

North State Stocker Ranch

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North State Stocker Ranch is a beef cattle yearling/stocker operation in the northern Sacramento Valley of California. The ranch typically purchases 300 head of 8 to 9 month old weaned steers in late autumn weighing around 530 pounds and grows them out on grass to about 800 pounds on owned pasture over the course of six months.

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 scenario.

The ranch is owned by Jim Bets, a first generation producer who grew up spending summers on his uncle's ranch in Idaho. That same uncle helped him get his start by co-signing the loan and gifting him \$100,000 to help purchase a 640 acre section of prime grassland in Northern California from a recently retired rancher. The rancher kept good production records and provided Jim with 40 years of historical forage data. Jim and the retired rancher used that data to estimate the

ranch could handle 311 stockers in an average year without supplementation feeding over the six month grazing period Jim was proposing. To be safe, Jim has been stocking the ranch with 300 steers for the last two years and things appear to be running pretty smoothly.

At this point in time, Jim would like to become more progressive in managing risk. He is primarily concerned about market risk and forage production risk related to uncertain precipitation patterns. He is looking at developing a more aggressive approach to pricing his cattle in advance of actual sale delivery using marketing contracts. In addition to stocking rate decisions, he has been reading a lot lately about Pasture, Rangeland, and Forage (PRF) Insurance as a way to help manage the forage production risk associated with low precipitation on the ranch in a given year.

The cash operating costs excluding land costs, owner labor, and interest are estimated at \$92 per head. Fixed overhead costs including insurance, land and property taxes, capital recovery costs on equipment and office expenses are \$9,120 per year. Jim figures his budget using an assumed 2% death loss percentage. For 300 head, this means he expects to market 294 head each year. The initial market price for a 530 pound weaned steer is \$153 per hundredweight and for an 800 pound steer

Beef Cattle Production

Quantity	300 head of steers
Average Steer In Weight	530 pounds
Average Steer Out Weight	800 pounds
Production costs per unit	\$92 per head
Overhead costs	\$9,120
Death Loss Percentage	2%
Initial Market Price for a 530 lb. Steer	\$153 per hundredweight
Initial Market Price for a 800 lb. Steer	\$135 per hundredweight

calf it is \$135 per hundredweight based on recent averages in the region. Using these assumptions, total cattle sales will generate \$317,520 in revenues each year off of total calf purchase costs of \$243,270. Jim projects \$7,712 in annual interest expenses based on 6% interest for calf purchase costs financed for 6 months and cash operating costs financed for 3 months on average. This results in an expected \$29,818 in net returns each year to land, management, and family labor.

Expected Annual Net Farm Income			
<u>Expected Revenues</u>		<u>Expected Expenses</u>	
800 lb. Steer Calves	294 head = \$317,520	530 lb. Steer Calves	300 head = \$243,270
		Cash operating costs	\$92/head = \$27,600
		Interest	\$7,712
Annual Gross Revenue:	\$317,520	<u>Overhead</u>	<u>\$9,120</u>
		Annual Expenses:	\$287,702
Returns to Land, Management and Family Labor = \$29,818 per year			

As Jim Bets, you will be making decisions for the North State Stocker Ranch that include the number of calves to purchase each fall, whether or not to purchase Rainfall Index-PRF insurance, buy or sell hay, and when to market your calves. Various market and production risks will influence the ultimate impact of these decisions as you progress throughout the simulation.

NORTH STATE STOCKER RANCH SIMULATION

RISK & DECISIONS

YEAR 1		
Period 1	Risk and Probability of Occurrence	Impact
Nov. 1 to Dec. 31	<u>Precipitation Conditions</u> Poor Precipitation (30%) Average Precipitation (50%) Good Precipitation (20%) <u>U.S. Corn Production</u> Extremely high (5%) Above average (35%) Average (55%) Below average (5%)	<ul style="list-style-type: none"> • Dry weather will decrease forage production, calf weight gains and calf prices but increase hay prices. • Wet weather will increase forage production, calf weight gains and calf prices but decrease hay prices. <ul style="list-style-type: none"> • Hay prices decrease and calf prices increase when production of competitive feed alternatives grows. Extremely high corn production results in these impacts. • 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.

Period 1	Risk Management Decisions	
Nov. 1 to Dec. 31 (cont.)	<p>Decision 1: Calves Purchased</p> <p>You must decide how many calves to purchase based on your interpretation of forage availability. You should assume average production results of 1,500 pounds of forage per acre or 960,000 pounds total for the 180 day grazing season. This is allocated evenly over the season with carryover allowed from one period to the next. You should also assume each calf consumes an average of 16.6 pounds of forage per day over the season with an average of 14.36 consumed per day during the first 2-month period, 16.6 during the second, and 18.84 during the last 2 months.</p> <p>Decision 2: Rainfall Index (RI-PRF) Insurance - Grazingland</p> <p>RI-PRF is a rainfall index insurance product offered for grid areas that are 0.25 degrees in latitude by 0.25 degrees in longitude, which translates to approximately 17 by 17 miles at the equator. Indemnities are based on NOAA rainfall index determinations for each grid over a 2-month interval. Producer protection is established by choosing a coverage level, productivity factor, and by insuring between 10-60% of covered value in two or more 2-month intervals for the production year (January–December). Each month can only be insured once (no overlapping intervals). An indemnity is paid if the Final Grid Rainfall Index is less than the Coverage Level. This coverage must be purchased by November 15th for the upcoming calendar year. Premiums are due September 30 and will be deducted from your bank balance at the end of the year.</p>	
Period 2	Risk and Probability of Occurrence	Impact
Jan. 1 to Feb. 28	<p><u>Precipitation Conditions</u> Poor Precipitation (30%) Average Precipitation (50%) Good Precipitation (20%)</p> <p>.....</p> <p><u>Corn Market Conditions</u> Extremely Low (5%) Below average (20%) Average (50%) Above average (25%)</p>	<ul style="list-style-type: none"> • Low winter precipitation will decrease forage and livestock yields while negatively affect cattle prices. • Above normal winter precipitation is excellent for forage production and livestock yields. Expect hay prices to decrease due to shifts in demand. <p>.....</p> <ul style="list-style-type: none"> • Lower corn prices result in expectations for lower feed prices and higher cattle prices. • Higher than expected corn prices result in expectations for higher feed prices and lower cattle prices.
Risk Management Decisions		
<p>Decision 1: Buy/Sell Calves</p> <p>Now that you have seen the first two months of precipitation and production, you have the opportunity to buy or sell feeder calves. The calves will be bought or sold at their current weight and price displayed below. Remember each calf consumed an average of 14.36 pounds of forage per day during the first period. Over the next two periods, 16.6 pounds per day and 18.84 pounds per day will be consumed, respectively.</p> <p>Decision 2: Buy/Sell Hay</p> <p>Hay may be purchased for feeding or sold to generate cash flow. Remember, you cannot carry a negative inventory at the end of any period. If you run short of grazing during a period, you will automatically feed hay to get through the period. If you run short of hay during a period, it will automatically be purchased for you at the end of the period at the prevailing market price. All hay is sold at the end of the year to pay bills.</p> <p>Decision 3: Implant</p> <p>If you choose, you may implant your calves with a growth stimulant at this time at a cost of \$1.66 per head. If you do not implant, expect weight gain to fall 5 to 8 percent below expectations for the remainder of the production year.</p>		

Period 3	Risk and Probability of Occurrence	Impact
Mar. 1 to Apr. 30	<u>Precipitation Conditions</u> Poor Precipitation (30%) Average Precipitation (50%) Good Precipitation (20%) <u>Corn Planting Intentions Report</u> High Acreage (20%) Normal Acreage (65%) Low Acreage (15%)	<ul style="list-style-type: none"> Poor spring precipitation will decrease forage and livestock yields while having a positive impact on hay prices and a negative impact on cattle prices. Good spring precipitation will increase forage and livestock yields while decreasing hay prices due to shifts in supply and demand. Lower feed prices increase cattle prices. Hay prices will fall and calf prices will rise when corn crop acres are above expectations. Low corn acres will have a positive effect on hay prices and a negative effect on calf prices.
Risk Management Decisions Decision 1: Buy/Sell Hay Hay may be purchased for feeding or sold to generate cash flow. Remember, you cannot carry a negative inventory at the end of any period. If you run short of grazing during a period, you will automatically feed hay to get through the period. If you run short of hay during a period, it will automatically be purchased for you at the end of the period at the prevailing market price. All hay is sold at the end of the year to pay bills. Decision 2: Contract Steer Calves You have the opportunity to contract your steer calves to a private buyer. Non contracted steers will be sold at auction at the end of April and receive the prevailing cash market price.		
YEAR 2		
Period 4	Risk and Probability of Occurrence	Impact
Nov. 1 to Dec. 31	Same as Period 1	<ul style="list-style-type: none"> Same as Period 1
Risk Management Decisions Same as Period 1		
Period 5	Risk and Probability of Occurrence	Impact
Jan. 1 to Feb. 28	Same as Period 2	<ul style="list-style-type: none"> Same as Period 2
Risk Management Decisions Same as Period 2		
Period 6	Risk and Probability of Occurrence	Impact
Mar. 1 to Apr. 30	Same as Period 3	<ul style="list-style-type: none"> Same as Period 3
Risk Management Decisions Same as Period 3		



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