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CRP

EVALUATING THE OPTIONS

CROP • HAY • GRAZE • WILDLIFE • SELL • RENT • RECREATION • LEASE
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GRAZE • LEASE • RENT • RECREATION • LEASE • WILDLIFE

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Introduction

Congress established the Conservation Reserve Program (CRP) in Title XII of the Food Security Act of 1985. The CRP program was established as a voluntary, long-term cropland retirement program to be administered by the United States Department of Agriculture (USDA). Program goals included the reduction of erosion, protection of the long-term productivity of the land, water quality improvement, enhancement of wildlife, reduction of sedimentation, reduction of surplus commodities, and income support for farmers (Osborn et al., 1992). CRP contracts require landowners to establish permanent vegetative cover on the land. In return, USDA has paid annual rental payments and provided cost-share for the establishment of vegetative cover.

The initial enrollment target was set at 40 to 45 million acres. Approximately 36.4 million acres, representing over 375 thousand contracts, were enrolled through the first 12 sign-ups (USDA, 1994). These 12 sign-ups took place from March 1986 through June 1992. Much of this acreage was located in the Northern Plains and Southern Plains regions. About 9.7 million CRP acres are enrolled in the Northern Plains and 5.3 million CRP acres are enrolled in the Southern Plains (USDA, 1994). The Northern Plains region includes North Dakota, South Dakota, Nebraska, and Kansas. The Southern Plains region includes Texas and Oklahoma. Kansas ranks third in the number of acres enrolled (2.9 million acres) and second in the number of contracts (31,657 contracts).

Kansas CRP acres are concentrated in the western part of the state. However, the distribution of CRP contracts is relatively uniform across the state. The contracts tend to be large in the western part of the state and smaller in the east.

The Food Security Act of 1985 called for the first contracts to expire September 30, 1995. By action of the Secretary of Agriculture, contracts expiring in 1995 can voluntarily be extended to September 30, 1996. The bulk of CRP contracts in Kansas will expire in 1996 and 1997. As a result, many people are trying to decide what to do with their CRP land.

The purpose of this publication is to provide contract holders with a conceptual framework to determine CRP land use after contract expiration. In addition, CRP benefits and restrictions on land use are discussed. The conceptual framework includes a planning procedure to determine the alternative uses of the land and an economic evaluation of the options available to contract holders under farm program regulations of the 1990 Farm Bill.

Benefits of CRP

While the costs of the CRP program have been easy to identify, the benefits are much harder to quantify. There have been many benefits from the CRP program. CRP has reduced soil erosion. On average, CRP has reduced erosion by an estimated 16 tons per acre in Kansas (USDA, 1994).

CRP has improved wildlife habitat and distribution of some species of wildlife (Lee, 1994). This improvement in habitat quality and distribution has resulted in increased reproductive success, numbers, and distribution of numerous grassland-dependent species. Benefits to economically important species such as pheasants, bobwhite quail, prairie chickens, and dabbling ducks are evident (Lee, 1994). Waterfowl and turkey nests also have increased in CRP fields.

Although not well documented, CRP has probably enhanced environmental quality in Kansas by significantly reducing water and wind erosion (Satterthwaite, 1994). A reduction in soil erosion results in fewer soil particles, and attached nutrients and pesticides being released into the water and air. In addition, CRP land requires less fertilizer and pesticides, which decreases the environmental threat from improper storage, disposal, application, and accidental spills of these inputs.

CRP also has protected the long-term productivity of the land, reduced the production of surplus commodities, and provided income support for farmers. Currently, annual CRP payments in Kansas average about $53 per acre and total more than $153 million.

Allowable Practices and Restrictions on Land Currently in CRP

It may be possible to prepare land in advance for various CRP production options. However, current contract provisions limit what can be done. Before making any modifications to CRP land, contract holders should be sure the activity will not cause a violation of the contract because penalties can be significant. The discussion in the next two sections draws heavily from Lemmons (1994).

Before making any modifications to CRP land, contract holders should be sure the activity will not cause a violation of the contract because penalties can be significant.

CRP cannot be hayed or grazed during the contract term unless permitted through secretarial declaration due to a disaster condition. In this situation, the participants would have to forego a percentage, usually 25 to 50 percent, of their annual rental payment for the privilege of haying or grazing their CRP acres. CRP cover cannot be harvested for grain or seed. It cannot be used for any activity that would adversely impact the control of erosion or water quality. Recent procedural changes now allow County Consolidated Farm Service Agency (CFSA) Committees to determine what is detrimental to CRP cover. Uses that might be considered limitations are no longer cited in procedure.

CRP may be used for hunting, including lease hunting. Except for normal maintenance purposes, vehicular traffic is prohibited. Hunting lanes can be mowed if called for in the Conservation Plan of Operation. Introducing wildlife onto the land under contract is permitted, but the wildlife cannot be confined in any manner, such as by fence or wing clipping.

Water can be pooled and dams built on CRP, with the area of the dam and impounded water remaining under contract. Cost-share funds are not available from the federal government, but may be available from some conservation groups or state agencies. In all cases, the measures would have to be called for in the Conservation Plan of Operation and have prior approval from the County Conservation District (CCD), Natural Resource Conservation Service (NRCS, formerly Soil Conservation Service, SCS), and Consolidated Farm Service Agency (CFSA, formerly Agricultural Stabilization and Conservation Service, ASCS) County Committee.

Improvements such as dams, fences, wells, and spring developments can be installed on CRP at the producer's own expense if he/she modifies the Conservation Plan of Operation and receives CCD, NRCS, and CFSA County Committee approval prior to initiation of the modified plan. CFSA County Committees are not encouraged to approve such practices as terracing. Terracing would encourage breaking out the grass upon contract expiration and would destroy considerable vegetative cover in the construction process. Destroyed areas would have to be reseeded at the expense of the producer. Additionally, permanent cover may not have enough time to reestablish prior to contract termination in the construction areas.

Destruction of cover in the last 90 days of the contract to prepare for a fall-seeded crop is permitted.

Conversion of CRP acres is available to participants with CRP contracts approved on or before November 29, 1990. Under this option, participants can elect to extend their CRP contract by 1 to 5 years, at the same rental rate, by agreeing to plant trees on the land. Limited cost-share may be available. Requests for conversion must be made before August 31 of the final year of the CRP contract.

Government Program Participation and Base Protection

If CRP land will be returned to crop production, anyone who wishes to be eligible for USDA programs must meet conservation compliance provisions. These provisions state that an agricultural commodity cannot be produced on highly erodible land unless soil erosion prevention measures are initiated or installed. Breaking out CRP cover would usually require practices such as residue management, terraces, waterways, or contour grass strips. These measures would have to be initiated prior to the actual planting of an agricultural program commodity. Also, as a result of 1994 legislation, any producer who wants to participate in USDA farm programs, including CRP participants, must also purchase Catastrophic Crop Insurance.

If CRP land will be returned to crop production, anyone who wishes to be eligible for USDA programs must meet conservation compliance provisions.

Anyone who is thinking of making improvements on CRP land in anticipation of returning the land to crop production should first obtain the approval of their CFSA county committee. Approval for the improvements must be given before the participant begins work. It is also important to make sure that all practices will meet the standards and specifications of the NRCS.

Most CRP fields in Kansas will require substantial amounts of crop residue to control erosion. Conservation plans typically require 1,200 to 2,000 pounds per acre of residue on the soil surface after planting (for water erosion). In the case of wind erosion, residue requirements also apply from November through May.

Cost-share funds may not be available for conservation practices on CRP land following CRP contract expiration. Decisions by state, local, and federal agencies will determine whether cost-sharing funds will be provided.

Cropland base protection is another important consideration. During the contract period, "crop acreage base" is protected as if the base acres had been planted to the respective program crop. Normally base must be planted to be protected. Other options, such as 0/85, Conserving Use for pay, and

nonparticipating zero-planted base might offer base protection without having to destroy the CRP grass cover after contract expiration. The feasibility of these options is dependent on the 1995 Farm Bill.

CRP participants can elect to protect their crop base on CRP land after the contract expires without planting a crop on the land. This land could then be hayed or grazed, except for a consecutive 5-month period established by the State CFSA Committee. Participants who choose this option must continue to abide by the terms and conditions of the original contract with no additional payments.

The Planning Process

The authors wish to acknowledge the work of Lonnie Schulze, Resource Conservationist, USDA NRCS for assisting in the development of the resource evaluation and planning material in a previous paper.

When deciding what to do with CRP land, contract holders should consider existing land uses within an operation as well as the capital and labor resources available to support the alternative uses. The planning process used in making this decision (Figure 1) has been used for assessing other types of management changes for many years. The process begins with a statement of the producer's goal. Each step of the process will require the development of information that allows the decision-making process to proceed. When all the information from one step is complete, the next step begins.

Resource Inventory

The first step in the planning process is to inventory the resources available to the owner. Land (both CRP and that being farmed or grazed), capital, and labor resources need to be included.

The land evaluation should include all land, but concentrate on the CRP land. Each potential use being considered must be evaluated separately, anticipating the conditions that would exist under that use. As an example, if haying, grazing, and a cropping system are being considered, three separate evaluations would be needed. Questions that need to be addressed include the following: Is the land suitable for crop production?, If the land is cropped, how will erosion be controlled?, and What is the productivity of the land for the use being considered? This evaluation can be done by the NRCS, if requested.

The capital resource evaluation must take into consideration future income and the availability of credit to meet the costs anticipated for each option. The labor resource must be evaluated based on the anticipated availability of operator, family, and hired labor.

Each potential use of CRP land should be evaluated on the basis of its economic feasibility.

Options Available to Contract Holders

Once resources are inventoried and evaluated, each potential use of CRP land should be evaluated on the basis of its economic feasibility. There are at least seven options available to contract holders after the contracts expire:

1. Cropping with conservation compliance;
2. Cropping without conservation compliance;
3. Leave in permanent cover and harvest for hay;
4. Leave in permanent cover and graze livestock;
5. Leave in permanent cover for wildlife habitat;
6. Rent for crop production, grazing, or haying; and
7. Sell the land.

This publication discusses each of these options in detail. Central Kansas conditions are used to illustrate the budgeting process. A similar framework can be used for other parts of the state.

Figure 2 gives a conceptual overview of the permanent cover and cropping options available to CRP contract holders. Relative prices for wheat, feed grains, hay, and cattle will be important factors in the choice among these options.

Contract holders will want to answer several questions before deciding what to do with their CRP land. Specifically, for each option being considered landowners must ask:

- What investments are needed?
- How much debt will be incurred?
- What are the expected annual cash outflows per acre?
- What are the expected annual cash inflows per acre?

The information needed to make these decisions includes: cropping history; historical costs and returns; government program history; investment costs; future costs of production; and future expected returns. Historical profitability should be considered when evaluating CRP options. If historical returns were small or negative, there would appear to be little value, except for possible government payments, in returning the land to cropping.

The decision to extend or renew CRP contracts will be part of the 1995 Farm Bill. If a contract is eligible for extension, the CRP contract holder will want to compare returns from the various production options with returns that could be generated by extending the contract.

The Planning Process

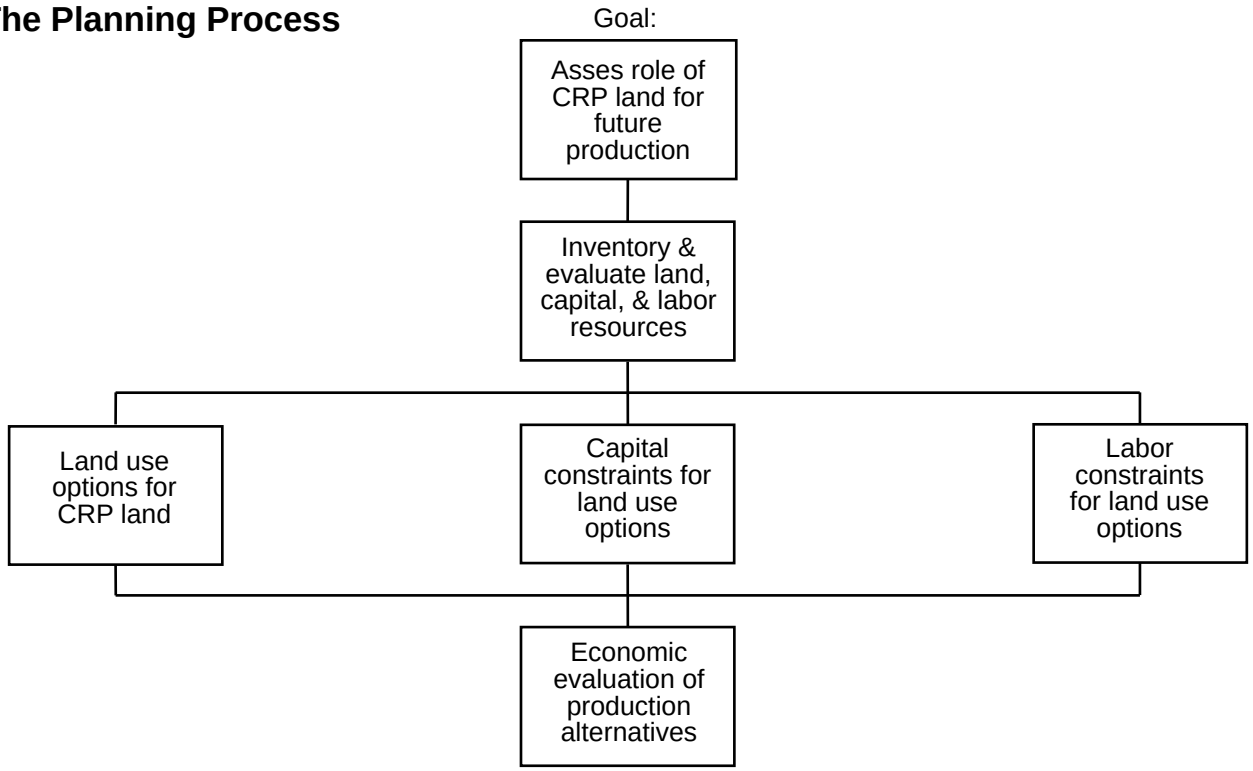

Figure 1 The planning model used as a guide in this process.

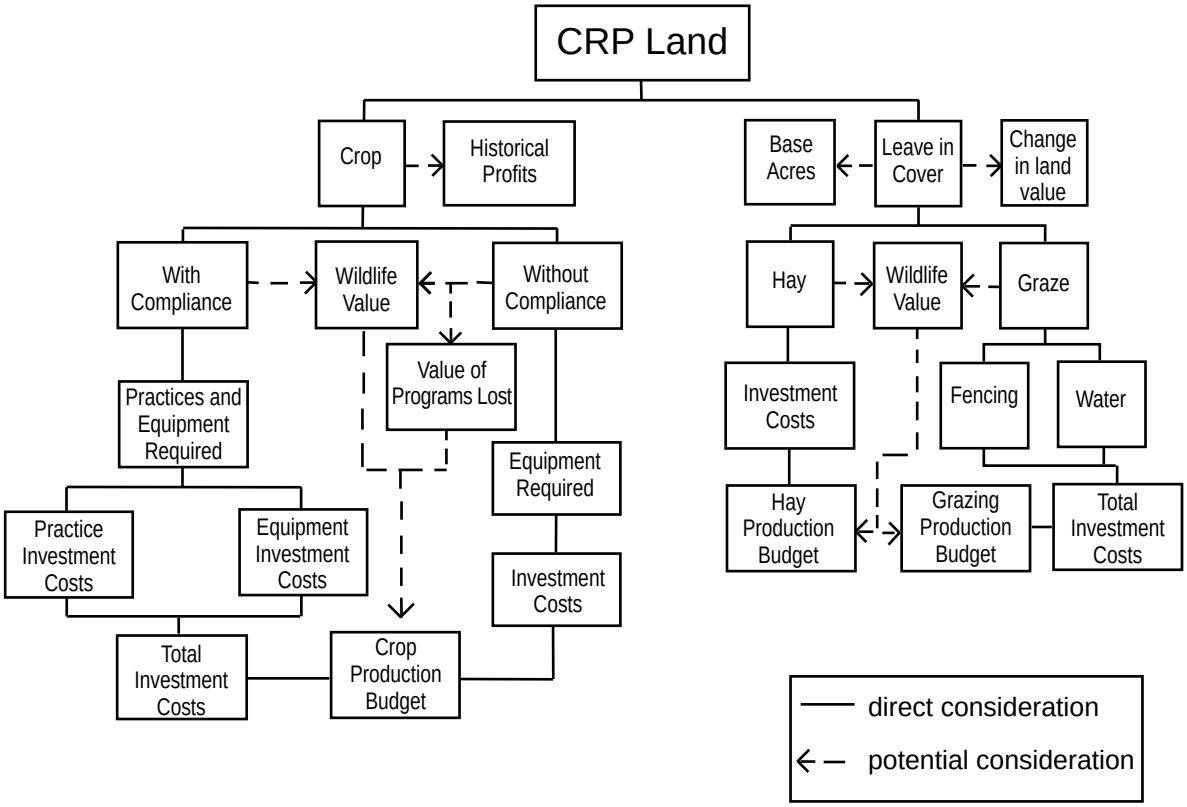

Figure 2 A schematic representation of the decision-making process

Investment Costs

Several of the CRP options available to contract holders will involve making purchases of capital assets, such as machinery and fencing. Unlike feed or fertilizer, capital assets typically have a useful life of several years. Because of this, the costs associated with the ownership of capital assets should be spread over several years.

Several of the CRP options available to contract holders will involve making purchases of capital assets, such as machinery and fencing.

The annual cost of owning a capital asset can be computed using the amortization formula. The amortization formula includes the interest rate, the useful life of the asset, and the purchase price of the asset. The annualized cost can also be calculated using amortization tables. For example, KSU Farm Management Guide MF-489 (Langemeier, 1994) contains an amortization table for assets with a useful life of 3 to 40 years, and interest rates of 8 to 20 percent. This table is included as an appendix at the end of this publication. Also, most spreadsheets and business calculators contain formulas to compute annualized costs.

An example of an annualized cost computation is as follows. Assume that $25,000 of additional equipment is needed to farm an additional 160 acres of CRP ground in 1996. This equipment has a expected useful life of 10 years, and a zero salvage value. The interest rate is 9 percent. With these assumptions the annualized cost of owning this asset would be $3895.50. If there were 160 acres of CRP, the annualized cost per acre would be $3895.50 ÷ 160 or $24.35. This $24.35 per acre would need to be incorporated into budget projections. Some producers may not need new equipment, while others may be able to spread the use of new equipment over more than just CRP acres.

Cropping Options

Conservation compliance will be an important consideration for contract holders studying the feasibility of cropping the CRP land after the contracts expire. Crop producers out of compliance will not be eligible for government program benefits. These benefits include direct government payments, USDA services, FmHA services, and federally subsidized crop insurance. However, conservation compliance will more than likely increase investment costs.

Contract holders who are considering returning some CRP land to crop production under conservation compliance will need to determine what practices or structures are needed to meet compliance. A large percentage of the contract holders surveyed by Diebel et al. (1993) indicated that at least some investment in conservation practices or structures would be needed to meet compliance. Many contract holders also may need to purchase equipment to farm the additional acres resulting from contract expiration. Each investment cost (conservation and equipment) needs to be annualized over its expected life and added to budget projections.

Projected cash inflows for this option include government program benefits and potential crop income. Projected cash outflows include annualized investment costs and annual costs of production. Wheat and grain sorghum enterprises are used to illustrate the budgeting process for the cropping options discussed below. Other crops also could be planted on CRP land once the contracts expire. A budgeting process similar to that for wheat and grain sorghum can be used to evaluate the feasibility of other crops.

Wheat

Table 1 presents a budget for continuous cropped winter wheat that includes government program payments. To be eligible for government program payments, CRP land must have a government program base. Approximately three-fourths of CRP land has a government program base (USDA, 1994). Base acres can have either a wheat or feed grain base. Table 1 assumes that the CRP land has a wheat base of 160 acres associated with it. The budget also assumes a 15 percent flex acre and 5 percent set-aside requirement. For the 1994 crop, 15 percent of the base acres were required to be flex acres and there was no set-aside requirement. Producers can plant almost any crop on the flex acres. The budget assumes wheat is planted on the flex acres. The expected crop price used in Table 1 represents the average price from 1989 to 1993.

KSU Farm Management Guide MF-574 (Warmann, 1994a), Continuous Cropped Winter Wheat in Central Kansas, is used to estimate variable costs for program and flex acres. Machinery investment is assumed to be $112.50 per acre or one-half of the investment per acre reported in MF-574. Thus, a contract holder is assumed to need more equipment to farm the additional acres. Machinery is assumed to have a useful life of 10 years. Using an interest rate of 9 percent, the annualized cost of the machinery investment is $17.53 per acre.

The first and second columns of Table 1 are identical except for the expected wheat yield. Program yield does not vary with annual fluctuations in

wheat yield, thus deficiency payments remain the same under the two yield scenarios. The lower yield has a large negative impact on expected revenue from grain sales and expected net returns.

In the third column of Table 1 the CRP tract is assumed to need terraces and waterways to meet compliance. The expected yield and other costs are identical to those in the first column. The investment in waterways is based on 6 acres of waterway constructed at $500 per acre. The investment in terraces is based on three miles of terraces at $0.50 per foot. The useful life of the waterways and terraces is assumed to be 10 years. Using a 9 percent interest rate, the annualized costs for waterways and terraces are $2.92 and $7.71 per acre. The projected net return per acre is $10.63 lower for the scenario in which terraces and waterways are needed compared to the average column.

Terrace and waterway costs on a per-acre basis will vary depending on the size of CRP tract. Projected cost for a 320-acre CRP tract is $11.37 per acre. For a 40-acre CRP tract, projected cost per acre is $9.66.

Figure 3 presents the sensitivity of wheat returns to various price and yield assumptions when government program payments are included. At low yields (25 bushels and lower) returns per acre are actually lower at higher prices. Deficiency payments decrease as price increases. When yields are low a higher proportion of income is derived from deficiency payments. In general, assuming investments in terraces and waterways are not needed, net returns per acre are positive as long as yields are above 24 bushels per acre.

Producers who choose to be out of compliance will not have to make the investments in conservation practices or structures. However, these producers will lose eligibility for government payments. Comparisons between the "with conservation compliance" and "without conservation compliance" options should be made with these considerations in mind.

Table 2 presents a budget for continuous cropped winter wheat without government program participation. This table uses the same cost, price, and yield assumptions as Table 1. Because of this, the net return per acre for each scenario can be directly compared to that in Table 1. Using a yield of 35 bushels per acre, net returns are $20 lower than those with government program participation. For the "low yield" scenario, net returns per acre are $23 lower.

The sensitivity of wheat returns outside the government program to price and yield assumptions is presented in Figure 3. Unless price is above $3.20, net returns are negative with expected yields of 30 bushels and below. The benefits associated with crop insurance are not included in Tables 1 and 2. Crop insurance would partially mitigate the low returns associated with low yields. A comparison of the sensitivity graphs indicates that participation in the government program tends to be beneficial for most price and yield scenarios.

Wheat returns per acre would be lower in a wheat fallow area of the state. Figure 4 presents the sensitivity of wheat-fallow returns per acre to various price and yield assumptions. These figures are based on the wheat-fallow budget and production costs per acre in KSU Farm Management Guide MF-257, Dhuyvetter, 1994). Again, returns per acre are significantly higher if government program participation is possible. In western Kansas, if producers are required to use less tillage, they may want to go to a wheat-sorghum-fallow rotation instead of wheat fallow.

Grain Sorghum

Tables 3 and 4 present grain sorghum budgets with and without participation in the government program. The format for these tables is similar to that for the wheat budgets. In Table 3, a 15 percent flex acre and a 5 percent set-aside requirement, and a 160-acre feed grain base is assumed. In addition, flex acres are assumed to be planted to grain sorghum. For the 1994 crop, 15 percent of the base acres were required to be flex acres and there was no set-aside requirement. The expected crop price used represents the average grain sorghum price from 1989 to 1993.

KSU Farm Management Guide MF-575 (Warmann, 1994b), Dryland Grain Sorghum in Central Kansas, is used to estimate variable costs for program and flex acres. Machinery investment costs are assumed to be one-half of the machinery investment requirements reported in MF-575, or $120 per acre. The useful life of the machinery is assumed to be 10 years. Using an interest rate of 9 percent, the annual cost of machinery is $18.70 per acre.

Using Tables 3 and 4, net return per acre is from $22 to $23 higher with government program participation and yield per acre of 55 bushels than without government participation. Under the "low yield" scenario returns per acre are about $25 higher with government program participation.

Net returns per acre are higher with government program participation for most of the price and yield scenarios reported in Figure 5. Given the assumptions used, in general it will be beneficial for producers to meet compliance and participate in the government program. Once compliance is met, producers can compare potential net returns from participation and non-participation each year.

Haying Options

Hay production and hay quality will need to be estimated to evaluate the feasibility of haying CRP. In addition, producers who are considering haying their

CRP land must have information about the market potential for hay in their area, investments needed to hay the land, and production costs.

Long-term production averages are not available in many areas. However, current research efforts are underway to develop reasonable production estimates. Forage productivity and quality can be improved by mowing or burning the CRP grass every 2 to 3 years.

Investment costs for the hay production option would include the costs of any new haying equipment needed. Once the investment costs are known, they should be annualized and added to hay production budget projections. Cash inflows for this option would come from the sale of hay or the value of hay fed. Cash outflows would include annualized investment costs and annual costs of production.

Table 5 contains an example of a native hay budget. Custom rates obtained from the Kansas Agricultural Statistical Service (Kansas Custom Rates, 1993) are used to estimate the costs in the budget. A native hay price of $55 per ton is used in the table. Because custom rates are used the only fixed cost item in the budget is real estate taxes. Custom rates include operating as well as fixed ownership costs. Swathing and raking costs are assumed to be $7.50 and $2.60 per acre. Baling and hauling costs are typically expressed on a per bale or per ton basis. The budget uses rates of $6.75 for baling and $2.75 for hauling large round bales. Large round bales are assumed to weigh 1500 pounds.

Yield per acre is the only item that varies across the middle column in Table 5. Net return to land and management on a per acre basis ranges from $18 for a yield of 0.75 ton to $39 for a yield of 1.25 ton. Potential hay yields from CRP land will vary substantially among CRP tracts. Native hay yields in the area can be used to estimate productivity.

Potential native hay returns are sensitive to price and yield assumptions. Native hay prices vary substantially from year to year, and across geographic location. In addition, the quality of hay can have a large impact on the price. Figure 6 presents the sensitivity of native hay returns per acre to changes in native hay prices and yields. Figure 6 also presents the sensitivity of returns per acre for smooth bromegrass production to proce and yield assumptions.

Grazing Options

Contract holders considering the grazing option will need information on the long-term carrying capacity and forage quality of CRP land, investments needed to graze the land (including breeding livestock), and production costs.

Long-term data pertaining to carrying capacity and forage quality are not generally available. However, estimates can be made by using information available for similar land. For introduced grasses (CP1), Pasture and Hayland Management guidelines are available from NRCS. For native grass mixtures (CP2), Range Site Descriptions are available from NRCS. These descriptions include information on production and management of range sites.

Investments that may be needed to graze the land include equipment, perimeter fencing, water development, and breeding livestock. Diebel et al. (1993) indicated that a vast majority of contract holders surveyed needed some type of improvement (fencing, water development, or livestock handling facilities) to graze the land.

Cow-Calf Production

Stocking rate is a crucial factor that needs to be considered in any cow-calf feasibility analysis. Age, weight, and body condition of the animal, and physiological growth stage of the grass need to be considered when determining stocking rate. More information on stocking rates is contained in Ohlenbusch and Watson (1994).

Potential investment costs will vary substantially among contract holders. Total investments in buildings and equipment for a producer starting a cow-calf operation is estimated to be $675 per cow in KSU Farm Management Guide MF-266 (Fausett and Langemeier, 1994). In contrast, a contract holder with an existing cow-calf operation may not need to make any investments to graze the land.

Investment and improvement costs should be annualized over their expected life and added to appropriate budget projections. Cash inflows for this option would include calf and cull cow sales. Cash outflows would include annualized investment costs, replacement animals, and annual costs of production.

Table 6 contains a cow-calf budget for central Kansas. The assumed stocking rate is one cow-calf pair per ten acres of native range. The assumed calf crop percent, replacement rate, and weaning weights are presented in the “Livestock Sales” section. Calf crop percent is defined as the number of calves weaned divided by the number of cows exposed to the bull.

Cattle prices used represent average prices for the 1989-1993 period. Variable cost information is taken from KSU Farm Management Guide MF-266. Net returns represent the residual return to land and management. Thus, pasture rent, or the opportunity cost associated with owning the pasture, is zero in the budget.

Real estate taxes are assumed to be $1.75 per acre or $17.50 per cow. Interest on breeding livestock represents the opportunity cost associated with investing money in cows, heifers, and bulls. If a contract holder’s money was invested in some asset

other than breeding livestock, $67.50 in income could be generated per cow with a rate of return on the investment of 9 percent.

The difference between the three columns in the budget relates to the improvements and investments needed. The first column assumes that the contract holder will not need to invest in any improvements or equipment to graze the land. The second column assumes that perimeter fencing is needed to graze the land. Perimeter fencing is assumed to cost $0.60 per foot (10,560 feet of fence is needed for the 160 acres) and have a useful life of 20 years. Using an interest rate of 9 percent, the annualized cost of the perimeter fencing is $694 for the 160 acres or $43.40 per cow ($4.34 per acre). The third column assumes that in addition to perimeter fencing a $10,000 investment in equipment is needed before the CRP land can be grazed. The equipment is assumed to have a useful life of 15 years. Using an interest rate of 9 percent, the annualized cost of the $10,000 investment in equipment is $77.50 per cow.

Perimeter fencing costs will vary by the size of the CRP tract. For example, perimeter fencing costs would be only $21.69 per cow or $2.17 per acre for a CRP tract of 640 acres. Perimeter fencing costs for an 80-acre CRP tract would be $6.51 per acre, or $65.07 per cow. High costs of fencing will likely make it prohibitive to graze relatively small CRP tracts.

Cow-calf returns are sensitive to changes in cattle prices and production efficiency measured as the calf crop percent. Figure 7 presents cow-calf returns per acre for various price and calf crop percentages. Average costs of production are used to develop Table 6 and Figure 7. A contract holder would probably need to have below average costs per cwt., have a relatively large contiguous CRP tract, and have an existing cow herd to make grazing of breeding livestock relatively more attractive than other CRP options.

Stocker Production

Table 7 contains summer stocker budgets for a season-long and an early-intensive program for steers. The CRP land was assumed to have been seeded to a native grass mixture. Stocking rates of 4.5 and 2.25 acres per head are used to illustrate the season-long and early-intensive programs. Stocking rates will depend on many factors including the type of grass planted on CRP land, cattle type and frame size, and environmental conditions (Ohlenbusch and Watson, 1994).

Cattle prices used represent average prices for the 1989-1993 period. Variable cost information is taken from KSU Farm Management Guide MF-1008. Real estate taxes are assumed to be $1.75 per acre. Net returns represent the residual return to land and management. Thus, pasture rent or the opportunity cost associated with owning the pasture is zero in the budget.

Stocker returns are sensitive to changes in cattle prices and weight gains. Figure 8 present season-long and early-intensive stocker returns per acre for various price and gain assumptions. In general, the net return per acre is higher for the early-intensive program than for the season-long program. The actual difference in net returns will depend on seasonal price patterns for calves and feeders, and rainfall. In some years, the season-long program will be more profitable than the early-intensive program.

Wildlife Options

Using CRP land for wildlife habitat may also be a viable option for some contract holders. Development of wildlife may also supplement income from haying or grazing options. Producers considering this option must attempt to determine whether there is a market for wildlife-related activities in their locale.

The quality of the habitat has a significant effect on wildlife populations (Lee 1994). There is a wide range in the quality of wildlife habitat quality on CRP land due to differences in seed mixtures, planting success, and vegetative conditions. No single CRP tract can provide habitat for all wildlife species. Each species of wildlife has specific habitat requirements. The habitat for any wildlife must provide 1) cover from weather and predators, 2) food and water for nourishment, and 3) space to gather food and water. Habitat requirements of one group of species benefiting from CRP land may conflict with the needs of other species.

In general, native grasses and legumes benefit wildlife diversity. The quality of the cover established, in terms of height and density, also is important. Management of CRP vegetation through mowing, prescribed burning, haying, or grazing both during and after the 10-year contract period will affect wildlife potential.

Haying and grazing has resulted in diminished wildlife habitat in some areas. However, controlled grazing can be beneficial in cases where vegetation becomes too dense. Haying should be avoided during peak nesting seasons. On established stands, wildlife agencies recommend that fields be mowed in late winter or early spring, before April 10th or after July 15th. Vegetation should be no shorter than 6 inches after mowing.

Management of CRP grasslands is necessary to maintain the value of wildlife habitat. Accumulation of vegetation litter and dense vegetation decrease the quality of CRP for upland-nesting birds. Prescribed burning, grazing, or light discing can be used to maintain or enhance CRP for most wildlife species. Annual removal of vegetation is not recommended.

Recreation and wildlife uses often require modification of normal production facilities and practices. Modifications may include fencing or water developments. These costs need to be compared to the possible income and benefits derived from wildlife.

Other Options

Contract holders may also want to consider renting or selling their land. Net returns on a per-acre basis should be calculated for these options and compared to potential net returns from cropping, haying, or grazing. If contract holders rent the ground, they will need to subtract real estate taxes, annualized improvement costs, and any maintenance costs from their rental income.

Summary of Production Options

Table 8 and Figure 9 summarize the per-acre costs and returns for cropping, haying, and grazing examples discussed above. Gross income per acre for the crop options are considerably higher than gross income per acre for the haying and grazing options. However, the total costs per acre for the crop options are also higher. The estimated return per acre for hay is similar to that for wheat and grain sorghum in the government program. The net returns for wheat and grain sorghum are much higher if government program participation is possible than without government program participation. However, not all CRP land has base associated with it. If this is the case, net returns for wheat and grain sorghum without government program payments should be compared with haying and grazing options.

The alternative production options may affect land values. For example, if land is left in permanent cover, land values may decline. This decline will affect the contract holder's net worth, credit worthiness, and amount of money available to make improvements on the land. These balance sheet effects should be considered in the decision-making process.

The 1995 Farm Bill will be a critical factor that needs to be considered in any decision regarding CRP land. It is likely to have a large impact on the relative profitability of the various production options discussed. Also, the decision to extend or renew CRP contracts will be part of the 1995 Farm Bill. If a contract is eligible for extension, the CRP contract holder will want to compare returns from the various production options with returns from extending the contract.

Relative returns for the various production options will differ among CRP contracts. The conceptual framework described above can be used to obtain relative return estimates for specific CRP tracts.

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Table 1. Continuous Wheat Budget With Government Program Participation.

	Avg. Yield	Low Yield	With Terraces	Your Farm
A. Grain Sales				
1. Program Acres	160	160	160	_____
2. Percent Flex Acres	15%	15%	15%	_____
3. Percent Set Aside Acres	5%	5%	5%	_____
4. Payment Acres	128	128	128	_____
5. Flex Acres	24	24	24	_____
6. Wheat Yield Per Acre	35	20	35	_____
7. Flex Yield Per Acre	35	20	35	_____
8. Expected Market Price	3.20	3.20	3.20	_____
9. Expected Flex Crop Price	3.20	3.20	3.20	_____
10. Revenue from Program Crop	14336	8192	14336	_____
11. Revenue from Flex Crop	2688	1536	2688	_____
12. Total Revenue from Grain Sales	$17,024	$9,728	$17,024	_____
B. Deficiency Payments				
13. Payment Acres	128	128	128	_____
14. Target Price	4.00	4.00	4.00	_____
15. National Average Price	3.20	3.20	3.20	_____
16. Deficiency Payment	0.80	0.80	0.80	_____
17. Program Yield	35	35	35	_____
18. Revenue from Deficiency	$3,584	$3,584	$3,584	_____
C. Variable Costs Per Payment Acre				
19. Labor	15.30	15.30	15.30	_____
20. Seed	7.75	7.75	7.75	_____
21. Herbicide and Insecticide	10.17	10.17	10.17	_____
22. Fertilizer and Lime	15.00	15.00	15.00	_____
23. Fuel and Oil	8.20	8.20	8.20	_____
24. Machinery Repairs	12.40	12.40	12.40	_____
25. Custom Hire	0.00	0.00	0.00	_____
26. Miscellaneous	5.00	5.00	5.00	_____
27. Interest on Variable Costs	3.32	3.32	3.32	_____
28. Total Variable Costs	$77.14	$77.14	$77.14	_____
D. Fixed Costs Per Payment Acre				
29. Real Estate Taxes	2.95	2.95	2.95	_____
30. Annualized Machinery Costs	17.53	17.53	17.53	_____
31. Annualized Cost of Terraces	0.00	0.00	7.71	_____
32. Annualized Cost of Waterways	0.00	0.00	2.92	_____
33. Total Fixed Costs	$20.48	$20.48	$31.11	_____
E. Costs Per Flex Acre				
34. Total Variable Costs	$77.14	$77.14	$77.14	_____
35. Total Fixed Costs	$20.48	$20.48	$31.11	_____
F. Maintenance of Set-Aside Acres				
36. Set-Aside Acres	8	8	8	_____
37. Total Variable Costs	$12.00	$12.00	$12.00	_____
38. Total Fixed Costs	$20.48	$20.48	$31.11	_____
G. Net Return to Land and Management				
39. Net Return for 160 Acres	$5,510	($1,786)	$3,809	_____
40. Net Return Per Acre	$34	($11)	$24	_____
41. Return on Investment	6.82%	0.33%	5.30%	_____

Table 2. Continuous Wheat Budget Without Government Program Participation.

	Avg. Yield	Low Yield	With Terraces	Your Farm
A. Grain Sales				
1. Acres	160	160	160	_____
2. Yield Per Acre	35	20	35	_____
3. Expected Market Price	3.20	3.20	3.20	_____
4. Revenue from Grain Sales	$17,920	$10,240	$17,920	_____
B. Variable Costs Per Acre				
5. Labor	15.30	15.30	15.30	_____
6. Seed	7.75	7.75	7.75	_____
7. Herbicide and Insecticide	10.17	10.17	10.17	_____
8. Fertilizer and Lime	15.00	15.00	15.00	_____
9. Fuel and Oil	8.20	8.20	8.20	_____
10. Machinery Repairs	12.40	12.40	12.40	_____
11. Drying	0.00	0.00	0.00	_____
12. Miscellaneous	5.00	5.00	5.00	_____
13. Interest on Variable Costs	3.32	3.32	3.32	_____
14. Total Variable Costs	$77.14	$77.14	$77.14	_____
C. Fixed Costs Per Acre				
15. Real Estate Taxes	2.95	2.95	2.95	_____
16. Annualized Machinery Costs	17.53	17.53	17.53	_____
17. Annualized Cost of Terraces	0.00	0.00	7.71	_____
18. Annualized Cost of Waterways	0.00	0.00	2.92	_____
19. Total Fixed Costs	$20.48	$20.48	$31.11	_____
D. Net Return to Land and Management				
20. Net Return for 160 Acres	$2,300	($5,380)	$600	_____
21. Net Return Per Acre	$14	($34)	$4	_____
22. Return on Investment	3.96%	-2.87%	2.45%	_____

Table 3. Grain Sorghum Budget With Government Program Participation .

	Avg. Yield	Low Yield	With Terraces	Your Farm
A. Grain Sales				
1. Program Acres	160	160	160	_____
2. Percent Flex Acres	15%	15%	15%	_____
3. Percent Set Aside Acres	5%	5%	5%	_____
4. Payment Acres	128	128	128	_____
5. Flex Acres	24	24	24	_____
6. Grain Sorghum Yield Per Acre	55	30	55	_____
7. Flex Yield Per Acre	55	30	55	_____
8. Expected Market Price	2.05	2.05	2.05	_____
9. Expected Flex Crop Price	2.05	2.05	2.05	_____
10. Revenue from Program Crop	14432	7872	14432	_____
11. Revenue from Flex Crop	2706	1476	2706	_____
12. Total Revenue from Grain Sales	$17,138	$9,348	$17,138	_____
B. Deficiency Payments				
13. Payment Acres	128	128	128	_____
14. Target Price	2.61	2.61	2.61	_____
15. National Average Price	2.05	2.05	2.05	_____
16. Deficiency Payment	0.56	0.56	0.56	_____
17. Program Yield	55	55	55	_____
18. Revenue from Deficiency	$3,942	$3,942	$3,942	_____
C. Variable Costs Per Payment Acre				
19. Labor	16.20	16.20	16.20	_____
20. Seed	3.00	3.00	3.00	_____
21. Herbicide and Insecticide	18.20	18.20	18.20	_____
22. Fertilizer and Lime	12.30	12.30	12.30	_____
23. Fuel and Oil	8.10	8.10	8.10	_____
24. Machinery Repairs	15.70	15.70	15.70	_____
25. Drying	5.50	3.00	5.50	_____
26. Miscellaneous	5.00	5.00	5.00	_____
27. Interest on Variable Costs	3.78	3.67	3.78	_____
28. Total Variable Costs	$87.78	$85.17	$87.78	_____
D. Fixed Costs Per Payment Acre				
29. Real Estate Taxes	2.95	2.95	2.95	_____
30. Annualized Machinery Costs	18.70	18.70	18.70	_____
31. Annualized Cost of Terraces	0.00	0.00	7.71	_____
32. Annualized Cost of Waterways	0.00	0.00	2.92	_____
32. Total Fixed Costs	$21.65	$21.65	$32.28	_____
E. Costs Per Flex Acre				
33. Total Variable costs	$87.78	$85.17	$87.78	_____
34. Total Fixed Costs	$21.65	$21.65	$32.28	_____
F. Maintainance of Set-Aside Acres				
35. Set-Aside Acres	8	8	8	_____
36. Total Variable Costs	$12.00	$12.00	$12.00	_____
37. Total Fixed Costs	$21.65	$21.65	$32.28	_____
G. Net Return to Land and Management				
38. Net Return for 160 Acres	$4,178	($3,215)	$2,477	_____
39. Net Return Per Acre	$26	($20)	$15	_____
40. Return on Investment	5.73%	-0.79%	4.23%	_____

Table 4. Grain Sorghum Budget Without Government Program Participation.

	Avg. Yield	Low Yield	With Terraces	Your Farm
A. Grain Sales				
1. Acres	160	160	160	_____
2. Yield Per Acre	55	30	55	_____
3. Expected Market Price	2.05	2.05	2.05	_____
4. Revenue from Grain Sales	$18,040	$9,840	$18,040	_____
B. Variable Costs Per Acre				
5. Labor	16.20	16.20	16.20	_____
6. Seed	3.00	3.00	3.00	_____
7. Herbicide and Insecticide	18.20	18.20	18.20	_____
8. Fertilizer and Lime	12.30	12.30	12.30	_____
9. Fuel and Oil	8.10	8.10	8.10	_____
10. Machinery Repairs	15.70	15.70	15.70	_____
11. Drying	5.50	3.00	5.50	_____
12. Miscellaneous	5.00	5.00	5.00	_____
13. Interest on Var. Costs	3.78	3.67	3.78	_____
14. Total Variable Costs	$87.78	$85.17	$87.78	_____
C. Fixed Costs Per Acre				
15. Real Estate Taxes	2.95	2.95	2.95	_____
16. Annualized Machinery Costs	18.70	18.70	18.70	_____
17. Annualized Cost of Terraces	0.00	0.00	7.71	_____
18. Annualized Cost of Waterways	0.00	0.00	2.92	_____
19. Total Fixed Costs	$21.65	$21.65	$32.28	_____
D. Net Return to Land and Management				
20. Net Return for 160 Acres	$531	($7,251)	($1,170)	_____
21. Net Return Per Acre	$3	($45)	($7)	_____
22. Return on Investment	2.52%	-4.35%	1.02%	_____

Table 5. Native Hay Budget.

	0.75 Ton	1.00 Ton	1.25 Ton	Your Farm
A. Hay Sales				
1. Acres	160	160	160	_____
2. Yield Per Acre	0.75	1.00	1.25	_____
3. Expected Market Price	55.00	55.00	55.00	_____
4. Revenue from Hay Sales	$6,600	$8,800	$11,000	_____
B. Variable Costs Per Acre				
5. Swathing	7.50	7.50	7.50	_____
6. Sideraking	2.60	2.60	2.60	_____
7. Baling	6.75	9.00	11.25	_____
8. Hauling	2.75	3.70	4.60	_____
9. Labor	0.00	0.00	0.00	_____
10. Fertilizer and Lime	0.00	0.00	0.00	_____
11. Herbicide and Insecticide	0.00	0.00	0.00	_____
12. Fuel and Oil	0.00	0.00	0.00	_____
13. Machinery Repairs	0.00	0.00	0.00	_____
14. Miscellaneous	0.00	0.00	0.00	_____
15. Interest on Variable Costs	0.88	1.03	1.17	_____
16. Total Variable Costs	$20.48	$23.83	$27.12	_____
C. Fixed Costs Per Acre				
17. Real Estate Taxes	2.95	2.95	2.95	_____
18. Annualized Machinery Cost	0.00	0.00	0.00	_____
19. Annualized Cost of Terraces	0.00	0.00	0.00	_____
20. Annualized Cost of Waterways	0.00	0.00	0.00	_____
21. Total Fixed Costs	$2.95	$2.95	$2.95	_____
D. Net Return to Land and Management				
22. Net Return for 160 Acres	$2,851	$4,516	$6,189	_____
23. Net Return Per Acre	$18	$28	$39	_____
24. Return on Investment	3.17%	4.96%	6.75%	_____

Note: This budget uses custom rates.

Table 6. Cow-Calf Budget.

	No Inv.	Add Fencing	$10,000 Inv.	Your Farm
A. Livestock Sales				
1. Acres	160	160	160	_____
2. Number of Cows	16	16	16	_____
3. Calf Crop Percent	90%	90%	90%	_____
4. Percent of Heifers Retained	16%	16%	16%	_____
5. Cow Death Loss	2%	2%	2%	_____
6. Steer Sales	7	7	7	_____
7. Heifer Sales	5	5	5	_____
8. Cow Sales	2	2	2	_____
9. Weaning Weight for Steers	560	560	560	_____
10. Weaning Weight for Heifers	540	540	540	_____
11. Weight of Cull Cows	1050	1050	1050	_____
12. Steer Price Per Cwt.	$94.50	$94.50	$94.50	_____
13. Heifer Price Per Cwt.	$87.50	$87.50	$87.50	_____
14. Cull Cow Price Per Cwt.	$52.00	$52.00	$52.00	_____
15. Gross Returns Per Cow	$451.61	$451.61	$451.61	_____
B. Variable Costs Per Cow				
16. Pasture	0.00	0.00	0.00	_____
17. Crop Residue	6.20	6.20	6.20	_____
18. Winter Hay and Forage	120.40	120.40	120.40	_____
19. Protein and Minerals	23.10	23.10	23.10	_____
20. Grain	0.00	0.00	0.00	_____
21. Labor	68.40	68.40	68.40	_____
22. Veterinary, Drugs, and Supplies	15.25	15.25	15.25	_____
23. Marketing Costs	8.70	8.70	8.70	_____
24. Utilities, Fuel, and Oil	16.80	16.80	16.80	_____
25. Building and Equipment Repairs	27.90	27.90	27.90	_____
26. Miscellaneous	13.20	13.20	13.20	_____
27. Interest on Variable Costs	13.50	13.50	13.50	_____
28. Total Variable Costs	$313.45	$313.45	$313.45	_____
C. Fixed Costs Per Cow				
29. Real Estate Taxes	17.50	17.50	17.50	_____
30. Depreciation on Bull	10.00	10.00	10.00	_____
31. Insurance	11.80	11.80	11.80	_____
32. Annualized Investment Costs	0.00	0.00	77.50	_____
33. Annualized Fencing Costs	0.00	43.40	43.40	_____
34. Interest on Breeding Livestock	67.50	67.50	67.50	_____
35. Total Fixed Costs	$106.80	$150.20	$227.70	_____
D. Net Return to Land and Management				
36. Net Return Per Cow	$31	($12)	($90)	_____
37. Net Return Per 160 Acres	$502	($193)	($1,433)	_____
38. Net Return Per Acre	$3	($1)	($9)	_____
39. Return on Investment	2.64%	2.25	1.58%	_____

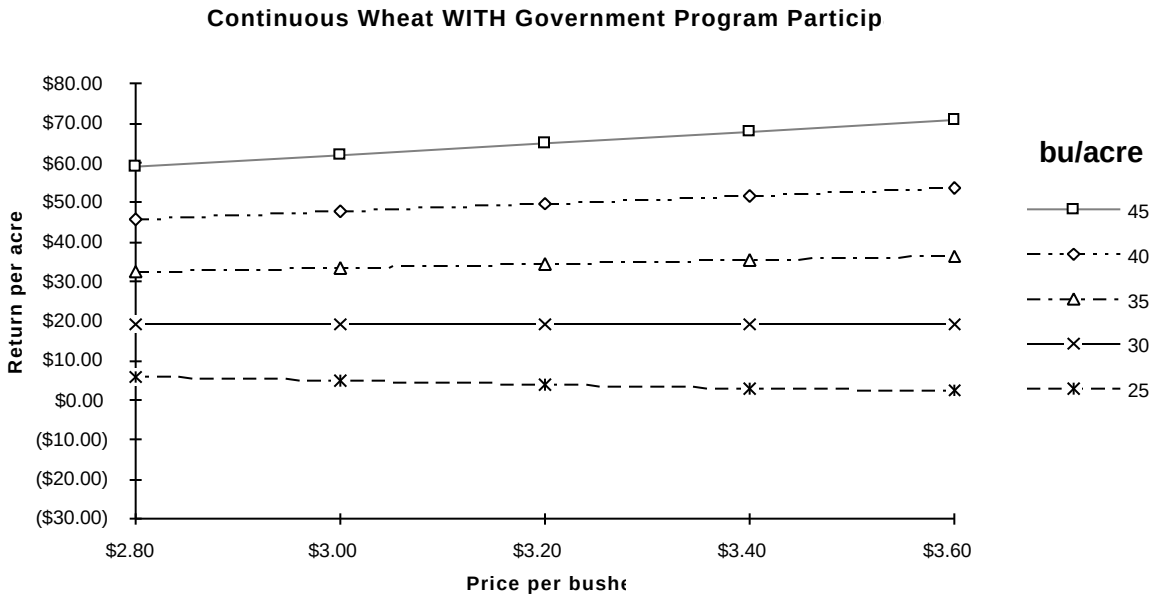
Table 7. Summer Stocker Budget.

	Season Long	Early Intensive	Your Farm	Your Farm
A. Livestock Sales				
1. Acres	160	160	_____	_____
2. Number of Steers	36	71	_____	_____
3. Death Loss	1	1	_____	_____
4. Steer Sales	35	70	_____	_____
5. Sale Weight	750	690	_____	_____
6. Sale Price	$85.75	$87.50	_____	_____
7. Purchase Weight	550	550	_____	_____
8. Purchase Price	$95.00	$95.00	_____	_____
9. Gross Returns Per Head	$102.76	$72.75	_____	_____
B. Variable Costs Per Head				
10. Pasture	0.00	0.00	_____	_____
11. Protein and Minerals	3.20	1.60	_____	_____
12. Labor	5.40	3.60	_____	_____
13. Veterinary, Drugs, and Supplies	10.00	8.00	_____	_____
14. Marketing Costs	3.50	3.50	_____	_____
15. Building and Equipment Repairs	1.00	1.00	_____	_____
16. Miscellaneous	2.50	2.00	_____	_____
17. Interest on Variable Costs	19.80	9.84	_____	_____
18. Total Variable Costs	$45.40	$29.54	_____	_____
C. Fixed Costs Per Head				
19. Real Estate Taxes	7.88	3.94	_____	_____
20. Insurance	0.50	0.50	_____	_____
21. Annualized Investment Costs	0.00	0.00	_____	_____
22. Annualized Fencing Costs	0.00	0.00	_____	_____
23. Total Fixed Costs	$8.38	$4.44	_____	_____
D. Net Return to Land and Management				
24. Net Return Per Head	$49	$39	_____	_____
25. Net Return Per 160 Acres	$1,764	$2,752	_____	_____
26. Net Return Per Acre	$11	$17	_____	_____
39. Return on Investment	6.86%	10.21%	_____	_____

Table 8. Summary of per acre income, costs, and returns for cropping, haying, and grazing options.

Enterprise	Gross income	Total cost	Net return
Continuous wheat			
with government payments	$ 128.80	$ 94.36	$ 34.44
without government payments	112.00	97.62	14.38
Grain sorghum			
with government payments	131.75	105.64	26.11
without government payments	112.75	109.43	3.32
Native hay	55.00	26.78	28.22
Cow-calf	45.16	42.03	3.13
Stockers			
Season-long grazing	23.12	12.10	11.02
Early-intensive grazing	32.28	15.08	17.20

Continuous Wheat Price and Yield Sensitivity



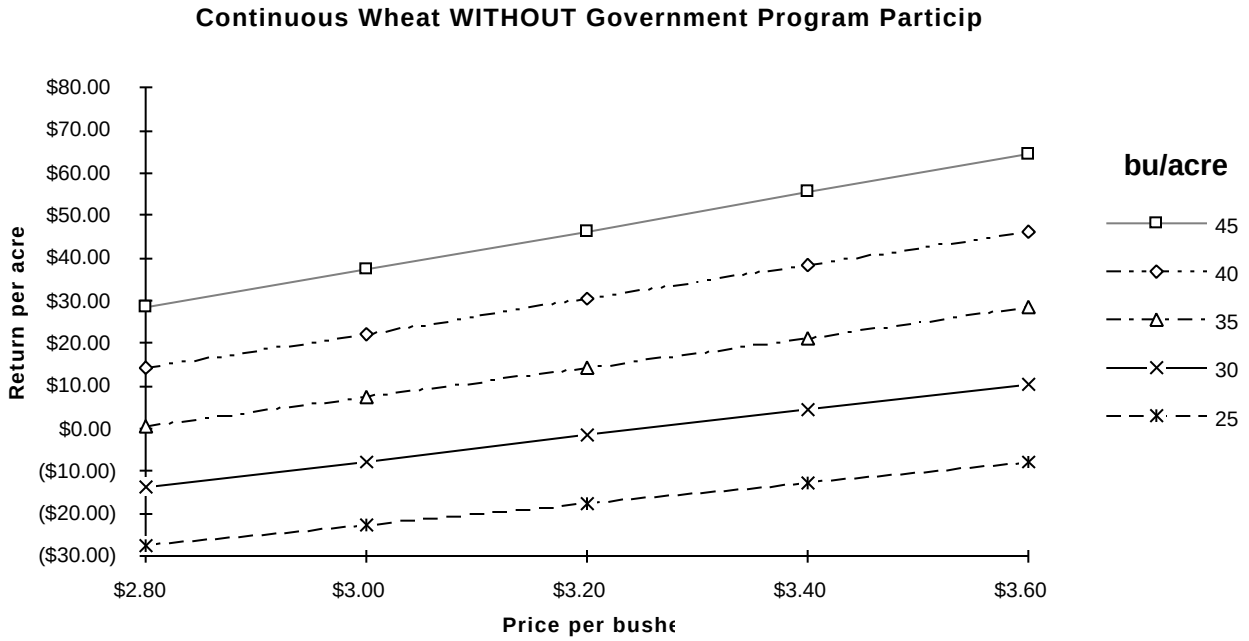
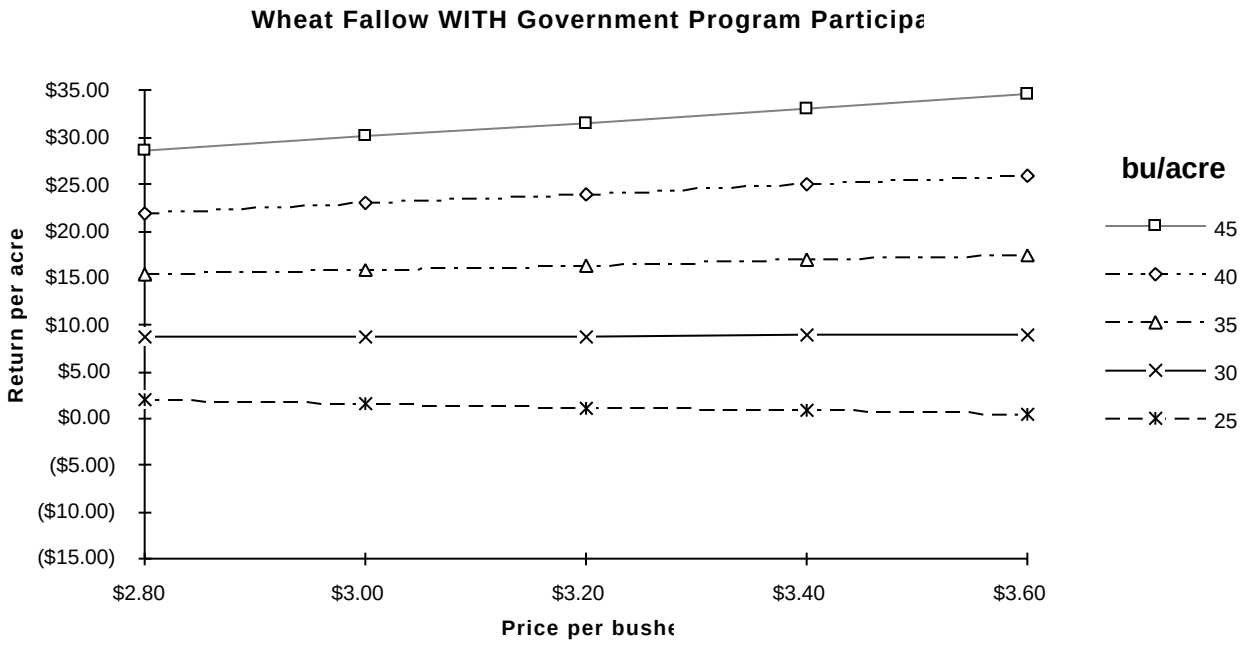


Figure 3 Sensitivity of continuous wheat returns per acre to yield and price with and without government program participation. (Assumes no investments are needed.)

Fallow Wheat Price and Yield Sensitivity



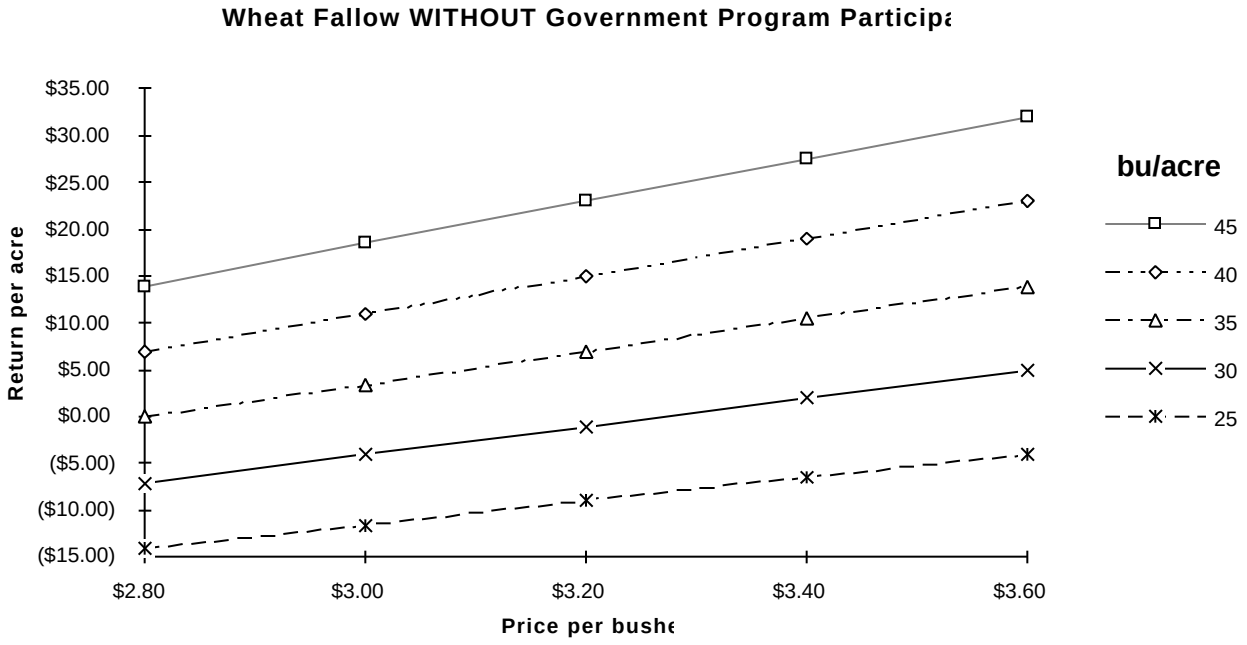
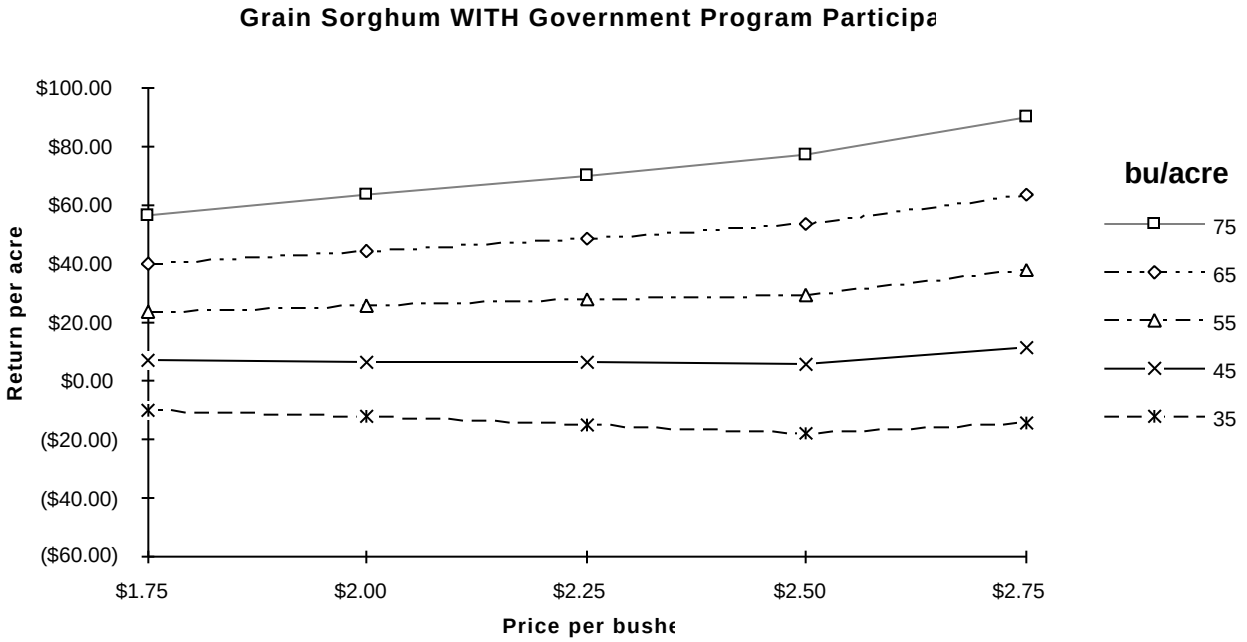


Figure 4 Sensitivity of wheat-fallow returns per acre to yield and price with and without government program participation. (Assumes no investments needed.)

Grain Sorghum Price and Yield Sensitivity



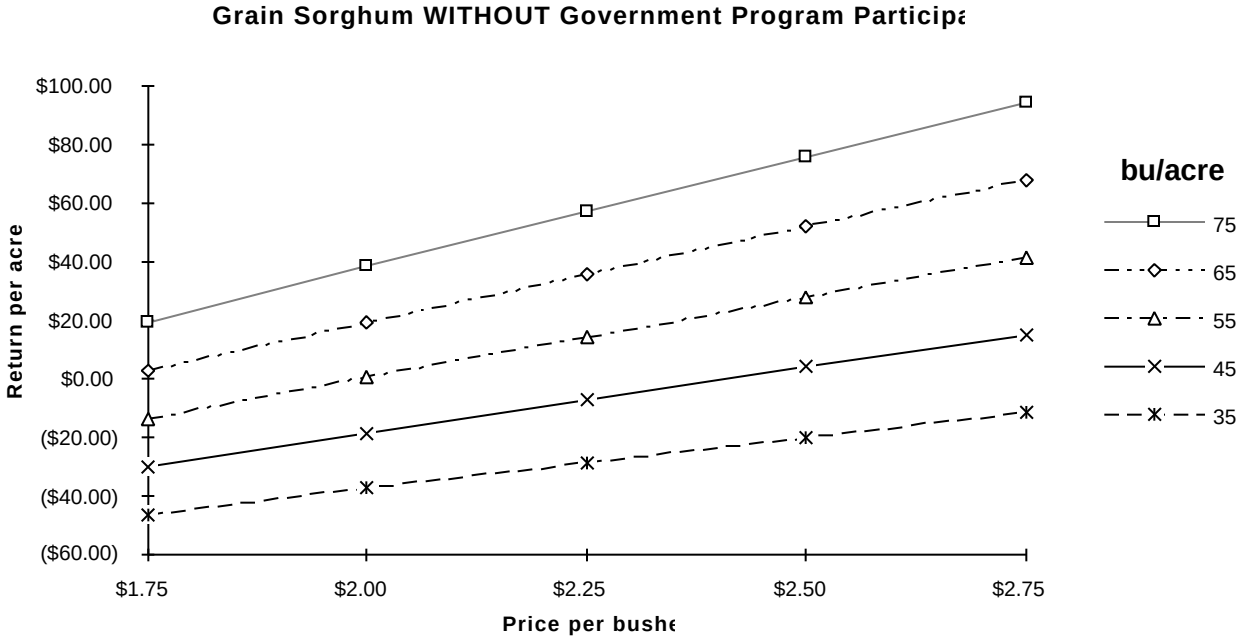
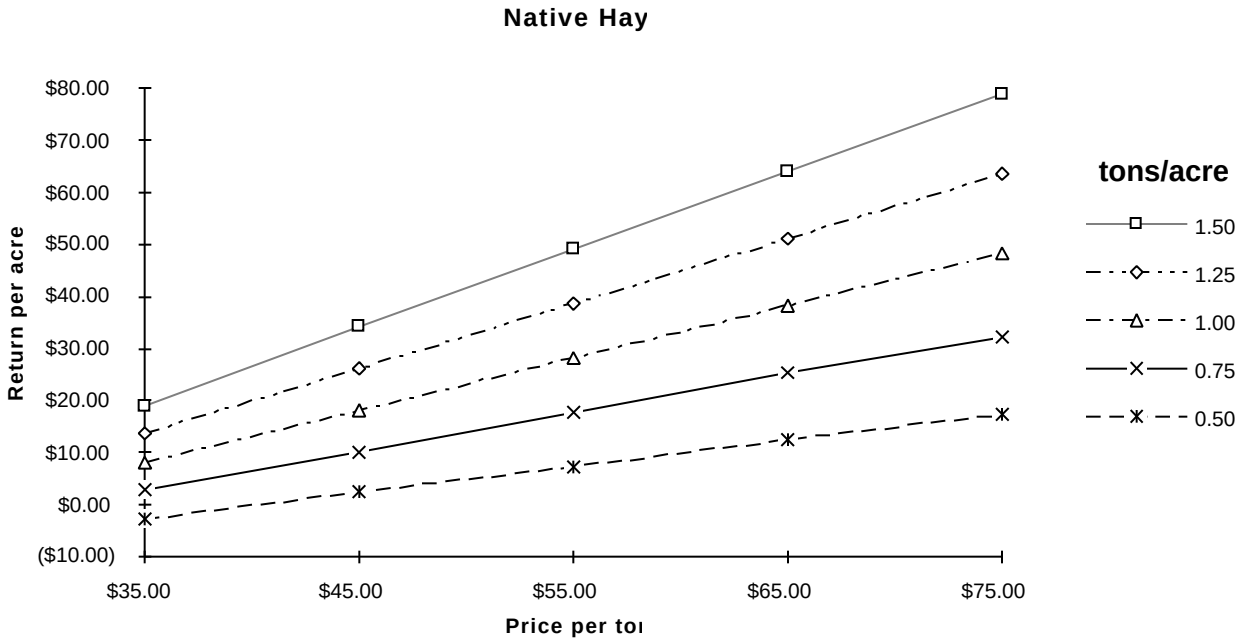


Figure 5 Sensitivity of grain sorghum returns per acre to yield and price with and without government program participation. (Assumes no investments are needed.)

Hay Price and Yield Sensitivity



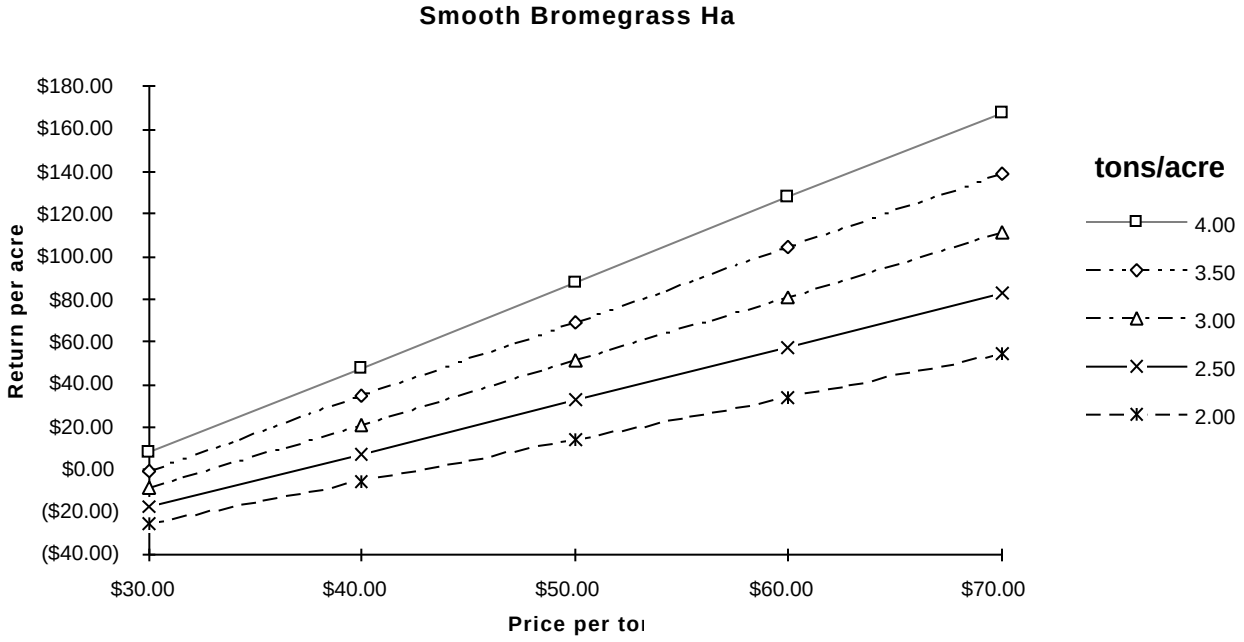


Figure 6 Sensitivity of native and smooth brome hay returns per acre to yield and price. (Assumes no investments are needed.)

Calf Crop and Price Sensitivity

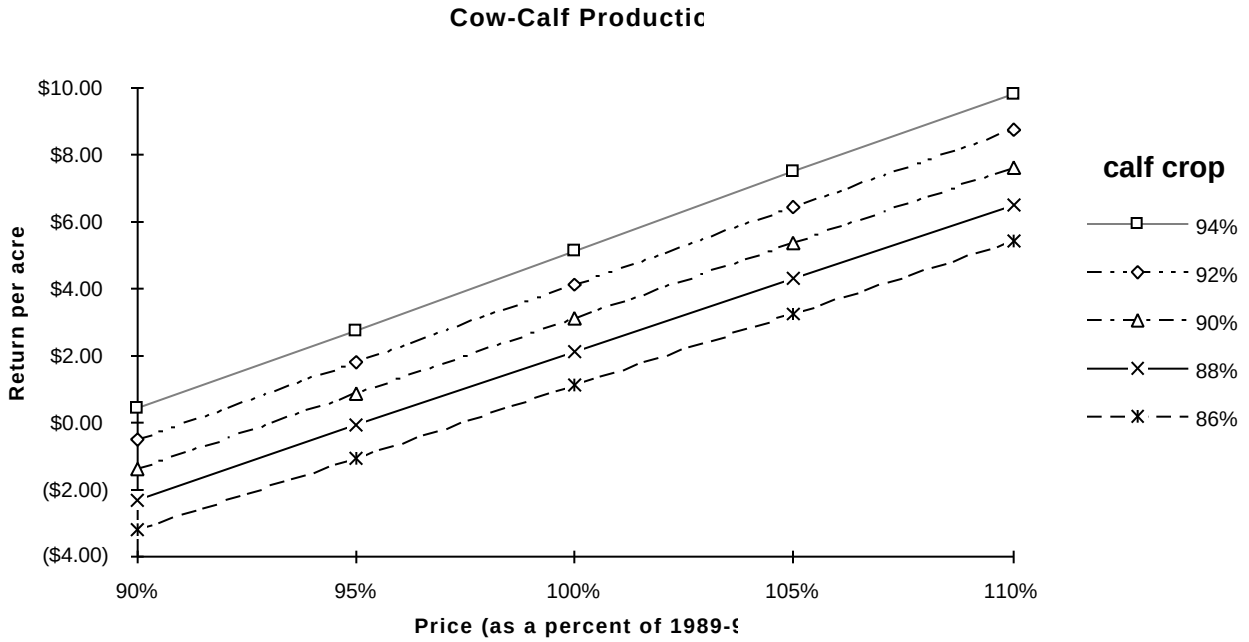
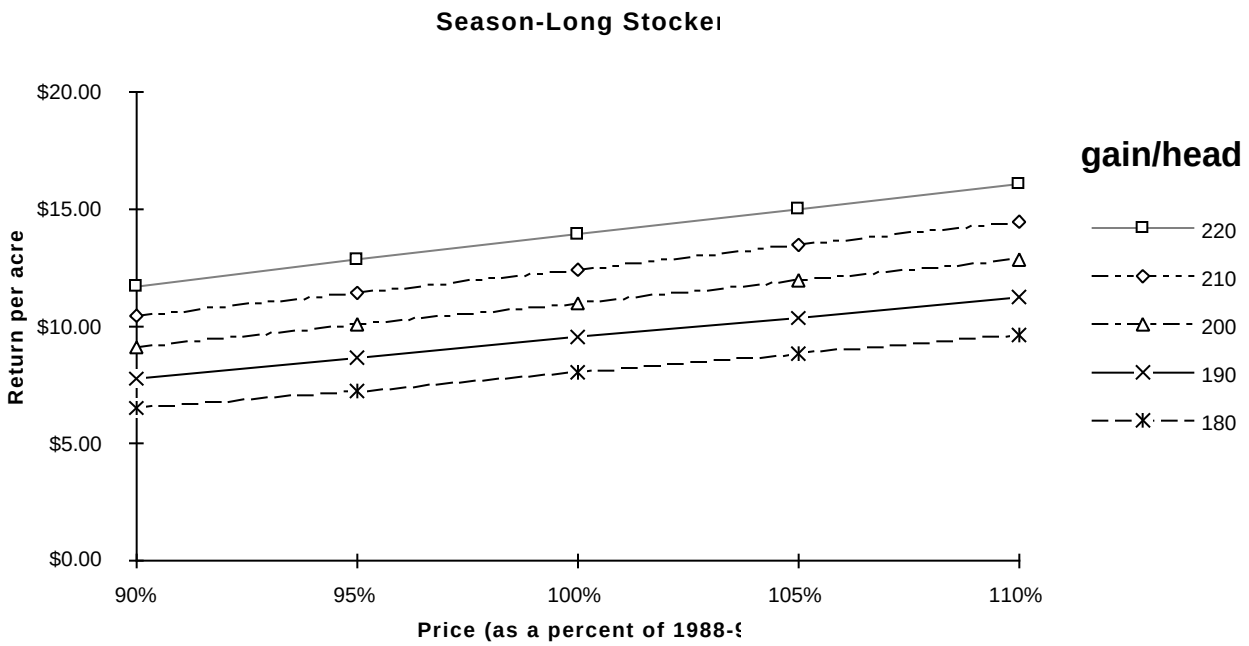


Figure 7 Sensitivity of cow-calf production returns per acre to price and calf crop. (Assumes no investments are needed.)

Stocker Price and Gain Sensitivity



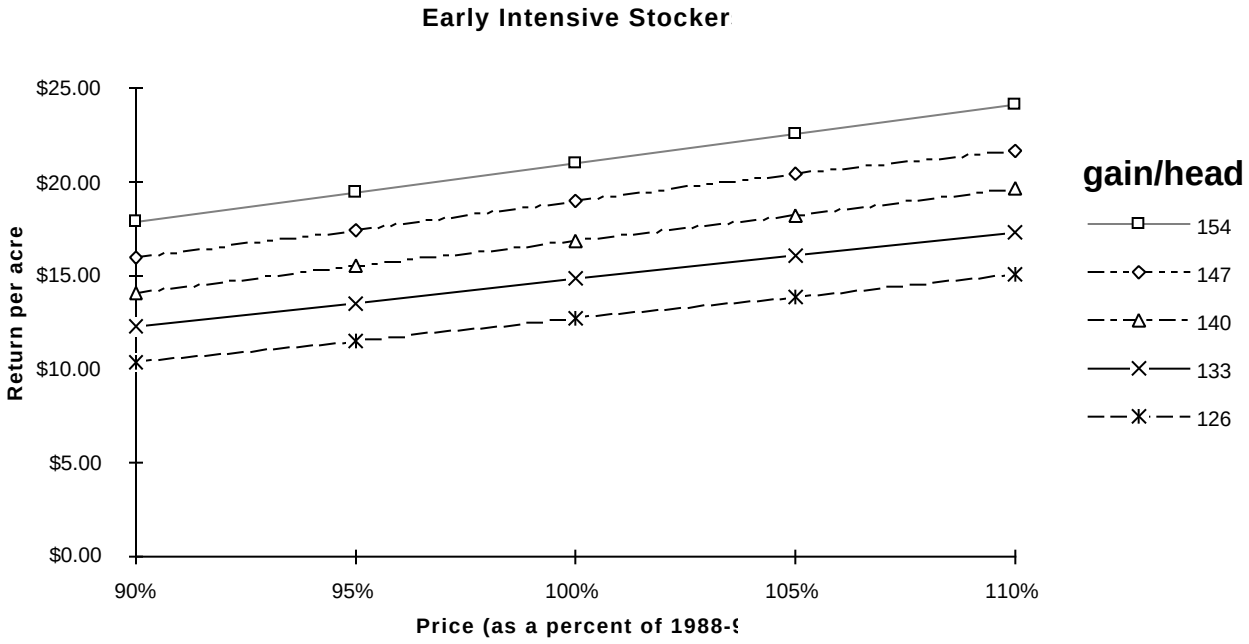


Figure 8 Sensitivity of stocker production returns per acre to gain and price. (Assumes no investments are needed.)

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MF-2078 March 1995

File Code:Crops & Soils. 2-3 & 3-3 MS 3-95—5M