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**MONOGRAPH  
ON  
ACCOUNTING FOR  
AGRICULTURAL  
OPERATIONS**

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ACCOUNTING FOR AGRICULTURAL  
OPERATIONS**



*ISSUED BY*  
**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF INDIA**  
**NEW DELHI**

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NEW DELHI

August, 1983  
Reprinted 1995  
Price : Rs. 30.00/-

ISBN : 81-85868-68-9

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Published by Shri Kamal Gupta, Technical Director, The Institute Of Chartered Accountants of India, Indraprastha Marg, New Delhi-110002, and Printed by SSS Printers, New Delhi-110017

## **FOREWORD**

The importance of agricultural sector in our national economy can hardly be over-emphasised. Apart from making the largest sectoral contribution to national income, it also provides employment to a vast majority of our population and is the primary means of subsistence of our rural masses. However, little attention has so far been paid to the task of designing accounting systems for this sector which would be appropriate in the circumstances of our country. In this context, the Research Committee's decision to bring out a series of monographs on accounting for agriculture and allied activities is indeed significant. This Monograph deals with various aspect of financial accounting for agricultural operations.

I hope, the monograph would be found useful by our members and others concerned with accounting for agricultural operations.

New Delhi  
15-9-1983

**ASHOK KUMBHAT**  
*President*

## PREFACE

This is the fourth publication in the series of monographs on accounting for agriculture and allied areas being brought out by the Research Committee of the Institute of Chartered Accountants of India.

Traditionally, in India, agriculture has been carried on as a family venture and, therefore, few accounting records are maintained by our farmers. In the recent times, however, some significant developments in the agricultural sector of our economy, such as the increasing emphasis on cash crops, procurement by government agencies, provision of financial assistance by banks, etc., necessitated the maintenance of proper and adequate accounting records in the various segments of the agricultural sector. It is in this context that the Research Committee decided to bring out a series of monographs on accounting for agriculture and allied areas.

This monograph deals with the salient features of accounting for agricultural operations and suggests accounting systems for medium-sized farms. It may be emphasised that these accounting systems provide only a general and basic guidance and the circumstances of each case will have to be taken into consideration while designing an accounting system for a particular farm. The monograph also deals with some valuation problems arising in the context of accounting for agricultural operations.

I am grateful to Shri S.B. Pandit, F.C.A., for preparing the basic draft of the monograph. I also acknowledge the valuable contribution made by Shri T.S. Grewal, our former Director of Studies, in giving the monograph its final shape and form.

New Delhi  
15-9-1983

P.A. NAIR  
*Chairman*  
Research Committee

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## CHAPTER I

### AGRICULTURE IN INDIA—AN OVERVIEW

Agriculture has traditionally been the most predominant sector of the Indian economy. Its contribution to the national prosperity has been so significant that it is sometimes described as the 'backbone' of the Indian economy. The agricultural sector accounts for the largest sectoral contribution to the national income and also provides direct and indirect employment to a vast majority of the working population. In terms of 1970-71 prices, the contribution of the agricultural sector to the national income in 1976-77 was 40.9%, with another 1.4% contributed by forestry. In this context, it may be mentioned that the share of agricultural sector in the national income has steadily declined since 1950-51, primarily due to industrialisation and development of tertiary sector in the Indian economy. The importance of the agricultural sector as a source of employment has, however, increased. At the beginning of the century, 62.5 per cent of the total work force was engaged in agriculture ; the figure rose steadily thereafter to 68.5 per cent in 1921 and to 68.7 per cent in 1971. This, of course, is the natural outcome of the increase in population without commensurate growth of the industrial sector. Also, about 70 per cent of the population depends on agriculture for its livelihood.

The state of agriculture has also a significant impact on the industrial sector. The agricultural sector provides important industrial raw materials such as cotton, oil seeds, sugarcane, etc. A fall in the output of such crops creates difficulties for the industry. The balance of payment situation and the price trends also depend to a great extent on agricultural production.

From the above discussion, it is obvious that in spite of significant industrial development since independence, the agricultural sector still retains its place of pride in the Indian economy. The state of agriculture, however, differs significantly from state to state and even from

district to district. Still, some broad features of Indian agriculture may be noted as below :

**Size of holdings :**

An analysis of the size distribution of land holdings in India may provide an insight into the nature of Indian agriculture. Table I below highlights some important features of land holdings in India.

Table I  
Size Distribution of Land Holdings<sup>1</sup>

Sl. No.	Size (Hectares)	No. ('000)	%	Area (000 hec)	%
1.	Marginal i.e. 1 less than	35682	50.6	14545	9.0
2.	Small 1-2	13432	19.0	19282	11.9
3.	Semimedium 2-4	10681	15.2	29999	18.5
4.	Sub-total of 1-4 (2) & (3)	24113	34.2	49281	30.4
5.	Medium 4-10	7932	11.3	48234	29.7
6.	Large 10 and above	2766	3.9	50064	30.9
Total :		70493	100	164124	100

It can be seen from the above table that nearly 70 per cent of the total holdings in India are less than 2 hectares in size, with another 15 per cent holdings between 2 to 4 hectares. Thus, these two categories account for about 85 percent of the total holdings. However, they cover only about 40 per cent of the total area. On the contrary, about 4 per cent of the holdings which are over 10 hectares in size, account for about 31 per cent of the total cultivated area. This clearly brings out the fact that most of the farms are of very small size.

1. Source: Ministry of Agriculture and irrigation, All India Report on Agriculture Census, 1970-71 (1975),

The average size of operational holdings significantly differs from state to state. Table II below shows the average size of operational holdings in different states as in 1970-71.

**Table II**  
**Average size of Operational Land Holdings (1970-71)**

State	Average size (Hectares)	State	Average Size (Hectares)
Rajasthan	5.48	Orissa	1.89
Maharashtra	4.28	Himachal Pradesh	1.53
Gujarat	4.11	Bihar	1.52
Madhya Pradesh	4.00	Assam	1.47
Haryana	3.78	Tamil Nadu	1.45
Karnataka	3.29	West Bengal	1.20
Punjab	2.89	Uttar Pradesh	1.16
Andhra Pradesh	2.51	Jammu & Kashmir	0.94
		Kerala	0.79

**Irrigation :**

In India where the agriculture is considered a gamble of monsoon, the importance of modern and efficient methods of irrigation can hardly be over-emphasised. As can be seen from Table III below, more and more cultivated area is progressively being brought under irrigation.

**Table III**  
**Percentage of Irrigated Area to Total Area under Cultivation<sup>1</sup>**

	1971-72	1978-79
Foodgrains (overall)	24.5	28.6
Of these :		
Rice	37.3	28.6
Wheat	64.3	65.2
Pulses	8.9	8.0
Oilseeds	7.1	9.5
Cotton	21.8	24.9
Sugarcane	72.4	80.9

1. Source : Economic Survey 1981-82, Government of India, p. 78.

The above table indicates only the All-India Pattern and the situation differs from state to state. In Punjab, for example, ratio of irrigated area is 78% of the total cultivated area (highest in the country) as against that of 27% for the whole of India. Within the state, Amritsar has 95.6% area under irrigation. Ropar with 40.9% is on the other extreme.<sup>1</sup>

*Investment* : Due to vast differences in the size of holdings, the amount of investment is bound to differ from farm to farm. The small farmers have only the land and a few implements; many of them do not have even a pair of bullocks. The large farmers, on the other hand, have a great deal of equipments like tractors, electric pumps, etc. Not much information is presently available on this aspect. However, the following data relating to the average farm assets of the Punjab farmer in 1977-78 may throw some light on the nature of assets employed on a farm as well as on their relative importance.<sup>2</sup>

Table IV

Composition of Assets of an average farmer in Punjab (1977-78)

A. Farm Assets		Rs.	%
1.	Land	1,58,293	75.50
2.	Farm Building	5,407	2.58
3.	Farm Machinery	11,074	5.28
4.	Farm Implements	1,598	0.76
5.	Draught Animals	2,459	1.17
6.	Milch Animals	3,937	1.88
7.	Others	471	0.22
B. Household Assets			
1.	Dwelling House	18,791	8.96
2.	Consumer Durables	7,185	3.43
C. Non-farm Assets		460	0.22
Total		2,09,678	100.00

1. "Prosperity of Punjab Farmer—Reality or Myth" by S.S. Grewal and Sidhu, Punjab Agricultural University, Ludhiana.

2. Ibid

### Pattern of Farm Inputs:

As at present, no information is available regarding the pattern of farm inputs on an All-India basis. However, partial light is thrown on this subject by a study conducted by Mr. C.H. Shah on the farms in the Kodinar Taluka in the state of Gujarat. The data collected in this study could be used as indicator of an all India pattern for agricultural inputs. For the purpose of analysis, agricultural inputs may be classified as under :

1. Land
2. Labour
3. Livestock
4. Manure
5. Seeds
6. Implements

1) *Land* : Land, including the developments thereon, is the most important physical asset of a farm. The value of land constitutes about 72 per cent of the total value of physical assets of a farm. While the developments carried out on land may be amortized over a period of time, land itself is a non-depreciable asset. On an All-India basis, about 10 per cent of the total area under cultivation is farmed under the share cropping arrangement. Under this arrangement, the farmer cultivates the land belonging to the landlord and pays rent in the form of a share in the final produce.

2) *Labour* : The labour employed on a farm may be either family labour or hired labour. Further, hired labour may be temporary or permanent and may be paid for in cash or kind. The relative importance of family labour and hired labour can be assessed on the basis of man-day inputs of the two categories of workers. Though the data on this aspect is not available on a national scale, some useful indications in this regard may be obtained from such data relating to two states— Punjab and Uttar Pradesh. This data is presented in Tables V and VI.

Table V  
Annual farm labour input in Punjab (in Man Days)

Size Group (Acre)	Family Farm Workers	Permanent Farm Worker
0— 5	212	—
5—10	247	269
10—20	284	338
20—50	297	370
50 & above	406	479
Overall	283	364

Table VI

## Percentage Distribution of Farm Labour in Uttar Pradesh

Size Group (Acre)	Family Labour	Hired Labour	
		Temporary	Permanent
upto 2.5	91.18	8.82	—
2.5—5	86.36	10.39	3.25
5—7.5	83.59	9.38	7.03
7.5—10	74.49	17.35	8.16
30—15	66.66	16.67	16.67
15—20	68.66	17.91	13.48
20—25	56.14	10.30	24.56
25 & above	43.75	22.92	33.33
Overall	71.08	15.67	13.25

From the above tables, it can be seen that conforming to the general notion, the relative proportion of family workers is high in the case of small farms and low in the case of large farms. Since most of the farms, as noted earlier, are quite small in size, the input of family labour is far in excess of the input of hired labour.

3) *Livestock* : Next to land, livestock is usually the major physical asset of a farm. It may be either for dairy or for draught purpose. In the study of the Kodinar Taluka referred to earlier, it was noted that livestock accounted for about 24 per cent of the total investment in physical assets. However, where the farmer uses tractor or some other mechanical equipment, the investment in livestock may be low or even negligible. The study noted that since almost every farmer had a pair of cattle, the smaller the farm, the larger the number of cattle per hectare. This is evident from the Table VII below :

Table VII

## Number of cattle per acre

	Dairy	Draught
Small Farm	0.36	0.27
Big Farm	0.18	0.14
Overall	0.19	0.17

In the year 1971-72, there were in all 355 million animals in India. The degree of reliance of the Indian farmer on the agricultural labour and work animals can be assessed from the fact that of the total horse-power employed on the Indian farm, over 60 per cent is contributed by these two sources. The total horse-power used for 1000 hectares is 373 and is contributed as below :

Table VIII

Source	Horse Power	%
1) Agricultural labour	76.92	20.6
2) Work animals	153.53	41.2
3) Tractors	15.42	4.1
4) Oil Engines	33.67	9.0
5) Electric Pumps	20.20	5.4
6) Other Machinery	73.46	19.7
<b>Total</b>	<b>373.20</b>	<b>100.0</b>

It can thus be seen that the use of cattle as a source of energy is very high, particularly so in the case of small farms. However, the use of such equipments as tractors and electric pumps is now progressively increasing as can be seen from Table IX below. The figures in the table are for 1,00,000 hectares of cropped land.

Table IX

Year	No. of Tractors	No. of Electric Pumps	Electricity consumed (KWH)
1951	7	20	1539
1961	20	105	5453
1971	126	1003	22900 <sup>1</sup>

In Punjab, according to the study by Grewal and Sidhu referred to earlier, the number of tractors per 1,000 hectares was 17.3 in 1975-76, varying from 24.5 in Ludhiana district to 9.6 in Ropar district.

4) *Manure* : Manure consumed on the farm is yet another important agricultural input. Manure may be either farm-yard manure or chemical

1. This figure is for 1,000 hectares.

Source : Commerce Annual Number, p. 4.

fertiliser. On an All-India basis, the consumption of fertiliser is only 3.6% of the gross total value of the agricultural production. As at present, no date is available on a national scale regarding the relative consumption of farm-yard manure and fertiliser. However, the results of the study conducted in the Kodinar Taluka are revealing. The study noted that of the total irrigated area (which came to 58.7 per cent of the total farmed area), 81 per cent was served by farm-yard manure and only the remaining 19 per cent area was served by fertilizers. Of the total non-irrigated area, only 7.7% was manured. Thus, the area manured by farm yard manure was more than four times the area manured by fertilisers, the total consumption of fertilisers in India which stood at 0.294 million tonnes in 1960-61 rose to 5.52 million tonnes in 1980-81, thus showing an increase of over 18 times. However, the per capita consumption of fertilisers in India is much lower than in many other countries—only 16 kgs in 1971-72 against 690 kgs in Netherlands, 400 kgs in Japan and 580 kgs in Newzealand.

5) *Seeds* : The seeds used on a farm may be either purchased seeds or farm-grown seeds. With the increase in area under high yielding varieties, the relative proportion of purchased seeds is on the increase. Again, even though comprehensive nation-wide data is not available, the study in Kodinar Taluka may throw some light on this aspect. According to the study, following is the percentage of farmers who used purchased seeds :

Table X

	Crop	Percentage
1)	Bajra	9.1
2)	Jowar	10.5
3)	Paddy	14.5
4)	Wheat	21.9
5)	Cotton	87.7

Thus, it can be seen that except in the case of cotton, a large majority of farmers used farm grown seeds. However, due to efforts of governmental agencies and the demonstration effect, the use of standardised seeds is now on the increase.

6) *Implements* : On a national scale, the investment by farmers in implements is meagre. The study in Kodinar Taluka revealed that of the total investment on a farm, only 4% was in implements.

**Conclusion :**

The above study of agricultural inputs clearly brings out an important fact, i.e., most of the inputs are internally generated. Family labour (which constitutes a majority of the total labour input on a farm) and in many cases, even the hired labour is not paid for in cash. The motive power (i.e. cattle), manure and seeds are also mostly internally generated and therefore no cash payments are made for them. Thus, most of the agricultural inputs are not exposed to the monetary economy.

It must be remembered that in a country like India where farming conditions differ materially from one location to another, there are bound to be significant differences in the inputs used on farms located in different areas. For example, the following analysis of farm expenditure per acre in Punjab (average for 1976-77 and 1977-78) gives an entirely different picture from that given by the study of conditions in the Kodinar Taluka.

Table XI

**Farm Expenditure per acre in Punjab\***

	Rs.	%
Fertilisers	184.83	23.34
Seeds	66.29	8.01
Pesticides and Weedicides	119.68	2.37
Irrigation charges (including electricity & oil for engines)	44.36	5.36
Fuel and Mobile Oil	39.39	4.75
Hired Labour	219.68	25.72
Crop cess and Land Revenue	45.16	5.46
Feeds and Fodder-	69.67	8.42
Depreciation on Machinery and interest on working capital	129.20	15.62
Miscellaneous	16.16	1.95
<b>Total</b>	<b>827.32</b>	<b>100.00</b>

\*Source : Grewal and Sidhu, Op. Cit P. 28.

Table XI clearly indicates that the average farmer in Punjab depends a great deal on outside sources for farm inputs and that most of the agricultural transactions in the state involve the exchange of money. This probably holds good for all areas covered by the green revolution. It is thus obvious that even though a very vast majority of farmers still operate in a barter economy, an increasing number of farmers is converting, and has already largely converted, agricultural operations into a sort of industrial activity which essentially involves operation in a monetary environment.

#### **Nature of agricultural operations in India**

Some of salient features of agricultural operations in India are as below :

- (1) The land cultivated by a farmer may be his own or he may have hired it from the landlord either on a fixed rent basis or under a share cropping arrangement. In the latter case, the land-lord will also share the cost of physical inputs like seeds, fertilisers, water, etc., but not labour.
- (2) A major part of the agricultural inputs is internally generated and does not involve cash outlay e.g., family labour, farm - yard manure, farm seeds, etc.
- (3) A part of the output is also consumed by the farmer and his family (e.g., wheat, rice, milk, fuel, etc.), as fodder for the cattle, as also for payment to the hired labour.
- (4) In irrigated areas, two crops are generally raised in a year. Some farmers are trying to raise three crops, the additional crop being a quick growing fodder crop or vegetables.
- (5) Certain crops like arhar dal are now raised to maintain the fertility of the land. They yield some income also but their chief purpose is what is called green manuring.
- (6) There is a market for the entire range of agricultural outputs ; in some cases the markets are well organised. Thus, the market value of production can generally be established with great deal of accuracy.

- (7) Many farmers combine agricultural operations with other operations like dairying. Milk is partly consumed and partly sold ; there is also the natural increase in the number of cattle which may bring some additional lumpsum income. In some cases, male calves are raised to serve as bullocks on the farm itself.
- (8) Agriculture is still greatly affected by the monsoon and in some cases, by market conditions.

## CHAPTER II

### SALIENT FEATURES OF ACCOUNTING FOR AGRICULTURAL OPERATIONS

The preceding discussion highlights certain important features of Indian agriculture which have a significant impact on accounting for agricultural operations as discussed below :

#### **Size of Farms :**

The farms in India are mostly very small and therefore, a relatively simple accounting system seems appropriate for such farms on cost-benefit considerations. However, large farms such as those run by factories or State Farming Corporations may find it useful to implement comprehensive accounting systems. In view of the divergent accounting and operating information requirements of farms at the two ends of the spectrum, it may be necessary to design different accounting systems for large commercial farms and for small family farms. However, this study seeks to design a system of accounting primarily for farms of the size of 10-30 acres of irrigated land. It is felt that this would cover a great majority of farms which would be interested in accounting information.

#### **Operation in a Barter Economy :**

The farms in India operate mostly in a non-monetary economy. Thus, the cases of exchange of goods or services account for a large number of transactions. Since, in accounting, all transactions are measured in terms of money, it would be essential to assign monetary values, howsoever approximate, to revenues, expenses, assets and liabilities generated by such transactions. To do so should not be difficult in view of the fact that market prices are available for a great majority of agricultural products.

#### **Broad Features of Accounting for Agricultural Operations :**

There are two alternative approaches to accounting for agricultural operations : the net worth approach and the approach involving the assignment of monetary values to barter transactions.

Under the net worth approach, the assets and liabilities of the farm are valued at two different points in time. The difference in the net worth as at the two dates represents the profit or loss resulting from the operations during the intervening period. While this method obviates the necessity of finding out the values of inputs and outputs consumed or produced during the period, it has one major drawback, viz., it does not reveal the composition of costs and revenues. Thus, this method helps only in ascertaining the net increase or decrease in the net worth during a period ; it provides no information as to what contributed to this increase or decrease. It is, therefore, an incomplete method of accounting.

In view of the limited utility of the net worth approach, it becomes necessary to follow the approach involving assignment of monetary values to barter transactions. Such valuation may be done on the basis of cost or market value. However, the valuation of the final produce at cost, when a part of it is used as an input, is possible only after a given set of simultaneous equations is solved. As most of the farmers do not possess the requisite knowledge of mathematics involved in such computations, it becomes impracticable to adopt the cost basis of valuation of farm inputs and outputs. The valuation of inputs and outputs at market price, therefore, seems imperative, even though in many cases, such valuation may violate the accounting principle of valuation of inventories (i.e. the lower of cost and net realisable value).

Since the inputs paid for in the form of outputs form a very large proportion of the total farm inputs, the problem of imputation assumes considerable importance. While one faces such situations in the case of industry also, the proportion of the outputs used as inputs to total outputs or to total inputs is very low. Thus, in the case of agriculture, this problem is much more acute than in the case of industry.

The problem of accounting for the large farms is far simpler than that of the small farms because most of their transactions are effected in a monetary economy. Their inputs like seeds, fertilizers, motive power etc., are largely purchased from the market and paid for in cash. Similarly, the outputs also are mainly sold in the market. Accounting for such farms is, therefore, similar to accounting for any industrial or commercial activity.

The above factors are the dominant considerations in designing an accounting system for agricultural operations. Any such accounting system should, therefore, have the following characteristics :

- i) It should be simple.
- ii) It should involve imputation of costs.
- iii) It should be flexible so that any farm, big or small, can adopt it with suitable modifications.

The accounting systems laid down in this monograph are based on these considerations.

**CHAPTER III**  
**A SYSTEM OF ACCOUNTING FOR**  
**AGRICULTURAL OPERATIONS**

**The structure of accounting :**

The accounting system presented here is based on a certain classification of transactions, assets and liabilities. The system lays down a set of books through which the classified transactions are to be recorded.

In the subsequent paragraphs, the classification of transactions and of assets and liabilities is discussed. The structure of accounting is then described and the formats for registers for assets and liabilities given. This is followed by an illustration showing the working of the system.

**Classification of transactions :**

All transactions are divided into two classes viz., the exchange transactions and the revenue transactions.

**i) Exchange transactions :**

Exchange transactions are the transactions whereby an asset or a liability is created or extinguished exclusively due to the exchange of another asset or liability. Exchange transactions cover the following cases :

- a) an asset created by creating a liability or exchanging an asset ;
- b) an asset extinguished by creating another asset or for extinguishing a liability ;
- c) a liability created for extinguishing a liability or for creating an asset ;
- d) a liability extinguished by creating another liability or exchanging an asset.

Some illustrative exchange transactions are as follows :

- a) Purchase of seeds on credit—an asset viz. stock of seeds is created by creating a liability.
- b) Purchase of seeds in cash—an asset viz. stock of seeds is created by exchanging an asset viz. cash.
- c) Payment of cash to settle a payable—an asset is exchanged to extinguish a liability.

It can be seen that exchange transactions include barter transactions, cash transactions, as well as credit transactions.

#### ii) Revenue Transactions :

Any transaction whereby an asset or a liability is created or extinguished without a corresponding creation or extinction of an asset or a liability would be revenue transaction. In effect, any transaction which involves the consumption of a benefit or a generation of a gain would be a revenue transaction.

Following are some of the illustrations of revenue transactions :

- i) Cash payment to labourers for services received ;
- ii) Creation of a liability in favour of labourers for services received ;
- iii) Consumption of seeds, fodder, manure etc ;
- iv) Harvesting of grain.

Like exchange transactions, revenue transactions also include barter transactions as well as cash and credit transactions.

The line of distinction between exchange and revenue transactions is fine but definite. This distinction forms the foundation on which this system of accounting is based.

#### Classification of assets and liabilities :

The assets and liabilities are divided into the following categories.

- 1) *Fixed Assets* : These include tangible as well as intangible assets like land, land development, cattle, implements, etc.
- 2) *Non-monetary Current Assets* : These include seeds, fodder, grain etc.
- 3) *Monetary assets and liabilities* : These include cash, receivables, payables, etc.

The classification is important because different registers are maintained for different types of assets.

The following form may be adopted for keeping information about land and labour ;

**Operational Holding, Irrigation Structures and Farm Labour**

**A. Details of Operational Holding**

	Area (Acres)	Irrigated (Acres)	Unirrigated (Acres)	Remarks (Rental Terms, Quality of land etc.)
a. Owned				
b. Rented in				
c. Rented out				
Total operational Area (a+b+c)				

**B. Irrigational Structures**

Sr. No.	Name of Power Unit with Horse Power	Area irrigated (Acres)	Remarks

**C. Permanent Labour**

	Name of Worker	Part/whole time	Nature of Work
1.	Family Labour		
2.	Hired Labour		

**The mechanism of accounting :**

The accounting of various transactions would be carried out after determining the nature of a transaction and the assets and liabilities that it affects. Any transaction involving cash would be recorded in the Day Book as well as in the appropriate asset or liability register. Any transaction not involving cash would be recorded in the appropriate asset or liability register(s).

Every exchange transaction would be recorded in two registers ; every revenue transaction would be recorded in one register.

i) *The Day Book.* (Table 3.1)

This book incorporates all the transactions involving cash. The book may be maintained in the following format :

Table 3.1

DAY BOOK

Date	Description of transaction	Reg. Ref.	RECEIPTS	PAYMENTS	BALANCE
			Exchange transactions Revenue transactions Personal transactions	Exchange transactions Revenue transactions Personal transactions	

It can be seen that there are three main columns of the Day Book, viz. Receipts, Payments & Balance. The receipts and payments columns are sub-divided into three sub-columns each viz., exchange transactions, revenue transactions and personal transactions. Transactions with the farmer would be recorded in the personal transactions column, other transactions would be recorded in the exchange or revenue column depending upon the nature of the transaction.

ii) *Register for fixed assets* (Table 3.2)

The fixed assets register would incorporate transactions relating to all fixed assets. As in the case of the Day Book, the register has main columns for balance, additions and reductions. The columns for additions and reductions are further subdivided into exchange transactions and revenue transactions. The columns for 'revenue transactions' would be used to record appreciation or depreciation in the value of an asset. For example, increases or decreases in the value of cattle due to births or deaths would be shown in these columns.

Table 3.2

**FIXED ASSETS REGISTER**

Item	Date	Description	Transaction No.	Opening Balance		Additions		Reductions		Closing Balance	
				Qty.	Value	Exchange	Revenue	Exchange	Revenue	Qty.	Value

iii) *Register for non-monetary current assets* (Table 3.3)

This register is the most comprehensive register since a large number of transactions of different nature have to be recorded in this register.

As in the case of other registers, the three main columns are for increase, decrease and balance. The 'increase' column is further subdivided into three sub-columns : purchase, generation and increment. The first sub-column shows exchange transactions, whereas the other two show revenue transactions.

The "decrease" column is sub-divided into four sub-columns) viz. Sale, farm consumption, self-consumption (i.e. personal consumption) and decrements. The first and second columns represent exchange transactions ; the third and fourth columns represent revenue transactions.

TABLE 3.3

NON-MONETARY CURRENT ASSETS

Date	Details	Transaction No.	INCREASE				DECREASE				BALANCE			
			Purchases		Generation		Increment		Sales	Farm Consumption	Farm Consumption	Decrement	Qty.	V.
			Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.

iv) *Register for monetary assets & liabilities* (Table 3.4)

This register follows the same form as other registers where the increase and decrease columns are sub-divided into exchange and revenue sub-columns.

Table 3.4  
Register for Monetary Assets

Date	Item	Details	Transaction	Increase		Decrease		Balance
				Exchange Rs.	Revenue Rs.	Exchange Rs.	Revenue Rs.	

As mentioned earlier every transaction affecting any asset or liability would be recorded in the appropriate transaction column of the relevant register. The balancing of these registers at any point of time would yield the balance sheet of the farm, whereas the revenue transactions column would show the profit or loss position of the farm.

**Illustration :**

The following illustration incorporates all the typical transactions of a farm. The illustration shows the use of all the registers as well as the determination of net worth and the break-up of profit or loss.

- I. A family farm had the following assets and liabilities at the beginning of the year :

Physical Assets :		Unit	Qty.	Value
<b>A. Fixed</b>				
1.	Land	Hec.	1	4,000
2.	Cattle	No.	2	2,200
3.	Implements	No.	4	400
<b>B. Current</b>				
1.	Farm-yard manure	Kg.	50	200
2.	Fertilizers-purchased	Kg.	250	1,000
3.	Farm-grown seeds	Kg.	5	100
4.	Purchased seeds	Kg.	10	400
5.	Standing crops			600

*Monetary Assets :*

1. Receivables	500
2. Advances to workers	50
3. Cash	500

*Liabilities :*

1. Payable to bank	2,000
2. Other payables	100

II. The following transactions took place during the year :

1. Purchased seeds worth Rs. 400/- (8 Kg.) and paid for in cash.
  2. Hired temporary labour at the cost of Rs. 100/- No cash payment was made immediately.
  3. Farm-yard manure generated during the year Rs. 600 (150 Kg.).
  4. Used farm-yard manure Rs. 400/- (100 Kg.)
  5. Used purchased seeds Rs. 600/- (13 Kg.)
  6. Harvested total grain worth Rs. 5000 (500 Kg.)
  7. Put aside a part of farm produce as seeds Rs. 800/- (80 Kg.)
  8. Farm-produced fodder valued at Rs. 600/- (200 Kg) was generated during the year. It was subsequently used.
  9. Family labour and permanent labour put in during the year was valued at Rs. 800/- and 300/- respectively.
  10. Consumed farm produce valued at Rs. 1200 (120 Kg.)
  11. Sold for cash farm produce worth Rs. 3000/- (300 Kg.)
  12. Employed own labour for land development Rs. 100/-.
  13. One bull died-value Rs. 1000/-.
  14. One calf born-value Rs. 800/-.
  15. Recovered the receivables worth Rs. 500/- and paid the same to the banker.
  16. Withdraw cash Rs. 2500/-.
- Amortize land development over 5 years. Depreciate implements at 10%.

III. The following assets and liabilities existed at the end of the year :

Physical Assets :	Unit	Qty.	Value
<i>A. Fixed :</i>			
1. Land	Hect.	1	4,000
2. Land development			80
3. Cattle	Nos.	2	2,500
4. Implements	Nos.	4	360
<i>B. Current :</i>			
1. Farm yard manure	Kg.	100	450
2. Fertilizers purchased	Kg.	250	950
3. Farm grown seeds	Kg.	85	900
4. Purchased seeds	Kg.	5	200
5. Standing crops			4,000
<i>Monetary Assets :</i>			
1. Advances to Workers			50
2. Cash			600
<i>Liabilities :</i>			
1. Payable to workers			100
2. Other payables			100
3. Payable to bank			1,500
4. Payable to hired labour			3,400

IV The above transactions would be recorded in the various registers in the following manner :

## DAY BOOK

Date	Descrip- tion	Transac- tion No.	Receipts			Payments			Balance Rs.
			Excha- nge Rs.	Reve- nue Rs.	Pers- onal Rs.	Excha- nge Rs.	Reve- nue Rs.	Perso- nal Rs.	
	Opening Balance							500	
	Purchased seeds					400		100	
	Sales		3000					3,100	
	Receivables		500					3,600	
	Payables					500		3,100	
	Withdrawal						2,500	600	
	Closing Balance							600	

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**II. FIXED ASSETS REGISTER**

Item	Description	Transaction No.	Opening Balance		Additions				Reductions				Closing Balance	
			Q.	V.	Q.	V.	Q.	V.	Q.	V.	Q.	V.	Q.	V.
Land			1	4000	—	—	—	—	—	—	—	—	1	4000
Land Development			—	—	100		—	—	—	—	—	20		80
							500						2	2500
Cattle			2	2200	—	—	—	—	—	—	—	—	2	2200
	Death										1	1000	1	1200
	Birth						1	800					2	2000
	Appreciations							500					2	2500
Implements			4	400	—	—	—	—	—	—	—	40	4	360

**III. NON-MONETARY CURRENT ASSETS**  
**Stock Items**

Date	Details	Transaction	INCREASE				DECREASE				Balance								
			Purchase		Generation		Increment		Sale		Self Consumption		Farm Consumption		Decrement		Qty. V.		
			Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.	Qty.	V.	
<i>Farm Yard Manure :</i>																			
	Opening Balance																50	200	
	Generated		3	6	150	600											200	800	
	Consumption	4									100	400					100	400	
	Increment						50										100	450	
	Closing Balance																100	450	
<i>Purchased Fertilizers :</i>																			
	Opening Balance																250	1000	
	Decrease in Value														50		250	950	
	Closing Balance																250	950	
<i>Farm Grown Fodder :</i>																			
	Opening Balance																	200	600
	Generated	8			200	600													
	Consumption	8									100	200							
	Closing Balance																		
<i>Farm Grown Seeds :</i>																			
	Opening Balance																5	100	
	Farm Grown	7			80	800											85	900	
	Closing Balance																85	900	
<i>Purchased Seeds :</i>																			
	Opening Balance																10	400	
	Cash Purchases	1	8	400													18	800	
	Consumption	5											13	800			5	200	
	Closing Balance																5	200	
<i>Grain Produced :</i>																			
	Production	6			600	5000												500	5000
	Seeds	7											80	600				420	4200
	Family Consumption	10																300	3000
	Sales	11									120	1200							
	Closing Balance																		

**IV. REGISTER FOR MONETARY ASSETS**

Date	Items	Details	Transaction	INCREASE		DECREASE		BALANCE
				Exchange Rs.	Revenue Rs.	Exchange Rs.	Revenue Rs.	Rs.
								500
	Receivable	Receipt		—	—	500	—	—
	Advances to	Op. Bal.		—	—	—	—	50
	Workers	Cl. Bal.		—	—	—	—	50
	Cash	Op. Bal.	Day Book	—	—	—	—	500
		Cl. Bal.		100	—	—	—	600

V. REGISTER FOR LIABILITIES

Date	Items	Details	Transac- tion No.	INCREASE		DECREASE		BALANCE Rs.
				Exchange Rs.	Revenue Rs.	Exchange Rs.	Revenue Rs.	
		Payable to Bank						2,000
		Payment	15	—	—	500	—	1,500
		Other Payables						100
		Payable to Temp. Workers	2	—	100	—	—	100
		Payable to Permanent Workers	9	—	300	—	—	300
		Payable to Family	9 12	— 100	800 —	— —	— —	800 900
		Members	10	—	—	1200	—	(—) 300
			16	—	—	2500	—	(—)2800

## VI STATEMENT OF NET WORTH

### 1. *Physical Assets :*

	Closing	Opening	Change
i) Total fixed	6940	6600	
ii) Total current	6500	2300	
<b>2. <i>Monetary Assets :</i></b>			
i) Personal	2800	—	
ii) Outside	650	1050	
Total Assets	16890	9950	
Less : Liabilities	2000	2100	
Net Worth	14890	7850	7,040

## VII. EQUATION OF NET PROFIT

$$\begin{aligned}
 \text{Net Profit} &= \text{Revenue Increase in Fixed Assets} - \text{Revenue Decrease in} \\
 &\quad \text{Fixed Assets} + \text{Revenue Increase in Monetary Assets} - \\
 &\quad \text{Revenue Decrease in Monetary Assets} + \text{Generation of} \\
 &\quad \text{Stock Items} - \text{Farm Consumption of Stock Items} - \\
 &\quad \text{Decrease in Stock Items} + \text{Revenue Inflow of Cash} - \\
 &\quad \text{Revenue Outflow of Cash} - \text{Revenue Increase in} \\
 &\quad \text{Liabilities} + \text{Revenue Decrease in Liabilities.} \\
 &= 1300 - 1060 + \text{Nil} - \text{Nil} + 7000 + 3450 - 2400 - 50 \\
 &\quad + \text{Nil} - \text{Nil} - 1200 + \text{Nil} \\
 &= 7040
 \end{aligned}$$

## VIII. INCOME AND EXPENDITURE STATEMENT

	Rupees
Profit from Farming Operations :	
<b>i) <i>Income :</i></b>	
(a) Value of grain harvested	5000
(b) Value of farm grown fodder	600
(c) Value of farm manure	600
(d) Increase in the value of standing crops	3400
(e) Increase in value of manure	50
Total B/F.	9,650

ii) *Expenditure :*

a) Consumption of manure	400	
b) Consumption of fodder	600	
c) Use of purchased seeds	600	
d) Decrease in the value of purchased fertilizers	50	
e) Family labour used during the year	800	
f) Permanent labour used during the year	300	
g) Temporary labour used during the year	100	
h) Depreciation on implements	40	
i) Prorated expenditure on land development	20	
	<u>    </u>	2,910
		<u>    </u>
	Net Income	6,740

**Other Profit/Loss**

i) *Income*

a) Birth of a calf	800	
b) Appreciation in the value of cattle	500	
	<u>    </u>	
	1,300	

ii) *Expenditure*

a) Death of bull	1,000	
	<u>    </u>	

Net Income 300

Total Profit 7,040

**IX. STATEMENT OF CASH RECEIPTS AND PAYMENTS**

	Rupees	Rupees
Opening Balance		500
<i>Add. : Receipts</i>		
i) Receipts from sale of grain	3,000	

	Rupees	Rupees
ii) Recovery of receivables	500	
Total Cash Receipts		3,500
<i>Less : Payments :</i>		
i) Purchase of seeds	400	
ii) Repayment to the Banker	500	
iii) Personal withdrawal	2,500	3,000
		600
Closing Balance		600

*Comments on the accounting system :*

The system of accounting laid down in the preceding paragraphs is not based on a comprehensive double-entry system. Therefore, to a certain extent, double entries as also the technical language of debit and credit are avoided. The normal system of recording in the primary and secondary books is also avoided. At the same time, the double check on accuracy of records is achieved because the change in the net worth is explained through the analysis of revenue transactions columns.

*Cost Accounting System :*

The accounting system developed so far is adequate to give a picture regarding the aggregate profitability of the total farming operations. In order to derive information regarding crop-wise costs and profits, it would be necessary to maintain some cost accounting records.

The cost accounting records are basically in the form of analysis tables, where the total costs are analysed on the basis of various crops.

Expenses incurred on consumption of manure, seeds, insecticides, use of labour may be classified through the following table :

*Cost Analysis Table (Table 3.5)*

Head of Expenditure :	Year :					
	Operation : Date : Details :			Columns for different crops		
	Qty.	Amt.	Qty.	Amt.	Qty.	Amt.

Annual summaries of costs incurred, collected and analysed through analysis tables, would give crop-wise costs. The cost of various stores consumed would be apportioned to various crops on the basis of the actual issues. The apportionment of labour charges would be based on man-days or man-hours spent. The expenses incurred on the use of cattle would be apportioned on the basis of usage of cattle for the various crops. Other overheads would be apportioned on the basis of generally accepted cost accounting principles.

In order to ascertain the crop-wise cost of labour, cattle, etc. certain non-financial records need to be maintained. These are discussed below :

1. The principal non-financial record is the **Labour Utilization Book (Table 3.6)**. This book would give detailed information regarding the utilization of family, permanent and temporary labour for various crops. The record would be kept on a daily basis and each month, a summary thereof would be prepared. The rupee value of the total man-days spent would be apportioned to different operations based on the number of days spent on each operation. While in the case of hired labour, the rupee value would be easily known, such value for the family labour would have to be ascertained on the basis of valuation principles discussed in Chapter 5.

*Table 3.6*  
**LABOUR UTILISATION BOOK**

Year.....	(Figures in Mandays)													
FAMILY LABOUR														
Operation/Month	:	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
Ploughing														
Sowing														
Weeding														
Watering														
Other Operations														
Harvesting														
<b>Total</b>														
Agricultural														
Dairying														
Other non-agricultural														
Operations														
<b>Grand Total</b>														

*Contd.*

Table 3.6 Contd.

LABOUR UTILISATION BOOK

Year.....

(Figures in Mandays)

Month	PAID LABOUR										AMOUNT				
	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Paid Rs.	Imputed P.	Total Rs. P.
Operation :															
Ploughing															
Sowing															
Weeding															
Watering															
Other Operations															
Harvesting															
Total Agricultural															
Dairying															
Other non- agricultural operations															
Grand Total															

Note : It would be necessary to have a register to show the daily utilisation of labour for each day of the month unless the operations are well set and the labour requirements are known.

2. Another useful non-financial book would be the Register of Cropping Pattern (Table 3.7). This is meant to provide monthly information on the crops raised.

*Table 3.7*

**REGISTER OF CROPPING PATTERN**

	Year.....											
Plot No.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May
	.....Name of the Crop.....											

**Accounting Year :** Since most of the agricultural operations are completed when the Rabi Crop is harvested in April, it would be advantageous if the accounting year is from June 1 to May 31.

The produce would be disposed off in May and therefore, the sale proceeds relating to the agricultural operations would be brought into the books. Though May 31 does not provide a complete cut-off between one year and the next, the ongoing operations would be the least on this date, hence this date may be the most convenient one for preparing the final accounts.

## CHAPTER IV

### AN ALTERNATIVE ACCOUNTING SYSTEM

As noted earlier, the number of farmers for whom cash transactions have assumed importance is growing and it is hoped that most of such farmers would be interested in keeping accounts. An accounting system based primarily on the movement of cash appears useful for such farmers. Such a system would be easily understood and its operation would involve little complications since both receipts and payments of cash are tangible transactions. Of course, the information provided by the cash transactions would need to be supplemented by information about non-cash transactions, mainly the use of family labour, domestic consumption of farm produce, and the use of farm outputs as inputs on the farm itself.

For designing an accounting system on the above lines it is necessary that the farmer maintains separate accounts for farm cash and domestic cash. Incidentally, it may be mentioned that the farmer may open a bank account to separate the farm cash from his domestic cash.

As a matter of rule, transactions should be recorded in the books of account only when cash changes hands. At the end of the year, all outstanding (expenses as well as revenues) should be brought into the books.

To ensure that no transaction is omitted from books of account, a 'waste book' should be maintained in which all credit transactions should be entered in a chronological order. As and when the cash settlement takes place, the transaction may be lightly crossed out, or the date of cash settlement mentioned against the relevant transaction. For example :

1982		1982
Nov. 20	Bought 20 Kg. wheat from Harjit Singh for Rs. 100	Paid 15/12
Oct. 13	Sold 50 Kg. gur for Rs. 150 to Atmaram	Received
		20/12
Dec. 25	Sold one buffalo to Nuruddin for Rs. 2,900	

As the date of cash settlement is not stated against the last transaction, it implies that the transaction is outstanding and, at the time of closing the accounts, it should be brought into the books.

The format for the Cash Book is suggested below. In order to keep the Cash Book within manageable size, only important analysis columns have been provided.

### CASH BOOK

*Receipts*

Date	Particulars	Quantity Details	Output		Other		Total		Cash		Bank	
			Sales		Receipts							
			Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.

Cumulative Total  
(To date)

*Payments*

Date	Particulars	Quantity Details	Input		Labour		Other		Total	Cash	Bank
			Pur-				pay-				
			chases				ments*				
Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.				

Cumulative Total (To date)

\*This column should be analysed in the form given on page 39

**Monthly Cash Payments Analysis**

Date	Fuel Oil & Electricity	Interest	Rent, taxes & land revenue	Repair & Custom Work	Vet. Charges	Other farm business payments	Capital expen- diture	Repay- ments of loans	Personal Draw- ings	Previous years out- standing payments	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

**Cumulative Total**

The quantitative details would help a great deal in compiling the statistical information regarding the sales of various products. The sales of the main output i.e., paddy, wheat, etc. would be infrequent and concentrated over a few months. On the other hand, the sales of products like milk, green fodder, eggs, etc. would be almost on a daily basis. It is desirable to keep a register showing detailed analysis of daily cash collections from the sales of various products. The analysis may be in the following form :

*Sales Analysis*

						<i>Month .. .. .</i>
Date	Total	Milk	Sugarcane	Wheat	Paddy	Others (specify)
	Rs.	Qty.	Rs.	Qty.	Rs.	Qty.
<b>Monthly Total</b>						
<b>Cumulative Total</b>						

The total for all the items should, of course, agree with the total of the 'Output Sales' column in the Cash Book. There should be a cumulative total to include figures for the previous months also. This would avoid the need for maintaining ledger accounts.

Similar to the analysis of output sales, the input purchases may also be analysed in the following form :

*Purchases Analysis*

						<i>Month .. .. .</i>
Date	Total	Fertilisers	Diesel Oil	Seeds	Cattle feed	Others
	Rs.	Qty.	Rs.	Qty.	Rs.	Qty.
<b>Monthly Total</b>						
<b>Cumulative Total</b>						

The total for all the items should agree with the total of the 'Input purchases' column of the Cash Book. Like the sales analysis, cumulative figures should be given.

It is essential for the farmer to record the output consumed by him in his house. The following is suggested :

*Domestic Consumption Book*

							<i>Month.....</i>	
Date	Milk (liters)	Vegetables (Kgs.)	Rice (Qtls)	Gur (Kgs.)	Wheat (Qtls)	Fire Wood (Qtls)	Others (specify Qty.)	
<hr/>								
<b>Total</b>								
<hr/>								
<b>Rate</b>								
<hr/>								
<b>Amount</b>								
<hr/>								
<b>Cumulative Total</b>								
<hr/>								

The rates to be used for determining the values of domestic consumption of various outputs should be the prevailing market rates, i.e., the rates at which the concerned products could have been sold by the farmer.

It is also necessary to bring into accounts the use of farm grown inputs and payments in kind. Since this is not likely to be a daily occurrence, daily analysis would not be needed. The quantities involved should be noted and then valued at prevailing market rates applicable

to the concerned products, i.e., the rate at which these could be disposed of. The following form is suggested :

*Farm Grown Inputs and Payments in Kind*

Month	Name of Commodity	Qty.	Rate	Value
	<b>A. Seeds</b>			
		i.		
		ii.		
		iii.		
				Total _____
	<b>B. Feeds</b>			
		i.		
		ii.		
		iii.		
				Total _____
	<b>C. Farm Manure</b>			
	<b>D. Other Items</b>			
		i.		
		ii.		
				Total _____
	<b>Monthly Total</b>			
	<b>Cumulative Total (To date)</b>			

The cash payments to hired labour would be recorded in the Cash Book. However, it is also necessary to bring into the books the value of family labour. For this purpose Table 3.6 in the previous chapter would be useful.

Fixed assets and livestock provide the basic infrastructure for a farm. Now-a-days, many farmers have quite a few costly fixed assets such as tractors, tube-wells, trollies, various types of implements, etc. For proper accounting and control, it is necessary to keep full particulars of the various fixed assets. The records pertaining to land may be kept in the form suggested in the previous chapter. The records of other fixed assets may be kept in the forms given on pages 44-48.

Particulars upto column 5 may be kept in a bound register to serve as a permanent record. Columns 6 to 10, the figures in which will change from year to year, may be prepared each year. Column 9 will give the annual depreciation for each type of fixed asset as well as the total for all fixed assets.

The valuation of various fixed assets should be done in accordance with the general accounting principles applicable to various types of fixed assets. In this regard reference may be made to the next chapter on 'Valuation of assets.'

**FIXED ASSETS REGISTER**

*Depreciable Articles*

Item	Actual cost	Year of acquisition	Working life (yrs)	Annual Depreciation	Value Beginning of year	Additions During the year	Disposals during the year	Depreciation during the year	Value at the end of the year
1	2	3	4	5	6	7	8	9	10
<b>(1) Farm Structures and Equipment</b>									
a) <i>Farm Buildings</i>									
(Give dimensions, type of construction Kacha/Pacca)									
1. Cattle shed									
2. Implements shed									
3. Bhusa shed									
4. Store									
5. Tubewell House									
i.									
ii.									
iii.									
6. Labour Quarters									
7.									
8.									
Sub Total									

*Contd.*

Contd.

---

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

---

b) *Irrigation Structures*

1. Tubewell (Bore only)

i.

ii.

iii.

2. Well

3. Water channels

4.

5.

6.

7.

---

Sub Total

---

c) *Farm Machinery and Equipment*

1. *Farm Machines*

i. Tractor

ii. Diesel Engine

iii. Electric Motor

iv.

---

Sub Total

---

Contd.

---

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

---

2. *Tractor/Power Equipment*

1. Centrifugal Pumps

i.

ii.

iii.

2. Cultivator

3. Disc. Plough

4. Disc. Harrow

5. Planker

6. Leveler

7. Ridger

8. Seed Drill

9. Planter

10. Thresher

11. Maize Sheller

12. Groundnut Digger

13. Potato digger

14. Cane crusher

15. Trolley

16. Chaff cutter

17.

18.

19.

20.

---

Sub Total

---

*Contd.*

1	2	3	4	5	6	7	8	9	10
3.	<i>Bullock Driven equipment</i>								
	i. Furrow turning plough								
	ii. Soil stirring plough								
	iii. Tirphali								
	iv. Planker								
	v. Seed Drill								
	vi. Bullock cart								
	vii.								
	Sub Total								
4.	<i>Plant Production Equipment</i>								
	i. Power Sprayer								
	ii. Hand Sprayer								
	iii. Seed Dressing Drum								
	iv. Duster								
	v.								
	Sub Total								

1	2	3	4	5	6	7	8	9	10
<b>5. Farm Transport</b>									
i. Cycle									
ii. Car									
iii.									
Sub Total									
<b>6. Other equipments</b>									
i.									
ii.									
iii.									
Sub Total									
<b>7. Draught animals</b>									
i. Bullock									
ii. Camels									
iii. He-buffaloes									
iv. Others.....									
Sub Total									
<b>Total Farm Structures Equipment and Draught Animals</b>									

Livestock is an important asset on a farm. Draught animals are like other fixed assets but milch animals grow in value for sometime and also have a natural increase. This question has been dealt with in detail in 'Monograph on Accounting for Livestock' published by the Research Committee of the Institute. However, the form given below may be useful for a summarised view of the cattle at hand.

**Milch Animals and Calves Register**

Year... ..

	Buffaloes	Buffalo Calves	Cows	Calves	Others	Total
In the beginning No.	.....	.....	.....	.....	.....	.....
Purchase No.	.....	.....	.....	.....	.....	.....
Natural Increase No.	.....	.....	.....	.....	.....	.....
<b>Total (A) No.</b>	.....	.....	.....	.....	.....	.....
Sale No.	.....	.....	.....	.....	.....	.....
Calves fully grown into Cows/Buffaloes No.	.....	.....	.....	.....	.....	.....
Death/Disabled No.	.....	.....	.....	.....	.....	.....
<b>Total Decrease (B) No.</b>	.....	.....	.....	.....	.....	.....
Balance at the end (A-B) No.	.....	.....	.....	.....	.....	.....
Value at the end Rs.	.....	.....	.....	.....	.....	.....
Value in the beginning Rs.	.....	.....	.....	.....	.....	.....
<b>Gain/(Loss)</b>						

It is obviously necessary to establish the values of inventories of farm products and stores and other inputs on hand at the end of the year. Farm products would be wheat, rice or paddy, gur, cotton etc. The stores on hand would include fertilisers, pesticides and weedicides, fuel, oil, small tools, etc. The farm produce should be valued at the net realisable value and the stores on hand should be valued at cost. The question of valuation, of standing crops and work-in-progress is discussed in detail in the next chapter.

From the accounting records, it should be possible to prepare the Profit & Loss Account and the Balance Sheet. The items for credit in the Profit and Loss Account will be the following computed in the manner suggested :

- (i) Sales - The cumulative total as per the relevant column of the Cash Book *Plus* the cumulative total from the Domestic Consumption Book *Plus* the Cumulative total of 'Home Grown Inputs, payments in kind' plus increase in the outstandings for sales.
- (ii) Any gain from livestock as per the Milch Animals and Calves Register.
- (iii) Closing inventories.
- (iv) Imputed cost of family labour.

For the debit side the items will be :

- (i) Labour - Paid as well as the imputed cost of family labour ;
- (ii) Opening inventories.
- (iii) Various - Either the cumulative total as per Cash Book or individual purchased items as per Purchase Analysis plus increase in the inputs outstandings for purchases.
- (iv) Farm - grown inputs and payments in kind.
- (v) Various other revenue expenses paid in cash as per the analysis (form on page 39), adjusted for (increase/decrease in outstandings and prepayments.
- (vi) Depreciation on fixed assets as per the final total of the relevant column on page 45 ;
- (vii) Loss on milch animals and other losses as per the Milch Animals and Calves Register.

The Profit and Loss Account will show the profit or loss for the concerned year.

The Balance Sheet may be drawn up in the following manner :

*Assets side :*

- (i) Fixed assets as per the relevant column on pages 44-48
- (ii) Milch Animals and Calves on hand
- (iii) Inventories
- (iv) Outstandings for sales
- (v) Prepayments
- (vi) Farm cash and bank balances as per Cash Book.

*Liabilities Side :*

- Capital :
- (i) Opening balance (i.e. the difference between the opening assets and liabilities) plus profit minus drawings in cash.
  - (ii) Loans payable—those in the beginning plus fresh loans taken minus repayments, as entered in the Cash Book.
  - (iii) Outstandings for purchases
  - (iv) Outstandings for expenses.

*Performance Analysis :*

For judging his overall performance, the farmer may compile the following statement annually :

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	Wheat	Paddy	Cotton	Sugar cane	Others (specify)
Area sown (in acres)					
<i>Direct Expenditure</i>					
Seeds					Rs.
Fertiliser					Rs.
Pesticides					Rs.
Weedicides					Rs.
Labour					Rs.
Machinery (Dep.)					Rs.

Water	Rs.
Others	Rs.
<b>Total</b>	<b>Rs.</b>
<hr/>	
<b>Output Qtls.</b>	
<b>Output per acre (Qtls)</b>	
<b>Total Sale Value</b>	<b>Rs.</b>
<b>Sale Value per acre</b>	<b>Rs.</b>
<b>Direct Expenditure Total</b>	<b>Rs.</b>
—per acre	<b>Rs.</b>
<b>Profit Total</b>	<b>Rs.</b>
—per acre	<b>Rs.</b>
<b>Last year Profit</b>	
—Total	<b>Rs.</b>
—per acre	
<hr/>	

## CHAPTER V

### VALUATION OF ASSETS

#### **General Principles :**

Valuation of assets, whether fixed or current, is one of the central problems in accounting. The general accounting principles of valuation of assets would be equally applicable in agricultural accounting. Thus, fixed assets would be normally valued at the acquisition cost, less depreciation, and the current assets at the lower of cost and net realizable value. The general principles of valuation of specific farm assets are discussed below.

1) *Livestock* : The nature of this asset, i.e. whether fixed asset or current asset would depend upon the purpose for which the cattle are held. If the cattle are held for draught or for milk, they constitute a fixed asset. On the other hand if the cattle are held for trading purposes, they would be treated as current assets.

Valuation of livestock held for their produce or service presents unique problem because cattle age, die, and procreate. A number of valuation approaches for this category of livestock are available, e.g., capitalization of cash Flows Approach, Cost basis, Cost-Efficiency Approach, Net Market Value Method etc. According to the generally accepted accounting principle, all fixed assets should be valued at their historical cost. However, in view of the peculiar nature of livestock, the 'net market value' method may be appropriate where cost of livestock cannot be determined with reasonable accuracy and where the reliable market prices are available (For a detailed discussion on various valuation approaches, reference may be made to Chapter 2 of the 'Monograph on Accounting for Livestock' published by the Research Committee of the Institute of Chartered Accountants of India).

2) *Land Development Expenditure* : The expenditure on major land developments carried out in the initial stage of bringing the land under farming may be added to the cost of land. However, if the land is

acquired under a leasing arrangement, such expenditure may be written off over the period of lease. Any subsequent development expenditure should be treated as a deferred revenue expenditure and written off over a period of 3 to 5 years.

Expenditure on digging wells may be capitalised and written off over the expected useful life of the well. As regards the expenditure on infructuous wells, it would be prudent to write it off in the same year in which it is incurred.

3) *Standing Crops* : The standing crops in a farm are similar to the work-in-progress in manufacturing industries and the general accounting principles of valuation of work-in-progress would be applied for standing crops. Thus, the standing crops would be valued at the lower of cost and net realizable value. The latter would be ascertained after making allowance for the expenses yet to be incurred to make the crop marketable and the marketing expenses. It may be mentioned that innumerable natural risks are associated with the agricultural operations and it would be prudent to carefully assess and provide for these risks while valuing the standing crops.

4) *Manure* : The manure purchased from the market would be valued at the lower of cost and net realisable value. The farm yard manure (i. e. internally generated manure) would be valued at the estimated procurement price (i.e. market price plus expenses on carriage inward). Where similar manure is not available in the market, a rough estimate of the market price may be made on the basis of the composition of the manure.

5) *Seeds* : The seeds purchased from the market would be valued at the lower of cost and net realisable value. The seeds produced in the farm would be valued at the estimated procurement price (i.e. market price plus expenses on carriage inwards).

6) *Finished Output* : In order to simplify records and in the interest of bringing into account the results of a year's operations, it may be valued at the net realizable value (i.e., less marketing costs). As in the case of standing crops, the risk of loss of grain should be carefully assessed and provided for while valuing the finished output.

7) *Other Inputs & Outputs* : As discussed earlier, valuation of inputs and outputs presents peculiar problems in the agricultural context. As a general rule, inputs should be valued at market price plus carriage inwards and outputs should be valued at market price less carriage outwards. Inputs like family labour should be valued at the market rate prevailing at the time when the labour is utilised. When the output is used as input, two different methods may be used for valuation. When a substantial part of the total output is used at the farm, the valuation may be done at procurement price (i.e. market price plus carriage inwards). When only a small part of the output is used as an input, valuation may be done at the net realizable value. When the same product is not available in the market, value of approximately similar products should be taken into account.

#### **Special Problems in Valuation of Farm Assets :**

In the preceding paragraphs, we have discussed the general principles for valuation of farm assets. Certain peculiar problems, however, arise in the valuation of assets in the context of accounting for agricultural operations. These problems as well as their possible solutions are discussed below

As mentioned in Chapter 3 the problem of valuation of growing crops and other work-in-progress may be minimised by selecting a proper date for closing the accounts. May 31 may be a suitable date in most of the states, but not for all. In the latter case, a different date may be chosen for closing the accounts. Still, whatever date be selected for this purpose, the problem cannot be eliminated altogether.

After a crop is harvested, the task of preparing the land for the next crop is almost immediately commenced particularly where the irrigation facilities exist. Thus, some ploughing and watering (in some cases, even sowing) would normally have been carried out for the next crop at the close of the financial year.

In the case of crops like sugarcane, the farmers deliberately allow the crop to grow again next year without any fresh ploughing or sowing (such crops are known as ratoon crops). Some farmers harvest sugarcane for three years with only one sowing operation. Of course, yield

declines substantially in the second and third years, being about 75% of the first year's yield in the second year and 50% in the third year. Thus, the ratoon crops may yield benefit for more than one year. This aspect would have to be duly considered while accounting for the cost of the first year's initial operations for the raising of ratoon crops.

Certain crops, though reaped in a comparatively short period, yield benefits over a much longer period. Arhar dal, for instance, is a readily saleable product, but its major benefit is that through the leaves falling on the ground, it serves to restore the natural fertility of the soil much in the manner as the farm yard manure does. From accounting point of view, it would be necessary to consider this aspect of such crops, if material.

Certain activities like bee-keeping and fisheries, though strictly not agricultural activities are being carried on by some progressive farmers as side activities. Though an initial capital expenditure is involved, the recurring expenses are almost negligible. For instance, in the case of fisheries, the only recurring expense is on filling the ponds with water. After an initial period of about two years, fish can be daily caught and sold in certain quantities. Bees cost nothing to maintain; they yield honey twice a year, generally in November and June. The accounting problem involved in the case of fisheries and bee-keeping would be to estimate the quantity of fish in the ponds, and similarly, the quantity of honey, albeit not yet in the saleable form, on the date of closing the accounts.

The above paragraphs show that there will generally be some standing crop and work-in-progress at the end of the year which would require valuation for closing the accounts. The term 'work-in-progress' is used here in a broader sense so as to include 'unfinished' honey already collected by the bees and the quantity of fish in the ponds. The amounts involved may be substantial. It may be argued that the amounts involved as at the end of the year may be more or less the same as in the beginning; therefore, even if these were ignored, the income of the year would remain largely unaffected. This argument may not hold good in many cases. Moreover, the work-in-progress in any case would need to be valued for balance sheet purposes especially where the amounts involved are substantial.

The agricultural operations by their very nature are subject to numerous natural risks such as drought conditions, excessive or untimely rain, hail storms, etc. Even if the crop is safely harvested, subsequent weather conditions may make it difficult to gather the grains in an undamaged condition. Moreover, economic and commercial risks also exist in ample measure.

Some people may argue that for accounting purposes, such risks or damage should be treated as irrelevant, being the "events after the balance sheet date," and the standing crops and other work-in-progress should be valued on the basis of their condition as at the balance sheet date. This argument, however, does not seem valid. For applying the generally accepted accounting principle of valuation of work in progress (i.e. lower of cost and net realisable value), it would be necessary to estimate the ultimate realisable price-this essentially involves an assessment of subsequent risks. Thus, for a fair valuation of work-in-progress, it would be necessary to consider all such risks.

The risks indicated above are of two types-those affecting the available yield and those affecting the available price (in the case of such commodities as do not command governmental support). A satisfactory method of taking account of the former is to apply statistical corrective factors arrived at on a study of past behaviour. The experience shows that at least one year out of five is generally 'bad'. On this basis, it seems appropriate to estimate the crop yield on the basis of five-yearly averages. The average may be reduced substantially, say by 20-25 per cent, if a bad year is expected. As regards the available price for commodities which are not purchased by governmental agencies at a fixed price, it may be appropriate to take only the average price prevailing in the previous five years. However, prudence would suggest that, in case the crop conditions are very good, the net realisable value should be estimated on the basis of the lowest price prevailing in the previous five years. Of course, the net realisable amount from standing crops should be arrived at by estimating the final yield and the available price as indicated above after deducting the cultivation and harvesting expenses etc. which are still to be incurred. This may be applied to standing crops at all stages till grain has been actually reaped and collected.

Work in progress either in preparation of sowing or when only sowing has just been carried out may be valued only at cost without computation of the net realisable amount since there would be many operations still to be carried out before anything can be realised.

The cost of work-in-progress would comprise the expenditure incurred on operations carried out till the balance sheet date, e.g., ploughing, sowing, application of fertilisers and insecticides, weeding, etc. As different pieces of land will be in different conditions, the work-in-progress should be listed area-wise showing the details of the work carried out in each area.

The task of determining the cost of work-in-progress would be greatly facilitated if the farmer established, with an acceptable degree of accuracy, the cost of carrying out the main operations per acre using the 'machine hour rate' approach. For example, the life of the tractor and the equipment in terms of working hours can be estimated and thus the depreciation plus maintenance charges per hour can be worked out; to this should be added the cost of diesel and other stores consumed per hour as also the effective hourly wages of the operator, to determine the direct cost of using a tractor for one hour. On this basis the cost of ploughing one acre of land once can be worked out. Should the farmer use bullocks or a camel, the approach would be similar.

In the same manner, the cost of watering one acre can be ascertained. If a tubewell is used, the cost will comprise the depreciation and maintenance charges of the tubewell, cost of the power or diesel oil required, and the wages of the operator. The time required to water one acre being known, the cost of watering one acre once can be easily worked out. Similar approach would be followed in case a persian wheel well is used with the help of a pair of bullocks or camel.

The ploughing and watering are two major agricultural operations and they basically remain more or less the same for each crop. However, the number of ploughings and waterings would differ from crop to crop. The cost of seeds, fertilisers and insecticides and the labour charges would also be different for different crops. To arrive at the cost of the work in progress the cost of ploughing and watering should be worked out using predetermined rates as discussed above

and to this should be added the actual cost of seeds, fertilisers and insecticides, etc. and the operations like sowing, applying fertilisers, weeding, etc.

As the ratoon crops yield benefits for more than one year the cost of raising such crops should be charged to revenue over the period for which the benefits are expected. In the case of sugarcane, for instance, two or three crops can be raised though the yield declines crop by crop. The initial expenditure on ploughing the land, labour operations, watering and fertiliser should therefore be spread over such period in accordance with the matching principle. If it is considered that only two crops should be raised and the yield of the second crop is 75% of the first, the initial expenditure should be spread over the two years in the ratio of 4 : 3 i.e.  $\frac{3}{7}$  of the initial expenditure should be carried forward to the next year. If it is desired to raise three crops and the yield in the second and third years is estimated at 75% and 50% respectively of that in the first year, the initial expenditure should be charged to revenue over the three year period in the ratio of 4:3:2.

It may be argued, however, that the initial expenditure will not change materially if the farmer decides to raise only one crop ; also, in many cases the decision to take another crop may be made only at the end of the first year or second year. Therefore, following the rule of conservatism, applicable with greater force in the case of agriculture, the entire initial expenditure may be charged to the revenue of the first year and no portion of the expenditure carried forward. The above view, though technically not incorrect, is not favoured as it is strongly believed that for determining the true results of operations, it would only be proper that a suitable portion of the initial expenditure on raising ratoon crops is charged to revenue of the second and third years. It may, however, be emphasised that the amount to be carried forward will be subject to the maximum of the expected net realisable amount from the crop (s) still to be raised.

As regards products like fish and honey that grow almost automatically without much recurring expense, two views prevail. One view is that only the actual amounts realised in a year should be treated as revenue and the amounts that are expected to be realised for quantities that will subsequently become available, should not be taken into

account. According to this view, the quantities of fish in ponds and of honey in the various boxes should be ignored for accounting purposes. This approach is in accordance with the cost concept and the principle of conservatism since little cost is actually incurred on fresh quantities of these products and since the quantities that will be ultimately available and the related realisations are both subject to a great deal of uncertainty.

The other view on the matter is that on consideration of 'true and fair' view of financial statements, it would only be proper to estimate and account for the quantities of the products that are available at the date of closing the accounts even though they would be taken in hand and sold only subsequently. In most cases, it would not be much difficult to make such estimates. For example, after the initial task of preparing the boxes, the process of gathering honey takes about five months. If three months have elapsed since the boxes were drained of the honey, about  $\frac{2}{5}$  of the expected next gathering may be taken as the honey on hand valued at the net realisable amount. It is felt that if due care is exercised in estimating and valuing such quantities, it would be an acceptable accounting practice to bring such values into account each year.