

CHAPTER VII

HOMEGARDEN DEVELOPMENT AND SPECIES COMPONENT RECOMMENDATIONS

7.1 Species component recommendations

According to the results of the PRAs in the studied sites, tree and crop species in the structural design of the new homegarden establishment had to meet the following conditions.

1. They are common tree species in the homegardens of the sub ecological zone, or in other word, they are “indigenous species”, which are cultivated in local homegardens for a long time.
2. They have to meet the daily needs of local gardeners.
3. They are cash income species.

However, trees and crops species in the homegardens have to maintain diversity, and product disposal through all months in the year. The species structure has to include long-term tree species and annual crops species. They also can undertake inter-cropping together and establish multi-storeys in the homegardens. Medicinal herbs and vegetable plots should also be developed in the homegardens.

7.2.1 Hongha

Pineapple, jackfruit, pumpkin, gourd, cassava and banana were common food species in the homegardens of Hongha commune (Table 10). In these species,

pineapple and banana were the income dominant species (Table 20). Pumpkin, gourd and cassava were annual crop species and jackfruit was a perennial tree. In order to increase homegarden products and income, pepper, coffee, litchi and longan, and the less common trees could become the dominant species. Table 25 presents the designed list of the main species in the Hongha homegardens.

Table 25: Main species, which should be planted in the Hongha homegardens

English name	Scientific name	Layer 3	Layer 2	Layer 1
Banana	<i>Musa paradisiaca</i> L.	Y	Y	-
Cassava	<i>Manihot esculenta</i> Crantz	Y	Y	-
Litchi	<i>Lichi sinensis</i> Radlk.	-	Y	-
Coffee	<i>Coffea</i> sp.	-	Y	-
Jackfruit	<i>Artocarpus heterophylus</i> Lamk.	-	-	Y
Longan	<i>Euphoria longana</i> Lam. (Lour.) Steud. <i>Dimocarpus longan</i> Lour.	-	Y	Y
Pepper	<i>Pepper nigrum</i> L.	-	Y	-
Pineapple	<i>Ananas comosus</i> (L.) Merr.	Y	-	-
Vegetables and spices	-	-	-	-

Note:

Layer 1: The lowest layer

Layer 2: The middle layer

Layer 3: The highest layer

With regard to homegardens' products outlet, most of middlemen agreed that concentrating products were the keys to solve this problem. Intensive homegarden production could provide great amounts of the products to the middlemen; the market could be opened in the harvest season. As discussed, jackfruit, pineapple, banana and

cassava were cultivated in Hongha homegarden for a long time. These crops became “indigenous crops” and were maintained in the homegardens by careful cultivar breeding. Site conditions in Hongha could grow pepper, coffee, longan and litchi well. In particular, pepper could provide high yields with the host plants like jackfruit and *H. pubescens*. Coffee was grown in the homegardens and could give a yield of 4 kg/tree on average. The problem of coffee cultivation in Hongha homegardens was an inadequate quantity of product although 62% of the total homegardens was planted with coffee. *Coffea dewewrei* Willd. et Dur var. *excelsa* Chev. showed its adaptation to the site conditions in Hongha sub-zone. To develop coffee production in this sub-zone, expanding the coffee area was the solution in case of good coffee product marketing. According to the Hongha gardeners, the temperature thresholds were from 30.5 °C to 13.8°C, annual rainfall was 3,738 mm in Hongha areas which were good conditions for longan and litchi cultivation. Moreover, longan and litchi yields in Hongha were higher and more stable than the other sub-zone of the Thuathien - Hue province. Developing longan and litchi in the homegardens here was reasonable. However, as well as coffee, intensive production in the homegarden and community levels was needed in this sub-zone. Table 25 also presents the layered structure of the tree and crop species in the homegardens. Layer 1 was the highest layer, which will be mainly occupied by jackfruit and longan whilst the second layer consisted of litchi, young longan and jackfruit, coffee, cassava and banana. At present, pineapple was planted over 60 to 80% of the homegarden area to cover almost of the ground. Cassava and banana should be planted to inter-crop with pineapple in the homegardens. Most of the vegetables and spices in Table 16 could be planted in the Hongha homegarden. Almost all of them are 3 months cropping thus they could be

planted in the vegetable plots of the household. They would bring short-term income and meet the household daily needs. Forestry trees would be recommended for the hedgerow area and on the steep slopes. Cassava and pineapple also are recommended for the second and the third layers of the wood plots. The estimated outputs of the Hongha homegardens would be pineapple, pepper, banana, longan, coffee and litchi. The main income period of Hongha homegardens would be from April to the end of August. However, cassava, banana, vegetables and pineapple could support food and income to the households throughout the year.

7.2.2 Hongtien

Based on the common tree species and dominant income species in Hongtien (Table 10 and 20), annual crops such as arrowroot, sweet potato, and cassava were the main products of these homegardens. Table 26 recommends the main species to be grown in Hongtien homegardens. The first layer will form a canopy of longan, jackfruit, coconut and forest wood trees such as gum and mulga. Gum and mulga will be planted in the hedgerow and in a falling cycle of 7 years.

The Hongtien climate is in the Aluoi climate zone, which is also good for longan cultivation. The second layer canopies would be tea, banana, and cassava. Lemon and coffee, the less common trees also could be recommended to this layer. Pepper can be set in this layer when the hosts were jackfruit, *S. lychnophorum* or *H. pubescens*. The second layer products could provide income throughout the year. The ground layer should be planted as pineapple, taro and arrowroot. Most of the vegetables in Table 16 could be planted in the Hongtien homegardens to supply daily needs and short-term income.

Table 26. Main species which should be planted in Hongtien homegardens

English name	Scientific name	Layer 3	Layer 2	Layer 1
Arrowroot	<i>Maranta arundinacea</i>	Y	-	-
Banana	<i>Musa paradisiaca</i> L.	-	Y	-
Cassava	<i>Manihot esculenta</i> Crantz	-	Y	-
Coconut	<i>Cocos nucifera</i> L.	-	-	Y
Eucalyptus	<i>Eucalyptus camaldulensis</i> Dehrh.	-	-	Y
Jackfruit	<i>Artocarpus heterophyllus</i> Lamk	-	-	Y
Longan	<i>Euphoria longana</i> Lam. (Lour.) Steud. <i>Dimocarpus longan</i> Lour.	-	Y	Y
Mulga	<i>Acacia auriculiformis</i> A.Cunn. ex. Benth.	-	-	Y
Pepper	<i>Pepper nigrum</i> L.	-	Y	-
Pineapple	<i>Ananas comosus</i> (L.) Merr.	Y	-	-
Taro	<i>Alocasia odora</i> (Roxb.)C. Kock	Y	-	-
Tea	<i>Camellia sinensis</i> Kuntze	-	Y	-
Vegetables and spices	-	-	-	-

Note:

Layer 1: The lowest layer

Layer 2: The middle layer

Layer 3: The highest layer

7.2.3 Binhthanh

As with Hongtien and Hongha, pineapple should be the main species for the ground layer of Binhthanh homegardens. Fruit species such as custard apple, jackfruit, lemon, litchi, and especially, sapodilla would be encouraged to increase the number of trees in the homegardens. They would be the main income contribution to the households throughout the year. Pepper was the dominant species for the Binhthanh site conditions, however, forest trees such as bamboo, gum and acacia should also be

encouraged for planting in the steep slopes and in hedgerows for garden frame and fuelwood.

Table 27. Main species, which should be planted in Binhthanh homegardens

English name	Scientific name	Layer 3	Layer 2	Layer 1
Banana	<i>Musa paradisiaca</i> L.	-	Y	-
Custard-apple	<i>Annona squamosa</i> L.	-	Y	-
Eucalyptus	<i>Eucalyptus camaldulensis</i> Dehnh.	-	-	Y
Jackfruit	<i>Artocarpus heterophyllus</i> Lamk	-	-	Y
Lemon	<i>Citrus aurantiifolia</i> (Chritm.) Sw.	-	Y	-
Litchi	<i>Lichi sinensis</i> Radlk.	-	Y	-
Pepper	<i>Piper ingrum</i> (L.)	-	Y	-
Pineapple	<i>Ananas comosus</i> (L.) Merr.	Y	-	-
Sapodilla	<i>Manilk arazapota</i> (L.) Van Royen	-	Y	-
Tea	<i>Camellia sinensis</i> Kuntze	-	Y	-
Vegetables and spices	-	-	-	-

Note:

Layer 1: The lowest layer

Layer 2: The middle layer

Layer 3: The highest layer

7.2.4. Huongho

The Huongho homegarden's establishment and development were based on market demands of the locally common tree species. Grapefruit and pomelo were the main products of these homegardens, moreover, papaya and sapodilla also provided income to the household. Grapefruit and betel nut would be two suitable species for the first layer whilst the second layer would be pomelo, papaya, sapodilla and banana. Jackfruit should be planted in homegardens as a pepper host. The ground should be

covered by pineapple. The income of Huongho homegardens was based on pepper and fruit trees throughout the year.

Table 28: Main species, which should be planted in Huongho homegardens

English name	Scientific name	Layer 3	Layer 2	Layer 1
Banana	<i>Musa paradisiaca</i> L.	-	Y	-
Betel nut	<i>Areca catechu</i> L.	-	-	Y
Grape fruit	<i>Citrus maxima</i> (Burm.) Merr.	-	Y	Y
Papaya	<i>Carica papaya</i> L.	-	Y	-
Pepper	<i>Piper nigrum</i> L.	-	Y	-
Pineapple	<i>Ananas comosus</i> (L.) Merr.	Y	-	-
Pomelo	<i>Citrus grandis</i> (L.) Osbeck	-	Y	-
Sapodilla	<i>Manilk arazapota</i> (L.) Van Royen	-	Y	-

Note:

Layer 1: The lowest layer

Layer 2: The middle layer

Layer 3: The highest layer

In summary, many of these homegarden species structure designs would recommend the main species in the homegardens of different sub ecological zones of the upland areas. Other indigenous trees should be encouraged in the homegardens for sustainability and stability of productivity and income. To meet market demands, tree and crop species breeding as well as new cultivar introduction in the homegarden ought to be done. However, intensive homegardens production would be needed for the homegardens' development for income in the upland areas. There are two types of intensive homegarden products, those which are intensive homegarden products in the household level and at the community level. The development of diversity of

homegarden product conjunction with intensive homegarden production at community level would be the better way for a sustainability of upland areas.

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