AGRICULTURAL EXPERIMENT STATION

NEW MEXICO STATE UNIVERSITY

COOPERATIVE EXTENSION SERVICE

CROP AND LIVESTOCK PRODUCTION SYSTEMS FOR LAND IN THE CONSERVATION RESERVE PROGRAM[1]

NOTICE TO READERS!!

This document is designed to assist agricultural producers in evaluating options regarding participation in the new Conservation Reserve Program (CRP). The report contains three sections:

Section One: The CRP Research/Demonstration Project's 1996 Progress Report (pages 2-14)

Section Two: An Overview of the Recently Released CRP Final Rule (pages 15-17)

Section Three: A CRP Decision Aid, including a Worksheet for Calculating a CRP Breakeven Bid (pages 18-23)

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CROP AND LIVESTOCK PRODUCTION SYSTEMS FOR LAND IN THE CONSERVATION RESERVE PROGRAM

1996 Progress Report

PROJECT PARTICIPANTS

Rex Kirksey, Superintendent/Project Coordinator
Agricultural Science Center at Tucumcari, NMSU

Gary Donart, Professor
Dept. of Animal and Range Sciences, NMSU

Darrell Baker, Extension Agronomist & Acting Superintendent
Cooperative Extension Service, Agricultural Science Center at Clovis, NMSU

Joe Whitehead, Range Conservationist
Curry County Natural Resources Conservation Service

Connie Falk, Associate Professor
Dept. of Agricultural Economics and Agricultural Business, NMSU

Allen Torell, Professor
Dept. of Agricultural Economics and Agricultural Business, NMSU

Jim Libbin, Professor
Dept. of Agricultural Economics and Agricultural Business, NMSU

Victor Stout, Farmer
Clovis, NM

Stanley Pipkin, Farmer
Clovis, NM

INTRODUCTION

The Conservation Reserve Program (CRP) was established by the Food Security Act of 1985 and was extended by the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Bill). The 1996 Farm Bill significantly changed the focus of the CRP. Agriculture Secretary Dan Glickman has called the new CRP a "strong, revolutionized environmental program", ...one that is "no longer just a soil protection program, but a true conservation program," (USDA, Release No. 0047.97). The primary goals of the new CRP are erosion reduction, improvement of water quality, and enhancement of wildlife habitat.

The CRP is the largest cropland retirement program for conservation purposes in U.S. history. Today some 32.9 million acres are enrolled in the CRP. More than one-half of this acreage is in contracts that will expire on September 30, 1997.

CRP enrollment in New Mexico is approximately 480,000 acres. Nearly one-third of the cropland in eastern New Mexico is currently enrolled in CRP. Ninety percent of this acreage is in contracts that will expire on September 30, 1997. Most CRP contracts in New Mexico have already been granted a one year extension and many contracts have been extended a second time. The 1997 Agriculture Appropriations Act precluded the extension of existing CRP contracts beyond September 30, 1997.

Research/Demonstration Project Overview

The research/demonstration project was initiated in 1994 to help producers evaluate post-CRP land use options. Since 1994, project efforts have focused on the physical collection of data through field trials and demonstrations and the delivery of project information to interested persons.

Efforts for 1997 will focus on; (1) the statistical analysis of collected data, (2) assessment of the potential profitability of continued participation in the new CRP as compared to non-CRP options, and (3) the delivery of project information to interested persons.

The project's objectives are:

1. Determine the seasonal productivity of grasses growing on CRP land.
2. Determine the seasonal productivity and utilization of weeping lovegrass by grazing cattle.
3. Identify dryland crop production systems for converting CRP grassland to annual crop production.
4. Compare the potential environmental impacts of different systems of production.
5. Demonstrate techniques for enhancing wildlife habitat on CRP and post-CRP land.
6. Evaluate the potential profitability of alternative production systems and farm program options.
7. Obtain producer input in the process of project planning and reevaluation.
8. Deliver project information to interested persons.

Readers should be aware that much of the data in this report have not been statistically analyzed. Caution should be exercised when drawing conclusions from this limited information. The project cooperators, however, believe that limited amounts of information can be very useful in helping producers make decisions about production options. As additional information becomes available, more definitive conclusions can be drawn.

USE OF CRP LAND FOR LIVESTOCK GRAZING

A major portion of the project's efforts have been devoted to assessing the potential for using existing CRP grasslands for livestock production. These efforts have centered around two approaches: (1) estimating forage yield and quality of several species of grass currently established on CRP land, and (2) utilizing on-site grazing trials to determine the suitability of producing cattle on weeping lovegrass.

Seasonal Productivity of CRP Grasslands

Several grass species are currently growing on CRP land in eastern New Mexico. To estimate the productivity of the predominate species, ten tracts of privately owned CRP land were selected for study. Only seven sites were sampled in 1996. The selected grass species and their site locations are shown in Table 1. Two of the sites that had been sampled in previous years were grazed in spring 1996 under the CRP emergency haying and grazing provisions. Another site was granted an early contract termination and converted to irrigated corn production in 1996.

Table 1. CRP grass sampling sites in New Mexico, 1996.

Grass species	Location	County	Soil type	Precipitation (inches)	
				Jan. to May	June to Sept.
Blue grama & sideoats grama	Mosquero	Harding	Labrier loam	0.3	14.6
Weeping lovegrass	San Jon	Quay	Amarillo loamy fine sand	1.1	16.3
Weeping lovegrass	Portales	Roosevelt	Amarillo loamy find sand	0.4	16.7
Weeping lovegrass	Crossroads	Lea	Brownfield-Patricia fine sand	0.8	12.8
Weeping lovegrass	Clovis	Curry	Pullman & Mansker loam	0.5	10.0
Yellow bluestem	San Jon	Quay	Amarillo fine sandy loam	1.1	16.3
Kleingrass	McDonald	Lea	Lea loam	0.8	12.8

Eastern New Mexico experienced drought conditions during the last three months of 1995 and the first five months of 1996. Precipitation during early 1996 was 1.1 inches or less, compared to normal amounts of 3.4 to 4.6 inches. Precipitation was normal to six inches above normal for the remainder of the 1996 growing season.

Each CRP grassland site was sampled three times in 1996. On each sampling date, total standing biomass was harvested at ground level from multiple replications of 5.6 ft^2 areas. The harvested material was separated into green and dry plant components to approximate growth from the current growing season and accumulated standing material from previous years growth. Forage production data are presented in Figures 1-3. All yields are reported in pounds of oven-dry forage per acre.

Due to drought conditions, forage yields at all locations were low during the early part of 1996. The grama grass site at Mosquero (Fig. 1) had no measurable green growth on June 20, due to the drought and a severe hail storm that came through the area a few days prior to sampling.

For the first time in three years, the grama grass site produced more than 1,000 pounds of green forage per acre at the late season harvest. Precipitation at Mosquero was more than three inches above normal for the June through September period. Even though the grama grass site was more productive in 1996 than it had been in previous years, it still produced less than all other species.

The kleingrass forage growth pattern observed in 1996 (Fig. 1) was similar to that observed in 1995. The amount of green forage harvested at the late season harvest doubled the yield from the mid-season harvest. The kleingrass site produced less green forage than the old world bluestem site but was comparable to two weeping lovegrass sites.

Part of the San Jon bluestem site was burned in spring 1994. In 1996, there were no visual differences between the burned and non-burned portions of the site. As in previous years, the non-burned bluestem site at San Jon was the

most productive site evaluated in this study.

Figure 2 shows forage yields at three weeping lovegrass sites. The Crossroads site produced the least dry forage at the early and mid-season harvests. This reflects the loss of accumulated forage resulting from a wildfire that burned the site in fall 1994. There had been a light frost at the Crossroads site prior to the late season harvest on November 13, 1996. All forage was dormant and it was not possible to separate the harvested forage into green and dry components.

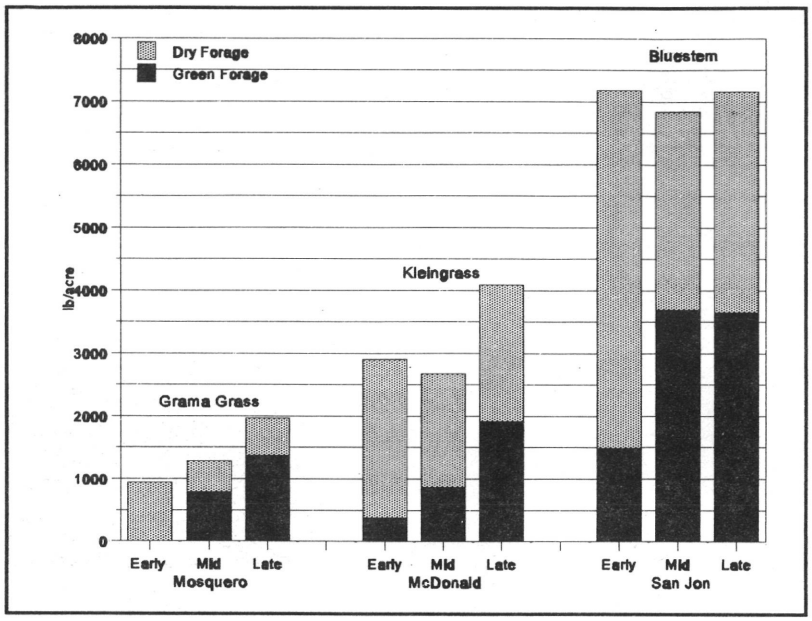

Figure 1. Grama grass, Kleingrass and Bluestem production, by season of growth, at Mosquero, McDonald and San Jon, 1996.

For all three harvest periods, the Portales site produced more green forage than the San Jon site and more total dry matter than the other weeping lovegrass sites (Fig. 2). Weeping lovegrass forage growth patterns in 1996 were similar to those observed in 1995, even though all sites experienced drought conditions in early 1996.

The effects of nitrogen fertilizer on the growth of weeping lovegrass are shown in Figure 3. The fertilized site was burned in 1994 and 1995 but was not burned in 1996 as there was an insufficient fuel load to carry a fire. The fertilizer application rates in 1996 were 0, 45 and 90 lb/ac of nitrogen from a broadcast application of urea. The fertilizer was not applied until July 9, 1996, due to the dry conditions that existed earlier in the year. The same sites were used for fertility evaluations in 1995 when nitrogen application rates were 0, 38 and 76 lb/ac.

There were only two harvests from the fertilized plots in 1996 due the lateness of the nitrogen application. Although nitrogen was not applied until July 9,

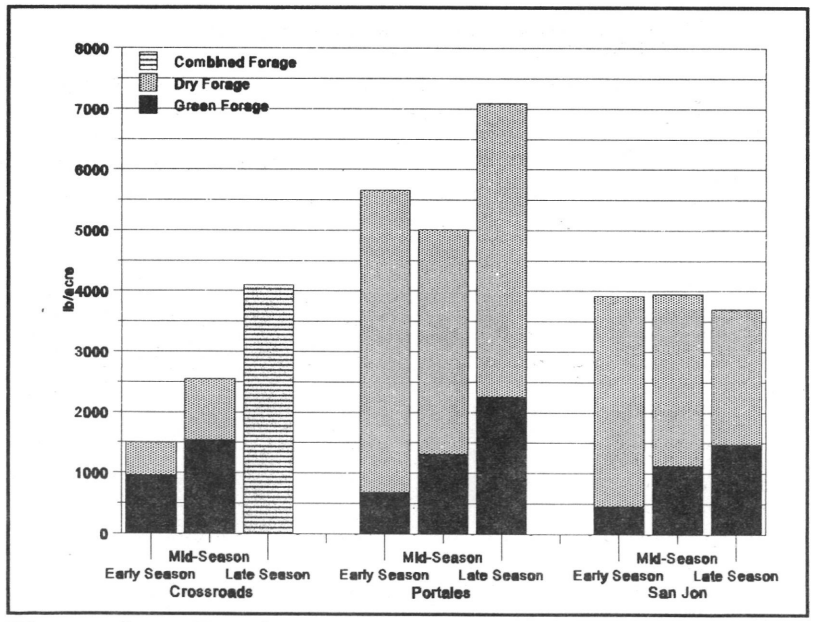

Figure 2. Weeping Lovegrass production at Crossroads, Portales and San Jon, 1996.

differences in green forage yields were observed at the August 8, harvest. The amount of dry forage harvested in August was similar for all treatments due to the 1995 hay harvest.

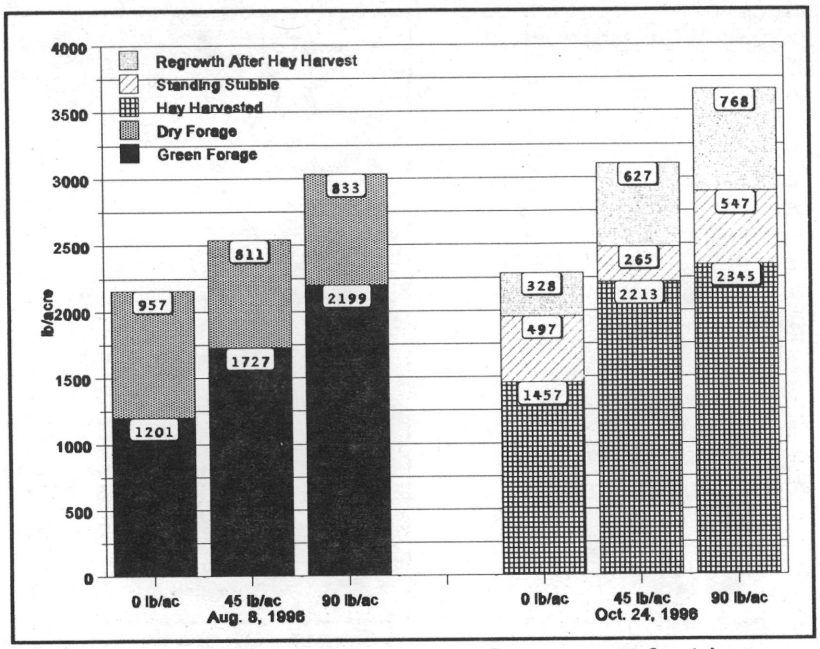

Figure 3. Weeping lovegrass forage production from fertilized sites at Clovis, 1996.

The fertilized areas were harvested for hay on September 7, 1996. Hay yields and nutrient values are shown in Table 2. Forage collected from the fertilized plots on October 24, 1996, was separated into regrowth after hay harvest and standing stubble. The 2.5 inches of stubble left after the September 1996 hay harvest contained less than 550 lb/ac of dry matter (Fig 3). The application of nitrogen resulted in increased forage regrowth after hay harvest. As compared to the non-fertilized area, the application of 45 and 90 lb/ac of nitrogen increased forage yields by 36% and 60%, respectively.

As in previous years, there were dramatic species, locational and environmental differences in grass production. Nutritive analysis of the samples collected in 1996 and prior years will be completed in 1997.

Weeping Lovegrass Grazing Trials

In spring 1994, a 1,204 acre tract of weeping lovegrass (unknown cultivar) was selected for the project's grazing trials. The property, 15 miles north of Clovis, is owned by Wayne Palla and has been in CRP since 1987. The property has a combination of Pullman and Mansker loam soils. Annual precipitation during the 1996 growing season was approximately 10.5 in., with no measurable precipitation received before May 28.

Table 2. Weeping lovegrass hay yields and nutritive values, from three levels of fertility, at Clovis, 1996.

Applied Nitrogen	Dry Matter	Crude Protein	Digestible Protein	Acid Detergent Fiber
(lb/ac)	(lb/ac)	(%)	(%)	(%)
0	1457	5.41	2.81	38.8
45	2213	8.51	4.53	37.3
90	2345	8.69	4.66	38.6

Grazing research in 1996 consisted of one replicated grazing management trial and two observational trials. The replicated trial consisted of steers grazing weeping lovegrass under five grazing management strategies. In one of the observational trials, yearling steers from the 1995 grazing management trial were carried through the summer of 1996. In the other trial, mature bred cows from the NMSU Corona Ranch grazed weeping lovegrass from October 1995 through September 1996.

Replicated Grazing Management Trial

The 1996 grazing management trial consisted of two replications of five grazing treatments (Table 3). The 12-month continuous grazing treatment that had been included in the grazing trial in previous years was discontinued in 1996. The project's plan of work required the termination of all grazing research in fall 1996. Consequently, there was insufficient time to complete a 12-month grazing treatment. In 1996, the 12-month continuous grazing treatment was replaced with a 28-day summer grazing treatment. When steers were removed from the heavy spring/fall grazing treatments on July 23, 1996, they were placed on the 28-day summer treatment. Steers were returned to the heavy spring/fall grazing treatments on August 20, 1996.

Due to drought conditions, initiation of grazing was delayed by about 4 weeks in 1996. Stocking densities for the heavy spring/fall grazing treatments were higher than the levels used in 1995, while the 6-pasture rotation pastures were not stocked as heavy as in 1995.

The 1996 grazing treatments were on the same sites used for the corresponding grazing treatments in 1994 and 1995, with the exception of the 28-day treatment. As previously mentioned, the pastures used for 28-day summer grazing in 1996 had been used for 12-month continuous grazing in previous years. All pastures were burned in 1994 and 1995. There was insufficient forage to warrant burning in 1996.

Steers that had been placed on the 12-month continuous grazing treatment in May, 1995, remained in their assigned pastures until May 21, 1996. They were then moved to a large, ungrazed pasture immediately north of their original assigned pastures. Animal performance data for the 12-month continuous grazing treatment are presented under the heading, Year-long Performance of Steers on page 9.

Urea fertilizer was spread on the heavy spring/fall with fertilizer pastures on July 9, 1996. Rates of nitrogen application were 45, 38 and 34 lb/ac in 1996, 1995 and 1994, respectively. The 6-pasture rotation pastures were subdivided into six paddocks. From June 4 to July 12, 1996, all paddocks were continuously grazed as there was insufficient forage to begin a rotation sequence. The rotation grazing sequence was initiated on July 12. Steers grazed individual paddocks two to four days during each rotation cycle.

Table 3. Grazing treatments for grazing management trial at Clovis, 1996.

Grazing treatment	Dates grazed	Approximate stocking rate
28-day summer	7/23/96-8/20/96	0.5 ac/head
6-mo. continuous	6/04/96-11/14/96	2.7 ac/head
Heavy spring/fall	6/04/96-7/23/96 8/20/96-11/14/96	1.4 ac/head 2.6 ac/head
Heavy spring/fall with fertilizer	6/04/96-7/23/96 8/20/96-11/14/96	1.2 ac/head 2.5 ac/head
6-pasture rotation	6/04/96-11/14/96	2.0 ac/head

Yearling crossbred steers for the grazing trial were provided by the Clayton Livestock Research Center. Steers were weighed at Clayton on May 30, 1996, and shipped to the grazing trial on June 4, 1996. The May 30 weights served as the basis for calculating initial body weights (523 lb average) and subsequent rates-of-gain. As in 1995, one-half the steers came from a feedlot background; the remainder came from winter wheat pasture. While on the grazing trial, the cattle were provided free access to white salt and 12:12 mineral block.

Average rates-of-gain for the steers on the various grazing treatments are shown in Table 4. Gains in 1996 followed a trend similar to 1994 and 1995. Average daily gains were very good for all treatment groups during the early grazing season. As the season progressed, rates-of-gain declined. After the four-week rest period (July 23 to August 20), steers on the heavy spring/fall grazing treatments had higher rates-of-gain than the other treatment groups.

In contrast with previous years, rates-of-gain for all treatment groups remained relatively high (0.68 to 1.86 lb/day) during the September-October grazing period. Steers on the 28-day summer grazing treatment had relatively low rates-of-gain (0.50 lb/day), presumably due to lack of available forage resulting from the high stock density.

Pre-grazing background treatment had little effect on subsequent rates-of-gain. When compared across all treatment groups, steers with a winter wheat background had a May 30, to October 14, 1996, average daily gain of 1.39 lb compared to 1.17 lb for the steers with a feedlot background.

Information on weight gain per acre is presented in Table 4. The spring/fall with fertilizer grazing treatment produced the most weight gain on a per acre basis (112 lb). The spring/fall grazing and six-pasture rotation grazing treatments produced intermediate and similar amounts of gain per acre (96 and

Table 4. Average daily gains and weight gains per acre for steers grazing weeping lovegrass at Clovis, 1996.

	Grazing Period					
	30 May to 26 Jun	26 Jun to 23 Jul	23 Jul to 20 Aug	20 Aug to 17 Sep	17 Sep to 14 Oct	Season Total
	pounds					
Average Daily Gains						
28-day summer	---	---	0.50	---	---	0.50
6-mo. continuous	1.01	2.92	1.41	0.74	0.68	1.35
Spring/fall	0.79	2.64	---	1.16	1.48	1.58
Spring/fall w/ fertilizer	0.54	2.79	---	1.88	1.86	1.73
6-pasture rotation	1.01	2.50	1.24	0.84	0.96	1.30
Weight Gain per Acre						
28-day summer	0	0	31	0	0	31
6-mo. continuous	10	29	16	8	7	69
Spring/fall	16	52	0	12	16	96
Spring/fall w/ fertilizer	12	60	0	21	20	112
6-pasture rotation	14	34	17	12	13	90

90 lb/ac, respectively). The 6-month continuous grazing treatment was the least productive season-long grazing treatment (69 lb/ac). The relative ranking of per acre gains was comparable in 1995 and 1996. Average daily gains and weight gain per acre were lower in 1996 than the previous year, reflecting the effects of drought conditions and the delay of grazing in 1996.

Year-long Performance of Steers

Twenty-two yearling steers from the 1995 grazing trial remained on the 12-month continuous grazing pastures until May 21, 1996. On that date they were moved to a large, ungrazed pasture immediately north of their original pastures. From June 4 until September 24, 1996, these steers grazed a pasture immediately south of the pasture management trial.

Steers on the 12-month continuous grazing treatment received a 37% protein block supplement at a rate of 2.2 lb/day from December 5, 1995, until January 22, 1996. From January 22, until May 21, 1996, the rate-of-supplementation was increased to 2.6 lb/day.

The steers had an average body weight of 460 lb when placed on weeping lovegrass on May 9, 1995. Their average body weight on May 21, 1996, was 735 lb. During this 12-month period, the steers gained an average of 0.73 lb/day. When removed from weeping lovegrass on September 17, 1996, the steers had an average body weight of 951 lb. The daily rate-of-gain from May 21, to September 17, 1996, was 1.82 lb. Weight gain for the entire grazing period (496 days) was 491 lb, or 0.99 lb/day. Seasonal changes in forage quality are reflected in the periodic rates-of-gain shown in Figure 4.

Performance of Bred Cows During Winter

Thirty-one mature, bred cows from the NMSU Corona Ranch were placed on weeping lovegrass at Clovis on October 31, 1995. The cows were placed on a 500-acre portion of the weeping lovegrass tract that had been burned in 1994 and subjected to light grazing pressure in 1994 and 1995.

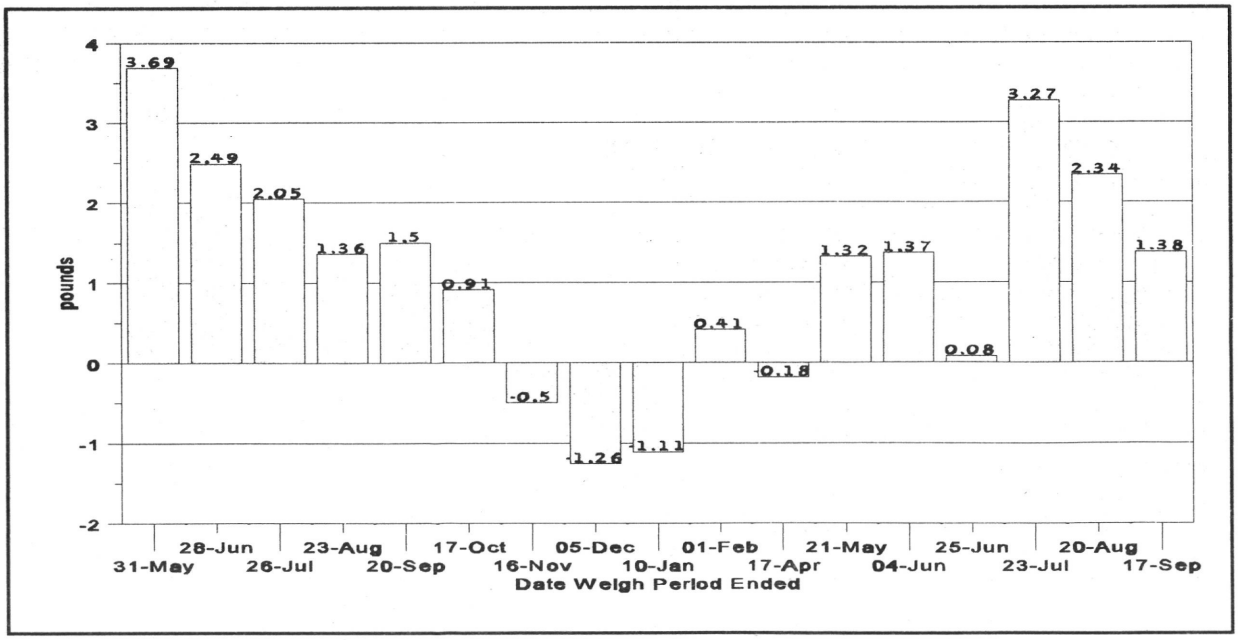

Figure 4. Average daily gains of steers from continuous grazing of weeping lovegrass at Clovis, May, 1995, to September, 1996.

The cows received no supplemental feed from the time they were placed on weeping lovegrass until January 22, 1996. From that date until May 14, 1996, the cows were fed 37% protein blocks, once a week, at a rate equivalent to 1.7 lb/head/day.

Cow average body weights are presented in Table 5. The cows experienced an average weight decline by 172 lb during the winter months (October, 1995 to April, 1996). All cows calved between February 2 and May 14, 1996. Three cows died soon after calving, presumably due to complications associated with their poor physical condition. Twenty-eight calves survived through the end of the trial. The calves had an average body weight of 193 lb at branding (July 2, 1996). When removed from the trial on September 24, 1996, the calves weighed 357 lb. They gained 1.95 lb/day during the July 2 to September 24, time period.

Table 5. Average body weight of cows grazing weeping lovegrass at Clovis, 1995-1996.

Weigh Date	Weight (lb)
Oct. 31, 1995	1052
Jan. 10, 1996	1057
Apr. 17, 1996	880
Jul. 2, 1996	908
Sept. 24, 1996	1003

All cows were pasture exposed to a Hereford bull from April 1, 1996, until termination of the grazing trial on September 24, 1996. At the end of the grazing trial, 14 of 27 cows were not bred, as determined by rectal palpation. The remaining 13 head were estimated to be between two to four and one-half months pregnant.

The rate of winter supplementation (1.7 lb/hd/day) utilized in this trial was insufficient to maintain the cows in an adequate body condition to rebreed in a timely manner. In addition, the once-weekly feeding of blocks may have created inequities in individual rates of consumption. A one-week supply of blocks was usually consumed in 3 or 4 days. The more dominant cows kept the less aggressive, weaker cows away from the blocks, resulting in unequal rates of consumption.

USE OF CRP LAND FOR CROP PRODUCTION

A cropping systems component was included in this project in anticipation of a large acreage of land returning to crop production when existing CRP contracts expire. In 1996, the cropping systems research focused on; (1) identifying dryland cropping systems for converting CRP land to grain sorghum or winter wheat production, and (2) a nitrogen mineralization study.

The cropping trials were located on CRP land owned by Stanley Pipkin. The site was established to weeping lovegrass (cultivar unknown) in 1987 and is 14 miles north of Clovis on a Pullman loam soil.

Dryland Cropping Systems

The dryland cropping systems trials were designed to evaluate selected tillage systems for their effectiveness in converting CRP land to non-irrigated winter wheat or grain sorghum production. The three tillage systems utilized by this trial were conventional tillage, minimum tillage, and no-tillage.

Wheat - 1996 Harvest

Field management practices and tillage treatments for the 1996 winter wheat crop were as follows:

July 5, 1995-Sprayed all areas with Roundup (1.3 pt/acre)
August 21, 1995-Sprayed all areas with Roundup (1.3 pt/acre)
September 17, 1995-Sprayed No-till and Minimum Tillage plots with Roundup (3 pt/acre) + Ag Oil (0.4 pt/acre).
September 20, 1995-Disked Minimum Tillage plots one time
-Disked Conventional Tillage plots two times
September 21, 1995-Planted TAM 105 winter wheat (30 lb/acre)

Drought conditions during the 1995-96 winter wheat growing season resulted in highly unfavorable growing conditions. Precipitation from the time of planting through June, 1996, totalled 4.70 inches, compared to the long-term average of 8.83 inches. The wheat crop received only 0.21 inches of precipitation between January 1 and May 31, 1996. Due to the lack of precipitation, few non-irrigated wheat producers in the region harvested wheat for grain. There was insufficient grain production from this trial to warrant a winter wheat harvest in 1996.

Grain Sorghum - 1996 Harvest

The conventional and minimum tillage treatments for grain sorghum were discontinued in 1996. All grain sorghum plots were planted using no-till methods in 1996. Field management practices for establishment of the 1996 grain sorghum crop were as follows:

October 9, 1995-Sprayed area with Roundup (1.3 pt/acre)
July 1, 1996-Planted no-till (Experimental XPX) grain sorghum (4 lb/acre)
July 3, 1996-Sprayed with Roundup (3 pt/acre)
+ Ammonium sulfate (3.75 pt/acre)

The grain sorghum crop was destroyed by a hail storm on August 30, 1996. On that date, the area received high winds, marble-sized hail and two inches of rain in 45 minutes. Grain was dislodged from the plants and only the stalks were left standing. At season's end, there was insufficient grain production to warrant a harvest.

Nitrogen Mineralization Study

The goal of this study is to determine the effects of three tillage systems and the timing of tillage operations on net nitrogen mineralization. The study is being conducted by Tamera Gallentine, an M.S. graduate student at NMSU. The amount of nitrogen available to plants in post-CRP soils is being determined by In-situ nitrogen mineralization techniques. Soil core samples from various tillage treatments are being analyzed for NO_3, NO_2-N and NH_4-N. A report on this component of the project will be completed by July, 1997.

ENVIRONMENTAL IMPACTS

On-site data for estimating potential soil erodibility has been collected from the grass sampling, grazing, and cropping sites utilized by the project. Data were collected on soil surface residue, soil surface roughness, standing stubble or canopy height, and row orientation. These observations will be combined with information from existing data bases for climate factor, soil classification, depth of soil horizons, and other factors to estimate potential erodibility of the different production systems. Soil loss estimates will be determined using the Revised Wind Erosion Equation, IMPLAN, or other appropriate computer models.

DEVELOPMENT OF WILDLIFE HABITAT

Although most CRP land may return to crop production or livestock grazing when existing CRP contracts expire, at least some acreage should be maintained in wildlife habitat. Tremendous wildlife benefits can be achieved by implementing a few simple and inexpensive methods for enhancing and/or maintaining wildlife habitat on post-CRP lands. Suitable wildlife habitat developments could be as small as one-half acre per 160 acres.

In spring 1994, a small area (approximately 0.5 acre) near the cropping trial was set aside for development as a wildlife habitat area. The purpose of the area is to demonstrate techniques for improving wildlife habitat on non-irrigated grassland sites.

Tree and Shrub Plantings

Two-hundred thirty-four trees and shrubs were planted on May 9, 1994. The plants were set by hand in a shallow V-trench. After transplanting, the trench was lined with a woven plastic weed barrier with openings cut for each plant. This method allows precipitation to collect around the plants while reducing evaporation and weed competition. The plants have received no supplemental water. On June 27, 1995, the planting was evaluated for survival. As shown in the previous year's annual report, the planting had an overall survival rate of 92%. Plants that were established in 1994 showed considerable growth in 1996, especially when considering the severity of the spring weather (0.21 in. of precipitation between January 1 and May 31). The shrubs leafed out but made no growth until moisture was received.

On April 8, 1996, 48 bare root seedlings (22 skunkbush sumac, 16 hackberry and 10 chokecherry) were planted in vacant spots in the 1994 planting and a nearby area. Plants in the new area were planted on flat ground with no plastic weed barrier. These plantings were watered at the time of planting and received no additional irrigation. Due to dry conditions after planting, none of the 1996 plantings survived.

By mid-summer, weeping lovegrass had become established in many of the holes that had been cut in the weed barrier for the 1994 planting. The grass was competing with the shrubs for space and moisture. An August 13, 1996, application of Poast herbicide was ineffective in controlling encroaching weeping lovegrass due to the stage of grass maturity and lack of moisture.

Wildlife Waterer

The wildlife waterer installed in August, 1995, continued to provide a reliable source of water even during the winter drought. The water depth reached a low level of 11.5 inches in May, 1996. After the summer rains, the tank filled to capacity (20 inches in depth). Prior to summer rains, water in the tank appeared to be very stagnant. However wildlife, primarily birds, continued to use the waterer.

Wildlife food plots were not planted in 1996 due to the lack of springtime moisture. Volunteer millet from the 1995 planting was observed in the area following the summer rains. Purple groundcherry (*Physalis lobata*) was prevalent in the food plots.

ECONOMIC EVALUATION

For many farmers, the final decision about post-CRP land use will depend on the economic profitability or financial feasibility of available options. Crop and livestock cost and return estimate templates have been developed using a representative farm design. This approach allows whole-farm analyses

of various land use scenarios regarding; (1) continued participation in the CRP, (2) conversion of CRP acreage to cropland using conventional or conservation tillage methods, and (3) utilization of established grassland for livestock grazing. Integrated livestock budgets and the flexibility of considering conservation versus conventional tillage methods are key to the economic and financial assessments.

Enterprise and whole-farm budgeting models provide for analysis of crop and livestock research results within a representative farm framework and allow producers to adapt the model to individual operations in order to make their own land use decisions. This approach enables research results, which were developed on a limited scale of operation, to be evaluated within the context of other ongoing farm activities and with a representative equipment complement. Preliminary cost and return estimates have been developed for an integrated dryland crop/CRP grazing representative farm. The models still must be validated with crop yield, grazing trial, and animal performance research data.

Further, a series of pasture-based farms have been modeled for permanent and improved non-native pasture grazing systems. By modeling in an integrated grazing system context, the true value of pasture can be viewed. Prior to this effort, all of the pasture budgets ever produced by NMSU had shown losses. But if alternative approaches to pasture valuation are employed, a different view of pasture management and the role of improved pastures emerges. The approach employed has no impact on the whole-farm returns as an increase in the opportunity cost allocated to the pasture increases pasture returns and commensurately lowers livestock returns. Resource allocation and pasture improvement decisions may have been incorrect in the past if pasture is automatically assumed to be a losing proposition. An intensive educational effort in pasture management and economics might have a significant impact on the decision to move CRP lands, now in grass, to crop production.

ADVISORY BOARD

The CRP project's advisory board provides direction to the project participants. Members of the board include farmers from each of the six counties in eastern New Mexico, the FSA District Director, three agricultural Extension Agents, three NRCS District Conservationists, and two area business representatives.

INFORMATION DELIVERY

The information delivery component of the project is aimed at providing applied research and demonstration results to more than 1,500 CRP contract holders in New Mexico. The project's 1995 Progress Report was mailed to nearly 1,700 individuals in spring 1996.

The project co-hosted a series of "Decision CRP" symposia in Goodland, KS; Eads, CO; Garden City, KS; Claude, TX; Guymon, OK; Portales, NM; and Big Spring, TX between September 30 and October 10, 1996. Through the cooperative efforts of research and extension personnel in Texas, Oklahoma, Colorado, Kansas and New Mexico, project information was presented to nearly 1,000 producers in the Southern Great Plains.

Project participants made several presentations before local gatherings and professional meetings in 1996. Presentations included an invited paper for a symposium on CRP at the Annual Meeting of the Society for Range Management, an oral presentation at the Annual Meeting of the Soil and Water Conservation Society, and oral and poster presentations to a Regional Conference on Future Management of CRP Lands.

The project has received a great deal of media coverage through at least two dozen newspapers and magazines. Radio and television stations in New Mexico and West Texas have done several positive stories on the CRP project.

SUMMARY

Project results have shown that, when properly managed, weeping lovegrass can be successfully utilized for beef cattle grazing. For three years in a row, yearling steers or heifers produced weight gains in excess of 2 lb/day during spring and early summer. Weeping lovegrass pastures can support a stock density up to five times greater than native rangeland. As the growing season progresses and the weeping lovegrass forage matures, cattle rates-of-gain decline. Yearling steers and heifers have failed to maintain their body weight during winter months without supplemental feed. The project has shown the productivity of weeping lovegrass pastures can be improved by manipulating forage quality through grazing/rest rotations. A positive response to nitrogen fertilization has been observed in weeping lovegrass forage production and cattle rates-of-gain.

Project results indicate it will be difficult to overwinter bred cows on weeping lovegrass without significant amounts of protein and/or energy supplements. The high death losses and low conception rates incurred by this trial would be unacceptable to commercial cattle producers in New Mexico. These negative results were accentuated by the drought conditions that existed from October 1995 to May 1996.

Research on converting CRP grassland to annual crop production has shown it will be difficult to obtain commercially viable grain sorghum or winter wheat grain yields during the initial years following conversion. Below normal amounts of precipitation and a devastating hail storm contributed to non-existent crop yields for the crop production trials in 1996. Cropping systems results have shown the herbicidal control of CRP grass stands is difficult and expensive. If perennial grasses are to be controlled with tillage operations, adequate lead time must be provided.

The project has demonstrated several techniques for improving wildlife habit on CRP sites. Deciduous and evergreen shrubs have been established using water shedding techniques and no supplemental water. A fiberglass water catchment has provided a consistent source of water for wildlife use.

Cost and return estimate templates for analyzing a variety of post-CRP land uses have been developed. A series of pasture-based farms have been modeled for permanent and improved non-native grass pasture grazing systems. In these models, pasture and livestock are viewed as an integrated grazing system thereby resolving concerns about inequities in previously used technique of valuing pasture and livestock as separate enterprises. In coming months, the economic models will be validated with crop yield, grazing trial, and animal performance research data.

Project results have been distributed through a number of outlets. The project's 1995 Progress Report was mailed to approximately 1,700 individuals. Nearly 1,000 persons attended the "Decision CRP" symposia held in September and October 1996. Project participants have made several presentations before local, regional and national meetings. Media coverage of the project's activities has been extensive.

Persons seeking additional information about the CRP research/demonstration project should contact Rex Kirksey, Project Coordinator, at (505) 461-1620.

OVERVIEW OF THE RECENTLY RELEASED CRP FINAL RULE

Land Eligibility Requirements

Under the new CRP, cropland eligibility requirements have changed. Eligible cropland is now defined as land that has been planted or considered planted to an agricultural commodity in two of the last five crop years and is capable of being planted to an agricultural commodity. Marginal pasture land is eligible for enrollment in the CRP if it is currently enrolled in the Water Bank Program or will be devoted to a riparian buffer planted to trees. There are approximately 230-240 million acres that meet the CRP eligibility requirements, but CRP acreage will be limited to 36.4 million acres.

To be considered for enrollment in the CRP, eligible cropland must also meet at least one of the following criteria:

* Have an Erosion Index (EI) of 8 or higher or be considered highly erodible land according to conservation compliance provisions;

* Be considered a cropped wetland;

* Be devoted to any of a number of highly beneficial environmental practices, such as filter strips, riparian buffers, grass waterways, shelter belts, wellhead protection areas or other similar practices;

* Be subject to scour erosion;

* Be located in a national or state CRP conservation priority area; or

* Be cropland associated with, or surrounding non-cropped wetlands.

Conservation Priority Areas

There are four national conservation priority areas: Chesapeake Bay, Long Island Sound, Great Lakes and the Prairie Pothole Region. None of these areas are in the southwestern U.S. Efforts to designate a state conservation priority area for New Mexico were unsuccessful. Acreage located in a conservation priority area will receive additional consideration in the CRP bid acceptance process.

Producer Eligibility Requirements

Under the producer eligibility requirements, land must have been owned or operated for at least 12 months prior to the close of the sign-up period. There are limited exceptions to the ownership requirements for; (1) acquiring land as a result of death by the previous owner, (2) a change in ownership due to foreclosure, and (3) instances where the new owner can provide assurances that the land was not acquired for the purpose of enrolling it in CRP.

Environmental Benefits Index

A new Environmental Benefits Index (EBI) will become the tool by which CRP bids will be evaluated and ranked. By using the index, each bid will be ranked against all other bids based on the potential environmental benefits of enrolling the land in the CRP. Those lands providing the maximum environmental benefit at the least cost will be selected for enrollment in the

CRP. Factors in the EBI include; (1) wildlife habitat benefits, (2) water quality benefits, (3) on-farm benefits of reduced erosion, (4) continuation of benefits beyond the contract period, (5) air quality benefits from reduced wind erosion, (6) benefits from being located in a conservation priority area, and (7) cost per acre.

Rental Rates

CRP payment rates will be based on county average dryland cash or cash rent equivalent rental rates that are adjusted for site-specific, soil-based productivity factors. Maximum allowable soil rental rates for eastern New Mexico range from $8 to $40 per acre per year depending on soil type and location. Producers can obtain site specific information on maximum rental rates from their local NRCS office.

Producers who offer acreage for enrollment in the CRP at a rate lower than the maximum rental rate will increase the likelihood of being accepted through the competitive Environmental Benefits Index (EBI). Bids exceeding the maximum rental rate will be rejected. Land that has that been rejected at an earlier sign-up may be re-offered at a later sign-up if the acreage continues to meet basic eligibility requirements and cropland acreage limits are not in effect.

The soil rental rate may be increased by an amount not to exceed $5 per acre per year, as an incentive to perform certain maintenance obligations. As in previous CRP sign-ups, cost share assistance will be provided for the establishment of cover on land enrolled in the CRP.

General Sign-Up

The next general CRP sign-up (the 15th sign-up), will begin March 3, 1997, and continue through March 28, 1997. Producers with contracts expiring September 30, 1997, may offer that acreage for re-enrollment during the 15th sign-up if the land meets the new eligibility requirements. If acreage is currently under a CRP contract that will expire on September 30, 1997, and it is accepted into the CRP, the new contract will be effective October 1, 1997. If acreage that has not previously been in the CRP is accepted, the participant will be able to choose an effective contract date of October 1, 1997, or October 1, 1998.

Continuous Sign-Up

In addition to the general sign-up, there is a continuous sign-up for certain highly valuable environmental acreage. Environmentally sensitive areas include; filter strips, riparian buffers, shelter belts, living snow fences, field windbreaks, grassed waterways, salt tolerant vegetation, shallow water areas for wildlife, and acreage within designated wellhead protection areas. In some instances, pasture along streambanks may be eligible for the continuous sign-up if it will help protect waterways and threatened species. Acreage that meets the continuous sign-up eligibility requirements and does not exceed the maximum per acre rental rate is automatically accepted under the continuous sign-up provisions. Certain practices allow the per acre maximum rental rate to be increased by as much as 20%.

Haying and Grazing

Existing provisions allow for haying and grazing of CRP acreage only in emergency situations. However, the summary of comments published in the new CRP rule indicates the USDA will seek legislative amendments to modify existing haying and grazing provisions to obtain specific authority for periodic managed haying and grazing. If non-emergency haying and grazing of CRP acreage is authorized, producers who hay or graze CRP land can expect a proportionate reduction in their annual rental payment.

Early Land Preparation

Individuals who plan to bring CRP acreage back into crop production can begin seedbed preparation activities before the contract expiration date. Beginning July 1, in the final year of the contract, CRP cover may be destroyed to prepare a seedbed for fall-seeded crops. Preparations for fall-seeded crops may include chemical applications to kill cover, tillage, mowing or disking. The State Technical Committee may allow planting of certain crops when the normal planting begins before October 1.

Chemical applications to prepare a seedbed for spring-seeded crops can begin July 1 in the final year of the contract. There will be no reduction in the annual rental payment for preparations begun on or after July 1.

With some limitations and FSA prior approval, land preparation for fall-seeded crops in arid regions, including New Mexico, may begin as early as May 1 of the final year of the contract. In these cases, participants shall forego a portion of their annual rental payment for the period of time between the initiation of early land preparation activities and July 1.

An NRCS approved conservation plan must be obtained prior to initiating any early land preparation.

County Cropland Limitation

The maximum acreage which may be placed in the CRP and the Wetlands Reserve Program (WRP) may not exceed 25 percent of the total cropland in the county. Waivers of the county maximum acreage limit may be requested from the FSA state committee, in consultation with NRCS and the State Technical Committee.

Available Resources and Sources of Information

There are a number of resources available to assist producers in making decisions about whether to re-bid land currently in the CRP or to enroll new land in the CRP. Your local NRCS office will provide assistance in determining the potential eligibility of individual tracts of land. In addition, they have information on soil types and maximum rental rates. Your county FSA office can provide useful information on annual per acre transition payments you may be eligible to receive if land is not enrolled in the CRP. Transition payments and a range of other factors should be an important consideration in the decision making process.

For additional information or assistance, please contact the sources listed above, your local Extension office, or one of the CRP Project Participants listed at the beginning of this report.

A worksheet to assist producers in calculating a CRP break-even bid is presented in the following section.

CONSERVATION RESERVE PROGRAM DECISION AID

Many producers will be making difficult and important decisions about what to do with CRP acreage in the near future. This worksheet (adapted from a publication written by the group of Extension specialists listed at the end of the worksheet) is intended to provide guidance for cropland owners and operators as they consider the economic factors in making their decision about whether to re-bid land currently in the CRP program or to bring new land into the reauthorized CRP. There are, of course, other considerations beyond the economic factors outlined here, such as environmental and/or wildlife benefits, that landowners and operators may wish to consider in their decision making.

To do a more detailed analysis after working through the example in this guide, a detailed list of decision modeling resources can be found on the worldwide web at http://www.esusda.gov/

ELIGIBILITY REQUIREMENTS SUMMARY

The new final rule describes requirements and methods for evaluating acceptance for both periodic and continuous signups for the reauthorized CRP, as described in detail in the previous section of this report. Most important to potential program participants, in terms of acres that can be enrolled, will be the periodic signups. Key eligibility requirements for periodic signups are:

1) land eligibility: land eligible to be placed in CRP must have been annually planted or considered to an agricultural commodity in two of the five most recent crop years (1992 through 1996 crop years). Additionally, eligible land must have an erodibility index (EI) greater that or equal to 8.

2) eligible person: an eligible person must be an owner, operator, or tenant of eligible cropland. With limited exceptions, owners and operators must have managed the cropland for one year by the close of the periodic CRP signup.

LAND NOT CONTINUING IN CRP

Decisions on enterprise selection will have to be made on land that will not continue in CRP after the current contract expires. First, the decision maker may decide not to rebid the acreage for economic or other reasons (see the economic decision making guide presented later). Second, land meeting the eligibility criteria of early sign up periods may not meet current eligibility criteria and therefore will not be eligible for new contracts. In either case, it will be important to carefully consider the options for the use of these land resources. This point in time presents an opportunity to consider new uses for these lands and to reassess the long term plan for the farm. This may be especially important given the recent changes in federal farm policy which will have permanent long term implications for the economic environment in which farmers and ranchers will operate. Contact your county extension agent for assistance in whole farm planning, enterprise selection and analysis, risk management and marketing strategies, and for decision making tools to assist you in this process.

SELECTION METHOD STEPS

There are two basic steps in the selection method for the periodic CRP signups that the USDA will use to decide whether a bid submitted by an eligible person for eligible land will be accepted. These are:

Step 1: Level of the applicant's per acre bid: The potential program participant first confers with the local Natural Resource Conservation Service (NRCS) Office of the USDA to determine a maximum annual rental payment the USDA will be willing to pay for the tract of cropland to be bid. This maximum annual payment will be determined by considerations for site-based soil productivity, prevailing local cash equivalent rental rates for cropland, and up to $5 additional per acre for annual maintenance costs for the conserving use established on CRP land. Then the applicant formulates a bid. If the bid exceeds the USDA's maximum per acre annual rental rate for that particular cropland, the bid is rejected and the process ceases. If the bid is less than or equal to the maximum annual rental rate, the process continues.

Step 2: Bids less than or equal to the maximum annual rental rates specified by USDA for the tracts of cropland are then evaluated for possible acceptance based on a comparison of environmental benefits indicators with the CRP bids for the tracts. Those bids for tracts of cropland with the highest environmental benefits to bid levels will be first considered for acceptance. Total CRP payments will be limited to $50,000 per person.

The USDA will develop an environmental benefits index that will at least include soil erosion, water quality, wildlife habitat, and cost (bid level). Other technical factors such as conservation priority areas, permanent wildlife habitat, and conservation compliance requirements may also be considered in the index.

MAJOR DEPARTURES FROM PREVIOUS RULES

Potential CRP participants, especially those who have participated in the program in the past, will recognize that there are departures in the new rule for the periodic signups from previous rules. The major departures are:

1) The land must have an erodibility index of 8 or greater, whereas in the past actual erosion and/or highly erodible lands criteria were applied. In many states there will be considerable acreage of cropland currently enrolled in CRP that has an erodibility index of less than 8.

2) The period of time owners and operators must have managed the cropland before they are eligible to submit a CRP bid has been reduced from three years to one year.

3) The land must have been planted, or considered planted, to an agricultural commodity in two of the 1992 through 1996 crop years rather than the 1981 through 1986 crop years.

4) The maximum CRP rental rate will be based on the soil rental rates established for each specific tract of cropland. This procedure is similar to that used in special CRP signup #13 in 1995, but it differs from the earlier signups in that the CRP payment is solely expressed as a soil rental rate rather than a per-acre payment for all resources idled.

CONTINUOUS SIGNUP

The proposed rule also consolidates into one set of regulations those announced for the continuous CRP signup. This continuous signup is applicable to acreage determined eligible and suitable by the Natural Resources Conservation Service (NRCS) for any of the following practices:

- Filter strips
- Grass waterways
- Riparian buffers
- Shelter belts
- Field windbreaks
- Salt tolerant vegetation
- Shallow water areas for wildlife
- Living snow fences
- Acreage within designed wellhead areas

The land and person eligibility criteria are the same for the continuous signup as for the periodic signups. However, the 25% of county cropland limitations is waived for continuous signup practices.

The continuous signup regulations provides for contracts ranging from 10 to 15 years. The contracts become effective on the first of the next month following approval and payments are prorated for contracts effective for a portion of the fiscal year. For example, a 15-year contract approved on February 21, 1997, effective March 1, 1997, will received payment for 14 years and 7 months.

The CRP rental payment maximum will be determined using the same procedure as the periodic signup by FSA utilizing their CRP-2 worksheet. However, this per-acre maximum rental rate can be augmented with an additional 20% incentive for tracts containing windbreaks, grass waterways, filter strips, and riparian buffers. If practices such as permanent introduced and native grasses, forest tree planting, and permanent wildlife habitat are put in place in a wellhead protection area, and additional 10% incentive is authorized. Finally, up to $5 per acre incentive can be added annually for maintenance of the practice. The $50,000 per person annual payment limitations still applies. The continuous signup bids are not subject to the environmental index rating for acceptability.

CONCLUSIONS

The potential bidder must develop his/her own strategy to determine how much less than the USDA's maximum annual payment to bid. A high bid might allow other bidders to be selected first, but a low bid might not be competitive with what you can earn farming the land outside CRP. This decision is very personal in that each potential bidder's situation is unique. A landowner who has sold all farm equipment and whose only alternative is rental to another farmer for crop production will probably formulate a relatively low bid. A farmer who can achieve higher than average yields at lower than average costs will need a competitively high bid.

Call your local County Extension Agent for a copy of the NMSU Cost and Return estimates for crop and/or livestock operations typical in your county, if you need help estimating the total costs (including fixed, depreciation, paid and unpaid labor, and other costs) for potential crops after CRP.

Finally, this worksheet analysis does not consider risk. It compares an uncertain stream of income with a certain CRP payment. (See Worksheet Part I, line 3.) The real world is uncertain with price, yield, and cost variation. It would be best to redo this worksheet with various price/yield/cost combinations to determine the payment bid that best suits your needs.

OTHER CONSIDERATIONS

While the authors of this CRP Decision Aid believe that the economic bottom line is important, it is recognized that many other factors will enter the decision making process. Whether land is currently in CRP and is expected to be re-bid or returned to cropland, whether land is currently cropped and is expected to go into CRP or remain in crops, many other factors must be considered.

* Local Rental Rates: Will my decision on CRP affect cropland rental rates in my local community? Is my county approaching the 25 percent participation level and will this affect what remaining growers are willing to pay for land rent?

* Local Labor Force: Will my decision to enter the CRP affect employment in my area or will an opposite decision allow me to find enough labor to effectively run my farming operation?

* Local Agricultural Suppliers: Will my decision to enter CRP weaken the local business community and reduce the critical mass of farming or ranching in the area, forcing business to move elsewhere?

* Environmental Concerns: Are there overriding environmental conditions in my area that will be affected, either positively for negatively, by my decision to participate or not?

* Wildlife: Will my decision affect area wildlife and species and habitat diversity?

{Adapted from a publication prepared by Coleman Dangerfield (GA), Bob Goodman (AL), Jim Jonson (MT), Allen Lines (OH), Jon Newkirk (WA), Jackie Smith (TX), and Don Tilmon (DE)]

WORKSHEET

Part I: Relevant Information

1. Is land you are considering for CRP eligible under the new rules?

   If yes (go to item 2)

   If no (Stop and skip over the worksheet)

	Example	Your Numbers
2. How many years is your CRP bid for?.....	10	_____
3. What is the per acre BID CAP for your land?.....	$28	_____
4. What is your annual maintenance cost for CRP cover?	$ 3	_____
5. What are your un-reimbursed per acre establishment or re-establishment costs for CRP cover?.....	$40	_____
6. What can you rent your CRP land for (per acre)?.... or What is your net income per acre over variable costs for crop production?.....	$25	_____
7. What is your average annual per acre reduction of transition payments?	$ 9	_____

Part II: Calculate Present Value of Break Even Cash Flow
(Enter appropriate items from Part I)

1. Enter item 5 in Column 1 for year 0.

2. Enter item 6 plus item 4 in Column 1 for years 1 thru end of CRP contract.

   Adjust these numbers for changes (inflation, prices, costs) you expect over the life of the CRP contract.

3. Enter item 7 in Column 2 for years 1 thru 5 (or remaining years payment will be received).

Part III: Calculate the Breakeven CRP bid based on the number of years of your bid.

1. Multiply the annualized equivalency factor (see Table 2) for the number of years in your bid by the present value of your net returns (the sum of Column 7 from Table 1).

2. Reconsider risk and alternative yield/price/cost combinations.

Table 1. Computation of Present Value of Income

Year	Column 1 Costs, Income, or Rent	Column 2 Average Annual Transition Payment	Column 3 Column 1 + Column 2	Column 4 Present Value Factor 7%	Column 5 Present Value Factor 9%	Column 6 Present Value Factor Your%	Column 7 Column 3 x Column 6
0				1.0000	1.0000		
1				0.9346	0.9174		
2				0.8734	0.8417		
3				0.8163	0.7722		
4				0.7629	0.7084		
5				0.7130	0.6499		
6				0.6663	0.5963		
7				0.6227	0.5470		
8				0.5820	0.5019		
9				0.5439	0.4604		
10				0.5083	0.4224		
11				0.4751	0.3875		
12				0.4440	0.3555		
13				0.4150	0.3262		
14				0.3878	0.2992		
15				0.3624	0.2745		
						Sum A	

Table 2. Annual Equivalency Factors

Year	Column 1 Annual Equivalency Factor 7%	Column 2 Annual Equivalency Factor 9%	Column 3 Annual Equivalency Factor Your%
10	0.1424	0.1558	
11	0.1334	0.1470	
12	0.1254	0.1387	
13	0.1197	0.1336	
14	0.1143	0.1284	
15	0.1098	0.1241	

Table 3. Breakeven Bid

Sum of Column 7 from Table 1

A _____

Select an equivalency factor from Table 2

B _____

Breakeven bid =

A x B _____

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