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EFFECT OF THE CONSERVING BASE REQUIREMENT
ON THE RESPONSE TO THE SET-ASIDE PROGRAM
IN THE GREAT PLAINS

by

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U.S.D

**COMMODITY
ECONOMICS DIVISION**

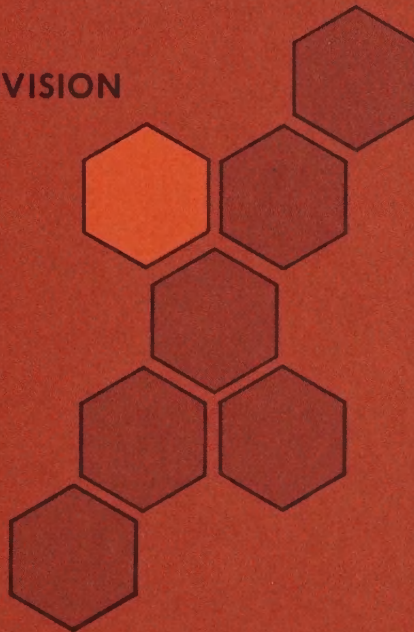**ECONOMIC RESEARCH SERVICE   U.S. DEPARTMENT OF AGRICULTURE**

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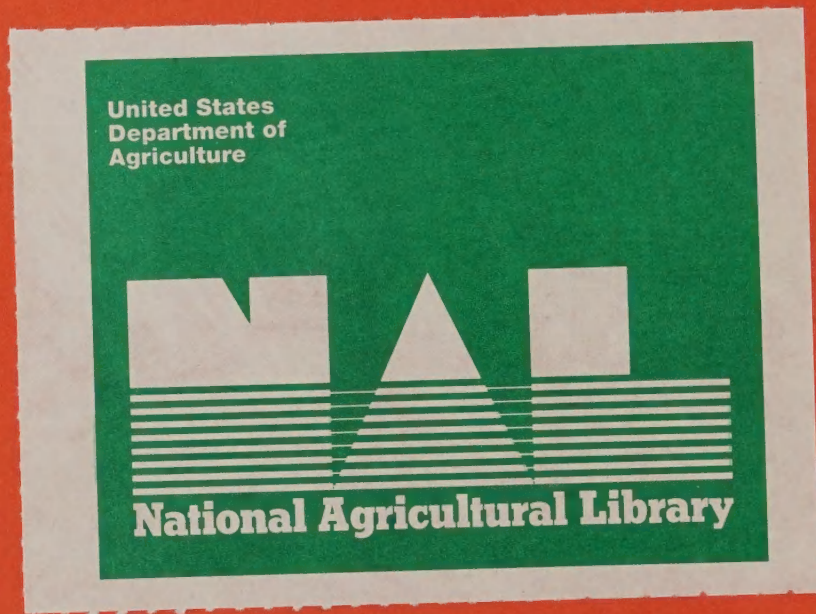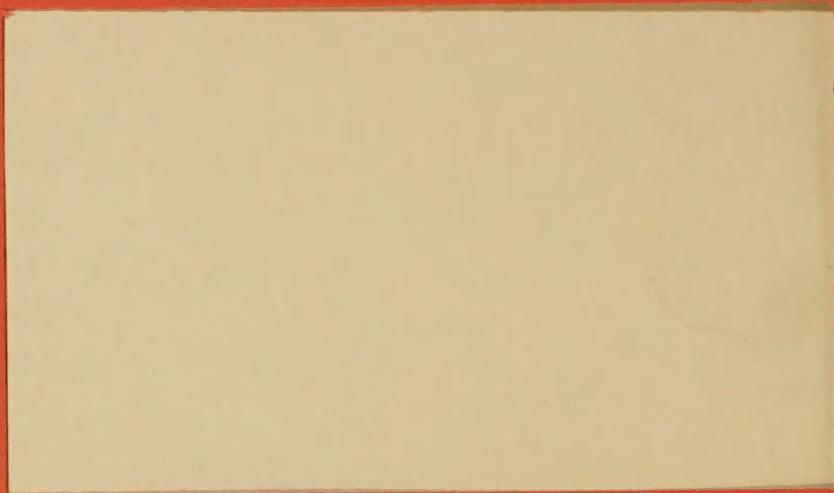IN THE GREAT PLAINS

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EFFECT OF THE CONSERVING BASE REQUIREMENT ON THE RESPONSE
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Soon after the congressional enactment of the 1973 Farm Act, Secretary of Agriculture Earl L. Butz announced that [5] :

> There will be no set-aside requirement and no restriction on planting for the 1974 crop program and there will be no conserving base require-ment for the 1974 through 1977 crop years, the duration of the Agri-culture and Consumer Protection Act of 1973.

With this statement Secretary Butz considerably reduced the options avail-able to control production during the latter years of the 1973 Farm Act, should such control appear desirable. The purpose of this paper is to evaluate the possible impact of the decision by Secretary Butz to lift the conserving base requirement from program participants. The specific objective is to estimate the possible effect of this decision if set-aside is required in the Great Plains in 1975.

Concepts and Methodology

For program purposes, conserving bases in the Great Plains are generally equal to the average acreage in hay and pasture and cultivated summer fallow and idle land in 1959 and 1960. In 1972, the conserving base acreage in-cluded about 19.6 million acres in the Great Plains.

Two alternative responses may be hypothesized as limiting cases. For case A, we would assume that removal of the conserving base requirement would make no difference in the response to the set-aside program. Under this assumption estimates of the impact of the set-aside program would ignore re-moval of the conserving base requirement and be based on the historical re-lationships of program effectiveness.

Case B, on the other hand, would hypothesize a direct correspondence between the sum of conserving base and set-aside under the 1970 Act and set-aside under the 1973 Act. Thus 2 acres of set-aside under the 1973 Act would have a comparable impact to one acre of set-aside and one acre of conserving base under the previous program. In case B, removal of the conserving base requirement would require replacement by an equal acreage of additional set-aside to achieve the same production control as achieved previously.

The actual response would be expected to lie somewhere between the extremes of case A and case B. On farms where tame hay is profitable and is the primary component of the conserving base the response would tend toward case A -- the hay acreage would probably remain unchanged and the response to set-aside would be the same without the conserving base requirement as with it. On farms where summer fallow is an important cropping practice, the response would tend toward case B, and require an equal increase in set-aside to compensate for the lack of conserving base. The aggregate impact would be the summation of all such situations.

This paper evaluates the possibilities between these two hypotheses by considering the types of cropland use that qualify for the Government conserving base requirement and for set-aside acreage in the Great Plains. For example, tame hay and cropland pasture qualify for conserving base but not for set-aside whereas cultivated summer fallow qualifies for either. This difference in land use qualification provides the key to estimating the impact of eliminating the conserving base and the extent to which it will need to be compensated for by added set-aside acreage in the future.

Response with the Conserving Base Requirement

Experience with the past Government programs including a conserving base requirement provides a baseline estimate for evaluating the response of the

set-aside program after elimination of the conserving base.

Much of the analyses of response to commodity programs prior to this time provided estimates of the impact of changes in the total conserving use requirement (conserving base plus set-aside acreage) on the acreages of major crops [1, 2]. The basic models and procedures have been described in detail elsewhere and will only be summarized and updated here [3, 4]. Basically, regression techniques have been used to identify the historical relationship between the total conserving use requirement and cropland in conserving use. [1/] The relationship assumed for each of the six Great Plains states [2/] is of the form:

$$Y = a + b_1X_1 + b_2X_2 + e$$

where

    Y = Cropland (in thousand acres) actually devoted to conserving use defined as the sum of hay, seed crops, summer fallow, cropland pasture, idle cropland and small grain abandonment.

    X_1 = The Government conserving use requirement (in thousand acres) defined as the sum of the conserving base, the acres diverted or set-aside from wheat and feed grains under annual commodity programs, and acreage diverted under the Conservation Reserve and Cropland Adjustment Program (CAP).

    X_2 = A dummy variable to measure time shifts in the relationship: 1961 = 1, 1962 = 2, ...

    e = Residual variation.

Ordinary least-squares regression estimates for each state in the Great Plains using 1961-73 data are quite similar and may be aggregated to a regional Great Plains equation of the form:

$$\hat{Y} = 26,733 + 0.48950\ X_1 + 205.34\ X_2$$

The individual equations are significant at the 0.01 level and exhibit an aggregate R^2 value of 0.76. Historically, in the Great Plains, a one acre increase in the conserving use requirement under government programs has added

a little less than one-half acre to the cropland in conserving uses.

The resulting response line is shown as the lower (straight) line in figure 1. This line indicates the total conserving use acreage in the Great Plains in 1975 as a function of conserving use requirements when the conserving use requirement equals the total of conserving base and set-aside. The line is above most of the observed points because of the upward shift provided by the X_2 variable, and provides our best estimate of program response for 1975 if the conserving base requirement had been maintained.

Table 1 shows the estimated acreage in conserving use by Government program category for 1972 and 1973. The estimates represent what might have happened based on (a) data used in the regression analysis, (b) Government program rules for land use within each category (e.g., hay cannot qualify as set-aside), (c) a 1972 Statistical Reporting Service survey on the use of set-aside land, and (d) judgment of the authors in allocating any residual acreage. [3/] These data provide the "baseline estimates" for the following analysis of the impact of the set-aside program with no conserving base requirement.

Response Without a Conserving Base

The 1974 experience provides another clue to the analysis, since there was neither a set-aside nor conserving base requirement. Under this situation, farmers would be expected to retain only their "normal" acreage in conserving uses, unaffected by government programs. For 1974, this may have been their minimum conserving acreage. The level of such "hard core" conserving use is suggested by the 1974 March 1 SRS planting intentions data. These data support our previous estimates of 1974 summer fallow which were based on past trends and levels of summer fallow under an estimated one year adjustment to a no program situation. The total 1974 conserving use is 38,064,000 acres
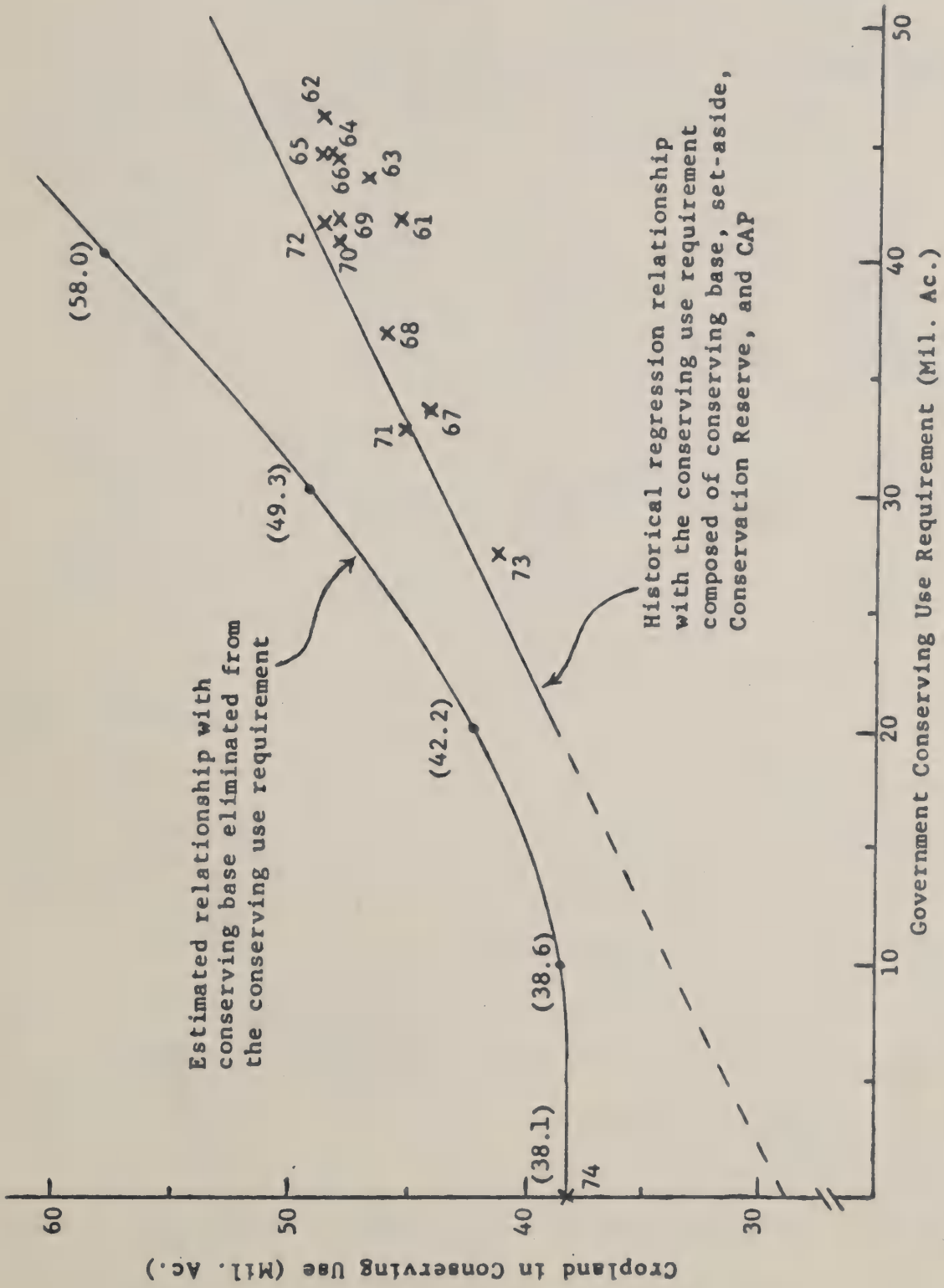
Figure 1. Relationship Between Cropland in Conserving Use and the Government Conserving Use Requirement, Great Plains States

Table 1. -- Estimated acreage of cropland in conserving uses,
Great Plains, 1972-73

Land Use	Government program category			Other conserving uses	Total
	Conserving base	Set-aside	CAP		
	----- 1,000 acres -----				
1972					
Tame hay	10,302	--	--	--	10,302
Seed crops	--	--	--	171	171
Fallow	7,308	14,667	--	2,224	24,199
Cropland pasture	2,214	1,027	550	1,229	5,020
Idle	50	4,774	--	2,299	7,123
Abandonment	--	569	--	1,407	1,976
Total	19,874	21,037	550	7,330	48,791
1973					
Tame hay	10,834	--	--	--	10,834
Seed crops	--	--	--	211	211
Fallow	7,028	5,244	--	7,786	20,058
Cropland pasture	1,787	285	546	2,733	5,351
Idle	--	1,279	--	2,113	3,392
Abandonment	--	318	--	1,373	1,691
Total	19,649	7,126	546	14,216	41,537

and is shown on the left axis of figure 1.

This 1974 value provides an estimate of the lower limit of cropland in conserving use under a set-aside program in 1975 without a conserving base requirement; in fact, 1974 may be taken directly as the estimate of the 1975 response with no set-aside or conserving base requirement. The components are shown in the top section of table 2.

The estimates presented in table 1 also aid in estimating the impact of a set-aside program in 1975 without a conserving base requirement, since the "other" land (that is, land in conserving uses but not in government programs) shown in 1972 suggest minimums in each of these categories. For example the 2,224,000 acres of summer fallow in the "other" category in table 1 for 1972 is apparently distributed on farms in such a manner that it cannot qualify

Table 2. -- Estimated conserving use cropland for various set-aside
levels, Great Plains, 1974 and 1975

Land use	Government programs		Other conserving uses	Total
	Set-aside	CAP		
	------1,000 acres------			
1974-(1975 with no set-aside)				
Tame hay	--	--	10,994	10,994
Seed crops	--	--	180	180
Fallow	--	--	18,292	18,292
Cropland pasture	--	543	3,740	4,283
Idle	--	--	2,329	2,329
Abandonment	--	--	1,986	1,986
Total	--	543	37,521	38,064
1975 - 14,700 set-aside				
Tame hay	--	--	11,024	11,024
Seed crops	--	--	180	180
Fallow	11,630	--	7,539	19,169
Cropland pasture	978	489	2,816	4,283
Idle	1,846	53	1,120	3,019
Abandonment	246	--	1,740	1,986
Total	14,700	542	24,419	39,661
1975 - 29,400 set-aside				
Tame hay	--	--	11,024	11,024
Seed crops	--	--	180	180
Fallow	20,024	--	3,255	23,279
Cropland pasture	2,007	489	2,462	4,958
Idle	6,786	53	930	7,769
Abandonment	583	--	1,403	1,986
Total	29,400	542	19.254	49,196

for set-aside. Similarly the other categories of cropland pasture, idle, and
abandonment in 1972 suggest the minimum non set-aside levels of these crops.
The year 1972 is chosen for this purpose because it is the year in which the
total of conserving base and set-aside acreage reached the high point of
40,911,000 acres in the Great Plains.

With larger acreages set aside in 1975, two basic changes would occur.
Initially, assuming summer fallow would qualify as set-aside land, summer fallow

would simply transfer from the "other" category to the set-aside category and no change would occur in the total acreage in conserving use. This stage is represented by the flat portion of the upper response line in figure 1. However, as set-aside is further increased, summer fallow in the non set-aside category decreases toward the 1972 equilibrium level, and various categories of land use would slowly and then more rapidly increase. Thus the response line in figure 1 increases at an increasing rate until it approaches 45 degrees and all increases in set-aside require nearly similar increases in conserving uses.

The aggregate results for 14.7 and 29.4 million acres [4/] of set-aside (approximately 30 percent and 60 percent, respectively, of the wheat and feed grain base acreage) are shown in the bottom two sections of table 2. As set-aside is increased, the "other" categories of summer fallow, cropland pasture, idle and abandonment decrease towards the equilibrium levels denoted by the 1972 experience. Over the range shown in table 2, by setting aside 29.4 million acres, the land in conserving use increased from 38,064,000 acres to 49,196,000 acres. These data, and the curved response line shown in figure 1, summarize our current estimate of the 1975 relationship between the cropland in conserving use in the Great Plains and set-aside when there is no conserving base requirement.

<center>Summary and Conclusions</center>

The elimination of 19,649,000 acres of conserving base in the Great Plains would result in a significant increase in the amount of set-aside acreage required for a given level of production control. Referring to figure 1, the level of production control reached in 1972 with 21,037,000 acres of set-aside and 19,874,000 acres of conserving base could be achieved in 1975 by about 30 million acres of set-aside. At this level, approximately one acre of set-aside compensates for a two acre reduction in conserving base requirement.

For the United States in total, the conserving base in 1973 was 83,959,000 acres when production controls are in effect. The requirement of a conserving base restricts production at no cost to the government. Based on the results of this paper for the Great Plains and what is currently known about the remaining regions, the absence of this requirement from the 1975 program could require a compensating increase in set-aside acreage of from 14 to 18 million acres nationally. Such an increase in the set-aside acreage of future programs could add significantly to the program cost of obtaining a specific amount of production adjustment, should it become necessary.

FOOTNOTES
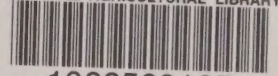
*/ The views expressed in this paper are those of the authors and not necessarily those of the U.S. Department of Agriculture.

1/ Estimating cropland in conserving use as a function of program changes provides a back door approach for the primary task of estimating cropland devoted to wheat, feed grains, etc., as a function of program changes. The level of cropland in conserving use is one of the major factors affecting (negatively) the level of wheat and feed grain acreages.

2/ For this analysis, the Great Plains is defined as North Dakota, South Dakota, Nebraska, Kansas, Wyoming and Colorado.

3/ Although the initial allocations were estimated on a state by state basis, considerations of significance dictate that only regional totals be shown here.

4/ While table 2 shows the Great Plains allocation for only two levels of set-aside, the process described here was actually completed continuously and for the individual states.

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