

The World's Largest Open Access Agricultural & Applied Economics Digital Library

# This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search http://ageconsearch.umn.edu aesearch@umn.edu

Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

# **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



Reserve aHD1761 .M54 1974

FILE COPY DO MOT REMOVE

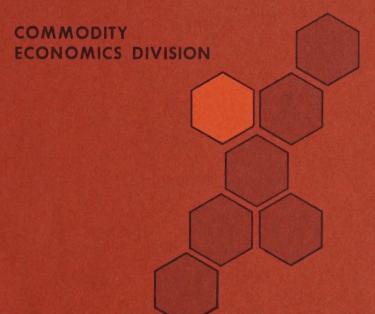
- 14

# CED WORKING PAPER

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

by

Thomas A. Miller and James Vermeer

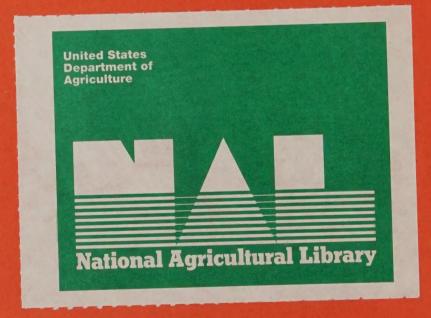


ECONOMIC RESEARCH SERVICE U.S. DEPARTMENT OF AGRICULTURE

U.S.D

Division. The manuscript has not been cleared for publication and should not be cited as a reference. The views expressed are those of the author and do not necessarily represent the opinion of CED, the





## WP5-75 (CE)

DO NOT REMOVE

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

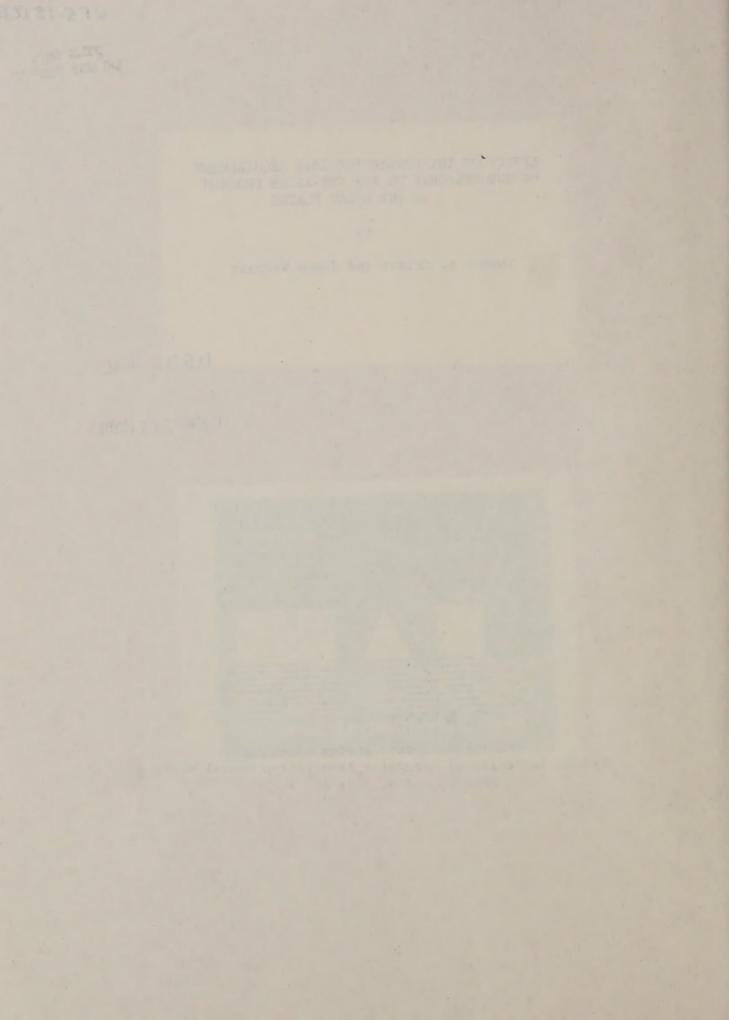
by

Thomas A. Miller and James Vermeer

U.S.D.A., NAL

AUG 2 0 2001 Cataloging Prep

Contributed paper presented at the Western Agricultural Economics Association Annual Meeting Moscow, Idaho, July 25, 1974



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

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 requirement for the 1974 through 1977 crop years, the duration of the Agriculture and Consumer Protection Act of 1973.

With this statement Secretary Butz considerably reduced the options available 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 included 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 removal of the conserving base requirement and be based on the historical relationships of program effectiveness.

And all the lot I have an all the second and the second of the second and the sec

The fix of a set of a

#### the level of the stand

the propressions conserves have 1- the form restored with a serve of the server aureors is in and posters and collever the and call that in 1950 and 1940. In 1977, the commercial last server and colle to all the action arrow to the fraction

the state of an and second to the as approximation as indicate a second second

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 setaside 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 setaside 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

2

This poper avairance its passibilities beread there is the second to available the types of tripled we was quility for the Constant on another has requirement and for set-matte attends in the free frame states for another tree hey and regised partic quility for essenties have be to attend to the set and the set of the quility for essenties have be to attend to the partic to the set of the test of the free to the set of the test of the set of the set of the test of the set of the set of the partic to add the set of the test of the set of the set of the set of the test of the set of the test of the set of the set of the test of the set of the

Lange francisses with the set for and the set of a set of

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.  $\frac{1}{}$  The relationship assumed for each of the six Great Plains states  $\frac{2}{}$  is of the form:

 $Y = a + b_1 X_1 + b_2 X_2 + e_1$ 

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<sub>1</sub> = 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<sup>2</sup> value of 0.76. Historically, in the Great Plains, a one acre increase in the conserving use requirement under government programs has added the standard of the same later of the database

a paratura - Si the reprised contains to the reprise of the second strategy of the second s

between translande have been need to connective the assertion of the assertion of the provident of the second of the second of the second second of the second second second of the second seco

1 \* 1 \* 2 \* 3 2 \* 1 \* 1

defined in charged arrest about a control is an interdefined at the sum of her seast crape, entry in the start pasters, this oracled and chail erall and chark and chail

\* proceeding general conservice was requirement to the hermonic case defines on the ansant the conservicy by the color (warrack as served) from sheet too fred grains and in the conservice and Granks. Allogonus Freezed older the tooservation bestore and Granks. Allogonus Freezen ("A")

A density section in measure class shifts in the reference x = x = 1000

Variante Trans I want to

The second and intervent of the said and a second state

is hadrownow as you have tallate with othe & an

of the focos

1. AE. 201 . . . . OCEGA. O + 801. .

the an electric here there is the first second there are any

- MI INTER A MARTINE SEAT

builds and shall the treatments

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<sub>2</sub> 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.  $\frac{3}{}$  These data provide the "baseline estimates" for the following analysis of the impact of the set-aside program with no conserving base reguirement.

### 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

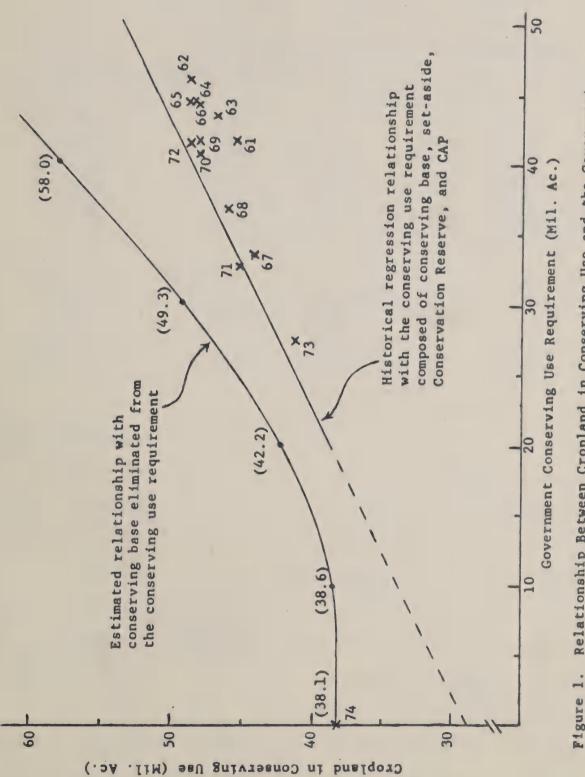
4

A per maneral f acta be the elegatoria for access on the events of the second of the second of the forest of the second on the forest of the second on the second on the second of the second

an even apply a star margare shiseries and to I what is a showing the

#### bead an even of a realitie demonral

<sup>3</sup> Whe last capactions provides anothe size to the borizity, name there there is a secondifier out componition have requirements. "Pour this is attributed and would be appended to except and, their second." A second there is anotherial to provide and, the 200 2004, this cap date bear there is anotherial to provide and, and of 2004, this cap date bear the in anotherial to provide and other of the cap date bear the second is set of an include the react "the transformed attribuant, and the is and atta and is the first reaction there is the date of the of the set of the reaction of the set of the reaction the set of the reaction of the set of the set of the set of the set of the reaction of the set of the set of the set of the set of the reaction of the set of a set of the set of a set of the set of the set of the set of the test of the set of



Relationship Between Cropland in Conserving Use and the Government Conserving Use Requirement, Great Plains States 5



	Governme	ent program ca	:			
Land Use		:	Other			
Land Use		g : Set-aside	: CAP	conserving	Total	
	base	•	•	: uses :		
	: 1,000 acres					
972						
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	
973						
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	

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

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 al. - And skied porrege of urowined is chronoring as.

10000 hon 1. 2000 hong 1. 2000			
Press how I. 200 - 1. 200 Bard of all 1. 200 Sources P. 300 14. 600 - 19 Sources P. 300 14. 600 319			

LT Cost and a cost of a co

is shown in the lasts of figure 1.

Thes 376 which provided at coltants of the cose and the cose and a set there is anti-solder at coltants of 1925 without a train real to back, 1922 way be taken directly a new coltance a the with as actually is connerving base, read remove. The company as a to be set of the of the taken of the set of the company and a to be set of the of the taken of the set of the se

presented in todic i also and it estimating the degree is 1975 efficient e presserving bies converses in in the preserving used but no is presimilarly a sec of make of these conception. The enclosities is the in "other concepts is adding to the

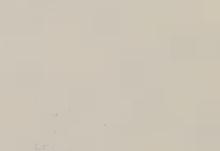
TANK TOTAL TOTAL TRUE OF TANK

Table 2.	 Estimated conservin	g use cropland	for	various	set-aside
	levels, Grea	t Plains, 1974	and	1975	

	Government programs		: Other :				
Land use	:	:	conserving :				
	Set-aside :	CAP :	uses :	Total			
	:	:	:				
	<u>1,000 acres</u>						
1974-(1975 with no set-aside)			s				
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			
:	;						
<u>1975 - 14,700 set-aside</u> :							
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			
:							
	and the second sec	the second s		the second s			

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



Stadiatly the other taterorto-

in a acainin add feargar II

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 <sup>4/</sup> 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 setaside 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.

#### Summary and Conclusions

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 setaside compensates for a two acre reduction in conserving base requirement.

8

the strate transfer the the fores

- 1 - alt katzmärk : 4 1 - sin katzmärk : 4

a set that is the

500 GT3

a sand a fair a f

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 setaside, the process described here was actually completed continuously and for the individual states.

#### REFERENCES

- Ericksen, Milton H. Researching Short-Term Commodity-Related Agricultural Policy Issues. Seminar presented at University of Missouri, Columbia, Mo. March 1974.
- Miller, Thomas A. Economic Adjustment Research for Policy Guidance: An Exple from Agriculture. Ch. 5 in Studies in Economic Planning over Space and Time. Ed. by George G. Judge and Takashi Takayama. North Holland, Amsterdam. 1973. pp. 63-68.

And a galegies of the second of the

#### L. THE

are preversed this paper and there is in articles and the articles and the articles are the sector of the sector o

intemation crowing intercontration as a tradition of older a hear door spacease for the primary test of entrol veted to elever. read statute at: as a react, a contra level of crowing and commentally contact and the statute intercont segurited why lieur of under any and react, contact to the second of the lieur of under any and react, contact

or tals out.jate, the cost fimine is definition to capate. Let

A though the Millist Allocations water actimated on a start of a start momentarial lobe of almulticrate distance inst only regioned true here.

rable i more the Crief History ellocation for no. Two least and alle for no. Two least and the process described nere very descutiv conclesed contrined on the last scatter.

217 (1998) 13.9

ake. - as N. Indeesriking Share Barn Composity Alered

agaistama desearch for follow (allowing the Second States) and the Bloghouth States and the Second states and

- 3. Miller, Thomas A. Estimates of 1972 Production Response to the Agricultural Act of 1970. Proceedings 1971, Western Agr. Econ. Assn., Squaw Valley, California. July 1971. pp. 36-40.
- 4. Miller, Thomas A. The Great Plains ACRE model. Unpublished manuscript. Economic Research Service, U.S. Dept. of Agriculture. November 9, 1973.
- 5. U.S. Dept. of Agriculture. 1974 Feed Grain Program, Soybean Loan Level Announced. NEWS, USDA 2677-73, Amarillo, Texas. August 29, 1973.

Action 1000000 . Contrates of 1972 model. Contrate to the April form

Riller, Surger & The Start Flates still motel topostichted arresting . Scootste fin arch Sarvirg, 1, N. 2-91 of April 1991 Borener 9, 1973





1

)

1

)