# Return on Assets and Return on Equity

**Return on Assets and Return on Equity are important KPIs for benchmarking historical performance and also for comparing future investments.**

### General formula for calculating Return on Assets

Return on Assets $\quad\quad$ = $\dfrac{\text{Return}}{\text{Opening Asset}}$ x 100

### Formula for calculating Return on Dairy Assets on a Dairy Farm
(no owned runoff or no rent or lease of milking land, buildings, vehicles, plant or livestock).

Return on Dairy Assets $\quad$ = $\dfrac{\text{Dairy Operating Profit}}{\text{Opening Dairy Assets}}$ x 100

### Formula for calculating Return on Assets on a Dairy Farm
(With owned runoff or rent or lease of milking land, buildings, vehicles, plant and livestock).

Return on Dairy Assets $\quad$ = $\dfrac{\text{Dairy Operating Profit + Owned Runoff Adjustment - Rent}}{\text{Opening Dairy Assets}}$ x 100

### General formula for calculating Return on Equity

Return on Equity $\quad\quad$ = $\dfrac{\text{Return - interest}}{\text{Opening Equity}}$ x 100

### Formula for calculating Return on Equity on a Dairy Farm
(no owned runoff or no rent or lease of milking land, buildings, vehicles, plant or livestock, no net off-farm income).

Return on Equity $\quad\quad$ = $\dfrac{\text{Total Operating Profit - interest}}{\text{Opening Equity}}$ x 100

### Formula for calculating Return on Equity on a Dairy Farm
(With owned runoff or rent or lease of milking land, buildings, vehicles, plant and livestock, or off farm income. DairyBase calculates return on equity for all assets, not just the dairy assets so net-off farm income is also added to this calculation.).

Return on Equity
= $\dfrac{\text{Total Operating Profit + Net Off-farm Inc + Owned Runoff Adjustment – Rent - Interest}}{\text{Opening Equity}}$ x 100

### Treatment of Capital Gain/Loss and Taxation
Returns may be calculated with or without capital gain/loss and before or after taxation. For example, for a rental property we could express the return from the rent or the return from the rent plus any capital appreciation or depreciation. When capital value changes are included, DairyBase refers to this as the Total Return on Assets or the Total Return on Equity. The inclusion of taxes is dependent on whether you wish to compare the returns with other investments and how taxation is treated when calculating returns.

# Example Calculation of Return on Dairy Assets and Equity

Assumptions
- Dairy Farm Assets = $6 m
- Operating Profit = $370,000
- This farm has no owned runoff or no rent or lease of milking land, buildings, vehicles, plant or livestock, and no net off-farm income
- 60% equity 40% borrowings at 8% interest rate
- No allowance made for taxation

| Return on Dairy Assets % | Total Return on Dairy Assets % |
|---|---|
| RoDA = $\dfrac{\text{Dairy Operating Profit} \times 100}{\text{Opening Dairy Assets}}$<br><br>= $\dfrac{370,000 \times 100}{6,000,000}$<br><br>= 6.2% | tRoDA = $\dfrac{\text{Dairy Operating Profit + Change in Cap Value} \times 100}{\text{Opening Dairy Assets}}$<br><br>= $\dfrac{370,000 + 350,000 \times 100}{6,000,000}$<br><br>= 12% |
| **Return on Dairy Equity %** | **Total Return on Dairy Equity** |
| RoDE = $\dfrac{\text{Dairy Operating Profit - interest} \times 100}{\text{Opening Equity}}$<br><br>= $\dfrac{370,000 - (2,400,000 \times 8\%) \times 100}{3,600,000}$<br><br>= $\dfrac{370,000 - 192,000 \times 100}{3,600,000}$<br><br>= 4.9% | tRoDE = $\dfrac{\text{Dairy Op Profit + Change in Cap Value - interest} \times 100}{\text{Opening Equity}}$<br><br>= $\dfrac{370,000 + 350,000 - (2,400,000 \times 8\%) \times 100}{3,600,000}$<br><br>= $\dfrac{720,000 - 192,000 \times 100}{3,600,000}$<br><br>= 14.7% |

from farm operations       from farm operations and capital gain

| | | | | |
|---|---|---|---|---|
| ROA | 6.2 | | | 12 |
| | | | 8% | |
| ROE | 4.9 | | | 14.7 |