Management of Agricultural Operations and Agri-Food enterprises

Third-Year Agronomy Course (Bachelor's Level)

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Chapter 04

Cash Flow Management

By the end of this chapter, you will be able to:

⟶ Explain how cash flow works in a farm or agri-food company
⟶ Build and read a partial budget to evaluate a management decision
⟶ Calculate the working capital and understand its effect on cash flow
⟶ Build a complete monthly cash flow budget
⟶ Identify and prevent cash shortages before they happen

1. How Cash Flow Works

The difference between profit and cash flow: A farm can be profitable (it makes money at the end of the year) and still be unable to pay its bills in March. This happens because profit and cash are two different things. Understanding this is the most important idea in this chapter.

1.1. What is Cash Flow?

Cash flow is the money available in your business at a given moment. It includes:

→ Cash in hand (notes and coins)

→ Money in your bank account

→ Short-term savings you can use immediately

Think of cash flow like blood in your body. A business can be rich on paper but still 'bleed out' if money does not flow in at the right time.

Cash flow changes every day.

Money comes in when you sell products or receive grants.

Money goes out when you buy inputs, pay salaries, or repay loans.

The manager's job is to predict these movements so the business never runs out of money at a critical moment.

BASIC FORMULA:

Cash Balance = Total Money Received (Inflows) - Total Money Paid (Outflows)

Or using the balance sheet approach:

Net Cash = Working Capital (WC) - Working Capital Need (WCN)

1.2. Cash Inflows and Outflows on a Farm

On a farm, cash movements are often very irregular. Production is seasonal, but expenses happen every month. This gap between when you spend and when you earn is the main cause of cash problems in agriculture.

A) Cash Inflows (Money Coming In)

The main sources of income on a farm are:

- **Sales of farm products** (cereals, milk, vegetables, livestock, etc.), these often arrive all at once, at harvest time.
- **Agricultural subsidies** (national grants, etc.), usually received once or twice a year.
- **Bank loans,** received at the start of a project to finance equipment or land.
- **Owner contributions:** money put in by the farmer or business partners.

B) Cash Outflows (Money Going Out)

The main expenses on a farm are:

- **Inputs:** seeds, fertilisers, pesticides, animal feed.
- **Labour costs:** salaries, social contributions, seasonal workers.
- **Loan repayments:** monthly instalments (capital + interest).
- **Machinery costs:** fuel, maintenance, insurance.
- **Taxes and fees:** land tax, income tax, registration fees.
- **Investments:** buying new equipment, building storage, purchasing land.

Example

Ahmed runs 50 hectares of wheat near Setif.

His main income arrives in July (wheat sale) and December (government subsidy).

But he must pay for fertiliser in February, seeds in October, and salaries every month.

→ Result: His cash is very tight from January to June, even though his farm is profitable by the end of the year.

→ Solution: Use a cash flow budget to anticipate and plan for these gaps.

1.3. Cash Flow Cycle

Every type of farm has its own cash flow cycle (a repeating pattern of spending and earning). Understanding this cycle helps managers predict when problems will occur.

A) Short Cycle (Annual Crops)

For crops like wheat, corn, or vegetables, the cycle lasts less than one year. You spend at the beginning (seeds, fertiliser, labour) and earn at harvest. Cash is very low during the growing season and jumps up sharply at selling time.

B) Long Cycle (Livestock)

For dairy farming, cycles are longer. A dairy herd generates monthly income but needs constant investment. An olive grove can take several years to produce. These long cycles require multi-year cash planning.

Cash Flow Pattern (Dairy Cattle Farm)

Jan – Mar : High feed + vet costs / Low milk production (dry period) → TIGHT

Apr – Jun : Calving begins / Milk income starts rising → IMPROVING

Jul – Sep : Peak milk production → POSITIVE

Oct – Dec : Winter feed purchases / Income starts falling → DECLINING

→ Even in livestock farming, cash flow changes significantly month by month.

1.4. Cash Shortage Risks

A cash shortage happens when outflows in a period are greater than inflows plus the money already in the bank. In agriculture, the main causes are:

- Bad weather that destroys a crop and removes expected income.
- A sudden fall in market prices (agricultural prices can be very volatile).
- Late payment by buyers such as cooperatives or food companies.

- Unexpected expenses: equipment breakdown, animal disease outbreak.
- Expanding the farm too fast without enough financial reserves.

2. Partial Budget and Cash Flow

2.1. What is a Partial Budget?

Definition

A partial budget is a decision-making tool that measures the financial impact of a single change in the farm, without touching the rest of the budget.

→ It answers one simple question:

'If I make this change, will I earn more or lose money?'

2.1. Structure of a Partial Budget

A partial budget always has two sides: the gains side (what you gain from the change) and the losses side (what you lose or spend extra because of the change). The structure looks like this:

ELEMENT	GAINS (Money In)	LOSSES (Money Out)
Extra income from the change	……..	
Costs saved by making the change	……..	
Extra costs caused by the change		……..
Income lost by making the change		……..
TOTAL	Sum of gains	Sum of losses
NET CHANGE = Total Gains - Total Losses	Positive = Good	Negative = Bad

Full Example: SARL Agri-Med (50 ha of market gardening, Constantine) is thinking about buying a new tractor for 4,500,000 DA to stop renting tractors from a neighbour.

GAINS (what we save and earn):

→ Saving on tractor rental currently paid: 600,000 DA/year

→ Faster work = estimated productivity gain: 150,000 DA/year

→ TOTAL GAINS: 750,000 DA/year

LOSSES (new costs from buying the tractor):

→ Loan repayment (capital + interest over 5 years): 1,080,000 DA/year

→ Extra fuel: 80,000 DA/year

→ Maintenance and insurance: 120,000 DA/year

→ TOTAL LOSSES: 1,280,000 DA/year

NET CHANGE = 750,000 - 1,280,000 = -530,000 DA/year

→ Conclusion: In the short term, this investment makes cash flow worse by 530,000 DA/year.

→ Decision: Delay the purchase OR negotiate a longer loan (7-8 years) to reduce annual cost.

2.3. The Link Between Partial Budget and Cash Flow

Every decision evaluated with a partial budget creates real cash movements, money in or out at specific times of the year. This is why a partial budget analysis should always be followed by a look at when those flows will actually happen.

For example, an investment might look profitable over 5 years (positive net change) but create very tight cash flow in the first two years because of high loan repayments. The manager must always ask three questions:

- Is the decision profitable? → Use a partial budget.
- When exactly will the money come in and go out? → Look at the cash timing.
- Do I have enough reserves to survive the difficult months? → Check the working capital.

2.4. Comparing Different Scenarios with Partial Budgets

In practice, partial budgets are used to compare several options before making a decision. You build one partial budget for each option, then compare the net changes.

Example: Comparing Two Options for a Sheep Farm (Biskra)

Option A: Add 50 more ewes to the existing flock

→ Extra income (lamb sales + milk): + 380,000 DA/year

→ Extra costs (feed + vet + labour): - 290,000 DA/year

→ Net change A: + 90,000 DA/year ✓

Option B: Start making artisan cheese from the milk

→ Extra income (added value from processing): + 650,000 DA/year

→ Extra costs (equipment + premises + training): - 520,000 DA/year

→ Net change B: + 130,000 DA/year ✓✓

→ Option B is more profitable BUT needs a bigger upfront investment.

→ We must check the working capital impact before deciding

3. Working Capital and the Cash Flow Budget

3.1 Working Capital (WC)

A) What is Working Capital?

Working capital (in French: Fonds de Roulement) is the financial cushion that allows a farm to run its day-to-day operations without running out of money. It is the part of the long-term resources that stays available after all fixed assets have been paid for.

Imagine you have a bucket of water (long-term funds). You use most of it to build your farm buildings and buy equipment (fixed assets). Whatever water is left in the bucket is your working capital (it is what you use to run the farm every day).

NET WORKING CAPITAL (NWC):

NWC = Stable Resources - Fixed Assets

Where: Stable Resources = Owner's Equity + Long-Term Loans

Fixed Assets = Land + Buildings + Machinery (Net Book Value)

Reading the result:

→ NWC > 0 : Good — the farm has a safety cushion for daily operations ✓

→ NWC = 0 : Fragile — no margin for unexpected expenses

→ NWC < 0 : Danger — the farm may face cash problems very soon ✗

B) Working Capital Need (WCN)

The Working Capital Need (in French: Besoin en Fonds de Roulement) is the financing gap created by the operating cycle. It appears because you pay for inputs before you sell your products. The bigger this gap, the more money you need to keep operations running.

WORKING CAPITAL NEED (WCN):

WCN = Operating Current Assets - Operating Current Liabilities

= (Stock + Customer Receivables) - (Supplier Debts + Tax Debts)

→ A high WCN means the farm needs a lot of cash to operate normally.
→ A low WCN means the farm collects money quickly and pays suppliers slowly ideal!

C) Net Cash (The Key Equation)

The relationship between Working Capital and Working Capital Need gives us the Net Cash position. This is the equation that connects all three concepts together:

THE FUNDAMENTAL CASH EQUATION:

Net Cash (NC) = NWC - WCN

If NWC > WCN → NC > 0 : The farm can pay all its short-term debts ✓
If NWC < WCN → NC < 0 : Bank overdraft needed (financial stress) ✗

Worked Example:

ASSETS (Actifs)moumtalakat	Montant (DA)	LIABILITIES (Passifs)douyoun	Montant (DA)
Land + Buildings	8,500,000	Owner Equity	6,000,000
Farm Machinery	2,000,000	Long-term Loans	3,500,000
Stock (inputs)	800,000	Supplier Debts	600,000
Customer Receivables	400,000	Tax Debts	200,000
Cash Available	100,000		
TOTAL ASSETS	11,800,000	TOTAL LIABILITIES	10,300,000

Calculations:

NWC = (6,000,000 + 3,500,000) - (8,500,000 + 2,000,000)

= 9,500,000 - 10,500,000 = -1,000,000 DA ✗ (Bad!)

WCN = (800,000 + 400,000) - (600,000 + 200,000)

= 1,200,000 - 800,000 = +400,000 DA

NC = -1,000,000 - 400,000 = -1,400,000 DA ✗✗ (Very bad!)

→ This farm is in financial difficulty. It must either bring in more equity capital or renegotiate its loans to improve its working capital.

3.2 The Cash Flow Budget

A) What is a Cash Flow Budget?

The cash flow budget is the most important planning tool in farm financial management. It is a table that shows, month by month, all the money expected to come in and all the money expected to go out, so that you can calculate the cash balance at the end of each month.

Definition

A cash flow budget is a monthly forecast table that lists:

→ All expected money received (inflows)

→ All expected money paid out (outflows)

→ The cash balance at the start and end of each month

It lets you spot in advance any months where cash will not be enough,
so you can take action before the problem happens.

B) How to Build a Cash Flow Budget

Building a cash flow budget follows four clear steps:

- List all expected income and place each item in the month when the money will actually be received (not when the sale takes place).
- List all expected expenses and place each item in the month when the money will actually be paid.
- Calculate the monthly balance: Monthly Balance = Inflows of the month - Outflows of the month.
- Calculate the cumulative balance: Cumulative Balance = Previous month's cumulative balance + This month's balance.

Key Rule (Payment Date, Not Invoice Date)

Always record cash when it is RECEIVED or PAID, not when it is invoiced.

Example: You sell wheat in June but the cooperative pays you in August.

→ Record this income in AUGUST, not June.

This approach is called the cash basis (as opposed to the accrual basis used in accounting).

It is the only correct way to build a cash flow budget.

C) Full Example (6-Month Cash Flow Budget)

Below is the cash flow budget for the first 6 months of Benchikh Cereal Farm (100 ha of wheat, Msila Province):

ITEMS	Jan.	Feb.	Mar.	Apr.	May	Jun.
INFLOWS (DA)						
Cereal sales (previous harvest)	500,000	–	–	–	–	–
Government subsidy	–	–	300,000	–	–	–
VAT refund	–	150,000	–	–	–	–
Other product sales	50,000	50,000	50,000	50,000	50,000	50,000
TOTAL INFLOWS	550,000	200,000	350,000	50,000	50,000	50,000
OUTFLOWS (DA)						
Seeds	–	180,000	–	–	–	–
Fertiliser and pesticides	–	250,000	150,000	–	–	–
Salaries + social charges	120,000	120,000	120,000	120,000	120,000	120,000
Fuel and oil	30,000	40,000	60,000	40,000	30,000	20,000
Loan repayment	80,000	80,000	80,000	80,000	80,000	80,000
Miscellaneous charges	25,000	25,000	25,000	25,000	25,000	25,000
TOTAL OUTFLOWS	255,000	695,000	435,000	265,000	255,000	245,000
MONTHLY BALANCE	+295,000	-495,000	-85,000	-215,000	-205,000	-195,000
Opening balance	200,000	495,000	0	-85,000	-300,000	-505,000
CUMULATIVE BALANCE	495,000	0	-85,000	-300,000	-505,000	-700,000

Reading the Budget (What Does It Tell Us?)

January: Cash is positive thanks to income from the previous harvest.

February: Seeds and fertiliser purchases cause a big cash drop (-495,000 DA).

March-June: Cash stays negative and gets worse every month.

June end: The cumulative deficit reaches -700,000 DA.

CORRECTIVE ACTIONS the manager can take:

→ Negotiate a seasonal farm loan of 800,000 DA from the bank before November.

→ Ask the fertiliser supplier to accept payment in May instead of February.

→ Check if the government subsidy can be received earlier (apply in December).

→ Sell part of the stored grain in April if market prices are good.

3.3. Tools to Improve Cash Flow

Once you have identified cash problems using the budget, you have several practical tools to solve them. These tools fall into two categories: actions on income and actions on expenses.

A) Improve Inflows

- Negotiate shorter payment terms with buyers (cooperatives, food companies).
- Set up direct sales (farmers markets, local delivery, online) for immediate payment.
- Submit VAT refund claims quickly to speed up these receipts.
- Diversify crops or livestock to spread income more evenly across the year.

B) Control Outflows

- Negotiate longer payment terms with suppliers (pay in 60 days instead of 30).
- Delay non-urgent investments to a month when cash is better.
- Use leasing or hire purchase instead of buying equipment outright.
- Join a farmers' buying group to negotiate better prices on inputs.

C) Use Bank Financial Instruments

- **Seasonal farm credit:** a short-term bank loan designed specifically for farms, repaid as soon as the harvest is sold. Very common in Algeria through the BADR bank.
- **Authorised overdraft:** an agreement with the bank to allow a negative balance up to a fixed limit.
- **Invoice discounting:** you sell an unpaid customer invoice to the bank before its due date, getting cash immediately (at a small fee).

3.4. Monitoring and Controlling the Budget

A cash flow budget is only useful if you track it regularly and update it every month. The control process has three simple steps:

1. Compare the actual cash balance at the end of the month with the budgeted figure — this is called variance analysis.
2. Identify why there is a difference (late customer payment, unexpected expense, lower sale price than expected).
3. Update the forecasts for the remaining months with the new information you now have.

Practical Tip

- For small farms, a simple Excel spreadsheet updated every week is enough to track cash flow.
- For larger farms, farm management software (like ISAGRI or AgroStar) automatically
- generates a live cash flow budget from the accounting data.
- The most important thing is REGULARITY. A cash flow that is monitored every month
- will never produce unpleasant surprises.

End of Chapter 04