Model Answer

M.Sc. Forestry (Third Semester) Examination, 2013

Subject: Farm Management

Department of Forestry, Wildlife and Environmental Sciences

Question 1: A. Choose the correct answer

i. Large farmer in India mean the land holding should be-

a. 1 – 2ha

b. 4-10ha

c. > 10ha

d. None of these

ii. Peasant farming is farming adopted by -

a. Their own Choice

b. Commercial farming

c. Specialized farming

d. Cooperate farming

iii. In elastic demand for farm products refers to-

a. Change in price as per demand change

b. Change in demand due to rate of supply

c. Change in price does not affect the demand

d. Both a and b

iv. Grazing of livestock in public pasture

a. Public pasturing

b. Grazing

c. Ranching

d. All of these

v. The conversion factor to change the Nitrogen from urea is-

a. 6.25

b. 1.80

c. 2.20

d. 4.00

B. Write formula for the following

i. Discounting **PV= P/ (1+i) n**

ii. Net income-= **Gross income- Gross cost**

iii. Rate of turn over= **Gross Income/ total farm assets *100**

iv. The profit will be equal to Gross income **- Gross cost**

v. Formula of Partial budgeting R= Qy1 Py1- [X1PX1+X2PX2+….Xn Pn]

Question 2. Discuss the parameters to assess the economic viability of dairy farming. Give cost of production and profit of dairy.

Answer: Dairying is an important source of subsidiary income to small and marginal farmers and agricultural laboures. The manure from animals provides a good source of organic matter for improving soil fertility and crop yields. The surplus fodder and agricultural by products are gainfully utilized for feeding the animals. Dairying provides employment throughout the year.

Scope:- The total milk production in the country for the year 2008-09 was estimated at 108.5 million tones and demand is expected to be 180 million tones by 2020. Thus there is a tremendous scope for increasing the milk production through profitable dairy farming.

Important aspects for consideration

1. Good quality animals
2. Feed management
3. Veterinary knowledge
4. Marketing
5. Value addition

Constraints

1. Working capital
2. Feed availability and management

Actions for dairy farming profitable

1. All old non productive animals should be sold.
2. Purchase of 1 year bull to avoid inbreeding.
3. Increasing the milking animals.
4. Better feeding management

Economic viability and Cost of production

Technical feasibility

i. Availability of good quality animal in nearby market and veterinary surgeon.

ii. Availability of training facilities

iii. Availability of good grazing ground

iv. Market facilities

Economic viability

i. Unit cost

ii. Input cost for feed and fodder, veterinary aids

iii. Output cost sale price of milk, manure etc

iv. Income- expenditure statement

v. Cash flow analysis

Question 3. How farm planning is very important aspects in farm management. Write the steps of farm planning.

Answer: All planning is a matter of forecasting. Evidently planning is to serve as a blue print for the future. All business undertakings plan their production and marketing operations consciously in respect of what how much, how to produce and when and where to buy and sell. The planning of operations and their execution is secret of their success. In agriculture also planning is must.

Objective

1. The immediate objective of farm planning is to maximize the annual net income sustained over a long period of time.
2. The maximization of net income through improved resource use planning.
3. The ultimate objective of farm planning is improvement in the Standard of living of the farmer.

Importance :- If necessity is the mother of invention, scarcity of resources is the mother of farm planning. The fact of scarcity makes it necessary for the farmer to make the most what he has in their efficient utilization. Farmer can make optimum utilization of scarce productive resources. The farm planning, of course, may be annual or long range planning. Annual planning obviously is meant for ensuing agriculture year. In case of long range planning, long range objectives are involved, covering a longer period over the next 5 to 10 years.

The importance of farm planning can be examined through its helpfulness. In view of this following things are very important.

1. It enables the farmer to achieve his objectives in relation to his farm and family in a more organized manner.
2. Farm planning enables a careful examination of the existing resources and their best allocation.
3. It helps farmer to take decisions in relation to selection of crops, hectare under different crops and kind and number of live-stock to be maintained.
4. It helps the farmer to identify the input and credit needs.
5. It helps in estimating future cost and returns.

Steps of Planning

1) **Preparing the farm map**: The general lay out of the farm, number and shape, irrigation channels can be shown in the farm map.

2) **Recording the History of the Farm**: It is very important to obtain the information pertaining to utilization of resources and their efficiency. What was the crop rotations followed previously, etc on the basis of this information planning in respect of crops to be grown, crop rotations to be followed; requirement of credit along with their sources etc can be possible.

3) **Planning Bullock and Human Labour Requirement**: Next a calendar of farm operations should be prepared and bullock and human labour requirements determined for different months. A labour schedule should be developed as to guide a farmer to appraise the amount of labour need in relation to the availability.

4) **Planning the Land Use and Soil Conservation practices**: When a full picture of the resources and their appraisal is obtained, the next step in farm planning is to adopt such practices which would lead to the best use of land. While planning the cropping scheme, due importance should be given for soil conservation. Therefore purposively crops and crop rotations need to be introducing a plan which will enhance soil conservation.

5) **Planning Live stock Programme**: Live stock and crop production is having supplementary relationship. The size of live stock depends upon size of farm, cropping intensity, availability of irrigation etc. If irrigation water is ample naturally cultivator can grow fodder crops through out year and he can maintain milch animals more.

6) **Planning the Marketing of Produce:** Only production is not sufficient to maximize the returns, good price for the produce is also important. Therefore, study of market conditions,

prices etc. are essential to decide the time of selling. Similarly the agency through which marketing is to be done must be identified in view of getting maximum shares in consumers price.

Characteristics (Good Farm Plan)

1. Good farm plan provides a cropping scheme that includes a most profitable crop as well as some legumes to maintain fertility of soil.
2. It offers balanced combination of crops and live-stock enterprise leading to profit maximization.
3. The plan must be able to fulfill the farm and family requirement of the farmer.
4. The farm plan provides a regular employment and income to farm family and bullock labour, through the development of sounds crop rotations.
5. It is flexible enough to take advantage of any new technology or source of power.
6. The plan when it is practically implemented should be resulted into least cost.

Question 4. Write notes of the following:

a. Law of diminishing return

b. Compounding

Answer:

a. Law of Diminishing Returns

This law states that "An increase in the capital and labour applied to the cultivation of land causes in general a loss than the proportionate increase in the amount of produce raised unless, it happens to coincide with an improvement in the art of agriculture"

This law is 'physical law' broadly speaking; the law is generalization based on experience, that the use of increased inputs leads to less than proportionate increase in output. There are three stages of the law of diminishing returns. They are 1) stage I 2) stage II and 3) stage III. The positions of the parameters i.e. TP (Total Product), AP (Average Product), MP (Marginal Product) and EP (Elasticity of Production) in different stages of production area as under.

Stage – I

1) This stage starts from origin and ends where AP & MP curves intersect each other.

2) The TP is increasing at increasing rate at first then at decreasing rate.

3) AP and MP both increase but MP is greater than AP.

4) The EP is greater than 1 (one)

Stage – II

1) It starts where AP & MP intersect each other and EP = l. It ends when MP = 0

2) TP increases but at decreasing rate.

3) MP Starts to decline continuously and AP also start to decline but it is greater than MP

4) The elasticity of production (EP) is greater than zero but less than 1.

Stage – III

1) This stage starts when MP is zero and TP is at maximum.

2) TP starts to decline and it declines continuously.

3) MP becomes negative, remains positive.

4) EP is always less than zero.

b. Compounding: Compound interest arises when interest is added to the principal of a deposit or loan, so that, from that moment on, the interest that has been added also earns interest. This addition of interest to the principal is called compounding.

Calculation

Formulae are presented in greater detail at time value money.

In the formulae below, *i* is the effective interest rate per period. *FV* and *PV* represent the future and present value of a sum. *n* represents the number of periods.

A formula for calculating annual compound interest is

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

where

- *A* = value after *t* periods
- *P* = principal amount (initial investment)
- *r* = annual nominal interest rate (not reflecting the compounding)
- *n* = number of times the interest is compounded per year
- *t* = number of years the money is borrowed for

Here $\frac{r}{n}$ is the periodic rate (the amount of interest that is charged for each compounding period, divided by the principal at the beginning of that period); $\left(1 + \frac{r}{n}\right)^{n}$ is 1 + the effective annual rate (the value most commonly used to compare different financial instruments), and the latter expression raised to the power *t* is the effective rate for *t* periods (the original principal plus total interest paid over *t* periods, divided by the original principal).

As an example, suppose an amount of 1500.00 is deposited in a bank paying an annual interest rate of 4.3%, compounded quarterly. Then the balance after 6 years is found by using the formula above, with P = 1500, r = 0.043 (4.3%), n = 4, and t = 6:

$$A = 1500\left(1 + \frac{0.043}{4}\right)^{4\times 6} = 1938.84$$

So, the balance after 6 years is approximately 1938.84. The amount of interest received can be calculated by subtracting the principal from this amount.

Question 5. Define farm management. Explain how it is necessary in taking farm decisions.

Answer:

Definition- Farm management is that branch of agricultural economics which deals with the business principles and practices of farming with an object of obtaining the maximum possible return from the farm as a unit under a sound farming programme.

Farm management is the study of the business principles of forming. It may be defined as the science of organization and the management of the farm enterprise for the purpose of securing the greatest continuous profits.

Objectives

- To obtain the maximum net profit from the various enterprises on a farm.

-To get maximum net returns from the farm as a whole.

-To optimize the use of available resources.

Farm Management Decision

Farm management is basically decision making science. On farm every day decisions are required to be taken keeping in view the profitability. These decisions are generally:

1) What to produce? - Selection of enterprise

2) How much to produce? - Enterprise mix

a) Product - mix b) Resource - use

3) How to produce? - Selection of least cost/efficient method

4) When to produce? - Timing of production.

Thus to achieve the objective of farm management the answers of above mentioned questions are very important.

Question 6. Why the efficiency of agriculture labour is poor in India. Suggest measures to improve the labour use efficiency.

Answer: Labour in agriculture constitutes one of the most important factors of production as machine and labour can not be perfect substitute in the agricultural production process.

In India the efficiency of labour is very poor as compared to other countries. There are some reasons for decreasing their efficiency.

1. Low standard of living
2. Indebtedness
3. Forced labour
4. Seasonal employment
5. Irregular hour of working
6. Lack of organization
7. Lack of education
8. Housing problem
9. Lack of recreation facilities

Suggestion for the improvement of labour efficiency

1. A plan for each day's work should be chalked out one day before in the evening.
2. The farm manager should see that the implements and machinery are in good order before the work starts.
3. The provision for drinking water facilities should be provided on the fields particularly during summer.
4. The work should be assigned to workers in such a way as to get optimum advantage of their capacity and ability.
5. The farm manager should set up certain standards of work for a day's work.
6. The manager should also take physical strength into consideration in the selection of field labour.
7. The regular supervision and training should be there so that the work may be satisfactory.

Question7. In what manner the advance farm equipments helps in farm production. Give the note on usefulness of following machines:

a. Combine cum harvester

b. MB Plough
c. Zero till cum Seed drill
d. Sprayer

Answer: Modern agriculture depends on equipment because instruments help farmers in maximizing production, timeless work and efficiency improvement.

a. Combine cum harvester

The combine harvester, or simply combine, is a machine that harvests grain crops. The name derives from its combining three separate operations comprising harvesting reaping, threshing, and winnowing into a single process. Among the crops harvested with a combine are wheat, oats, rye, barley, corn of maize, soybeans and linseed. The waste straw left behind on the field is the remaining dried stems and leaves of the crop with limited nutrients which is either chopped and spread on the field or baled for feed and bedding for livestock.

Advantages

1. Combine harvesters are one of the most economically important labor saving inventions, enabling a small fraction of the population to be engaged in agriculture.
2. In less time more output with less cost as compared to manual labour.
3. Earn income by custom hiring of machine.

Disadvantage

1. Higher cost is required to purchase
2. Only seasonal use.
3. High cost on wear and tear and maintenance

b. **Mould board Plough**

The parts of mouldboard plough are frog or body, mouldboard or wing, share, landside, connecting, rod, bracket and handle. This type of plough leaves no un ploughed land as the furrow slices are cut clean and inverted to one side resulting in better pulverization. The animal drawn mouldboard plough is small, ploughs to a depth of 15 cm, while two mouldboard ploughs which are bigger in size are attached to the tractor and ploughed to a depth of 25 to 30 cm. Mouldboard ploughs are used where soil inversion is necessary. Victory plough is an animal drawn mouldboard plough with a short shaft.

Mouldboard plough can handle the toughest ploughing job with outstanding performance. The under frame and unit clearances are adequate to cope with trashy conditions. Perfect alignment at the plough beams carrying the Mouldboard bottom is maintained by virtue of the frame construction. The Mould Board will work in any kind of soil whether it's tougher or simpler. The plough has special wear resistant steel bottoms with bar points for toughest ploughing jobs. Bar pointing bottom it really ensures the longer life.

c. Zero till cum Seed drill

Fertilisers are placed at a depth of 5 cm and 5 cm away from seed rows for effective utilization of fertilisers. Both operations viz. drilling seeds and fertilizers are done simultaneously by ferti-cum-seed drill. It is similar to seed drill, but with extra tynes and hopper for drilling fertilizers. Zero-till-drill consists of frame, seed box, fertilizer box, seed metering mechanism, fertilizer metering mechanism', seed tubes, furrow opener seed/fertiliser adjusting mechanism and transport cum power transmitting wheel. The frame is made from mild steel box section. The tynes are mounted with the help of clamps, to obtain infinite row spacing. The main difference between zero-till drill and conventional drill is that it has inverted T-type furrow opener fixed on the tynes instead of reversible shovels type furrow openers. The main advantage of inverted t-type furrow openers is non formation of clods, lower draft requirement and easier penetration in the soil.

Advantages

i. Without ploughing field can be sown directly.

2. In one operation seed and fertilizer both can be placed scientifically.

3. Sowing will be advanced and hence higher the production.

4. Saving on cost of inputs.

d. Sprayer

In agriculture, a sprayer is a piece of equipment that spray nozzles to apply herbicides, pesticides, and fertilizers to agricultural crops. Sprayers range in size from man-portable units (typically backpacks with spray guns) to trailed sprayers that are connected to a tractor, to self-propelled units similar to tractors, with boom mounts of 60–151 feet in length.

Types

- Backpack/knapsack
- Foot
- Garden
- Hand compression
- Power
- Stirrup
- Self-propelled crop sprayer

  Uses

  1. Control of disease and insect in crop
  2. Weed control and spray of weedicides
  3. Fertilizer application by foliar method
