

Grazing Lands: How Much CRP Land Will Remain in Grass?

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Abstract

The Conservation Reserve Program of the 1985 Food Security Act, through the eighth signup, has retired 30.6 million acres of highly erodible cropland. However, the 10-year CRP contracts will begin to expire in 1996. Fundamental economic trends do not indicate clearly whether CRP land will be needed for either crop or livestock production when contracts expire. Given present expectations of future agricultural markets we anticipate no more than twenty percent of the land now in the CRP to remain in grass. Three sets of factors will influence landowners' decisions: long-term relative economics of crop and livestock production; direct and indirect incentives in existing and proposed agricultural policy; and the characteristics of CRP landowners.

The Food Security Act of 1985 is five-year legislation governing basic agricultural policy in the United States. For the first time, this legislation contained a conservation title with far-reaching potential for agricultural resources, including grazing lands. Among other conservation provisions, a Conservation Reserve Program (CRP) was established to plant 40 million acres of highly erodible cropland to permanent vegetation for 10 years, in exchange for annual rental payments to the landowner and 50 percent of cover establishment costs. CRP has accomplished the largest addition to our stock of grazing lands since the 1930's. The CRP contracts will begin to expire in 1996. What will happen to grazing lands currently enrolled in the CRP after the contracts expire?

The future of CRP grazing lands is a function of three sets of interacting factors: long-term relative economics of crop and livestock production; the characteristics and attitudes of CRP owners and operators; and direct and indirect incentives in existing and proposed agricultural policy.

Long-term Crop and Livestock Economics

While short-term crop and livestock economics are heavily influenced by natural and manmade shocks, such as droughts and wars, the best guides to the long-term future are observable secular trends and recurring cycles. The evidence from relevant trends is as old as Malthus and as new as genetic engineering, and often provides conflicting insights. The major dimensions discussed here are familiar ones: demand and supply for crops and livestock, both domestic and worldwide.

Demand for Crops and Livestock

Looming over the relative demand for crops and livestock, and the derived demand for land, is population growth. World population is about 5 billion now and is expected to increase 63 percent by 2025. Judging from the rapid reversals in viewpoint experienced over the last decade, we know as little about the response of agriculture to such population growth now as was known in Malthus' time. As an example, the USDA Resources Conservation Appraisal (RCA), conducted in 1980 under the influence of tight food supplies and rising export demand, projected U.S. cropland requirements for 2030 at 457 million acres, an 11 percent increase over the 413 million cropland acres inventoried in 1977. Only five years later, the promise of high technology for increased productivity and declining agricultural exports influenced the Second RCA to project cropland requirements in 2030 at 218 million acres, a 48 percent decline from the 421 million acres of existing cropland inventoried in 1982.

The point is not that the earlier RCA projections were done badly, but that they are very sensitive to assumptions about exports, productivity, and consumption patterns.

Domestic red meat consumption per capita has declined 7.4 percent since 1970 (USDA, ERS, 1987). The Food and Drug Administration and National Institutes of Health, in interviews with 4,000 consumers, found that 62 percent made major changes in their diets to reduce risk of heart disease and cancer. Thirty-six percent reduced intake of red meat (Briggs, 1987). Blaylock and Smallwood, analyzing demographic and income effects on per capita food consumption expenditures, projected a 39 percent increase in total food expenditures, while beef, pork, and other red meat expenditures are projected to increase only 20 percent (Blaylock and Smallwood, 1986, Table 33).

The 11.7 percent increase in U.S. exports during the 1970's was a function of rapid growth in real per capita incomes, growth in foreign exchange earnings, plentiful credit, import-enhancing agricultural policies of other countries, and a declining dollar, all of which were reversed in the 1981 to 1985 period. Even if continued high levels of foreign demand are assumed, the implications for retention of CRP grazing land depend on the mix of commodities demanded. Change in the kinds of commodities demanded is less a function of absolute population growth as of growth in per capita income and

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changes in tastes as incomes rise (Marks and Yetley, 1988). For example, if high exports are primarily due to population growth in less developed countries with low per capita incomes, it is likely that they will focus on wheat, rice, and other commodities for direct human consumption. On the other hand, exports fueled by increases in incomes in more developed countries are more likely to be concentrated in commodities like meat and poultry. This is particularly true for land-poor countries like Japan, Korea, and Malaysia that are less able to develop sizeable livestock industries of their own through imports of feed grains.

United States exports of meat (excluding poultry) are small relative to crops, accounting for 5 percent of the value of total exports in 1987 versus 33 percent for grains and feeds. However, meat exports have increased steadily since 1977, rising 31 percent, while exports of grains and feed fell 23 percent from their peak in 1981. Two-thirds of 1987 U.S. beef exports were to Japan; increased import quotas and decreased tariffs should further increase exports. Japanese beef markets have not yet seen the health-related emphasis on lean beef in American markets, raising the possibility of differentiation between longer-fed beef for export and shorter-fed beef for the domestic market (Lin, et al. 1989).

Recent estimates of domestic and export market potential for crops and livestock products by Economic Research Service conclude that "...demand growth is likely to be less than productivity growth over the next fifteen years" (Meyers, Blaylock and White, 1987, p. 446). Technological advance may reduce the need for U.S. agricultural land resources in two ways: both increasing productivity per acre of U.S. producers and more rapidly increasing productivity of our competitors and former export customers.

Supply of Grazing and Croplands

On the supply side, there is no lack of forage resource available for U.S. livestock production that would create much pressure to keep CRP lands in grass. Total grazing land amounted to 817 million acres in 1982, down 20 percent since 1950 (Daugherty, 1988). However, most of the decrease occurred in cropland used only for pasture and grazed forest land; pasture and range decreased only 6 percent between 1950 and 1982. Further, much of the decreased pasture and range was in the urbanizing regions of the Northeast, Lake States, and Pacific regions. Grazing land per animal unit declined from 15 acres in 1950 to 9.1 acres in 1982, but increased from 8.9 acres per animal unit at the last peak in the cattle cycle in the mid-1970's.

Overall, the U.S. cropland base has remained remarkably constant at about 400 million acres for much of the post-war period. However, only 328 million acres of U.S. cropland was used for crops in 1988, down 15 percent from the peak in 1981 due primarily to a record 78 million acres in annual and long-term government idling, including CRP land. Stocks of major program crops have been reduced through a combination of increased exports,

production controls, and the 1988-89 drought. United States grain and soybean stocks in 1989 are expected to be cut about 60 percent (USDA, ERS, 1989 p. 2). World stocks are expected to decline sharply to only 1.5 to 2 months of use. How much of the cropland currently idled will be needed as CRP contracts expire will be heavily influenced by new cropland development in competing countries and productivity increases on existing cropland through adoption of existing and emerging technology in the United States and abroad.

In short, the fundamental economic trends do not indicate clearly whether CRP land coming out of 10-year contracts will be needed for either crop or livestock production. Both crop and livestock production seem poised for expansion in the 1990's, but existing supplies of cropland and grazing land seem adequate to meet the expansion, particularly if productivity increases associated with new technology do materialize. The key economic factors appear to be the growth and nature of world demand and the impact of technology on U.S. and world cropland productivity.

Characteristics and Attitudes of CRP Landowners

Another set of factors influencing the fate of CRP land after contracts expire is the characteristics of the land and the people who own and manage it. Within any economic and policy environment prevailing when contracts expire, it is likely that some owners on some CRP land will be disposed to return the land to crop production and that others will be more likely to keep the land in grass.

Landowners in Daviess County, Missouri, were interviewed in early 1988 in a study of factors influencing CRP participation. Almost half of the landowners controlling 52 percent of CRP acres in the study planned to leave the land in grass after contracts expired and graze or harvest forage. Forty-two percent of owners controlling 45 percent of acres planned to return the land to crop production, while 2 percent did not know how they would use the land.

A model of intended use was developed from the information collected in which the predominant enterprise (crops or livestock), gross sales, the opportunity cost of idling crop base acreage, and the cost of conservation compliance were significant variables explaining the operator's intentions for CRP land. The probability that a landowner intends to retain CRP land in grass decreases from 90 percent for those who have livestock enterprises, sell less than \$20,000 in agricultural products annually and have no base acreage to only 3 percent for cash-crop farmers with more than \$200,000 in annual sales, and high base acreage. The probability of keeping land in grass is 7 to 28 percent higher for livestock farmers than for cash-crop farmers, decreasing as sales increase. At the mean levels of the variables, livestock farmers had a 77 percent estimated probability of retaining CRP land in grass, while the probability for crop farmers was only 44 percent.

Of course, these probabilities are of farmers' intentions at the end of the contract from the perspective of 1988. Their views are dependent on 1988 expectations and will

Table 1. Estimated probability of retaining CRP land in grass, Davless County, Missouri.

Five-year average annual gross sales	Base opportunity cost ¹			
	Low		High	
	Livestock farm	Crop farm	Livestock farm	Crop farm
	Probability of retention in grass			
Less than \$20,000	.90	.68	.84	.56
\$20-4,000	.77	.44	.67	.33
\$40-100,000	.56	.23	.44	.16
\$100-200,000	.32	.10	.23	.07
\$200-300,000	.15	.04	.10	.03

¹Base acres times average sales per acre.
Source: After Kula, 1989.

undoubtedly change as a contract expiration approaches. The significance of crop base acreage in the model reflects current uncertainty about the future of commodity program benefits.

Counties Most Likely to Keep CRP Lands in Grass

Smaller operators are more likely to keep CRP lands in grass, as are mixed crop and livestock producers. We know that 92 percent of the contracts involved crop base acreage and 64 percent of the acres enrolled are base acres. The smaller crop base acreage enrolled in CRP, the more likely CRP land will be kept in grass.

To develop a threshold level beyond which counties were more likely to keep CRP land in grass, we used 1982 Census of Agriculture and CRP enrollment data. Counties with over 10,000 acres in the CRP with at least 20 head of cattle per farm, less than 20 percent of farms with gross sales over \$100,000 and less than 28 acres of crop acreage base enrolled per CRP acre were considered most likely to remain in grass. A second, more liberal analysis included all counties with at least 5,000 acres in the CRP, at least 15 head of cattle per farm, and no more than 15 percent of farms with over \$100,000 in sales per year.

Counties likely to retain CRP land in grass have 4.5

Table 2. Estimated CRP acreage in counties rated likely to retain CRP land in grass, by state.

State	CRP land likely to remain in grass							
	Low		High		Low		High	
	Thousand acres		Percent		Percent of CRP			
South Dakota	727.1	951.2	16.1	10.7	2.4	3.2		
Texas	641.7	1,066.4	14.3	12.0	2.1	3.5		
Colorado	638.1	1,126.9	14.2	12.7	2.1	3.8		
Kansas	632.4	933.0	14.1	10.5	2.1	3.1		
Montana	439.9	958.3	9.8	10.7	1.4	3.2		
Oklahoma	266.1	765.8	5.9	8.6	0.9	2.6		
New Mexico	260.1	260.1	5.8	2.9	0.8	0.8		
Iowa	206.9	511.4	4.6	5.8	0.7	1.7		
Nebraska	149.6	526.9	3.3	5.9	0.5	1.8		
North Dakota	125.6	651.0	2.8	7.3	0.4	2.2		
10 States	4,087.5	7,751.0	91.9	87.1	13.4	25.9		
Total	4,491.4	8,873.6	100.0	100.0	14.7	29.6		

million acres in the CRP, 15 percent of all land enrolled. Ten states have 4.1 million CRP acres, or 91 percent of all the CRP land likely to remain in grass. These States are for the most part states with high CRP enrollment. Most of the Corn Belt States, with the exception of Iowa, were not included, possibly due to the high levels of crop base acreage and the predominance of cash crop farms. Under the more liberal threshold, 8.9 million acres, or 30 percent of all CRP land is located in counties likely to remain in grass. The results suggest that the percentage of CRP land that will stay in grass is roughly equal to the 20 percent that remained after the Soil Bank.

Incentives in Agricultural Policy

The imponderables of world agricultural demand, technology development and adoption, and individual landowners' perceptions and intentions, as they influence the fate of CRP land, are difficult to predict and largely impossible to affect. However, agricultural policies will have a major influence and are matters of political will. U.S. and world viewpoints on agricultural resource use will be reflected in both 1990 farm legislation and the Uruguay Round of General Agreement on Tariff and Trade (GATT) negotiations. Clearly, natural resources are paramount in neither situation, but resource impacts will be carefully considered both in provisions directly aimed at resources and those which have indirect effects on resources.

Implicit in the current CRP program are three disincentives to keeping enrolled land in permanent vegetation: limited term rental arrangements, no economic use, and crop acreage base loss. These disincentives are addressed in alternative legislative proposals regarded as "trial balloons" for the conservation portion of 1990 farm legislation, Senate Bill 970 (Fowler) and Senate Bill 1063 (Lugar).

First, structuring CRP with a defined term and annual rental payments underlined the temporary nature of the "permanent" vegetative cover required under the program. CRP is an improvement over annual set asides featured in previous commodity policy because it reduces uncertainty, improves landowners' ability to make long-term plans for their land, and provides long-term environmental benefits. Although a permanent easement program with a one-time payment might have attracted smaller (or at least different) participation, it would have had more predictable consequences for grazing (Ervin and Blase, 1986).

Second, CRP land cannot be grazed or hayed except under emergency conditions. Farmers might be able to establish livestock enterprises to make the transition from crop production if commercial use was allowed while the land is under CRP contract. Livestock groups opposed forage production on land that was being subsidized by rental payments for conservation and feared artificial expansion of livestock production. However, the livestock industry benefitted from increased forage supplies from emergency haying on CRP lands during the 1988-89

drought that probably reduced herd liquidation and may have reduced opposition to broader use of CRP forage.

Third, program crop acreage base is protected while the land is enrolled in CRP, but will be subject to commodity program rules when the contracts expire. Base protection during the life of the contract probably increased participation and reduced rental payments compared with a program where base acreage was lost. However, current rules for calculating crop base mean that one-fifth of protected base in the CRP will be lost every year that the land is not returned to crop production after contracts expire. If crop prices are low when CRP land comes out of contracts, this rule creates a powerful incentive to plow the land once again. In theory, conservation compliance could prevent some of the most highly erodible land from being cropped. In practice, however, alternative conservation systems (ACS) are being allowed that will not require reducing erosion to soil loss tolerance levels and much CRP land will be cropped under minimum tillage or other conservation practices. The Food Security Act authorized additional payments to farmers who permanently retire base acres, but USDA has not implemented this provision.

Recommendations of the Third Grazing Lands Forum

The Third Grazing Lands Forum, "Grazing Land and the Conservation Reserve Program," identified obstacles to good grazing land stewardship and actions that Forum members and others could take to overcome those obstacles.

Landowner education was identified as an important means of affecting the quality and ultimate fate of CRP plantings (Heimlich et al., 1989). Suggestions include:

- Education and extension programs to influence CRP enrollment by farmers who will be more likely to keep land in grass.
- Programs to persuade farmers to plant well-adapted native grass species that will support a viable, long-term forage base. Proper management of CRP grass stands during the life of the contract can also affect long-term forage value.
- Provide assistance to farmers to explore options for integrating their CRP land back into the operation in the most profitable manner.

Implementation of the existing program can be better geared to long-term retention of CRP land in grass. Suggestions made by participants in the Third Grazing Lands Forum include the following:

- Develop multi-disciplinary planning teams to promote sound production systems for conservation compliance on CRP land after contracts.
- Reevaluate and revise present CRP plans to include necessary management and additional practices to establish profitable livestock enterprises after contracts expire.
- Request the Secretary of Agriculture to extend CRP contracts to the legislated 15-year maximum.
- Require that stricter "sodbuster" rules apply to CRP lands.

Opening lands for haying and grazing during drought years, as was done in 1988 and 1989, could help stabilize foundation herds at this low point in the cattle cycle. Careful management of emergency grazing would prevent damage to newly-established stands and could actually encourage desirable species and improve stand viability. The Third Forum noted the following:

- Explore possibilities for economic use of CRP land during the last years of the contract.
- Revise cropland acreage base management to protect base acreage and allow farmers to transfer or exchange acreage base.
- Explore possibilities for extending CRP eligibility to environmentally sensitive land other than cropland.
- Ensure that Congress consider the impact of proposals to reduce or change farm income supports, such as decoupling or trade liberalization, on the ultimate use of CRP land.

Conclusion

Passage and implementation of the Conservation Reserve Program to date constitute a major achievement for conservation and for agricultural policy. CRP played a major role in restoring the balance between cropland and grassland upset by the export-based expansion of the 1970's. At this stage, the remaining challenge is to ensure that CRP lands are not returned to crop production unless they are truly needed to meet domestic and global food demands. In particular, steps should be taken now to give producers the best possible information for their decisions regarding the long-term use of CRP land, to put in place policies and programs that will not artificially hinder change to grazing use.

Now is the time for action, rather than when contracts actually begin to expire. Education and extension programs take time to develop and farmers need time to consider the opportunities open to them so that they have carefully designed plans to work from when the contracts expire. Recurring omnibus farm legislation is up for consideration in 1990 that will set agricultural policy, including agricultural conservation policy, until 1995. Changes to CRP provisions and regulations need to be considered in the 1990 Farm Bill because they will be too late to be effective if they are delayed until 1995.

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I Know the Cattle A Poem for Joyce

This poem is written for Joyce, our former Resources Clerk, who once sent a message to all Forest range personnel pleading for help, as she could not distinguish the bulls, cows, yearling, and horses in her data base...

I think that I shall never pass
 Along a stretch of open grass,
 That my eye won't find delight
 When cattle graze within my sight.
 For 'cattle' as a kind of stock
 I've learned to know without a block:
 Bull, cow, calf, yearling, heifer, steer,
 The cattle classes all are clear,
 And when I look, I know I can
 Describe the 'cow' that's on the land.

The bull, he is a brutesome beast;
 For humankind he cares the least.
 Among the cows, one month a year,
 He falters not, his duty clear.
 He glares at all with beady eyes,
 His back a swarm of biting flies.
 I'll not mistake his ponderous gait,
 Or think that he's too overweight,
 When in a bull field I must pace,
 I'm watching him, prepared to race.

The cow, she's 'mom' most udderly,
 Her belly's broad and motherly,
 Her big brown eyes have lashes thick-
 The envy of many a human 'chick.'
 Unlike the bull, who'll grunt and bellow,
 A cow says 'moo' with manner mellow,
 Unless she's desperate, her calf astray,
 Her composure all in disarray.
 At times like that I know to try
 To keep my distance, slightly shy.

A cow that has not borne a calf yet
 We call a 'heifer' in cattle etiquette.
 A heifer's daintier than a cow,
 Her tail is short, she's less a 'frau,'
 Her belly's trim, her udder light,
 Her cares are few—she's more a sprite.
 A heifer's not a creature mean,
 She's just a cow that's still a teen.

A steer is what a cowboy calls
 A cattle male that's minus balls,
 He's usually of a heifer nature,
 But heavier built, of beefy stature.
 Steer calves, heifer calves to 6 months old,
 They're what the cow-calf rancher sold.
 From 6 to 18 months they're known.
 As yearling cattle, on their own.

Now yearlings are a curious group,
 They tend to cluster as a troop,
 Investigating things 'en masse,'
 Or scattering wildly through the grass.
 The baby calves are a special treat,
 They're cute and clean and soft and sweet.
 I really like their wide-eyed stare,
 And their frisking in fresh spring air.

I know the cattle, from bull to calf-
 The classes all I've memorized,
 But what concerns me still by half,
 Is how **a horse** is recognized!

by Katie Bump