## **Contents**

Foreword t	o the Second Edition	v
Foreword t	o the First Edition	vii
Preface to	the Second Edition	ix
	the First Edition	х
	INTRODUCTION	1
	Agricultural Economics	1
	Importance of Agricultural Economics	2
	SECTION I: MICROECONOMICS	3
Chapter 1	Economics-its Subject Matter	5
	Divisions of Economics	5
•	Modern Approach	6
	Definitions of Economics	7
	Economics–A Social Science	8
	Economics-Positive Science or Normative-Science	9
	Methods of Economic Investigation	9
	Economic Laws	9
Chapter 2	Basic Concepts in Economics	11
	Good	11
	Service	11
	Classification of Goods	11
	Utility	13
	Value	15
	Price	15
*	Wealth	15
Chapter 3	Consumer Behaviour and Demand	17
	Human Wants	17
	Law of Diminishing Marginal Utility	19
	Law of Equi-marginal Utility	21
	Consumer Surplus	23
	Consumer Surplus and Producer Surplus—Algebraic Approach	25
	Indifference Curve	28

	Demand	31
	Kinds of Demand	34 34
	Law of Demand	37
	Elasticity of Demand	38
	Degrees of Elasticity of Demand Methods of Measuring Price Elasticity	41
Chapter 4	Theory of Costs	44
•	Cost Concepts	46
Chapter 5	Supply	50
	Law of Supply	52
	Elasticity of Supply	54
	Price Determination	57
Chapter 6	Production	61
	Factors of Production	62
	Land	62
	Labour	62
	Theories of Population	66 71
	Capital	73
	Organization Forms of Business Organization	73 74
	Partnership	75
	Joint Stock Company	77
	Co-operative Organization	79
	State Or Public Enterprise	80
Chapter 7	Market Structure	83
	Perfect Competition	84
	Imperfect Competition	97
	Monopoly	97
	Monopolistic Competition	106
	Duopoly	109
	Oligopoly	111
	Monopsony	113
	Oligopsony	114
Chapter 8	Distribution	115
	Rent	115
	Wages	118
	Theories of Wages	119
	Interest	120 121
	Theories of Interest	121
	Profit Theories of Profit	124
Chanton	National Income	129
Chapter 9	Concepts of National Income	130

Chapter 10	Money Kinds of Money	134 134
Chapter 11	Public Expenditure Need for Public Expenditure	137 137
Chapter 12	Public Revenue Major Sources of Public Revenue Minor Sources of Public Revenue Canons of Taxation	139 139 140 141
Chapter 13	Unemployment Types of Unemployment Measurement of Unemployment	143 143 144
Chapter 14	Business Cycles or Trade Cycles	146
Chapter 15	Inflation	149
s	ECTION III: AGRICULTURAL PRODUCTION ECONOMICS	153
Chapter 16	Agricultural Production Economics  Meaning Subject Matter Objectives Basic Concepts in Production Economics Features of Agricultural Production As Compared to Industrial Production	155 155 155 156 156 uction
Chapter 17	Laws of Returns Law of Increasing Returns Law of Constant Returns Law of Decreasing Returns	162 163 164
Chapter 18	Factor-Product Relationship Production Function Three Stages of Production Function Rational and Irrational Stages of Production Determination of Optimum Level of Input Determination of Optimum Level of Output Relationship Between Tpp, Mpp and App of Land (X2) And Tpp, Mpp and App of Human Labour (X1)	166 166 168 169 170 171
Chapter 19	Factor—Factor Relationship Iso-quant Types of Factor Substitution Iso-cost Line Least Cost Combination Expansion Path Ridge Lines	177 177 180 183 184 185 186

Chapter 20	Product-Product Relationship	188
	Production Possibility Curve	188
	Relationships Among the Products	190
	Marginal Rate of Product Substitution	192
	Types of Product Substitution	192
	Iso-revenue Line	196
	Determination of Optimum Product Combination	196
	Output Expansion Path	199
	Ridge Lines	199
Chapter 21	Returns to Scale	201
	Differences between the Law of Variable Proportions	
	and Returns to Scale	202
Chapter 22	<b>Production Functions</b>	204
	Production Function With two Variable Inputs	206
	Constant Elasticity of Substitution Production Function (CESPF)	209
	Quadratic Production Function	211
	Constrained Output Maximization-Algebraic Derivation	212
	Constrained Cost Minimization-algebraic Expression	216
	Measuring Efficiency in Agricultural Production – Application	24.
	of Frontier Production Function	217
	SECTION IV: FARM MANAGEMENT	219
Chapter 23	Farm Management	221
_	Meaning	221
	Scope	222
	Definitions	222
	Objectives	222
	Farm Management-Its Relationship With Other Sciences	222
	Farm Management Decisions	224
	Agricultural Production Economics vis-à-vis Farm Management	226
Chapter 24	Economic Principles Applied to Farm Management	227
	Law of Diminishing Returns (LDR)	227
	Principle of Factor Substitution	228
	Principle of Product Substitution	230
	Principle of Equimarginal Returns	232
	Opportunity Cost Principle	233 234
	Minimum Loss Principle	234
	Principle of Comparative Advantage Time Comparison Principle	237
<b>~.</b>	•	
Chapter 25	Types of Farming Factors Influencing Types of Farming	<b>242</b> 244
Charter 20		246
-	Types of Farm Business Organizations	
Chapter 27	Farm Planning Why Farm Planning Is Necessary?	248 248
	YYIIY I'AIIII I IAIUUIIK IS INECESSAIY!	470

		XVII
	Characteristics of Good Farm Plan	249
	Limitations of Farm Planning	249
	Farm Budgeting	250
	Farm Enterprise Budget	250
	Organization of Enterprise Budget	250
	Partial Budgeting	251
	Complete Budgeting	252
	Steps in Whole Farm Planning and Budgeting	252
Chapter 28	Application of Operations Research Techniques to Farm Management	255
	Linear Programing (LP)	255
	MOTAD Minimisation of Total Absolute Deviation Model	274
	Goal Programming	276
	Game Theory Model	280
	Discrete Stochastic Programming	283
	Simulation	285
	Dynamic Programming	288
	Quadratic Risk Programming	289
	Data Envelopment Analysis (DEA)	297
Chapter 29	Size of Farm	301
	Factors Influencing Size of Farm	303
	Measures of Farm Size	304
Chapter 30	Farm Records	305
Chapter 30	Farm Records Benefits of Farm Records	<b>305</b> 305
Chapter 30	Benefits of Farm Records Limitations in the Maintenance of Farm Records	305 306
Chapter 30	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm	305 306 306
Chapter 30	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms	305 306 306 311
Chapter 30	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm	305 306 306
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms	305 306 306 311
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms	305 306 306 311 316 <b>321</b> 321
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal	305 306 306 311 316 <b>321</b> 321 324
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger	305 306 306 311 316 <b>321</b> 321 324 325
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance	305 306 306 311 316 <b>321</b> 321 324 325 328
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts	305 306 306 311 316 <b>321</b> 321 324 325 328 328
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals	305 306 306 311 316 <b>321</b> 324 325 328 328 329
-	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts	305 306 306 311 316 <b>321</b> 321 324 325 328 328
Chapter 31	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals Cashbook  Farm Inventory	305 306 306 311 316 <b>321</b> 324 325 328 328 329
Chapter 31	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals Cashbook	305 306 306 311 316 321 324 325 328 328 329 330
Chapter 31 Chapter 32	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals Cashbook  Farm Inventory	305 306 306 311 316 321 324 325 328 328 329 330
Chapter 31 Chapter 32	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals Cashbook  Farm Inventory Methods of Valuation	305 306 306 311 316 321 324 325 328 328 329 330 333
Chapter 32 Chapter 33	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals Cashbook  Farm Inventory Methods of Valuation  Depreciation Methods of Computation	305 306 306 311 316 321 324 325 328 328 329 330 333 333
Chapter 32 Chapter 33	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals Cashbook  Farm Inventory Methods of Valuation  Depreciation	305 306 306 311 316 321 324 325 328 329 330 333 333 336 337
Chapter 32 Chapter 33	Benefits of Farm Records Limitations in the Maintenance of Farm Records Records Maintained On An Average Farm Records Maintained On the Corporate Farms and the State Farms Records Maintained On Commercial Dairy Farms  Farm Accountancy Terms and Concepts Journal Ledger Trial Balance Final Accounts Subsidiary Books Or Subsidiary Journals Cashbook  Farm Inventory Methods of Valuation  Depreciation Methods of Computation  Farm Efficiency Measures	305 306 306 311 316 321 324 325 328 328 329 330 333 333 336 337

Chapter 35	Management of Farm Resources	350
-	Land Management	350
	Land use Planning	351
	Owning the Land	351
	Leasing	352
	Buying the Land	353
	Land Appraisal	353
	Farm Layout	354
	Farm Labour Management	356
	Classification of Farm Labour	356
	Characteristics of Farm Labour	357
	Farm Labour Efficiency	358
	Capital Management	359
Chapter 36	Risk and Uncertainty	361
	Sources of Risk	362
	Measuring the Expectation and Variation	363
	Measures to Manage Farm Risk	364
	SECTION V: AGRICULTURAL FINANCE	367
Chapter 37	Agricultural Finance	369
	Problems of Agricultural Credit in India	369
	Need of Agricultural Finance	370
	Definitions	371
	Importance	371
	Requisites of Good Credit System	372
	Classification of Credit or Loans	372
Chapter 38	Institutional Agencies in Agricultural Credit	378
	Meaning and Definitions of Co-operation	378
	Maxims of Co-operation	378
	Essential Principles of Co-operation	379
	Co-operative Movement in India	380
	State Co-operative Banks (SCBS)	385
	District Central Co-operative Banks (DCCBS)	385
	Primary Agricultural Co-operative Credit Societies (PACS)	385
	Central Land Development Bank (CLDB)	386
	Primary Land Development Banks (PLDBS) Single Window System	386
	Large-sized Adivasi Multipurpose Co-operative Societies (LAMPS)	386 387
	Farmers Service Societies (FSS)	388
	Social Control and Nationalization of Banks	389
	State Bank of India (SBI)	391
	Specialized Branches	391
	Multi-agency Approach	392
	Branch Expansion Scheme	393
	Village Adoption Scheme	393
	Lead Bank Scheme	393

	Regional Rural Banks (RRBS)	395
	Differential Rate of Interest Scheme (DIR SCHEME)	400
	Farm Graduate Scheme	401
	Deposit Insurance and Credit Guarantee Corporation of	
	India (DICGC)	402
	Service Area Approach	403
	Crop Loan System	404
	District Credit Plans (DCPS)	406
	District Consultative Committee (DCC)	406
	Functions of DCC	406
	New Private Sector Banks	407
	Report of the High-level Committee On Agricultural Credit Through	
	Commercial Banks	408
	Higher Financing Agencies	411
	World Bank	411
	Reserve Bank of India (RBI)	413
	Agricultural Refinance and Development Corporation (ARDC)	416
	National Bank for Agriculture and Rural Development (NABARD)	417
	Agricultural Finance Corporation (AFC)	422
	Outlines of Recommendations of Khusro Committee and Narasimham	
	Committee	423
	Programmes of Rural Development	424
4	Small Farmers Development Agency (SFDA) and Marginal	
· ·	Farmers and Agricultural Labourers Development Agency (MFAL)	424
	Integrated Rural Development Programme (IRDP)	426
	Self Help Groups (SHGS)	429
	Ganga Kalyan Yojana	434
	Kisan Credit Card (KCC)	435
Chapter 39	Tests of Farm Credit Proposals	442
Chapter of	Economic Feasibility Tests of Credit	442
	Returns From the Investment	442
	Repayment Capacity	443
	Risk Bearing Ability	445
	'Five Cs' of Credit	447
	'Seven Ps' of Credit	448
	Principle of Owner's Equity and Increasing Risk	451
	Procedural Formalities in Sanction of Farm Loans	453
	Repayment Plans	<b>4</b> 55
Chapter 40	Tools of Farm Financial Analysis	460
Chapter 10	Balance Sheet Or Networth Statement	460
	Income Statement Or Profit and Loss Statement	464
	Cash Flow Statement	465
Chapter 41	Agricultural Projects	470
•	Meaning	470
	Definition	<b>47</b> 0

	Phases in Project Cycle	471
	Investment Analysis (Capital Budgeting)	475
	Undiscounted Measures	477
	Discounted Measures	479
	Sensitivity Analysis	484
	SECTION VI: AGRICULTURAL MARKETING	487
Chapter 42	Agricultural Marketing	489
	Meaning	489
	Role of Marketing	489
	Definitions	490
	Significance of Agricultural Marketing	490
	Scope of Agricultural Marketing	491
	Characteristics of Agricultural Commodities	492
	Classification of Markets	493
	Producer's Surplus	497
Chapter 43	Process of Agricultural Marketing	498
	Marketing Functions	499
	Marketing Efficiency	505
	Efficient Marketing	505
	Approaches to Marketing Efficiency Estimation	506
	Approaches to the Study of Marketing	507
	Market Risks	510
	Marketing Risk-management Strategies	510
	Speculation	511
	Hedging	512
Chapter 44	Problems in Agricultural Marketing	514
Chapter 45	Suggestions to Improve Agricultural Marketing	518
Chapter 46	Marketing Channels	531
	Marketing Costs and Margins	531
	Estimation of Price Spread	533
	Reasons for Higher Marketing Costs of Farm Commodities	538
Chapter 47	Agricultural Prices	539
	Meaning	539
	Functions of Prices	539
	Instability in Prices	541
	Types of Price Instability	542
	Measurement of Instability	542
	Time Series Analysis	543
	Price Forecasting	556 540
	ACF Partial Adjustment Model	560 572
	Partial Adjustment Model  Dynamic Models of Marketing	572 574
	Estimation of Demand and Supply Through Simultaneous Equations	576
	Lamiation of Demand and Supply Through Simultaneous Equations	

	Model	578
Chapter 48	Role of Government in Agricultural Marketing National Agricultural Co-operative Marketing Federation (NAFED) National Co-operative Development Corporation (NCDC) Procurement of Foodgrains Public Distribution System (PDS) Revamped Public Distribution System (RPDS) The Targeted Public Distribution System Directorate of Marketing and Inspection Bureau of Indian Standards (Bis) HACCP Commodity Boards	585 585 585 586 588 588 588 589 591 592 592
SECT	ION VII: ECONOMIC PROBLEMS OF INDIAN AGRICULTURE	599
Chapter 49	Role of Agriculture in Indian Economy	601
Chapter 50	Agriculture in Five-Year Plans First Five-year Plan (1951-56) Second Five-year Plan (1956-61) Third Five-year Plan (1961-66) Annual Plans (1966-69) Fourth Five-year Plan (1969-74) Fifth Five-year Plan (1974-79) Sixth Five-year Plan (1980-85) Seventh Five-year Plan (1985-90) Eighth Five-year Plan (1997-2002) Tenth Five - Year Plan (2002 - 07) Eleventh Five - Year Plan (2007 - 12) Twelfth Five - Year Plan (2012 - 17)	604 605 605 606 606 607 607 608 608 608 609 610
Chapter 51	Agricultural Technology Technological Developments Achieved	<b>611</b> 612
Chapter 52	Land Reforms Land Tenure Systems Objectives of Land Reforms Measures Abolition of Intermediaries Tenancy Reforms Measures of Reorganization of Agriculture Progress of Land Reforms	615 616 617 617 618 618 620 622
Chapter 53	Agricultural Labour Wages and Earnings of Agricultural Labourers Programmes for Improving the Conditions of Agricultural Labourers	624 624 625
Chapter 54	Farm Mechanization	628

	Case for Mechanization	628
	Case Against Mechanization	629
	Selective Mechanization	629
Chapter 5	5 Capital Formation in Agriculture	630
	Factors Affecting Capital Formation	633
Chapter 5	6 Irrigation	635
	Development of Irrigation	635
	Irrigation Policy and Strategy	638
	Conjunctive Use of Surface and Ground Water	638
Chapter 5	7 Agricultural Price Policy	641
	Recommendations On Agricultural Price Policy	642
	Administered Prices	643
Chapter 5	8 World Trade Organization (WTO)	645
	Objectives of GATT	646
	Origin of WTO	647
	WTO Agreements	648
Reference	es .	652
Appendix	A	657
Appendix	<b>B</b>	661
Appendix	C	663
Appendix	D	665
Index		691