



## **ACCRUAL VERSUS CASH ACCOUNTING**

This article discusses the importance of using accrual accounting to track financial performance and for benchmarking. First, the article will briefly discuss the differences between cash and accrual accounting. Second, the article will discuss the difference between a cash flow statement and an income statement. Third, the article will illustrate differences in net cash farm income and net accrual farm income (referred to as net farm income in all KFMA reports) using a case farm example. When discussing accrual and cash accounting, it is common to use the calendar year as the appropriate accounting period. Thus, the calendar year is used as the accounting period in the discussion below.

The term “cash” in the phrase cash accounting provides a good description of this accounting method. Transactions are typically not recorded unless cash has been received or spent under this accounting method. Revenue for products produced or services provided are recorded in the accounting period in which it is received. This often results in revenue being recorded in an accounting period different from the one in which the products were produced. Examples would include backgrounding fall weaned calves and selling them in February, and storing wheat past the beginning of new accounting period and then selling it. Similar to the

treatment of revenue, expenses are recorded in the accounting period in which cash was expended. This often results in recording expenses in a year different than the year in which the item is used. For example, seed may be purchased in December and used the next April. Using cash accounting and assuming calendar year end, this seed would be an expense in the year prior to the year in which the seed was used.

As with any accounting method there are advantages and disadvantages associated with using the cash accounting method. The primary advantage of this method is that is easy to use and that it typically generates the information that is needed for income tax purposes. The disadvantage of this method is that revenue and expenses, because they are often recorded in a year different from the production period, do not have a direct relation to the actual production activities of a particular year.

Accrual accounting is the standard used by most accountants and more importantly provides a much better picture of the profitability of a business. Accrual accounting records revenue using the value of all products produced and services provided during the accounting period. Accrual accounting emphasizes recording the value of products and services in the year produced and provided, regardless of when the cash was received. This artifact can make for large differences in cash and accrual revenue for a particular year. To accurately depict revenue, crops in storage and livestock inventories are given a value on the balance sheet which is then used to reflect inventory adjustments to accrual

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income. An inventory decrease reduces income while an inventory increase augments income.

An important principle in accrual accounting is the principle of matching income and expense items. Items purchased and paid for in the same year are recorded the same under the cash and accrual accounting methods. Differences in treatment of expenses arise when items are purchased in the year prior to that in which the items were used (these expenses are often referred to as prepaid expenses) or payment is not made until after the items are used (accounts payable and accrued expenses).

As with the cash accounting method, there are advantages and disadvantages associated with using the accrual accounting method. The primary advantage associated with using the accrual accounting method is that it more accurately reflects profitability in a given year. The primary disadvantage associated with this method is that it is more difficult to use, particularly if a farm is not in the habit of generating an accurate balance sheet.

The discussion below focuses on differences between cash flows and accrual income using an income statement. More information on income and cash flow statements can be found in the farm management guides MF-275 and MF-294, which can be found on the Ag Manager web site. There are several important differences between a cash flow statement and an income statement. A cash flow statement does not include non-cash items such as inventory adjustments and depreciation, but does typically include cash flows related to family living withdrawals, asset sales and purchases, principal payments, and income and self-employment taxes, all of which are not typically included in an income statement. The example cash flow statement described in MF-275 includes both farm and non-farm cash inflows and outflows. This is common when using a cash flow statement in isolation of an income statement.

Table 1 provides an illustration of the difference

between net cash farm income and net accrual farm income using the same case farm that was used to discuss benchmarking in last month's and this month's newsletters. This case farm has a cow/calf enterprise and produces grain sorghum, wheat, alfalfa, and soybeans. Operating inventories, used to compute net accrual farm income, are depicted in Table 2. The case farm has fertilizer and lime inventories, but does not have accrued income or accrued expense items. There are several common mistakes in the preparation of an income statement. These mistakes include the following: the inclusion of asset and liability values rather than changes in these items, leaving out accounts receivable or accounts payable, and using tax depreciation rather than economic depreciation.

Net cash farm income for the income statement in Table 1 is \$94,357. After the inclusion of inventory changes or adjustments, and depreciation, net accrual farm income is \$67,850. The case farm uses a consistent marketing plan. Thus, the negative inventory adjustment reflects differences in yields and prices between the prior year and the current year. If yields or prices would have been relatively higher in the current year, the inventory adjustment would have been positive.

As indicated above, net cash farm income is heavily dependent on when crop and livestock enterprises are sold. The two scenarios depicted in Tables 3-4 illustrate situations in which the crops for the case farm are sold in the year produced and sold in the year following the production year, respectively. For ease of illustration, the sales prices of the crops are assumed to be the same in Tables 1-4. This of course would typically not be the case. Table 3 shows a net cash farm income of \$140,141; \$45,784 higher than the net cash farm income in Table 1. The \$45,784 figure represents the ending inventory values for grain sorghum and alfalfa in Table 2. Table 4, in contrast to Tables 1 and 3, shows a net cash farm income of -\$62,817, which is \$157,174 lower than net cash

farm income illustrated in Table 1. The \$157,174 figure represents total crop income in Table 1. It is important to note that net accrual farm income is the same in Tables 1, 3, and 4.

The examples above illustrate situations in which net cash farm income varies substantially while net accrual farm income remains constant. These examples were used to illustrate how net cash farm income changes as marketing plans are adjusted. When comparing net cash farm income and net accrual farm income over time, it is more likely to see a relatively stable net cash farm income and a net accrual farm income that is more volatile. This phenomenon is due to the fact that many farms use cash basis accounting for tax purposes and try to stabilize cash income, to the extent that this is possible, over time.

This article briefly discussed the importance of using accrual accounting to track financial performance and for benchmarking. It is important for businesses to develop a cash flow statement and an income statement. A cash flow statement is used to examine historical cash inflows and outflows, and to project borrowing needs. An income statement, on the other hand, is used to track financial performance. The bottom line number in a farm income statement, net accrual farm income, is used to develop financial ratios such as the operating profit margin ratio and the total expense ratio.

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**Table 1. Net Accrual Farm Income Statement.**

Description	Dollars
Livestock Income:	
Raised Beef	80,933
Beef, Breeding Stock	12,600
Total Livestock Income	<u>\$93,533</u>
Crop Income:	
Grain Sorghum	23,154
Wheat	60,404
Alfalfa	36,256
Soybeans	37,360
Total Crop Income	<u>\$157,174</u>
Other Income:	
Patronage Dividends	400
Government Payments	6,243
Crop Insurance Proceeds	2,508
Total Other Income	<u>\$9,151</u>
Total Gross Cash Farm Receipts	\$259,858
Cash Operating Expenses:	
Hired Labor	7,653
General Machinery Repair	16,735
Building Repair	1,075
Interest Paid	13,729
Feed Purchased	6,839
Seed and Other Crop Expense	10,307
Crop Insurance	4,831
Fertilizer and Lime	22,786
Machine Hire	7,146
Fees, Publications, Travel	2,508
Vet Medicine and Drugs	2,343
Livestock Marketing and Breeding	4,023
Gas, Fuel, Oil	13,958
Crop Storage and Marketing	715
Real Estate Tax	3,560
Personal Property Tax	834
General Farm Insurance	3,408
Farm Utilities	1,863
Cash Farm Rent	10,240
Herbicide and Insecticide	12,370
Conservation	578
Total Cash Operating Expenses	<u>\$147,501</u>
Livestock Purchases:	
Beef, Breeding Stock	\$18,000
Total Cash Farm Expenses	\$165,501
Net Cash Farm Income (1)	\$94,357
Ending Operating Inventory	\$150,784
Beginning Operating Inventory	\$157,971
Inventory Adjustment (2)	-\$7,187
Accrued Income and Expense (3)	\$0
Management Depreciation (4)	\$19,320
Net Accrual Farm Income (1) + (2) + (3) - (4)	<u>\$67,850</u>

**Table 2. Beginning and Ending Operating Inventories**

Item	Beginning	Ending
Beef Breeding Stock	97,500	97,500
Grain Sorghum	13,371	12,784
Alfalfa	39,600	33,000
Fertilizer and Lime	<u>7,500</u>	<u>7,500</u>
Total Operating Inventory	\$157,971	\$150,784

**Table 3. Scenario #1: Sell All Crops During Year.**

Description	
Net Cash Farm Income (1)	\$140,141
Ending Operating Inventory	\$105,000
Beginning Operating Inventory	\$157,971
Inventory Adjustment (2)	-\$52,971
Accrued Income and Expense (3)	\$0
Management Depreciation (4)	\$19,320
Net Accrual Farm Income (1) + (2) + (3) - (4)	\$67,850

**Table 4. Scenario #2: Do not Sell Any Crops During Year.**

Description	
Net Cash Farm Income (1)	-\$62,817
Ending Operating Inventory	\$307,958
Beginning Operating Inventory	\$157,971
Inventory Adjustment (2)	\$149,987
Accrued Income and Expense (3)	\$0
Management Depreciation (4)	\$19,320
Net Accrual Farm Income (1) + (2) + (3) - (4)	\$67,850

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## BENCHMARKING EXAMPLE

As indicated in last month's newsletter, external benchmarking involves comparing an individual farm's performance to that of similar farms. This article uses a case farm to illustrate external benchmarking.

The table and figure below were developed for a case farm that has a cow/calf enterprise and produces grain sorghum, wheat, alfalfa, and soybeans. This case farm was developed using north central KFMA data so it is compared to farms in the north central KFMA. The farm has a value of farm production that is less than \$250,000 and is typed as a crop, cow herd farm. Each KFMA farm with a 2009 analysis will receive a table and figure with a similar layout to those presented in this newsletter this spring.

Examining the table comparisons for the farm type column, the case farm had a lower value of farm production, farm production per worker, and total expense ratio; and a higher net farm income, gross crop value per acre, machinery investment per acre, and net farm income as a percent of average net worth for 2009. The lower farm production per worker indicates that labor is not utilized as efficiently on this farm as it is on similar farms. The relatively higher machinery investment per acre indicates that the farm has more money invested in crop machinery than similar farms. To mitigate this problem the farm could slow down its purchases of crop machinery and/or expand crop acreage. The lower total expense ratio and higher net farm income as a percent of average net worth provide signals that the case farm has above average financial efficiency and profitability measures compared to similar farms.

The stoplight figure below can be used to compare the case farm to key benchmarks for solvency, profitability, and efficiency ratios. For each profitability and efficiency ratio illustrated in the stoplight figure, the goal would be to land in the green zone. Benchmarks for

solvency are more difficult to compare. A low or high debt to asset ratio is not necessarily desirable or problematic. Key considerations when examining the debt to asset ratio for an individual farm are the operator's or operators' aversion to risk and a comparison between the rate of return on assets and a farm's interest rate on borrowed funds. A farm with a high rate of return can handle a relatively higher debt to asset ratio. In contrast, for a farm with a low rate of return, debt reduces profitability. Comments below will focus on the debt to asset ratio, operating expense ratio, and profit margin.

The five-year average debt to asset ratio for the case farm is 0.22. In comparison, the 2009 debt to asset ratio was 0.18. The case farm has been paying down debt the last several years. It is important to note that the case farm is relatively small compared to the average north central KFMA farm. If the case farm decides to expand in the next few years, the debt to asset ratio will increase.

The five-year average operating expense ratio for the case farm is 0.5850 which is below the benchmark of 0.62 in the stoplight figure. An operating expense ratio above 0.72 would be in the red zone of the stoplight figure. Farms with an operating expense ratio above 0.72 should take a close look at how their individual expense items compare to similar farms, and if not already doing so, should try to analyze the cost and net return of individual enterprises on their farm.

The profit margin is computed by adding cash interest paid and subtracting unpaid labor from net accrual farm income, and then dividing the result by value of farm production. The five-year average profit margin for the case farm is 0.2810. This profit margin is well within the green zone of the stoplight figure. In addition to examining individual expense items and enterprises, farms with a profit margin in the red

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zone, or below 0.10, should take a close look at farm production per worker. Often farms with a low profit margin have a relatively low farm production per worker and thus in addition to other inputs are not efficiently utilizing labor.

As a final note on the information provided in the table and figure below, it is important to note that capital gains or losses on land are not included in the return on farm assets or the return on farm equity figures presented. Including capital gains or losses, particularly in recent years, would typically increase these ratios. A producer wanting to compare these ratios to the returns from off-farm investments

would need to include capital gains or losses on land in their computation of these ratios.

This article provided an example of external benchmarking using a case farm. Each KFMA member that processed a 2009 analysis will receive a table and figure similar to those discussed in this article this spring. Updated benchmark information by farm size and farm type will be presented in future newsletters.

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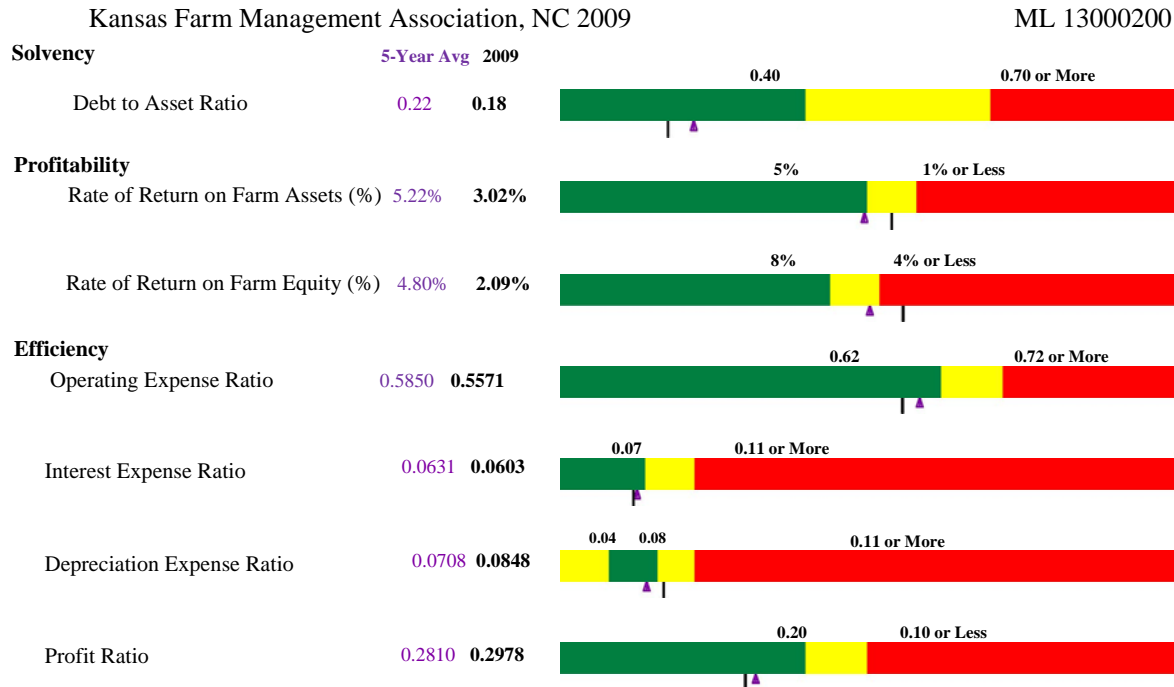
Kansas Farm Management Association, NC 2009

ML 13000200

	Your Farm	RL County	VFP < 250,000	Farm Type *	KFMA NC
Number of Farms		9	112	31	277
Gross Livestock Income	75,533	35,300	38,510	121,608	96,907
Feed Expense	6,839	8,901	14,130	22,972	40,425
Livestock Income	68,694	26,399	24,380	98,637	56,482
Non-Livestock Income	159,137	163,827	120,715	169,417	317,719
Value of Farm Production	227,831	190,226	145,095	268,054	374,201
Cash Operating Expense	140,662	98,841	108,651	214,645	256,492
Depreciation	19,320	15,214	12,647	22,089	29,435
Total Farm Expense	159,982	114,055	121,297	236,734	285,927
Net Farm Income	67,849	76,171	23,798	31,319	88,274
Total Crop Acres Farmed	800	559	554	777	1,140
Gross Value of Crops/Crop Acre	311.89	360.26	279.01	277.65	335.17
Crop Production Cost/Crop Acre	156.13	177.39	162.66	172.88	190.57
Machinery Investment/Crop Acre	201.72	205.38	153.24	156.48	161.98
Fuel Cost/Crop Acre	14.13	13.66	12.32	14.82	12.57
Machinery Repair/Crop Acre	15.69	19.43	20.55	25.13	21.90
Machinery Cost/Crop Acre	75.94	84.45	69.00	70.46	72.72
Farm Production per Worker	189,859	231,356	189,181	235,401	291,818
Total Expense Ratio	0.70	0.60	0.84	0.88	0.76
Economic Total Expense Ratio	1.22	1.22	1.37	1.26	1.05
Ending Total Assets	1,055,043	1,205,090	705,476	1,131,253	1,112,197
Ending Total Debt	186,100	69,626	167,358	372,573	341,066
Ending Net Worth	868,943	1,135,463	538,119	758,680	771,131
NFI as % of Ave. Net Worth	7.81%	6.71%	4.42%	4.13%	11.45%
Debt to Asset Ratio	0.18	0.06	0.24	0.33	0.31
Interest Paid	13,729	5,293	10,980	25,125	19,018

\*Farm Type 21 = Crop, Cow Herd

This farm not included in average calculations.



Purple indicates your farm's 5-year average.

## RECOMMENDATIONS FOR FURTHER READING

The purpose of this section of the newsletter is to briefly discuss articles and web sites that may be of interest to readers. In general, the articles discussed will not report on original research. Rather, the articles will contain citations to web sites and articles that discuss topics of general interest.

A recent issue of the *Animal Science Monitor* (Issue 102), written by Beth Hilson, Dan Simmons, and Don Hunter, discusses the importance of social networking. The authors contrast traditional networking with social networking. Traditional networking involves

making connections and building relationships through face-to-face meetings and over the phone. Social networking is an online form of networking that involves the exchange of information and ideas. Social networking sites include MySpace, Facebook, Twitter, and LinkedIn. The authors briefly discuss three reasons to social network: to become an expert in your field, to know who to turn to when you need information, and to stay in touch with personal and professional references. The authors also discuss how to social network. For more information on social networking, I encourage you read the issue articles. Issues of

the *Animal Science Monitor* can be accessed via the following web site:

[www.animalsciencemonitor.com](http://www.animalsciencemonitor.com).

Karen Dynan of the Brookings Institution has recently written an article entitled “The Income Rollercoaster: Rising Income Volatility and its Implications”. In the article, she documents the increasing volatility of household income in the United States since the late 1960s. The increase in volatility is largely the result of the increase in large income swings in individual households. The frequency in income declines of 50 percent or more has increased from 7 percent households in the late 1960s to 12 percent in the mid 2000s. The author indicates that some of the possible explanations for the increase in volatility are globalization, deregulation, and technological change. Though not discussed in the article, changes in income levels and volatility directly impact the demand for food, particularly the demand for livestock products. The article by Dynan can be found on my contributor site under “Recommendations for Further Reading”.

Henry Aaron, an expert on Social Security at the

Brookings Institution, recently wrote an article on the importance of accurately describing future shortfalls associated with the Social Security program. He notes that the Social Security program derives revenue from three sources: payroll taxes levied on covered earnings, earmarked income taxes levied on benefits, and interest earnings on reserves. Outlays will exceed payroll taxes this year, but will not exceed the total garnered from all three sources of revenue. The key policy issues involve closing the long-term gap between outlays and revenue for the Social Security program and getting the U.S. budget deficits under control.

The Federal Reserve Bank of New York publishes a web site that illustrates delinquency rates for auto loans, bank cards, mortgages, and student loans. Current rates as well as year to year changes in rates are illustrated. This web site can be accessed using the following link: [data.newyorkfed.org/creditconditions](http://data.newyorkfed.org/creditconditions).

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The Kansas Farm Management Association (KFMA) Newsletter is distributed monthly to provide farm management information to farm decision makers. Further farm management information can be found on the KFMA program website: [www.agmanager.info/kfma](http://www.agmanager.info/kfma); and, on the Extension Agricultural Economics website: [www.agmanager.info](http://www.agmanager.info). The Newsletter is edited by Michael Langemeier, Professor,

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