THE WHEAT AND STOCKER CATTLE ANALYZER: A MICROCOMPUTER DECISION AID FOR EVALUATING WHEAT PRODUCTION AND STOCKER CATTLE GRAZING DECISIONS

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Abstract

The Wheat and Stocker Cattle Analyzer is a microcomputer decision aid for evaluating interrelated wheat production and stocker cattle grazing decisions under yield, weight gain, and price uncertainty. An important feature of the model is that wheat commodity program provisions are incorporated into the analysis. A wide range of alternatives including wheat production for grain only, owned stocker cattle grazing, and wheat pasture leasing can be evaluated by the program.

Key words: decision aid, computer software, risk analysis.

Stocker cattle grazing on wheat pasture is an important agricultural enterprise in the Southern Plains and the southeastern United States. A number of alternatives are available to wheat producers including (1) growing wheat for grain production with no stocker cattle grazing, (2) grazing stocker cattle on wheat pasture during the winter months and removing them in the early spring and harvesting wheat for grain, and (3) grazing stocker cattle on wheat pasture during the winter and spring, foregoing grain production.[1] If wheat pasture is grazed, several additional options also are available, including stocker cattle ownership and custom pasture lease arrangements. Outcomes of alternative wheat production and stocker cattle grazing decisions depend on a number of random variables. These variables include wheat yield, stocker cattle weight gain, wheat price, and early and late spring stocker cattle prices (the relevant stocker cattle price depends on whether winter or winter-and-spring grazing is being considered). Clearly this choice set and these uncertain factors create a complex decision environment for wheat producers.

Commodity program provisions of the 1985 farm bill increased the attractiveness of some stocker cattle grazing opportunities available to wheat producers. This bill authorized the Secretary of Agriculture to incorporate into commodity programs for wheat, feed grains, and rice a reduced planting alternative commonly referred to as the 50/92 option (Glaser). This was amended by the Omnibus Budget Reconciliation Act of 1987 to become a 0/92 option for wheat and feedgrains. Under these provisions, commodity program payments are not restricted to acreage planted for harvest, as they were under previous farm bills. For example, when a 50/92 option is in effect for wheat, a producer who plants for harvest between 50 and 92 percent of his farm's permitted acreage receives 92 percent of the deficiency payment that would have resulted if full permitted acreage had been planted for harvest.[2] Stated differently, as little as 50 percent of permitted acreage can be planted for harvest with only an 8 percent deficiency payment reduction. The same is true when a 0/92 option is in effect, except acreage

[1] The terms "wheat pasture grazing" and "stocker cattle grazing" are used interchangeably throughout this paper as are the related terms "wheat pasture graze-out" and "stocker cattle graze-out."

[2] At this point, two terms should be defined. Farm program *base acreage* for wheat is a farm's historically established wheat acreage—specifically the average wheat acreage planted or considered planted for harvest in the previous five crop years. *Permitted acreage* is base acreage less the acreage reduction requirement. Thus, permitted acreage is the maximum acreage that can be harvested under the wheat commodity program.

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planted for harvest can be reduced to zero with only an 8 percent deficiency payment loss. Importantly, stocker cattle grazing is an authorized use of land removed from grain production under these provisions.[3] Since the 1985 farm bill took effect, a 50/92 option was available for wheat in the 1986 and 1987 crop years, while a 0/92 option was offered in the 1988 and 1989 crop years. The Omnibus Budget Reconciliation Act of 1987 made available a 0/92 option for the 1990 crop year as well.

Clearly the reduced planting options of the 1985 farm bill make stocker cattle grazing in the spring period (wheat pasture graze-out) a more viable alternative. Under previous farm bills, the opportunity cost of graze-out included foregone grain production and loss of deficiency payments on all acreage grazed. Now the deficiency payment reduction is relatively small. While this offers enhanced opportunities for wheat producers, it further complicates the decision environment. Effective and complete evaluation of the available alternatives would be virtually impossible using simple budgeting techniques.

This paper describes a microcomputer decision aid—the Wheat and Stocker Cattle Analyzer—designed to help managers evaluate wheat and stocker cattle production alternatives. The Wheat and Stocker Cattle Analyzer is one of a new generation of decision aids, such as the Agricultural Risk Management Simulator (King *et al.*), that utilize enhanced microcomputer capabilities to analyze decisions under uncertainty. Explicitly incorporated into the analysis are uncertainty of wheat yields, stocker cattle rates of gain, wheat price, and stocker cattle prices. In addition, the Wheat and Stocker Cattle Analyzer incorporates commodity program provisions and payments into the analysis—a significant advance over the Agricultural Risk Management Simulator and other risk analysis software. The Wheat and Stocker Cattle Analyzer should help agricultural producers and farm management advisors to evaluate more thoroughly complex decisions under uncertainty. The model also should be useful in teaching concepts of decision making under uncertainty in both college classroom and extension settings.

MODEL STRUCTURE

The Wheat and Stocker Cattle Analyzer is a fully menu-driven program including an Inputs submodel, a Monte Carlo Simulation submodel, and an Analysis submodel. The Inputs and Analysis submodels are electronic spreadsheets (Lotus 1-2-3^{R}), while the Monte Carlo Simulation submodel is a compiled Fortran program. All data are entered and modified in the Inputs submodel to generate random samples of wheat yields, stocker cattle weight gain rates, wheat prices, and stocker cattle prices for use in the analysis. Data from the Inputs and Monte Carlo Simulation submodels are used in the Analysis submodel, which employs the probabilistic budgeting approach described by King *et al.* The Analysis submodel performs calculations and presents results to the user. Each of these submodels is described in more detail in the sections that follow.

INPUTS SUBMODEL

The main menu for the Inputs submodel is also the overall program control menu. It has six options: (1) wheat data entry, (2) owned stocker cattle data entry, (3) wheat pasture lease-out data entry, (4) yield, price, and gain relationships data entry, (5) analysis, and (6) quit. The analysis option initiates the results calculation process (explained later when the Analysis submodel is described). The quit option terminates the program. The following is a brief description of the other four menu options that lead to sections of the Inputs submodel.

Wheat Data Entry

The wheat data entry section of the Inputs submodel has four parts in which the user enters cash production costs, wheat yield probabilities, wheat price probabilities, and government program information. Cash costs are entered in an itemized budget format. Preharvest and harvest costs are separated so that harvest costs can be conditioned on yield and excluded if wheat pasture is grazed out. Importantly, data entered in this section should reflect cash costs of wheat grown for grain production; subsequent sections allow wheat cost adjustments to reflect changes due to winter or winter and spring stocker cattle grazing.

Wheat yield probabilities are assessed by the user on the screen shown in Figure 1. This screen employs a variable interval elicitation method (Huber) in which the user assesses five percentiles of the wheat yield distribution for the farm (example values are shown in this and subsequent screens to illustrate the linkage between the data entry sections). A similar screen is used to enter wheat price

[3] Grazing is restricted for a five-month period on acreage idled under these provisions. However, this restriction, in general, does not affect wheat pasture grazing because the restricted period is in the summer months, not during the time when wheat pasture is grazed.

Wheat Grain YIELD Probabilities		
What is the level that you believe there is a 5% (1 in 20) chance of your yield falling below? ======>	10	Bu/Acre
What is the level that you believe there is a 25% (1 in 4) chance of your yield falling below? ======>	22	Bu/Acre
What is the level that you believe there is an equal chance (50/50) of your field falling below? ======>	28	Bu/Acre
What is the level that you believe there is a 75% (3 in 4) chance of your yield falling below? ======>	35	Bu/Acre
What is the level that you believe there is a 95% (19 in 20) chance of your yield falling below? ======>	40	Bu/Acre
Instructions: Use the arrows keys to move up and down and the Return key to advance screens.		

Figure 1. Wheat Yield Probability Assessment Screen.

probabilities. A second screen is included in the wheat price probabilities subsection. On this screen the user estimates the association between his or her wheat price and the deficiency payment rate. This information is necessary so that randomly drawn prices, produced by the Monte Carlo Simulation submodel, can be associated with appropriate deficiency payment rates in the probabilistic budgeting process. The user is provided information including the national target price, the national loan rate, and the maximum possible deficiency payment rate. Given this information, the user is asked to indicate the expected deficiency payment rate associated with prices equal to the 5th, 50th, and 95th price percentiles previously entered in the wheat price elicitation screen. A linear interpolation process is used in the Analysis submodel to derive the expected deficiency payment rate for each of the random prices, which can range from the 5th to the 95th percentile values.[4]

Government program information is required for farms with wheat commodity program base acreage. These inputs include wheat base acreage, net cash costs on acreage conservation reserve and conservation use acreage, farm program payment yield, the county Commodity Credit Corporation loan rate, and the USDA projected deficiency payment rate.

Owned Stocker Cattle Data Entry

Cost data for owned stocker cattle are broken out into backgrounding cash costs, winter grazing cash costs, and graze-out cash costs.[5] Stocker cattle purchase price and payweight are entered in the backgrounding period subsection. Also entered are the number of days backgrounded, expected average daily gain while backgrounding, and backgrounding period percent death loss, as well as a number of itemized costs.

An itemized budgeting format is used for winter-grazing-period stocker cattle cash cost entries. The user also is given the opportunity to modify the wheat budget to reflect cost changes due to winter grazing. The screen on which these changes are made is shown in Figure 2. Also entered in this subsection are selling costs (hauling, sales commissions, etc.) for cattle sold at the end of the winter grazing period. Finally, the user is given the opportunity to adjust wheat yields to account for the effect of winter grazing.[6]

The spring grazing or graze-out period cash cost subsection follows the same format as that for the winter grazing period, except that no opportunity is given for further wheat yield adjustment (wheat pasture graze-out eliminates the possibility of grain harvest). The wheat cost budget, previously adjusted to reflect changes associated with winter grazing, is provided so that additional modifications can be made for wheat pasture graze-out.

Revenue data for owned stocker cattle may be entered for the winter grazing period only or for the winter and spring grazing periods, depending on the grazing strategy to be evaluated. Revenue-related

[4] Estimation of the association between local market prices and the national deficiency payment rate clearly is a difficult task. However, it is a difficulty inherent in the farm program that cannot be avoided if price uncertainty is to be incorporated into the analysis.

[5] The term "backgrounding" is used here to describe a preconditioning period when purchased cattle are prepared for placement on wheat pasture. During this time cattle may be placed on alternative pasture or confined in a dry lot.

[6] Experiment trials have shown mixed results concerning the effect of winter grazing on wheat grain yields. This feature of the program provides results that reflect the user's beliefs on this issue.

Changes in Wheat Budget due to WINTER GRAZING		
COSTS from WHEAT BUDGET		Change to
a. Seed (1.5 bu @ 9.6 $/bu) ($/AC)	14.40	14.40
b. Fall Fertilization ($/AC)	13.50	20.00
c. Spring Fertilization ($/AC)	14.87	14.87
d. Herbicide ($/AC)	5.25	0.00
e. Fuel & Lube Costs		
1. Irrigation Equipment ($/AC)	0.00	0.00
2. Other Machinery & Equipment ($/AC)	3.53	2.18
f. Repairs		
1. Irrigation Equipment ($/AC)	0.00	0.00
2. Other Machinery & Equipment ($/AC)	2.25	1.30
g. Hired Labor Cost		
1. Irrigation Equipment ($/AC)	0.00	0.00
2. Other Machinery & Equipment ($/AC)	4.80	3.29
h. Insecticide ($/AC)	6.00	5.26
i. Other Cash Outlays ($/AC)	0.00	0.00

Figure 2. Screen For Modifying Wheat Cash Costs To Reflect The Effect Of Stocker Cattle Grazing In The Winter Grazing Period.

inputs for each time period include (1) number of days in the grazing period, (2) stocking rate, (3) average daily gain probabilities, (4) stocker cattle selling price probabilities, and (5) price-weight adjustments. Number of days in the grazing period and stocking rate are straightforward, single-item entries. Average daily gain probabilities for each time period are entered in screens similar to those used for wheat yield (Figure 1) and wheat price probabilities.

Assessment of stocker cattle selling price probabilities is complicated by the uncertainty of selling weight (selling weight is a function of average daily gain, which is a random variable). It would be ambiguous to ask the user to enter selling price probabilities without specifying a weight. This is the purpose for the price-weight adjustment entries. An example of the selling price probability and price-weight adjustment entry process for the winter grazing period is given in Figures 3, 4, and 5. Figure 3 indicates a specific selling weight on which price probabilities are to be conditioned. This weight is derived as follows:

(1) Selling Weight = PW + (ADG1 * DAYS1) + (MADG2 * DAYS2)

where PW is purchase weight, ADG1 is average daily gain in the backgrounding period, DAYS1 is the number of days in the backgrounding period, MADG2 is median (50th percentile) average daily gain in the winter grazing period, and DAYS2 is the number of days in the winter grazing period. Selling price probabilities are entered in the screen shown in Figure 4. On the price-weight adjustments screen, Figure 5, the user estimates the median (50th percentile) prices associated with selling weights derived from the assessed 5th and 95th percentile average daily gains. The Analysis submodel uses these values and the median price based on the median average daily gain, in a linear interpolation process, to adjust randomly drawn prices (based on the median selling weight) to be consistent with selling weights derived from randomly drawn average daily gains.

Wheat Pasture Lease-Out Data Entry

The Wheat and Stocker Cattle Analyzer is designed to evaluate three common wheat pasture lease arrangements. One of these is referred to as leasing on a "dollar-per-hundredweight-per-month" basis. Under this arrangement the lease payment is calculated as follows:

(2) Lease Payment = IW * N * MOP * LR

where IW is the average incoming weight (in hundredweight) of cattle placed on pasture, N is the number of stocker cattle placed on pasture, MOP is the number of months the cattle are on pasture, and LR is the lease rate in dollars per hundredweight per month on pasture. A second leasing arrangement that can be analyzed is payment on a "dollar-per-pound-of-gain" basis. Under this arrangement cattle are weighed before placement on the wheat pasture and again when they are removed. The lease payment is the total weight gain multiplied by a fixed rate per pound of gain. The third lease arrangement is a fixed per-acre charge. Any of these leasing options can be analyzed for the winter or spring grazing periods. However, due to the number of calculations required, only one winter and spring lease combination can be analyzed in a single program execution.

Itemized cost inputs for the wheat pasture lease-out section are similar to those in the owned stocker cattle section, except that purchase and selling costs are not included. As in the owned stocker cattle

STOCKER SELLING PRICE - MARCH SELLING DATE
On the following screen enter price expectations for stocker cattle sold at the end of the WINTER GRAZING period (assumed to be March).
In making these estimates, assume a selling weight of 581 lbs.
Instructions: Press the Return key to advance screens.

Figure 3. Information Screen Indicating The Selling Weight Upon Which Selling Price Assessments Are To Be Conditioned

grazing section, the user is given the opportunity to adjust wheat costs for grazing in the winter and spring periods. Wheat yields may also be adjusted to account for the effect of winter grazing.

Revenue inputs in the wheat pasture lease-out section depend on the leasing arrangement selected. Inputs required to analyze leasing on a dollar-per-hundredweight-per-month basis include (1) average incoming weight, (2) the dollar-per-hundredweight-per-month charge, (3) number of days on pasture, and (4) average stocking rate for the grazing period. Revenue inputs required to analyze wheat pasture leasing on a dollar-per-pound-of-gain basis are the same as those for leasing on a dollar-per-hundredweight-per-month basis, except the charge is based on weight gain, and a stocker cattle average daily gain distribution is assessed using the same procedure as in the owned stocker cattle section. Only two revenue-related inputs are required to analyze wheat pasture lease-out on a per-acre basis. These are the average stocking rate for the grazing period and the per-acre charge.

Yield, Gain, and Price Relationships Data Entry

The Yield, Gain, and Price Relationships Data Entry section obtains the user's assessments of the association between each pair of random variables included in the analysis (for example, the association between wheat yield and stocker cattle weight gain rates). An intuitive approach is taken to obtain these assessments, which are used to assign pairwise correlation coefficients to the variables. Five alternative relationships are described in an information screen. These are (1) a strong negative relationship, (2) a moderate negative relationship, (3) unrelated to each other, (4) a moderate positive relationship, and (5) a strong positive relationship. Relationships are then entered on the screen shown in Figure 6. Correlation coefficients assigned to these relationships by the program are -0.9 for strong negative relationship, -0.5 for moderate negative relationship, 0.0 for unrelated, +0.5 for moderate positive relationship, and +0.9 for strong positive relationship. Importantly, an error checking procedure prevents the user from specifying a set of correlations that is technically impossible.

Clearly, this process does not permit the entry of precise correlation estimates. However, it does provide reasonable distinction between levels of association in a way that should be more appealing to the average user than direct correlation coefficient assessment.

MONTE CARLO SIMULATION SUBMODEL

The Monte Carlo Simulation submodel is a modified version of the Monte Carlo subroutine from the Firm Level Policy Simulation Model (FLIPSIM)

Stocker SELLING PRICE probabilities-MARCH Selling Date: 581 lbs.		
What is the level that you believe there is a 5% (1 in 20) chance of your yield falling below? ======>	78.00	$/Cwt
What is the level that you believe there is a 25% (1 in 4) chance of your yield falling below? ======>	82.00	$/Cwt
What is the level that you believe there is an equal chance (50/50) of your field falling below? ======>	85.00	$/Cwt
What is the level that you believe there is a 75% (3 in 4) chance of your yield falling below? ======>	88.00	$/Cwt
What is the level that you believe there is a 95% (19 in 20) chance of your yield falling below? ======>	92.00	$/Cwt
Instructions: Use the arrows keys to move up and down and the Return key to advance screens.		

Figure 4. March (End of Winter Grazing Period) Selling Price Assessment Screen.

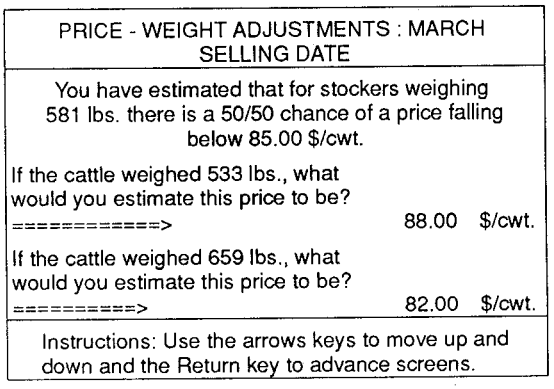

Figure 5. Price - Weight Adjustment Entry Screen for the Winter Grazing Period.

developed by Richardson and Nixon. This submodel uses wheat yield, stocker cattle average daily gain, wheat price, and stocker cattle price probabilities along with yield, price, and gain relationships entered into the inputs submodel to generate 100 sample observations for each of the random variables included in the analysis. Associations between the sample values approximately preserve the correlations reflected in the values entered in the Yield, Price, and Gains section of the Inputs submodel.

ANALYSIS SUBMODEL

The Analysis submodel, a Lotus spreadsheet, is initiated from the program control menu–the main menu in the Inputs submodel. This submodel automatically retrieves data from the inputs and Monte Carlo Simulation submodels, performs calculations, and summarizes results for production alternatives chosen for analysis by the user. Space does not permit presentation of example results summaries for the wide range of wheat and stocker cattle production alternatives that can be analyzed by the model. Therefore, two examples are used to illustrate the results produced and the format in which these results are presented to the user. These examples are for (1) wheat production for grain only with no wheat pasture grazing and (2) wheat production with owned stocker cattle grazing during both the winter and spring grazing periods.

Example Results for Wheat Production Only

Growing wheat for grain production with no wheat pasture grazing is an alternative that is always available to the producer. Results for this alternative are calculated and summarized in every run of the Wheat and Stocker Cattle Analyzer. An explanation screen describes four strategies for which results are produced. These are (1) plant and harvest wheat base acreage with no farm program participation, (2) plant and harvest permitted acreage, (3) plant and

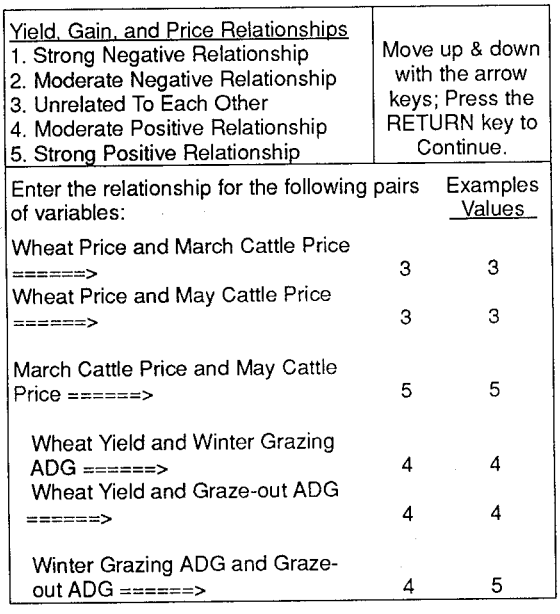

Figure 6. Yield, Gain, and Price Relationship Entry Screen.

harvest 50 percent of permitted acreage under the 0/92 farm program provision, and (4) plant no acreage under the 0/92 farm program provision. These strategies are selected to reflect the effects of farm program participation alternatives; however, use of the program by a wheat producer who has no wheat base acreage or who chooses to plant for harvest acreage in excess of the farm's wheat base is not precluded, although some of the results produced by the model may not be meaningful for such a user.

An example analysis summary screen for the wheat-production-only alternative is shown in Figure 7. Input values underlying these results were estimated to reflect the decision environment for a Texas high plains wheat farm in the fall of 1988. Although various sources of information, such as Extension Service budgets and October 1988 calf prices as well as the October 1988 prices for the May 1989 stocker cattle futures contract and the July 1989 wheat futures contract, were used in constructing the examples presented here, all the input values—especially price and yield distributions—are subjective in nature. Therefore, the results should be regarded as illustrative of the software output, not as a general indication of the merits of the strategies analyzed.

The results in Figure 7 would probably suggest to most wheat producers that the best wheat-for-grain-only production strategy is to plant and harvest permitted acreage. The expected net cash return for this strategy is substantially larger than expected returns for the other three alternatives analyzed. Also, the 25th, 50th, 75th, and 95th percentiles of

the net cash return distribution exceed the corresponding percentiles of the distributions for the other strategies. The only indication of superiority of other strategies over planting and harvesting permitted acreage are the 5th percentile values for planting and harvesting 50 percent of permitted acreage or planting and harvesting no acreage, under the 0/92 provision. In the worst of circumstances, outcomes for these strategies are better than the outcome for producing at the permitted acreage level. A high degree of risk aversion would, however, be required to forego the potential benefits of production at the permitted acreage level to avoid this slightly increased loss potential.

One feature of the results in Figure 7 that should be explained is the returns percentiles for the no-production alternative. Under this option net cash returns uncertainty is the result of the unknown deficiency payment rate. A guaranteed minimum deficiency payment rate is provided for acreage removed from production under the 0/92 provision. This rate is equal to the USDA projected deficiency payment rate. Producers who take the 0/92 option receive the larger of the guaranteed minimum or the calculated deficiency payment rate on acreage idled under the provision. The effect of the guaranteed minimum deficiency payment rate is apparent in the net cash returns distribution for the no-production strategy. Returns at and below the 50th percentile are based on the guaranteed minimum deficiency payment rate. Higher deficiency payment rates (associated with low prices) are reflected in the 75th and 95th percentile net cash returns values.

Example Results for Wheat Production With Winter and Spring Grazing of Owned Stocker Cattle

As indicated earlier, stocker cattle graze-out is a potentially more attractive alternative under the 50/92 and 0/92 options of the 1985 farm bill. This production alternative is used as a second example of the results produced by the Wheat and Stocker Cattle Analyzer. An explanation screen describes three graze-out strategies analyzed by the model. All three strategies assume that wheat pasture is stocked to capacity during the winter grazing period and that no additional cattle are purchased in the spring. The differences between the strategies are in acreage planted and the number of stocker cattle grazed out. Specifically, the strategies are (1) plant base acreage and harvest permitted acreage, grazing out as many stocker cattle as possible on the acreage not harvested and selling the remaining cattle (if any) at the end of the winter grazing period (level 1); (2) plant base acreage and graze out all stocker cattle, harvesting acreage not required for spring grazing (level 2); (3) plant permitted acreage and graze out all stocker cattle pastured through the winter, harvesting the acreage not required for spring grazing (level 3). The first strategy is primarily a grain production and winter grazing option, with spring grazing limited to acreage idled under the acreage reduction requirements (10 percent of wheat base acreage in 1989). The other two strategies emphasize wheat pasture graze-out, with grain production on any acreage not required for spring stocker cattle grazing.

WHEAT HARVEST ONLY - NO STOCKERS

	Acres Planted & Harvested			
	Base	Permitted	50% of Permitted	0% of Permitted
# of Acres Harvested	500	450	225	0
Expected Return	2,298.67	12,025.82	5,375.76	223.39
Percentiles				
5	(17,040.29)	(6,956.26)	(4,569.33)	(771.20)
25	(6,367.94)	7,380.74	(2,692.05)	(771.20)
50	1,756.11	12,239.70	5,560.75	(771.20)
75	9,235.21	18,575.30	8,983.50	(214.78)
95	23,437.11	27,131.91	12,588.52	4,792.96

Note: Assumes you plant TO WHEAT only the acreage necessary for wheat harvest. Any required ACR & CUA is maintained.

Figure 7. Examples Analysis Summary Screen for the Wheat-Production-Only Alternative.

An example analysis summary screen for wheat production with winter and spring stocker cattle grazing is shown in Figure 8. Again, as in Figure 7, the strategy results are completely dependent upon localized and subjective input data and should be viewed only as an illustration of the software output. The upper portion of the screen in Figure 8 summarizes the strategies. Information provided includes planted and harvested acreage, the percent of permitted acreage harvested, and the number of acres grazed out, as well as the number of stocker cattle placed on pasture, the number sold at the end of the winter grazing period, and the number grazed out. These values are derived from such input data as winter and spring stocking rates and stocker cattle death loss estimates for the backgrounding, winter grazing, and spring grazing periods.

Analysis results are presented in the lower section of the summary screen. Expected net cash returns for all these strategies are significantly larger than for the wheat-production-only strategies summarized in Figure 9. Expected returns for the first two strategies (levels 1 and 2) are almost equal. Somewhat greater risk is indicated for level 2, which emphasizes wheat pasture graze-out, than for level 1, which emphasizes grain production and winter stocker cattle grazing. Expected and median returns for the third strategy are somewhat lower. The results for all these strategies, however, are similar enough that choices would likely differ among decision makers with different risk attitudes.

MODEL UPDATING

A unique and important feature of the Wheat and Stocker Cattle Analyzer is the incorporation of complex commodity program provisions and resulting payments into a risk-analysis framework. Given the importance of these payments in determining the outcomes of alternative decisions, this is a significant advance. The cost of this advance is the requirement for annual updating. The difficulty of this updating in a given year will depend on the extent of commodity program changes. Major revision may be required when a new farm bill takes effect—in this case for the 1991 crop year. However, less comprehensive annual commodity program changes such as those that have occurred under the 1985 farm bill can be easily incorporated into the model. This is facilitated by the use of electronic spreadsheet technology rather than coded programming languages.

Two years of experience provided an indication of the ease with which annual commodity program modifications can be incorporated into the Wheat and Stocker Cattle Analyzer. Provisions of the 1988 wheat program were incorporated into the initial version of the model. The program was updated in 1989 and 1990 to incorporate wheat program changes. These updatings required approximately two weeks for revision and validation.

HARDWARE REQUIREMENTS AND AVAILABILITY

The Wheat and Stocker Cattle Analyzer can be run on IBM PC, XT, and AT (or compatible) microcomputers using MS-DOS or PC-DOS version 2.0 or higher and Lotus 1-2-3 version 2.01 and higher. A minimum of 640K of random access memory is required, with 540K free after boot-up. A hard disk also is needed to run the program. The model is available from the Texas Agricultural Extension Service at the cost of $35.

WHEAT HARVEST & OWNED STOCKERS - GRAZE-OUT

	Level 1	Level 2	Level 3
# Acres Planted	500	500	450
# Acres Harvested	450	253	228
% of Permitted	100.00%	56.25%	50.63%
# Acres Grazed Out	50	247	222
# Stockers in Fall	250	250	225
# Stocker Sold-March	197	0	0
# Stockers Graze-out	51	246	221
Expected Return	21,676.37	21,689.75	19,543.12
Percentiles			
5	(5,216.71)	(11,108.52)	(8,208.38)
25	7,875.10	6,460.75	5,819.58
50	23,228.41	19,053.02	17,739.68
75	33,949.00	36,325.42	33,875.22
95	54,091.13	60,767.46	61,524.12

Figure 8. Example Summary Screen for Wheat Production With Winter And Spring (Graze-Out) Stocker Cattle Grazing.

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