1. Introduction
   1.1. History, impact and importance of crop research and development programs
   1.2. Agricultural perspective plan and its priority in food security
   1.3. Major constraints of agricultural production in Nepal
   1.4. Prospects of commercial field and plantation crops for commercialization

2. Crop Production and Its Management
   (Major Cereal crops, pulses, cash crops) in relation to
   2.1. Introduction, Origin and Distribution
   2.2. Botany, Physiology, Morphology and Growth stages of Crop Plant
   2.3. Climate and Soil
   2.4. Recommended Varieties and their Characteristics
   2.5. Cultivation Practices: land preparation, seed rate, and seed treatment, planting methods, planting time, intercultural operations
   2.6. Manure's and Fertilizers: recommended doses, method of application, time of application etc.
   2.7. Water Management: critical stages of water requirement, time and frequency of water application, irrigation methods and drainage prevalent
   2.8. Plant Protection Measures: important diseases, insect pests prevalent in Nepal and their control measure / IPM practices
   2.9. Post Harvest Practices and Handling

3. Weather and crops
   3.1. Climate-Temperature, Humidity, Rainfall, Sunshine Hours, Soil Temperature and their effects on crops
   3.2. Agro climatic Zones, Seasonal Patterns in relation to crops of Nepal
   3.3. Effects of Drought, Floods, Cold, Frost Hailstones and Wind on Crop Production

4. Land Resources and Tillage
   4.1. Physiographic Distribution and Land System in Nepal
   4.2. Land capability and Irrigation suitability
   4.3. Land utilization
   4.4. Soil classification and its relationship with tillage practices
   4.5. Zero Tillage, minimum tillage and optimum tillage
   4.6. Terrace and Terrace management

5. Biodiversity & Agro biodiversity
   5.1. Convention on Biodiversity (CBD)
   5.2. Role of IPGRI in conservation of agro-biodiversity
   5.3. Plant variety protection in relation to WTO
   5.4. Himalayan Region as a centre of crop plants origin and diversity
   5.5. Biodiversity and approaches for its utilization and conservation

6. Soil and Plant Nutrition Management
   6.1. Importance of Top Soil and Sub Soil's
   6.2. Soil of Nepal and their classification
6.3. Chemical Properties of Soil
6.4. Essential Plant Nutrients and their sources
6.5. Organic Manuring
   6.5.1 Organic Manures- Application/Sources
   6.5.2 Plants suitable for green manuring
   6.5.3 Desirable characteristics of green manuring crops
   6.5.4 Constraints of organic manuring
   6.5.5 Sources of organic manures
   6.5.6 Organic crop production in the present scenario

7. Water Management in Crop Production
   7.1. Irrigation potential in Nepal
   7.2. Water requirement of different crops
   7.3. Quality of irrigation water, methods and technique of irrigation
   7.4. Some alternative irrigation practices presently in use
   7.5. Drainage methods
   7.6. Available water resources
   7.7. Integrated crop and water management

8. Weeds & weed control
   8.1. Classification of needs, effects on crop production
   8.2. Common needs found in major field crops
   8.3. Principles and methods of weed control practices in Nepal
   8.4. Herbicides: type, formulation, and mode of action, effects and its use in Nepal
   8.5. Herbicidal effects on environment and its economic use

9. Genetics & Plant Breeding
   9.1. Advances in crop improvement in Nepal.
   9.2. Definition, importance, history and achievement of plant breeding
   9.3. Genetic basis of plant breeding
   9.4. Breeding methods: self pollinated & cross pollinated crops
   9.5. Varietal improvement procedure adopted in Nepal
   9.6. Use of biotechnology in plant breeding

10. Seed Technology
    10.1. Principles and practices of seed production
    10.2. Seed classification and their qualities
    10.3. Physiology of seed
    10.4. Seed certification procedures and seed certification standards of major crops
    10.5. Seed regulatory agency and its function in controlling and maintenance of seed standards
    10.6. Seed self sufficiency program, its importance and present status

11. Crop Physiology
    11.1. Growth & development
    11.2. Photoperiodics
    11.3. Photosynthesis and respiration.
    11.4. Transpiration
    11.5. Absorption & translocation
11.6. Stress physiology: cold & heat stress, low & high moisture stresses, etc.

12. Sustainable Agriculture & Farming System
   12.1. Definition of sustainable agriculture
   12.2. Problem of modern agriculture system
   12.3. Importance of green revolution
   12.4. Technology generation and its sustainability
   12.5. Importance of indigenous technology
   12.6. Farming system approach and its components
   12.7. Social, economic & institutional aspects of farming system
   12.8. Gaps in agronomy research & development
   12.9. Suggestion to strengthen sustainability in agriculture
   12.10. Gender issues in agronomic practices

13. Biometrics
   13.1. Concept and fundamental parameter of statistics
   13.2. Proper plot technique and data analysis
   13.3. Estimate and control of error-replication, blocking and randomization
   13.4. Concept and use of different design used agriculture
   13.5. Use of computer statistical packages in agronomy research and development