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ANALYZING RISK-INCOME PERFORMANCE WITH ADAPTIVE VS. NON-ADAPTIVE ENTERPRISE MIX DECISIONS*

by

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ABSTRACT

Risk-income benefits of revising a firm's enterprise mix in response to updated information is examined from the standpoint of historical income variability; and frequency and amount of target-loss. The impact of improved information on a firm's risk status appears to depend heavily upon the type of risk expression used.

ANALYZING RISK-INCOME PERFORMANCE WITH ADAPTIVE VS. NON-ADAPTIVE ENTERPRISE MIX DECISIONS

Farmers and ranchers operate in a highly risky environment of imperfect knowledge. Improved management of updated information in terms of developing more current or accurate expectations for an uncertain future is one of several considerations for effective risk management. Decisions over time can often be adapted to changing conditions with access and usage of new and improved information.

The purpose of this paper is to examine risk-income benefits of revising a firm's enterprise mix in response to updated revenue information. Specifically, a firm's risk-income performance is evaluated over time with regard to using fixed-type versus various types of updated revenue expectations for making annual enterprise mix decisions. As discussed in greater detail below, the impact of using improved information with regard to firm-level risk is examined with respect to several types of risk expression including: (1) historical income variability on a whole-farm basis; and (2) the frequency and amount that annual revenue misses a designated financial target. Risk as measured by these selected criteria is then compared with reference to alternative strategies of either employing the same enterprise mix over time as opposed to revising farm enterprise plans on an annual basis (in response to updated information on revenue expectations).

Example Farm for Analysis

A profit-maximizing linear programming (LP) model was developed for an example irrigated 400-acre farm in central Wyoming having necessary resources to produce a mix of irrigated crops (dry beans, barley and corn) as well as having a 500-head feedlot for a warm-up steer feeding enterprise (Table 1).

Technical constraints are included for acreage of irrigated land and seasonal labor requirements as described in Agee [1], as well as upper limits for crop acreage rotation and feedlot capacity. With the feeding program, 400 lb. calves are purchased in the fall (November 1) and wintered on a warm-up ration for sale as 700 lb. yearlings the following April [2].

The LP model is designed to test the financial performance of the example farm over time. Specifically, it initially derives the optimum mix of crops and steers in terms of maximum "expected" net farm revenue (objective function row 1, Table 1), and then calculates net farm revenue that actually occurs in each subsequent year over a 12-year test period. To accomplish this, annual gross margins (i.e. returns over variable costs) are developed for crops ($/acre) and steers ($/head) over the designated 12-year period as shown in Table 1 (rows 21-32). Comparison of expected versus actual revenue can provide some indication of success in the management planning and control functions regarding how far actual outcomes (realized net revenue) deviate from planned results (expected net revenue).

For crops, actual historical gross margins are developed from annual data series of area-average yields and prices [5, 6] and a time series of variable costs based on published Extension budgets [1]. For the steer enterprise, gross margins are based on the April sale value of 700 lb. steers--minus the previous November purchase cost of 400 lb. calves, feed, and variable non-feed costs [3, 2]. Resulting gross margins for crops and steers (as shown in rows 21-32 of Table 1) are converted to real 1985 dollars with the GNP price deflator to remove the effects of inflation.

Annual Performance from Non-updated Revenue Expectations

The performance of the example farm is initially simulated with the LP model assuming a situation of "fixed" revenue expectations resulting in a

stable combination of enterprises over the 12-year test period. As shown in Table 2 (col. 1-4), "expected" gross margins for dry beans ($129), barley ($85), corn ($113) and steers ($32) remain constant over the entire 12-year period. Expected enterprise gross margins for the fixed expectation setting are based, in this case, on respective three-year averages of gross margins observed prior to 1974 (1971-73). Incorporating the above noted gross margins into the LP objective function (row 1 of Table 1)--yields a stable mix of dry beans (131 ac.), barley (109 ac.), corn (160 ac.) and steers (463 hd.) over the 12-year period as shown in Table 2 (col. 5-8).

This particular enterprise mix, in conjunction with actual gross margins included in the LP model (rows 21-32 of Table 1) provides the basis for deriving actual Net Farm Revenue actually realized each year of the test period for steers, crops and the total farm as shown in Table 2 (col. 9-11). In contrast to "actual" net revenue (col. 11), "expected" net revenue (col. 12) corresponds to the objective function value of annual LP solutions based on the expected gross margins (col. 1-4).

The annual margin of error between realized versus expected net revenue (col. 13) reflects the degree of success in matching planned expectations with actual revenue outcomes. From column 13, it can be noted that actual revenue fell below expected revenue in seven of the 12 years in terms of negative errors ranging from -$754 to -$12,152. Conversely, actual results exceeded expectations in five of 12 years with positive errors ranging from $17,778 to $101,873. In this setting, selected years of large losses from placing steers in poor years contributed greatly to years of negative errors (where actual revenue fell short of expectations).

Annual Performance From Updated Revenue Expectations

Annual performance based on updated revenue expectations is examined under three different settings: two cases of imperfect knowledge (Tables 3 and 4) and one case of perfect knowledge (Table 5). In the first case (Table 3), November 1st projections of steer returns (for the following April of each year) are based on the sale price of yearling steers observed the previous April (i.e. a one-year lag sale price). In the second case (Table 4), projected returns are based on USDA outlook prices for spring sale of yearling steers as published each October just prior to deciding on November 1st placement of feeder calves [4].

In both cases of imperfect knowledge, expected gross margins for "crops" are based on moving three-year average gross margins for years prior to the current decision year. For example, expected gross margins for 1974 are based on the prior 1971-73 averages, 1975 expected gross margins are based on the prior 1972-74 averages, etc. Similar to the fixed expectation scenario described above, updated expectations are also developed only on the basis of imperfect revenue information that is known just prior to establishing the optimum LP enterprise mix based on these expectations. As a result of these yearly updated revenue expectations, a different revised LP enterprise mix is developed each year (col. 5-8, Tables 3 and 4) from 1974-1985. Each updated enterprise mix in turn becomes the basis for computing actual realized net farm revenue in each respective year (col. 9-11, Tables 3 and 4).

In order to provide an upper limit benchmark of performance for the example farm, a parallel analysis was conducted to represent an artificial environment of perfect knowledge (Table 5). In this setting "actual" gross margins were used in the LP objective function as the basis for annual updates of revenue expectations and enterprise combinations. This in turn results in actual net farm revenue (col. 11) corresponding to that which was

expected (col. 12) and hence an annual error factor of zero in all twelve years (col. 13).

Results of Comparative Revenue Performance

Given the above described scenarios for adapting annual enterprise mix decisions in response to different types of revenue expectations--the performance of the model farm is initially evaluated with respect to average net farm revenue realized over the 12-year test period (Table 6).

From Table 6, the option of maintaining a stable enterprise mix (based on fixed expectations) performs the worst relative to other settings in terms of 12-year average revenue ($100,429), which is far below the best possible amount ($124,879) associated with adapting the enterprise mix with updated perfect information. A large portion of this difference can be attributed to erratic income performance of the steer enterprise as shown by comparing annual steer revenues between Tables 2 and 5 (col. 9). Specifically, with the fixed scenario steers showed a loss in six of the 12 years, contributing to a 12-year average loss (-$2,585) which is $18,046 below the maximum attainable average ($15,461) under perfect knowledge (Table 6). With the perfect knowledge setting, steers were sold and realized profit in only six of 12 years, but moreover were not placed in the other six years when losses would have been incurred. Some benefit of higher crop revenue was also realized from updating with perfect knowledge ($109,418) versus maintaining a stable crop mix ($103,014).

From Table 6, the two settings involving updated revenue expectations under "imperfect" knowledge (one-year lag and USDA outlook steer prices) show intermediate amounts of average revenue ($103,686 and $116,932) over the 12-year period. Further inspection of average steer revenue associated with these two cases indicates the benefit of using revised price expectations is

greatly dependent upon the type of information. For example, even though using a one-year lag sale price to project steer revenue was not expected to perform well per se, it performed even worse in this case than simply feeding steers in each of the 12 years. As shown in Table 3, returns from steers were negative in three of 12 years (1975, 1977 and 1980), and moreover, substantial profit opportunities were missed in three additional years (1976, 1978 and 1979). As a result, 12-year average loss from steers given the one-year lag price scenario was $1,457 worse than the fixed scenario of placing steers each year as shown in Table 6 (-$4,042 vs. -$2,585). In contrast, using updated USDA outlook prices, as opposed to one-year lag prices, results in considerable improvement in whole-farm revenue ($116,932 vs. $103,686). This is largely the result of better quality information provided by USDA projections, thus promoting higher average steer revenue ($10,997 vs. -$4,042).

Results of Comparative Risk Performance

Performance of the example farm is next considered in terms of selected measures of risk and variability, including: (1) historical standard deviation of net farm revenue over the 12-year period; and (2) frequency and amount that annual revenue falls below a designated financial target (Table 6). Comparing risk performance among the alternative settings for revenue expectations in Table 6, shows their relative status can be dependent upon the particular type of risk measure employed. In the context of historial income variability, the lowest revenue option (non-updated fixed expectations) could be considered least risky having the lowest standard deviation of $42,988. Conversely, the highest revenue setting (perfect knowledge) is considered most risky having the highest standard deviation of $54,904.

Although most will agree that considering risk exposure is important, there is not always complete agreement on how risk or its consequences should be evaluated. As an alternative to associating risk with historical income variability, risk can also be considered in a "chance and amount" of loss context. With this approach, variation of income from high to low amounts is not a major concern per se. Specifically, low income as opposed to high income events are considered as a threat or source of risk.

With this setting, it is necessary to establish a threshold of target income to represent some disaster level, below which adverse financial consequences might occur. Selection of a specific target is arbitrary and would be unique for each individual farm and its financial situation. For example, the $100,000 target used in this analysis could represent the minimum amount of annual income required to meet annual fixed cash obligations. The related measures of risk in this context, "frequency" (years in 12) and "total amount" that annual revenue falls below the specified $100,000 target are shown at the bottom of Table 6.

With these types of measures, the ranking of the alternative settings for revenue expectations is found to be opposite of using historical income variability as a measure of risk. Specifically, the higher revenue settings which could be considered more risky in terms of income variability are now shown to be less risky in a chance and amount of loss context. For example, compared to the non-updated case, the updated USDA outlook scenario renders substantially less risk from a chance and amount of loss standpoint, even though it shows higher income variability. Specifically, it misses the $100,000 target by a total of only $134,178 instead of $205,639 and in only four years instead of seven years in 12. In addition, the perfect knowledge setting which was considered most risky in terms of income variability is now shown to be least risky in terms of fewest deviations from the $100,000

target ($126,615). Therefore, with risk considered in a target loss context, higher revenue as well as reduced risk is associated with the usage of better updated information in this example.

Conclusions

Historical risk-income performance is shown to be dependent upon both the quality of information used in developing revenue expectations, and in addition, on how risk is actually considered or evaluated over time. Using historical income variability (as opposed to target loss) as a risk expression, appeared to be at odds in this case with the concept that using better information for adaptive decisions should result in not only higher returns, but reduced risk exposure as well. Higher income options, in spite of sometimes being more variable from a historical standpoint may often reduce the chance of falling below critical income targets which are necessary for continued firm survival. Hence, any adverse effects associated with courses of action promoting higher variability over time should be carefully weighed against potential benefits of higher income for financial well being. This can be especially true as managers use improved information as a basis for decisions which promise to increase not only income over time, but its historical variability as well.

Table 1. Linear Programming Tableau for Example Irrigated Farm.

		Enterprise Activities				Net Farm Revenue Actually Realized												
	Rows	(ac) Dry Beans	(ac) Malt Barley	(ac) Corn	(hd) Steers	($) 1974 Rev	($) 1975 Rev	($) 1976 Rev	($) 1977 Rev	($) 1978 Rev	($) 1979 Rev	($) 1980 Rev	($) 1981 Rev	($) 1982 Rev	($) 1983 Rev	($) 1984 Rev	($) 1985 Rev	Constraints
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
1)	Exp. Net Rev.	129	85	113	32													
2)	Land (ac)	1	1	1														= 400
	Labor																	
3)	Mar-2 (hr)	.218	1.920	.445	.33													< 462
4)	Apr-1 (hr)	.754	.341	.842	.33													< 462
5)	Apr-2 (hr)	.563	.503	.881	.33													< 462
6)	May-1 (hr)	.601	.753	.384														< 462
7)	May-2 (hr)	.472	.052	.334														< 462
8)	Jun-1 (hr)	1.760	.402	1.172														< 462
9)	Jun-2 (hr)	1.312	.449	.250														< 462
10)	Jul-1 (hr)	.989	.402	.296														< 462
11)	Jul-2 (hr)	.942	.355	.246														< 462
12)	Aug-1 (hr)	.943	.893	.250														< 462
13)	Aug-2 (hr)	1.336		.122														< 462
14)	Sep-1 (hr)	.907		.010														< 462
15)	Sep-2 (hr)	.277		.959														< 462
16)	Oct-1 (hr)			.924														< 462
	Upper Limits																	
17)	Beans (ac)	1																< 160
18)	Barley (ac)		1															< 160
19)	Corn (ac)			1														< 160
20)	Steers (hd)				1													< 500
	Realized Gross Margins																	
21)	1974 ($)	781	457	336	-207	1												= 0
22)	1975 ($)	551	538	224	-42		1											= 0
23)	1976 ($)	266	347	209	35			1										= 0
24)	1977 ($)	417	215	162	-15				1									= 0
25)	1978 ($)	272	246	151	127					1								= 0
26)	1979 ($)	375	168	190	190						1							= 0
27)	1980 ($)	478	226	250	-130							1						= 0
28)	1981 ($)	406	178	147	-79								1					= 0
29)	1982 ($)	90	116	156	25									1				= 0
30)	1983 ($)	246	152	229	25										1			= 0
31)	1984 ($)	138	126	127	5											1		= 0
32)	1985 ($)	189	130	124	-1												1	= 0

Table 2. Realized Enterprise Combinations and Annual Net Farm Revenue (Realized vs. Expected) With Expected Enterprise Gross Margins Based on Fixed Non-Updated 3-Year Average Gross Margins (1971-73).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Expected Enterprise Gross Margins				Realized Enterprise Combinations[a/]				Net Farm Revenue				
									Actually Realized[b/]			Expected[c/]	Error
Year	Dry Beans	Malt Barley	Corn	Steers	Dry Beans	Malt Barley	Corn	Steers	Steers	Crops	Crops and Steers	Crops and Steers	Realized -minus- Expected
	---$/ac---			$/hd	---ac---			hd	---$---			$	$
1974	129	85	113	32	131	109	160	463	-95,841	205,884	110,043	122,195	-12,152
1975	129	85	113	32	131	109	160	463	-19,446	166,663	147,217	111,270	35,947
1976	129	85	113	32	131	109	160	463	16,205	106,109	122,314	104,536	17,778
1977	129	85	113	32	131	109	160	463	-6,945	103,982	97,037	97,980	-943
1978	129	85	113	32	131	109	160	463	58,801	86,606	145,407	91,365	54,042
1979	129	85	113	32	131	109	160	463	87,970	97,837	185,807	83,924	101,873
1980	129	85	113	32	131	109	160	463	-60,190	127,252	67,062	76,955	-9,893
1981	129	85	113	32	131	109	160	463	-36,577	96,108	59,531	70,163	-10,632
1982	129	85	113	32	131	109	160	463	11,575	49,394	60,969	65,970	-5,001
1983	129	85	113	32	131	109	160	463	11,575	85,434	97,009	63,549	33,460
1984	129	85	113	32	131	109	160	463	2,315	52,132	54,447	61,009	-6,562
1985	129	85	113	32	131	109	160	463	-463	58,769	58,306	59,060	-754

a/ Realized enterprise combinations are optimal linear programming solutions resulting from expected enterprise gross margins.

b/ Realized Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with enterprise gross margins that actually occur in respective years (shown in Table 1).

c/ Expected Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with expected enterprise gross margins (cols. 1-4) and therefore correspond to optimal linear programming objective function values (expressed in real 1985 dollars).

Table 3. Realized Enterprise Combinations and Annual Net Farm Revenue (Realized vs. Expected) With Expected Enterprise Gross Margins Based on Updated 3-Year Average Gross Margins (for Crops) and Updated 1-Year Lag Prices (for Steers).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Expected Enterprise Gross Margins				Realized Enterprise Combinations[a/]				Net Farm Revenue				
									Actually Realized[b/]			Expected[c/]	Error
Year	Dry Beans	Malt Barley	Corn	Steers	Dry Beans	Malt Barley	Corn	Steers	Steers	Crops	Crops and Steers	Crops and Steers	Realized -minus- Expected
	---$/ac---			$/hd	---ac---			hd	---$---			$	$
1974	129	85	113	-26	131	109	160	--	--	205,884	205,884	91,541	114,343
1975	223	137	143	26	156	128	116	395	-16,590	180,804	164,214	149,100	15,114
1976	288	198	155	-58	160	160	80	--	--	114,800	114,800	159,583	-44,783
1977	273	234	133	21	160	160	80	255	-3,825	114,080	110,255	161,114	-50,859
1978	231	204	112	-28	160	160	80	--	--	94,960	94,960	121,532	-26,572
1979	192	162	105	-59	160	160	80	--	--	102,080	102,080	92,422	9,658
1980	230	136	110	16	160	132	108	380	-49,400	133,312	83,912	94,744	-10,832
1981	269	150	141	-64	160	160	80	--	--	105,200	105,200	93,044	12,156
1982	324	147	150	24	160	132	108	380	9,500	46,560	56,060	107,862	-51,802
1983	263	142	152	19	160	132	108	380	9,500	84,156	93,656	90,879	2,777
1984	217	132	159	20	131	109	160	463	2,315	52,132	54,447	80,073	-25,626
1985	147	122	158	-8	131	109	160	--	--	58,769	58,769	57,835	934

a/ Realized enterprise combinations are optimal linear programming solutions resulting from expected enterprise gross margins.

b/ Realized Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with enterprise gross margins that actually occur in respective years (shown in Table 1).

c/ Expected Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with expected enterprise gross margins (cols. 1-4) and therefore correspond to optimal linear programming objective function values (expressed in real 1985 dollars).

Table 4. Realized Enterprise Combinations and Annual Net Farm Revenue (Realized vs. Expected) With Expected Enterprise Gross Margins Based on Updated 3-Year Average Gross Margins (for Crops) and Updated USDA Outlook Prices (for Steers).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Expected Enterprise Gross Margins				Realized Enterprise Combinations[a/]				Net Farm Revenue: Actually Realized[b/]			Expected[c/]	Error
Year	Dry Beans	Malt Barley	Corn	Steers	Dry Beans	Malt Barley	Corn	Steers	Steers	Crops	Crops and Steers	Crops and Steers	Realized -minus- Expected
	$/ac			$/hd	ac			hd	$			$	$
1974	129	85	113	-51	131	109	160	--	--	205,884	205,884	91,541	114,343
1975	223	137	143	61	131	109	160	463	-19,446	166,663	147,217	179,392	-32,175
1976	288	198	155	46	157	129	114	392	13,720	110,351	124,071	188,434	-64,363
1977	273	234	133	34	160	132	108	380	-5,700	112,596	106,896	168,972	-62,076
1978	231	204	112	29	160	132	108	380	48,260	92,300	140,560	134,595	5,965
1979	192	162	105	28	160	132	108	380	72,200	102,696	174,896	105,273	69,623
1980	230	136	110	-6	160	160	80	--	--	132,640	132,640	87,770	44,870
1981	269	150	141	-5	160	160	80	--	--	105,200	105,200	93,044	12,156
1982	324	147	150	36	160	132	108	380	9,500	46,560	56,060	112,956	-56,896
1983	263	142	152	47	131	109	160	463	11,575	85,434	97,009	103,309	-6,300
1984	217	132	159	64	131	109	160	463	2,315	52,132	54,447	101,117	-46,670
1985	147	122	158	30	131	109	160	463	-463	58,769	58,306	71,725	-13,419

a/ Realized enterprise combinations are optimal linear programming solutions resulting from expected enterprise gross margins.

b/ Realized Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with enterprise gross margins that actually occur in respective years (shown in Table 1).

c/ Expected Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with expected enterprise gross margins (cols. 1-4) and therefore correspond to optimal linear programming objective function values (expressed in real 1985 dollars).

Table 5. Realized Enterprise Combinations and Annual Net Farm Revenue (Realized vs. Expected) With Expected Enterprise Gross Margins Based on Actual (Perfect Knowledge) Gross Margins for Both Crops and Steers.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Expected Enterprise Gross Margins				Realized Enterprise Combinations[a/]				Net Farm Revenue: Actually Realized[b/]			Expected[c/]	Error
Year	Dry Beans	Malt Barley	Corn	Steers	Dry Beans	Malt Barley	Corn	Steers	Steers	Crops	Crops and Steers	Crops and Steers	Realized -minus- Expected
	$/ac			$/hd	ac			hd	$			$	$
1974	377	221	163	-100	160	160	80	--	--	224,960	224,960	224,960	0
1975	293	285	119	-22	160	160	80	--	--	192,160	192,160	192,160	0
1976	150	196	118	20	160	132	108	380	13,300	110,936	124,236	124,236	0
1977	251	129	98	-9	160	160	80	--	--	114,080	114,080	114,080	0
1978	176	159	97	82	131	109	160	463	58,801	86,606	145,407	145,407	0
1979	264	118	134	134	131	109	160	463	87,970	97,837	185,807	185,807	0
1980	367	173	192	-100	160	132	108	--	--	133,312	133,312	133,312	0
1981	342	150	124	-67	160	160	80	--	--	105,200	105,200	105,200	0
1982	80	104	139	23	131	109	160	463	11,575	49,394	60,969	60,969	0
1983	229	141	213	24	131	109	160	463	11,575	85,434	97,009	97,009	0
1984	133	122	123	5	131	109	160	463	2,315	52,132	54,447	54,447	0
1985	189	130	124	-1	160	160	80	--	--	60,960	60,960	60,960	0

a/ Realized enterprise combinations are optimal linear programming solutions resulting from expected enterprise gross margins.

b/ Realized Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with enterprise gross margins that actually occur in respective years (shown in Table 1).

c/ Expected Net Farm Revenue (expressed in real 1985 dollars) is derived from relating realized enterprise combinations (cols. 5-8) with expected enterprise gross margins (cols. 1-4) and therefore correspond to optimal linear programming objective function values (expressed in real 1985 dollars).

Table 6. Realized Annual and 12-Year Average Net Revenue (1974-1985) With Associated Measures of Variability and Risk, Given Alternative Settings of Developing Revenue Expectations.

	Alternative Settings for Revenue Expectations			
Year	Non-Updated Fixed	Updated With 1-Yr. Lag Steer Prices	Updated With USDA Outlook Steer Prices	Updated Perfect Knowledge
	$	$	$	$
1974	110,043	205,884	205,884	224,960
1975	147,217	164,214	147,217	192,160
1976	122,314	114,800	124,071	124,236
1977	97,037	110,255	106,896	114,080
1978	145,407	94,960	140,560	145,407
1979	185,807	102,080	174,896	185,807
1980	67,062	83,912	132,640	133,312
1981	59,531	105,200	105,200	105,200
1982	60,969	56,060	56,060	60,969
1983	97,009	93,656	97,009	97,009
1984	54,447	54,447	54,447	54,447
1985	58,306	58,769	58,306	60,960
12-Year Average Revenue ($)	100,429	103,686	116,932	124,879
-Steers	-2,585	-4,042	10,997	15,461
-Crops	103,014	107,728	105,935	109,418
Standard Deviation ($)	42,988	44,269	47,413	54,904
Frequency (Yrs./12) Annual Revenue is Below $100,000 Target	7/12	6/12	4/12	4/12
Total Amount Annual Revenue is Below $100,000 Target ($)	205,639	158,196	134,178	126,615

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