



FARM Assistance

Focus

**AgriLIFE EXTENSION**
Texas A&M System



Panhandle Model Farms - Case Studies of Texas High Plains Agriculture

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Farm Assistance Focus 2010-1
March 2010



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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 region-specific 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

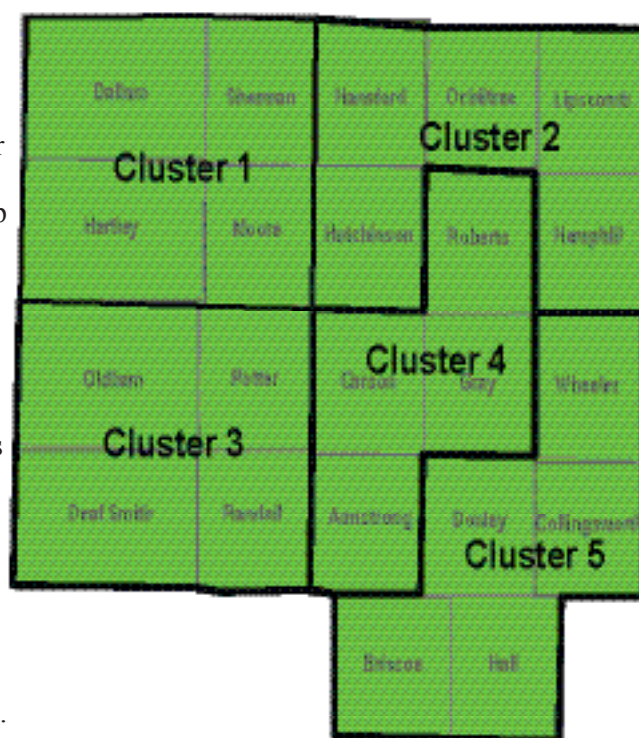
characteristics of successful versus struggling producers.

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 are grouped into five clusters, representing similar crop and livestock production systems. Risk management specialists conducted eight focus group discussions with 55 participants, consisting of county agents, area producers, and agribusiness representatives. In these discussions, participants were asked to describe the structure and characteristics of a realistic operation in their respective areas. Model farms consist of both crop and livestock operations. Five different crops were analyzed (both dryland and irrigated). These included corn, cotton, wheat, sorghum, and peanuts. Many operations also incorporated leased stockers, owned stockers, and/or cow-calf herds. All analyses also assumed a specific equipment replacement strategy during the 10-year projection period.

Cluster 1. The Northwest Texas Panhandle model operation consists of a 2,500 acre crop farm and stocker operation. The farm 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, and irrigation. The analysis indicates an emphasis on corn and wheat production (1,000 acres each), followed by Sorghum (300 acres) and cotton (200 acres). All crops are operator sprayed and harvested. The operation takes in 400 head of stockers annually at a lease rate of \$0.40 per pound of gain. The stockers are left on for an average 105 days with an average daily gain of 1.75 lbs.

Figure 1. Texas AgriLife Extension Service District 1 - Panhandle



Five different crops were analyzed. These included corn, cotton, wheat, sorghum, and peanuts. Many operations also incorporated leased stockers, owned stockers, and/or cow-calf herds.

Table 1. Characteristics of Cluster 1 Model Farm, Northwest					
Crops	Acres	Yield	Price	Stocker	
Irr Corn	1,000	220 bu	\$3.75/bu	# Head	400
Irr Cotton	200	1100 bu	\$0.56/bu	Lease Rate	\$0.40
Irr Wheat	500	60 bu	\$4.50/bu	In Weight	450 bu
Dry Wheat	500	15 bu	\$4.50/bu	Out Weight	634 lbs
Irr Seed Sorghum	200	98.21 bu	12.00/bu	ADG	1.75 lbs
Dry Sorghum	100	98.21 bu	3.25/bu		
Total Acres	2,500				

Cluster 2. The Northeast Texas Panhandle model operation consists of a 3,000 acre crop farm and stocker operation. The farm is 40% owned and 60% 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 \$0.40 per pound of gain. The stockers are left on for an average 134 days with an average daily gain of 1.5 lbs.

Table 2. Characteristics of Cluster 2 Model Farm, Northeast					
Crops	Acres	Yield	Price	Stockers	
Irr Corn	500	220 bu	\$3.75/bu	# Head	500
Irr Wheat	500	65 bu	\$4.50/bu	Lease Rate	\$0.40
Dry Wheat	700	25 bu	\$4.50/bu	In Weight	450 lbs
Dry Sorghum	650	60 bu	\$3.25/bu	Out Weight	651 lbs
Fallow	650			ADG	1.5 lbs
Total Acres	3000				

Cluster 3. The Western Texas Panhandle model operation consists of a 3,040 acre crop farm and a stocker operation. The farm 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, herbicide, irrigation and harvest. Crops are custom sprayed and custom harvested. The operation takes in 325 stockers annually at a lease rate of \$0.40 per pound of gain. The stockers are left on for an average of 120 days with an average daily gain of 1.75 lbs.

Table 3. Characteristics of Cluster 3 Model Farm, Western					
Crops	Acres	Yield	Price	Stockers	
Irr Wheat	280	60 bu	\$4.50/bu	# Head	325
Dry Wheat	620	20 bu	\$4.50/bu	Lease Rate	\$0.40
Dry Sorghum	620	39 bu	\$3.25/bu	In Weight	450 lbs
Irr Sorghum	280	98 bu	\$3.25/bu	Out Weight	660 lbs
Native Pasture	1000	0.65 ton	\$30/ton	ADG	1.75 lbs
Sorghum Silage	240	25 ton	\$35/ton		
Total Acres	3040				

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 operation consists of a 2,700 acre crop farm and stocker operation. The farm is 40% owned and 60% 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, and irrigation. The grain crops are custom sprayed and the cotton is custom harvested. The operation also purchases 250 head of stockers annually. Cattle graze for 128 days with an average daily gain of 1.8 lbs.

Table 4. Characteristics of Cluster 4 Model Farm, Eastern					
Crops	Acres	Yield	Price	Stockers	
Irr Corn	500	180 bu	\$3.75/bu	# Head	250
Irr Cotton	500	1250 lbs	\$0.56/bu	Purchase lbs	450 lbs
Irr Wheat	250	50 bu	\$4.50/bu	Purchase \$	\$1.00/lb
Dry Wheat	400	20 bu	\$4.50/bu	Sale lbs	680 lbs
Dry Sorghum	200	36 bu	\$3.25/bu	Sale \$	\$.96/lb
Irr Sorghum	250	90 bu	\$3.25/bu	ADG	1.8 lbs
Dry Cotton	200	450 lbs	\$0.56/bu		
Fallow	400				
Total Acres	2700				

Cluster 5. The Southeast Texas Panhandle model operation consists of a 4,000 acre crop farm and cattle operation. The farm is 62% owned and 38% share leased. The share lease agreement is 1/3 on irrigated cotton and irrigated peanuts and 1/4 on irrigated wheat, dryland cotton and sorghum with the landlord paying a percentage of fertilizer, insecticides, and irrigation. The wheat is custom sprayed and the cotton is custom harvested. The operation has 50 head of cows and an 85% calving rate. Weaning weight is assumed to be 450 lbs and the 2010 price received is \$1.02 for heifers and \$1.13 for steers.

Table 5. Characteristics of Cluster 5 Model Farm, Southeast					
Crops	Acres	Yield	Price	Cows	
Irr Cotton	600	1000 lbs	\$0.56/lb	# Head	50
Dry Cotton	1500	350 lbs	\$0.56/lb	Culling Rate	10%
Irr Peanuts	200	1.75 ton	\$400/ton	Calving Rate	85%
Native Pasture	1000	0.65 ton	30/ton	Weaned lbs	450 lbs
Irr Sorghum	200	100.14 bu	3.25/bu	Weaned \$	\$1.08
Dry Sorghum	500	32.14 bu	3.25/bu		
Total Acres	4000				

Results

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. It should be noted that a poor financial outlook does not necessarily indicate the demise of an operation, but rather identifies problem areas that may require attention.

Table 6 provides the projected 10-year average financial performance for each of the Northern Panhandle model farms. Results vary widely by county group. Several calculations are used to determine model farm financial 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 measured by real net worth (RNW) and represents the dollar amount left over if all assets were sold and all debts are paid. Liquidity is measured by working capital (WC). Working capital is calculated by subtracting current assets from current liabilities. It evaluates the ability of a farm to meet its short-term financial obligations. Figure 2 shows the probability of negative working capital, which represents the operations' overall liquidity risk. The debt-to-asset ratio, return-to-asset ratio, operating expenses to receipts ratio, and net farm income to receipts ratio are also used to determine overall performance.

Clusters 1 and 2 exhibit strong financial performance in all categories. Of the five clusters, Cluster 4 has the weakest financial performance in all categories.

Table 6. Average Financial Performance of Cluster Farms

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Net Cash Farm Income	\$369,930	\$197,830	\$102,740	\$71,760	\$109,390
Real Net Worth in 2019	\$3,042,280	\$1,479,310	\$1,316,990	\$856,200	\$1,130,640
Government Payments	\$68,170	\$36,720	\$14,570	\$76,950	\$67,290
Probability of Negative Capital in 2019	5%	22%	30%	85%	43%
Debt to Asset Ratio	0.19	0.27	0.17	0.43	0.26
Return to Assets (ROA)	11.22%	8.30%	4.13 %	4.12%	6.69%
Expense to Receipts Ratio	0.74	0.76	0.81	0.88	0.88

Cluster 1 exhibits strong financial performance in all categories. In terms of profitability, Cluster 1 has the highest average NCFI per year at \$369,930. Real net worth is also highest for Cluster 1 at \$2.3 million. Solvency and liquidity are desirable, with an average working capital of \$624,580 and an average debt-to-asset ratio of only 19%, meaning there is \$0.19 of debt for every \$1.00 in assets. Cluster 1 has some liquidity risk early in the analysis as indicated by a 51% chance of a negative working capital in 2010 (Figure 2). This probability improves over the period as cash levels rise and debt levels fall. Return to assets is also strong at 11.2%. Cluster 1's operating expense to receipts ratio indicates 74% of revenues are used on operating expenses. Meaning, for every .74 used by the operation, the operation gains \$1.00 in receipts.

Cluster 2 also exhibits strong financial performance, with the second highest profitability (\$197,830 NCFI), and equity (\$1.18 million RNW). Working capital is second amongst the 5 clusters at \$128,790. The debt-to-asset ratio is much higher than Cluster 1 at almost 27% as well as the return to assets being lower at 8.30%. Cluster 2's operating expense to receipts ratio indicates 76% of revenues are used on operating expenses; this is the second most efficient cluster of the five in terms of revenue generation.

Cluster 3 has a lower level of profitability (\$102,740 NCFI), keeping a relatively strong average equity position of \$1.11 million. Working capital is acceptable, but lower than Clusters 1 and 2 at \$118,820. Cluster 3 exhibits liquidity risk for the first year of the analysis, with a 51% chance of a negative working capital in 2010 (Figure 2), but quickly levels out to 30% by 2019. This probability improves over the analysis period as cash levels rise and debt levels fall. The debt-to-asset ratio for Cluster 3 is the lowest of all clusters at 17%. Return to assets is the second lowest of the five groups at 4.13%. Cluster 3 has less expected government payments than the other four clusters, averaging \$14,570 over the analysis period. Cluster 3's operating expense to receipts ratio indicates 81% of revenues are used on operating expenses.

The financial position of Cluster 4 is by far the least desirable of the 5 clusters. Cluster 4 has extremely poor levels of profitability (\$71,760 NCFI), equity (\$891,580 million RNW), and liquidity (-\$366,520 WC) and a low return on assets of 4.12%. It is important to note that Cluster 4 receives the highest level of government payments of the five cluster groups and would likely experience an income reduction if payments fall below projected levels. Cluster 4's operating expense to receipts ratio indicates 88% of revenues are used on operating expenses. Cluster 4 and 5 are tied as the least efficient model operations in terms of expense management.

Cluster 5 is neither the lowest nor highest performer of all the clusters. It has a net cash farm income (\$108,160) and negative average working capital (-\$21,940). Cluster 5 also exhibits a moderate debt-to-asset ratio (26%) and a lower return on assets (6%) compared to cluster one. The probability of negative working capital decreases throughout the analysis, starting at 57% in 2010 and declining to 43% by 2019. Real net worth averages \$983,490 over the 10-year analysis period. Additionally, Cluster 5 also receives a significant amount of government payments and would likely experience an income reduction if payments fall below projected levels. Cluster 5's operating expense to receipts ratio indicates 88% of revenues are used on operating expenses.

Operations with the highest percentage of grain crops fared better than cotton and peanut entities. Crop and stocker operations projected more desirable equity levels than those with cow-calf herds.

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 Northwest and Northeast Texas Panhandle farms (Clusters 1 & 2) have the strongest financial performance. These clusters project high profitability, equity, and financial efficiency, accompanied by low debt levels. The Western and Eastern Texas Panhandle (Clusters 3 & 5) indicate moderate financial performance, with lower but acceptable financial performance measures. The Southeast Texas Panhandle (Cluster 4) is the only county group to project an unacceptable position across all financial measures. A conclusion can be drawn that operations with the highest percentage of grain crops fared better than cotton and peanut entities. 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.

Figure 2. Probability of Negative Working Capital

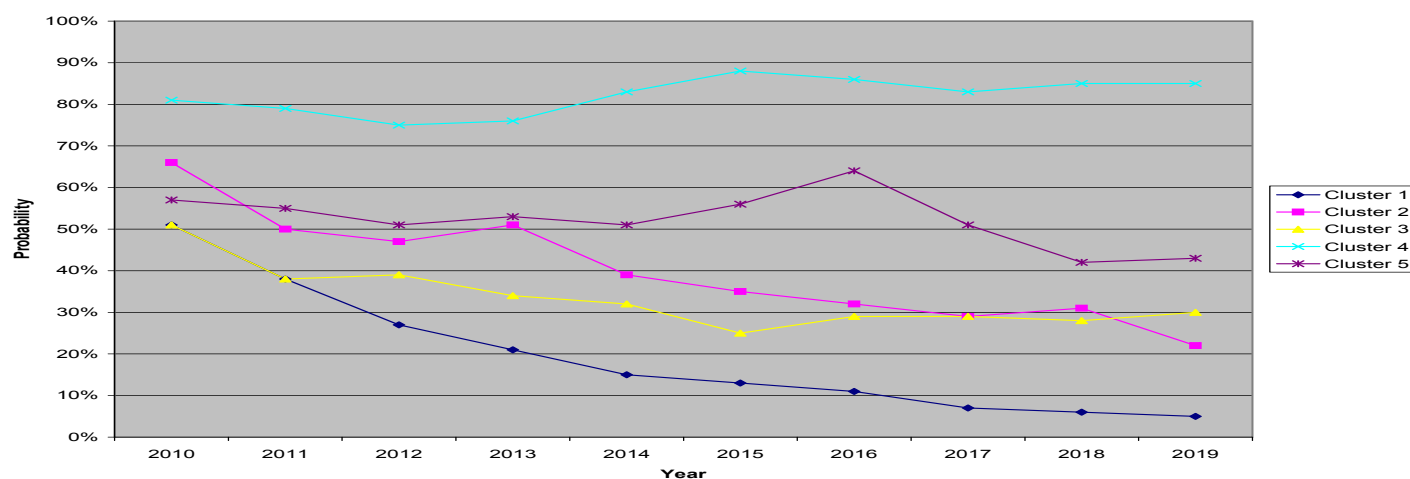
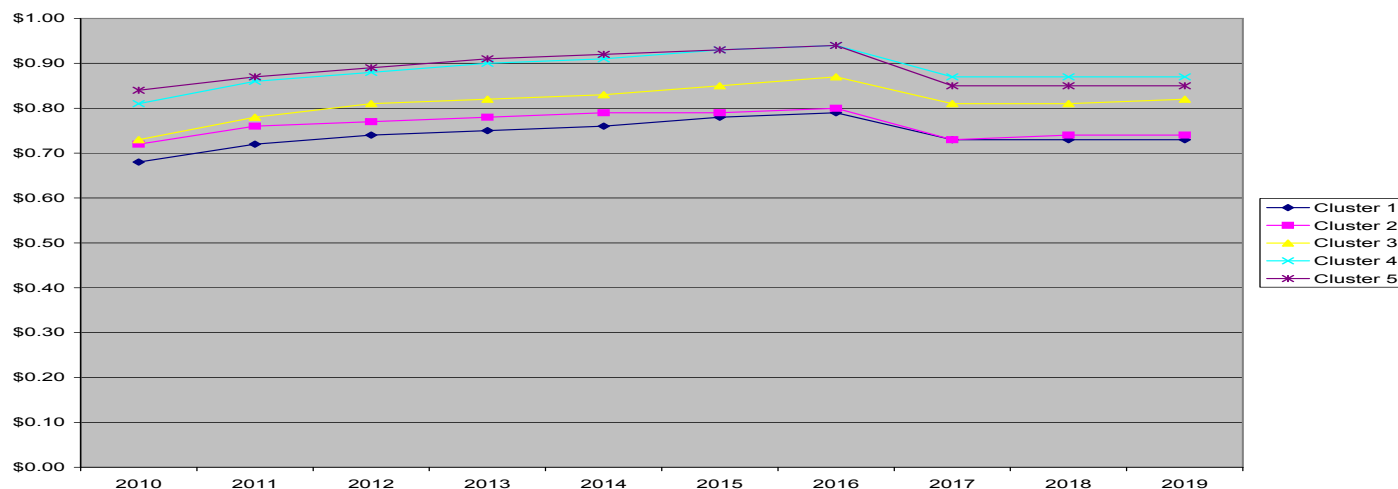


Figure 3. Operating Expense to Receipts Ratio



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