns will cover all variable costs and at least part of fixed costs. However, crop production cannot be maintained in the long run at SRSDP-level prices because returns will not be sufficient to cover machinery and equipment replacement. Thus, producers facing SRSDP-level crop prices over the long run will lose their equity and eventually be forced to leave farming.

Long-run Shut-down Prices (LRSDP's)

The long-run shut-down price (LRSDP) is the market price required to cover all costs of production except land and management. This approach assumes that land and management are the residual claimants of profits, i.e., any profits or losses from crop production will accrue to these resources in the long run. In a manner similar to the estimation of the SRSDP, government payments and secondary crop receipts were subtracted from variable and fixed costs (excluding land and management costs). The remaining costs were then divided by the representative yield. LRSDP's were estimated for both participation and non-participation in government programs using procedures described earlier for SRSDP's.

When current crop prices are lower than LRSDP, returns to land and management are negative. This means that the land owner and/or farm operator must pay money into the farming operation to cover these losses. In the

short run cash payments may not be required because negative returns (i.e., losses) may be offset by non-cash costs such as depreciation. However, when machinery and equipment must be replaced, non-cash depreciation costs become real cash outlays -- and at this point additional capital must be invested to cover past negative returns to land and management. Since it is unlikely that land owners and farm operators will be willing and able to subsidize a given crop indefinitely, production of that crop is likely to decline if the market price remains below LRSDP. Thus, positive returns to land and management are a necessary condition for maintenance of long-run production of a given crop.

It should be noted that a market price above LRSDP does not always insure continued production because production may shift to other crops which provide even higher positive returns to land and management. Nor do positive returns insure that land values will not decline since the joint return to land and management may not be high enough to support historical land values.

Break-even Prices (BEP's)

The break-even price (BEP) is the market price required to cover both variable and fixed costs of production. Generally, break-even prices are said to cover all costs; however, in this study, break-even prices do not include a return to management. In a manner similar to the estimation of shut-down prices, government payments and secondary crop receipts were subtracted from variable and fixed costs. The remaining costs were then divided by the representative yield. BEP's were estimated for both participation and non-participation in the government farm programs using the same procedures described earlier for shut-down prices.

Prevailing rental rates in each region were assumed to be representative of the cost of using land in crop production. It is important to note that financial stress has placed a great deal of downward pressure on rental rates

in most regions of Texas. Thus, while these rates were representative of the rental arrangements at the time the budgets were developed, they may overstate land costs as rental rates continue to adjust to reduced receipts from crop production. As rental rates decline, land values can be expected to decline since the value of productive farmland is tied closely to rental rates.

When the market price for a crop is below BEP, management is receiving no return, and land is receiving less than the prevailing rental rate. Production of this crop will likely continue if the market price is above LRSDP; but if prices remain below BEP, land values can be expected to decline.

Results

Short-run Shut-down Prices (SRSDP's)

A comparison of short-run shut-down prices (SRSDP's) to recent market prices for regional crop production in Texas is shown in Table 1. "Participating" and "non-participating" market prices are the same for all crops except cotton. In the case of cotton, the marketing loan provision of the government farm program provides a higher effective cash price to participating producers than the market provides to non-participating producers. For example, the SRSDP for irrigated cotton in the High Plains is $0.32 per pound for participating producers, or $0.58 per pound for non-participating producers. Since participating producers can receive $0.48 per pound for their cotton, production will continue in the short run because receipts will cover variable costs and provide $0.16 per pound ($0.48 - $0.32) to pay to fixed costs and management. On the other hand, non-participating producers will only receive $0.35 per pound for their cotton. If such prices are expected to continue, these producers should

Table 1. Regional Short-run Shut-down Prices and Recent Market Prices for Major Crops, 1986.

Region	Crop	Units	Market Price	Short-run Shut-down Price	
				Participating[a/]	Non-Participating[b/]
			($)	($)	($)
High Plains	Corn, Irrigated	Bu.	1.70	1.34	2.37
	Cotton, Irrigated	Lb.	0.48[c/]	0.32	0.58
	Sorghum, Irrigated	Cwt.	2.70	2.67	4.38
	Soybean, Irrigated	Bu.	4.20	4.90	4.91
	Wheat, Irrigated	Bu.	2.20	1.47	3.10
	Cotton, Dryland	Lb.	0.48[c/]	0.42	0.68
	Sorghum, Dryland	Cwt.	2.70	2.02	3.58
	Wheat, Dryland	Bu.	2.20	-0-	1.40
Rolling Plains	Cotton, Irrigated	Lb.	0.48[c/]	0.16	0.42
	Cotton, Dryland	Lb.	0.48[c/]	0.17	0.49
	Sorghum, Dryland	Cwt.	2.70	2.25	4.00
	Wheat, Dryland	Bu.	2.15	-0-	1.12
Blacklands	Corn, Dryland	Bu.	1.70	0.86	1.89
	Cotton, Dryland	Lb.	0.55[d/]	0.20	0.46
	Sorghum, Dryland	Cwt.	2.70	1.03	2.78
	Wheat, Dryland	Bu.	2.15	1.08	2.91
East Texas	Corn, Dryland	Bu.	1.70	1.25	2.28
	Sorghum, Dryland	Cwt.	2.70	2.55	4.30
	Soybeans, Dryland	Bu.	4.20	6.21	6.21
	Wheat, Dryland	Bu.	2.15	1.69	3.52
Coast	Rice, Irrigated	Cwt.	3.75	-0-	8.14
	Corn, Dryland	Bu.	1.70	0.96	1.99
	Cotton, Dryland	Lb.	0.50[e/]	0.12	0.38
	Sorghum, Dryland	Cwt.	2.75	1.32	3.07
	Soybeans, Dryland	Bu.	4.20	5.45	5.45
South and West	Cotton, Irrigated	Lb.	0.55[d/]	0.23	0.49
	Cotton, Dryland	Lb.	0.55[d/]	0.19	0.45
	Sorghum, Dryland	Cwt.	2.75	1.40	3.15
	Wheat, Dryland	Bu.	2.15	0.38	2.21
Valley	Corn, Irrigated	Bu.	1.70	1.27	2.30
	Cotton, Irrigated	Lb.	0.55[d/]	0.17	0.43
	Sorghum, Irrigated	Cwt.	2.75	3.19	4.94
	Cotton, Dryland	Lb.	0.55[d/]	0.12	0.38
	Sorghum, Dryland	Bu.	2.75	0.97	2.72

[a/] Participating in government programs.

[b/] Not participating in government farm programs.

[c/] Market price for cotton grown outside the program = $.35/#.

[d/] Market price for cotton grown outside the program = $.42/#.

[e/] Market price for cotton grown outside the program = $.37/#.

"shut down" because receipts will lack $0.23 per pound ($0.35 - $0.58) covering variable costs of production.

In a few cases the SRSDP for a particular crop is shown as zero. This means that government payments and secondary crop receipts (e.g., wheat grazing) completely cover variable costs of production. Thus any receipts from sale of the primary crop are available to pay fixed costs and management.

The importance of farm program benefits is illustrated by the fact that current market prices for the majority of the crops across the state are above SRSDP for most producers who are participating in the government programs. Whereas, the majority of the crops are below SRSDP for non-participating producers. For participating producers, only irrigated soybeans in the High Plains, dryland soybeans in East Texas and on the Coast, and irrigated sorghum in the Valley are below SRSDP. For non-participating producers, the only crops which are above SRSDP are dryland cotton and sorghum in the Valley and dryland wheat in the High Plains and Rolling Plains.

Observations can also be made about irrigation and soybeans. First, while irrigated crop production is generally above SRSDP for participating producers, current crop prices are below SRSDP for all irrigated study crops produced outside the government program in every region of the state. Second, the current price of soybeans is below SRSDP in all regions where soybeans are a major crop, even for participating producers.

Long-run Shut-down Prices (LRSDP's)

The long-run shut-down prices (LRSDP's) shown in Table 2 represent market prices required to cover all costs of production except land and management. Any additional returns above LRSDP are then available for division between land and management. For example, dryland wheat produced on the High Plains

Table 2. Regional Long-run Shut-down Prices and Recent Market Prices for Major Texas Crops, 1986.

Region	Crop	Units	Market Price	Long-run Shut-down Price	
				Participating[a/]	Non-Participating[b/]
			($)	($)	($)
High Plains	Corn, Irrigated	Bu.	1.70	1.91	2.93
	Cotton, Irrigated	Lb.	0.48[c/]	0.55	0.78
	Sorghum, Irrigated	Cwt.	2.70	4.60	6.24
	Soybeans, Irrigated	Bu.	4.20	7.67	7.67
	Wheat, Irrigated	Bu.	2.20	2.67	4.43
	Cotton, Dryland	Lb.	0.48[c/]	0.75	0.92
	Sorghum, Dryland	Cwt.	2.70	3.92	5.12
	Wheat, Dryland	Bu.	2.20	0.53	2.20
Rolling Plains	Cotton, Irrigated	Lb.	0.48[c/]	0.41	0.67
	Cotton, Dryland	Lb.	0.48[c/]	0.47	0.73
	Sorghum, Dryland	Cwt.	2.70	3.96	5.71
	Wheat, Dryland	Bu.	2.15	0.22	2.05
Blacklands	Corn, Dryland	Bu.	1.70	1.25	2.28
	Cotton, Dryland	Lb.	0.55[d/]	0.29	0.55
	Sorghum, Dryland	Cwt.	2.70	1.91	3.66
	Wheat, Dryland	Bu.	2.15	1.63	3.46
East Texas	Corn, Dryland	Bu.	1.70	1.89	2.92
	Sorghum, Dryland	Cwt.	2.70	3.65	5.40
	Soybeans, Dryland	Bu.	4.20	7.62	7.62
	Wheat, Dryland	Bu.	2.15	2.13	3.96
Coast	Rice, Irrigated	Cwt.	3.75	2.81	11.85
	Corn, Dryland	Bu.	1.70	1.52	2.55
	Cotton, Dryland	Lb.	0.50[e/]	0.20	0.46
	Sorghum, Dryland	Cwt.	2.75	2.48	4.23
	Soybeans, Dryland	Bu.	4.20	8.49	8.49
South and West	Cotton, Irrigated	Lb.	0.55[d/]	0.37	0.63
	Cotton, Dryland	Lb.	0.55[d/]	0.31	0.57
	Sorghum, Dryland	Cwt.	2.75	2.95	4.70
	Wheat, Dryland	Bu.	2.15	1.47	3.30
Valley	Corn, Irrigated	Bu.	1.70	1.95	2.32
	Cotton, Irrigated	Lb.	0.55[d/]	0.27	0.53
	Sorghum, Irrigated	Cwt.	2.75	4.75	6.50
	Cotton, Dryland	Lb.	0.55[d/]	0.22	0.48
	Sorghum, Dryland	Bu.	2.75	3.07	4.82

[a/] Participating in government programs.

[b/] Not participating in government farm programs.

[c/] Market price for cotton grown outside the program = $.35/#.

[d/] Market price for cotton grown outside the program = $.42/#.

[e/] Market price for cotton grown outside the program = $.37/#.

in compliance with the government program provides a return of $1.67 per bushel ($2.20 - $0.53) after payment of all variable and fixed costs (excluding land and management). However, if the producer does not participate in the farm program, returns from dryland wheat just cover variable and fixed costs (excluding land and management). Therefore, land and management will receive no returns.

For participating producers, dryland wheat is the only crop which is above LRSDP in all major production regions. Irrigated wheat, which is produced primarily in the High Plains, is below LRSDP. Cotton is above LRSDP in all regions where it is a major crop except the High Plains. Dryland corn is above LRSDP in two of the three regions where it is a major crop, but irrigated corn is below LRSDP in both of its major production regions. Sorghum is below LRSDP in all regions with the exception of dryland production in the Blacklands and on the Coast. Soybeans are below LRSDP in all major production regions in Texas. For non-participating producers, only dryland wheat in the High and Rolling Plains is above LRSDP at recent market prices.

Break-even Prices (BEP's)

Table 3 shows a comparison between current market prices and break-even prices (BEP's) for participation and non-participation in the government farm programs. Under the assumptions in this study, the BEP is the market price which covers all costs of production except management. All regions except East Texas have at least one major crop enterprise where current market price is above BEP for participating producers. However, none of the crops in any of the regions is above BEP for non-participating producers. These results, it should be noted, do not take into account possible downward adjustments in rental rates which may have occurred subsequent to development of the budgets, or which may occur in the future.

Table 3. Regional Break-even Prices and Recent Market Prices for Major Texas Crops, 1986.

Region	Crop	Units	Market Price	Break-even Price[a]	
				Participating[b]	Non-participating[c]
			($)	($)	($)
High Plains	Corn, Irrigated	Bu.	1.70	2.21	3.24
	Cotton, Irrigated	Lb.	0.48[d]	0.75	0.99
	Sorghum, Irrigated	Cwt.	2.70	5.63	7.22
	Soybeans, Irrigated	Bu.	4.20	8.69	8.69
	Wheat, Irrigated	Bu.	2.20	3.33	4.89
	Cotton, Dryland	Lb.	0.48[d]	1.08	1.35
	Sorghum, Dryland	Cwt.	2.70	6.08	7.01
	Wheat, Dryland	Bu.	2.20	1.85	3.27
Rolling Plains	Cotton, Irrigated	Lb.	0.48[d]	0.58	0.84
	Cotton, Dryland	Lb.	0.48[d]	0.68	1.08
	Sorghum, Dryland	Cwt.	2.70	5.81	7.56
	Wheat, Dryland	Bu.	2.15	0.73	2.56
Blacklands	Corn, Dryland	Bu.	1.70	1.79	2.82
	Cotton, Dryland	Lb.	0.55[e]	0.44	0.70
	Sorghum, Dryland	Cwt.	2.70	2.96	4.72
	Wheat, Dryland	Bu.	2.15	2.78	4.61
East Texas	Corn, Dryland	Bu.	1.70	2.09	3.11
	Sorghum, Dryland	Cwt.	2.70	5.06	6.81
	Soybeans, Dryland	Bu.	4.20	9.03	9.03
	Wheat, Dryland	Bu.	2.15	2.72	4.55
Coast	Rice, Irrigated	Cwt.	3.75	4.64	12.79
	Corn, Dryland	Bu.	1.70	2.59	3.62
	Cotton, Dryland	Lb.	0.50[f]	0.31	0.58
	Sorghum, Dryland	Cwt.	2.75	4.18	5.92
	Soybeans, Dryland	Bu.	4.20	9.82	9.82
South and West	Cotton, Irrigated	Lb.	0.55[e]	0.51	0.76
	Cotton, Dryland	Lb.	0.55[e]	0.37	0.63
	Sorghum, Dryland	Cwt.	2.75	3.55	5.29
	Wheat, Dryland	Bu.	2.15	2.17	4.00
Valley	Corn, Irrigated	Bu.	1.70	2.60	3.62
	Cotton, Irrigated	Lb.	0.55[e]	0.36	0.62
	Sorghum, Irrigated	Cwt.	2.75	5.92	7.67
	Cotton, Dryland	Lb.	0.55[e]	0.31	0.58
	Sorghum, Dryland	Bu.	2.75	4.41	6.15

[a] Does not include return to management.

[b] Participating in government farm programs.

[c] Not participating in government farm programs.

[d] Market price for cotton grown outside the program = $.35/#.

[e] Market price for cotton grown outside the program = $.42/#.

[f] Market price for cotton grown outside the program = $.37/#.

Even with participation in the government program, the only crops which are above BEP are cotton (Blacklands, Coast, Valley, South and West), and wheat (High and Rolling Plains). Corn, soybeans, and sorghum are below BEP in all regions. Further, irrigated cotton in the Valley and South and West Texas are the only irrigated enterprises which are above BEP.

Limitations and Implications

Limitations

The results from this study have serious implications for Texas agriculture. However, the conclusions from any study are limited by the underlying assumptions, especially in the case of implications concerning possible future adjustments. Thus, while these results are valid indicators of current conditions, the validity of their implications for future adjustments rests firmly on the extent to which the underlying assumptions describe the future economic environment.

The Texas Crop Budgets (Extension Economists-Management) were assumed to be representative of the costs incurred on the typical farm in a given area, producing a given crop. Although this assumption ignores the variability in production costs associated with the level of management and farm size, it is not overly restrictive since most farms are within the "typical" range.

Moreover, future price expectations were not considered. While prices may be expected to change, projection of such possible changes is beyond the scope of this study. This study essentially says: "Given current input and crop prices, this is the current profitability situation and here are some possible future adjustments."

Current provisions of the government farm program were used, with no adjustment for the effects of Gramm-Rudman-Hollings deficit reduction measures. Since program benefits under the current law are scheduled to

decrease over time, this assumption tends to understate possible adjustments. Moreover, major changes in the farm program could greatly alter both the current situation and future adjustments.

Shut-down prices were estimated for the owner-operator. Thus tenants (who must pay a land charge) will have higher SRSDP's and LRSDP's than those reported. Therefore, there may be distortions during the adjustment process which are not adequately described in these results or implications.

Implications

Figure 2 illustrates schematically the relationships between recent crop prices, SRSDP, LRSDP, and BEP for the study crops produced under the government program in each major production region. For example, the current price for dryland wheat is above BEP in the High Plains and the Rolling Plains. In contrast dryland wheat is above LRSDP, but below BEP, in the Blacklands, East Texas, and South and West Texas.

Since current market prices for participating producers of all major crops (except sorghum in the Valley and soybeans statewide) are above SRSDP, there should be no major shifts in cropping patterns in the short run because (a) producers have equipment which is specific to these crops, (b) resale potential for existing equipment is relatively low, and (c) farm program bases will not allow producers to shift to other crops and continue to receive program benefits.

In most cases, prices are above LRSDP for participating producers. This seems to indicate that crop production should be relatively viable in the long run, assuming current levels of government payments. However, the fact that crop prices are also generally below BEP suggests that rental rates and land values will continue to adjust downward.

While the long-run outlook varies from region to region, the situation in the High Plains appears to be particularly serious. Without significant

	Region						
	High Plains	Rolling Plains	Blacklands	East Texas	Coast	South & West	Valley
	Wheat, Dryland	Wheat, Dryland	Cotton, Dryland		Cotton, Dryland	Cotton, Irrigated Cotton, Dryland	Cotton, Irrigated Cotton, Dryland
Break-even Price	- - -

increases in current crop prices and/or farm program benefits, or substantial breakthroughs in cost-reducing technologies, the High Plains likely faces severe long-run adjustments in crop production and farmland values. There are also serious implications for the overall agricultural economy of the state because the High Plains accounts for about 44 percent of the state's major crop acreage, including 40 percent of the corn, 59 percent of the cotton, 34 percent of the sorghum, 29 percent of the soybeans, and 44 percent of the wheat (Texas Agricultural Statistics Service).

Under current economic conditions, crop production outside of the government program does not appear to be a viable option in Texas (Figure 3). Dryland wheat in the High and Rolling Plains is the only crop which provides a positive return to land and management, i.e., current market prices are above LRSDP. Generally, even providing no payments to land and management, receipts for Texas crops grown outside the program will not cover depreciation and other fixed costs. Thus, when machinery and equipment wears out, returns will not justify replacement.

Until returns increase and/or costs decrease, the outlook for that portion of the state's rural economy which is heavily dependent on crop production is one of intensified financial stress. Producers cannot continue to produce those crops which are shown below SRSDP in Figures 2 and 3 because returns do not cover variable costs of production. Production of those crops which are shown higher than SRSDP and lower than LRSDP will decline as machinery and equipment wears out because, even without allocation of returns to land and management, receipts will not fully cover depreciation, taxes, insurance, and interest. Production of those crops higher than LRSDP and lower than BEP will likely continue, but rental rates will decline until returns cover other fixed costs and management. These factors will also continue to depress land values.

	Region						
	High Plains	Rolling Plains	Blacklands	East Texas	Coast	South & West	Valley
Break-even Price							
	Wheat, Dryland	Wheat, Dryland					
Long-run Shut-down Price							
							Cotton, Dryland Sorghum, Dryland
Short-run Shut-down Price							
	Corn, Irrigated Cotton, Irrigated Sorghum, Irrigated Soybean, Irrigated Wheat, Irrigated Cotton, Dryland Sorghum, Dryland	Cotton, Irrigated Cotton, Dryland Sorghum, Dryland	Corn, Dryland Cotton, Dryland Sorghum, Dryland Wheat, Dryland	Corn, Dryland Sorghum, Dryland Soybean, Dryland Wheat, Dryland	Rice, Irrigated Corn, Dryland Cotton, Dryland Sorghum, Dryland Soybean, Dryland	Cotton, Irrigated Cotton, Dryland Sorghum, Dryland Wheat, Dryland	Corn, Irrigated Cotton, Irrigated Sorghum, Irrigated

Figure 3. The Relationship of Recent Market Prices ot Break-even, Long-run Shut-down, and Short-run Shut-down Prices of Major Texas Crops in Each Region, Assuming Non-Participation in Government Farm Programs.

Those producers of crops with prices above BEP will experience relatively little financial stress. But since the latter situation exists for relatively few crops in selected regions of Texas, it seems reasonable to conclude that Texas crop producers, lenders, and agribusineses will continue to face serious financial problems. And it seems equally reasonable to conclude that a long-run solution of these problems will require substantial increases in crop prices, decreases in production costs, or changes in government farm policies.

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