UNIVERSITY OF AGRICULTURE, ABEOKUTA
DEPARTMENT OF AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

Course Title: Production Economics, Farm Management & Accounting.

Course Code: AEM 501

Semester: First

No. of Units: 3 Units.

Department: Agricultural Economics & Farm Management (AEFM)

COURSE LECTURER: DR. O.F. ASHAOLU

LECTURE NOTE

Recommended Texts

- (i) Olayide, S.O. and E.O. Heady (1982). <u>Introduction to Agricultural Production Economics</u>. Ibadan Univ. Press. Ibad., Nigeria. 319p

- (ii) Heady, Earl O. (1952). <u>Economics of agricultural production and resource use</u>. Prentice-Hall Inc. Englewood Cliffs, N.J.

Course Contents

➢ Theory and principles of agricultural production with respect to resource use;

➢ Response analysis, forms of production functions and characteristics;

➢ Resource allocation, resource and product/enterprise combination;

➢ Agricultural demand and supply functions

➢ Production/farm planning and resource productivity;

➢ Farm records and accounting

Course Details

(1).Theory and principles of agricultural production with respect to resource use

- Application of Economic theories
- The field of production economics, definitions and objectives.
- Subject matter of production economics
- Production economics and agricultural economics
- Production economics and peasant agriculture

(1 CONTD.)

● Tools of production economics: To facilitate empirical analyses of quantifiable variables of differentiable functions, econometric methods employing least square multiple regression, and methods of solving systems of simultaneous equations are employed where appropriate. Statistical principles for tests of hypotheses and significance of parameters are then employed. These tools are applicable in situations where we try to estimate production relationships and parameters based on experimental, time series, cross section and engineering data. Other tools include linear algebra and its extension of linear programming (LP); linear algebra and its extension of input-output or inter-industry model; systems analysis and its computer tool of simulation.

(2) Response analysis, forms of production functions and characteristics.

- Variables and functions, implicit functions, explicit functions, derivatives.
- Optimization of production magnitude; steps in optimization of production functions.
- Selection of functional forms: Functional forms include

→ Linear function of the form $y = f(x) = ax + b$

→ Non- Linear function e.g. (i) Quadratic function of the form $y = f(x) = a_1x^2 + a_2x + a_3$ for $a_1 \neq 0$, $y = x^2 + 3x + 4$. (ii) Cubic function of the form $y = f(x) = b_1x^3 + b_2x^2 b_3x + b_4$ for $b_1 \neq 0$. A typical example is the total cost of function $C = 4q^3 - 9q^2 + 10q + 5$.

(2 CONTD.)

→ (iii) Power function of the form $y = f(x) = ax^b$ for $a \neq 0$ and $b \neq 0$.

Typical examples are the double-logarithmic (Cobb-Douglas) and the semi- logarithmic functions.

→ Exponential function of the form $y = b^x$, $y = ae^{rt}$, or $P_t = P_o(e^{rt})$ where $e = 2.71828$ is the base of natural log.

→ Root function of the form $y = f(x) = b_0 + b_1x + b_2x^{0.5}$

→ Cube root function of the form $y = f(x) = b_0 + b_1x + b_2x^{1/2}$

● Inflection points in production functions.

● Production functions:

→ Definition and examples

→ Average product, marginal product

(2 CONTD.)
→ Rates of return and types e.g. constant returns, increasing returns and decreasing returns. Support with tabular examples and graphical presentation
→ The generalized production function and description; concept of returns to scale
● Profit maximization and cost minimization in the one-input-one-output production case
→ Determination of physical and economic maxima, with assumptions.
→ Application of unconstrained maxima and minima
→ Average physical product, marginal physical product, marginal revenue, marginal cost and relationships.

(3) Resource allocation, resource and product/enterprise combination

● Production relationships
→ Factor-product relationships: Stages of production and the law of diminishing returns
→ Factor-factor relationships: The concept of isoquants, isocline, ridgeline and expansion paths
→ Product-product relationships: Antagonistic products, joint products, complimentary products, supplementary products and competitive products. The concept of constant marginal rate of substitution, increasing marginal rate of substitution and decreasing marginal rate of substitution under competitive situation.

(4) Agricultural demand and supply functions● Agricultural input demand

● Concept in supply relation; Importance of the study of supply functions

(5) Production/farm planning and resource productivity

● Differences between production and productivity
● Measurement of resource productivity
● Farm planning and budgeting process
→ Linear programming (LP) and optimal solution. Assumptions and structure of LP, graphical and simplex methods of solution
→ Farm budgeting: Definition, importance and rules of budgeting; steps in farm budgeting process; partial and complete budgets

(6) Farm records and accounting

● Reasons for collecting farm management data; approaches to and problems of farm management data collection; sources of data for farm management studies; objectives of farm management studies; stages in developing a research program
● Systems of farm accounting: Differences between profit and loss accounts and balance sheets; depreciation techniques; farm inventory.