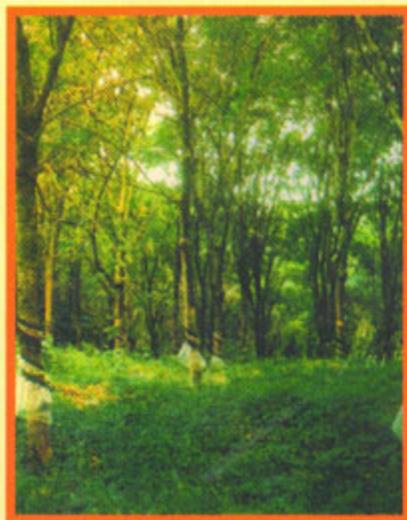


2nd Edition

Handbook of

AGROFORESTRY



S. P. SINGH

2nd EDITION

HANDBOOK OF AGROFORESTRY

S. P. SINGH



Agrotech Publishing Academy
Udaipur – 313 002

Distributed by

Dr. L. L. Somani

VINAYAK BOOK HOUSE

11-A, Vinayak Complex-B, Durga Nursery Road,

UDAIPUR – 313 001

Mob. 09414169635

ISBN : 81-8321-036-8

REPRINTED 2009

SECOND EDITION 2006

First Published in 1994

Agrotech Publishing Academy

11-A, Vinayak Complex-B, Durga Nursery Road,

Udaipur – 313 001

Type Setting :

VINAYAK COMPUTERS

Udaipur – 313 002

Printed at :

S.S.S. Printers

New Delhi – 2

PREFACE

Agroforestry has been in practice since time immemorial. But it is currently being adopted for intensive scientific researches. It is getting good momentum in India and elsewhere too due to awareness for making land use management efficient and effective. Agroforestry includes planting of tree species, raising of agricultural crops, grasses, animals etc. all are interacting on one another symbiotically. Such symbiotical relations bring about a balance in the existing land use management system so that sufficient amount of firewood, fodder, food, feed, fruits, and several useful raw materials (leaves, flowers, fruits, seeds, bark, gum, resin, honey, oil, tannin, dye, timber) are available for small cottage industries. Firewood will help in saving a large quantity of cow dung from burning and it will be available for application to agricultural crops to increase crop yield and to restore the productivity of the land. Similarly, fodder to animals which becomes precious during drought conditions when agricultural crops fail-to-grow: tree species are only source for it. In fact, agroforestry helps in maintaining equilibrium between man, land, livestock and plants. Components of agroforestry are labour intensive which create employment opportunities to unskilled

unemployed rural people. Agroforestry increases vegetation cover on land hence it helps in creating favourable environment. Trees act as air purifier; they reduce noise pollution; reduce soil erosion, flood havoc and improves aesthetic value which makes life living better.

If agroforestry programmes are implimented seriously and sincerely on war footing it can bring one third land under vegetation cover in India which in tern can help in increasing productivity, profitability and sustainability of production.

This book introduces preliminary aspects on Agroforestry which are very essential to the beginners for obtaining knowledge on agroforestry particularly to undergraduate students of Agricultural Sciences and for postgraduate students who just entered in the field of agroforestry knowing only little about the subject, Extension workers, Agroforesters, University teachers, educated cultivators who are intended in converting their unproductive, wasteland into green lands, and to those who are interested in agroforestry.

I am thankful to all publishers, authors of various journals, periodicals books, and interaction with large number of experts which gave me a strong support and guidelines to systematize my scattered ideas and vision in the from of this hand book.

I am very much thankful to my wife, daughter and son who have been very cooperative, and allowed me to work on holidays and during late night hours.

Suggestions are welcome from readers for further improvements in the text for the next edition.

Hope, this handy reference will go in the hands of masses

S.P. Singh
Associate Professor (Horticulture)
Gujarat Agricultural University
Junagadh - 362 001.

CONTENTS

	Page
Preface	3
1. Introduction	7
2. Benefits of Agroforestry	23
3. Landuse Systems Related to Agroforestry	55
4. Desirable Characteristics of Tree Species for Agroforestry	75
5. Multipurpose Trees and Shrubs (M.P.T.S.)	85
6. Nursery Management	95
7. Propagation	117
8. Management Techniques in Agroforestry Systems	131

	Page
--	------

9. Climatic and Edaphic Factors in Agroforestry	147
10. Agro-ecological regions of India	155
11. Energy Plantation	161
12. Glossary	171
Abbreviations	193
Common names of a few species	197

INTRODUCTION

AGROFORESTRY- THE CONCEPTUAL BACKGROUND

"Agroforestry" is the new name for an ancient landuse practice. The concept of Agroforestry implies the integration of farming with forestry practices on the farm to increase output. The practice of Agri-silviculture which was began way back in Burma in 1856 is a classical instance ⁽¹⁾. Various tree species and annual agricultural crops can be grown together ⁽⁴⁾.

In our country, the functional allocation on land is 46.4 per cent for agriculture and 22.7 per cent area for forestry is not sufficient for meeting the multifarious requirements of growing human and cattle population for food, feed, fuel and other raw materials. The only answer appears to be to integrate the land use for agriculture and forestry in such a way as to maximise production of foods and services for diverse requirements for rural communities.

Modern agroforestry establishes a symbiosis among agricultural crops, tree species and livestock raising. In other words, these are complementary and beneficial to each other.

Tree growth conserves soil moisture, increases atmospheric humidity,

improves soil fertility, protects field crops against the scorching and desiccating effects of winds. Besides amelioration of adverse climatic conditions, trees supply cheap fuelwood in villages, so that cowdung, which is still being burnt on large scale (about 60 per cent) for cooking purpose, is released for use as farmyard manure. Fruit tree species enrich the diet of rural population and also meet the demand for timber to small scale rural industry. Fodder tree species provide the much needed top feed (fodder) for sustenance of livestock. In fact, there is a need to devise such a land management and farming system which would produce food, fruit, fodder and wood and at the same time conserve the ecosystem. Such a system is agroforestry ⁽¹¹⁾

DEFINITION OF AGROFORESTRY

Agroforestry may be defined as "an efficient and integrated landuse management system by raising of certain agricultural crops, forest tree species and or animals simultaneously or sequentially on the same unit of land with appropriate management practices which result in overall increase in the production under a particular set of climatic and edaphic conditions and socio-economic status of local people"⁽⁴⁾ Agroforestry involves interaction of woody perennial ecologically and economically with the crop and or livestock.

OBJECTIVES OF AGROFORESTRY

The following are the main objectives of agroforestry.

- 1) To manage land efficiently so that its productivity is increased and restored.
- 2) To use available resources efficiently and economically.
- 3) To generate employment opportunities to rural poor.
- 4) To provide raw materials for developing small cottage industries in rural areas (raw materials namely, wood, pulp, fibre, medicinal material ingredients and oils and cakes, gum, wax, resin, lac, tannins, dye. green manure, soap substitutes, perfumes etc).
- 5) To provide basic needs of small and marginal farmers for food,

feed, fodder, fruits, firewood, small timber etc.

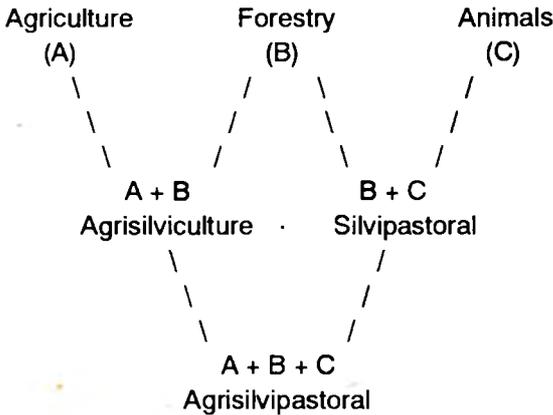
Higher sustained and more diversified productivity is obtained from the existing resources when positive interactions are at optimum levels.

COMPONENTS OF AGROFORESTRY

There are three basic components of agroforestry

- 1) Agricultural crops/herbaceous plants
- 2) Woody perennials (tree crops/forest plants)
- 3) Animals

Above basic components when combine together form three basic agroforestry systems.



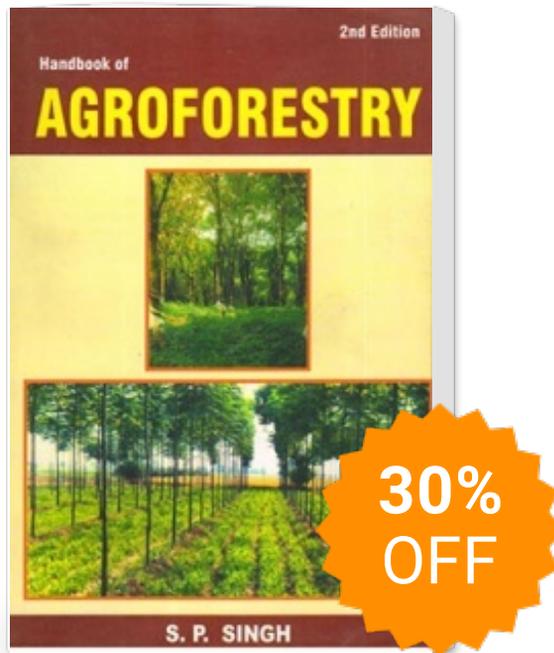
FORMS OF AGROFORESTRY PRACTICES

The following practices are being adopted by the farmers in India such as

Trees with crops

This form of practice is very common in India where crops are grown with trees. This is achieved by five ways

Handbook of Agroforestry



Publisher : Agrotech
Publications

ISBN : 9788183210362

Author : Singh SP

Type the URL : <http://www.kopykitab.com/product/7180>



Get this eBook