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General Cropland Retirement Programs: Response in Indiana With and Without Feed Grain and Wheat Programs

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Estimates are made of possible effects in Indiana of a part-farm general cropland retirement program, operating with and without the type of commodity programs that existed until 1970. Conclusions are drawn from estimates for four major groups of crop and livestock farms in each of five areas of Indiana. Results showed, among other things, that percentages of total cropland in corn, soybeans, and wheat would probably increase with or without the commodity programs. The increase would be greater without the programs.

Key words: Indiana, cropland retirement, farm programs.

The overcapacity problem in U.S. agriculture has two parts. One part is long term, arising from the fact that production is increasing faster than effective demand. This technology effect tends to substitute for and reduce the need for land inputs in the long run. The other part is short run. Surpluses and shortages may happen because of weather or disease. They may happen because technological or market changes temporarily disrupt a foreign one-crop economy. Time is required to adjust the people and resources to the new situation. Or they may happen because previous domestic programs have caused imbalances. There may be other reasons.

A combination of commodity programs and general cropland retirement programs could deal with both the long-run and the short-run problems. Simply phasing out commodity programs and switching to general land retirement would imply that only the long-term problem requires a policy solution, and that no cushion is needed for the transitory problems after an initial adjustment period.

The Agricultural Act of 1970 provides for general cropland retirement with income support for specific commodities. The "set-aside" is general cropland retirement, but the price support and diversion payment features also allow the program to be used to ease adjustment to temporary situations. The amount of land a participating farmer must set aside would depend on the feed grain and wheat bases assigned his farm. But what he would plant on the remaining acres would be his decision. Thus the cropland retirement may be called general because, compared with past feed grain and wheat programs, it places fewer restrictions on acreage of specific crops.[1] However, the price support features of the program continue to be oriented toward the so-called problem crops—wheat, feed grains, and cotton.

In the past, we have had periods with both kinds of programs. Under the Soil Bank of the late 1950's, the Conservation Reserve was a form of long-term retirement, while the Acreage Reserve Program was based on an annual signup. The opportunity was available annually for payment rates to be altered to meet short-term problems with individual commodities. But to some extent, the Acreage Reserve also was viewed as a means of dealing with long-term problems.

The experimental Cropland Conversion Programs of 1963-65 and Cropland Adjustment Program of 1966-67 provided for long-term retirement of cropland. In contrast, the diversion programs of the 1960's for feed grain, cotton, and wheat took an annual, commodity-by-commodity approach to restraining production.

Experience with these various programs was built into the design of many proposals reviewed in the preparation of the 1970 legislation. We might have examined how farmers responded to various features of past programs that are similar to the main features of the new program. But we felt it might be more fruitful to modify a research model already in use[2] in attempting to

[1] The Act permits the Secretary of Agriculture to limit feed grain acres on participating farms through 1973, as a transition mechanism. This provision was not invoked for 1971, but could be for 1972 or 1973.

[2] The original model is found in J. H. Berry, A method for handling pecuniary externalities in relating firm and aggregate supply functions, unpublished Ph. D. thesis, Purdue Univ., 1969.

develop some quantity estimates of possible effects for major groups of Indiana farms. We used alternatives that do not match the 1971 program, although there are similarities. And the estimates make no attempt to evaluate the effects of corn leaf blight. However, the results provide benchmarks which may be useful in anticipating some future impacts of the 1970 legislation, even though no set of conditions used adequately describes its program features. The specific calculations, as well as the yields and prices behind them, may become outdated. But the issues are likely to remain important whenever new calculations are made.

Choices Considered[3]

The analysis covers 100-to-259-acre and over-260-acre grain farms and livestock farms, in each of five production areas covering the entire State. These 20 groups made up about half of Indiana farms in 1964, and produced about 80 percent of farm product sales. Dairy and smaller-than-100-acre farms were not examined. These have decreased in numbers rapidly since 1964, and do not sell much feed grain, corn, and wheat. Nor were direct comparisons made by age of farmer, equity position, or any other characteristic which might be especially relevant for whole-farm retirement programs. The estimates of land retired are on a part-farm bid basis, with payment varying according to productivity of the land. This implies a voluntary program with poorer and less intensively used land being offered at lower rates.

The results presented are totals by type of farm, by area, and by all farms of the 20 types in the State. Primary interest is in the aggregate production effects rather than adjustments on individual farms. Response would vary between farms in any one of the 20 groups, and so no general rules would be very useful. But by taking an average situation out of each of the 20 groups, we attempt to estimate general effects on each farm type and area, as well as the aggregate effect.

Three aspects were investigated:

(1) General cropland retirement (GCR) was analyzed under two alternatives: (a) with feed grain and wheat programs (FGW), and (b) without these or other programs. Under the first, diversion of 20 percent of feed grain base was assumed mandatory. Other features, based on the programs of 1968-69, are fixed-acreage wheat allotment and certificate payments equal to 50 cents per bushel on total allotment. These features differ from features in the 1970 and 1971 programs. The first benchmark situation is more restrictive than the 1971 set-aside because it assumes both wheat and corn acreages are limited by allotment, and it does not allow nonparticipation. The second benchmark is less restrictive because no conserving base or set-aside is required and there are no program payments or price supports. Thus the market prices, assumed to be closer to a world market level than in the first benchmark situation, were the sole guide to production.

(2) Two ways of defining land eligible for GCR were compared: (a) Any tillable land normally part of the crop rotation (TILL), and (b) acreage in row crops in an average year (ROW)—a sort of corn-soybeans base. Total acreages of each of the two types of land were based on proportions shown by the 1964 Census. Total signup in the GCR program was limited to no more than 30 percent of the eligible land in each of the five areas. The TILL program would affect feed grain and wheat acreage directly, by bidding land away, and would also get much acreage of lower valued soil-conserving crops at low payment levels. Because this land can be retired without much effect on grain output, and with only limited effects on livestock, there is slack between acres retired and production control. The ROW program is designed to avoid this problem. It requires a net reduction in row crops for each acre of participation in general cropland retirement, whether or not the FGW programs are available, but it has no direct effect on wheat production.

(3) The price relationships among soybeans, corn, and wheat were varied to appraise the impact of changing world price relationships. For most comparisons, wheat was priced at $1.30 for the situations assuming no feed grain or wheat programs, and the equivalent of $1.80 per bushel when the programs were included. The basic corn and soybean prices used were $0.92 and $2, with program payments added to corn price for the situations assuming FGW programs. Additional comparisons were made with $2.25 and $2.50 soybean prices. These prices were specified in early 1969. Since then market conditions have raised price levels considerably, but the relationships are similar. Price relationships rather than price levels influence results in this model. These variations allow us to examine likely effects of the rather wide fluctuations in soybean prices caused by the alternate surplus and deficit fears of the past few years. The effects both on

[3] We caution the reader that this is a report of research that required a very large number of simplifying assumptions. This leaves a big spread between the model and the real world where interpretation must be made. We have attempted to spell out these assumptions so the reader can critically evaluate and apply the results. The study should be used as a guide to thinking, and not accepted as established fact. A source of additional results is G. D. Irwin, J. A. Sharples, and J. H. Berry, Part-farm general cropland retirement: Effects of some alternate program specifications, Southern Jour. Agr. Econ., Dec. 1970, p. 97-101.

corn and soybean production and on the expected participation in the GCR and the FGW programs are of interest.

A linear programming analysis was made for the 20 groups of farms with various combinations of these three sets of alternatives.[4] Total land and other resources were projected for 1970 from census data, and agronomic limits were based on 1967 cropping patterns. These limits on acreage of row crops assume that soil conservation and cultural practices require the 1967 proportion of tillable land to be in nonrow crops each year. The assumption turned out to have a very important influence on the results. Crop yields and practices were what above-average farmers were accomplishing in the mid-1960's, as these were assumed to represent what the averages would be by 1970. Numbers of farms and assumed yields are presented in table 1.[5]

The Logic of Comparisons

Economic forces cause cropping patterns to adjust toward profitable combinations over the long run. But they need not reach the most profitable combination in any one year, especially when economic conditions are changing. But the computed results are as if the entire population of farmers maximized profits and completed adjustment to the assumed conditions.

Differences found by comparing the computed results with actual acreages grown in some recent year may be due to one of three reasons: (1) Farmers might not have completed their adjustment to conditions that have changed recently, (2) some of the assumptions about expected prices or yields in the model might be different from those in farmers' thinking, and (3) some farmers, especially in the short run, may be strongly influenced by nonprofit goals. These comparisons project the numbers and sizes of farms to 1970, and they exclude dairy farms and all other farms under 100 acres.

We have no accurate way to estimate effects of the above factors. Comparison with historical production can only verify that the estimates appear reasonable. On the other hand, comparison of one computed solution with another avoids these limitations, because the basic assumptions are identical throughout. Though such assumptions were based on the best information available, certain results depend upon their correctness. The most critical is the limit placed on the percentage of land permitted in row crops in an average year.

Adjustments Without General Cropland Retirement

What would be the effects of adjusting all farms to feed grain and wheat programs of the 1960's but under 1970 conditions? What would be the effects of dropping all programs? The answer to the first question represents an estimated adjustment to a mandatory 20 percent diversion feed grain program; the answer to the second represents a result for a free market. How have the varying price prospects for soybeans affected the direction of cropping patterns? These questions are guides to studying the results shown in table 2, which assume *no* general cropland retirement (GCR). They are our standards of comparison when the general cropland retirement program is considered.

Column 1 indicates assumed agronomic limits on acreage of three primary crops and limits on feed grain diversion on crop and livestock farms of over 100 acres. Column 2 shows estimated land use under the base solution with soybeans at $2, corn at $0.92 plus diversion payments, and wheat at $1.30 plus certificate payments. Columns 3, 4, and 5 show changes from the base situation with different relative soybean prices and farm programs. Since the benchmark solution and the three alternative solutions are derived from a common set of assumptions, we are interested in the differences between solutions.

The results require careful interpretation to identify which of the assumptions were limiting. This will enable the reader to reevaluate the assumption, and to adjust the results if he feels the assumption needs to be revised. Four main points may be made:

(1) Economic adjustments in all solutions would be toward a larger percentage of total cropland in the four uses—corn, soybeans, wheat, and feed grain diversion (bottom line, table 2)—than has been the case in recent years. The 1968 actual acreage was 12,376,000 for the four uses. At least 8,955,000 acres were on farms included in the analysis, and 7,140,000 acres were in row crops on included farms. Thus the assumptions allowed some increases in these uses, and they were found to be profitable.

(2) The switch toward these more intensive uses would be greater when commodity programs are not in effect, with nearly all the net increase being in wheat

[4] A multifirm, multiarea linear programming model was used to maximize net social product. See Berry (cited in footnote 2). Except for the 30 percent maximum participation in GCR, no area or statewide constraints were binding. Thus the monopoly solution bias, which is inherent in this kind of model, was not a serious problem.

[5] Farm numbers were projected using a Markov chain model on 1959-64 census data. Variable production cost per acre was varied by size and type of farm, and by area, based on machine complements determined by survey.

Table 1.—Projected numbers of farms and grain yields used in the model

Area and type of farm	Projected acreage	Projected farms	Average grain yields per acre		
			Corn	Soybeans	Wheat
	1,000 acres	*Number*	*Bu.*	*Bu.*	*Bu.*
Northwest:					
Small cash crop	313.6	1,895			
Large cash crop	1,349.7	2,700			
Small livestock	52.5	307			
Large livestock	75.9	148			
Area	1,791.7	5,050	115	30	45
Northeast:					
Small cash crop	1,015.0	5,800			
Large cash crop	884.0	2,906			
Small livestock	183.1	1,071			
Large livestock	193.4	606			
Area	2,275.5	10,383	105	28	45
Central:					
Small cash crop	1,216.3	6,860			
Large cash crop	3,960.3	8,840			
Small livestock	418.0	2,208			
Large livestock	481.0	1,055			
Area	6,075.6	18,963	115	35	45
Southwest:					
Small cash crop	493.8	2,941			
Large cash crop	1,171.3	2,668			
Small livestock	84.4	497			
Large livestock	115.8	255			
Area	1,865.3	6,361	115	30	45
Southeast:					
Small cash crop	762.3	5,200			
Large cash crop	515.3	1,733			
Small livestock	146.9	871			
Large livestock	138.5	466			
Area	1,563.0	7,270	100	28	40
Total	13,571.0	45,927	–	–	–

acres (col. 2 compared with col. 3, and col. 4 compared with col. 5, table 2). Some 2.2 to 2.4 million additional acres would be freed from the mandatory diversion requirement, and put into crops. The additional acres would go to soybeans and wheat, despite the fact that crop budgets for Indiana usually show corn to be a more profitable crop than either.

For several reasons, the acreage of corn and soybeans in 1967 can be considered as a practical limit on the acreage of row crops. Beginning in the fall of 1966, there was considerable concern about an adequate food supply. Voluntary diversion by farmers participating in the 1967 feed grain program was suspended. We have assumed that with all farmers participating in the program and desiring to maintain diversification and good farming practices, they would not plant more acreage to row crops than the acreage of corn and soybeans in 1967. The addition of soybeans and wheat

acreage rather than corn acreage is sensitive to this assumption.

Land in feed grain diversion would be cropped when commodity programs are discontinued. The adjustment is mainly toward soybeans, with only slight increases in corn acreage. At the higher relative soybean price, substantial corn acreage also would be shifted to soybeans. It should be noted that this particular corn-soybean price ratio is 0.92/2.50, which is outside the range of recent experience. Wheat acreage also would increase with programs discontinued. Even at the free market wheat price of $1.30 assumed in the programming, wheat is more profitable than hay and pasture as a close-grown crop, and large acreages can be shifted without affecting livestock output. Since wheat usually can be planted after soybean harvest in the fall, but not after corn, there is a complementary "fit" between growing wheat and soybeans, which gives soybeans a stronger competitive position for row cropland than otherwise.

(3) The higher soybean-corn price ratios shift the row crop pattern away from corn (col. 4 compared with col. 2, and col. 5 compared with col. 3, table 2). The benchmark situation (soybeans at $2 and FGW programs) shows that profitable diversion would be above the 20 percent minimum of 998,000 acres. Corn acreage would be large, and soybeans would be cut back from recent State totals. An additional estimate we made suggests that the results of a $2.20 soybean price would be similar to the effects of a $2 price, though the acreage of soybeans would be slightly larger. Even with soybeans at $2.50, some optional diversion would be made under the feed grain program.

If the feed grain and wheat programs were dropped, the pattern of adjustment is similar—toward more intensive crops and also toward the soybean-wheat combination. With soybeans at $2.50, the land freed from diversion requirements would go mostly to soybeans. But with soybeans at $2, both corn and soybean acreage would expand to absorb diverted land.

(4) The no-programs situation would create substantial expansion in production which, if Indiana results were repeated elsewhere, could create substantial downward price adjustments in the short run. At the $2 soybean price, farmers expecting the prices assumed in the analysis could make profitable adjustments as shown in column 3 of table 2. In addition, they would be adjusting from the current situation rather than from the profit-maximizing benchmark situation shown in column 2. The no-programs output (col. 3) would be 97,000 more acres of corn, 2,155,000 more acres of soybeans, and 2,278,000 more acres of wheat, with elimination of 1,023,000 diverted acres. If farmers in other areas would tend to adjust in the same direction, prices could turn out to be much lower than expected and assumed in the calculations. The size of these potential increases in acreage suggests the seriousness of the permanent overcapacity problem.

Adjustments to General Cropland Retirement

What happens when a general cropland retirement

Table 2.—Program bases and computed acreages in selected uses: Effects of feed grain program and soybean price, Indiana crop and livestock farms of over 100 acres

Uses of land	Assumed program bases and agronomic limits with FGW programs	Benchmark solution[1]	Change from benchmark solution		
			Soybeans at $2, no program	Soybeans at $2.50	
				With program	No program
	(1)	(2)	(3)	(4)	(5)
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*
Corn	4,990	4,977	+97	- 2,791	- 2,760
Soybeans	—	905	+2,155	+3,414	+5,012
Feed grain diversion	[2](998-2,494)	2,252	- 2,252	- 623	- 2,252
ROW crop uses	8,134	8,134	0	0	0
Wheat	1,161	1,161	+2,278	0	+2,437
TILLable land uses	[3](9,295-11,877)	9,295	+2,278	0	+2,437

[1] Soybeans at $2 with feed grain and wheat programs (FGW).

[2] The first figure represents the minimum 20 percent diversion; the second includes the optional 30 percent additional.

[3] The first figure is the limit with FGW programs, which assume a 20 percent mandatory diversion; the second applies with no FGW program.

plan is created to draw out some of this permanent overcapacity? The program must, of course, compete with farmers' other alternatives. These depend on the type of land that is eligible for retirement, as well as on the income opportunities from cropping, nonfarm activities, and any other land retirement programs that are in effect.

Amount of Land Retired

Figure 1 summarizes the effects of several possible kinds of part-farm general cropland retirement, with soybeans priced at $2. The top half of the figure (part A) is for general cropland retirement programs with all tillable land eligible (TILL), and the bottom half (part B) for a program restricted to a row land base (ROW). Each part has three curves. I is for acreage in a general cropland retirement (GCR) program operated alone; the curves marked II are for the jointly operated GCR and feed grain-wheat programs; IIa is only that part of acres retired due to the general cropland retirement part of the program; and IIb is the total of feed grain diversion and GCR. Each curve is a land-offered-for-retirement curve, since moving up the left axis indicates higher and higher GCR payment rates. At zero rate, no land is offered. As price is increased more land is offered.

Several points should be noted in figure 1:

(1) The general (GCR) and commodity-oriented (FGW) land retirement programs may compete with each other for the same land. Participation in the GCR is higher without the feed grain program to compete for land, when a ROW land base (part B) is used, and at payments of $45 or higher when a TILL base (part A) is used (curve IIa compared with curve I). A whole-farm GCR is often proposed in an attempt to minimize such competition. In designing a combined program, the relationship between commodity-type diversion payments and GCR rates would thus be crucial.

The lines trace out acres, not costs. The figures assume the same feed grain payment rate, regardless of variations made in the GCR payment rate. In one of the five areas, feed grain payments averaged $82.90 per acre for the first 20 percent and $66.51 per acre for an additional 30 percent. This rate was applied to all such diversion in the area. The GCR rate was as if on a "bid" basis, so that some acres received $15, others $30, and so on. Thus, the average payment for retiring all cropland in line IIb is higher than the average for all acres in line I.

(2) With either TILL or ROW land base, more total acreage is retired with the combined programs (curve IIb compared with curve I).

(3) For a GCR program operated alone, increasing payment rates in the $15-$45 range obtain additional land (line I). Some rate above $60, probably close to feed grain diversion payment levels, would undoubtedly draw still more land. The curves provide an estimate of what the land is earning in other uses, because they indicate the cost of bidding it away from those uses.

(4) For a GCR program in combination with FGW programs, land is attracted only at the extremes of the payment rates considered (line IIa). With a ROW land base, response is only above $45. With TILL land base, response is at both ends of the range. Low payments draw slack land[6] from low-productivity uses, while high ones draw row cropland.

(5) Some complementarity between the FGW and GCR programs exists at the lower GCR rates when a TILL land base is assumed. This is shown by the crossing of lines I and IIa, part A. At GCR payment rates of $30 and below, acres put in GCR are greater when the FGW programs are in effect. The programs complement each other, rather than compete.

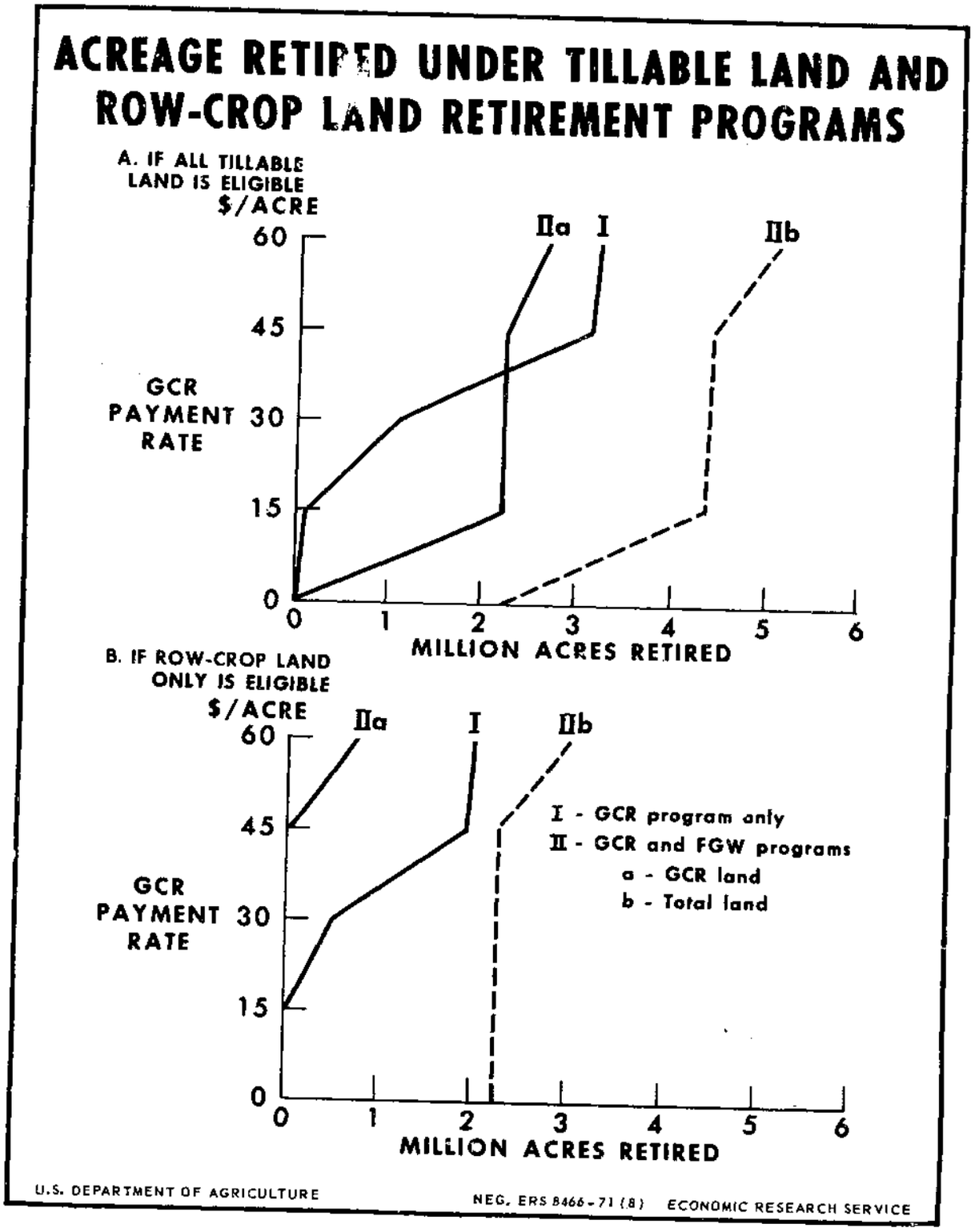
The complementarity depends on two facts: (1) Allotments limit the acreage devoted to wheat, and (2) some land is eligible for a TILL general cropland retirement program but not for feed grain diversion. When a GCR program is run in combination with FGW programs, a low payment draws in much of this noncompetitive land. But if FGW program limits are removed, much of this land goes to wheat instead of general cropland retirement. So, for a TILL base GCR without FGW program limits (line I, part A) it is necessary to bid the land away from wheat production. This requires between $30 and $45 per acre in several of the 20 farm situations.

(6) A GCR program attracts little land in a combined program if it draws on the same land base as the feed grain program (part B, line II). Unless rates are set higher than $60, they would be competitive with neither the feed grain program, nor with growing soybeans on the remaining land.

Land Use Patterns

As GCR payments are raised to get progressively more land, how is crop production affected? Figure 2 reveals some of the effects for a TILL-base general cropland retirement program. Part A is for a combined GCR-FGW program, part B for a GCR program operated alone. The leftmost line in part A corresponds to line IIa

[6] Acres retired without achieving significant production control. See point 2, p. 78.


ACREAGE RETIRED UNDER TILLABLE LAND AND ROW-CROP LAND RETIREMENT PROGRAMS
A. IF ALL TILLABLE LAND IS ELIGIBLE
$/ACRE
60
45
30
15
0
GCR PAYMENT RATE
IIa
I
IIb
0
1
2
3
4
5
6
MILLION ACRES RETIRED
B. IF ROW-CROP LAND ONLY IS ELIGIBLE
$/ACRE
60
45
30
15
0
GCR PAYMENT RATE
IIa
I
IIb
I - GCR program only
II - GCR and FGW programs
a - GCR land
b - Total land
0
1
2
3
4
5
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MILLION ACRES RETIRED
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 8466-71 (8) ECONOMIC RESEARCH SERVICE

Figure 1

PATTERNS OF LAND USE UNDER TILLABLE LAND RETIREMENT PROGRAM

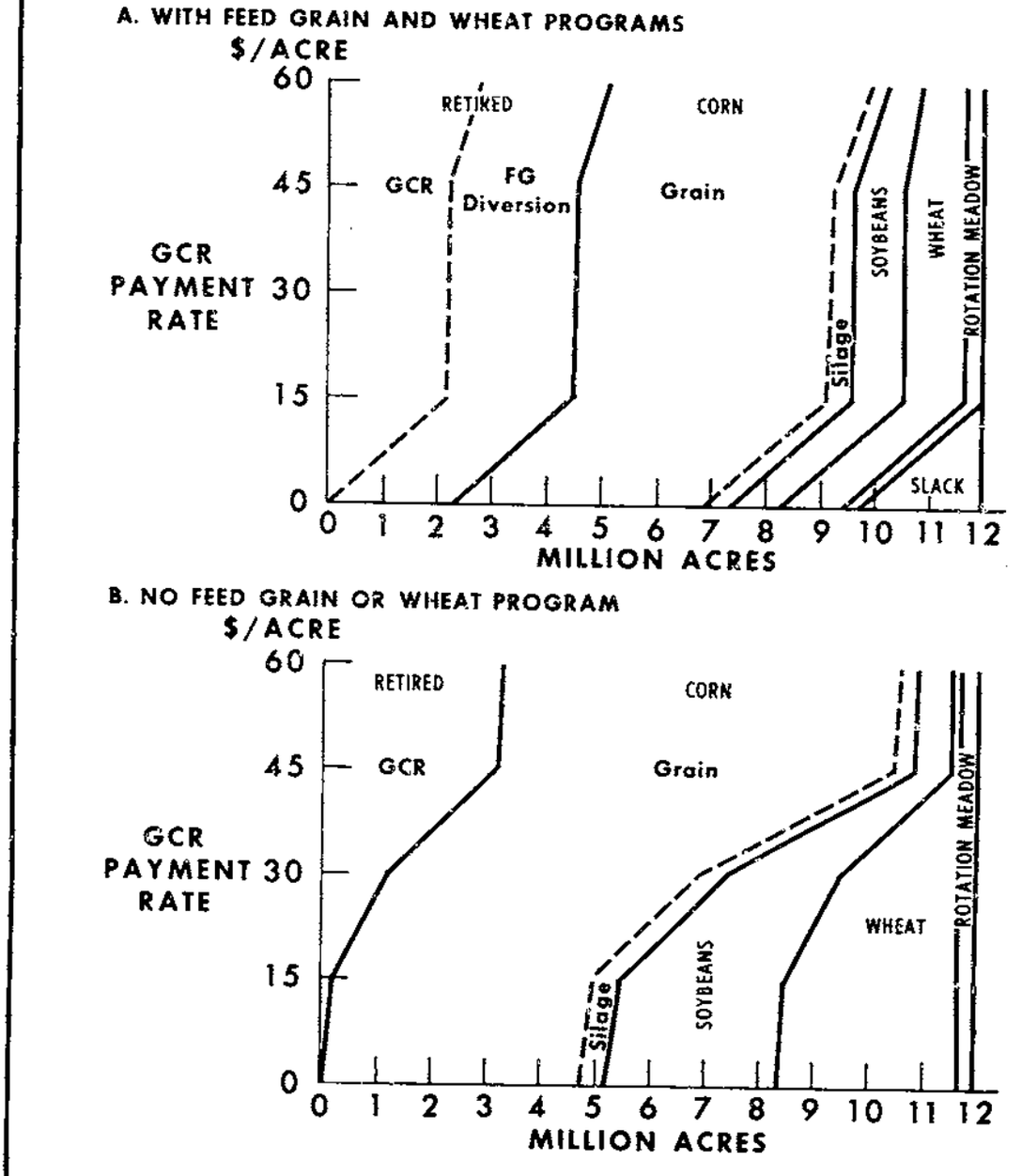

Figure 2

in part A of figure 1, and the leftmost line in part B to line I in part A, figure 1 (both drawn to a closer scale on the acres axis). The width of various crop sections in figure 2 indicates profit-maximizing land use of the approximately 11.7 million acres of cropland (TILL-base) at the various GCR payment rates. Moving from bottom to top of each part, we see which crops are affected as participation in GCR increases.

Several points are significant:

(1) The pattern for combined FGW and GCR programs (part A) shows that some acres are obtained at minimum payment rates. These are mostly the part of cropland that must be rotated out of row crops in any given year. The total amount of such land assumed in the analysis exceeds acres that can go into wheat and those needed for livestock, hay and pasture. It is slack, available to a GCR program at low rates.

(2) At GCR rates above $45, with combined programs, the expansion of GCR acres comes from wheat and soybeans at the $2 soybean price (at $2.50 it would come from corn). The two crops are cut back about equally.

(3) With GCR program operating alone (part B), expansion of GCR also comes from wheat and soybeans. But without wheat allotment restrictions, the starting level is much higher, the cutback is much more, and the response is largely in the $15-$45 range.

(4) With GCR program operating alone, as wheatland goes into GCR, the complementary situation for soybeans disappears. So corn acreage also increases.

Total Production and Returns

Since a combined program would pick up fairly large amounts of land currently in low-productivity uses for conservation or rotation, some payments wouldn't buy much production control. Most of the additional land retired would be from soybeans and wheat production. Table 3 summarizes the effects on program costs and production with a TILL-base general cropland retirement program. The numbers are indexes of the output and program cost with the benchmark situation (FGW, but no GCR) equal to 100. The benchmark situation involves program payments of $189 million, and returns to farm resources of $631 million (from livestock as well as crop production).

For combined programs, the total acreage retired runs up to 5 million at $60 per acre, with slightly over half the retired acreage in the GCR. The effects of slack land, and of GCR competing with cropping for use of other land, can be seen by comparing the figures in columns 1 and 2. At rates between zero and $15, the cost of the programs jumps 17 percent, with a reduction of less than 1 percent in production. In the $15-$45 price range, response is slight. But between $45 and $60, the cost goes up 13 percent for a 4 percent production cut. Over the entire range, a 34 percent increase in costs caused by GCR would affect production about 6 percent. The combined program is thus rather inefficient in production control when all TILL land is eligible to participate.

For the GCR program alone, program costs range from zero if no land is retired, to 52 percent of present levels (col. 3) at the $60 rate. But crop output is consistently higher than with FGW programs, ranging from 13 to 30 percent above. With a low elasticity of demand for farm production, the same type of result over a large area would translate to much lower farm income from production. The same conclusion has been reached in several other recent studies on effects a free market would have.

The results in table 3 emphasize how labor and capital resources can be shifted within the farm to maintain total value of production, even though some

Table 3.—Index of cost and production effects, TILL land GCR program with and without FGW programs
(Combined programs at $0 GCR rate = 100)

GCR payment rate per acre	Combined FGW and GCR programs		GCR program alone	
	Cost of programs (1)	Production (2)	Cost of programs (3)	Production (4)
0	100	100	0	130
$15	117	99	1	130
$30	118	99	16	126
$45	121	98	48	114
$60	134	94	52	113

land is withdrawn. Production of specific crops may be reduced, but the impact on total output is less substantial.

Excluded Farms and Production

Our analysis was limited to effects on Indiana crop and livestock farms of over 100 acres. This excludes about half the farms and around one-fifth of the crop and livestock sales. In the 1964 Census figures, the excluded farms had a larger portion of their cropland in uses other than grain crops. They also had a much higher proportion of part-time and older farmers. This might lead us to expect that participation rates would be higher, that required payment rates per acre would be lower, and that production control would be small if a part-farm, TILL-base GCR were offered these excluded farms. However, participation in programs in 1964 was actually much smaller for this group than for larger farms.

Variations Among Farms and Areas

The proportion of land that would be in the less productive uses varies among the individual farms in the 20 groups studied. Crop returns, and thus rates required to attract land into the GCR, vary among farms. And the number of farms is different for each of the 20 groups. The impact of a part-farm GCR in which lowest bids per acre were accepted would fall unequally on areas and on types of farms, with heavier participation in the least productive soil areas, and those with predominance of crop farms.

With combined GCR and FGW programs, about three-fifths of the estimated acreage in GCR would be from grain farms over 260 acres, another one-third from 100-to-259-acre grain farms, and 2 to 6 percent from livestock farms in each size group, regardless of the GCR payment rate. These numbers reflect the fact that there are more of the large grain farms than any other category, but also that participation would be more attractive to them.

In contrast, a GCR program operated alone shows considerable variation in payment distribution among farm types as the rate is varied. At $15, participation would be low, and fairly equally distributed among the four classes of farms. As rates were increased, participation would expand greatly, and almost 94 percent would be from grain farms. At $30, it would be equally split between small and large farms. But at higher rates, the large farms would increase participation and claim nearly three-fifths of the payments.

By areas, the less productive southwestern, southeastern, and northeastern parts of Indiana would reach the 30 percent participation limits at GCR payment rates of $60 or lower. The southeastern area would reach the limit with a $15 GCR payment with combined programs, or a $30 GCR payment for GCR alone. The southwestern and northeastern areas would reach 30 percent limits at $45 for GCR alone, or $60 with combined programs. Even so, the number of acres participating would be greatest in the 32-county central area, which has the largest land area.

Summary

Estimates of the effects of a part-farm general cropland retirement (GCR) program were made for four size-types of farms in five areas of Indiana, which included all farms over 100 acres except dairy farms, or about half of all farms, and four-fifths of the crop and livestock sales. Two definitions of land eligible for GCR were compared, with participation limited to 30 percent of eligible land in any area. Estimates were made with and without the recent type of feed grain and wheat programs (FGW), and effects of varying soybean prices were studied.

Under a part-farm GCR program, a considerable part of the cost would be incurred before very much grain production is retired. This is true especially for a program permitting retirement of any tillable land (TILL). With only row cropland eligible (ROW), the GCR program would reduce production of corn and soybeans, but not wheat, and then only when the GCR program was operated alone rather than in competition with FGW programs. At any payment rate, participation would be greatest on crop farms and in the least productive soil areas, and would vary significantly between separate and combined programs.