

Small-scale dairy farming manual

Vol. 6

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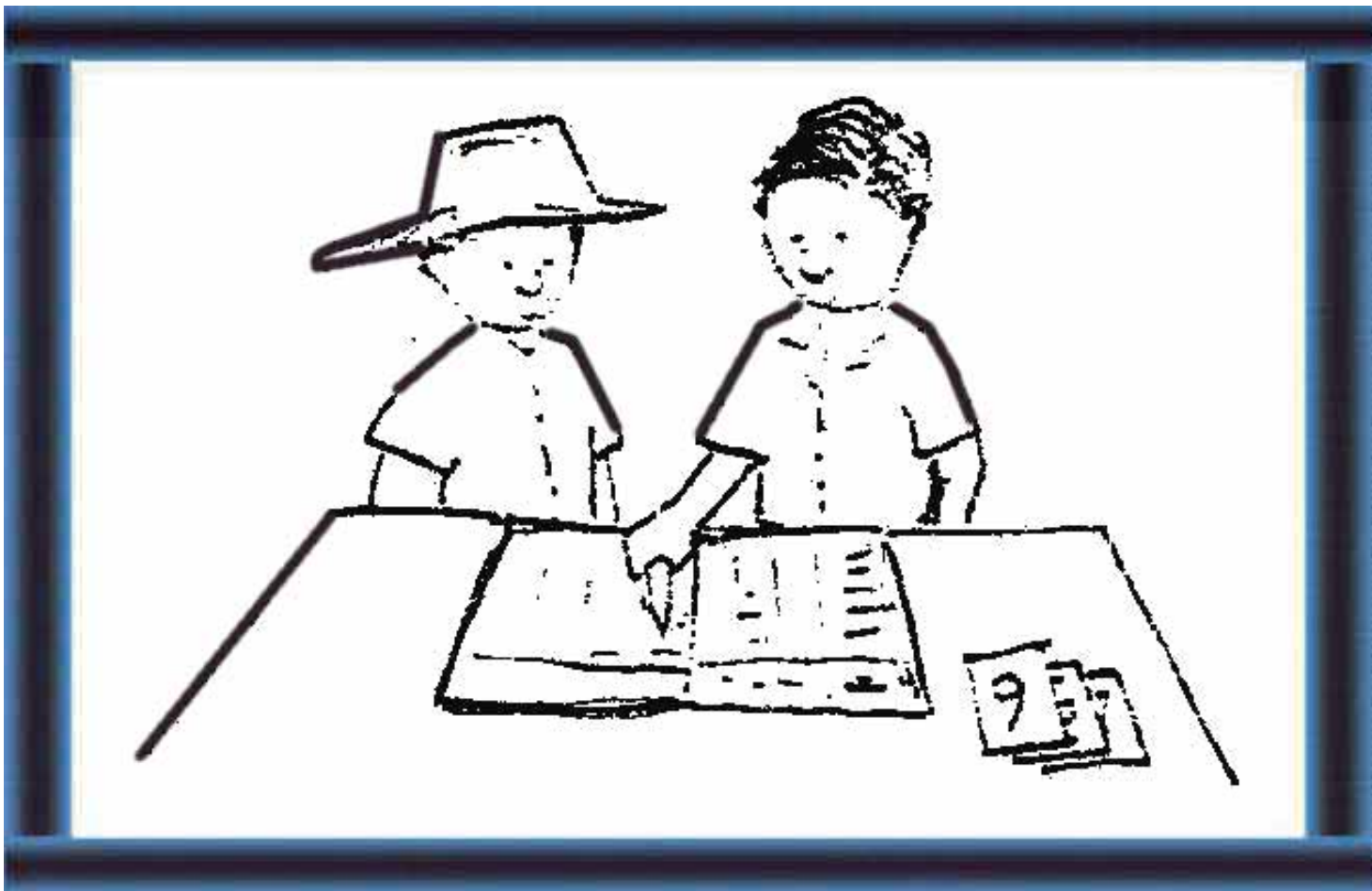
Small-Scale Dairy Farming Manual

Volume 6

Husbandry Unit 12

DAIRY FARM ACCOUNTING

page i



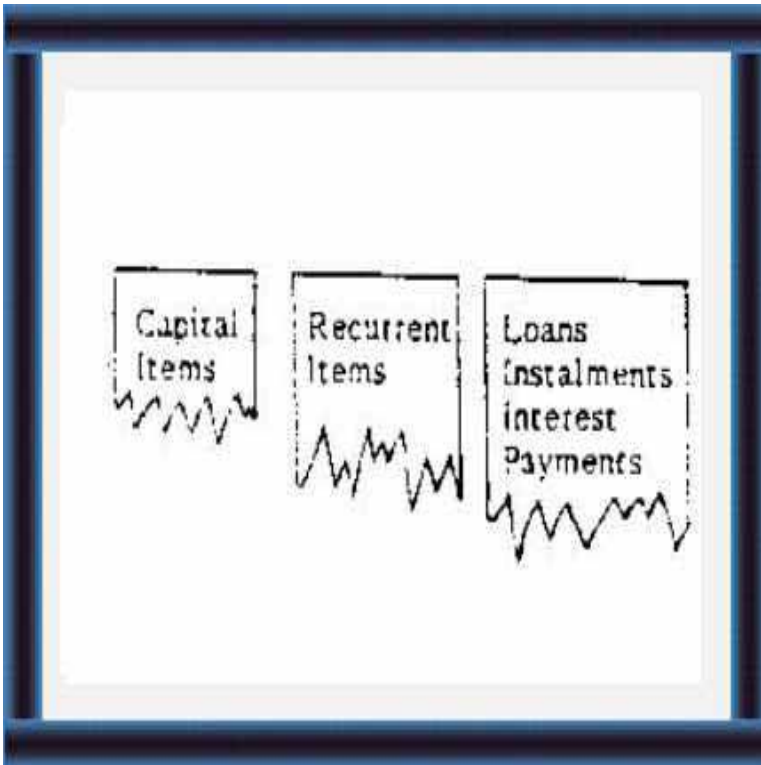
Extension Materials

What should you know about dairy farm accounting?



1 How can you keep accounts by single-entry book keeping? (5-11)

By entering transactions in one book and filing documents.



2 How can you calculate profits and losses? (12-18)

Keep payments and incomes over a year under:

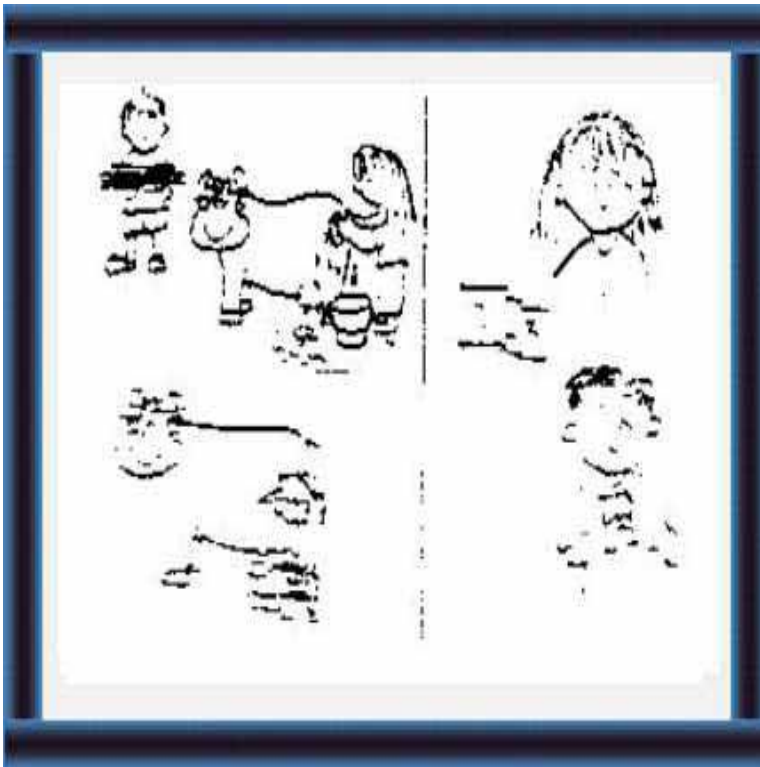
- capital items
- recurrent items
- loans, instalments, interest payments.



3 How can you keep capital, loan and current accounts?

Consult your extension worker about:

- how to record items
- when and how to analyze accounts.



4 How can you analyze net returns and cash flows? (19-24)

By accounting for:

- labour and other costs and benefits
- the timing of receipts and payments.

DAIRY FARM ACCOUNTING

Husbandry Unit 12:

Technical Notes

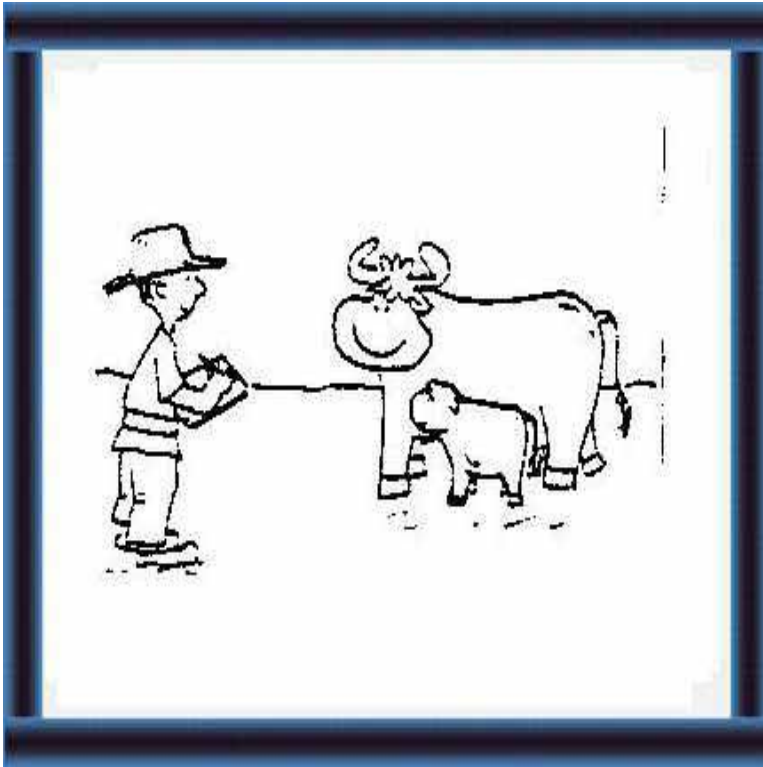
Note: Numbers in brackets refer to illustrations in the Extension Materials.

Introduction (5-7)

Record keeping is an activity that is almost completely neglected by small scale farmers, even in literate communities. The farmers may not see the benefits from this extra activity, which appears to be quite unconnected with the practical aspects of dairy farming. The extension officer, therefore, need to make an extra effort to explain the benefits of maintaining accurate records. Maintaining separate accounts for the dairy farm will be helpful in:

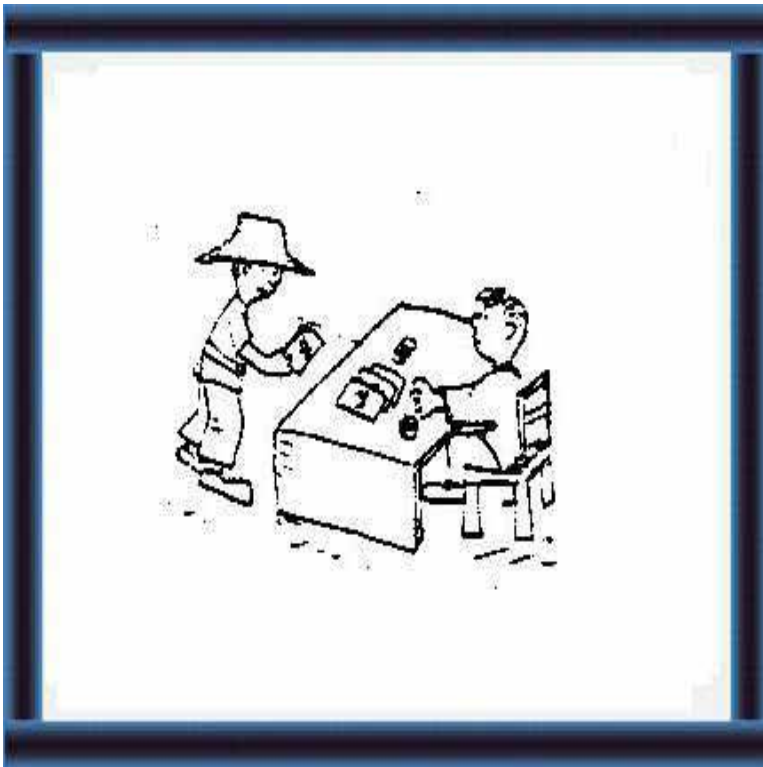
- understanding how money is spent and income is earned;**
- finding ways of reducing expenses and increasing incomes i.e. increasing profits;**
- making decisions about increasing or decreasing concentrate feeds, growing pastures and fodder crops, buying and selling of animals etc.**

To get a correct picture of the income, expenditure and profits (or losses), everything of value in the dairy farm and all transactions involving payments and receipts of money must be recorded.



5 Measuring and recording:

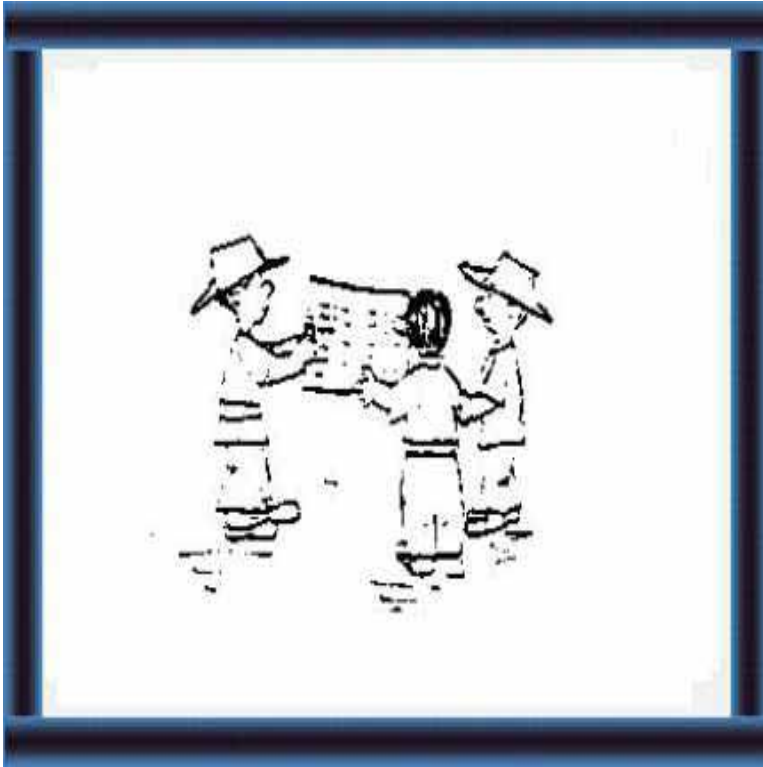
- everything of value on your farm: animals, buildings, machines, equipment etc.



6

- any business or movement of money, buying, selling, borrowing etc.

Why keep accounts?



page 3

7 Keeping accounts helps to:

- understand how you spend money and earn income
- find ways to reduce expenses and increase profits
- make decisions about feeds, pastures, animals etc.

Single-entry book keeping

Single-entry book keeping is a simple method of accounting. A single book is maintained to enter all transactions, whether they are payments made out or income received by the farmer. (8-10)

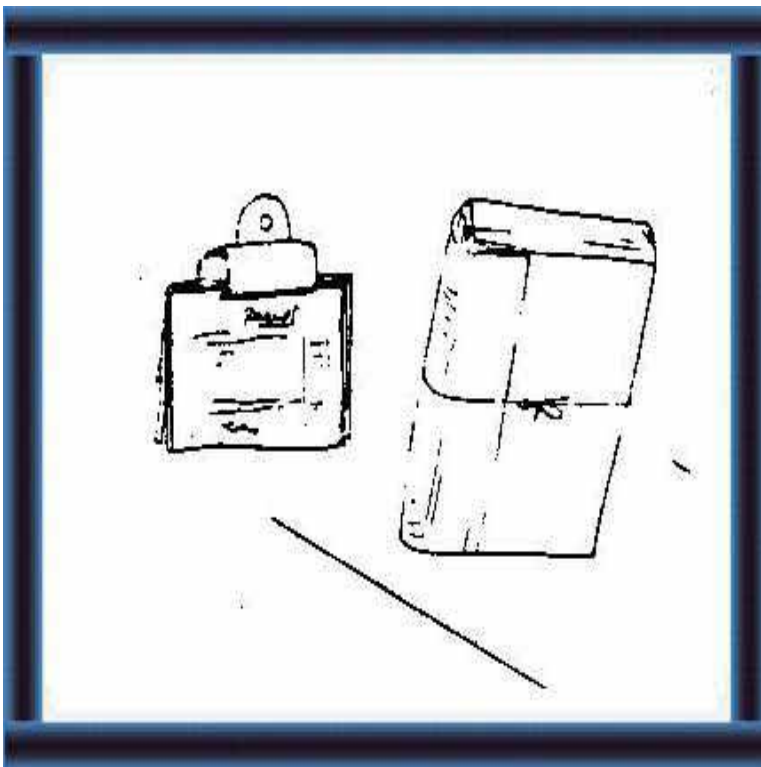
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How can you keep accounts by single-entry book keeping?



8 Keep a single accounting book. Your extension worker can advise you on this.

Fill in the book every day or at least every week. Enter all transactions including payments and income.



9 Keep receipts, invoices, statements and other business documents together with a clip or in a file.



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10 You will learn a simple method of accounting here called single-entry bookkeeping.

- you use only one book.

It is important to note the purpose for which the payment was made or income was received. See the example in the Extension Materials opposite.

Note: If an invoice is received from the dairy coop (or any other purchaser of milk), only the quantity of milk and amount of money received need to be entered in the accounts book, together with the invoice number. The invoice must be filed separately to get the relevant information when necessary. (11)

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Make a record for each payment or income e.g.

January 1990				
Item	Date	Description	Payment	Income
1	3.1.90	Concentrate feeds (40 kg @ 3.00)	120.00	-
2	5.1.90	Milk sales-received from dairy coop. (for milk supplied 16-31 Dec. 89. 62 litres; av. fat 4.2 %; 5.00 per l)	-	310.00
3	5.1.90	Payment to labourer (grass cutter)	50.00	-
4	6.1.90	Mineral mixture (5 kg@ 12.00)	60.00	-
5	10.1.90	Payment of loan instalment	96.00	-
6	12.1.90	Sale of 2 bull calves (3 months - 700.00) (5 months - 800.00)	-	1500.00
7	15.1.90	Purchase of heifer Tattoo No. (650); date of birth (25.12.88)	5000.00	-
8	16.1.90	A.I. service for cow no. (5) - receipt no. (A 2125)	60.00	-



11 If the dairy coop or someone who buys milk from you gives you an invoice, only record:

- amount of money received
- quantity of milk
- invoice numbers in the accounts book.

File the invoice separately so you can get information if you need it.

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Profit and loss

Even though income and expenditure are recorded daily in this manner as and when actual transactions take place, the profits (and losses) are usually calculated for longer periods e.g. for a year. For calculating profits (and losses), the items of expenditure and income during the period under consideration are summarised under three main sections: (12)

- capital items
- recurrent items
- loans (and payment of loan instalments including interest).

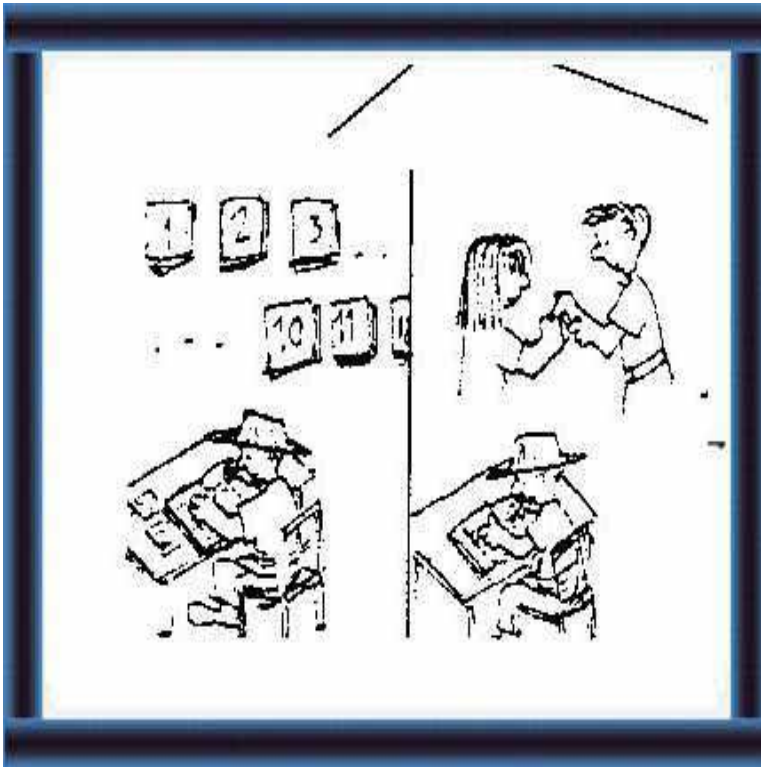
Capital items

Capital items are those having a longer life and a higher value e.g. land, buildings, equipment such as milk cans and animals. (13)

Recurrent items

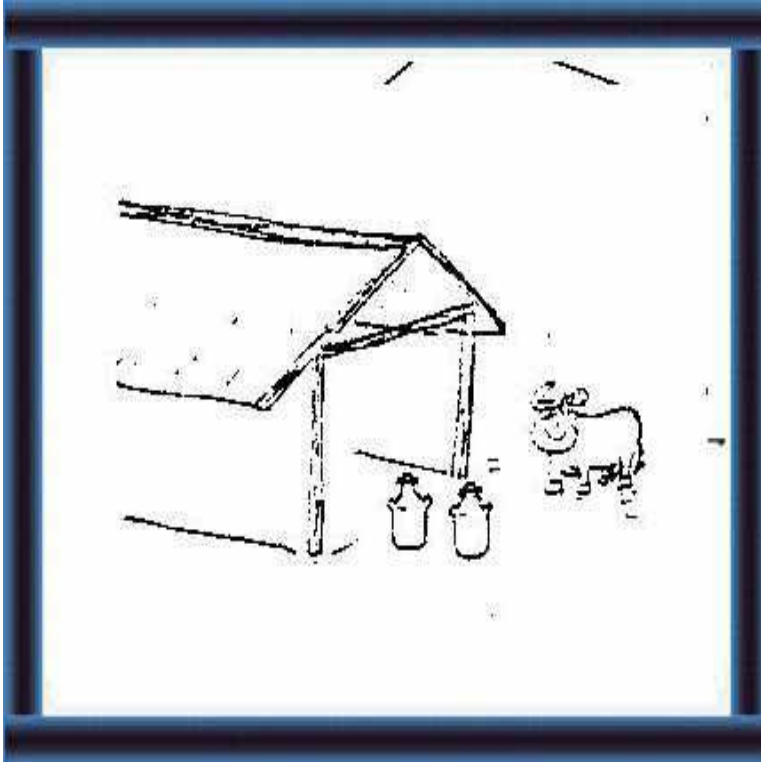
The recurrent (or consumption) items are those that get used up in the production process e.g. cattle feeds (both roughages and concentrates), mineral mixtures, chemicals, disinfectants, medicines, soap, and various miscellaneous items. (14)

How can you calculate profits and losses?



12 You usually calculate profit and loss over a long period (e.g. 1 year).

Whereas you record payments and income from day to day.



13 For profit and loss calculations, keep payment and income under 3 headings:

Capital items

Things with long life and high value e.g.

- land
- buildings
- equipment
- animals.



Recurrent items

14 Payments for things you use:

- feeds (roughages and concentrates)
- mineral mixtures
- chemicals
- disinfectants
- medicines
- soaps etc.

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Payments made for services such as labour, A.I. and veterinary services are also considered under recurrent items. (15)

On the income side are sale of milk or milk products, cow dung or compost etc.

Loans, instalments, interest payments

Money received on loans and payments made as loan repayment and interest charges are summarised separately for purposes of profit (and loss) and cash flow calculations. (17)

Small scale farmers may find it difficult to prepare these summaries and analyze them. Therefore extension officers should:

- encourage farmers to record each and every item of income and expenditure with relevant details;
- assist farmers to summarise them and analyze them once in 3 months, 6 months or a year. (18)

Examples of dairy farm accounts are given in the Extension Materials opposite.



15 Payments for services:

- A.I.
- veterinary.



16 Income from the sale of:

- milk
- milk products
- cow dung
- compost etc.



Loans, instalments, interest payments.

17 Record these under a separate heading to calculate profit and loss and cash flow.



18 Consult your extension worker about:

- how to record items
- when and how to analyze accounts.

How can you keep a capital account?

Item	Value as on 1.1.89	Sales during 89	Additions/ purchase during 89	Value as on 1.1.90
Land	5000.00	-	-	5,000.00 ¹
Buildings	4,000.00	-	2,000.00	6,000.00 ²
Equipment	1,000.00	-	500.00	1,500.00 ²
Animals				
(a)	Value as of 1.1.89 30,000.00 ³	-	-	-
-Sales				
Culls (2 Nos.)-		5,000.00 ³	-	-
Bull calves (3 Nos.)-		1,500.00 ³	-	-
Heifer calves(1 No.)-		1,500.00 ³	-	-
-Purchases				
Pregnant heifers (2 Nos.)	-	-	10,000.00 ³	-
(b)	Value as of 1.1.90			33,000.00 ³
Total	40,000.00 ⁴	8,000.00 ⁴	12,500.00 ⁴	45,500.00 ⁴

1 Even though land values may have gone up (appreciated) between 1.1.89 and 1.1.90, it has not been taken into account.

2 Depreciation of buildings and equipment has not been accounted for. Depreciation is the amount of money that has to be set aside to replace the buildings (in about 20 years time) or the equipment (in about 3-5 years time, depending on the type of equipment). This is a factor to be considered in an overall profit and loss account.

3 The total number of animals in the farm have been valued as of 1.1.89 and also 1.1.90.

When the difference between additions/purchases of animals (10,000.00) and sales of animals (8,000) amounting to 2,000.00 (10,000.00 - 8,000.00) is added to 30,000.00, value as of 1.1.90 should be only 32,000.00. The additional 1,000.00 could be due to a heifer on 1.1.89, calving down and starting its lactation in 1989, thus appreciating in value.

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4 Total value of capital items (assets) has gone up only by 4,500.00 (44,500.00 - 40,000.00) in spite of additions and purchases amounting to 12,500.00. This may be explained as follows:

Value of assets as of 1.1.90	45,500.00	
Additions/purchases during 1989	+ 12,500.00	
Total value of assets held during 1989	=	58,000.00
Less:		
Sales of assets during 1989	8,000.00	+
Increase in value of herd growth	1,000.00	
Value of assets as of 1.1.89	40,000.00	
	=	49,000.00
Investments from savings and/or loans	9,000.00	

i.e. The increase in the value of capital items by 5,500.00* (45,500.00 - 40,000.00), including additions/purchases amounting to 12,500.00* has been made possible:

- partly by sale of assets (animals)	-
(8,000.00)	
- partly by using cash from a loan and farmer's savings	-
(9,000.00)	
- partly due to an increase in the value (appreciation)	-
of a heifer	(1,000.00)
Total	= 18,000.00

***(5,500 + 12,500 = 18,000)**

How can you keep a loan account?

Item	Outstanding as of 1.1.89	Receipts in 89	Payment in 89	Outstanding as of 1.1.90
Loan obtained in 1987	10,800.00¹	-	3,600.00	7,200.00
Interest payment on above loan	-	-	600.00	-
New loan in 1989	-	2,400.00²	1,200.00	1,200.00
Interest on new loan	-	-	360.00	-
<hr/>				
	10,800.00	2,400.00	5,760.00	8,400.00³
<hr/>				

1 Loan may have been obtained to purchase cattle/equipment and/or construct/improve buildings.

2 Part of the investment of 9,000.00 may have come from this loan.

3 Interest is also payable in addition to the outstanding loan amount.

How can you keep a current account?

Current Account (with and without depreciation and excluding capital items and loans)

Income Expenditure

Income

Items

- milk sales	26,500.00	
- milk product sales	-	
- cow dung sales	-	
- compost sales	-	
- animal sales	8,000.00	

Expenditure Items

- concentrates		14,200.00
- minerals		250.00
- roughages		-
- seeds and planting material		300.00
- fertilizer		800.00
- labour payments		600.00
- hire of machinery		-
- transport costs		1,200.00
- vet. fees, pharmaceuticals etc.		300.00
- A.I. and stud services		500.00
- chemicals, disinfectants etc.		250.00
- miscellaneous purchases (e.g. ropes, chains, soap etc.)		200.00
- rent on land, buildings etc. (if not owned)		-
- maintenance of buildings		400.00
- maintenance of equipment		-
- other recurrent items		-

Total	34,500.00	19,000.00
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- Profit on the operation (34,500.00 - 19,000.00)	15,500.00
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Less depreciation (buildings, 5 %; equipment 20 %)	600.00
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- Profit after allowing for depreciation	14,900.00
---	------------------

Note: Revenue from sale of animals is included as an income whereas payments for the purchase of new animals are not included as an expenditure. The sales result from a previous investment; the payments for new animals is a new investment and the farmer's capital assets have increased because of this investment.

Profit from the dairy enterprise

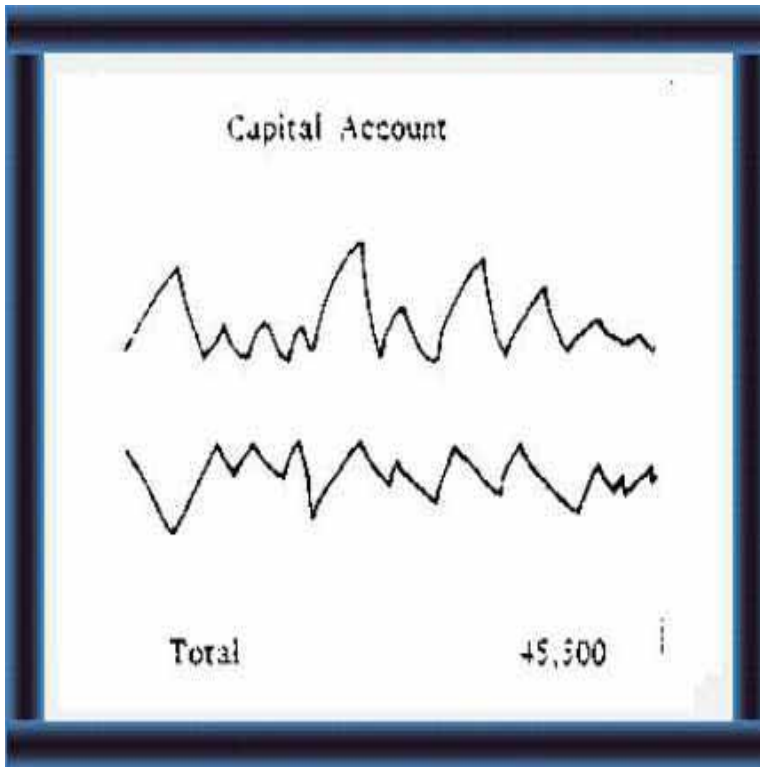
Net return on investment

This shows that by making an investment of 45,500.00 (19), the farmer has received an income of 14,900.00 in 1989 (after setting apart 600.00 to meet the replacement of buildings in 20 years and equipment in 5 years) i.e. a return of 32.7 % on investment. (23)

However, the time spent by the farmer and his family have not been taken into account in this computation. If the farmer and his family together spend about four hours a day (for 365 days of the year) on the dairy enterprise (milking, feeding, cutting grass, washing animals and sheds, transporting milk and cattle feed etc.) (21), the total number of hours spent in a year is 1,460. If the normal wage rate is 5.00 per hour, the total earning from working for 1,460 hours is 7,300.00. (22)

The net return from the investment of 45,500.00 after allowing for labour 7,300.00	= 14,900.00 - 7,300.00 = 7,600.00 mu
and the net return on investment (after allowing for labour)	= $\frac{7,600}{45,000} \times 100$ = 16.7 %

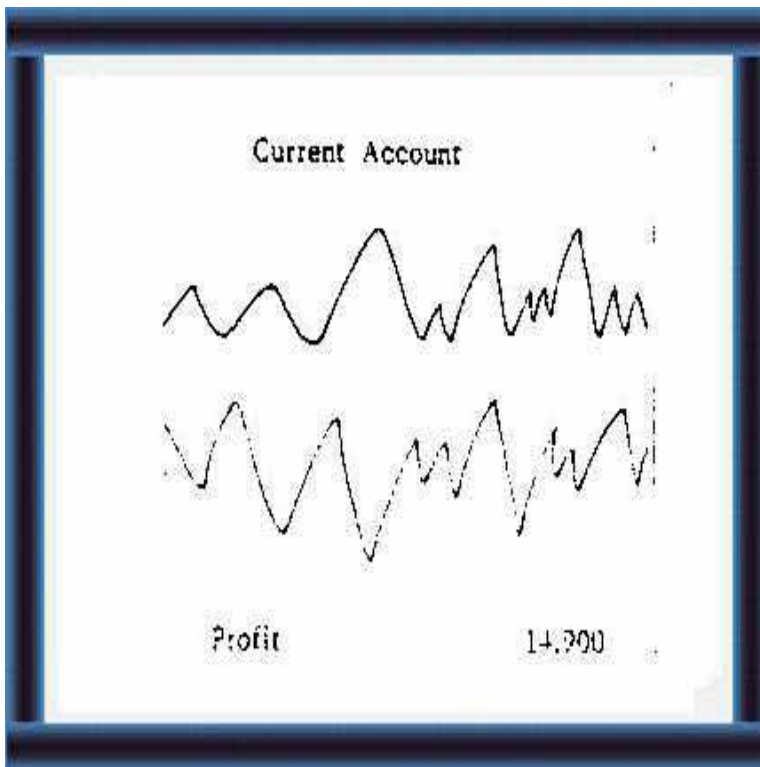
How can you analyze net return?



Net return on investment

From the above accounts:

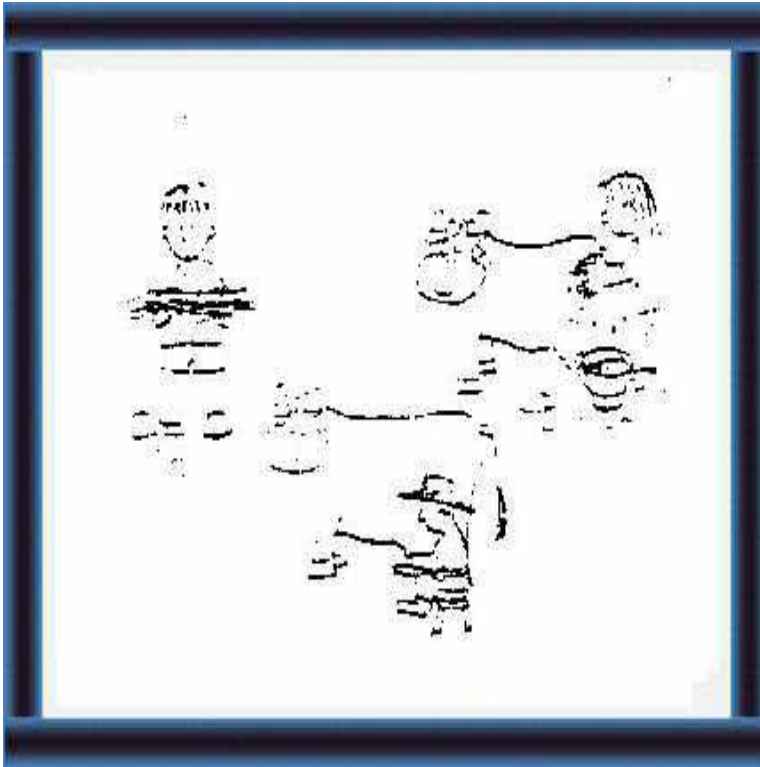
19 The farmer made an investment of 45,000 mu



20 and received an income of 14,900 mu in 1989 (after allowing for depreciation).

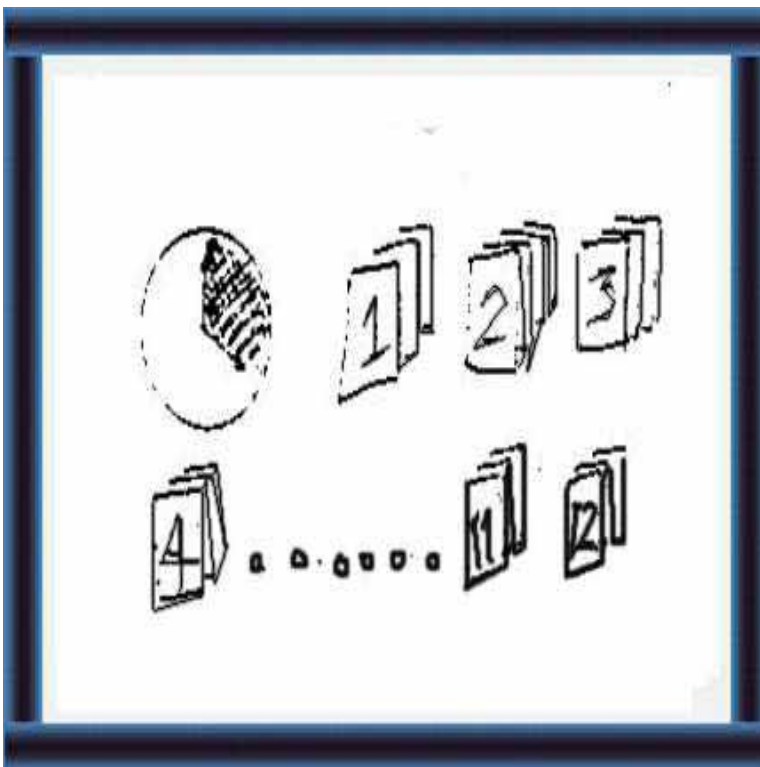
His return is

$$\frac{14,900}{45,000} \times 100 = 32.7\%$$



21 But the farmer and his family use their time, they work on the farm:

- cutting grass and feeding
- washing animals and sheds
- milking
- transporting milk and cattle feed.



22 If the farmer and his family spend 4 hours/day for 365 days/year = 1,460 hours/year.

If the normal wage is 5 mu/hour, they should earn 7,300 mu.

The net return (after allowing for labour) is 14,900 - 7,300 m = 7,600 mu

The net return on investment is $\frac{7,600}{45,000} \times 100 = 16.7\%$

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Net return on labour

Another method of analyzing the benefits is to compute the net return on labour. In this method the capital investment is valued on the basis of the normal interest rate. If the interest rate is 12 %, the value of the investment of 45,500.00 is 5,460.00 i.e.

$$45,500 \times \frac{12}{100}$$

The net return from 1,460 hours of work (labour) is

(14,900.00 - 5,460.00 =) 9,440.00

Therefore, the net return on labour is 6.47 mu per hour i.e.

$$\frac{9,440}{1,460}$$

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You can also calculate the net return on labour.

If the interest rate is 12 %, the value of the investment of 45,000 is:

$$45,500 \times \frac{12}{100} = 5,460 \text{ mu}$$

The net return from 1,460 hours of work (labour) is:

$$14,900 - 5,460 = 9,440 \text{ mu}$$

The net return on labour is:

$$\frac{9,440 \text{ mu}}{1,460 \text{ hours}} = 6.47 \text{ mu/hour}$$

Thus this example shows that the farmer benefits because:

- he gets a higher return on the investment than the normal interest rate and
- he gets a higher payment for labour than he could have obtained by renting his labour i.e. by working for somebody else.

Other benefits that have not been taken into account are:

- the increase in value (appreciation) of land
- the increase in value (appreciation) of the herd
- the value of cow dung, compost etc. that may have been used for improving soil fertility
- the value of milk that may have been consumed in the household.

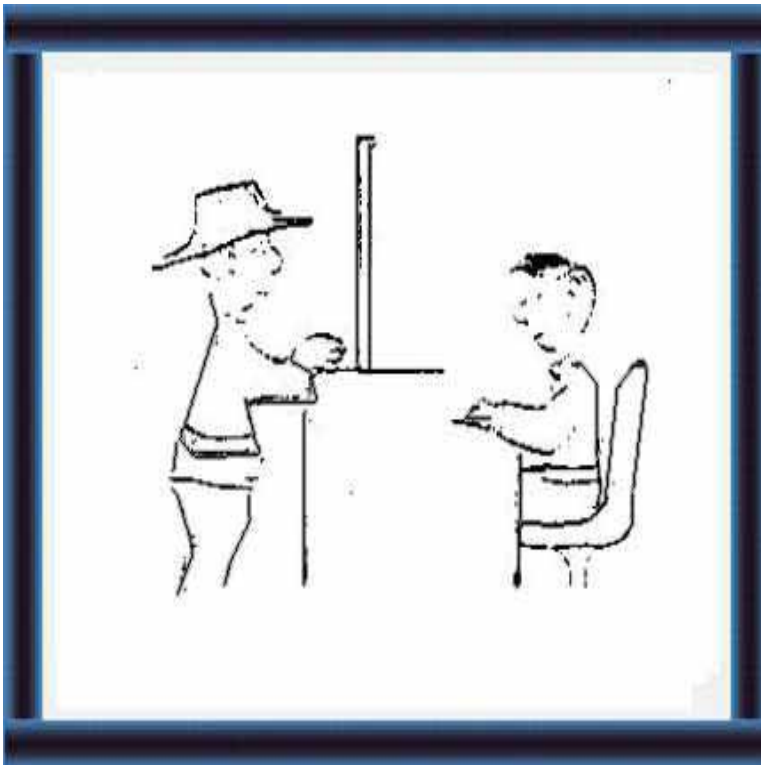
Cash flows

It is also important to know about the timing of receipts and expenditure of money. If money is not available from the enterprise to meet the expenditure at the correct time, e.g. planting grass or buying concentrates, the farmer may be forced to borrow from expensive sources (because the borrowing has to be done at short notice). The cash flow from the above example is shown opposite.

How can you analyze cash flow?



23 It is important to know about:
- timing of receipts
- timing of payments.
If you do not have money to pay at the right time for planting grass, concentrates etc.



24 you have to borrow.
If you hurry to borrow, this can be very expensive.

Here is the cash flow from the above accounts:

Item Outflow	Inflow	
(expenses)	(receipts)	
Capital Account	8,000.00	12,500.00
Loan Account	2,400.00	5,760.00
Current Account	<u>34,500.00</u>	<u>19,000.00</u>
	44,900.00	37,260.00

In this example, there is a surplus inflow over outflow of (44,900.00 - 37,260.00 =) 7,640.00. Therefore, it would be possible to arrange the expenses in such a way as to avoid borrowing at short notice. (Of course, there is an outstanding loan of 10,800.00 and a new loan of 2,400.00 which are considered as planned borrowing at normal interest rates.

What do you know about dairy farm accounting?	
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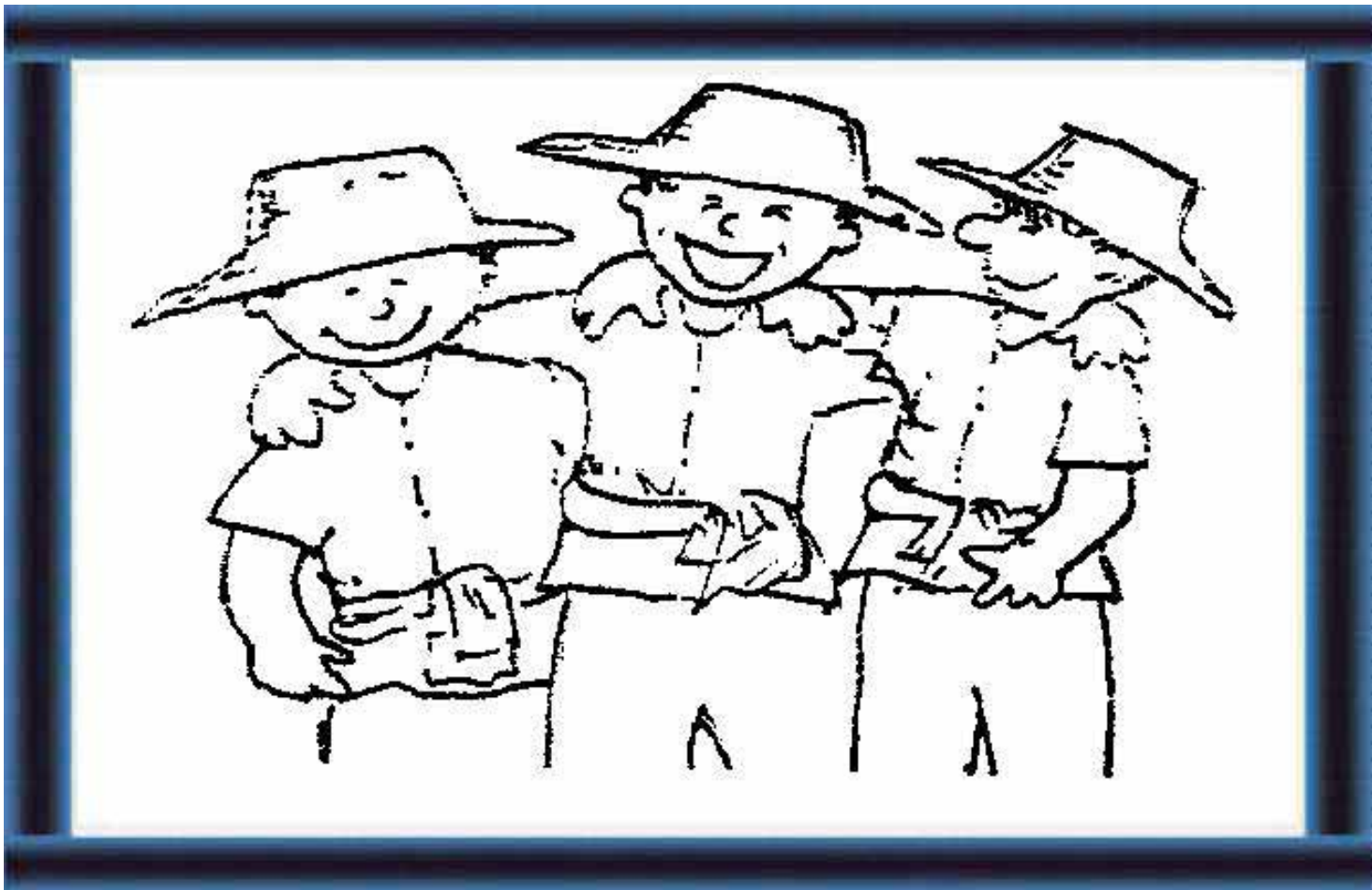
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Husbandry Unit 13

DAIRY FARMING ORGANIZATIONS

page 23



Extension Materials

What should you know about dairy cooperatives?



1 What is a dairy cooperative and why join? (5-16)

A dairy cooperative is:
- a group of people working **together** to help each other and **share benefits**.



2 What does a dairy cooperative do? (17-35)

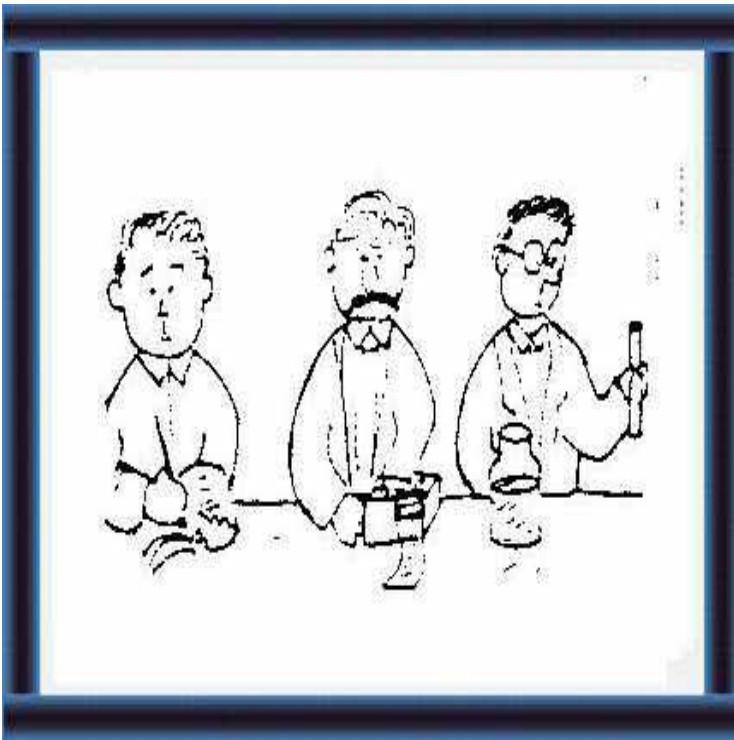
A dairy cooperative:
- provides **services** for members
- keeps **records** and organises **financial matters**.



3 What types of dairy cooperative are there? (36-44)

There are:

- **single-purpose** cooperatives
- **multi-purpose** cooperatives.



4 How can you organise a dairy cooperative? (45-49)

By choosing:

- the **right person**
- for the **right job**
- in the **right structure**.

What is a dairy cooperative?



5 A group of people working together on dairying:
- they put their labour and resources **together** to **benefit all members**.



6 A cooperative is **democratic**:
- each member has **one vote**.



7 By members working as a **group**, the cooperative can help by:
- making the **best use** of the money and resources which each member has



8
- buying **large quantities** of necessary items at **lower prices** such as concentrates



9

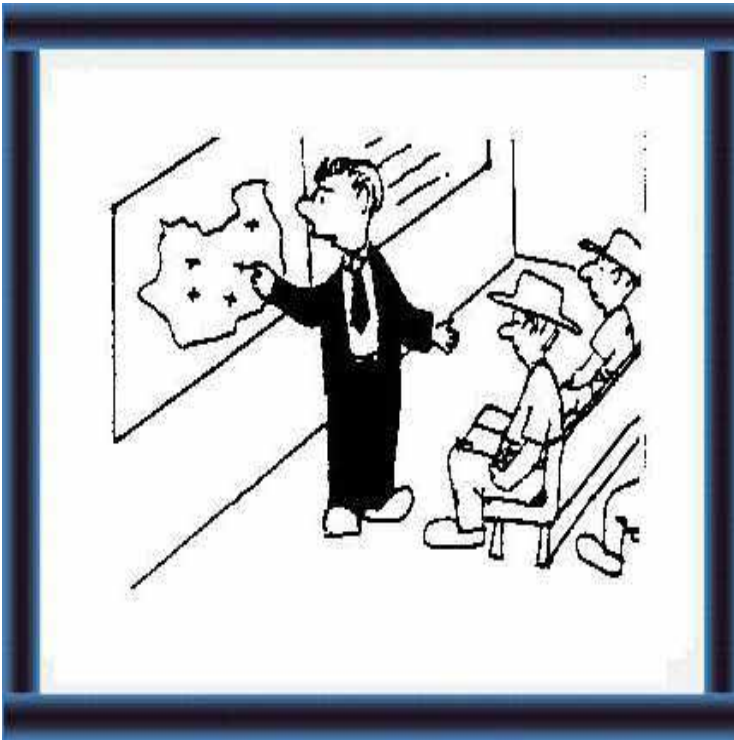
- **sharing the costs** of collection, processing and distribution
- making production more **efficient** and **increasing** employment
- making a **profit** to **share** between members.



10 Each year, **some** of the surplus money goes to the cooperative for financial, social and training services

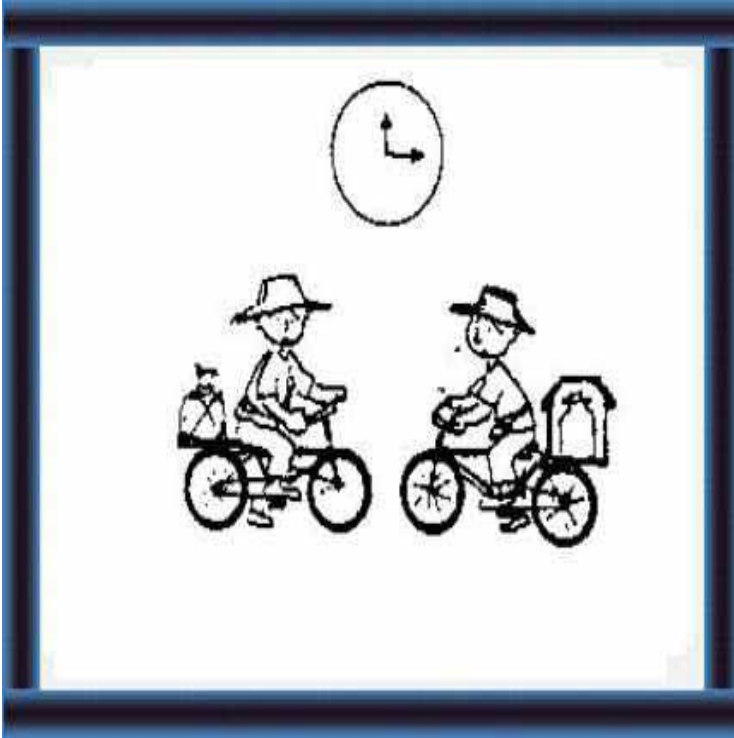


11 and the members **share the rest** of the money.
So you get **more benefit** by **joining other farmers in a dairy**



cooperative
12 and sometimes your dairy cooperative can get **more benefits** by **working with other dairy cooperatives**.

Why join a dairy cooperative?



13 **Without** a cooperative, you must spend a **long time**
- to send your milk to the chilling plant
- to collect your feed



14 or deal with a **middle man** who takes a high profit and may be corrupt.

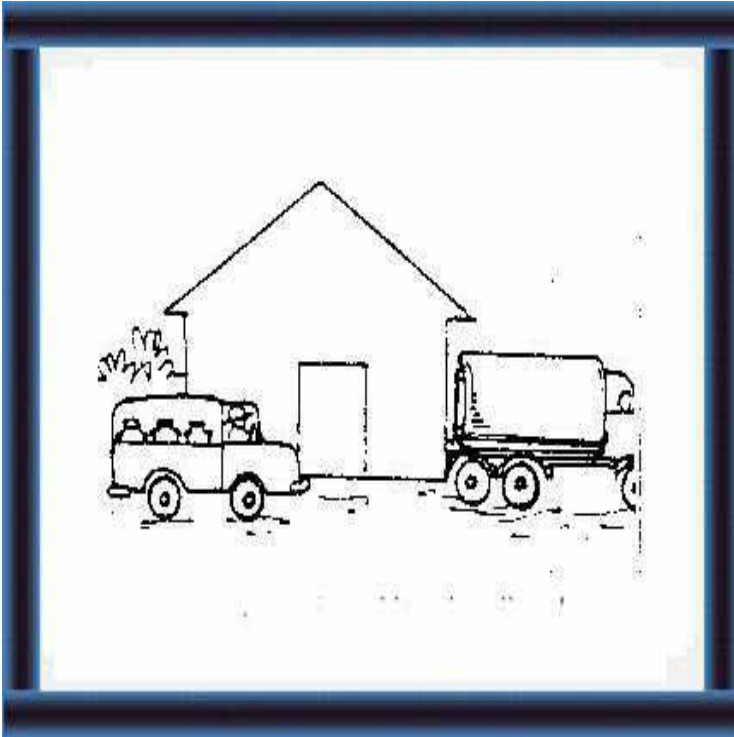


15 **With** a cooperative, you can have **milk collecting points** in each village or group of villages. The collecting points can also provide feed and other requirements.



16 By **sharing**, you:
- spend **less time** travelling
- **reduce the cost** of feed because the coop buys in bulk.

What does a dairy cooperative do?



17 It organizes members for efficient collection, processing and distribution of milk.



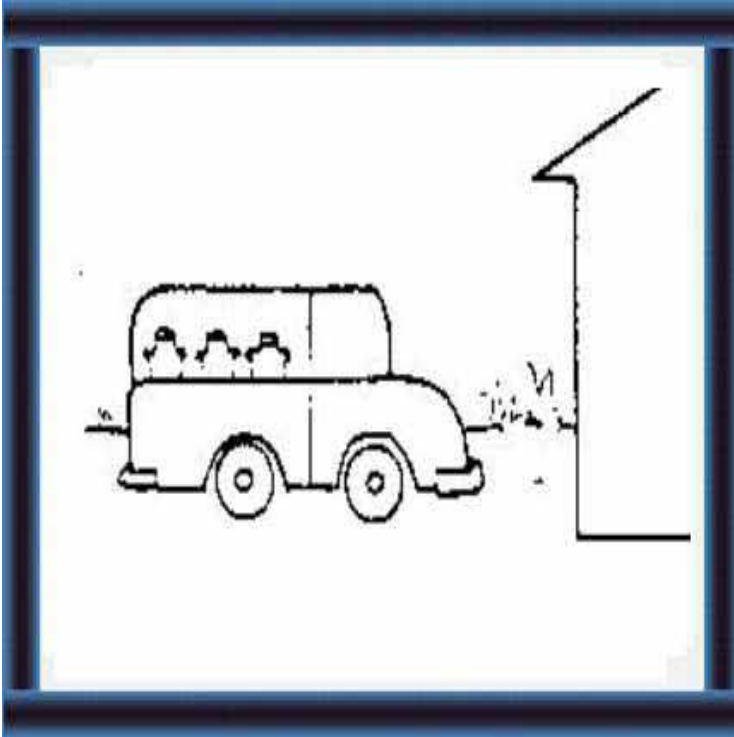
18 It checks milk quality
- on the farm
- during processing
- during retail.



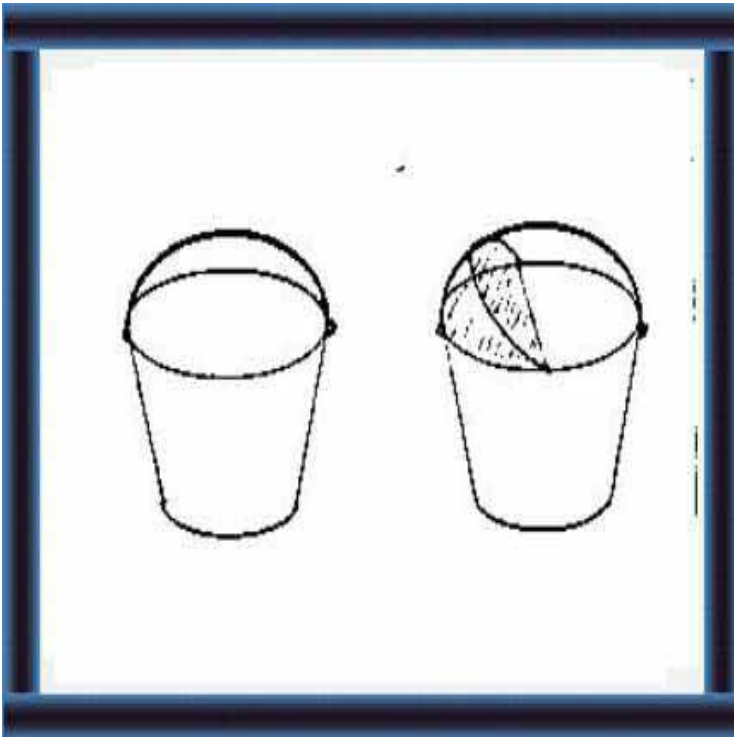
19 It **sets milk prices** paid to members.
It **negotiates sale prices** for milk on behalf of all members.



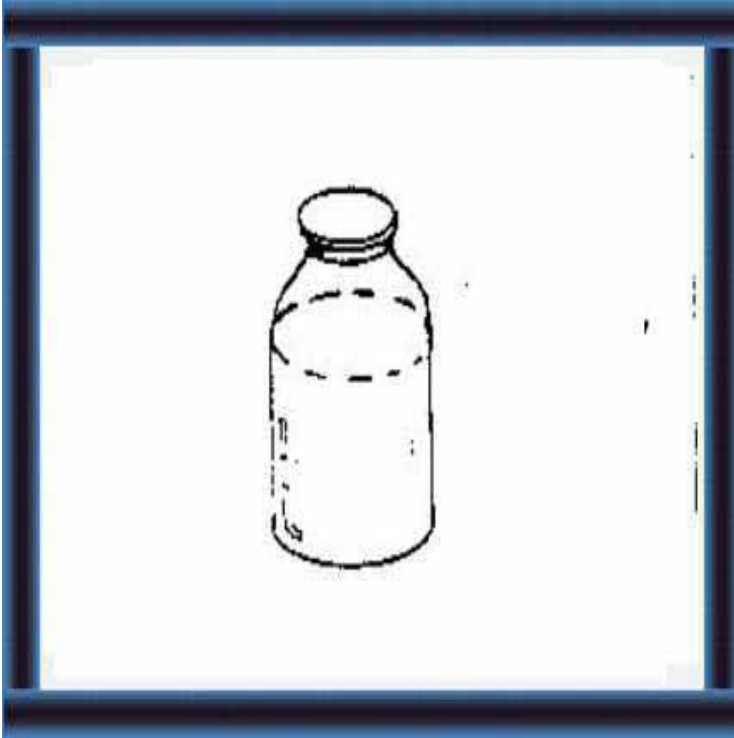
20 It **supplies:**
- animal feeds
- farm and household supplies.



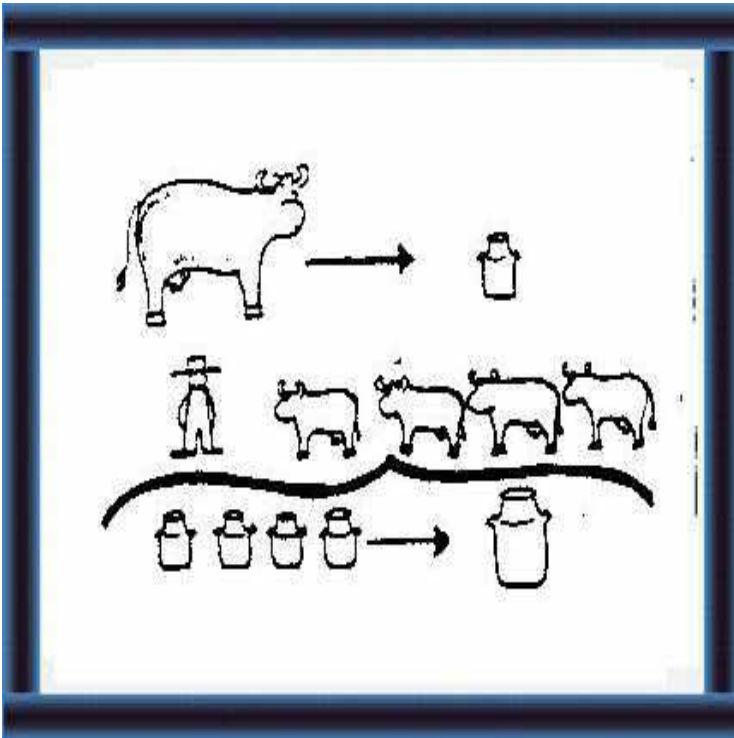
21 The cooperative **purchases:**
- equipment
- vehicles
- buildings
necessary for cooperative activities.



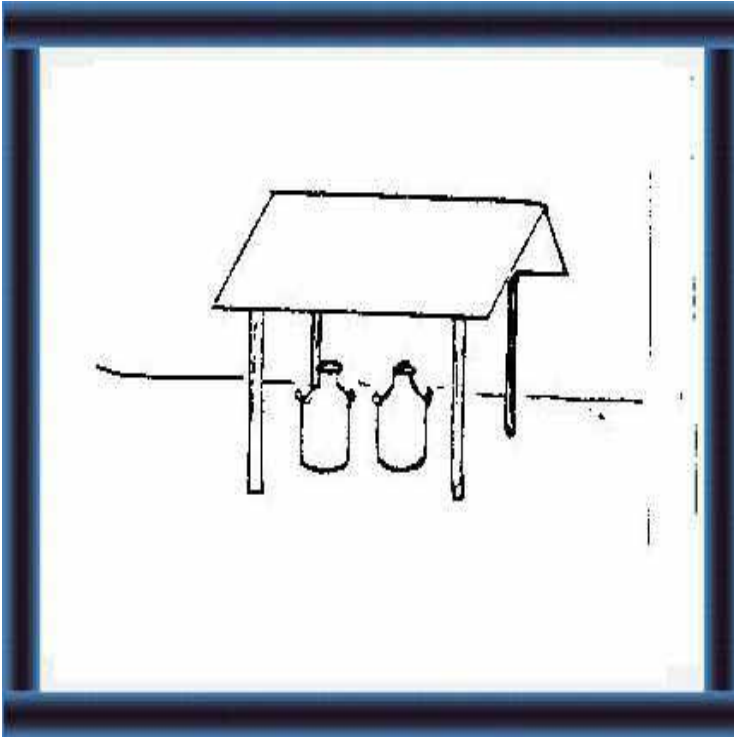
22 Each farmer needs:
- an open milking bucket
- a milking bucket with a **hood**



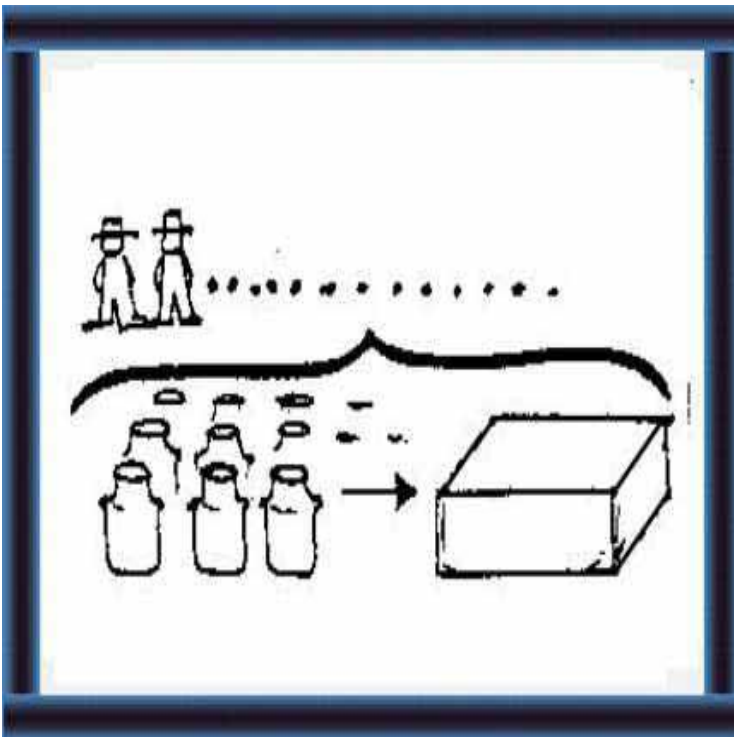
- 23
- a milk transport can, **large enough** to hold all the milk with:
 - a lid
 - a **wide neck** to allow cleaning.



- 24 For example: 1 cow needs: 1 x 10 l milk can
- so**
- 1 farmer with 4 cows needs:
- 4 x 10 l milk cans and
 - 1 x 40 l milk transport can.

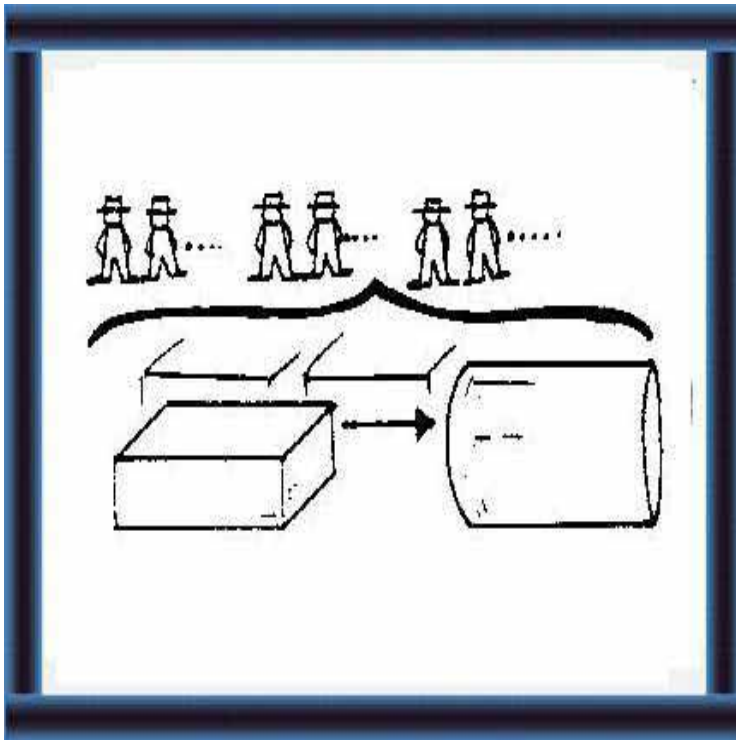


25 **Each** milk collecting point needs:
- milk transport cans.

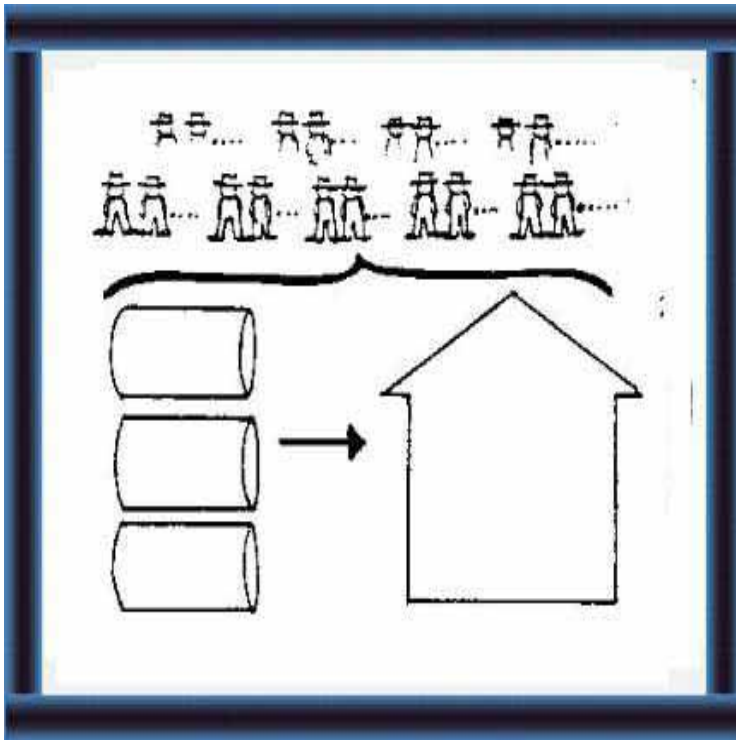


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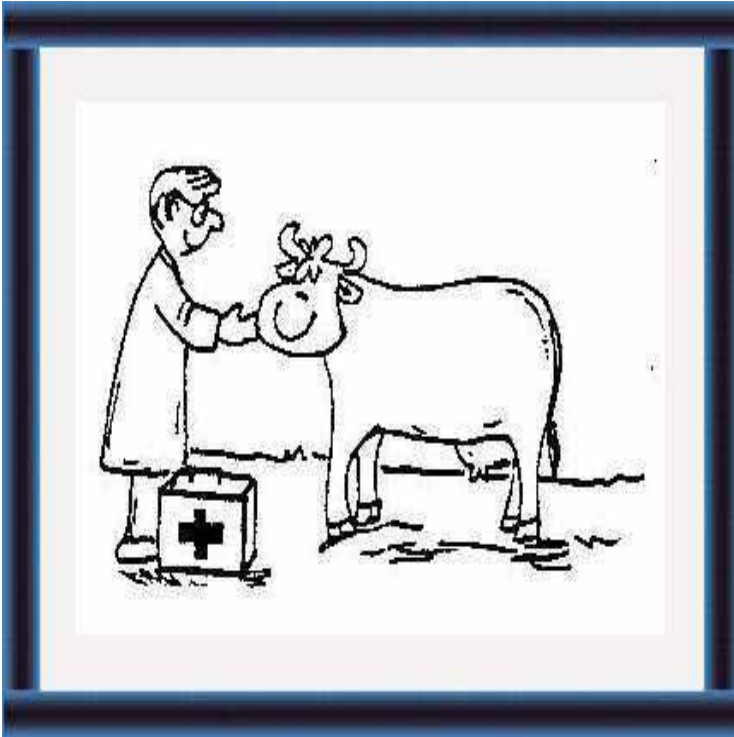
For example:
25 members supply 400 l to the collecting point so there should be **at least**:
- 12 x 40 l cans (2 spare cans).



27 The milk chilling centre needs:
- cooling tanks.
For example, the daily collection is:
- 2,500 l from 10 collecting points with 300 members.



28 The processing plant collects milk from the chilling centres and, therefore, needs **larger capacity**.



29 The cooperative **provides**:
- A.I. services
- veterinary services.



30 For this work, a cooperative needs:
- vets
- inseminators
- extension workers
- milk recorders (where there is official milk recording).

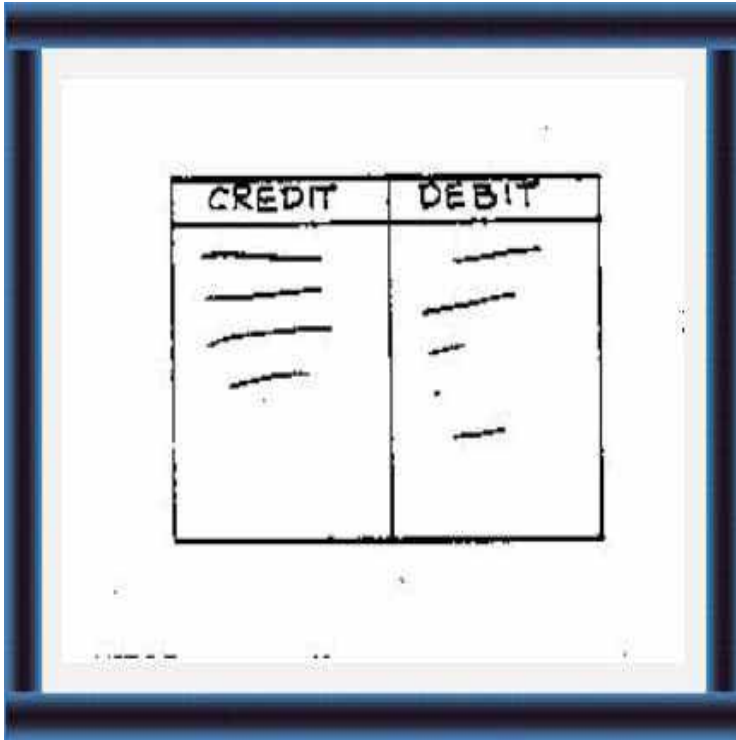


31 It provides training:
- in husbandry
- and cooperatives.

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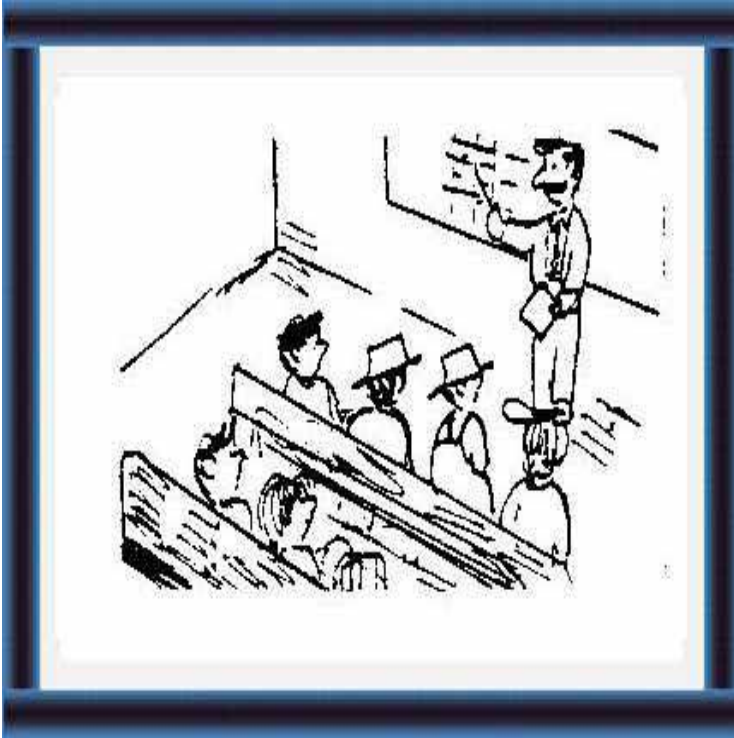
32 The cooperative **keeps records** of all credits and debits



33 and **produces balance sheets** for:
- milk collection and marketing
- sales of cattle feed and consumer goods
- other activities.



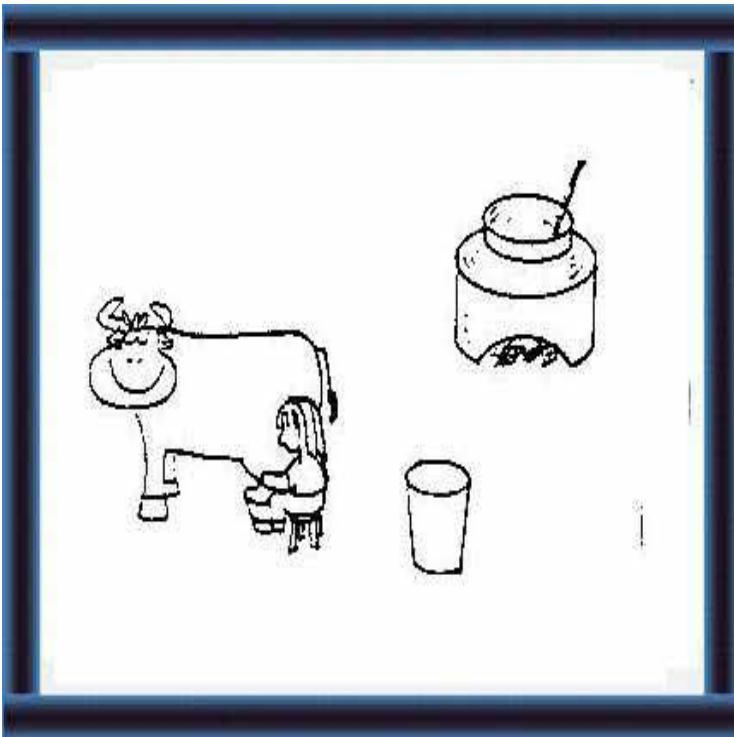
34 An **internal auditor checks**:
- investments
- budgets
- loans
- payments.



35 Cooperative officers or private auditors approved by the cooperative:
- do the **final auditing**
- **report** to the meeting of all the members.

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What types of cooperatives are there?

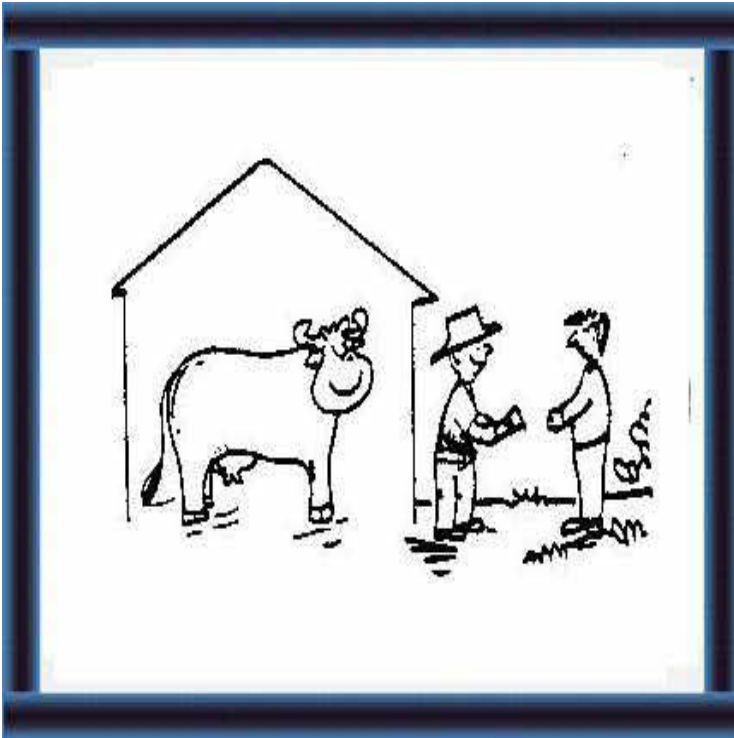


Single-purpose cooperatives
36 This type of cooperative **only** supports dairying, dairy feeds and milk processing.

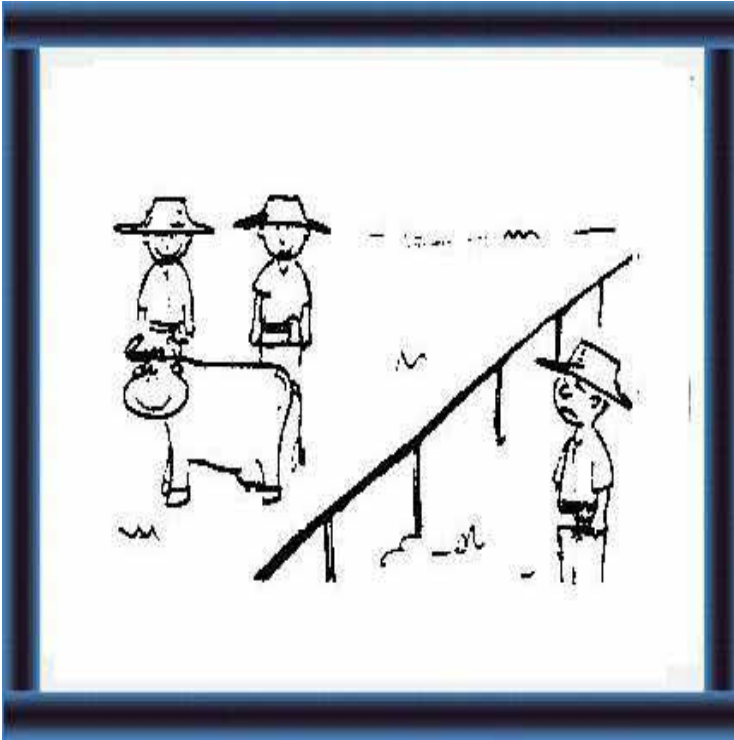


37 In some countries, e.g. India, the cooperative does **not give credit**.

The bank may offer credit to members of the cooperative.



38 In other countries, e.g. Indonesia and Thailand, the cooperative **does offer credit**.



39 Only milk producers can be members of these single-purpose cooperatives.

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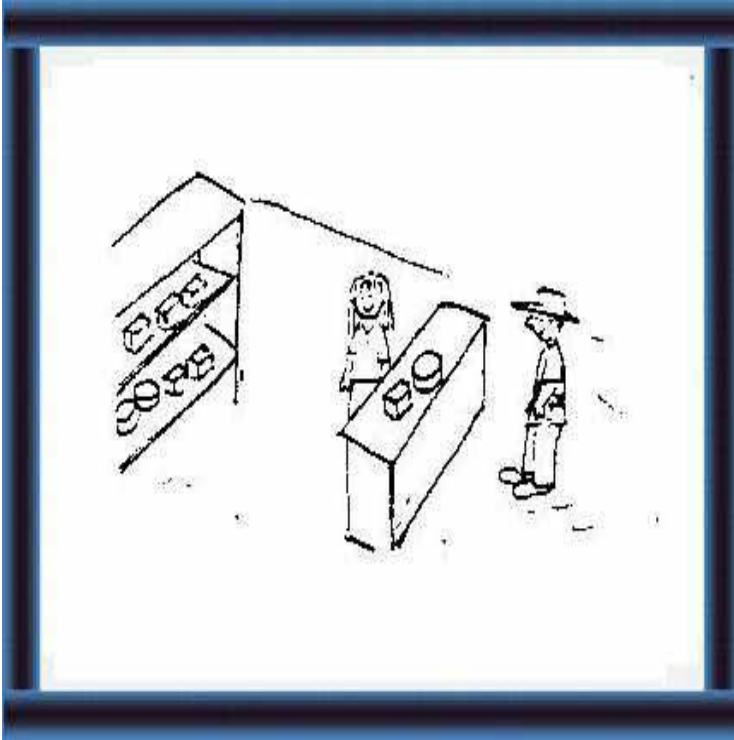
Multi-purpose cooperatives
40 This type of cooperative supports **other activities** besides dairying:
- crop production e.g. smallholder tea



41
- general sales outlets e.g. in
Indonesia.

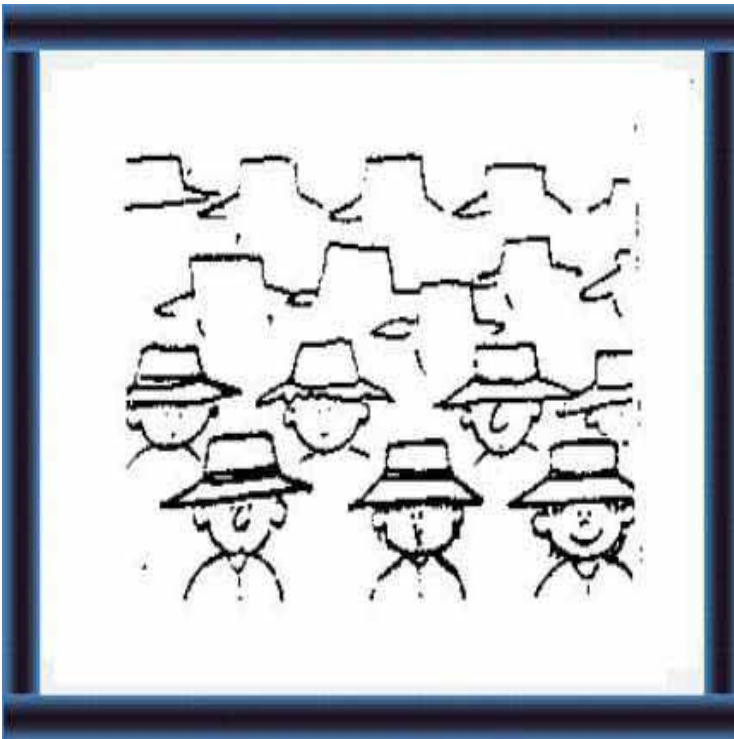


42 Milk producers, tea
producers, consumers **and**
others can join multi-purpose
cooperatives.



43 Some cooperatives process milk from members and market the products. Profits are **shared with members**.

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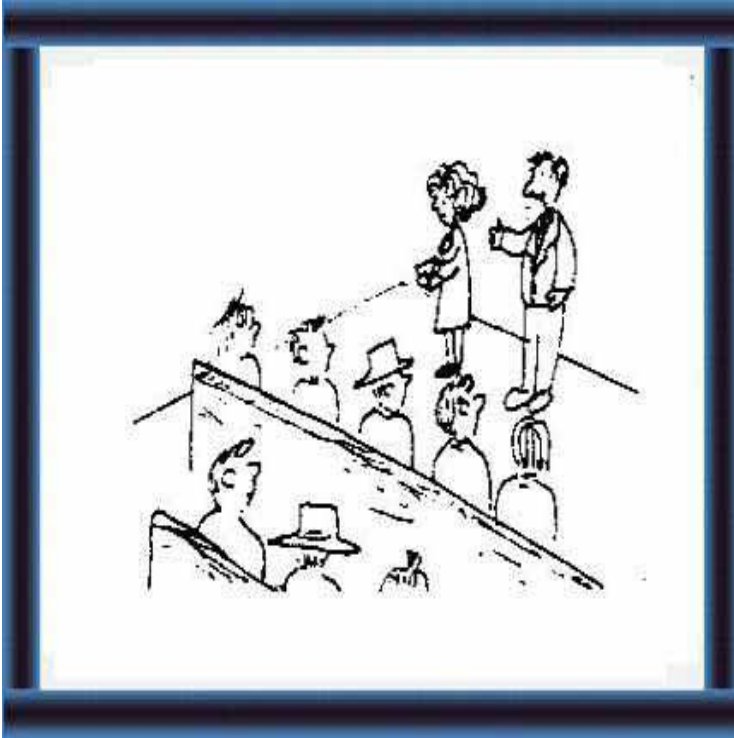
How can you organize a cooperative?

44 You choose the:

- **right man**
- **for the right job**
- **in the right structure.**

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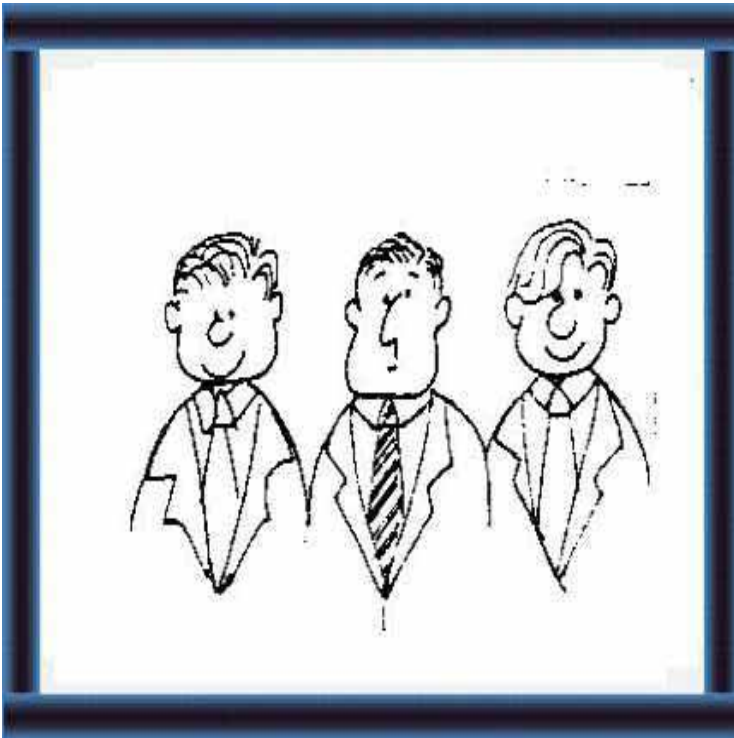
What are the duties of each group?



45 The **General Assembly** has a **President** and a **Secretary** elected from the members.

It can:

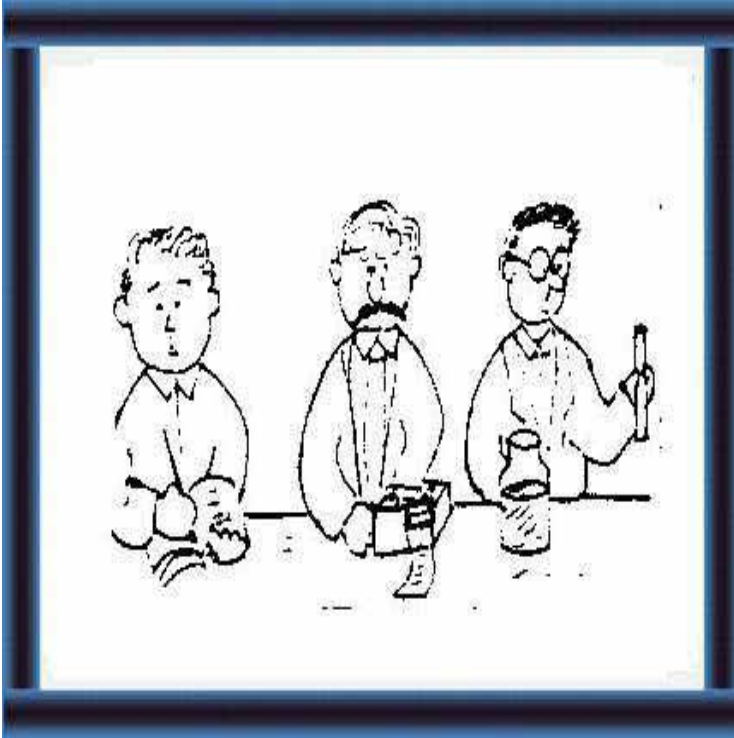
- **elect** and **dismiss** the President, Secretary, Board of Directors and Management
- **approve** budgets and rules
- **vote** on other important subjects.



46 The **Board of Directors** has a **Chairman**, **Secretary**, **Cashier** and **Board Members**, and is responsible to the General Assembly.

It can:

- **arrange meetings** of the General Assembly
- **interpret** rules
- **supervise** management
- **set** and **review** budgets.



47 The **Supervisory Board** has an **Auditor** and **Inspectors**.

It can:

- **check** accounts
- **supervise** administration
- **check** production
- **call meetings** if necessary.

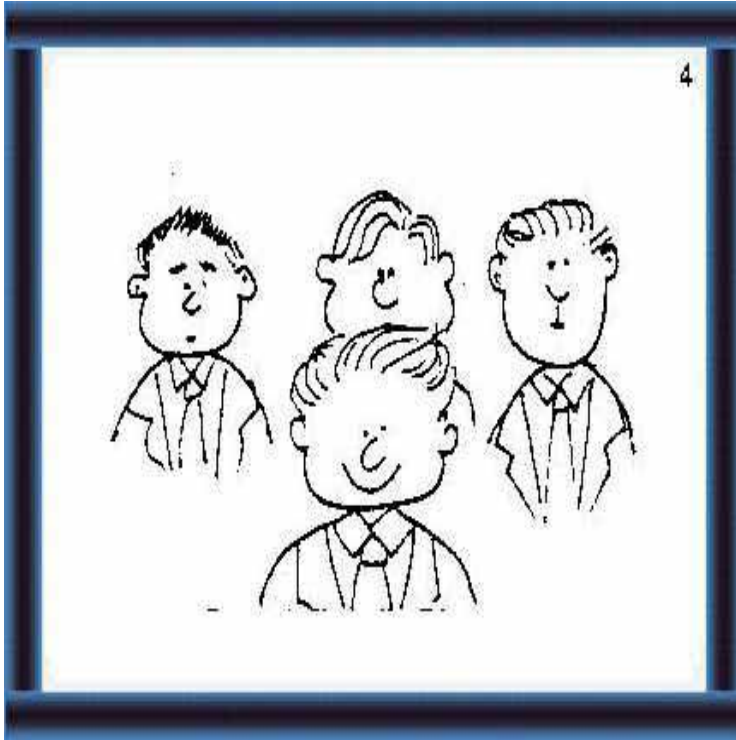
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48 The **Advisory Board** has **experts** in many fields.

It can give **specialist advice** on:

- housing
- processing
- marketing.



49 The General Manager and the Section Managers:
 - **manage** the personnel
 - make sure to **achieve objectives**
 - **report** activities and budgets to the Board of Directors.
 In small cooperatives members will do most of the jobs above. Large cooperatives will employ specialists where necessary.

What do you know about dairy cooperatives?

What a dairy cooperative is

- 1 Activities** (5-9)
- 2 Sharing benefits** (10-12)

Reasons for joining

- 1 Problems of time and middle man** (13-14)
- 2 Benefits of milk collecting points and cooperation** (15-16)

What a dairy cooperative does

- 1 Organises collection** (17)
- 2 Checks milk quality** (18)
- 3 Negotiates milk prices** (19)
- 4 Supplies goods for members** (20)
- 5 Purchases items for activities** (21)
- 6 Farmer requirements** (22-24)
- 7 Milk collecting point requirements** (25-26)
- 8 Milk chilling centre requirements** (27)
- 9 Milk processing plant requirements** (28)
- 10 Cooperative services and manpower requirements** (29-31)
- 11 Financial matters** (32-35)

Types of dairy cooperative

- 1 Single-purpose** (36-39)

2 Multi-purpose	(40-43)
Organising a dairy cooperative	
1 Manpower and structure	(44)
2 Organisation:	
- General Assembly	(45)
- Board of Directors	(46)
- Supervisory Board	(47)
- Advisory Board	(48)
- General and Section Managers	(49)

