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Original Article

Connectivity of Local Wisdom in Homegarden Management in Rural Kupang City

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Abstract *Homegarden management is considered the oldest land use activity. It is a transformation from shifting cultivation to a more intensive land management system due to the pressure of population growth and reduced fertile land. This study answers the research question about what local wisdom underlies yard management in rural Kupang City. The location was chosen deliberately, while the respondents were randomly selected, involving 120 households. Data analysis descriptively and quantitatively. The results of the analysis show that local wisdom in the yard is related to management from social, ecological, economic, and aesthetic aspects while remaining oriented towards environmentally friendly management. The role of the yard from an ecological aspect is to provide a diversity of plant types, namely five types of food, 16 horticultural plants and six types of biopharmaceutical plants, 20 fruit trees, more than 15 types of forestry plants, 16 types of ornamental fish business plants and five types of domesticated livestock. Various types of plants act as soil cover, reduce erosion, and increase groundwater storage, in addition to their contribution to the family economy and socially absorb labor throughout the year*.

Keywords: *Connectivity, Local Wisdom and Homegarden Management.*

I. INTRODUCTION

Homogardems are one component of dry land agriculture that is starting to be considered for use by rural and urban households in the city of Kupang. As the population increases and there is less productive land to manage, homegardens are an alternative for development. Utilization of the homegardens based on the commodities needed to reduce household expenses. Apart from that, homegarden management is also often based on local social or cultural needs, for example, certain types of plants that are always used in traditional events or ceremonies, such as betel and areca nut. Homegarden management linked to local wisdom, especially medicinal plants, has been carried out by [1]. Contribution to food diversity was carried out by [2], and plant diversity and its use was studied by [3].

According to [4], a homegarden is a combination of various branches of farming, livestock, fish, seasonal crops (food, horticulture, and biopharmaceuticals), and annual crops (plantations and forestry) on the land around the house. The various types of plants planted in the homegardens are described as a multistratum planting system. The definition stated above tends to describe homegardens in rural areas, but by [5], the definition was expanded to include urban homegarden systems. In the context of urban homegardens, they are commercially oriented [6], provide aesthetic services [7], and provide open spaces to absorb smoke and dust from urban vehicles [8].

Historically, the homegarden is said to be the oldest land management system, a transformation of the shifting cultivation system, which experienced development from generation to generation in accordance with changing times [4]. Homegardens that have developed in Indonesia have experienced a cultural and biological transformation (types of plants and livestock) and represent local wisdom resulting from farmers' interactions with the environment without access to capital, knowledge, and exogenous input. In [9] explaining its initial development in Southeast Asia, it is stated that its development was associated with fishing communities who lived in tropical humid areas. Meanwhile, the development of gardens by Indian ancestors was mentioned as a source of green vegetables, figs (Ficus, spp), mustard (Brassica spp), and other types of plants.

The homegarden farming system is categorized as environmentally friendly farming and a form of traditional agroforestry system [9], [7] and has good development prospects. In urban areas, yards with relatively small areas provide ecosystem services and aesthetic value [10]. Studies by [4].[12] stated that the importance of the yard is related to its ability to provide a sustainable ecological and socioeconomic system, apart from being a type of occupation (livelihood) for rural communities, which provides food security, nutrition, energy needs, and a source of family income.

Homegarden land in NTT refers to [13] as covering an area of 112,719 ha or around 2.48%, while in Kupang City, the homegarden area is 2,522ha or 16.11% of dry land for agriculture. The yard at each location is unique. Therefore, this research aims to examine the connectivity of local wisdom in homegarden management and its role from social, economic, and

ecological aspects in rural Kupang City. It is hoped that this study will serve as a reference in further studies and in regulating regulations related to yards and provide various inputs in improving their management.

II. LITERATURE REVIEW

A study of local wisdom in the management of homegarden farming conducted by [1] concluded that the medicinal plants developed were a wisdom that had been passed down from generation to generation. It also provides traditional medicine production for families and, at the same time, carries out conservation of biopharmaceutical plants [14]. In [15] 's article about Javanese ethnic gardens as the oldest agroecosystem and has a high diversity of plants and animals. Furthermore, good and intensive homegarden care can produce a unique combination where the level of productivity is stable and continues. Land use has evolved over generations from a shifting cultivation system to a settled farming system around the residence [9]. In the development process, the homegardens that are managed are influenced by the habits and culture carried out from generation to generation by the local community.

In the ecological context of [16], [15] said that the yard contains biodiversity which functions ecologically. As an agroecosystem, in the writings of [2], it was found that in a small area of land, 60% of annual plant types are cultivated using verticulture technology. Furthermore, it was also stated that around 83% of plant yards use containers such as polybags, pots, and other plastic containers. All plants in the yard depict a multistratum shape, which is important for optimizing the use of sunlight. [8] Also explained is that the function of the yard as a habitat for various types of plants and wild animals, contributing to the production of organic fertilizer reducing surface runoff, is the result of integrating plants, livestock, and fish, which optimizes land use. Apart from that, it was also mentioned that the use of yards as a potential prospect for urban green open space for the conservation of natural resources and the environment refers to [17], article 28 concerning the arrangement of urban green open spaces to eliminate the problems of air pollution, noise, temperature, and humidity. [1] study in vegetation analysis found around 30 to 50 types of garden plants. Based on the importance value index, the plants that give the highest to lowest values in order are mango, banana, taro, cassava, rubber, and coconut.

Spatially, the layout of plants in the homegarden was studied by [4],[18] where ornamental (aesthetic) plants are placed in the front yard, and food plants are placed in the back and side yards. Biopharmaceutical plants and spice plants are integrated with livestock, poultry, and livestock at the back of the yard. This is also related to local wisdom, which tends to place aesthetic value on what is beautiful to look at. Food crops planted next to/behind the house indicate that food is a family affair (domestic), and placing livestock behind the house is because livestock is often associated with a "dirty" condition, so it is placed in a part that is not visible.

The role of the homegarden from a socioeconomic aspect, for example, the study by [3],[8] where it is said that the type of plant cultivated is associated with a fairly high selling value and demand by the market so that it can increase family income. The socioeconomic aspect is seen in the demand for biopharmaceutical plants for traditional medicine. In [16],[8], and [2]' studies stated that the use of a homegarden is important in providing food, ensuring food diversity while maintaining family food security, and accommodating family labor throughout the year. In [8] studied, the introduction of homegarden-scale technology in post-harvest handling was studied to increase the added value of homegarden products.

The achievement of backyard farming is estimated using ecological, social, and economic approaches [19]. The ecological dimension is approached by how local wisdom aspects have a positive impact on environmental services, for example, the presence of quite high biodiversity, seen from the number and types of plants and livestock kept, improving soil fertility through conservation applications so as to reduce erosion. Estimated achievement from the social dimension is providing work that can accommodate workers in their free time optimally, providing various sources of food and medicine, ensuring the availability of nutrition, maintaining food availability, and stable food security. Meanwhile, the estimation of the economic dimension is seen from how products from the yard can increase family income and increase the added value of the product.

III. RESEARCH METHODS

The research was carried out from March to August 2023. The location was determined purposely, taking into consideration villages that cultivate gardens intensively, ease of transportation, and locations that are easy to reach during the dry season or rainy season. Households as the research base were randomly selected from 40 respondents from each village (Quota Random Sampling, [20] so that there were 120 households involved in the study. Primary data was obtained through interviews guided by a questionnaire. Meanwhile, secondary data comes from various institutions and online reference/library analysis.

Data analysis to answer each objective uses categorical (domain) analysis referring to [21] by paying attention to important variables and associating them with other variables related to local wisdom values. The further analysis uses descriptive statistics through inventory, counting, frequency, variable average values , and standard deviation.

IV. RESULTS AND DISCUSSION

Homegarden management is influenced by habits and culture that have been passed down from generation to generation. The interaction of living things, namely between humans, livestock, and plants, is greatly influenced by local wisdom values institutions that are formed because of the same habits or hobbies. The institutions that are formed are often considered as institutions of knowledge, practices, and beliefs that are modified from mutualistic symbiotic relationships between living things [9]. Furthermore, it was also stated that the process of establishing a homegarden is a process of transmitting habits, customs, and culture that contains local wisdom values over many years and has experienced trial and error.

Passing down local wisdom from one generation to the younger generation is obtained from the nuclear or extended family. Furthermore, this local wisdom is combined with external knowledge to produce a new yard management system that provides various life support services for today's rural and urban communities. The regulation of plant types that provide ecosystem services as shelter is then transformed with plant types that, apart from offering environmental services, also produce products of economic value. Thus, the dynamics of homegarden management continue to develop by regulating plant types that not only provide environmental and economic services but also add plant types/developing into plants that can provide aesthetic services, biopharmaceuticals, and plants whose products can be used in various traditional ceremonies.

A. Respondent Characteristics

The characteristics of the respondents listed in Table 1 indicate that the average yard area they own is 126.33 ± 196.18 m², with the largest yard variation being 1,500m² and the narrowest being 8m². The average age of respondents was 52.85 ± 10.94, with the oldest age variation being 87 years and the youngest 26 years. Respondents' education varies quite widely, according to the main type of work they do. It was recorded that the education of respondents who used the yard had a fairly high undergraduate education, namely more than 30%. Overall, around 80% of respondents had education above high school.

Table 1: Internal Household Factors in Research Locations

Description	Value (Percentage)
Size of homegardens, m²	126.33
Number of Family Members, people	4-5
Age of Head of Family, years	52.85
Formal Education of the Head of the Family	
Illiterate people (%)	4 (3.33)
Elementary School, people (%)	17 (14.17)
Secondary school, people (%)	19 (15.83)
Senior High School, people (%)	46 (38.33)
University, people (%)	34 (28.33)

From the aspect of family demographics, the average number of family members is 4 - 5. The type of work undertaken by respondents who work in the yard varies; some, around 28.33%, earn their living as ASNs. Furthermore, 23.33% of respondents earn their livelihood in the broad sense of agriculture. Around 16.67% of respondents were private employees, builders, carpenters, and tailors, making up 9.17% of the total respondents, and the lowest was 2.50%, who worked in NGOs and were social and environmental observers.

B. Connectivity of Local Wisdom in Homegarden Management

For the people of Kupang City, the homegarden is an integral part of the house, so the activities carried out in the homegarden are related to the household's domestic activities. Homegarden management is carried out by mothers, fathers, and the children who help. Homegarden cleaning is usually done by mothers or daughters who are also often assisted by sons. Meanwhile, work that requires a lot of effort, such as masonry, hoeing the soil, and making beds for plants, is usually done by men and assisted by boys. While designing, the layout of the plants is usually an agreement between men and women.

A relatively narrow homegarden is usually planted with one or two types of fruit plants, a few vegetable plants in small beds, or polybags and ornamental plants. While the homegarden is large, >1,000m², usually this homegarden is integrated with the garden. This land is generally cultivated throughout the rainy season by planting paddy fields, corn, and other secondary crops. Meanwhile, in the dry season, if there is sufficient water availability, partial/whole cultivation is carried out.

The homegarden is associated with traditional agriculture and local wisdom; the plants planted in it are plants that are oriented towards meeting the family's food needs while maintaining harmony with nature. The orientation towards local wisdom is characterized by allowing the land to recover itself naturally by providing stimulation through the provision of organic materials before the land is reused to plant various types of plants. Sustainable productivity based on the principles of local wisdom is always oriented towards an agricultural system in harmony with nature. These farming methods not only

prioritize abundant results but also include elements of harmony with nature. In the process of maintaining harmony, the element of conservation of land and the environment is very much considered, even though it is done simply; this is considered a form of respect for something that has the power to maintain natural harmony [24]. It was further stated that the community would obtain economic benefits if environmentally friendly technology rooted in local wisdom continued to be developed together with appropriate technology as an effective response to increasing productivity based on market demand.

The connectivity of local wisdom in homegarden management can be seen from the use of various types of biopharmaceutical plants in the use of herbal medicines grown in the yard. Many types of biopharmaceutical plants can be used as a source of herbal medicine in everyday life to reduce pain from various diseases by consuming them. Various types of herbal plants are in the homegarden. Apart from that, local wisdom in protecting water sources by not using well water carelessly, where well water must be closed and cleaned at least once a year, is one of the local pearls of wisdom that is still maintained in the rural areas of Kupang City.

Local wisdom in managing the homegarden is also marked by the choice of types of plants planted and animals kept, which means betel and areca plants are mandatory crops for some people in the rural areas of Kupang City. Because betel and areca nuts are cultural symbols used in various traditional events. Likewise, livestock, such as chickens, pigs, and cows, are considered savings for the family. So, this type of livestock also determines the solution to meeting the needs of relatively small, medium, or larger families.

The connectivity of local wisdom in homegarden management is considered not only from the plant aspect but also from the function of the homegarden as a meeting place in the context of traditional, religious, and family associations. From the results of the analysis, information was obtained that in the context of traditional and religious meetings, 100% of respondents said that the yard was very important in accommodating this function, both in traditional affairs that had nuances of joy and sorrow and those related to religion. Likewise, the majority of respondents said that the yard is important in accommodating family gatherings in the form of social gatherings, family gatherings.

C. The Role of the Homegardens from an Ecological Aspect

There are five types of food plants planted or cultivated by rural households in Kupang City, 16 types of horticultural plants, and six types of biopharmaceutical plants. The use of food crops is generally for household consumption. The distribution of the results obtained is that 81.90% of the results are for household needs, 7.29% for social needs, and 11.81% of the results are for sale. There is 60.07% utilization of horticultural plants for household consumption, 15.89% for social use, and 24.04% for sale. If we trace the number of households cultivating food crops in their yards, it was recorded that 32.67% of households planted cassava, and 6.67% of households planted sweet potatoes. Furthermore, there are 5 households, or 4.17%, who grow legumes, such as green beans and rice beans, and one household, or 0.83%, who plant rice.

Households that grow horticultural plants are quite varied, and chili plants are the plant most cultivated by rural households in the city of Kupang, reaching 54 or 45% of all respondent households. Details of households cultivating food, horticultural, and biopharmaceutical crops are presented in Table 2. The number of households cultivating biopharmaceutical crops is the largest compared to households cultivating food crops or horticultural crops. It is thought that many households plant biopharmaceutical plants because these plants do not require maintenance. Apart from that, its uses are quite diverse, from kitchen spices to herbal medicine that can refresh the body. It was recorded that the number of households planting biopharmaceutical plants was more than 30, except for ginger and galangal, 10.83%, and 14.17% of all rural households in Kupang City, respectively.

The types of plantation crops planted by rural households in Kupang City are quite varied. There are more than 20 types of fruit trees, Table 3. Interview results found that most of the fruit was consumed by themselves, shared with neighbors or family who came, and only a small amount was sold. Numerical data shows that 70.12% is consumed, 17.55% and 12.33% is sold. This can be understood considering that the percentage of respondents as farmers in this study was only 28 (23.33%) farming households, and around 66 (55%) households are civil servants, private employees, traders, and NGO workers. Mango, papaya, and banana plants are the three most common types of fruit plants planted in the yards of rural households in Kupang City and recorded sequentially as many as 67 (55.83%), 63 (52.50), and 51 (42.50%), respectively, the number and percentage of rural households in Kupang City who grow mangoes, papayas, and bananas in their homegardens. There are three types of non-timber forestry plant products, namely tamarind, cherry, and moringa plants.

Table 2. Ecological Aspects of Households Based Type of Crops in Rural Areas of Kupang City

Types of d Crops	Total and Percentage (%) of Hoseholds	Average Production Kg/Household
Food Crops		
Paddy (Oryza sativa)	1 (0,83)	1.400,00

Corn (Zea mays)	5 (4,17)	302,00
Cassava (Manihot esculenta)	38 (31,67)	15,34
Sweet potato (Ipomoea batatas L)	8 (6,67)	16,50
Mung beans (Vigna radiata)	5 (4,17	19,20
Horticultural Crops		
Chinese cabbage (Brassica rapa L. ssp. pekinensis)	14 (11,67)	14.64
Japanese mustard greens (Brassica rapa nipposinica)	12 (10,00)	19.32
Mustard greens (Brassica junea)	7 (5,83)	16,85
Mustard Flower (Brassica rapa)	8 (6,67(	30.12
Water Spinach (Ipomoea spp)	18 (15,00)	7.56
Spinach (Amaranthus spp)	6 (5,00)	11.50
Long beans (Vigna unguiculata ssp. Sesquipedalis)	1 (0,83)	6.00
Egg Plant (Solanum Melongena L)	10 (8,33)	28.90
Cabbage (Brassica oleraceavar)	1 (0,83)	10.00
Bitter melon (Momordica charantia L)	3 (2,50)	17.67
Cucumber (Cucumus Sativus)	3 (2,50)	6.67
Shallot (Allium cepa L.)	4 (3,33)	10.25
Celery (Apium graveolens)	21 (17,50)	5.14
Onion Leaf (Allium fistulosum)	9 (7,50)	10.67
Chilli (Capsicum annum L.)	54 (45,00)	5.15
Tomato (Solanum lycopersicum)	13 (10,83)	6.92
Biopharmaceutical Crops		
Tumeric (Curcuma longa Linn.)	32 (26,67)	4.91
Kemangi (Ocimum basilicum)	35 (29,17)	4.49
Galangal (Alpinia galanga L)	13 (10,83)	4.83
Ginger (Zingiber Officinale)	17 (14,17)	6.29
Lemongrass (Cymbopogon citratus	55 (45,83)	5.25

There are more forest plants recorded around the rural homegardens of Kupang City that provide shade services such as sepe flower (Delonix Regia), Leucena (Leucaena leucocephala), Gliricidei (Gliricidiasepium), Alstonia scholaris, mahogany (Swietenia macrophylla), Kopok (Ceiba pentandra L.), Senna siamea, Schleichera oleosa, bidara (Ziziphus mauritiana), teak wood (Tectona grandis), and various types of shrubs.

There are more than 15 types of ornamental plants cultivated in the rural homegarden of Kupang City. Existing ornamental plants are generally displayed to enjoy their beauty, stated 76.10%, and 23.19% stated that cultivating ornamental plants, apart from enjoying their beauty, can also be sold to increase household income. A detailed explanation of ornamental plants is presented in Table 4. It was recorded that around 79.17% of all respondent households. This shows that ornamental plants have great potential, not only from an aesthetic perspective but also if managed well; they can add to the household economy, with a household economy that can access food and maintain the food security of rural households in Kupang City.

Table 3: Ecological Aspects According to Plantation and Forestry Crops in Rural Areas of Kupang City

Types of Forestry and Plantation Crops	Total dan Percentage (%) of Hoseholds	Average Production unit/Household
Plantation Crops		
Pine apple (Ananas comosus L. Merr.), fruit	10 (8,33)	5,00
Watery rose apple (Syszygium samarangense aqueum), kg	18 (15,00)	20,00
Papaya (Carica papaya L.), fruit	63 (52,50)	15,00
Pomegranate (Punica grnatum), fruit	6 (5,00)	12,00
Jackfruit (Artocarpus heterophyllus Lamk.), fruit	19 (15,83)	48,00
Mango (Mangifera indica), fruit	67 (55,83)	120,00
Coconut (Cocos nucifera), fruit	37 (30,83)	40,00
Banana (Musa paradisiaca), tandan	51 (42,50)	12,00
Grape (Vitis vinivera L), kg	10 (8,33)	1,10
Sapodila (Manilkara zapota), fruit	23 (19,17)	112,00
Sugar-apple (annona) (Annona squamosa), fruit	14 (11,67)	17,00
Sireh.Betel (Piper betle linn), fruit	27 (22,40)	250,00
Betel palm (Areca Catecu), fruit	4 (3,33)	100,00
Sour Orange (Citrus ap), fruit	1 (0,83)	20,00

Key lime (Citrus xaurantiifolia), fruit	37 (30,83)	115,00
Apple guava (Klutuk) (Psidium guajava L), fruit	32 (26,67)	110,00
Sour sop (Annona muricata L), fruit	25 (20,83)	23,00
Avocado (Persea americana), fruit	29 (24,27)	20,00
Longan (Dimocarpus longan), kg	12 (10,00)	3,12
Breadfruit (Artocarpus incisa Linn), fruit	12)10,00)	30,00
Forestry Plants (Non-Timber Forest Products)		
Tamarind (Tamaricus indica), kg	16 (13,33)	3,15
Muntinga calabura L	12 (10,00)	***nc***
Moringa Oleifera	22 (18,33)	***nc***

Note: tc= not counted

Based on Table 4, it can be seen that there are dozens of types of ornamental plants found in yard farming in rural Kupang City. Ornamental plants play a significant role in supporting the household economy. The selling price of each type varies from Rp. 25,000 – Rp. 95,000 per pot. The results of [26] research on the role of ornamental plants in the household economy found that the contribution of ornamental plants in the yard to household income reached 48.3%. The role of the homegarden in the ecological aspect is in line with what [27] stated in his study. In this study, it was concluded that one of the efforts to carry out forestry development can be done through repairing and developing yards. Improvement and development efforts should be based on the composition and structure of plant vegetation in the homegarden and environmental factors that influence the composition and structure of the yard vegetation.

The results of the study show that the vegetation composition in stratum 1 (<1m) is dominated by ginger (Zingiber Officinale), turmeric (Curcuma domestics), garlic (Allium fistu/osum), hanjong ti or hanjuang (Cordy/ine fruticosa) ornamental plants comes from the Asparagaceae family, and Durante repens, which is a type of ornamental shrub that is widely used as a hedge plant. The arrangement of plants in stratum II (1-2 m) is characterized by the Cordy/ine fruticosa plant, a type of carriage plant, namely a shrub that is often used as an ornamental plant in the homegarden. Type of Katuk (Sauropus androgynus); Cassava (Manihot utilissims). The plant arrangement in Stratum Ill (2-5 m) is characterized by cassava, banana (Muse paradisiaca) and taro (Colocasia esculenta). The plant arrangement in Startum IV (5-10m) is characterized by coffee plants (Coffea robusta), papaya (Carica papaya), banana (Musa paradisiaca), avocado (Persea americana), clove (Syzygium aromaticum), duku (Lansium domesticum) and guava klutuk (Psidium guajeva). The plant arrangement in Startum V (Stratum V (>10m) is characterized by coconut (Cocos nucifera), mango (Mangifera odorata); keluak (Pangium edule), jackfruit (Artocerpus heterophylus) and sugar palm (Arenge pinnate).

A study by [28] regarding homegarden farming found 33 types of woody plants and 25 types of annual plants. In the early stages of development of the yard, 12 types of woody plants and 15 types of annual plants were found. Then, in the middle stage of yard development, 16 types of woody plants and 14 types of annual plants were found. Furthermore, in the advanced homegarden development stage, 23 types of woody plants and 8 types of annual plants were found. Thus, as the development stages of a homegarden progress, the number of woody plants increases, and the number of annual plant species decreases. This condition shows the gradual development model of the yard to the forest development model.

Table 4: Ecological Aspects by Type of Ornamental Crop Business in Yards, Rural Areas of Kupang City

No	Ornamental Crop	Total dan Percentage (%) of Hoseholds	Average Production unit/ Household	IDR/unit
1	Red Aglonema (Aglaonema sp)	72 (60,00)	15,20	50.000.00
2	Aglonema Striated (Aglaonema sp)	40 (33,33)	10,22	50.000.00
3	White Aglonema (Aglaonema sp)	39 (32,50)	8,29	50.000.00
4	Green Aglonema (Aglaonema sp)	25 (20,83)	11,05	50.000.00
5	Rosa in various kinds and colors (Rosa sp)	60 (50,00)	6,27	25.000,00
6	Bonsai (in various kinds)	43 (35,83)	10,37	105.000,00
7	Anthurium plowmanii)	55 (45,83)	3,28	135.000,00
8	Bougenvile (in various color) (Bougainvillea sp)	69 (57,50)	11,05	45.000,00
9	Monstera adansonii	40 (33,33)	2,57	95.500,00
10	Euphorbia (in various kinds) (Euphorbia milii)	55 (45,83)	8,29	25.000,00
11	Adenium arabicum, sp	63 (52,50)	7,07	50.000,00
12	Vary of Portulaca oleracea	39 (32,50)	2,85	52.500,00
13	Syzygium oleana	25 (20,83)	2,17	55.000,00

14	Vary of aladium sp	77 (64,17)	7,87	25.000,00
15	Vary of Sansevieria)	51 (42,50)	4,24	17.500,00
16	Vary of Arenga, sp	31 (25,83)	8,26	55.500,00
17	Sri rejeki (Aglonema sp)	32 (26,67)	5,66	75.000,00
18	Vary of small Palms (fan, princess, bamboo)	50 (41,67)	4,38	84.600,00
19	Vary of Codiaeum variegatum	95 (79,17)	35,60	36.500,00

Fishing business in the homegarden is carried out by 4 respondents, or 4.33% of all households. The average area used is 7.48m², with the number of fish kept being 50 per household. If the fish is valued at the market price of Rp. 37,750/kg (five heads). Thus, it can be said that the average fish maintenance is around 10 kg per household. Details of fish businesses and types of livestock are presented in Table 5.

The fish that are raised are not sold but are consumed by themselves, either in the context of enjoying the beauty of the fish in the pond or the fish that are used as a side dish to eat. Meanwhile, other types of livestock kept by rural households are poultry (chickens and ducks), cows, goats, pigs, and dogs. Because these livestock are kept in the city, the number they own is not large.

Table 5: Ecological Aspects of Homegardens Based on Fisheries and Livestock In Homegardens, Rural Areas of Kupang City

Fisheries and Livestock Business	Total and (Percentage) of Hoseholds	Average Production unit/Household
Fish (tail)	4 (3,33)	50
livestock ownership		
Cow	2 (1,67)	2
Pig	27 (22,50)	2-3
Goat	2 (1,67)	4
Poultry	45 (37,50)	10
Dog	40 (33.33)	2

Poultry is the livestock most often kept in rural household yards. It was recorded that 45 households, or 37.50% of all respondents, kept poultry; in addition, 40 households, or 33.33% of all respondent households, kept dogs, and 27 households, or 22.50% of all respondents households kept pigs. Goats and cows are only kept by two households each. Dogs, in particular, have two functions, namely as houseguards, and some households sell puppies or sell dogs to be used as special food.

V. CONCLUSION AND SUGGESTION

Homegarden management is linked to local wisdom, as seen from the plants planted, which are oriented towards meeting the family's food needs while maintaining harmony with nature. Local wisdom in the form of planting various types of plants in one hole, known in the local language as *tsen bua*, to overcome crop failure, connectivity of local wisdom in homegarden management from the use of various types of biopharmaceutical plants as traditional herbal medicines, as well as betel and areca palm plants which are cultural symbols used in various traditional events. Also, it can be seen from the yard's function as a meeting place in the context of traditional, religious, and family associations.

The role of the homegarden from an ecological aspect by providing a diversity of crop types, namely five types of food crops, 16 horticultural crops, six types of biopharmaceutical crops, 20 fruit trees, and more than 15 types of forestry plants, and 16 types of ornamental crops whose function is as a soil cover, reducing erosion, increasing groundwater storage. In addition to contributing to the family economy and absorbing labor throughout the year. Those crops are integrated with five kinds of domesticated livestock.

The results of this study can become reference material on the topic of homegardens and form the basis for further, more detailed research. The important role of the homegarden is seen from the pillars of sustainable agriculture: ecology, social, and economic, so it is necessary to have policies that are oriented towards increasing local homegarden productivity. In socioeconomic terms, the role of homegardens is quite large; the management of potential homegarden businesses can be improved while remaining oriented towards a sustainable agricultural system.

Interest Conflicts

"I declare that there is no conflict of interest concerning the publishing of this paper."

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