High Plains Ranch

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The High Plains Ranch is representative of many of the mountain valley cow/calf and hay ranches in the Rocky Mountain west. Production practices, costs of production, market prices, weather patterns, and other information are based on data from the region in order to provide a realistic setting. The probabilities of risk events were also calculated using actual data; however, slight modifications were sometimes made to maintain the workability and realism of the game.

The ranch runs 500 mother beef cows with annual productions costs of $250 per cow not including hay and grazing expenses. Calving typically occurs in February-March and weaned calves are sold in October. The High family historically has a 94 percent weaning percentage and replaces 14 percent of their cows. This leaves 400 calves (100%-6%-14%), weighing 550 pounds (for steers and heifers, alike), to market each year. The initial market price for weaned calves is $100.00 per hundredweight. Cull cows weighing 1,110 pounds are sold at the end of each year for $48.00/cwt.

Beef Cattle Production

Quantity	500 head
Production costs per unit	$250 per cow
Weaning Percentage	94%
Average Net Sale Weight	550 pounds per weaned calf
Initial Market Price	$100.00 per hundredweight
Annual Hay Consumption	1.65 tons per cow
Replacement percentage	14%
Sale weight per cull unit	1,110 pounds per cow
Net Sale Price	$48.00 per hundredweight

The High Plains Ranch also raises 350 acres of hay each year and uses most of it as winter feed for their 500 cows. Normal annual yield is 2.5 tons per acre, which costs $70.00 per acre to produce. When you begin the simulation, there are 875 tons in inventory with a market value of $105 per ton. Space limitations prevent the Highs from having more than 1,000 tons of hay in inventory.

Crop Production

Crop Acres	350 acres
Normal Annual Yield	2.5 tons per acre
Production Costs	$70.00 per acre
Initial Inventory	875 tons
Initial Market Price	$105.00 per ton

The High Plains Ranch utilizes a mixture of public and private grazing lands that provide at total of 4,500 animal unit months (AUMs) of grazing under normal conditions on 16,200 acres.

The High Plains Ranch expects to sell 400 calves at weaning, 70 cull cows, and 50 tons of hay. Total sales will generate $262,546 in revenues each year. The Highs will have $24,500 in expenses for producing 350 tons of hay. They will also have $125,000 of non-feed expenses for the cow herd plus $49,500 of annual expenses associated with use of the grazing lands. The Highs expect their ranch to generate $63,546 of net profits each year or about $127,092 over the two years in the simulation.

Expected Annual Net Ranch Income

Expected Revenues		Expected Expenses	
Weaned Calves	400 head = $220,000	Cows	500 cows = $125,000
Cull Cows	70 head = $37,296	Hay	350 acres = $24,500
Hay	50 tons = $5,250	Grazing	4,500 AUMS = $49,500
Annual total:	$262, 546	Annual total:	$199,000

Profit = $63,546 per year

As ranch manager, you will be making decisions for the High Plains Ranch that include whether or not to purchase various insurance products (PRF-VI, AGR-Lite, and LRP-Feeder Cattle), fertilize your hay meadows, buy or sell hay, or early wean some of your calves in response to markets and available forage. Various market and production risks will influence the ultimate impact of these decisions as you progress throughout the two-year time period of the simulation.

DECISIONS

YEAR 1

Period 1	Risk and Probability of Occurrence	Impact
Sep. 30 to mid-Mar.	Winter Conditions Severe Winter (20%) Normal Winter (65%) Milder Than Normal (15%) ..... Corn Planting Intentions High Acreage (20%) Expected Acreage (60%) Low Acreage (20%)	• In severe winters hay prices increase from greater demand. Weaning percentages decrease due to increased death losses. • If it is a normal winter, hay prices decrease due to normal market price seasonality. • In a mild winter, hay prices decrease further due to reduced demand. ..... • If planting intentions are higher than expected, hay prices fall because corn is a competitive feed alternative. • Hay prices fall from normal market price seasonality when intentions are as expected. • Hay prices rise when planting intentions are lower than expected.

Risk Management Strategy Decisions

Decision 1: Pasture, Rangeland and Forage -Vegetation Index Insurance (PRF-VI)

PRF-VI is an insurance product offered for grid areas that are 4.8 miles by 4.8 miles in size. Indemnities are based on a vegetation index measurement for each grid over a 3-month period. Producer protection is established by choosing a coverage level, productivity factor, and one or more 3-month interval for the production year (April–October). Each month can only be insured in a maximum of one covered interval. An indemnity is paid if the Final Grid Index, determined by satellite-based measures of the actual vegetation, is less than the Trigger Grid Index. This coverage decision is for the next production year and must be purchased by September 30th.

	This scenario decision focuses solely on coverage for rangeland using a productivity factor of 100 on all acres of rangeland for the High Plains Ranch. If you wish to purchase PRF-VI coverage, please select the coverage level and enter the percentage of acres to be covered during each coverage interval. Premiums are due July 1 and will be deducted from your bank balance in mid-June.	
Period 1	**Risk Management Strategy Decisions**	
mid-Nov. to mid-Mar. (cont.)	Decision 2: AGR-Lite Insurance AGR-Lite is a whole-farm/ranch revenue protection insurance plan that covers revenue losses from crops, livestock, and unprocessed livestock products. The plan protects against low revenue due to losses in production and declines in product quality and market price. Coverage must be purchased before March 15th of the current crop year by providing 5 years of Schedule F tax return information and a plan for the current production year.	
Period 2	**Risk and Probability of Occurrence**	**Impact**
mid-Mar. to mid-Jun.	<u>Spring Precipitation</u> Excellent (20%) Normal (50%) Poor (23%) Very Poor (7%)	• If spring precipitation is excellent, forage and livestock yields will increase. Expect hay prices to decrease due to shifts in supply and demand. Lower feed costs increase cattle prices. • Normal precipitation will result in seasonal effects on prices. • Poor spring precipitation will decrease forage and livestock yields. Expect hay prices to increase due to shifts in supply and demand. Higher feed costs decrease cattle prices. • Very poor spring precipitation will have an even more dramatic effect.
	Risk Management Strategy Decisions	
	Decision 1: Fertilize Meadows Fertilization of hay meadows is one strategy for providing adequate stored feedstuffs for winter feeding or perhaps providing another source of income through hay sales. However, decision-makers will need to carefully consider the increased production expenses from fertilizer and application costs compared with the expected increase in hay yield. Decision 2: Livestock Risk Protection (LRP) Insurance for feeder cattle The number of animals to be insured and the coverage level is to be determined here. The current futures price for 500 pound calves to be delivered at the end of September will be used to determine coverage price for a 26-week policy contract.	
Period 3	**Risk and Probability of Occurrence**	**Impact**
mid-Jun. to mid-Aug.	<u>Summer Precipitation</u> Poor (20%) Average (60%) Good (15%) Too much (5%)	• Hay prices rise with poor precipitation because of reduced hay and grass production and weaning weights fall. • Average precipitation results in no price changes due to typical hay and grass production. • With good precipitation, hay prices fall due to increased production and weaning weights increase. • When there is too much precipitation, hay prices rise due to reduced hay production and there is a decrease in weaning percentage and weights from increased sickness and limited ability of animals to graze all parts of pastures.

	Risk Management Strategy Decisions	
	Decision 1: LRP Feeder Cattle The number of animals to be insured and the coverage level is to be determined here. The current futures price for 500 pound calves to be delivered at the end of September will be used to determine coverage price for a 13-week policy contract. Decision 2: Buy or sell hay Hay left in inventory may be sold on the cash market or you may purchase hay to increase inventory during this off-season period. Remember, you only have space for 1,000 tons in inventory. Cash market sales will automatically adjust inventories as needed to accommodate this space limitation.	
Period 4	**Risk and Probability of Occurrence**	**Impact**
mid-Aug. to mid-Nov.	<u>Late-Season Forage Production</u> More than adequate (11%) Normal (65%) Inadequate (12%) Extreme shortage (12%) ..... <u>U.S. Corn Production</u> Extremely high (5%) Above average (35%) Average (55%) Below average (5%)	• Late season forage may be inadequate due to poor spring precipitation, poor summer precipitation, or both. More than adequate forage results in expected gains. • Normal forage levels results in expected gains. • Inadequate results in reduced calf weights. • Extreme shortages will result in greatly reduced calf weights and the need to purchase hay or other stored feedstuffs to compensate. ..... • Hay prices decrease and calf prices increase when production of competitive feed alternatives grows. Extremely high corn production results in large impacts. • There are above normal impacts on hay and calf prices when corn production is above average. • There are only seasonal impacts on hay and calf prices when corn production is as expected. • Hay prices increase and calf prices decrease when corn production falls below expected levels.
	Risk Management Strategy Decisions	
	Decision 1: Early Weaning One strategy for responding to conditions where forage is short is to wean early. The choice here is whether to wean all or some of the calves 60 days early to reduce the forage demand. Early-weaned calves sell at a lighter weight than those held to the normal sale date. Decision 2: Buy or sell hay Hay may be sold or purchased to adjust inventory levels. Decision 3: Pasture, Rangeland and Forage -Vegetation Index Insurance (PRF-VI) If desired, purchase PRF-VI insurance for the upcoming production year.	
YEAR 2		
Period 5	**Risk and Probability of Occurrence**	**Impact**
mid-Nov. to mid-Mar.	Same as year 1.	Same as year 1.
	Risk Management Strategy Decisions	
	Decision 1: AGR-Lite Insurance	

Period 6	Risk and Probability of Occurrence	Impact
mid-Mar. to mid-Jun.	Same as year 1.	Same as year 1.
	Risk Management Strategy Decisions	
	Decision 1: Fertilize Meadows Decision 2: LRP Feeder Cattle	
Period 7	**Risk and Probability of Occurrence**	**Impact**
mid-Jun. to mid-Aug.	Same as year 1.	Same as year 1.
	Risk Management Strategy Decisions	
	Decision 1: LRP Feeder Cattle Decision 2: Buy or sell hay	
Period 8	**Risk and Probability of Occurrence**	**Impact**
mid-Aug. to mid-Nov.	Same as year 1.	Same as year 1.
	Risk Management Strategy Decisions	
	Decision 1: Early Weaning Decision 2: Buy or sell hay	
Game End	Hay inventory must be at 875 tons. Hay is automatically bought or sold at the current price. All weaned calves remaining in inventory and not being held back as replacements are automatically sold.	

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