

Horti-Silviculture System of Farming

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ABSTRACT

Agroforestry practices show great potential as biodiversity interventions contributing to an ecological intensification of agriculture. The Horti/Silviculture system can be a powerful tool for multiple production of goods and services and provide better water and fertilizer efficiencies. This system must be integrated into the countries' development policies in search of economically resilient economies and food security.

INTRODUCTION

The Horti/Silviculture is an agroforestry system where the wood tree, fruit tree, and the annual crop is cultivated integrated, this system provides better water and fertilizer efficiencies compared to the same separately established crops. This system is defined as the growing of horticulture crops, trees and fruit trees or vegetables together in same land at the same time (Buvaneshwaran et al. 2021). Hortisilvicultural practices affect soil organic carbon (SOC) primarily through litterfall, root turnover and exudates, and by increasing overall net primary productivity of the system (Cardinael et al., 2018a). The horticultural trees provide cash returns to the growers. Some of the benefits targeted by farmers include improved soil fertility, shade for understory crops by trees, trees

acting as stakes for climbing plants, soil erosion control, improved microclimate and increased yield stability.

COMPONENTS OF HORTI-SILVI CULTURE

- I. Horticultural crops
- II. Silviculture practices and systems.

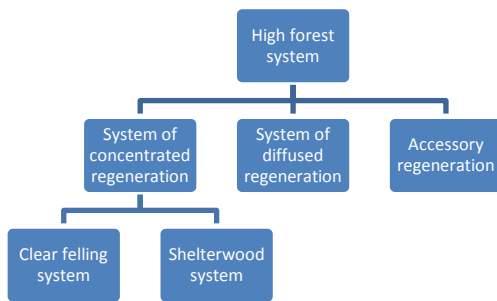
1) Examples of horticultural crops

- Mango, guava, pomegranate, pineapple, sapota, cashew nut, ber, custard apple, wood apple, banana, aonla, almond, apple, pear, peach, strawberry, gooseberry, papaya, etc.

2) Silviculture practices and systems

1) High Forest Systems

- Silvicultural Systems in which the regeneration takes place from seedling, which could be natural or artificial or a mixture of both are called High Forest Systems.
- In these systems, rotation period is generally long.
- They are further classified on the basis of pattern of felling affecting the concentration or diffusion of regeneration.



a) Clear-felling Systems

Those silvicultural systems in which the mature crop is harvested in a single operation are called clear-felling systems.

b) Shelterwood Systems

The Shelterwood Systems are those Silvicultural Systems in which the mature crop is removed in a series of operations, the first of which is the seeding felling and the last is the final felling. Other fellings, if any, are called secondary fellings. The interval between the seeding felling and the final felling on a particular area, such as a compartment, is called regeneration interval and determines the degree of uniformity in the new crop. Systems of diffused regeneration are those silvicultural systems in which the regeneration fellings are distributed

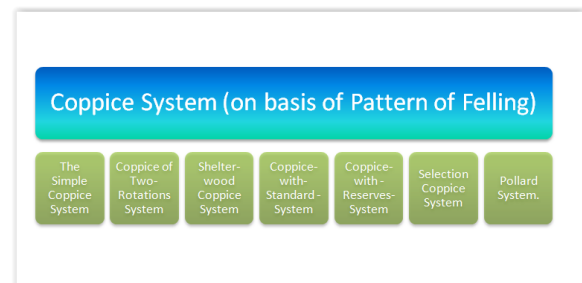
over the whole felling series (except in so far as felling cycles introduces a modification)

c) Accessory Systems

Accessory Systems are those silvicultural systems which result in irregular or two storeyed high forest.

2) Coppice Systems

- Coppice Systems are those Silvicultural Systems in which the new crop originates mainly in the form of coppice shoots of stools of trees of the old crop felled and where the rotation of coppice is short.
- This main group is further differentiated into following silvicultural systems on the basis of pattern of felling:



- Simple Coppice: Defines as Silviculture System based on stool coppice, in which the old crop is, clear filled completely with no reservation for sheltered wood or any other purpose.
- Coppice of Two Rotations Systems: Modification of Simple coppice system which at the end of the first rotation of coppice, a few selected poles are left scattered singly over the coupe in the second rotation to attain bigger size.
- The Sheltered Wood Coppice System: Another modification on Simple coppice

system in this system even in the first clear felling, some sheltered (125 to 150 trees/ha) trees are retained for frost protection.

- Coppice with Standards: Defined as Silviculture System. based on coppice in which an over wood of standards usually seedlings origin and composed of trees of various ages as kept over coppice for periods which may be multiples of coppice rotation and a permanent feature of the crop throughout two peculiarities which differentiate it from the simple coppice.
- Coppice with Reserves: Felling is done only in suitable areas likely to benefit, after reserving all financially immature growth of principal as well as other valuable miscellaneous species, either singly or in optimally spaced groups, tree yielding products of economic importance and entire crop for protective reasons.
- Coppice Selection System: Silviculture System in which felling is carried out on the principles of selection system but regeneration is obtained by coppice.
- The Pollard System: Pollard is defined as a tree whose stem has been cut off in order to obtain a flush of shoots, usually above the height to which the browsing animals can reach. Thus, the Pollard system consists in Pollarding trees periodically to obtain exploitable material (Dagar et al., 2016).

Table 1 Different cropping system for horti/silviculture practices.

Fruit crop	Vegetable crop	Tree
Mangifera	Vegetables	Azadirachta

indica, Carica papaya		indica
Mangifera indica, Artocarpus integrifolia		Timber trees
C. nucifera, Musa sp., P. guajava, Citrus sp., M. indica, C. papaya, P. granatum		Tectona grandis, Fodder tree
Morus alba	Aquatic plants	
P. guajava, C. nucifera, M. indica, Citrus spp., Litchi chinensis		Aquilaria malaccensis, Terminalia cebula, Sesbania grandiflora

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