

# Assessing the Financial Position of an Aquaculture Business: Using Balance Sheets

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Aquaculture businesses require careful and comprehensive financial analysis to be successful. Comprehensive financial analysis has three key components: financial position, profitability and liquidity/cash flow. Other SRAC publications provide an overview of financial management (4400), and address profitability (4402) and liquidity/cash flow (4403). This publication focuses on using balance sheets to analyze financial position.

A critical long-term decision aquaculturists must make is to determine whether the business can generate enough value over time to pay off its debts. The appropriate financial statement for doing this is the balance sheet. It is used to identify the financial strengths and weaknesses of the business. Financial position is determined by comparing the strengths and weaknesses identified through a series of financial ratios and indicators.

The balance sheet is divided into two main categories: assets and liabilities. Assets include all the cash, savings, equipment, buildings and land owned by the business. The value of the swimming inventory of fish on the farm is also an asset. Liabilities are the debt obligations and bills that have not yet been paid and are owed to the bank, supply store, feed mill, or other suppliers.

The balance sheet is structured by dividing assets and liabilities into one of two time periods: current and non-current. Current assets are those that will be converted into cash in the coming year. Current assets include the balances in the business's checking and savings accounts and the value of the inventory of fish that will be sold in the coming year. Non-current assets are those items used on the farm for more than a year that would not

be sold in the coming year. Non-current assets include land, ponds, equipment and buildings. Current liabilities include bills and loan payments to be made in the coming year. The amounts of principal remaining on loans in subsequent years are non-current liabilities on the balance sheet.

Table 1 presents a balance sheet for a 256-acre catfish farm. In this example, current assets include cash on deposit (\$15,000), the balance in the checking account (\$849), and the value of small fish in the ponds (\$266,112), while non-current assets include the value of equipment, ponds, wells and land. The total value of current assets is added to that of non-current assets to obtain total assets (\$1,285,851). In a similar fashion, current liabilities include the payments due this year on the equipment and pond construction loans (\$110,584), while non-current liabilities include the principal that remains on the equipment and pond construction loans (\$423,630). The value of the current liabilities is added to that of non-current liabilities to obtain the value of total liabilities for the business (\$534,214).

The total value of the business at the time the balance sheet is prepared is calculated by subtracting total liabilities from total assets to obtain an indicator termed "net worth." Also referred to as "owner equity," net worth is the bottomline of the balance sheet. In this example, net worth is positive, at \$751,637. A positive net worth like this indicates that the business is solvent. In other words, if the business were to be sold, the value of the assets is high enough to pay off the claims (liabilities) on the business's assets. The value of a successful business increases over time, as measured by increasing net worth from year to year.

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**Table 1. Balance sheet for a 256-acre catfish farm, December 31.**

Item	Total value
<b>Assets</b>	
<b>1. Current assets</b>	
Cash on deposit	\$15,000
Checking account balance	849
Accounts receivable	0
Fish inventory <sup>a</sup>	\$266,112
<b>Total current assets</b>	<b>\$281,961</b>
<b>2. Non-current assets</b>	
Equipment	\$387,570
Ponds	\$357,888
Wells	\$48,000
Land	\$210,432
<b>Total non-current assets</b>	<b>\$1,003,890</b>
<b>3. Total assets</b>	<b>\$1,285,851</b>
<b>Liabilities</b>	
<b>4. Current liabilities</b>	
Payments on debt due and payable over next year	
Equipment	\$72,368
Real estate (pond construction)	\$38,216
<b>Total current liabilities</b>	<b>\$110,584</b>
<b>5. Non-current liabilities</b>	
Equipment loan	\$168,858
Real estate loan	\$254,772
<b>Total non-current liabilities</b>	<b>\$423,630</b>
<b>6. Total liabilities</b>	<b>\$534,214</b>
<b>7. Net worth (3-6)</b>	<b>\$751,637</b>

<sup>a</sup>4,500 sub-marketable fish per acre at 0.33 pound each at \$0.70 per pound.

Other financial indicators and ratios can be used to assess various specific aspects of the business and provide greater perspective on its performance. For example, Table 2 shows that the net worth of the business, while positive, declined in the past year, resulting in a negative change in net worth. Such a decrease in net worth indicates a weakening financial position that can be problematic, although it does not necessarily mean that the business is doomed. Decreasing net worth does indicate that additional scrutiny is needed to identify the specific reasons for the downturn in financial position and to identify corrective action.

Another useful ratio calculated from the balance sheet is the debt/asset ratio. The debt/asset ratio is 0.42 for the example catfish farm. This value is within a range considered acceptable by most lenders (< 0.50) and shows that the overall debt on the farm is not too high. Thus, the negative net worth on this farm's balance sheet may

**Table 2. Financial ratios that measure solvency and liquidity from the balance sheet for a 256-acre catfish farm.**

Ratio	Value
<b>Solvency</b>	
Change in net worth	-\$245,994
Debt/asset ratio	0.42
Equity/asset ratio	0.58
Debt/equity ratio	0.71
Debt structure ratio	0.21
<b>Liquidity</b>	
Current ratio	2.55
Working capital	\$171,377

have more to do with a downturn in the economy and the resulting decreases in land prices and value of assets than with structural problems in the business.

The other solvency ratios in Table 2 also provide detailed information on specific aspects of the financial position of the business. The equity/asset ratio of 0.58, for example, shows that the majority (58 percent) of the capital in the business has been contributed by the owner. The debt/equity ratio compares the amount of debt directly to the quantity of equity in the business. A debt/equity ratio that is less than 1, as in Table 2 (0.71), shows that the amount of debt in the business is less than the amount of capital contributed by the owner. Finally, the debt structure ratio of 0.21 means that 21 percent of the debt is in current liabilities (those that must be paid in the coming year) and that the majority of the debt is from long-term loans.

The balance sheet can also provide a quick look at the liquidity of the business. Liquidity measures the ability of a business to meet its cash flow obligations, which is important for smooth financial transactions. The current ratio is a general measure of liquidity. The higher the current ratio, the better the liquidity; a value above 1 indicates adequate liquidity. For the farm example in Table 1, the current ratio of 2.55 indicates that there is sufficient liquidity (Table 2). Table 2 also shows working capital of \$171,377. Working capital is the amount of capital available for use in the near future, after all current liabilities have been met.

Balance sheets can be prepared by farmers themselves or by their accountants. However, not all accountants calculate the financial ratios discussed here and these ratios provide useful insights into the business. Fish farmers who choose to prepare their own balance sheets and calculate the associated ratios can use the spreadsheet template developed by Engle et al. (2009 a, b, c), the AgPlan website (University of Minnesota, 2010), or a purchased business planning tool.

Once the balance sheet is developed, it can be used to establish specific goals for improving the business's financial position over the next year. It can also be used to identify specific types of financial problems, such as whether the business has incurred too much debt to be able to continue. For example, Table 3 shows 3 years of balance sheets for the example catfish farm. While net worth is positive, it declines across the 3 years and the debt/asset ratio increases across the same period. These changes were caused by a downturn in the economy that decreased the prices of catfish. The value of current assets fell because the value of swimming inventory (affected by the declining prices) is a large component of the assets on a catfish farm. A secondary effect of the economic downturn was a decline in the value of land in the area that decreased the value of non-current assets. These declining asset values resulted in lower total assets on the balance sheet.

The decrease in catfish prices in the second year also reduced revenue for the farm, making it difficult to pay down the full amount of the operating line of credit at the end of Year 1. This increased the value of current and total liabilities on the balance sheet.

The associated debt/asset ratio reached 0.67 in Year 3. If catfish prices are expected to increase in Year 4, the balance sheet should improve and other changes might not be needed. However, if the price of catfish is not expected to increase, other changes may be needed on the farm to strengthen the balance sheet.

The example in Table 3 shows how changes in the price of catfish can affect a balance sheet through a change in the value of the farm inventory of catfish. Yet it is difficult to accurately estimate farm inventories of catfish. The depletion method has been shown to estimate inventories within an accuracy of 10 percent (Engle et al., 1998), but it requires the farmer to seine the pond two to three times and weigh all fish into a separate sock after each seining. For most farms, this is expensive and impractical unless combined with harvesting. Sudhakaran (2009) showed that the commonly used feed response methods of estimating inventories are not accurate enough for financial planning. However, farmers who carefully monitor stocking, feeding and harvesting for each pond over time can maintain fairly accurate records of pond inventory.

Creative solutions to financial problems are sometimes needed. For example, the working capital for the 431-acre catfish farm in Table 4 is low for this farm size. The farmer is aware that increasing his aeration rate from 1 to 2 hp per acre would increase yields and profits. However, the debt/asset ratio of 0.67 will likely prevent a bank from approving the loans needed to buy additional aerators. The debt structure on the farm shows that most

**Table 3. Practical application of financial indicators, 256-acre catfish farm. (Values taken from Table 1.)**

Balance sheet category	Year 1	Year 2	Year 3
<b>Assets</b>			
Current	\$281,961	\$228,096	\$228,096
Non-current	\$1,003,890	\$889,170	\$889,170
Total	\$1,285,851	\$1,117,266	\$1,117,266
<b>Liabilities</b>			
Current	\$110,584	\$187,993	\$319,588
Non-current	\$423,630	\$423,630	\$423,630
Total	\$534,214	\$611,623	\$743,218
<b>Net worth</b>	<b>\$751,637</b>	<b>\$505,643</b>	<b>\$374,048</b>
<b>Debt/asset ratio</b>	<b>0.42</b>	<b>0.55</b>	<b>0.67</b>
<b>Current ratio</b>	<b>2.55</b>	<b>1.21</b>	<b>0.71</b>

**Table 4. Catfish farm balance sheet, 431-acre farm, end-of-year.**

Category	Single farm	Merged farm
<b>Assets</b>		
<b>1. Current assets</b>		
Cash on deposit	\$31,000	\$62,000
Fish inventory	\$150,000	\$300,000
<b>Total current assets</b>	<b>\$181,000</b>	<b>\$362,000</b>
<b>2. Non-current assets</b>		
Equipment	\$606,035	\$1,513,070
Ponds	\$602,538	\$1,205,076
Wells	\$81,000	\$162,000
Land	354,282	708,564
<b>Total non-current assets</b>	<b>\$1,643,855</b>	<b>\$3,588,710</b>
<b>3. Total assets</b>	<b>\$1,824,855</b>	<b>\$3,950,710</b>
<b>Liabilities</b>		
<b>4. Current liabilities</b>		
Payments on debt due and payable over next year		
Equipment	\$80,914	\$142,741
Real estate	\$78,811	\$78,811
<b>Total current liabilities</b>	<b>\$159,725</b>	<b>\$221,552</b>
<b>5. Non-current liabilities</b>		
Equipment loan	\$393,923	\$694,923
Real estate loan	\$674,583	\$674,583
<b>Total non-current liabilities</b>	<b>\$1,068,506</b>	<b>\$1,369,506</b>
<b>6. Total liabilities</b>	<b>\$1,228,231</b>	<b>\$1,591,058</b>
<b>7. Net worth</b>	<b>\$596,624</b>	<b>\$2,359,652</b>
Current ratio (1÷4)	1.13	1.63
Working capital (1-4)	\$21,275	\$140,448
Equity/asset ratio (7÷3)	0.33	0.60
Debt/asset ratio (6÷3)	0.67	0.40
Debt/equity ratio (6÷7)	2.06	0.67
Debt structure (4÷6)	0.13	0.14

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of the debt is long-term. In this case, then, the debt/asset ratio stems from real estate and equipment loans, not operating capital loans.

The farmer who owns the business described in Table 4 decided to merge his business with that of a family member who has been in the catfish business for many years, built his ponds himself, and has no outstanding long-term debt. As a result of the merger, the debt/asset ratio decreased to more acceptable levels. This allowed the now-combined business to purchase additional aerators for all ponds to achieve the 2 hp per acre aeration rate, increasing yields, profits, and working capital. A stronger financial position was created for the business through this creative management solution.

Developing and analyzing balance sheets each year allows the farmer to understand the financial position of his/her business. Better decisions can be made with respect to borrowing and managing capital assets when the owner clearly understands the financial strengths and weaknesses of the business.

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