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AFPC **POLICY WORKING PAPER**

IMPACT OF REDUCED PROGRAM PAYMENTS AND  
FLEXIBLE BASE  
ON REPRESENTATIVE TEXAS FARMS


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Government cost and lack of base flexibility are frequently debated as shortcomings attributed to current farm programs. As a result, several proposals are being discussed which address the level of direct payments to farmers and the flexibility issue. One such proposal would pay deficiency payments to participating farmers on only 80 percent of their permitted acreage. The remaining 20 percent of permitted acreage could be planted to any crop, but would not be eligible for deficiency payments. The farm, therefore, would face reduced government payments but realize greater flexibility in choosing the crop mix.

This paper investigates the impact of a 20 percent reduced payment flexible base program relative to a continuation of the 1985 Farm Bill provisions. The focus of the analysis is on the economic impacts of this program on representative crop farms in Texas. The program was evaluated for three alternative uses of the flexible acres, namely: idle or fallow the additional 20 percent of permitted acreage that does not receive deficiency payment income protection, produce the same crop without deficiency payment protection, or produce the most profitable crop on the additional idled acres. Thus, the four scenarios analyzed are:

1. Continue the 1985 Farm Bill provisions with target prices frozen at the 1990 levels and no flexible base (BASE),
2. No deficiency payments on 20 percent of permitted acreage with flexible acres idled or fallowed (IDLE),
3. No deficiency payment on 20 percent of permitted acreage with flexible acres used to produce the same program crop without deficiency payment income protection (SAME),
4. No deficiency payment on 20 percent of permitted acreage with flexible acres planted to the crop offering greatest net cash returns. The choice of the crop alternative is limited, however, to crops currently grown on the farm (RETURNS). The decision to limit the

alternatives to crops currently being grown on the representative farm was made after examining extension budgets for alternative crops in each region. A review of the extension budgets revealed only a few instances where a crop other than the ones currently grown on the farm might offer a greater return to labor and fixed cost. Even then, a majority of the crops offering the higher returns could be ruled out due to:

- Thin markets,
- Input constraints (labor, irrigation, etc.)
- Capital requirements and economies of size.

Under the SAME and RETURNS scenarios, it was assumed production on flexible acres was eligible for Commodity Credit Corporation (CCC) loans although not eligible for deficiency payments. Six representative cotton, wheat, and sorghum farms in selected regions of Texas were simulated over the 1989-93 planning horizon for each of the four scenarios. Commodity prices and policy variables for the BASE option were taken from the January 1989 baseline developed by the Food and Agricultural Policy Institute (FAPRI). Annual crop prices for IDLE, SAME, and RETURNS, over the 1989-93 planning horizon, were obtained from an April 1989 FAPRI study of the 80 percent deficiency program (flexible base).

FAPRI's flexible base study indicates that shifts in acreage are small and no crop experiences a change of more than 2 percent from base level projections. The flexible base options evaluated in the present study, however, are for representative farms in Texas and reflect alternative uses of flexible base acres. It should be recognized that if a significant number of farmers in a region or nationwide chose one option (idle, same, or returns) over the others, prices for the commodities likely would differ from the April 1989 FAPRI study. Therefore, the crop mixes under alternative scenarios for the representative farms in Appendix Tables 1-6 are not projections of how all farmers would react to a flexible base, but reflect different ways a representative farmer could alter the crop mix under a 20 percent flexible base program.

The analysis used the farm level simulation model, FLIPSIM, developed by Richardson and Nixon to simulate the impacts of the four options on the economic viability of the representative crop farms. These farms grow various combinations of wheat, cotton, and feed grains, as is

typical of their respective production region, given the current economic environment and the constraints imposed by the farm program (Figure 1). For this study, an initial debt-to-asset ratio of 0.4 was assumed for each representative farm. The farm's beginning acreage, assets, and crop mix under the BASE scenario are presented in Table 1. The assumed level of target prices, loan rates, and market prices, as specified by the FAPRI January 1989 (baseline) and the April 1989 (flexible base) reports, are summarized in Tables 2 and 3, respectively. Note that the market prices under the flexible base are only marginally higher than under the current program.

## **Results**

Impacts of the alternative uses of the 20 percent flexible base acreage program are compared to the continuation of the 1985 farm bill provisions, in terms of: average annual net cash income, probability of earning a five percent return on investment, and probability of economic survival.

### **Net Cash Farm Income**

The average annual net cash farm income over 1989-93 is given for each representative farm under each policy scenario in Table 4. For the BASE policy, a continuation of the 1985 farm bill provisions, the income ranges from -\$12,560 for the Southern High Plains medium-sized farm to \$58,860 for the Southern High Plains large-sized farm. Relative to the BASE, each farm shows a decline in income for the three alternative 20 percent flexible base options. This result is expected under IDLE and SAME because the farm is giving up deficiency payments. The lower returns under the RETURNS scenario indicate that the foregone deficiency payments are not being offset by increased revenue generated from the most profitable crop. Since the crop alternatives were limited to only those program crops currently grown on the farm, it is highly likely that this alternative also would return less net cash farm income when compared to BASE.

Idling the flexible base acres results in the lowest income among the three alternatives. The loss in average annual net cash farm income due to idling flexible base acres exceeds \$20,000 for each of the farms except the Southern High Plains medium-sized farm (Table 4). Based on these results, it is highly unlikely that many farms in the five study areas would idle flexible base acres if given the option.

For all six representative Texas crop farms, the highest income of the three flexible base options is produced by the RETURNS option, shifting the flexible base acres to the crop with the highest net cash return. For the Blacklands, Rolling Plains, and Southern High Plains farms, the difference between the RETURNS and SAME options is less than \$4,000 (Table 4). The Coastal Bend farm experienced a \$6,490 greater net cash farm income under the RETURNS option over the SAME option. The \$13,000 increase in income for the Northern High Plains farm by transferring idled cropland to dryland wheat production (RETURNS) comes primarily from reduced production costs associated with irrigated wheat and sorghum under the SAME scenario (Table 4).

### **Return On Investment**

The return on investment criteria evaluates the probability that the representative Texas farms will earn a five percent or greater return on initial investment over the period 1989-1993 (Table 5). The Base Policy is again preferred to the three flexible base options in terms of higher probabilities of earning a five percent return for each representative farm.

Of the flexible base options, idling the flexible acres gives the lowest probability of earning a five percent return for each farm. The SAME option gives the same probability as the RETURNS option for the Blacklands farm and two Southern High Plains farms. The RETURNS option gives the highest probability of earning a 5 percent return for the Coastal Bend, Rolling Plains, and Northern High Plains farms (Table 5).

### **Probability of Survival**

In the simulation model, farms whose debt-to-asset ratio increased above 95 percent were considered to have failed (declared economically insolvent). In the BASE policy option, the Coastal Bend, Blacklands, and Rolling Plains farms show a 100 percent probability of survival (staying below the .95 debt-to-asset ratio for the 1989-1993 planning horizon, Table 6). The large Southern High Plains and Northern High Plains farms have 96 and 95 percent probabilities of survival, respectively. The medium-sized Southern High Plains farm has only a 58 percent probability of survival under the base policy option.



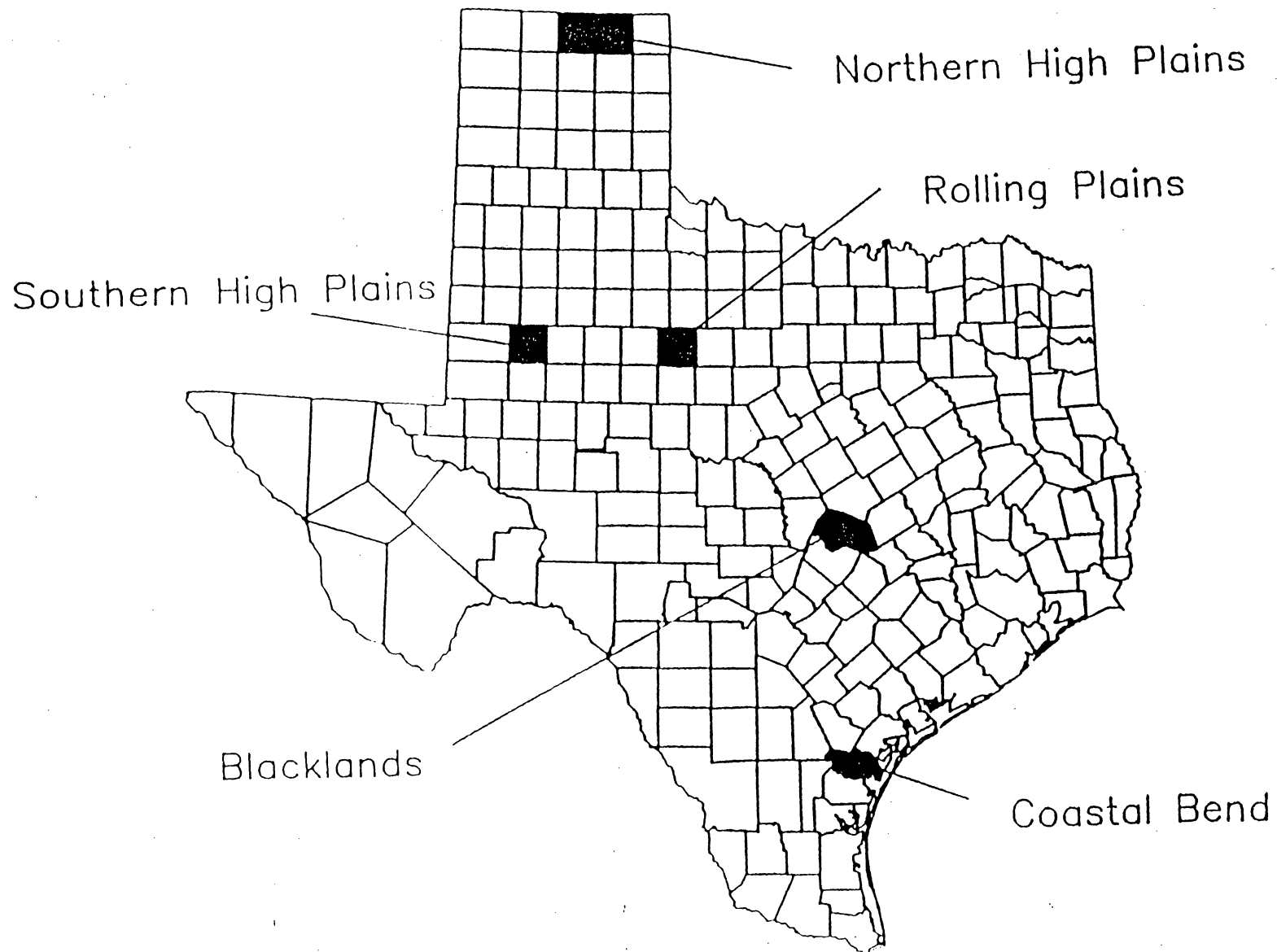
For the flexible base scenarios, the Coastal Bend and Blacklands farms have 100 percent probabilities of survival in all three options. Probabilities of survival for the Rolling Plains farm are about the same (97 to 98) for the three options. The medium-sized Southern High Plains farm varies from 30 percent in the IDLE land option to 39 percent under RETURNS. The large-sized Southern High Plains farm maintains over a 90 percent probability of survival for all three options. The Northern High Plains farm shows a drop to 54 percent probability of survival for the IDLE land option but a 92 percent probability of survival for RETURNS.

### **Conclusions**

Providing flexibility for farmers while reducing farm program payments through a flexible base acres program will mean lower net cash farm income and lower probabilities of earning a five percent return on investment for many Texas crop farmers. The probabilities of survival suggest that, given the initial debt structure assumptions, farmers in the Coastal Bend, Blacklands, Rolling Plains and the large Southern High Plains could survive the 1989-1993 study period even though their financial position would be significantly weakened. Commercial operations representative of the 1360 acre Southern High Plains cotton farm and the Northern High Plains grain farm will find bankruptcy more likely.

A flexible base program would make the farm program participation decision considerably more complex. Idling flexible base acres would likely not be the preferred option. However, transferring acreage to the most profitable crop would be considered very carefully. That is, various crop-mix options for utilizing the flexible base acres would have to be considered to maximize returns to the whole farm.

Figure 1. Study Areas for Representative Crop Farms.



**Table 1. Characteristics of Representative Crop Farms in Five Regions of Texas.**

Crop	Coastal Bend	Blacklands	Rolling Plains	Southern <u>High Plains</u>		Northern High Plains
				Medium	Large	
Cropland (Acres)	1200	1000	1300	1360	3300	2240
Owned (Acres)	300	250	325	340	825	560
Leased (Acres)	900	750	975	1020	2475	1680
Assets (\$)	473,600	405,280	316,650	277,450	688,160	418,741
Land (\$)	342,500	250,000	162,500	116,800	283,400	188,000
Machinery (\$)	126,100	145,280	124,150	130,650	331,950	170,241
Other (\$)	5,000	10,000	30,000	30,000	72,810	60,500
Crop Mix (Base Acres)						
Irr. Cotton	0	0	0	448	1088	0
Dry. Cotton	456	470	909	911	2211	0
Irr. Sorghum	0	0	0	0	0	560
Dry. Sorghum	684	520	0	0	0	0
Irr. Wheat	0	0	0	0	0	560
Dry. Wheat	0	50	390	0	0	1120

Under assets, land includes the market value of cropland. Machinery includes the market value of all farm machinery and irrigation equipment. Other assets consist of pastureland, livestock, off-farm investments, and cash or near-cash investments.



**Table 2. Farm Program Provisions and Market Prices for Cotton, Wheat and Grain Sorghum, Assuming Continuation of the 1985 Farm Bill Provisions (BASE), 1989-93.**

	Target Price	Loan Rate	Market Price	Acreage Reduction Requirement
Cotton (\$/lb.)				
1989	0.734	0.50	0.500	25%
1990	0.729	0.50	0.500	25%
1991	0.729	0.50	0.513	25%
1992	0.729	0.50	0.532	20%
1993	0.729	0.50	0.593	20%
Wheat (\$/bu.)				
1989	4.10	2.06	3.52	10%
1990	4.00	2.29	3.16	5%
1991	4.00	2.31	3.01	5%
1992	4.00	2.42	3.26	5%
1993	4.00	2.49	3.27	5%
Grain Sorghum (\$/bu.)				
1989	2.69	1.56	2.02	10%
1990	2.60	1.48	2.01	12.5%
1991	2.60	1.43	2.02	12.5%
1992	2.60	1.51	2.04	12.5%
1993	2.60	1.52	2.05	12.5%

Source: Food and Agricultural Policy Research Institute, January, 1989.

**Table 3. Farm Program Provisions and Market Prices for Cotton, Wheat and Grain Sorghum, Assuming a 20 Percent Flexible Base Program, 1989-93.**

	Target Price	Loan Rate	Market Price	Acreage Reduction Requirement
Cotton (\$/lb.)				
1989	0.734	0.50	0.5031	25%
1990	0.729	0.50	0.5048	25%
1991	0.729	0.50	0.5202	25%
1992	0.729	0.50	0.5393	20%
1993	0.729	0.50	0.6006	20%
Wheat (\$/bu.)				
1989	4.10	2.06	3.53	10%
1990	4.00	2.29	3.18	5%
1991	4.00	2.31	3.05	5%
1992	4.00	2.42	3.27	5%
1993	4.00	2.49	3.30	5%
Grain Sorghum (\$/bu.)				
1989	2.69	1.56	2.02	10%
1990	2.60	1.48	2.04	12.5%
1991	2.60	1.43	2.04	12.5%
1992	2.60	1.51	2.06	12.5%
1993	2.60	1.52	2.08	12.5%

Source: Food and Agricultural Policy Research Institute, April, 1989.

**Table 4. Comparisons of Base Policy to Alternative Flexible Base Options on Average Annual Net Cash Farm Income for Representative Texas Farms, 1989-93.**

Farms	Base Policy <sup>1</sup>	-----Flexible Base Options-----		
		IDLE <sup>2</sup>	SAME <sup>3</sup>	RETURNS <sup>4</sup>
----- (\$) -----				
Coastal Bend	25300	930	17640	24130
Blacklands	45060	23090	39690	39910
Rolling Plains	38550	14180	26830	29920
Southern High Plains, 1360 Acres	-12560	-29110	-26780	-23980
Southern High Plains, 3300 Acres	58860	14830	39730	40900
Northern High Plains	-4070	-33300	-19370	-6090

**Table 5. Comparisons of Base Policy to Alternative Flexible Base Options on Probability of Success for Representative Texas Farms, 1989-93.**

Farms	Base Policy <sup>1</sup>	-----Flexible Base Options-----		
		IDLE <sup>2</sup>	SAME <sup>3</sup>	RETURNS <sup>4</sup>
		----- (%) -----		
Coastal Bend	82	21	62	67
Blacklands	100	74	97	97
Rolling Plains	93	52	74	79
Southern High Plains, 1360 Acres	21	5	9	9
Southern High Plains, 3300 Acres	81	55	69	69
Northern High Plains	38	2	22	34

<sup>1</sup> Base Policy denotes continuation of the 1985 Farm Bill through 1993 as interpreted by the January 1989 FAPRI Baseline.

<sup>2</sup> IDLE denotes plan whereby the 20% flexible base acres are fallowed.

<sup>3</sup> SAME denotes plan whereby the 20% flexible base acres are planted to the same crop as the government base specifies.

<sup>4</sup> RETURNS denotes plan whereby the 20% flexible base acres are planted to a currently produced crop in which net cash returns are highest for the farm.



**Table 6. Comparisons of Base Policy to Alternative Flexible Base Options on Probability of Survival for Representative Texas Farms, 1989-93.**

Farms	Base Policy <sup>1</sup>	-----Flexible Base Options-----		
		IDLE <sup>2</sup>	SAME <sup>3</sup>	RETURNS <sup>4</sup>
		----- (%) -----		
Coastal Bend	100	100	100	100
Blacklands	100	100	100	100
Rolling Plains	100	97	98	97
Southern High Plains, 1360 Acres	58	30	34	39
Southern High Plains, 3300 Acres	96	91	93	92
Northern High Plains	95	54	76	92

<sup>1</sup> Base Policy denotes continuation of the 1985 Farm Bill through 1993 as interpreted by the January 1989 FAPRI Baseline.

<sup>2</sup> IDLE denotes plan whereby the 20% flexible base acres are fallowed.

<sup>3</sup> SAME denotes plan whereby the 20% flexible base acres are planted in the same crop as the government base specifies.

<sup>4</sup> RETURNS denotes plan whereby the 20% flexible base acres are planted to the crop in which net cash returns are highest for the farm.

**Appendix Table 1. Acres Planted and Considered Planted on Representative Coastal Bend Farm in 1989.**

	Base Policy <sup>1</sup>	-----Flexible Base Options----- Idle Land <sup>2</sup> Same <sup>3</sup> Returns <sup>4</sup>
In Program		
Grain Sorghum	615	492
Cotton	342	273
Out of Program		
Grain Sorghum	0	123
Cotton	0	69
Idled		
Grain Sorghum	0	123
Cotton	0	69

**Appendix Table 2. Acres Planted and Considered Planted on Representative Rolling Plains Farm in 1989.**

	Base Policy <sup>1</sup>	-----Flexible Base Options----- Idle Land <sup>2</sup> Same <sup>3</sup> Returns <sup>4</sup>
In Program		
Wheat	351	280
Cotton	454	363
Out of Program		
Wheat	0	71
Cotton	0	91
Idled		
Wheat	0	71
Cotton	0	91

<sup>1</sup> Base Policy denotes continuation of the 1985 Farm Bill through 1993 as interpreted by the January 1989 FAPRI Baseline.

<sup>2</sup> IDLE denotes plan whereby the 20% flexible base acres are fallowed.

<sup>3</sup> SAME denotes plan whereby the 20% flexible base acres are planted in the same crop as the government base specifies.

<sup>4</sup> RETURNS denotes plan whereby the 20% flexible base acres are planted to the crop in which net cash returns are highest for the farm.

**Appendix Table 3. Acres Planted and Considered Planted on Representative Northern High Plains Farm in 1989.**

	Base Policy <sup>1</sup>	-----Flexible Base Options----- Idle Land <sup>2</sup> Same <sup>3</sup>	Returns <sup>4</sup>
In Program			
Wheat, Irrigated	504	403	403
Wheat, Dry	1008	806	806
Grain Sorghum	504	403	403
Out of Program			
Wheat, Irrigated	0	0	0
Wheat, Dry	0	202	404
Grain Sorghum	0	101	0
Idled			
Wheat, Irrigated	0	101	0
Wheat, Dry	0	202	0
Grain Sorghum	0	101	0

**Appendix Table 4. Acres Planted and Considered Planted on Representative Southern High Plains 3300 Acre Farm in 1989.**

	Base Policy <sup>1</sup>	-----Flexible Base Options----- Idle Land <sup>2</sup> Same <sup>3</sup>	Returns <sup>4</sup>
In Program			
Cotton, Irrigated	816	652	652
Cotton, Dry	1657	1326	1326
Out of Program			
Cotton, Irrigated	0	0	0
Cotton, Dry	0	331	495
Idled			
Cotton, Irrigated	0	164	0
Cotton, Dry	0	331	0

<sup>1</sup> Base Policy denotes continuation of the 1985 Farm Bill through 1993 as interpreted by the January 1989 FAPRI Baseline.

<sup>2</sup> IDLE denotes plan whereby the 20% flexible base acres are fallowed.

<sup>3</sup> SAME denotes plan whereby the 20% flexible base acres are planted in the same crop as the government base specifies.

<sup>4</sup> RETURNS denotes plan whereby the 20% flexible base acres are planted to the crop in which net cash returns are highest for the farm.



**Appendix Table 5. Acres Planted and Considered Planted on Representative Southern High Plains 1360 Acre Farm in 1989.**

	Base Policy <sup>1</sup>	-----Flexible Base Options----- Idle Land <sup>2</sup> Same <sup>3</sup> Returns <sup>4</sup>		
In Program				
Cotton, Irrigated	336	268	268	268
Cotton, Dry	683	546	546	546
Out of Program				
Cotton, Irrigated	0	0	68	0
Cotton, Dry	0	0	137	205
Idled				
Cotton, Irrigated	0	68	0	0
Cotton, Dry	0	137	0	0

**Appendix Table 6. Acres Planted and Considered Planted on Representative Blacklands Farm in 1989.**

	Base Policy <sup>1</sup>	-----Flexible Base Options----- Idle Land <sup>2</sup> Same <sup>3</sup> Returns <sup>4</sup>		
In Program				
Grain Sorghum	468	374	374	374
Cotton	352	282	282	282
Out of Program				
Grain Sorghum	0	0	94	164
Cotton	0	0	70	0
Idled				
Grain Sorghum	0	94	0	0
Cotton	0	70	0	0

<sup>1</sup> Base Policy denotes continuation of the 1985 Farm Bill through 1993 as interpreted by the January 1989 FAPRI Baseline.

<sup>2</sup> IDLE denotes plan whereby the 20% flexible base acres are fallowed.

<sup>3</sup> SAME denotes plan whereby the 20% flexible base acres are planted in the same crop as the government base specifies.

<sup>4</sup> RETURNS denotes plan whereby the 20% flexible base acres are planted to the crop in which net cash returns are highest for the farm.



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