





Panhandle Model Farms -2012 Case Studies of Texas High Plains Agriculture

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Texas agricultural producers frequently need realistic examples of crop and livestock operations. Case studies are often the best way to explain agricultural industry concerns to local and state officials as well as commodity associations. To encourage communication between different interest groups, the Texas AgriLife Extension Services' risk management specialists and county agricultural agents developed regionspecific model farms through the FARM Assistance program. Focus groups were conducted and the FARM Assistance producer database was utilized to develop representative operations. These operations attempt to illustrate production agriculture in five distinct regions of the Northern Texas Panhandle.

Financial and Risk Management (FARM) Assistance is a highly specialized Extension effort aimed at helping farmers and ranchers with strategic planning and risk management. The program is a computerized decision support simulation model that uses both farm-level information supplied by participating producers and market price forecasts from the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri. It provides a 10-year financial forecast of the individual farm or ranch. An added program benefit is that by using actual participant data, risk management specialists are also able to conduct research on important industry issues such as state tax and federal farm policies. Additional work has focused on identifying the characteristics of successful versus struggling producers.

Model Farm Overview

The model farm process attempts to illustrate production agriculture in the Northern Texas Panhandle. Texas AgriLife Extension District 1 consists of 22 counties in this region. Characteristics vary greatly by county group, reflecting the diversity of Northern Panhandle agriculture. For purposes of this study, the counties were combined into five clusters, representing similar crop and livestock production systems (Figure 1). Risk management specialists then conducted eight focus group discussions with 55 participants, consisting of county agents, area producers, and agribusiness representatives. In these conversations. participants were asked to describe the structure and characteristics of a realistic operation in their respective areas. Model farms were developed and run through the FARM Assistance program. The models consisted primarily of crop and livestock operations. Eight different crops were analyzed having both dryland and irrigated production practices. Leased stockers, owned stockers, and/or cowcalf herds were also incorporated into several entities. Government payments were not

presumed to continue past 2012, and all cluster farms implemented a specific equipment replacement strategy over the projection period. **Cluster 1.** The Northwest Texas Panhandle model consists of a 2,500 acre crop farm and stocker operation that is 60% owned and 40% share leased. The crop share lease agreement is 1/3 on corn and wheat and 1/4 on cotton, with the landlord paying a percentage of fertilizer, chemicals, irrigation, and harvest (irrigated only). The analysis indicates an emphasis on wheat production (850 acres) and corn (650 acres), followed by sroghum (550 acres) and cotton (450 acres). All crops are operator sprayed and harvested. The farm takes in 300 head of stockers annually at a lease rate of \$0.55 per pound of gain. Stockers graze for approximately 105 days with an average daily gain of 1.75 lbs.

Figure 1. Texas AgriLife Extension Service District 1 - Panhandle



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Eight different crops were analyzed, having both dryland and irrigated production practices.

Table 1. 2012 Characteristics of Cluster 1 Model Farm, Northwest						
Crops	Acres	Yield	Price	Stocker		
Irr Corn	650	200 bu	\$6.00/bu	# Head	300	
Irr Cotton	450	1100 lbs	\$0.70/lb	Lease Rate	\$0.55	
Irr Wheat	500	40 bu	\$7.00/bu	In Weight	450 lbs	
Dry Wheat	350	0 bu	\$7.00/bu	Out Weight	634 lbs	
Irr Seed Sorghum	300	89.30 bu	\$16.50/bu	ADG	1.75 lbs	
Dry Sorghum	250	26 bu	\$5.40/bu			
Total Acres	2,500					

Cluster 2. The Northeast Texas Panhandle model consists of an approximately 3,900 acre crop farm and stocker operation that is 30% owned and 70% share leased. The crop share lease agreement is 1/4 on irrigated corn and wheat and 1/3 on dryland wheat and sorghum, with the landlord paying a portion of seed (irrigated only), fertilizer, chemicals, and irrigation. All crops are custom sprayed and owner harvested. The operation takes in 500 head of stockers annually at a lease rate of \$0.55 per pound of gain. Stockers graze for approximately 134 days with an average daily gain of 1.5 lbs.

Table 2. 2012 Characteristics of Cluster 2 model Farm, Northeast						
Crops	Acres	Yield	Price	Stocker		
Irr Corn	700	200 bu	\$6.00/bu	# Head	500	
Irr cotton	140	1125 lbs	\$0.70/lb	Lease Rate	\$0.55	
Irr Wheat	700	60 bu	\$7.00/bu	In Weight	450 lbs	
Dry Wheat	800	0 bu	\$7.00/bu	Out Weight	650 lbs	
Dry Sorghum	755	50 bu	\$5.40/bu	ADG	1.5 lbs	
Fallow	755					
Total Acres	3,850					

Cluster 3. The Western Texas Panhandle model consists of a 3,040 acre crop farm and stocker operation that is 66% owned and 34% share leased. The crop share lease agreement is 1/3 on all crops, with the landlord paying a percentage of fertilizer, chemicals, irrigation and harvest. Crops are custom sprayed and harvested. The operation takes in 250 stockers annually at a lease rate of \$0.55 per pound of gain. Stockers graze for 120 days with an average daily gain of 1.75 lbs.

Table 3. Characteristics of Cluster 3 Model Farm, Western						
Crops	Acres	Yield	Price	Stocker		
Sorghum Silage	240	22.5 ton	\$48.12/ton	# Head	250	
Irr Seed Sorghum	280	89.3 bu	\$16.50/bu	Lease Rate	\$0.55	
Irr Wheat	280	46 bu	\$7.00/bu	In Weight	450 lbs	
Dry Wheat	620	0 bu	\$7.00/bu	Out Weight	660 lbs	
Dry Sorghum	620	29 bu	\$5.40/bu	ADG	1.75 lbs	
Native Pasture	1000					
Total Acres	3,040					

Study results are illustrated based on the long-term (10-year) financial outlook of each model farm and represent a general financial outlook for producers in each county cluster. Results vary widely by county group.

Cluster 4. The Eastern Texas Panhandle model consists of an approximately 3,200 acre crop farm and stocker operation that is 50% owned and 50% share leased. The crop share lease agreement is 1/3 on corn, wheat, and sorghum and 1/4 on cotton, with the landlord paying a percentage of fertilizer, chemicals, irrigation, and harvest (cotton only). Grain crops are custom sprayed and cotton is custom harvested. The operation also takes in 100 head of stockers annually. Cattle graze for 128 days with an average daily gain of 1.8 lbs.

Table 4. 2012 Characteristics of Cluster 4 Model Farm, Eastern						
Crops	Acres	Yield	Price	Price Stocker		
Irr Corn	500	190 bu	\$6.00/bu	# Head	100	
Irr Cotton	500	1250 lbs	\$0.70/lb	Lease Rate	\$0.55	
Irr Wheat	200	45 bu	\$7.00/bu	In Weight	450 lbs	
Dry Wheat	400	20 bu	\$7.00/bu	Out Weight	680 lbs	
Dry Sorghum	400	35.71 bu	\$5.40/bu	ADG	1.8 lbs	
Irr Sorghum	300	107 bu	\$5.40/bu			
Dry Cotton	480	480 lbs	\$0.70/lb			
Fallow	400					
Total Acres	3,180					

Cluster 5. The Southeast Texas Panhandle model consists of a 3,800 acre crop farm and cattle operation that is 36% owned and 64% share leased. The crop share lease agreement is 1/4 on all crops, with the landlord paying a percentage of seed (cotton and peanuts only), fertilizer, chemicals, and harvest (cotton only). Wheat is custom sprayed and cotton is custom harvested. The operation also has 50 head of cows with an 86% calving rate. Weaning weight is 450 lbs with an estimated 2012 calf price of \$1.75/lb.

Table 5. 2012 Characteristics of Cluster 5 Model Farm, Southeast						
Crops	Acres	Yield	Price	Cow Herd		
Irr Cotton	800	1250 lbs	\$0.70/lb	# Head	50	
Dry Cotton	1,000	350 lbs	\$0.70/lb	Culling Rate	10%	
Irr Peanuts	200	1.80 ton	\$650/ton	Calving Rate	86%	
Dry Sorghum	400	32.14 bu	\$5.40/bu	Weaned lbs	450 lbs	
Irr Sorghum	200	100.14 bu	\$5.40/bu	Weaned \$	\$1.75	
Irr Wheat	200	50 bu	\$7.00/bu			
Native Pasture	1,000					
Total Acres	3,800					

Results

Study results show the long-term (10-year) model farm financial outlook, and represent a general economic overview for area producers. It should be noted that poor financial outcomes do not necessarily indicate an operational demise, but rather identifies problem areas that may require attention. Table 6 exhibits the projected 10-year average financial performance for each Northern Panhandle operation. Several calculations determine overall economic position. Profitability is measured by net cash farm income (NCFI). It represents the amount of money available for debt repayment, federal tax payments, capital equipment replacement, investment or withdrawal by the owner. Equity is

Northern and Western Texas Panhandle farms had the strongest financial performance.

calculated through real net worth (RNW) and shows the dollar amount left over after all assets are sold and all debts are paid. Liquidity measures the ability of a farm or ranch to meet its short-term financial obligations without disrupting normal business operations, and is evaluated through working capital. The debt-toasset ratio measures overall solvency while the return-toasset ratio determines financial

Table 6. Average Financial Performance of Cluster Farms							
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5		
Net Cash Farm Income	\$463,750	\$396,880	\$283,480	\$250,510	\$130,980		
Real Net Worth	\$2,256,940	\$1,539,350	\$1,378,220	\$1,265,450	\$956,130		
Working Capital	\$262,100	\$209,060	\$334,520	\$16,550	(\$83,770)		
Debt to Asset Ratio	31.07%	33.22%	24.93%	38.60%	41.82%		
Return to Assets (ROA)	11.67%	13.47%	12.62%	10.09%	6.28%		
Expense to Receipts Ratio	70%	69%	61%	82%	90%		
Net Farm Income to Receipts Ratio	13%	14%	22%	5%	1%		

efficiency. The operating expenses to receipts ratio shows what percent of revenues are used on operating expenses. Finally, the net farm income ratio calculates profit margin.

Cluster 1 exhibits strong financial performance among all evaluation categories. It has the highest average profitability, with a NCFI of \$463,750. Profit margin, as measured by income to receipts ratio is satisfactory at 13%. Cluster 1 also projects the greatest average real net worth of \$2.25 million. Solvency and liquidity are desirable, with an ending working capital of \$262,100 and an average debt-to-asset ratio of 31.07%. This measure indicates there is \$0.31 of debt for every \$1.00 in assets. Return to assets determines financial efficiency and averages 11.67%. Cluster 1's operating expense to receipts ratio indicates 70% of revenues are used on operating expenses.

Cluster 2 also shows desirable financial measures, with the second highest profitability (\$396,880 NCFI), and equity (\$1.54 million RNW). Ending working capital is third amongst the five clusters at \$209,060. Profit margin, as measured by income to receipts ratio, is 14%. The average debt-to-asset ratio is similar to Cluster 1 at 33.22%, while a return to assets of 13.47% is the highest of all five enterprises. Cluster 2's operating expense to receipts ratio indicates 69% of revenues are used on operating expenses. This number falls well within the recommend range for agricultural entities.

Cluster 3 has a lower profitability (\$285,000 NCFI) than Clusters 1 and 2, but maintains a strong ten-year equity position of \$1.39 million. Profit margin averages 22% and means that for every dollar in revenue, there is a \$0.22 gain after paying necessary expenses. Working capital is the highest of all five clusters (\$334,520). This situation is due primarily to a low debt to asset ratio (24.93%), and an attractive operating expense to receipts value (61%). In fact, it appears to be the most efficient operation in terms of expense management.

Cluster 4 projects a less desirable profitability (\$250,510 NCFI) than Clusters 1, 2, and 3, but is still higher than Cluster 5. It has an acceptable equity (\$1.26 million RNW) and an adequate return on assets (10.09%). Cluster 4 indicates a marginal working capital (\$16,550), which leads to considerable liquidity risk. This is exemplified by a 52% probability of experiencing a negative working capital over the analysis period (Figure 3). Profit margin, as measured by income to receipts ratio is low at 5%. Cluster 4's operating expense to receipts ratio indicates 82% of revenues are used on operating expenses.

Cluster 5 is the least desirable performer among all operations, as indicated by a net cash farm income of \$130,980. Real net worth is also lower than the other clusters, averaging \$956,130 from 2012-2021. Cluster 5 has the most elevated debt-to-asset ratio (41.82%), and the worst profit margin (1%). Average working capital remains negative for the majority of the analysis period, leading to high liquidity risk and a 67% chance of experiencing cash shortfalls (Figure 3). Cluster 5's operating expense to receipts ratio indicates 90% of revenues are used on operating expenses, which makes it the least efficient model in terms of expense management.

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



Summary

Case studies for 22 Northern Texas Panhandle counties were developed in an effort to facilitate communication between agricultural producers and their local officials. Based on focus group model farm characteristics and FARM Assistance analyses. the Northern and Western Texas Panhandle farms (Clusters 1, 2, & 3) have the strongest financial performance. These clusters project desirable profitability. equity, and financial efficiency, accompanied by acceptable debt levels. The Eastern operation (Cluster 4) indicates moderate financial performance, while the

Western Texas Panhandle farm (Cluster 5) shows the least attractive financial position. A conclusion can be drawn that operations with higher percentages of grain crops planted in 2012 fare better than cotton entities. Furthermore, farms with lower operating expense to receipts ratios have a more desirable liquidity risk profile than entities with less efficient expense management. This assertion is supported by Figures 2 and 3. It is important to note that these model farms

are based on the input of focus group participants. While they appear to be good indicators of regional production, they do not, and are not intended to portray all producers within each region.



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