Texas A&M AgriLife Extension

EAG-006
03/14

After the Conservation Reserve Program:

Economic Decisions with Farming and Grazing in Mind

DeDe Jones – Extension Risk Management Specialist, Texas A&M AgriLife Extension Service

Michelle Jones – Extension Assistant, Texas A&M AgriLife Extension Service

Tracy Fischbacher – Conservation Agronomist, Natural Resources Conservation Service

The Texas A&M System

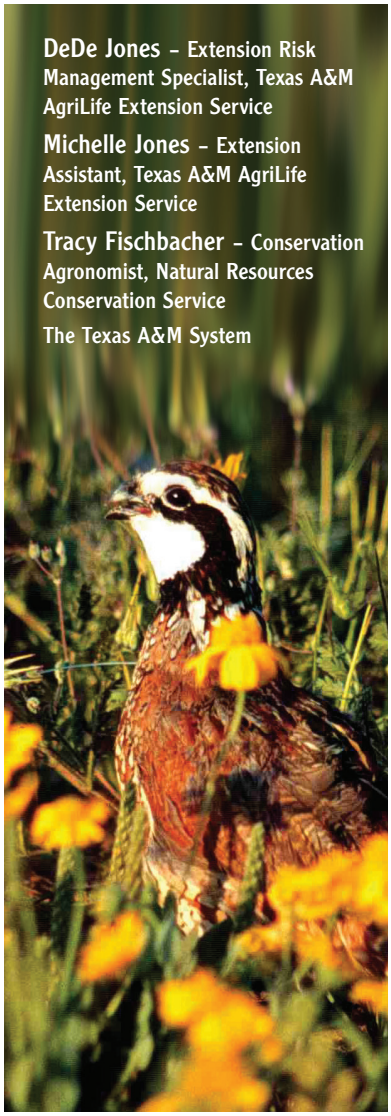
Since the Conservation Reserve Program (CRP) began in 1985, several million acres of former cropland have been planted with native and introduced grasses. CRP helps protect topsoil by taking highly erodible land out of crop production and establishing permanent vegetative cover in its place. This process not only helps reduce erosion, but also increases wildlife populations. Now that CRP contracts are beginning to expire, landowners must decide if they should re-enroll their acreage in the conservation program, convert it back to farmland, or leave it in permanent cover for wildlife and/or grazing.

Land placed under the CRP tends to be highly susceptible to erosion and possesses relatively low fertility. However, increased corn, soybean, wheat, and cotton prices over the last several growing seasons may encourage landowners to return these grass acres to crop production.

In making this decision, consider factors such as chemical applications, crop selection, and tillage options. Crops raised on converted CRP land are usually farmed dryland due to lack of water or irrigation equipment, which means available soil moisture is a major consideration in determining crop production. The amount of soil moisture at the time of conversion determines which crops to plant and the length of fallow necessary to rebuild soil moisture after grass kill-off. Dryland wheat and dryland grain sorghum fit well into dryland rotation programs and are often grown on converted CRP land. Dryland cotton is also an option, depending on the farm's location and current mode of operation. Producers should expect lower yields in the first year of crop production after the CRP, but this could depend on such factors as the amount of rainfall and existing soil moisture levels.

When preparing for crop production, evaluate the amount of available nutrients within the soil. Also, factor in the rates and prices of nitrogen and phosphorous applications during the conversion process before the crop is planted. Tillage options range from reduced tillage to complete clean tillage. Chemical rates and applications will depend on the amount of tillage used.

The landowner must decide which acres to plant, since converting all the CRP acres to crop production may not be feasible.



Consider leaving a wide, grass buffer strip around playa lakes or along and within drainages to help prevent erosion of topsoil and leaching of chemicals and fertilizer into water sources.

Conversion to Cropland

Once the decision to convert CRP land back to crop production is made and a fall crop is to be planted, the conversion process can begin no sooner than 90 days prior to expiration, usually July 2. If a summer row crop is planted after the contract expires, the conversion process can begin when the contract ends. Consult a local Natural Resources Conservation Service (NRCS) field office to determine the exact time to begin conversion. The agency's web address is http://www.nrcs.usda.gov.

The first step in the conversion process is clearing old grass residue. Finish any necessary grass mowing, baling, or burning before the first herbicide application. Complete this initial forage removal at least 6 to 8 weeks before the first chemical application in July so the grass will already be growing and the herbicide will be more effective. Removing forage and dead grass also allows chemicals to easily reach new plant growth for a faster and more complete root kill. Mowing alone only shreds the dead plant material and leaves excess surface material that prevents chemicals from reaching the new plant growth. Mowing followed by tilling can incorporate residue into the soil to help rebuild organic matter levels. Remove the old grass production by baling it. However, this grass is less nutritious than younger, more actively growing grasses; the hay produced from baling the deteriorating forage may be best used as roughage.

Burning, one of the best options for clearing grass residue, is relatively inexpensive, removes a large portion of dead grass material, and helps stimulate regrowth, causing favorable conditions for effective herbicide control. However, use caution when burning, especially in the Texas Panhandle, where winds are high, humidity is low, and conditions in late winter are dry. Burn only under proper conditions and only with experienced, trained personnel with adequate preparation. Contact a prescribed burn association such as the Texas Panhandle Prescribed Burn Association (http://www.ranches.org/tppba.htm) or others listed with the Prescribed Burn Alliance of Texas (http://pbatexas.org).

After clearing the old grass, the next step in the conversion process is grass kill-off and soil preparation through tillage and herbicides. The amount of tillage varies for each farm. Reduced tillage uses chisels, disks, or sweeps along with herbicides to kill existing grasses and to minimally till the soil during the conversion process. This process leaves more surface residue than clean tillage and helps reduce soil moisture loss from evaporation. The reduced-till option also improves the quality of the seedbed compared to no-tillage.

The clean-tillage option, which involves more operations and trips across the land than reduced-till, is used to control grass and to quickly and effectively prepare the soil for planting. However, the clean-till process also involves an increase in labor and machinery expenses caused by a greater number of trips across the land. Multiple tillage operations also leave very little crop residue on the surface, exposing the land to wind and water erosion, and lose a greater amount of stored soil moisture to evaporation.

No-tillage is not very effective in the conversion process because the soil compaction of the CRP land may be too great for a satisfactory seedbed, and the land surface may be too rough. Because grass tends to grow in clumps, most CRP land is extremely rough; using a disk plow followed by a chisel and sweep plow can help level the surface. No-till can be a successful farming practice after conversion is completed.

Wheat

A landowner who has decided to plant dryland wheat should begin the conversion process by clearing old grass residue. Once the initial burning is completed in the spring, give the grass time to grow before applying herbicide. In July, apply 1.5 pounds of Acid Equivalent (AE) per acre of glyphosate (Roundup). All herbicide applications include a water conditioner such as ammonium sulfate in the tank mixture, which costs an additional $1 per acre. A custom application rate of $5 per acre is also included in each herbicide application, (Table 1). The next step is disk plowing in August, followed by chisel plowing in September, and sweep plowing in October. Depending on the amount of rainfall in late summer and early fall, dryland wheat may not be the best first grain crop to produce. If conditions are dry, the land should remain fallow through the winter to build up soil moisture before planting a summer row crop.

If enough moisture is available for wheat production, apply a phosphorous rate of 30 pounds of 10-34-0 along with 40 pounds of nitrogen (32-0-0). Use a knife and coulter application rig to inject the fertilizer into the soil without disturbing any surface residue. Estimated application cost is $12 per acre. A soil fertility test can determine the exact amount of fertilizer needed in a particular locale. One composite sample for every 10 to 40 acres is appropriate and costs $10 per sample, which equates to a soil test expense between $0.25 and $1.00 per acre. More information on

Table 1. Estimated costs of converting CRP to wheat, dryland, reduced-tillage
2014 projected costs per acre; Texas Panhandle area

Date	Item		Unit	Price	Quantity	Amount
	Direct expenses of conversion					
April	controlled burn	burn	acre	$5.50	1.00	$5.50
July	herbicide	herbicide and application	acre	$16.50	1.00	$16.50
August	disk	disk	acre	$12.10	1.00	$12.10
September	chisel	chisel	acre	$16.75	1.00	$16.75
October	sweep	sweep	acre	$12.60	1.00	$12.60
October	soil test	sample	acre	$0.50	1.00	$0.50
October	fertilizer	fertilizer (P) 10-34-0	lb	$0.79	30.00	$23.70
October	fertilizer	fertilizer (N) 32-0-0	lb	$0.64	40.00	$25.60
October	fertilizer	fertilizer application	acre	$12.00	1.00	$12.00
				Total direct expenses		**$125.25**

soil sampling is available at the Texas A&M University Soil, Water, and Forage Testing Laboratory (http://soiltesting.tamu.edu). Expect lower yields the first year of grain production, especially if conditions are dry.

Grain Sorghum

The conversion of CRP to dryland grain sorghum, (Table 2), is similar to that of dryland wheat. Follow the same schedules of July herbicide application and fall tillages. The difference is that when planting grain sorghum, leave the ground fallow through the winter to allow winter precipitation to build up soil moisture. Sweep plow in the spring, depending on the emergence of weeds and grasses. Depending on the amount of rainfall and the emergence of weeds and grasses, apply 1 quart of glyphosate and 1.5 pints of metolachlor in June before planting. Metolachlor is a pre-emergence herbicide that prevents grasses and small-seeded weeds from sprouting. Use metolachlor only with Concep-safened grain sorghum seed.

Before planting, apply a fertilizer of 60 pounds nitrogen (32-0-0) and 40 pounds phosphorous (10-34-0) with the knife and coulter rig. Also, conduct a soil fertility test for $0.50 per acre.

Conversion to Cattle Grazing

In some instances, former CRP land is used for grazing instead of crop production. Depending on existing grass cover, the conversion to grazing involves some of the same processes as conversion to cropland, with a few additional steps.

Table 2. Estimated costs of converting CRP to grain sorghum, dryland, reduced-tillage
2014 projected costs per acre; Texas Panhandle area

Date	Item		Unit	Price	Quantity	Amount
	Direct expenses of conversion					
April	controlled burn	burn	acre	$5.50	1.00	$5.50
July	herbicide	herbicide and application	acre	$16.50	1.00	$16.50
August	disk	disk	acre	$12.10	1.00	$12.10
September	chisel	chisel	acre	$16.75	1.00	$16.75
October	sweep	sweep	acre	$12.60	1.00	$12.60
April	sweep	sweep	acre	$12.60	1.00	$12.60
May	soil test	sample	acre	$0.50	1.00	$0.50
June	herbicide	herbicide and application	acre	$33.45	1.00	$33.45
June	fertilizer	fertilizer (P) 10-34-0	lb	$0.79	40.00	$31.60
June	fertilizer	fertilizer (N) 32-0-0	lb	$0.64	60.00	$38.40
June	fertilizer	fertilizer application	acre	$12.00	1.00	$12.00
				Total direct expenses		**$192.00**

Remove deteriorated, low-value forage to stimulate new growth and improve forage quality. Options for removing the old grass growth include mowing, baling, and burning, with burning considered the most cost-effective. Fertilization may stimulate new grass growth and speed the conversion process. Use a soil fertility test to determine the amount and type of fertilizer needed. Apply the fertilizer after burning, ideally in early spring, before green up.

Fencing must be in place and water wells drilled before grazing can begin. Many CRP fields do not have fences or have inadequate fencing for containing livestock. Fencing can be barbed wire, electric, or a combination of the two. A five-strand barbed wire fence, including corners and gates, costs between $8,500 to $9,000 per mile (Table 3). The cost of electric fencing is estimated at $768.88 for a one-strand electric wire and $998.56 for a two-strand electric wire.

Because most CRP land does not have functional water wells, drilling a well and installing a windmill or electric submersible pump is necessary. Costs will depend on various well depths and windmill heights (Table 4). Estimated expense is based on 5-inch PVC casing and includes drilling, casing, capping, applying gravel, packing, and digging a slush pit. The estimated costs include mill, tower, sucker rod, pipe installation, and cylinder pump. Annual maintenance expenses of $50 to $75 per year include changing the oil in the windmill twice a year, along with other miscellaneous parts and repairs. A windmill should last about 75 years. Four gallons per minute is recommended on a section (640 acres), assuming a grazing intensity of 8 acres per animal unit, or the equivalent of a 1,000-pound cow with calf. Different grazing strategies will have different water requirements. On average, cattle require around 15 gallons of water each day, depending on weather conditions, body size, physical characteristics, and gender. Along with a functioning water source, water storage is required. NRCS recommends at least a 4-day water storage capacity for systems supplied by electric pumps or 7 days if the system is supplied by a solar pump or windmill. Steel stock tanks and earthen tank constructions are popular storage methods. A steel stock tank that holds 1,134 gallons costs about $340.

Expenses associated with the well and a solar submersible pump at various depths include solar panels, pump, pipe installation, platform, wiring, control box, and installation (Table 5).

Notice the drop in gallons per minute as the well depth increases. A solar submersible does not pump effectively at greater well depths. Expected annual repair costs are negligible. A submersible pump usually lasts about 10 years, and solar panels 40-plus years.

In addition to well and fencing expenses, take into account controlled burning and fertilization costs when developing former CRP land for grazing. The controlled burn will cost an average of $5.50 per acre. Apply a rate of 40 pounds of nitrogen with a knife and coulter rig following the initial burn down (Table 6). After applying the fertilizer, let the grasses gain 6 to 8 inches of regrowth before allowing grazing. Appropriate stocking rates will vary for each operation, depending on existing grasses. The type of pasture forage can be monitored over time; augmenting monocultures of introduced grasses with native grass species may be necessary to maximize production with minimal expense.

Table 3. Estimated fencing costs for electric and permanent fencing per mile

1-Strand, 1-Mile Electric			
	Quantity	**Price per unit**	**Total**
Rebar posts	264	$0.80	$211.20
Wire (1 mile)	1	$174.24	$174.24
Insulators	264	$0.21	$55.44
Solar panel	1	$199.00	$199.00
Charger	1	$129.00	$129.00
Total			**$768.88**
2-Strand, 1-Mile Electric			
	Quantity	**Price per unit**	**Total**
Rebar posts	264	$0.80	$211.20
Wire (1 mile)	2	$174.24	$348.48
Insulators	528	$0.21	$110.88
Solar panel	1	$190.00	$199.00
Charger	1	$111.00	$129.00
Total			**$998.56**
5-Strand, 1-Mile Barbed Wire			
	Quantity	**Price per unit**	**Total**
5-strand barbed wire	1	$8,500.00	$8,500.00
Total			**$8,500.00**

Table 4. Estimated well and windmill costs for various depths and windmill heights

Well		Windmill			
Depth (ft.)	**Cost**	**Size (ft.)**	**Cost**	**GPM**	**System cost**
150	$3,500	12	$13,685	4	$17,185
250	$5,600	12	$14,865	4	$20,465
350	$7,700	12	$16,045	3	$23,745
450	$9,800	14	$20,775	4	$30,575
550	$11,900	14	$21,995	4	$33,855

Table 5. Estimated well and solar submersible costs for various well depths

Well		Solar		
Depth (ft.)	Cost	Cost	GPM	System cost
150	$3,500	$4,650	4	$8,150
250	$5,600	$6,700	4	$12,300
350	$7,700	$7,925	3	$15,625
450	$9,800	$7,600	2	$17,400
550	$11,900	$8,050	1	$19,950

Conclusion and Summary

When choosing to convert former CRP land to cropland or grazing, a landowner faces several decisions. Conversion costs can run between $125 and $150 per acre, depending on the amount of tillage and chemicals applied to convert CRP land to dryland wheat production. The cost for converting CRP land to dryland grain sorghum should range between $175 and $215 per acre.

Converting to livestock grazing costs about $40 to $60 per acre using burning and fertilization. In addition, fencing and the development of a water source may be needed. Expect to pay $768.88 per mile for one-strand electric fencing and $998.56 per mile for two-strand electric fencing. Barbed wire fencing will cost approximately $8,500 per mile, including gates and corner posts. A well with a windmill ranges between $17,185 and $33,855, and a well with a solar submersible pump ranges between $8,150 and $19,950.

A producer should analyze the situation completely, focusing on his or her individual operation and figuring the numbers accordingly. Texas A&M AgriLife Extension Service personnel and local Natural Resources Conservation Service field offices can provide assistance in understanding the issues of conversion and offer insight into any financial assistance programs available to help offset costs.

Table 6. Estimated costs of converting CRP to pasture, dryland, cattle grazing 2014 projected costs per acre; Texas Panhandle area

Date	Item		Unit	Price	Quantity	Amount
	Direct expenses of conversion					
April	controlled burn	burn	acre	$5.50	1.00	$5.50
May	soil test	sample	acre	$0.50	1.00	$0.50
June	fertilizer	fertilizer (N) 32-0-0	lb	$0.64	40.00	$25.60
June	fertilizer	fertilizer application	acre	$12.00	1.00	$12.00
				Total direct expenses		**$43.60**

References

Bean, Brent. 1997. *Returning CRP Land to Crop Production.* The Texas AgriLife Extension Service. Texas AgriLife Research and Extension Center at Amarillo.

McCollum III, Ted. 1997. *Cattle Grazing on Land Formerly Enrolled in the CRP Program.* The Texas AgriLife Extension Service. Texas A&M AgriLife Research and Extension Center at Amarillo.

2013 Custom Rate Statistics. Retrieved from http://agecoext.tamu.edu/files/2013/07/CustomRateSurveyMay2013.pdf.

2014 Texas Panhandle Crop Budgets. Retrieved from http://agecoext.tamu.edu/resources/crop-livestock-budgets/budgets-by-extension-district/district-1-panhandle/2014-district-1-texas-crop-and-livestock-budgets/.

Photos courtesy of Kenneth A. Cearley and Dale Rollins, The Texas A&M AgriLife Extension Service.

Funding partially provided by Renewable Resources Extension Act.

RREA

Texas A&M AgriLife Extension Service

AgriLifeExtension.tamu.edu

More Extension publications can be found at *AgriLifeBookstore.org*

Revision