

How to calculate return on investment for equipment or project purchases

To calculate the ROI of that new equipment you've been eyeing, you first need two important numbers:

1. Annual cost of your current process
2. Estimated annual net benefit/loss of the new equipment or project

ROI formulas help you compare these two numbers in a meaningful way that reveals whether it makes sense financially to invest in that equipment or project.

Let's start with number 1...

1. CALCULATE THE TOTAL COST OF NEW EQUIPMENT or project

When purchasing new equipment or a project you must consider more than just the price tag on the machine. Your ROI calculations will be most accurate if your equipment cost represents the total cost of ownership including factors like:

- Equipment purchase price
- Freight costs
- Commissioning and installation costs
- Training costs
- Annual maintenance and parts expenses

Now that you know the Total Cost of Ownership of the new equipment or project you are considering, it's time to...

2. CALCULATE THE NET BENEFIT/LOSS OF INVESTING IN NEW EQUIPMENT

A major piece of ROI calculations is the total dollar amount you expect to gain or lose if you purchase the new equipment. There are 2 main categories to consider when making these comparisons:

Annual labor costs

A. First, determine the current fully loaded wage per hour for your staff. This includes not only the rate of pay, but the cost of benefits like insurance, paid time off, and other employee perks. Then do the math to figure out your total labor cost per year, inclusive of all employees that work on your farm.

B. Next, calculate the same thing but this time consider how your **labor costs would change** with new equipment / project. Your fully loaded wages per hour may not differ, but the number of employees required after implementing the project will probably change, or the output from the same team increases.

Once you've calculated both numbers, subtract B from A to arrive at your Estimated Labor Gain/Loss. Jot this number down for later.

Annual gross profit

A. First, begin with calculating how much you are currently producing annually (pounds or whatever metric applies to your operation) and what your profit per unit (same metric) is in dollars /cents. Multiply those together to get your annual gross profit from farming activities.

B. Next, calculate the same thing but this time consider how your gross profit will change with this new investment. Throughput specifications are often represented as ppm (pounds per minute) or pph (pounds per hour) Multiplying this number by the hours spent [doing this function] per day, the number of days per week, and operational weeks per year will give you an annual estimation. Then multiply your estimated pounds produced per year with the new equipment by your profit per pound.

Now subtract the number in A from B to arrive at your Estimated Gross Profit Gain/Loss. Jot this number down for later.

PERFORM RETURN ON INVESTMENT CALCULATIONS

Still with us? We're almost done.

Add up the net gain/loss from both categories in step 2 above to arrive at your total net gain/loss generated by the new equipment. You will plug this number, along with the total cost of ownership for the new equipment, into the ROI formulas below.

Simple Return on Investment (ROI) formula

A standard definition of ROI is the ratio of a benefit or loss made in a fiscal year expressed in terms of an investment and shown as a percentage. The ROI formula for equipment purchases is as follows:

$$(Net\ benefit\ or\ loss\ generated\ by\ new\ equipment / Total\ new\ equipment\ cost) \times 100$$

As an example, if you are considering purchasing equipment or doing a project that costs \$20,000 and predict a net annual benefit of \$15,000 (via labor savings and profit from increased sales), your return on investment will be:

$$(\$15,000 / \$20,000) \times 100 = 75\%$$

Payback period formula

The payback period calculates how much time it will take to recoup the initial investment. In packaging equipment terms, the payback period formula is as follows:

$$\textit{Total new equipment cost} / \textit{Total periodic benefit realized from new equipment}$$

Using the same example above of \$20,000 equipment cost and \$15,000 net annual benefit, the payback period will be:

$$\$20,000 / \$15,000 = 1.3 \text{ years}$$