



FARM Assistance



Focus

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Panhandle Model Farms - 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 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.

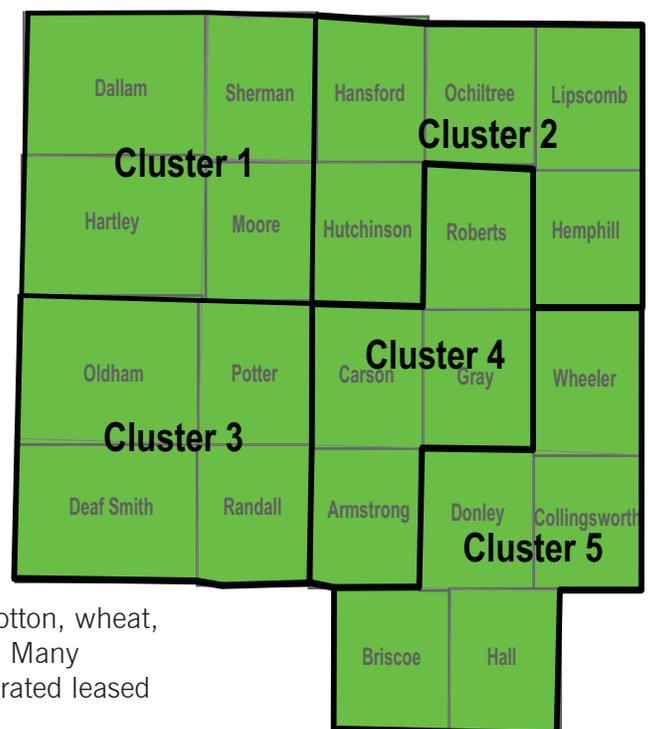
Model Farm Overview

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 production (1,000 acres), followed by equal

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.

amounts of cotton and wheat (500 acres each). All crops are operator sprayed and harvested. The operation takes in 500 head of stockers annually at a lease rate of \$0.44 per pound of gain. The stockers are left on for an average 105 days with an average daily gain of 1.75 lbs.

Crops	Acres	Yield	Price	Stocker	
Irr Corn	1,000	210 bu	\$4.05/bu	# Head	500
Irr Cotton	500	1000 bu	\$0.60/bu	Lease Rate	\$0.44
Irr Wheat	500	60 bu	\$6.30/bu	In Weight	450 bu
Dry Wheat	500	15 bu	\$6.30/bu	Out Weight	634 lbs
Total Acres	2,500			ADG	1.75 lbs

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 \$0.44 per pound of gain. The stockers are left on for an average 134 days with an average daily gain of 1.5 lbs.

Crops	Acres	Yield	Price	Stocker	
Irr Corn	500	200 bu	\$4.05/bu	# Head	500
Irr Wheat	500	65 bu	\$6.30/bu	Lease Rate	\$0.44
Dry Wheat	700	20 bu	\$6.30/bu	In Weight	450 lbs
Dry Sorghum	650	60 bu	\$3.50/bu	Out Weight	634 lbs
Fallow	650			ADG	1.5 lbs
Total Acres	3000				

Cluster 3. The Western Texas Panhandle model operation consists of a 2,800 acre crop farm, a cow-calf enterprise, and a stocker operation. The farm is 68% owned and 32% 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 250 stockers annually at a lease rate of \$0.44 per pound of gain. The stockers are left on for an average of 120 days with an average daily gain of 1.75 lbs. The operation also has a cow/calf operation with 50 head of cows and a 90% calving rate. Weaning weight is assumed to be 500 lbs and the 2008 price received is \$1.05 for heifers and \$1.15 for steers.

Crops	Acres	Yield	Price	Stocker		Cows	
Irr Wheat	280	45 bu	\$6.30/bu	# Head	250	# Head	50
Dry Wheat	620	20 bu	\$6.30/bu	Lease Rate	\$0.44	Culling Rate	6%
Dry Sorghum	620	35 bu	\$3.50/bu	In Weight	450 lbs	Calving Rate	90%
Irr Sorghum	280	90 bu	\$3.50/bu	Out Weight	660 lbs	Weaned lbs	500 lbs
Native Pasture	1000	0.65 ton	\$30/ton	ADG	1.75 lbs	Weaned \$	\$1.10
Total Acres	2800						

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.

Crops	Acres	Yield	Price	Stockers	
Irr Corn	500	180 bu	\$4.50/bu	# Head	250
Irr Cotton	500	750 lbs	\$0.60/bu	Purchase lbs	450 lbs
Irr Wheat	250	50 bu	\$6.30/bu	Purchase \$	\$1.17/lb
Dry Wheat	400	20 bu	\$6.30/bu	Sale lbs	680 lbs
Dry Sorghum	200	36 bu	\$3.50/bu	Sale \$	\$1.05/lb
Irr Sorghum	250	90 bu	\$3.50/bu	ADG	1.8 lbs
Dry Cotton	200	350 lbs	\$0.60/bu		
Fallow	400				
Total Acres	2700				

Cluster 5. The Southeast Texas Panhandle model operation consists of a 3,000 acre crop farm and cattle operation. The farm is 50% owned and 50% share leased. The share lease agreement is 1/3 on irrigated cotton and irrigated peanuts and 1/4 on irrigated wheat and dryland cotton, 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 86% calving rate. Weaning weight is assumed to be 450 lbs and the 2008 price received is \$1.05 for heifers and \$1.15 for steers.

Crops	Acres	Yield	Price	Cows	
Irr Cotton	375	1000 lbs	\$0.60/lb	# Head	50
Dry Cotton	1500	350 lbs	\$0.60/lb	Culling Rate	10%
Irr Peanuts	125	1.75 ton	\$425/ton	Calving Rate	86%
Native Pasture	1000			Weaned lbs	450 lbs
Total Acres	3000			Weaned \$	\$1.10

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. Net 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

Clusters 1 and 2 exhibit strong financial performance in all categories. Of the five clusters, Cluster 5 has the weakest financial performance in all categories.

ratio, return-to-asset ratio, operating expenses to receipts ratio, and net farm income to receipts ratio are also used to determine overall performance.

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Net Cash Farm Income	\$316,090	\$304,710	\$78,600	\$172,300	\$30,920
Real Net Worth	\$2,308,430	\$1,574,930	\$1,159,100	\$1,435,940	\$827,610
Government Payments	\$77,370	\$36,980	\$14,680	\$69,280	\$63,870
Working Capital	\$496,020	\$568,520	\$84,960	\$207,730	\$(235,140)
Debt to Asset Ratio	0.18	0.17	0.14	0.21	0.35
Return to Assets (ROA)	10.40%	12.97%	4.37 %	7.87%	5.00%
Expense to Receipts Ratio	0.73	0.61	0.73	0.78	0.91
Income to Receipts Ratio	0.18	0.30	0.14	0.11	0.04

Cluster 1 exhibits strong financial performance in all categories. In terms of profitability, Cluster 1 has the highest average NCFI per year at \$316,090. Profit margin, as measured by income to receipts ratio is satisfactory at 18%. Real net worth is also highest for Cluster 1 at \$2.3 million. Solvency and liquidity are desirable, with an average working capital of \$496,020 and an average debt-to-asset ratio of only 18%, meaning there is \$0.18 of debt for every \$1.00 in assets. Cluster 1 has some liquidity risk early in the analysis as indicated by a 46% chance of a negative working capital in 2008 (Figure 2). This probability improves over the period as cash levels rise and debt levels fall. Return to assets is also strong at 10.4%. It is important to note that Cluster 1 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 1's operating expense to receipts ratio indicates 73% of revenues are used on operating expenses.

Cluster 2 also exhibits strong financial performance, with the second highest profitability (\$304,710 NCFI), and equity (\$1.58 million RNW), as well as the highest available working capital (\$568,520). Desirable liquidity levels suggest virtually no chance of experiencing a negative working capital beyond the first year. Profit margin, as measured by income to receipts ratio, is desirable at 30%. The debt-to-asset ratio is even lower than Cluster 1 at 17% and the return to assets is very strong at 12.97%. Cluster 2's operating expense to receipts ratio indicates 61% of revenues are used on operating expenses; this is the most efficient cluster of the five in terms of revenue generation.

Cluster 3 has a much lower level of profitability (\$78,600 NCFI), although it maintains a relatively strong average equity position of \$1.16 million. Profit margin, as measured by income to receipts ratio, is satisfactory at 14%. Working capital is acceptable but much lower than Clusters 1 and 2 at \$84,960. Cluster 3 exhibits liquidity risk for the first several years of the analysis, with a 56% chance of a negative working capital in 2008 (Figure 2). 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 14%. However, this situation is due partially to a \$30,000 off-farm income, and does not necessarily result solely from farm operations. Return to assets is the lowest of the five groups at 4.37%. Cluster 3 has also less expected government payments than the other four clusters, averaging \$14,680 over the analysis period. Like Cluster 1, Cluster 3's operating expense to receipts ratio indicates 73% of revenues are used on operating expenses.

The financial position of Cluster 4 is more desirable than Clusters 3 and 5, but not as sound as Clusters 1 and 2.

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.

Cluster 4 has acceptable levels of profitability (\$172,300 NCFI), equity (\$1.44 million RNW), and solvency (\$207,730 WC) and a desirable return on assets of 7.87%. Profit margin, as measured by income to receipts ratio is also satisfactory at 11%. Like Cluster 1, Cluster 4 receives a significant amount of government payments and would likely experience an income reduction if payments fall below projected levels. Cluster 4's operating expense to receipts ratio indicates 78% of revenues are used on operating expenses.

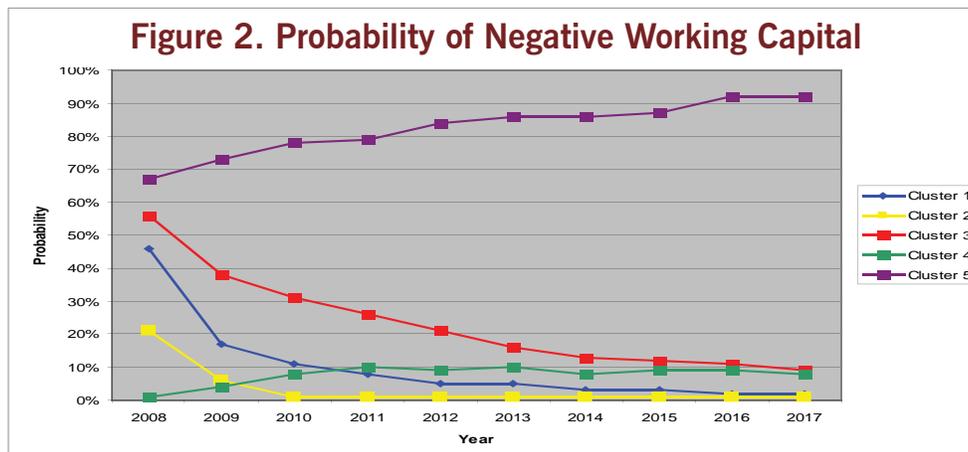
Of the five clusters, Cluster 5 has the weakest financial performance in all categories. It has a low average net cash farm income (\$30,920) and negative average working capital (-\$235,140). Cluster 5 also exhibits a higher debt-to-asset ratio (35%) and a lower return on assets (5%). The probability of negative working capital increases throughout the analysis, starting at 67% in 2008 and climbing to 92% by 2017. Profit

margin, as measured by income to receipts ratio is very low at 4%. Real net worth averages \$827,610 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 91% of revenues are used on operating expenses. Not surprising, Cluster 5 is the least efficient of the five model operations in terms of expense management.

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 & 4) indicate moderate financial performance, with lower but acceptable financial performance measures. The Southeast Texas Panhandle (Cluster 5) 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. Crop and stocker operations projected more desirable equity levels than those with cow-calf herds, and operating expenditures appeared to have a significant impact on liquidity and financial efficiency. 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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