Lecture No.14. Farm Financial Analysis - Balance sheet - Income statement - Cash flow analysis - Ratio analysis

A. FARM BUSINESS AND CONTROL

Efficient managers want to be able to determine the position of a business at any point of time. They also want a basis for evaluating where the business is going on. This helps their control of the business operations overtime. Thus, the objectives of farm business at a particular point of time are:

i) to evaluate the performance of the business at a particular point of time;

ii) to identify the weakness of the business;

iii) to remove the hurdles and improve the business; and

iv) to prepare financial documents like balance sheet and income statement so as to acquire credit, design farm policies and prepare tax statement.

i) Steps or Stages of Farm Business Analysis

a) Proper recording of accounts and activities.

b) Analysis of the data.

c) Interpretation of the results.

a. Recording of data: A systematic recording of information on financial aspects of the farm is essential for farm business analysis and for this purpose, a sound knowledge on book keeping and accounting is essential.

b. Analysis of data: The data collected would be useful to construct balance sheet and income statement. Financial ratio analysis would also increase the farm efficiency.

c. Interpretation of the results: The financial analysis would indicate the performance of the business and suggest measures for improvement. The interpretation of results would be more useful to understand the performance of the business.

ii) Advantages of Farm Records and Accounts

a) They are the means to increase the farm income.

b) They are the basis for diagnosis and planning.

c) They show the ways to improve the managerial ability of the farmer.

d) They are useful for credit acquisition and management.

e) They provide database for conducting research in agricultural economics.

f) They form the basis for designing government policies - land policy, price policy, national farm policies, etc.

iii) Problems in Farm Accounting

a) As Indian farmers carry out only subsistence nature of farming, recording is not essential to them.

b) Indian farmer acts as an owner, manager and labourer. Hence, recording becomes complex.

c) Illiteracy and lack of business awareness of farmers prohibit them to have farm records.

d) Fear of taxation prevents farmers from recording and accounting the information.

e) Forecasting becomes complicated because of very high risk and uncertainties involved in farming.

iv) Types of Farm Records: Farm records can be classified into three categories, i.e., inventories, production records and financial records.

a) Inventory: Farm inventory includes a complete listing of all that a farm owns and owes at a particular date, generally at the beginning and the end of each agricultural year. It includes not only the listing of physical assets but also assigning values of all such assets, liabilities and debts as well. There are two steps involved in taking a farm inventory.

1) Examination of Physical Assets: It includes a complete listing of all the physical assets including a verification of weights and measurements. The losses, wastages, shrinkages or gains, which accrue over time, are all accounted for.

2) Valuation of Physical Assets: A few common methods of valuation are discussed below:

i) Valuation at Cost: The amount of money actually invested on the asset when

Return per Year (R) 1,000
Present Value (PV) = = = Rs. 10,000
Interest Rate per Annum (r) 0.10
it was acquired is entered in the inventory. This method has the following limitations: a) it cannot be used for the valuation of farm products; b) the effects of inflation and deflation are ignored; and c) original investment value has only a limited use, when valuation is taken up somewhere in the middle of the business.

ii) Cost or market prices whichever is lower: This is used for valuing the purchased farm supplies.

iii) Net Selling Price: It represents market price less the selling costs. For all assets that will be sold within the year, the net selling price is used. Crops or livestock produced for the market can be valued with this method.

iv) Cost Less Depreciation: The value of asset in subsequent years can be estimated by subtracting the depreciation from its cost. Machinery, breeding livestock and buildings constructed recently can be evaluated with this method. But this method cannot be applied for products produced from the farm.

v) Replacement Cost: It represents a value of an asset, which is equal to the cost needed to reproduce the asset at the present prices and under the existing technological improvements. This method may be successfully employed for the valuation of fixed and long-lived assets.

vi) Replacement Cost less Depreciation: It represents an improvement over the previous method as it provides a more realistic valuation of fixed and long-lived assets like buildings, particularly, when wide price changes occur. However, this method should be used very carefully as it may often lead to over valuation.

vii) Income Capitalization: For assets like land whose contribution towards the income can be measured for each production period and which has long life, income capitalization is an ideal method of valuation. If a certain piece of land is expected to give an uniform income of Rs.1,000 per year indefinitely and the rate of interest is 10 per cent per annum, the present value of the land, then, can be easily assessed by using this method, i.e., 227

Thus, the piece of land in question would be valued at Rs.10,000.

Farm planning and control ? Elements of planning, objectives, steps and formulation of farm plans - Farm level management information systems- Farm Budgeting ? partial, enterprise and complete budgeting.

Production Records

These records provide information on the input-output relationship of different enterprises on the farm. These information are useful both for measuring production efficiency and preparing efficient farm plans. Production records have limited utility, as they do not indicate the financial position.

However, they show the quantity and time of application of various resources to different enterprises on the farm and the yield and other physical performance of different enterprises. Some of the popular physical records are: a) Farm Map, b) Crop Records (season, crop and yield particulars), c) Livestock Feed Record, d) Production Record of Livestock and e) Labour Records (to study labour efficiency and seasonal requirement of labour).

c) Farm Financial Records

Farm financial records provide valuable information on economic efficiency of the farm.

1) Cash analysis account book is the most important financial record to be maintained by the farmer. The cash transactions, expenses and receipts, are recorded in a cash analysis book as shown in table 16.3.

2) Trading Account: Trading Account is often used interchangeably with "profit and loss account". All the items in the cash analysis account book are repeated in this trading account. Purchases and expenses are put on the left-hand side and the sales and receipts on the right-hand side. Also, the closing valuation is put on the right-hand side and the opening valuation on the left-hand side. If the right-hand side total is greater than that of the left-hand, the farm has earned profit. The profit is entered on the left-hand side but the loss on the right-hand side. The trading account is prepared at the end of the year.

Table 16.4 Trading Account for the Year ending 31.06.2001

Purchases and Expenses	Amount (Rs)	Sales and Receipts	Amount (Rs)
Opening Balance as on 1-7-2000	1,10,000	i) Paddy	4,400

i) Wages	3,400	ii) Sorghum	600
ii) Feeds	1,400	iii) Ground-nut	1,500
iii) Seeds	460	iv) Milk	4,560
iv) Fertilizers	1,340	v) Others	700
v) Rent	1,800	Closing Valuation as on 30-6-2001	1,15,000
vi) Fuel	900	Total	1,26,760
vii) Others	700		
Total	1,20,000		
Net Profit	6,760		
	1,26,760		1,26,760

Table 16.3 Cash Analysis Account Book

(Amount in Rs)

Sales and Receipts							Purchases and Expenditur				
Date	**Name and Details**	**Total Received**	**Cereals**	**Oilseeds**	**Milk**	**Others**	**Date**	**Name and Details**	**Total Paid**	**Wages**	**Feeds**	**Fertilizers**
1-4-2000	Opening Balance	11000	-	-	-	-	-	Wages	3400	3400	-	-
	Paddy	4400	4400	-	-	-	-	Feeds	1400	-	1400	-
	Sorghum	600	600	-	-	-	-	Fertilizers	1340	-	-	1340
	Ground-nut	1500	-	1500	-	-	-	Seeds	460	-	-	-
	Milk	4560	-	-	4560	-	-	Rent	1800	-	-	-
	Others	700	-	-	-	700	-	Fuel	900	-	-	-
								Others	700	-	-	-
	Total	22760	5000	1500	4560	700		Total	10000	3400	1400	1340

Closing balance in the bank (as on 31-3-2001) =Rs.22760 – 10000 = Rs. 12,760.

Opening balance as on 1-4-2001=Rs.12760.

3) Income Statement

Income statement indicates how well the farm business has performed during the accounting period. From this, we can get an idea of the returns to various resources after deducting the expenses and also about overall earnings of the farm. This is an important financial record because it measures the financial progress and profitability over a period of time. It is a summary of both cash and non-cash transaction of the farm business. In non-cash financial transaction, we get capital gain and depreciation. Income statement is divided into two major categories, viz., income and expenses. Income includes cash receipts, capital sales of business and changes in inventory value of items produced in the farm. Expenses include operating and fixed expenses.

i) Inventory: It is a complete listing of all assets. Items like supplies, grain and feed held for sale are listed on the inventory form.

ii) Capital Sales of the Business: The sale of milch animals and equipment are major items under this heading. These types of receipts are separated from normal cash receipts because they must be reported differently on tax forms.

iii) Changes in Inventory: In making adjustment for changes in inventory value, both changes in price and quantity should be taken into consideration. If the ending inventory value is greater than the beginning inventory value, it should be treated as a form of income. If opposite holds true it should be considered as negative income.

iv) Operating and Fixed Expenses: Operating expenses generally vary with the size of the business operation. But fixed expenses do not significantly vary with changes in volume of business done under the period of reporting.

4) Net Worth Statement

Net worth statement is also known as balance sheet. It is a summary of assets, liabilities and owner's equity (net worth) at a given point of time. This statement shows the value of assets that would remain, if the farm business is liquidated and all the outside claims against the business are paid. A business is considered solvent, if the value of assets exceeds debt level. It is very useful for the lender for scrutinizing the loan application. Net worth = Assets - Liabilities.

i) An asset can be defined as "anything of value in the possession of the farm business or a claim for anything of value in the possession of others". Farm inventory, farm cash and accounts constitute the assets. Farm assets can broadly be classified into the following three main categories.

Table 16.5 Income Statement (1st July 2000 to 30th June 2001)

(Amount in Rs)

Receipts	Amount	Expenses	Amount
I Cash Receipts		**I Operating Expenses**	
1. Paddy sales	7,500	1.Hired labour	3,000
2. Sugar cane sales	5,500	2. Hired bullock labour	4,000
3. Ground-nut sales	12,000	3.Fuel and repairs for machineries	2,500
4. Milk sales	6,500	4. Fertilizers	1,500
5. Broiler sales	12,000	5. Other crop expenses (seed and spray of chemicals)	2,400

6.Miscellaneous income (hired out human and bullock labour)	1,500	6.Livestock and veterinary expenses.	1,000
Sub-Total	45,000	7. Interest on current debt	600
II Net Capital Gain Income		8. Other miscellaneous expenses	700
1. Sale of purchased milch animal	2,000	Sub-Total	15,700
2. Sale of farm bred animal	2,000	**II Fixed Expenses**	
3. Sale of machinery	2,000	1. Land rent	3,000
Sub-Total	6,000	2.Land revenue, cess and surcharge, water charge, etc	800
III Change in Inventory Value		3. Land development	4,200
1.Crop inventory	4,000	4. Interest on intermediate and long term loan	1,000
2. Livestock inventory	1,000	5. Equipment depreciation	1,500
Sub-Total	5,000	6. Livestock inventory change	1,000
Gross Farm Income	56,000	7. Imputed value of family labour	1,000
Net Farm Income	**25,700**	8. Building inventory change	600
		9. Imputed value of operator's management	1,500
		Sub-total	14,600
		Total Expenses	**30,300**

Table 16.6 Net Worth Statement (as on 30th June, 2001)

(Amount in Rs.)

Assets	Amount	Liabilities	Amount
I Current Assets		**I current Liabilities**	
1. Cash in hand	500	1. Cash expenses in seeds, feeds, fertilizers, repairs, etc	12,000
2. Cash in bank	2,500	2. Interest on intermediate and long term liabilities	4,500
3. Prepaid expenses for Goods not yet Received)	2,500	3. Taxes	500
4. Grains, seeds, feeds and supplies	25,000	4. Rent	2,500
5. Cash investment in growing (standing) crops	5,000	5. That portion of intermediate and long term debt	6,000

Total-Current Assets	35,500	Total- Current Liabilities	25,500
II Intermediate Assets		**II Intermediate Liabilities**	
1.Machineries and equipment	20,000	1. Sale contracts	2,000
2. Livestock	25,000	2. Intermediate or medium term loan (balance due beyond 12 months)	16,000
3. Securities not readily marketable	5,000	Total- Intermediate Liabilities	18,000
Total – Intermediate Assets	50,000	**III Long Term Liabilities**	
III Fixed Assets		1. Mortgage on land	12,000
1. Land (4 ha)	4,00,000	2. Land contract	5,000
2. Buildings	1,50,000	Total – Long Term Liabilities	17,000
Total – Fixed Assets	5,50,000	**Total Liabilities**	**60,500**
Total Assets (I+II+III+)	**6,35,500**	**Net Worth =Total Assets – Total Liabilities**	**6,35,500– 60,500 = Rs.57500**

a) Current Assets: Cash on hand or in the bank and other assets in the possession of the farm, which may be liquidated in the normal operation of the business like products held for sales and supplies are called current assets. The liquidation of these items will have the least effect on the business to continue its operation.

b) Working Assets or Intermediate Assets: Assets which are normally used up during the life of the business such as farm equipment and machinery, breeding and producing livestock can be categorized under this. They have the life of one to ten years. The liquidation of these assets would have a significant influence on business activity. These assets are somewhat more difficult to liquidate than current assets.

c) Fixed Assets or Long Term Assets: Assets like land, building and land improvements are difficult to convert into cash. They are long-term permanent assets. These are not likely to be liquidated. If a major portion of these assets were liquidated, the business would also be terminated in most cases. The sum of current, intermediate and long-term assets is the total assets of the business. The claim against is divided between debts of the business and owner's equity (net worth).

ii) Liability: A liability is defined as, "a claim by others against the farm business, like mortgages and accounts payable". Liabilities can be classified into:

a) Current Liabilities: Liabilities, which call for immediate payment, generally within one year and which cannot be deferred, are called the current liabilities. They include rents, taxes and interest, plus that portion of principal on intermediate and long-term debt due within the next twelve months.

b) Intermediate Liabilities: They are also known as medium term liabilities, which can be deferred for the present. They are not of immediate concern but have to be paid between one and ten year period.

c) Long-term Liabilities: Any deferred liability, which has to be met after ten years and generally upto 20 years, is called the long-term liability. They consist of mortgages and land contracts.

iii) Net Worth

Net worth is estimated by subtracting total liabilities from total assets. It reflects the owner's equity in the business and in other personal property. The net worth statement is one of the primary documents used by lending agencies in evaluating requests for new loans or extension of existing loans. It is also useful for calculating financial ratios of the farm business.

B. SYSTEMS OF BOOK KEEPING

There are two systems of farm accountancy, namely, i) Singly entry system and ii) Double entry system.

i) Single Entry System: This system ignores the double effects of transactions, namely, receipts and payments. It is therefore, relatively imperfect. Its results are less reliable and its accuracy cannot be tested by means of a trail balance, which is possible under the double entry system alone.

ii) Double Entry System: Every transaction is recorded twice in the accounts, i.e., to the debit side of one account and to the credit side of another. Each category of assets, liability, expense and income will be allocated an account in the ledger and this account will usually be divided into a debit (entry of a sum owing) (left hand side) and credit (right hand side). Each transaction has a two fold aspects of giving and receiving. The giving account is credited. The receiving account is debited, i.e., receiving cash is debited. Giving goods (sales account) is credited. In selling paddy for Rs 1200, there are two accounts, viz., cash account and paddy account. The cash account will be the receiving account and hence the amount will be written on the debit side of it. The paddy account will be the giving account; hence the amount will be written on the credit side of it. One of the in-built checks of a double entry system in that a trial balance can be prepared and the failure of the trial balance to balance credit and debit indicates that there are

errors in the accounts. Since every debit entry in a ledger has a corresponding credit entry or entries, it follows that the total debit and credit balances in the accounts must be also equal. The double entry system has a number of advantages over other systems. They are as follows:

a) It can record all types of transaction.

b) Full information can be extracted quickly from the accounts at any time.

c) A check on arithmetical accuracy is built into the system.

A good farm record system should: i) be easy to keep; and ii) provide needed information for analysis.

iii) Financial Ratio Analysis: The financial ratio analyses would useful to assess the performance of the farm business.

1. **Net capital ratio** = $\frac{\text{Total Assets}}{\text{Total Liabilities}} = \frac{6,35,500}{60,500} = 10.50.$

This is a measure of degree of financial safety over a period of time by comparing the present position of the business with that on some previous date. Higher the ratio, safer will be the position of the farmer.

2. **Current ratio** = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{35,500}{25,500} = 1.39.$

It measures the ability of the farm to meet its current liabilities. Higher the current ratio, the greater the short term solvency.

3. **Acid test ratio** = $\frac{\text{Quick Assets}}{\text{Current Liabilities}} = \frac{28,000}{25,500} = 1.10$

Quick assets are defined as current assets excluding inventories. Acid test ratio is also known as quick ratio, which is a stringent measure of liquidity. It is based on those current assets, which are highly liquid, i.e., inventories are excluded from current assets, as they are the least liquid component of current assets.

4. **Debt-Equity Ratio** = $\frac{\text{Debt (Total Liabilities)}}{\text{Owner's Equity or Net Worth}} = \frac{60,500}{5,75,000} = 0.11$

Lower the debt-equity ratio, higher degree of protection enjoyed by the creditors. The lower this ratio, the more desirable it is. It is also known as Debt to Net Worth ratio. The net worth indicates the solvency of the business. But this is the ultimate solvency rather than intermediate solvency. Ultimate solvency is meant that total resources are equal to or greater than total liability, in case the entire business is closed out and all the liabilities are met with. Net worth is greater than zero, when business is solvent. When total liabilities are not covered by total resources, the business is

insolvent or bankrupt. The intermediate solvency is meant the relationship between current liabilities and liquid assets, which can be used to clear them off, if demanded.

5. Total Assets Turn-Over Ratio = $\frac{\text{Net Sales}}{\text{Total Assets}} = \frac{43,300}{6,35,500} = 0.07.$

This measures how efficiently assets are employed over all. It is similar to output-capital ratio used in economic analysis. The higher their ratio, the greater the turn -over of assets.

6. Net Income to Total Assets Ratio = $\frac{\text{Net Income}}{\text{Total Assets}} = \frac{25,700}{6,35,500} = 0.04$

It also measures how efficiently the capital is employed. The higher this ratio, the more sound the capital use on the farm.

7. Equity/Value ratio = $\frac{\text{Net Worth}}{\text{Total Assets}} = \frac{5,75,000}{6,35,500} = 0.90.$

Higher the ratio, better will be the financial position of the farm business.

C. FARM EFFICIENCY MEASURES

Efficiency is generally taken to mean the output input ratio without any consideration of the quality either of output or input or both.

i) Crop yield index: It is a measure by which the yields of all crops on a given farm are compared with the average yields of these crops in the locality. The yield index is a convenient measure because it represents a combined index of yields of all the crops on a farm. Average yield of the area for each crop is obtained and then the corresponding yield figures of the farm in question are

Table 16.7 Estimation of Crop yield Index

Crop	Area (ha)	Yield / Ha on the Farm (Qtls)	Total Production (Qtls)	Per Ha Average Yield in the Region (Qtls)	Area Required at the Regional Yield to Obtain the Total Farm Production (Ha)
1.Paddy	10	39	390	45	8.67
2. Maize	6	24	144	10	14.40
3.Wheat	15	32	480	28	17.14
Total	31	-	-	-	40.21

used to work out the hectares needed to have the same production as actually obtained on the farm, if area average yields prevailed. The total hectares required, at area average yields, to have the existing level of production are divided by the hectares on the farm to obtain the yield index. A figure greater than 100 indicates that the farm in question is more efficient than an average farm in the area. The crop yield index of the above farm is 40.21 / 31.00 × 100 =130 per cent. As

the index is greater than 100, the selected farm is more efficiently operated in terms of crop yields as compared to an average farm in the area.

ii) System Index: This index is used for determining the rationality by which various enterprises on a certain farm are combined. It is obtained by expressing the potential net income per hectare on a farm as a percentage of the average standard net income per hectare in the area, i.e.,

$$\text{System Index} = \frac{\text{Potential Net Income per Ha on the Farm}}{\text{Average Standard Net Income per Ha in the Area}} \times 100$$

If the system index is more than 100, it indicates a higher level of efficiency in combining enterprises on the farm in comparison to that by an average farm in the area and vice versa. Therefore, the system index = (1000 / 900) × 100 = 111.11 per cent. However, major difficulty may be encountered in calculating this index, when the selected farm grows crops which are not usually grown in the locality.

Table 16.8 System Index

Crop	Average Standard Net Income per Hectare of Enterprise in the Area (Rs)	Area under Units of Enterprise on the Farm (Ha)	Total Potential Net Income of the Farm (Rs)
1. Paddy	1,000	10	10,000
2.Maize	500	6	3,000
3.Wheat	1,200	15	18,000
Total	2,700	31	31,000
Average	900	-	1,000

3. Intensity of Cropping: The intensity of cropping measures the extent of the use of land for cropping purposes during a given year. The gross cropped area is expressed as a percentage of net cropped area.It is expressed as a percentage.

$$\text{Cropping Intensity} = \frac{\text{Actual / Gross Area Cropped}}{\text{Net Cultivated Area}} \times 100$$

4. Irrigation Intensity: The gross irrigated area is expressed as percentage of net irrigated area.

$$\text{Irrigation Intensity} = \frac{\text{Actual / Gross Irrigated Area}}{\text{Net Irrigated Area}} \times 100$$

5. Labour Efficiency: A productive man equivalency is the average amount of work accomplished by one man in the usual eight hour day (man day). Given below is a list of important measures of labour efficiency:

a) Crops acres per man or per man-year.

b) Livestock maintained per man or per man-year.

c) Gross profits per man or per man-year.

6. Machinery Efficiency: It is helpful in judging the accomplishment of the farm machinery and equipment for making changes in their investment it required. A list of some common measures of machinery efficiency is given below:

i) Machinery and equipment cost per cropped acre: Only, total annual costs are considered including repairs, fuel, depreciation, etc. in estimating the cost.

ii) Investment in machinery and equipment per crop acre.

The following are a few important cost ratios:

a) Operating ratio: It represents the proportion absorbed by operating expenses out of the gross income and is calculated as:

$$\text{Operating Ratio} = \frac{\text{Total Operating Expenses}}{\text{Gross Income}}$$

b) Fixed Ratio: This is calculated by dividing the total fixed costs by the gross income.

$$\text{Fixed Ratio} = \frac{\text{Total Fixed Expenses}}{\text{Gross Income}}$$

c) Gross Ratio: This ratio expresses the percentage of gross income absorbed by the total costs and is calculated as:

$$\text{Gross Ratio} = \frac{\text{Total Expenses}}{\text{Gross Income}}$$