FARM Assistance Focus

TEXAS A&M AGRILIFE EXTENSION

Panhandle Model Farms - 2017 Case Studies of Texas High Plains Agriculture

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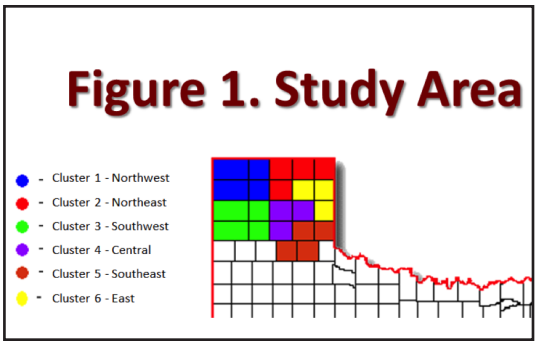
FARM Assistance
Planning Solutions

The Model farm process attempts to illustrate production agriculture in the Northern Texas Panhandle.

Texas High Plains producers often need realistic examples of crop and livestock operations to facilitate communication between local officials, commodity associations and agricultural lenders. To encourage interaction between these different interest groups and simplify decision making, Texas A&M AgriLife Extension risk management specialists developed region-specific model farms. These case study operations attempt to illustrate typical production agriculture in six distinct areas of the Northern Texas Panhandle.



Model Farm Overview

Model farms were created by organizing focus groups and collecting industry data. Texas A&M AgriLife Extension District 1 consists of 22 counties in the High Plains region. For study purposes, these counties were grouped into six clusters, each representing similar cropping and livestock systems (Figure 1). Risk management specialists then conducted focus groups within each cluster that consisted of county agents, agricultural producers, Farm Service Agency employees and agribusiness representatives. During these meetings, participants described the structure and characteristics of a realistic operation in their respective areas. Farm price data was gathered through Texas Cattle Feeders Association market summary reports and Chicago Board of Trade futures settlement sheets and adjusted with focus group input for local basis. Crop yields and cattle stocking rates came primarily from focus group estimates.

The following information provides a summary of model farm characteristics by cluster. Operational demographics vary greatly by county group, reflecting the diversity of Texas High Plains Agriculture. Overall, seven different crops are analyzed with both dryland and irrigated production practices. Several entities also include leased stockers, owned stockers, and/or cow-calf herds. Government payments are incorporated into each analysis, and assume that all farms are enrolled in the Price Loss Coverage program and eligible for Loan Deficiency Payments. Finally, most operations implement a specific equipment replacement strategy over the analysis period.

Cluster 1. . The Northwest model operation encompasses 3,000 acres that are 40% owned and 60% leased. A crop lease agreement involving 33% revenue sharing is incorporated on corn, wheat and cotton, with the landlord paying a percentage of fertilizer, chemicals and irrigation. All commodities are operator sprayed, and only cotton is custom harvested. Stocker cattle are not factored into the analysis.

Table 1. 2017 Characteristics of Cluster 1 Model Farm, Northeast

Crops	Acres	Yield/Ac	Price	Stocker	
Irr Corn	525	230 bu	$3.61/bu	# Head	0
Corn Silage Irr	480	27 tons	$33.50/ton	Lease Rate	$0.00
Irr Cotton	525	1000 lbs	$0.70/lb	In Weight	0 lbs
Irr Wheat	270	60 bu	$4.51/bu	Out Weight	0 lbs
Dry Wheat	250	15 bu	$4.51/bu	ADG	0 lbs
Irr Seed Sorghum	300	107.14 bu	$9.93/bu		
Irr Sorghum	150	89.30 bu	$3.03/bu		
Dry Cotton	250	450 lbs	$0.70/lb		
Fallow	250	N/A	N/A		
Total Acres	3000				

Seven different crops are analyzed, having both dryland and irrigated production practices.

Cluster 2. The Northeast model operation is a 3,000 acre crop farm and stocker enterprise that's 40% owned and 60% leased. A lease agreement involving 33% revenue sharing is incorporated on corn, wheat and sorghum with the landlord paying a percentage of fertilizer, chemicals, and irrigation. All commodities are farmer sprayed, and only cotton is custom harvested. The operation also takes in 200 head of stockers annually at a 2017 lease rate of $0.40 per pound of gain. Cattle graze for approximately 134 days with an estimated average daily gain of 1.5 pounds.

Table 2. 2017 Characteristics of Cluster 2 Model Farm, Northeast

Crops	Acres	Yield/Ac	Price	Stocker	
Irr Corn	600	220 bu	$3.62/bu	# Head	200
Irr Cotton	210	1100 lbs	$0.70/lb	Lease Rate	$0.40
Irr Wheat	600	60 bu	$4.40/bu	In Weight	540 lbs
Dry Cotton	500	450 lbs	$0.70/lb	Out Weight	650 lbs
Dry Wheat	500	20 bu	$4.40/bu	ADG	1.5 lbs
Irr Sorghum	90	116 bu	$3.06/bu		
Fallow	500	N/A	N/A		
Total Acres	3,000				

Cluster 3. The Southwest Texas Panhandle model consists of a 3,040 acre crop farm and stocker operation that's 75% owned and 25% leased. The lease agreement is 33% revenue sharing on both dryland and irrigated crops, with the landlord paying a percentage of fertilizer, chemicals and irrigation. All commodities are farmer sprayed, and only cotton is custom harvested. The operation also takes in 200 head of stockers annually at a 2017 lease rate of $0.40 per pound of gain. Cattle graze for 120 days with an estimated average daily gain of 1.75 pounds.

Table 3. 2017 Characteristics of Cluster 3 Model Farm, Western

Crops	Acres	Yield/Ac	Price	Stocker	
Irr Corn	230	225 bu	$3.67/bu	# Head	300
Irr Corn Silage	105	28 tons	$34.03/ton	Lease Rate	$0.40
Irr Cotton	335	1200 lbs	$0.70/lb	In Weight	450 lbs
Dry Cotton	500	450 lbs	$0.70/lb	Out weight	660 lbs
Dry Sorghum	250	27 bu	$3.18/bu	ADG	1.75 lbs
Irr Sorghum	170	110 bu	$3.18/bu		
Irr Wheat	200	65 bu	$4.39/bu		
Dry Wheat	250	18 bu	$4.39/bu		
Native Pasture	1,000	N/A	N/A		
Total Acres	3,040				

Cluster 4. The Central Texas Panhandle model encompasses 3,240 crop acres that are 50% owned and 50% leased. The lease agreement is 33% revenue sharing on corn, wheat, sorghum and cotton, with the landlord paying a percentage of fertilizer, chemicals and irrigation. All crops are operator sprayed, and only cotton is custom harvested. Stocker cattle are not factored into the analysis.

Study results are illustrated based on the long-term (5-year) financial projections of each model farm and represent a general economic outlook for area producers. Results vary widely by county group.

Table 4. 2017 Characteristics of Cluster 4 Model Farm, Central					
Crops	**Acres**	**Yield/Ac**	**Price**	**Stocker**	
Irr Corn	428	220 bu	$3.62/bu	# Head	0
Irr Cotton	428	1200 lbs	$0.70/lb	Lease Rate	$0.00
Irr Wheat	214	55 bu	$4.40/bu	In Weight	0 lbs
Dry Cotton	724	400 lbs	$0.70/lb	Out Weight	0 lbs
Dry Sorghum	724	30 bu	$3.06/bu	ADG	0 lbs
Fallow	722	N/A	N/A		
Total Acres	3, 240				

Cluster 5. The Southeast Texas Panhandle model consists of a 7,000 acre crop farm and cattle operation that's 18% owned and 82% leased. A lease agreement involving 33% revenue sharing is incorporated on cotton and peanuts with the landlord paying a percentage of fertilizer, chemicals and irrigation. All crops are farmer sprayed and harvested. The operation also has 50 head of cows with an 82% calving rate. Calves are sold at weaning weighing approximately 500 pounds.

Table 5. 2017 Characteristics of Cluster 5 Model Farm, Southeast					
Crops	**Acres**	**Yield/Ac**	**Price**	**Cow Herd**	
Irr Cotton	936	1350 lbs	$0.70/lb	# Head	50
Dry Cotton	3,752	350 lbs	$0.70/lb	Culling Rate	10%
Irr Peanuts	312	2.05 tons	$425/ton	Calving Rate	82%
Native Pasture	2,000	N/A	N/A	Weaned lbs	500 lbs
Total Acres	7,000			Weaned $	$1.58/lb

Cluster 6. The East Texas Panhandle model involves a 4,530 acre cattle operation that's 100% owned. All land is grazed and consists of wheat pasture, forage sorghum and native grass. The operation has 200 head of cows with an 85% calving rate and a 500 pound weaning weight. The operation sells approximately 40% of its calves at weaning and retains the remaining 60% as stocker cattle. Stockers graze for approximately 150 days with an average daily gain of 1.75 pounds.

Table 6. 2017 Characteristics of Cluster 6 model Farm, Southeast					
Crops	**Acres**	**Yield/Ac**	**Price**	**Cow Herd**	
Native Pasture	3840	N/A	N/A	# Head	200
Dry Wheat Graze	210	N/A	N/A	Culling Rate	5%
Forage Sorghum	50	N/A	N/A	Calving Rate	85%
Improved Pasture	430	N/A	N/A	Weaned lbs	500 lbs
Total Acres	4,530	N/A	N/A	Weaned $	$1.58/lb
				Stocker	
				# Head	100
				In Weight	500 lbs
				Out Weight	762 lbs
				ADG	1.75 lbs
				Stocker $	$1.45/lb

Overall, every farm exhibits relatively high debt levels and significant liquidity risk from 2017-2021 due to static commodity prices and rising input costs.

Analysis and Results

After developing six model operations, risk management economists performed a study analysis using the Texas A&M AgriLife Extension Service's Financial and Risk Management (FARM) Assistance Program. FARM Assistance is technically a long-term pro forma financial analysis that incorporates the research methods of stochastic simulation. It is aimed at helping farmers and ranchers with strategic planning and risk management. Study results show the five-year projected outlook for each cluster farm, and represent a general economic overview for area producers. Poor financial outcomes do not necessarily indicate an operational demise, but rather identify problem areas that may require attention. Table 7 exhibits performance indicators from 2017-2021 by county cluster. Several measures help evaluate economic viability. Net cash farm income (NCFI) determines profitability and represents the amount of money available for debt repayment, tax expenditures, capital equipment replacement, investment or withdrawal by the owner. Equity is calculated through real net worth (RNW) and shows the total value of all assets net of any debts owed. The debt-to-asset ratio measures operational solvency while the return-to-asset ratio determines financial efficiency. Finally, the operating expenses to receipts ratio measures the costs of operating a farm or ranch relative to the income it brings in.

Table 7. Average Financial Performance of Cluster Farms from 2017-2021

		Cluster 1 Northwest	**Cluster 2** Northeast	**Cluster 3** Southwest	**Cluster 4** Central	**Cluster 5** Southeast	**Cluster 6** East
Average Annual Financial Performance (2017-2021)							
Net Cash Farm Income		$224,510	$92,010	$112,680	$114,450	$230,840	$21,800
Expense to Receipts Ratio		79%	80%	78%	79%	84%	65%
Return to Assets Ratio		9.76%	5.34%	6.33%	5.37%	12.59%	2.90%
5-Year (Beginning 2017/Ending 2021) Equity, Solvency, and Liquidity Positions							
Debt / Asset	2017	57%	59%	57%	46%	51%	23%
	2021	55%	65%	55%	46%	49%	25%
Real Net Worth	2017	$1,156,190	$1,067,590	$967,530	$1,545,630	$908,360	$3,765,460
	2021	$1,448,140	$1,017,180	$1,177,170	$1,605,550	$1,233,210	$3,466,150
Prob of Ending Cash < $0	2017	99%	99%	99%	99%	99%	99%
	2021	76%	97%	89%	87%	61%	99%

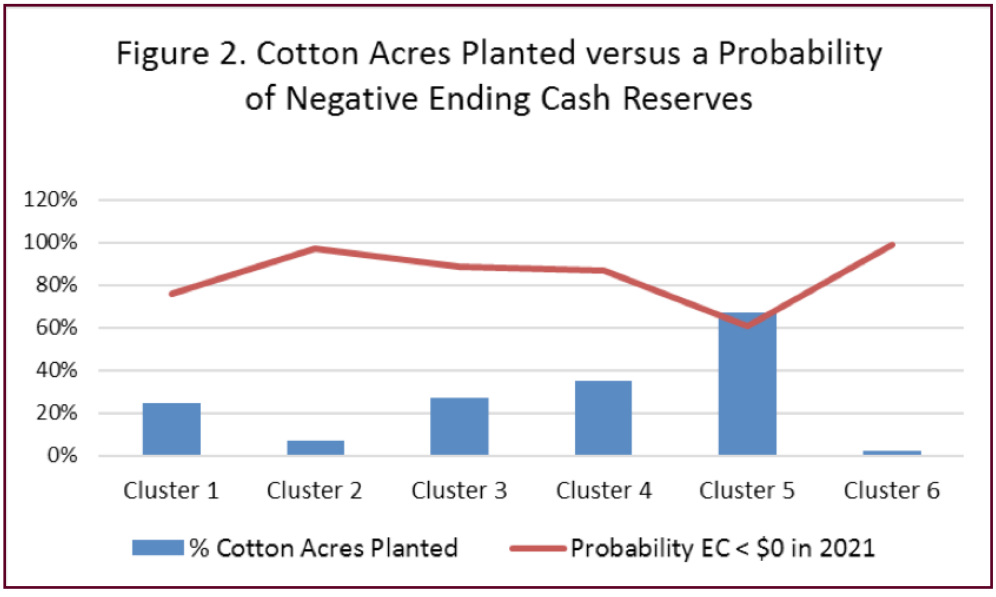
Overall, Texas Panhandle model farms exhibit acceptable profitability, adequate expense management and satisfactory financial efficiency (Table 7). However, most also show relatively high debt levels, which leads to significant liquidity risk. This situation is due to many operations developing carryover debts from recent low commodity prices. Although weak markets negatively impacted all entities, some fared better than others. Southeast Cluster 5 maintains the highest profitability level among farms, with an average net cash income of $230,840. This operation planted the greatest percentage of cotton acres (70%) from 2017-2021, which was less impacted by price declines compared to other commodities. Cluster 5's larger profits also result in the highest return to assets ratio (12.59%) and lowest probability of experiencing a cash flow deficit (61%) by the end of the analysis period.

A conclusion can be drawn that enterprises planting a higher percentage of cotton acres fared better than those with grain and cattle enterprises.

Northwest Cluster 1 demonstrates the next highest profitability level, with a net cash income of $224,510 and a 9.76% return to assets. This operation's financial strength can be attributed to planting the greatest percentage of irrigated crops (75%), which often leads to higher yields and more favorable returns. Northeast Cluster 2, Southwest Cluster 3, and Central Cluster 4 show adequate financial conditions, with net cash farm incomes of $92,010, $112,680, and $114,450, respectively, and return to assets ranging from 5.3% to 6.3%. East Cluster 6 is a ranching enterprise that exhibits the least desirable profitability among all operations analyzed, with a marginal net cash farm income of $21,850 and a low return to assets of 2.9%. This situation can be attributed to low cattle prices that are not projected to improve over the planning horizon. However, while Cluster 6 does exhibit weak profit margins, having a large percentage of owned land helps keep its operating expense to receipts ratio, equity position and debt levels within acceptable ranges.

Summary and Conclusions

Six model operations representing 22 Northern Texas Panhandle counties were developed to facilitate communication between producers, local officials, commodity associations and agricultural lenders. Based on focus group characteristics and FARM Assistance analyses, the Northwest and Southeast enterprises displayed more desirable financial conditions. Farms located in the Northeast, Southwest, and Central regions demonstrated marginal outcomes, while the Eastern operation showed a weak profit potential. A conclusion can be drawn that farms with a greater number of cotton acres planted showed a higher profit potential and a more significant improvement in ending cash position than those with primarily grain and cattle enterprises (Figure 2). However, while overall some operations appeared more financially stable than others, all six entities projected substantial solvency risk that improved only marginally over the planning horizon. Most also demonstrated high levels of carryover debt and low overall liquidity. Based on these results, careful expense management and aggressive marketing is highly recommended to all Texas Panhandle producers facing uncertain financial and production conditions.



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