Effectiveness of Acreage Reduction Programs

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ABSTRACT

Acreage reduction programs are used to reduce supplies and boost prices. In 1983, they were used to idle a third of the land used for program crops. Acreage reduction programs have been costly and inefficient. Their effectiveness is offset by increased plantings on unrestricted acres. Idling of lower yielding land reduces their impact on production. Most farmers are paid more than the minimum they would accept to idle the land. Erosive lands generally are not idled. Downward adjustment in land prices as a consequence of technical change is blunted. Acreage reduction programs need to be evaluated in relation to these inefficiencies, foreign acreage response, and the production signals given producers by other program provisions.

KEYWORDS: Acreage reduction, allotment, base acreage, quota, conservation, slippage, windfall benefits.

INTRODUCTION

Acreage reduction programs require that farmers idle a portion of their land in order to receive price and income supports. Over the past 50 years, acreage reduction programs have been a major policy tool to control crop production. But there is a growing frustration with these traditional programs because they have proved to be costly, less than fully effective, and they ultimately result in inefficient use of available resources. Further, the acreage reduction programs have become symbolic of how the United States has been virtually alone among agricultural exporters in assuming the burden of supply adjustment.

ORIGINS OF ACREAGE REDUCTION

Acreage reduction programs are rooted in a longstanding concern about farm income and farm prices. Supporting prices without adjusting production may have an initial appeal, but that approach may ultimately be self-defeating. Higher prices prompt more production and, at the same time, discourage consumption. If prices are supported at too high a level, the problem of excess production is made worse. Stocks accumulate; Government costs rise.

Allotments and Quotas

Rising stocks and costs were evident as early as the thirties. The Agricultural Marketing Act of 1929 provided price supports without production control. The

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futility of trying to raise prices without controlling production quickly became apparent; policymakers therefore established a set of measures to regulate output. The Agricultural Adjustment Acts of 1933 and 1938 used acreage allotments, and a combination of marketing quotas and acreage allotments which have been used since (table 1).

Allotments were used to allocate a desired U.S. acreage back to individual farms, using each farm's historical acreage. Quotas amounted to a type of mandatory acreage reduction. Under the 1938 act, the Secretary of Agriculture was required to proclaim quotas for wheat, rice, corn, cotton, and tobacco when supplies were excessive (for example, when wheat supplies exceeded 135 percent of total use). Once quotas were proclaimed, producers voted in referendums to determine if they would take effect. If two-thirds approved, a mandatory marketing quota was applied to all producers of the commodity in question.

Quotas required operators to restrict their production to a specified acreage or, in some cases, limited the amount of the commodity that they could sell. Production controls were usually implemented in terms of acreage controls through allotments but were still referred to as marketing quotas. The term "marketing quota" was used to emphasize the regulation of marketing, rather than production, in deference to an earlier Supreme Court ruling which invalidated production controls. Stiff penalties were assessed on producers who planted or marketed beyond their quotas. But to compensate for the restriction on production, price supports were raised when mandatory marketing quotas were in effect. If quotas were not in effect, farmers could exceed their acreage allotments without penalty, although they forfeited their rights to price and income supports if they did so. Enabling legislation often specified minimum allotment levels below which officials could not reduce program acreage.

The results were predictable. First, the action had a spillover effect because farmers continued to use their land by expanding production of uncontrolled commodities. The supplies of those commodities rose, reducing the demand for the controlled commodities. This was a primary reason why the allotment program for corn was abandoned in 1959. Noncontrolled feed grains, soybeans, and some additional minor crops gained acreage during periods when allotments were applied to other crops. Sorghum acreage rose in the Great Plains and Southeast, replacing wheat and cotton. Barley area rose in the Midwest and West, replacing land that otherwise would have gone to wheat. Soybean acreage rose in the Midwest and Southeast while corn and cotton acreage were controlled. Second, allotments locked in historical production patterns. Production shifts to lower cost areas were limited. Third, allotments and quotas controlled production in the short run, but in the longer run, farmers were able to increase yields per acre until production again exceeded use at the price support-level. Growing supplies mounted into highly visible surpluses. Fourth, despite this land-saving technical change, land prices were maintained by the scarcity valve created by allotments and quotas.

During the period of rising surpluses in the fifties and early sixties, efforts were made to expand demand, such as the enactment of P.L. 480 in 1954. But, at the same time, pressure grew to reduce supports and allotment and quota minimums. The Soil Bank was established in 1956 to help reduce surpluses. It had an acreage reserve program designed for shortrun acreage reduction. The program paid farmers to put part of their wheat, corn, cotton, tobacco, peanut, and rice allotments into conserving use. The program also provided for a conservation reserve, which paid to retire land under 3- to 10-year contracts. The program had little effect on surpluses, because farmers idled low-yielding cropland and land not normally cropped.

Table 1--The use of allotments (A), marketing quotas (M), acreage bases (B), and normal crop acreages (NCA) as a basis for acreage reduction, 1950-85

Crop	1950	1951-53	1954-58	1959-63	1964-70	1971-73	1974-77	1978-81 1/	1982-85 2/
Wheat	A	3/	M	M	A	A	A	NCA	B
Corn	A		A	B	B	B	A	NCA	B
Cotton (upland)	M		M	M	M	A	A	NCA	B
Rice	A	3/	M 4/	M	M	M	A	A	B
Peanuts	M	M	M	M	M	M	M	M	M 5/
Tobacco	M	M	M	M	M	M	M	M	M

1/ Except for peanuts and tobacco, reduction is specified as a percentage of current plantings such that diverted plus planted acreage is less than NCA.

2/ Except for peanuts and tobacco, reduction is specified as a percentage of crop base. If a set-aside program is specified, NCA could be used at the discretion of the Secretary of Agriculture.

3/ In 1951, allotments were in effect for a time, but were terminated early in the year.

4/ No quotas in 1954.

5/ Allotments were suspended for 1982-85; poundage quotas were in effect for peanuts for domestic edible use.

Voluntary Commodity Programs

When efforts at controlling production through allotments, quotas, the Soil Bank, and demand-expansion programs failed, policymakers turned to idling land through voluntary acreage reduction programs of the sort used today. Wheat provides a good example. Despite marketing quotas and the Soil Bank, wheat stocks grew to 1.5 billion bushels at the end of 1960/61--nearly 1-1/4 year's use. In 1962, quotas were still in effect, but in addition, growers were required to divert to conserving use 10 percent of their allotments. In 1963, an alternative was tried: growers were offered the option of diverting a percentage of their wheat allotment in return for a payment. This was a voluntary paid diversion used in conjunction with quotas. By 1964, wheat growers had voted against quotas and an entirely voluntary program was in place. For the next several years, program benefits were contingent on planting within allotments, and in some years, diverting a percentage of the allotment.

Still more versions of voluntary acreage reduction programs were introduced in the seventies and eighties (table 2). The set-aside concept, introduced in 1970, made program benefits contingent on idling a percentage of the farm's allotment or base acreage (the term base was used for feed grains and analogous to the allotment in that it was assigned to a farm according to historical plantings). Remaining land could be planted to any nonquota crop, including the specific program crop. The intent was to permit greater regional adjustments in cropping patterns, previously limited by allotments. In 1977, allotments were dropped, and the set-aside concept was altered to require that a percentage of current plantings of a crop be diverted to conserving uses. In the eighties, acreage reduction programs have required idling a percentage of the base acreage of a crop in return for program benefits. Additional diversion programs have offered cash payments or Payment-in-Kind (PIK) in return for idling a percentage of the base acreage of a crop.

Acreage reduction programs have had many names including soil bank, acreage reserve, conservation reserve, cropland adjustment, diversion, cash diversion, set-aside, acreage reduction, and PIK. Some have restricted production for a single year, others for many years. Most land idled today is under annual programs (table 3).

Prior to the soil bank, the old system of allotments and marketing quotas generally restricted production of commodities but did not require diversion of the land to a nonproductive use. Modern acreage reduction programs require farmers to take land entirely out of production of commercial crops. The benefits to farmers of today's reduction programs range from direct compensation payments to eligibility for loans and target price protection. Because participating farmers must put their idled land to conserving use, acreage reduction programs offer an opportunity to enhance resource conservation in addition to controlling production.

ACREAGE REDUCTION ISSUES

Basically, acreage reduction programs have been used as a way to reduce supplies and boost commodity and land prices. In recent years, it has become increasingly clear that several drawbacks to voluntary acreage reduction programs limit their effectiveness.

Table 2--Participation in set-aside, acreage reduction, and diversion programs, 1978-85 1/

Crop	1978	1979	1980	1981	1982	1983	1984 2/	1985 3/
					Percent			
Wheat:								
Program	20/0/0	20/0/0	NP	NP	15/0/0	15/5/10-30	20/10/10-20	20/10/0
Participation	72	57			48	78/78/66	60/60/35	74/74
Corn:								
Program	10/10/0	10/10/0	NP	NP	10/0/0	10/10/10-30	10/0/0	10/0/0
Participation	40/90	21/65			29	71/71/84	53	71
Upland cotton:								
Program	0/10/0	NP	NP	NP	15/0/0	20/5/10-30	25/0/0	20/10/0
Participation	NA/37				78	94/2/82	69	83/83
Rice:								
Program	NP	NP	NP	NP	15/0/0	15/5/10-30	25/0/0	20/15/0
Participation					78	98/98/88	83	92/92

NP = No program. NA = Not applicable.

1/ Programs are indicated as required set-aside (1978 and 1979) or acreage reduction (1982-84) percentage/optional cash diversion percentage/optional payment-in-kind (PIK) percentage. For 1978 and 1979 programs, participation in set-aside is defined as set-aside acreage as a percentage of acreage that would be set aside if participation were 100 percent. Participation in diversion is diverted acreage as a percentage of acreage that would be diverted if all participants (for cotton, all growers) complied with the optional diversion. For 1982-85 programs, participation in the acreage reduction programs is the base participating in all programs as a percentage of total base. The same definition is used for participation in the cash diversion when diversion was required, as it was for the 1983 wheat, corn, and rice programs and the 1984 and 1985 wheat programs. For the optional cash diversion for cotton in 1983, participation is base in the diversion as a percentage of total participating base. Participation for optional PIK programs is the base in PIK as a percentage of total participating base. PIK includes whole-base option.

2/ Participation rates are preliminary.

3/ Participation rates are based on enrollment rather than compliance.

Table 3--Principal crops planted and total idle acreage reduction, United States

Crop year	Principal crops planted	Annual acreage reduction	Long-term acreage reduction	Total idle acreage	Planted plus idle acreage
			Thousand acres		
1955	349,407	0	0	0	349,407
1956	340,926	12,000	1,400	13,400	354,326
1957	329,489	21,400	6,400	27,800	357,289
1958	326,843	17,200	9,900	27,100	353,943
1959	327,793	0	22,500	22,500	350,293
1960	324,337	0	28,700	28,700	353,037
1961	308,119	25,200	28,500	53,700	361,819
1962	297,598	38,900	25,800	64,700	362,298
1963	299,196	31,700	24,400	56,100	355,296
1964	298,454	37,600	17,500	55,100	353,554
1965	297,215	41,900	14,400	56,300	353,515
1966	293,062	47,500	15,700	63,200	356,262
1967	305,781	25,200	15,600	40,800	346,581
1968	299,384	35,700	13,700	49,400	348,784
1969	291,153	50,200	7,800	58,000	349,153
1970	293,211	53,100	3,900	57,000	350,211
1971	305,830	33,800	3,400	37,200	343,030
1972	294,609	58,700	2,800	61,500	356,009
1973	318,682	16,300	2,800	19,100	337,782
1974	326,076	0	2,700	2,000	328,076
1975	332,236	0	2,400	0	332,236
1976	336,091	0	2,100	0	336,091
1977	344,873	0	1,000	0	344,873
1978	336,438	18,200	0	18,200	354,638
1979	346,803	13,000	0	13,000	359,803
1980	355,677	0	0	0	355,677
1981	363,167	0	0	0	363,167
1982	358,708	11,100	0	11,100	369,808
1983	309,536	78,000	0	78,000	387,536
1984 1/	344,927	26,600	0	26,600	371,527
1985 1/	NA	34,000	0	34,000	NA

NA = Not available.
1/ Preliminary. Idle acres for 1985 are based on enrollment.

Slippage

The impact of acreage reduction programs on production is less than the number of idled acres would suggest. This discrepancy has been called "slippage." Acreage slippage, which is related to production slippage, occurs when harvested acres change by less than the change in idled acres. Slippage can refer to total crop acreage or to acreage of specific crops. It can refer to the acreage and production of program participants, or nonparticipants, or both. Slippage varies by crop, region, and year. The type of acreage control program in effect and the program rules also affect slippage.

One acre of land idled under an acreage reduction program does not reduce the acreage of the given crop by a full acre. Experience with acreage reduction in 1982 through 1984 provides graphic examples (table 4). Programs in these years required a participant to devote to conservation uses a portion of the farm's established base acreage of the crop. The size of a farm's base acreage was determined by the level of plantings during the previous 2 years. Record crop acreage was harvested in 198', so the available cropland acreage was utilized to a greater degree than ever before. In 1982, 2.1 million acres of the U.S. corn base were idled, but harvested acreage declined only 1.8 million acres. Thus, the idled acreage was 86 percent effective in reducing harvested area (1.8 million acres divided by 2.1 million times 100 percent). The following table presents additional data on acreage slippage in the 1982 to 1984 acreage reduction programs (computed from data in table 4).

	Change in harvested area (col. 1)	Change in idled area (col. 2)	Col. 1 divided by col. 2
	Million acres		Percent
Corn			
1982	-1.8	+2.1	86
1983	-21.2	+30.1	70
1984	+20.3	-28.4	71
Average			76
Wheat			
1982	-2.7	+5.8	47
1983	-16.5	+24.2	68
1984	+5.5	-7.9	70
Average			62

In 1976, Ericksen (1) concluded that diversion was only 50 to 60 percent effective in reducing acreage. "olding 10 acres idle reduces crop acreage by only 5 to 6 acres. The above table indicates that the 1982 to 1984 experience seems to coincide with the experience from earlier acreage reduction programs. Effectiveness was slightly higher with corn, averaging 76 percent, and wheat, 62 percent.

Nonparticipants--a Key Source of Slippage

An important source of acreage and production slippage has been the plantings of farmers not participating in crop programs. Because acreage reduction programs have been voluntary, there have been nonparticipants. Other things equal, an

Table 4--Harvested acres for major field crops and conserving-use acres, selected years

Item	1955	1972	1977	1978	1979	1980	1981	1982	1983	1984 1/
					Million acres					
Harvested:										
Corn for grain	68.5	57.5	70.9	71.9	72.4	73.0	74.5	72.7	51.5	71.8
Sorghum grain	12.9	13.2	14.1	13.4	12.9	12.2	13.7	14.1	10.0	15.3
Oats	39.0	13.4	13.5	11.1	9.7	8.7	9.4	10.3	9.1	8.1
Barley	14.5	9.6	9.6	9.2	7.5	7.3	9.0	9.0	9.7	11.2
Feed grains	134.9	93.8	108.1	105.6	102.5	101.5	106.6	106.1	80.3	106.4
Wheat	47.3	47.3	66.5	56.5	62.5	71.1	80.6	77.9	61.4	66.9
Rice	1.8	1.8	2.2	3.0	2.9	3.3	3.8	3.3	2.2	2.8
Cotton, upland	16.9	12.9	13.2	12.3	12.7	13.1	13.8	9.7	7.3	10.5
Soybeans	18.6	45.7	57.6	63.7	70.3	67.8	66.2	69.4	62.5	66.1
Total harvested	219.5	201.5	247.6	241.5	250.9	256.8	271.0	266.4	213.7	252.7
Conserving-use acres:										
Corn	0	--	0	6.1	2.9	0	0	2.1	32.2	3.8
Sorghum	0	--	0	1.4	1.2	0	0	.7	5.7	.6
Barley	0	--	0	.8	.7	0	0	.4	1.1	.5
Oats	0	--	0	0	0	0	0	.1	.3	.1
Feed grains	0	36.6	0	8.3	4.8	0	0	3.3	39.3	5.0
Wheat	0	20.1	0	9.6	8.2	0	0	5.8	30.0	22.1
Cotton	0	2.0	0	.3	0	0	0	1.6	6.8	2.4
Rice	0	0	0	0	0	0	0	.4	1.8	.8
Cropland adjustment	0	2.8	0	0	0	0	0	0	0	0
Total conserving	0	61.5	0	18.2	13.0	0	0	11.1	78.0	26.6
Total harvested and conserving	219.5	263.0	247.6	259.7	263.9	256.8	271.0	277.5	291.7	279.3

-- = Not available.

1/ Preliminary.

acreage reduction program reduces total production and has a positive effect on market prices. Nonparticipants therefore have an incentive to expand their acreage of crops in the reduction program to take advantage of the higher expected prices. They become "free riders," receiving indirect program benefits in the form of higher farm prices. The 1982 feed-grain and wheat programs demonstrate the contribution of nonparticipants to slippage.

In 1982, farmers initially enrolled 78 percent of the U.S. corn base in the corn program. However, only 29 percent of base acreage ultimately complied with the program. Farmers not complying--no damages were assessed for noncompliance--undoubtedly expected the high enrollment to strengthen prices. Nonparticipants planted 63 million acres, compared with established base acreage of nonparticipants of 57.6 million acres. This expansion, amounting to 109 percent of the base, was relatively greater than even 1981's record-high U.S. corn acreage, which was 104 percent of the 1982 U.S. corn base.

Nonparticipants also reduced the effectiveness of the 1982 wheat program. They planted 53.2 million acres, 13 percent above the nonparticipants' established base. Winter wheat growers were largely responsible for the extra plantings. The final 1982 program was not announced until January 1982, subsequent to the passage of the Agriculture and Food Act of 1981 during December 1981. Plans for the wheat program had been announced at the end of August 1981, contingent on passage of the bill. Uncertainty by winter wheat growers over the final provisions of the program and prospects for 1981/82 wheat prices 15 to 25 percent above the loan rate (as indicated by USDA forecasts published in August 1981) encouraged winter wheat producers to plant at or above their base acreages.

The smaller the required acreage reduction, the greater the prospect for slippage caused by nonparticipants. A program requiring only a small percentage reduction might be announced when only a small market imbalance is expected in the absence of the program. For farmers, the probability of receiving high prices for the new crop--caused by program participation, stronger than expected demand, or yield shortfalls--is greater than if a large percentage acreage reduction program were needed for market balance. Thus nonparticipation might be greater, and the nonparticipants are more likely to plant in excess of their bases. If a program requiring a small percentage reduction were accompanied by low expected prices, nonparticipation might be small, such as in the 1985 programs. Program effectiveness could still be low, as above-average yields or nonparticipants' acreage could easily offset the small amount of idled acreage.

Type of Program and Acreage Control of Participants

Sources of slippage also differ by type of acreage reduction program. Participants themselves can be a major factor. For the acreage reduction programs of 1982 to 1984, participants' planted plus idled acreage for a given crop was required to be, and generally was, equal to or less than their base acreages for the crop. In this type of program, if bases accurately reflect recent planting history, participants' plantings will be restrained, unless they violate the program rules. However, for set-aside programs, a participant's planted plus idled acres of a specific crop are not required by program regulations to be equal to or less than acreage planted to the crop in previous years.

The set-aside program requires that a percentage of current planted acreage of the crop, rather than the crop base, be diverted. Also, the sum of planted acreage of all crops plus diverted acreage must not exceed normal plantings of all crops, as measured by the farm's established normal crop acreage (NCA).

Cross-compliance can be imposed to limit slippage. Cross-compliance requires farmers to comply with set-aside provisions (or plant within established acreage bases) for all crops to be eligible for program benefits for any crop.

If a farmer were optimistic about the market prospects for a crop with a set-aside program, the farmer could increase plantings of the crop, yet remain within the NCA by diverting acreage of some other crop. An attractive target price can cause such an acreage expansion (2). Ironically, the Emergency Agricultural Act of 1978, signed into law in May, gave the Secretary of Agriculture the authority to raise target prices for major program crops whenever a set-aside program was in effect for at least one of the crops. The ostensible purpose was to attract participation and lower acreage. However, the higher target price could raise both acreage and Government costs. Of wheat producers participating in the 1978 program, 65 percent grew program crops, in addition to wheat (4). Around 40 percent of corn program participants grew other program crops. When nonprogram crops such as soybeans are considered, it is clear that most farmers have the potential to expand acreage of the crop with the set-aside program and still comply with program regulations.

Slippage in the 1978 and 1979 set-aside programs was significant and may be an important reason why set-aside programs have not been used since then. In 1978, with a 10-percent set-aside program for corn, 6.1 million acres were idled, but harvested acreage rose 0.3 million acres. In addition to the set-aside, there was a voluntary 10-percent cash diversion program, and this may have contributed to the slippage. The payment rate was 20 cents per bushel on planted acres or roughly $100 an acre on diverted acres. The cash diversion payment rate was the main attraction for overall corn program participation: 90 percent of set-aside participants were also in the additional paid diversion program (table 2). The attractive payment rate actually may have prompted plantings, because the more corn a producer planted, the greater the cash diversion payments. Again in 1979, there was little relationship between harvested and idled acreage in the corn program. Idled acreage fell 3.2 million because participation was halved, but harvested area rose only 0.5 million acres. Low participation in both 1978 and 1979 contributed to program ineffectiveness.

The 1978 wheat program was very effective--slippage was nil. High participation--70 percent of acreage--limited slippage by nonparticipants. Because corn acreage was expanding, cross-compliance also likely limited slippage by wheat growers; some probably did not have enough acreage of other crops to expand both corn and wheat acreage and meet set-aside requirements. Almost 10 million acres were set aside, and harvested acreage dropped 10 million. In 1979, participation among wheat and corn growers fell and wheat price prospects were much improved. Idled acreage dropped 1.4 million acres from 1978, but harvested wheat acreage rose 6 million acres.

Program Rules

Under any type of acreage reduction program, slippage caused by participants will also depend on program rules and enforcement of rules. Violation of rules reduces program effectiveness, but violators can be assessed damages and their benefits can be reduced. A USDA audit of the 1983 programs showed that 11 percent of farms in 20 States that were studied did not fully comply with requirements (9). Violators either designated ineligible or insufficient land as reserve acreage or misreported program crop acreages. However, there is no evidence indicating that the propensity to violate rules is greater under one type of acreage reduction program than another.

Recent acreage reduction programs provide several examples of how program rules can contribute to slippage, even when participants follow all requirements. Consider the rules for computing a farm's base acreage. For 1982 programs, base for a given crop was the higher of the acreage planted (or considered planted) in 1981 or the average plantings in 1980 and 1981. The example that follows shows how a farm with 200 acres of wheat and corn could have been assigned base acreages totaling 225 acres in 1982. This "phantom base" was an issue in the 1982 and later programs.

	1980	1981	Average	Base
		Acres		
Corn	50	100	75	100
Wheat	150	100	125	125
Total	200	200	200	225

Conserving-use acres were required to have been cropped in 2 out of the previous 3 years. Depending on availability of other land, such as soybeans or pasture, this farm could have had corn, wheat, and conserving-use acres in excess of 200 acres and still have been in compliance with the 1982 wheat and feed grain programs.

Turn-row, skip-row, and summer fallow acreage are normally excluded from the base acreage. Some 30 million acres of wheat are planted in a rotation with summer fallow land. Provisions for the 1982 through 1985 acreage reduction programs permitted wheat growers to use summer fallow as their conserving-use acres (although in 1983, land idled for PIK had to be land that would have been cropped in that year). This enabled participants to crop their entire base and still comply with program requirements.

In some cases, land incapable of being cropped can also qualify as conserving acres. In 1983, large amounts of land in California were severely flooded and could not have been planted. Some of this land qualified as conserving acres. Although not slippage *per se*, this provision allowed some farmers to plant all or most of their available cropland and still be program participants. However, an acreage reduction did occur even though it was due to weather, not the program.

Productivity of Idled Land

A factor that can substantially raise production slippage is yield. When acreage reduction programs are in effect, participants and nonparticipants alike tend to devote more inputs to land in production, thereby increasing yields. What occurs, then, is that idling an acre of land does not produce an equivalent reduction in production.

Another source of slippage associated with yields is the tendency for land withdrawn from production to be of lower productivity than the land remaining in production. Most of the land idled in the 1978 corn program was found to be in two soil groups that were 65 and 95 percent as productive as the national average yield (6). An earlier study concluded that the productivity of diverted acreage as a percentage of acreage in production was 90 percent for wheat, 85 percent for grain sorghum, 83 percent for barley, 82 percent for corn, and 80 percent for cotton (10). Econometric estimates can be used to relate average yield per harvested acre to the number of planted or idled acres (3, 5). Recent experience suggests that for every 10 percent of an acreage base that is idled, average yield on the remaining acres will increase 3.5 percent for cotton, 3 percent for corn, 2 percent for wheat, and 1 percent for grain sorghum.

Windfall Benefits to Some Producers

Another problem with acreage reduction is that the direct compensation payments made to producers are typically a constant per-bushel or per-pound offer rate to forego production. Under this method of compensation, a higher rate is required to bring in more producers to increase participation. However, those farmers who would otherwise be willing to participate at a lower rate also get the higher payment rate, which gives them a windfall. In effect, many farmers receive compensation for foregone income on idled acres plus an additional amount that is really a direct income supplement.

The diversion payment rate is stated explicity in cash diversion programs. For example, the 1983 wheat program paid participants $2.70 a bushel to idle 5 percent of their wheat base, and it offered an in-kind payment of 95 percent of a farm's yield to divert an additional 10 to 30 percent of base acreage. However, the payment rate is not explicit for acreage reduction programs that require idling a percentage of base in return for program benefits, such as nonrecourse loans and target price protection. Yet, the payment rate is still constant and can be computed by a farmer in order to make the decision whether to participate.

For example, the 1983 upland cotton program required a producer to idle 20 percent of cotton base acreage for eligiblity for program benefits; there was no explicit diversion payment rate applicable to this 20 percent. At the time of program signup, farmers generally expected that a deficiency payment rate of around 13 cents a pound on planted acreage would be a primary benefit of compliance. However, the deficiency payment could be viewed as a payment of 52 cents a pound on production foregone from diverted acreage (13 cents a pound times the ratio of the percent of base planted to the percent of base diverted, or 13 x (.8/.2) = 52). So, even when there is no explicit cash diversion payment rate, a dificiency--or income support--payment rate functions as one.

In principle, a constant payment rate that will induce a farmer to idle land has to be at least large enough to meet that farmer's net return expectations on the acre that is left idle. For a given level of payment, the farmer earning the lowest net return by farming the land is the farmer most likely to participate. Therefore, the program not only attracts the least efficient producers, but also gives them the largest windfall supplement to income. It can be argued from an efficiency standpoint that land reduction programs tend to perpetuate inefficient producers. It can be argued from a welfare standpoint that the program provides the most help to those who are receiving relatively lower returns per acre and perhaps are in most need of a subsidy. It is not known if these are the producers with the lowest family incomes, but some are surely in the group of inefficient producers.

A few numbers can illustrate the windfall. Consider wheat producers A and B who expect yields of 45 and 35 bushels per acre, respectively, and a price of $3.65 a bushel. Producer A expects to spend $35 an acre on variable costs, while producer B expects to spend $65. If the Government announces a cash diversion payment rate of $2.70 a bushel, producer A could earn more growing rather than diverting wheat. In fact, the diversion payment rate would have to rise to $2.87 a bushel to interest producer A. Producer B--the farmer with the higher production costs--could earn more by participating in the program. Producer B would have been willing to idle an acre for $1.80 per bushel and thus gains a windfall of 90 cents a bushel or $31.50 an acre.

Figure 1 graphically depicts the windfall payment involved in a typical acreage reduction program. If the Government could pay each producer the minimum amount

the producer would accept for participation, Government costs would be represented by the lined area. Producers would receive different payment rates, rather than a constant rate. Each producer would receive a rate equal to the producer's expected net return.

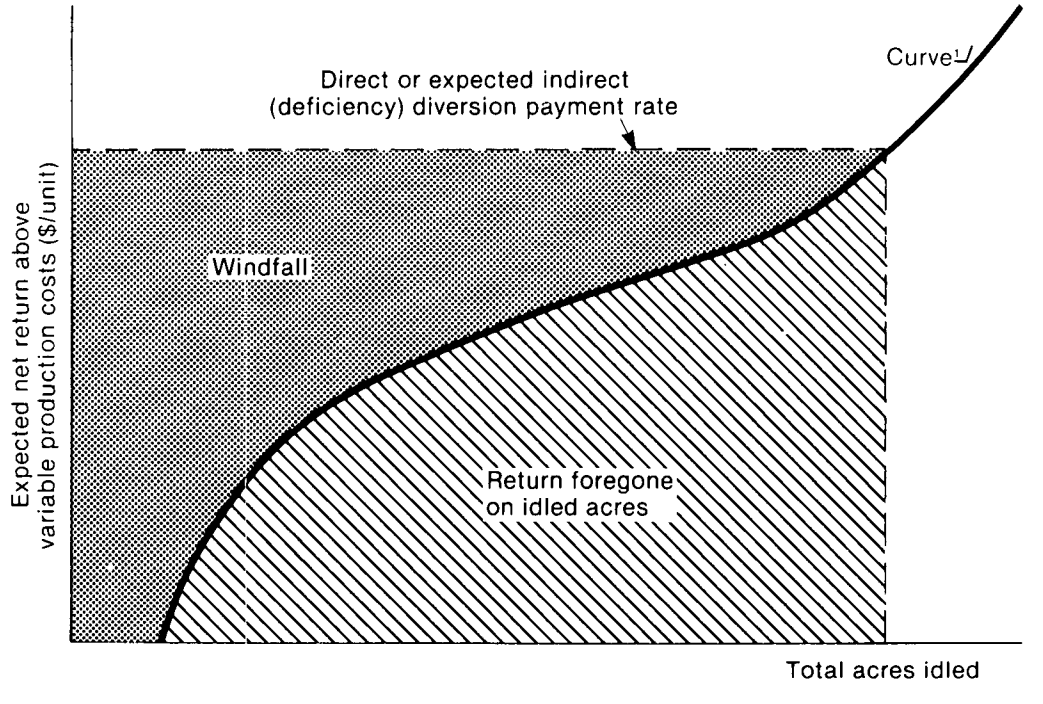
A constant payment rate will be equal to or greater than the expected net return per acre of all participants. The Government cost is then the lined area plus the shaded area, with the shaded area representing the windfall.

The lined area represents the minimum Government cost to idle land similar in productivity to that which has entered acreage reduction programs in recent years. This pattern of idle land implies limits on the amount of land each producer may idle. However, a recent study suggests that the cost can be reduced even below the lined area with a least cost conservation reserve program that targets the most marginal lands for retirement (6). The authors use such a program to compute a measure of the windfall. They conclude that to achieve the drop in production caused by the 1978 acreage reduction programs, a least cost program focused on idling the most marginal land would have been 25 percent less expensive than paying all farmers a fixed rate equal to the net return on the most marginal acre idled under the least cost program. The least cost program was assumed to operate through competitive bids by farmers, and it allowed all of a farm's less profitable land to be idled.

The PIK program provided an opportunity to compare fixed diversion offer rates with farmer-submitted bids. The Government offered wheat farmers 95 percent of their program yields to idle 10 to 30 percent of their base. Growers of other PIK crops were offered 80 percent of their program yields. Farmers could also

Figure 1

Constant diversion payment rate assures windfall



1/ Curve shows the number of acres idled with an expected net return at or below the specified level under a given acreage reduction program.

submit bids to idle their entire base acreage. Accepted bids averaged 85.9 percent of program yields for wheat, 73.3 percent for corn, 72.9 percent for sorghum, and 72.7 percent for cotton. There were many rejected bids below these averages, but limits on the amount of land that could be idled in any one county prevented their acceptance.

Adverse Effects on Local Economies

Idle land tends to have an adverse effect on local communities. The effect on farm input suppliers is particularly noticeable, as their sales are reduced. The effect hits some communities harder than others because the idle acres tend to concentrate in certain regions rather than being proportional to the base acreage.

The 1984 programs provide an example. Based on program enrollment, diverted wheat acres accounted for an estimated 20 percent of the Kansas wheat base. In Arkansas, where participation by growers who doublecrop soft red wheat is normally lower, required conserving acres accounted for only 6 percent of the wheat base.

The 1983 PIK program had a dramatic effect on input suppliers. An estimated 47 million acres were idled in return for an in-kind payment. In an initial assessment of the program, USDA estimated that farm expenditures would fall about 12 to 15 percent on seed, fertilizer, pesticides, and repairs; 8 to 10 percent on fuel; and 2 to 3 percent on machinery (8). The total decline was estimated at $5 billion. In order to limit the consequences of these reduced expenditures in any one area, USDA restricted the acreage for each program crop that could be diverted in any one county to 45 percent of the county's base acreage.

Increasing Crop Bases

Some producers have not participated in programs in some years in order to expand their bases of program crops either by adjusting crop rotations or by plowing up less productive, erosive land. Once land has a cropping history, it has been possible to enter it into the program acreage base, making it eligible for program benefits.

After the surpluses of the sixties, allotments were reduced in the seventies. Since then, the bases have been allowed to increase sharply (fig. 2):

- The corn base, at a low of 60.7 million acres in 1975, reached 81.2 million acres in 1984.
- The wheat base was 45.5 million acres in 1970 (domestic allotments were as low as 18.7 million acres in 1973); in 1984, it reached 91.0 million acres.
- The upland cotton base for 1978 was 10.0 million acres. In 1984, it reached 15.0 million acres.
- The rice base was 1.8 million in 1981--near the level of the early seventies. In 1984, it was 4.0 million acres.

The base changes reflect growth in demand, changes in methods for computing bases, and whether the bases were used for acreage reduction or payment purposes, or both.

Some of the added land is marginal and is likely brought in so that it can be entered into Government programs. Under current methods of paying for acreage reduction, the greatest relative benefits go to the less efficient producers. Therefore, if marginal land can be brought into the base and then be idled to earn acreage reduction payments, it can turn out that the Government payment provides a greater return than what could be earned from production in many years. In addition, it becomes more expensive to taxpayers to achieve the necessary production control.

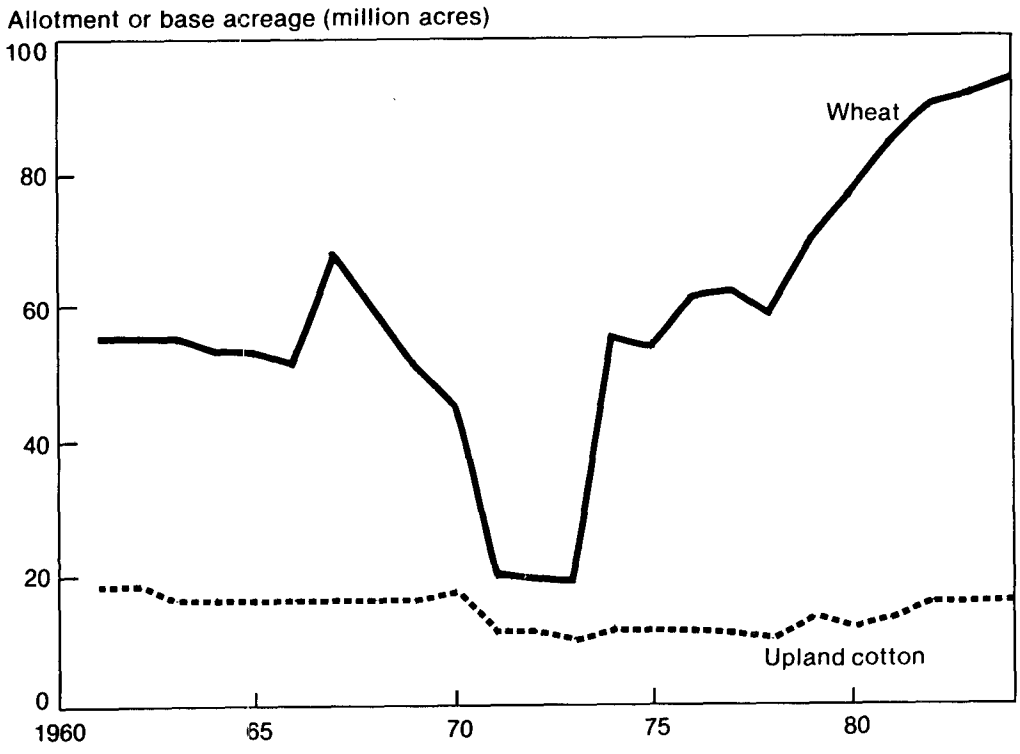
During the early eighties, bases have expanded while demand for crops has stagnated. Bases for crops such as wheat, rice, and cotton have moved well above the peak acreages of 1980 and 1981. For example, the estimated U.S. wheat base for 1985 is 93.9 million acres, compared with the record for plantings of 88.3 million set in 1981. Should demand remain stagnant, expanding bases will reduce the effectiveness of acreage reduction programs. The percentage of base that needs to be taken out of production will increase as the base increases. This will raise the cost of participating to those farmers who have not expanded their bases--primarily the participants in previous programs--unless they receive a cash payment for the larger reduction. The outcome of expanding bases, then, is lower participation and a higher probability that a large cash diversion program will be required to idle the necessary acreage.

Inefficient Land Conservation

Marginal land is idled under acreage reduction programs, but marginal land is not necessarily erosive land. Also, the size of the cash and in-kind diversion

Figure 2

Growth in crop bases



payment rates and expected deficiency payment rates in recent programs have encouraged the idling of land in productive, nonerodible areas. Consequently, erodible land generally will not enter an annual acreage reduction program, unless the program is designed to encourage its entry (6). This is consistent with USDA findings for the 1983 programs; the distribution of diverted acres by land capability class was about the same as that for U.S. cultivated cropland (7).

Land idled under acreage reduction programs allows the opportunity to implement conserving practices--leveling, terracing, tiling, weed control, or conversion to pasture and forest. However, the opportunities are not always taken or else are undone to the detriment of the environment, wildlife, and effectiveness of future programs. For example, USDA found that acreage idled under the 1983 programs generally suffered less erosion than if it had been cropped. It was also found, though, that in areas where a cover crop is hard to establish--which can be the case for erosive land--or where land was left fallow, erosion was worse on idled acres because of exposure to wind and water. Moreover, some conservation practices, such as on erodible land, may take more than a year to develop and are thus not encouraged by annual acreage reduction programs. Multiyear conservation programs have a much larger soil-saving effect than annual programs.

Acreage Reduction Effects on Land Values

The value of farm program benefits has been capitalized into land values, with the degree of capitalized value relating to the relative size and kind of commodity allotment or base. Programs with high price supports and relative permanence, such as tobacco, experience the greatest degree of capitalized value. Landowners benefit from acreage reduction programs because these programs limit the supply of land that can be used for profitable program commodities, thus giving that land a scarcity value. Tobacco provides an extreme example. The land and quota charge (net-share rent basis) for producing burley tobacco was $1,087 per acre in 1983, compared with an average gross cash rent of $58 an acre for cropland rented in Kentucky in that year. Those who wish to produce program crops must compete for a smaller eligible supply of land and, in so doing, they bid up the price or rent above what it would be otherwise. The increase is likely greater during periods when farmers expect reduction programs to be frequently in effect. Crop prices strengthened by acreage reduction programs will also be reflected in higher land prices or rental rates. Renters or subsequent landowners do not benefit to the same degree as landowners, because the higher priced land simply raises their production costs. Programs that depend on acreage bases for their administration tend to be perpetuated because current owners as well as communities fear an equity loss if bases were to be eliminated or changed.

Reduced Participation by Large Producers

About 12 percent of today's farms market about two-thirds of all farm products, while 60 percent of all farms account for only 10 percent of total farm sales. The effectiveness of acreage reduction programs is increasingly restricted because some of the larger farms are precluded from participation by the $50,000-per-person limitation on program payments. The effectiveness of PIK in reducing production would have been limited to a considerable degree if the PIK compensation were subject to the $50,000 payment limit.

If payment limits apply to all types of compensation, future acreage reduction requirements will be increasingly directed to the smaller farmers. This pattern has been evident for cotton, a high-value crop. In 1984, the average California cotton farm had 291 acres of cotton base on which yields were double the national

average; only 28 percent of the State's base acreage was in the 1984 acreage reduction program. The remainder of U.S. farms averaged 103 acres of cotton base, and 74 percent of their total base participated in the 1984 program.

The payment limit is often debated as an equity issue. The political process has judged that large efficient farms--those accounting for most of today's production--should have limited Government income supplements. But if program payments are made to induce farmers to idle acreage--rather than to supplement income--then equity and program effectiveness are stalemated. The larger the acreage reduction percentage and the larger and more efficient the farm, the larger the payment will have to be in order to attract adequate participation.

POTENTIAL FOR MAKING ACREAGE REDUCTION MORE EFFECTIVE

Some have suggested tightening up acreage reduction programs to make them more effective. As has been demonstrated, the very nature of limited acreage reduction programs makes this difficult at best. Others have suggested cross-compliance or offsetting compliance as a means of shoring up acreage reduction programs. Both views ignore the political reality that attempts of any kind to tighten up acreage reduction programs (such as cross-compliance, restrictions on summer fallow, or mandatory controls on haying and grazing) usually meet with strong opposition in Congress--at least they have in the past.

While cross-compliance may have value for certain commodities or in some regions of the country, there are also costs. Cross-compliance could be detrimental to participation in commodity-specific programs. For example, a producer with a large wheat base and a small corn base may only want to participate in the feed grain program. However, under cross-compliance the grower may very well not participate at all rather than being forced to participate in both commodity programs, or plant within the base of the nonparticipating crop. Moreover, if cross-compliance were administered as it has been in the past, it would be structured to control the total acreage in production, not individual crop acreages. Thus, there is no assurance that less wheat, corn, or another commodity will be produced on farms that are participating in the programs.

Offsetting compliance requires that farmers with multiple farming units be in compliance or plant within their bases on all units they operate or else forfeit eligibility for program benefits on any units. Offsetting compliance can reduce slippage because it prevents operators from increasing plantings on the most productive units and complying with acreage reduction only on their least productive units. But as farms become larger and comprise more units--some of which may be owned and others rented--the offsetting compliance requirement pits operators against landlords. It becomes difficult for an operator to get a consensus among different owners about participating in reduction programs.

The prospect that we will again be forced to rely on acreage reduction programs to correct a supply-demand imbalance makes improvements to increase effectiveness desirable. One possible improvement would be to use farmer-submitted bids which would offer to idle a quantity and quality of land for a payment acceptable to the farmer. The bid system was used for the whole-base PIK provision, and it proved workable. Program administrators could apply reasonable criteria to select efficient acreage reduction offers. It might also give administrators better control over the cost and the amount of reduction and even a way to retire more erosive lands and focus reduction programs geographically. If the program could be designed so that farmers believed that competitive bids would be necessary in order to be selected as participants, bids would likely be close to

the net returns farmers would expect from cropping the land. Thus, the windfall to less efficient producers that is associated with constant offer-rate reduction programs could be lowered.

CONCLUSIONS

High price supports, acreage allotments, and quotas evolved in an era when domestic use was a larger portion of total commodity use than it is currently. When the domestic market is dominant, price supports can be raised with minimal effects on the amount demanded by the domestic market, especially when there are no close market substitutes. But when the export market grows in importance, U.S. prices supported above world prices lead to a loss of markets.

A drop in production achieved by acreage reduction programs is likely to be at least partly offset by competitors overseas. For example, U.S. harvested wheat acreage was about the same in 1984/85 as in 1977/78. But during that period, Argentina, Australia, Canada, and the European Community increased their harvested acreage by about 24 million acres. Because of stagnant world trade and record production by other exporters, the U.S. share of world wheat trade fell from 48 percent in 1981/82 to an estimated 37 percent during 1984/85. The effectiveness of acreage reduction programs needs to be measured with regard to export markets, the single major growth area for U.S. farm products.

Acreage reduction programs typically follow from the judgement of policymakers that prices are too low, stocks are too high, or Government payments--such as for storage or income support--are excessive. Voluntary programs, as managed in the past, have often been an inefficient and costly means to restore market balance. At times, poor weather and export growth have masked the inefficiencies. Acreage reduction provisions have also had to contend with other program provisions, such as loan rates and target prices, which have insulated individual producers from market feedback that would indicate production was exceeding use. Hence, the future of acreage reduction programs will depend on whether policymakers will choose to idle U.S. resources in a competitive world market, whether cost-effectiveness can be improved, and whether the reductions can be made complementary with other price and income support provisions.

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