



FARM Assistance

Focus

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Panhandle Model Farms - 2015 Case Studies of Texas High Plains Agriculture

DeDe Jones
Steven Klose
Michelle Jones

Farm Assistance Focus 2016-1
March 2016



Department of Agricultural Economics,
Texas AgriLife Extension Service
Texas A&M University System
farmassistance.tamu.edu

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 operations exemplify Northern Panhandle agriculture.

Model Farm Overview

The model farm process attempts to illustrate production agriculture in the Texas High Plains. Texas A&M AgriLife Extension District 1 consists of 22 counties in this region. Counties were grouped into six clusters, each representing similar cropping and livestock systems (Figure 1). Risk management specialists then conducted focus groups within each area 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 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, eight different crops are analyzed with both dryland and irrigated production practices. Several entities also incorporate leased stockers, owned stockers, and/or cow-calf herds. Due to the unpredictable nature of current farm policy, government payments are not projected. However, all farms do 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.

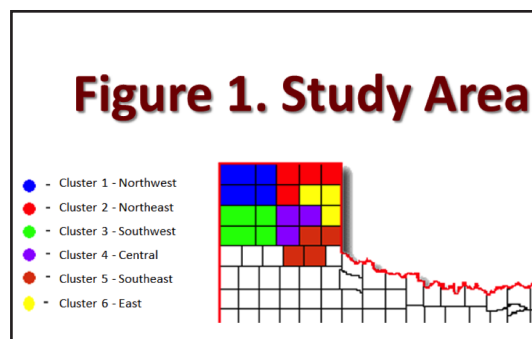


Table 1. 2015 Characteristics of Cluster 1 Model Farm, Northeast					
Crops	Acres	Yield/Ac	Price	Stocker	
Irr Corn	600	230 bu	\$4.07/bu	# Head	0
Corn Silage Irr	300	27 tons	\$37/ton	Lease Rate	\$0.00
Irr Cotton	450	750 lbs	\$0.60/lb	In Weight	0 lbs
Irr Wheat	270	60 bu	\$5.00/bu	Out Weight	0 lbs
Dry Wheat	250	20 bu	\$5.00/bu	ADG	0 lbs
Wheat Silage	180	15 tons	\$26.80/ton		
Irr Seed Sorghum	300	107.14 bu	\$14.00/bu		
Irr Sorghum	150	89.30 bu	\$4.00/bu		
Dry Sorghum	250	35 bu	\$4.00/bu		
Fallow	250	N/A	N/A		
Total Acres	3000				

Eight 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 2015 lease rate of \$0.50 per pound of gain. Cattle graze for approximately 134 days with an estimated average daily gain of 1.5 pounds.

Table 2. 2015 Characteristics of Cluster 2 Model Farm, Northeast					
Crops	Acres	Yield/Ac	Price	Stocker	
Irr Corn	600	220 bu	\$4.07/bu	# Head	200
Irr Cotton	150	1000 lbs	\$0.60/lb	Lease Rate	\$0.50
Irr Wheat	600	60 bu	\$5.00/bu	In Weight	540 lbs
Dry Cotton	500	450 lbs	\$0.60/lb	Out Weight	650 lbs
Dry Wheat	500	20 bu	\$5.00/bu	ADG	1.5 lbs
Irr Sorghum	150	105 bu	\$4.00/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 2015 lease rate of \$0.50 per pound of gain. Cattle graze for 120 days with an estimated average daily gain of 1.75 pounds.

Table 3. Characteristics of Cluster 3 Model Farm, Western					
Crops	Acres	Yield/Ac	Price	Stocker	
Irr Corn	200	215 bu	\$4.07/bu	# Head	200
Irr Corn Silage	105	28 tons	\$37/ton	Lease Rate	\$0.50
Irr Cotton	250	1100 lbs	\$0.60/lb	In Weight	450 lbs
Dry Cotton	250	450 lbs	\$0.60/lb	Out weight	660 lbs
Sorghum Silage	115	23 tons	\$34/ton	ADG	1.75 lbs
Irr Sorghum	170	95 bu	\$3.80/bu		
Irr Wheat	200	65 bu	\$5.00/bu		
Dry Wheat	500	18 bu	\$5.00/bu		
Dry Sorghum	250	27 bu	\$4.00/bu		
Native Pasture	1000	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. 2015 Characteristics of Cluster 4 Model Farm, Central

Crops	Acres	Yield/Ac	Price	Stocker	
Irr Corn	428	210 bu	\$4.07/bu	# Head	0
Irr Cotton	428	1100 lbs	\$0.60/lb	Lease Rate	\$0.00
Irr Wheat	214	55 bu	\$5.00/bu	In Weight	0 lbs
Dry Wheat	724	20 bu	\$5.00/bu	Out Weight	0 lbs
Dry Sorghum	724	27 bu	\$4.00/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. 2015 Characteristics of Cluster 5 Model Farm, Southeast

Crops	Acres	Yield/Ac	Price	Cow Herd	
Irr Cotton	936	1350 lbs	\$0.60/lb	# Head	50
Dry Cotton	3,752	350 lbs	\$0.60/lb	Culling Rate	1%
Irr Peanuts	312	2.05 tons	\$430/ton	Calving Rate	82%
Native Pasture	2,000	N/A	N/A	Weaned lbs	500 lbs
				Weaned \$/lb	\$2.55
Total Acres	7,000				

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. 2015 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	1%
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 \$/lb	\$2.55
				Stocker	
				# Head	100
				In Weight	500 lbs
				Out Weight	750 lbs
				ADG	1.75 lbs
				Stocker \$/lb	\$2.25

Northern Texas Panhandle farms had the strongest financial performance.

Analysis and Results

After developing six model operations, economists performed a study 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 model that includes simulation methods to incorporate agricultural risk. 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 average performance indicators from 2015-2019 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 dollar amount left over after all assets are sold and all debts are paid. The debt-to-asset ratio measures operational solvency while the return-to-asset ratio determines financial efficiency. Finally, the operating expenses to receipts ratio shows what percent of revenues are used on variable costs.

Table 7. Average Financial Performance of Cluster Farms from 2015-2019

	Cluster 1 Northwest	Cluster 2 Northwest	Cluster 3 Southwest	Cluster 4 Central	Cluster 5 Southeast	Cluster 6 East
Net Cash Farm Income	\$235,580	\$61,950	\$29,170	\$32,020	\$12,680	\$69,130
Real Net Worth	\$1,298,470	\$927,700	\$871,250	\$1,349,420	\$536,920	\$3,778,040
Ending Cash Reserves	(\$113,150)	(\$229,680)	(\$324,590)	(\$338,060)	(\$523,300)	(\$29,110)
Debt to Asset Ratio	52%	63%	60%	51%	72%	21%
Return to Assets Ratio	9.83%	4.31%	3.21%	3.14%	1.24%	2.10%
Expense to Receipts Ratio	79%	86%	88%	88%	100%	40%

Overall, every cluster farm shows a decline in projected financial performance from 2015-2019 due to undesirable crop and livestock prices and rising input costs. This situation causes increasing operational debt levels and decreasing cash balances (Table 7). Although all entities were negatively impacted by weak commodity markets, some fared better than others. Northwest Cluster 1 maintains the highest profitability level among farms, with an average net cash income of \$235,580. This outcome is partially due to planting the greatest percentage of irrigated crops (75%), which often leads to larger yields and more favorable returns. Cluster 1's revenues also result in a desirable return to assets ratio (9.83%) and satisfactory operating expenses to receipts ratio (79%) over the analysis period. Northeast Cluster 2 and East Cluster 6 demonstrate the next highest profitability levels, with net cash incomes of \$61,950 and \$69,130, respectively. Like Cluster 1, Cluster 2's irrigated acres (50%) contribute to improved returns. Cluster 6's positive outlook is primarily from owning 100% of its land, low debt levels, and selling cattle at a considerable profit early in 2015 before prices began to fall. In fact, this farm exhibits the most desirable real net worth (\$3.77 million) and smallest debt to assets ratio (21%) of any entity.

Southwest Cluster 3 and Central Cluster 4 show marginal financial conditions, with net cash incomes of \$29,170 and \$32,020, respectively. These farms exhibit lower return to assets ratios of approximately 3% and higher operating expense to receipts ratios of 88%. While both enterprises can likely remain operational in the short term, they will need to reduce expenses in order to achieve long term viability. Southeast Cluster 5 projects the least desirable outcome among all farms analyzed. This result is exemplified by a weak average net cash farm income of \$12,680 and a poor return to assets ratio of 1.24%. Furthermore, Cluster 5 exhibits an undesirable operating expense to receipts ratio of 100%, which indicates 100% of cash receipts are spent to cover variable costs. This situation leaves no income to pay any fixed expenses. Cluster 5 has the least

A conclusion can be drawn that operations with a higher percentage of irrigated crops planted fared better than dryland entities.

number of irrigated acres planted (25%) and smallest percentage of acres owned (18%), which may contribute to its poor projected outlook.

Summary and Conclusions

Six model operations representing 22 Northern Texas Panhandle counties were developed in an effort to facilitate communication between producers, local officials, commodity associations and agricultural lenders. Based on focus group characteristics and FARM Assistance analyses, the Northwest, Northeast, and Eastern enterprises displayed more desirable financial measures. Farms located in the Southwest and Central regions demonstrated marginal outcomes, while the Southeast operation showed poor long-term results. A conclusion can be drawn that enterprises in the upper Texas Panhandle region fared better than those in the lower portion, likely due to a greater number of irrigated acres planted. Furthermore, farms with smaller operating expense to receipts ratios showed more desirable solvency levels and greater risk tolerance than those with less efficient expense management. This assertion is supported by Figures 2 and 3. However, while overall some operations appeared more attractive than others, all six farms exhibited significant drops in liquidity and rising debt levels from 2015-2019 as crop and cattle prices cycled downward. Based on these results, careful expense management and aggressive marketing is highly recommended to all Texas Panhandle producers facing uncertain future conditions.

Figure 2. Operating Expense to Receipts Ratio from 2015-2019

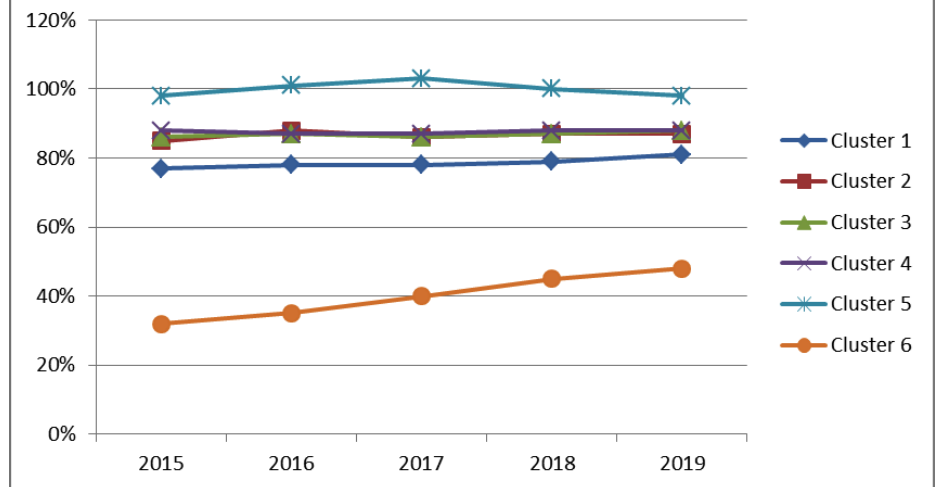


Figure 3. Average Debt to Asset Ratio from 2015-2019

