PROSPECTS FOR MEDICINAL PLANTS CULTIVATION WITH THE WANAFARMA SYSTEM IN MADIUN REGENCY

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Abstract :

Medicinal plants are types of plants used to cure diseases suffered by humans directly or indirectly.. The Indonesian people have a close relationship with the forest in their daily lives and possess a high level of traditional knowledge in the use of medicinal plants. The study's purpose supports efforts to develop medicinal types as valuable plant species for herbal medicines, based on the results of field observations and related literature studies. Data and information were collected through direct observations at the location where the medicinal ingredients grow naturally and by reviewing relevant literature studies. Analysis of the potential of medicinal types shows a relatively high potential for medicinal plants with rhizome weights reaching 1 kg The highest habitus type is trees at 45.7%. The lowest habitus type is bushes with 9.5%. Habitat types other than trees are rarely found in the forest because the dense tree canopy blocks sunlight from entering the forest floor. In addition, almost all parts of the tree are utilized

Keywords : Community, forest, medicine, traditional, plants

INTRODUCTION (Written in bold capital, Book Antiqua 12)

Nature greatly assists humans in providing food and medicine. Community forests are a significant source of medicinal plants. Indonesian community forests, covering an area of approximately 120.35 million hectares, contain 75% of the total types of medicinal plants and boast a relatively high and rich biodiversity worldwide (Cabuy et al., 2012). Medicine is one of the benefits of forest products that humans can enjoy, which can be derived from plants. Medicinal plants themselves are types of plants used to cure diseases suffered by humans, directly or indirectly. No fewer than 500 ethnic groups in Indonesia have a close relationship with forests in their daily lives, and they possess a high level of traditional knowledge in the use of medicinal plants (Indah et al., 2021)

Likewise, the Kare community in Madiun Regency utilizes medicinal plants originating from the forest, one of which is a type of medicinal plant used as an oxidant. Currently, the sustainability of medicinal plants in nature is increasing. This is due to the relatively high demand for medicines for various purposes, both subsistence and commercial, as well as destructive harvesting methods, such as cutting down tree trunks, and limited development efforts. Based on this, in order to preserve and meet market demand, medicinal cultivation techniques are necessary. Considerations for developing medicinal plants include the high utilization of these medicinal plants by the community, the existence of markets, and the development of forest agroforestry as a source of medicinal plant germplasm (Anang et al., 2023). The development of medicinal

plants can be carried out in areas or outside forest areas. One of the medicinal plant development technologies is in collaboration with Wanafarma. Wanafarma is a form of planting pattern that combines forest plants (wana) and medicinal plants (farma), where in its implementation it must pay attention to technical aspects including (1) compatibility between main plants and intercrops, (2) no competition for light, water, nutrients and CO_2, and (3) plants do not have the same pests and diseases (Kusumaningtyas, et al, 2015).

Wanafarma planting pattern is to determine the level of shade under forest plants (Muslikh et al., 2023). Some medicinal plants can grow under up to 30% shade, but their productivity drops drastically if the shade level exceeds 57%. Therefore, land that can be developed using agro-farm planting patterns is community forest land with a shade level of less than 45% or forest plants that are less than 20 years old. The chosen planting pattern is tailored to the agro-ecological conditions and the farmer's interests. The implementation of agro-farm planting patterns can increase farmer income (Anang et al., 2024). This income level is primarily determined by the type of crop cultivated. In Madiun Regency, East Java, planting Javanese ginger as a monoculture under sengon trees can increase farmer income by IDR 7-11 million/ha. If ginger is planted, farmer income reaches IDR 9-15 million/ha. Therefore, the development of medicinal types should be carried out in forest areas. This is because the land is still extensive, and also because medicinal products are used as the main ingredient in herbal medicine. Additionally, this type of medicine has considerable economic value due to its high demand. This research aims to support efforts to develop novel types of drugs based on plants that are useful as herbal medicines, informed by the results of field observations and related literature studies.

RESEARCH METHOD

Medicinal plants developed using agro-pharmacy models in forest areas are one of the objects of this research. The observation period took place between January and March 2024. Data and information were collected through direct observations at locations where the medicinal ingredients naturally grow, as well as through a review of related literature. Observations were carried out by creating observation plots using purposive sampling, specifically where this species is found directly. Observations included measuring plant dimensions (height and stem diameter), their dominance, and environmental conditions. Observations were carried out on three 20 m x 20 m plots with a minimum distance of 50 m between plots. The observation location was situated in a forest area used for other purposes in the Kare District, Madiun Regency.

FINDINGS AND DISCUSSION

In supporting agroforestry development, agroforestry activities must demonstrate performance at least equal to that of other alternatives, particularly monoculture planting (Ankrah et al., 2003). This performance is designed to align with social and economic objectives, both in the short term and long term. To

ensure business success, the selected commodity must not only have comparative advantages in the form of unique products specific to the location, but also have competitive advantages (competitiveness) both domestically/locally and internationally. These competitive advantages include product quality, product price, and service. Based on this, to support the development of types of drugs using the wanafarma pattern, it is necessary to assess the types of drugs from various aspects, including

1. Cultural Aspects

The selection of species for use in agroforestry must be based on cultural, economic, and environmental factors. Medicinal plants have been used for generations, especially by the people of the Kare Regency (Jayaprakasam et al., 2012). Field observations suggest that the use of these plants is quite diverse, mainly due to limited public health services and the community's ingenuity in utilizing natural conditions. These plants are used to treat various ailments, including malaria, stomachache, nausea, toothache, high blood pressure, and fever. The parts of the plant used include the leaves, bark, seeds, stems, and roots, with the seeds being the most widely used. Medicinal uses are currently expanding, including the treatment of diabetes and the acceleration of burn healing. Powdered medicinal plants are also mixed with pulosari for stomach ulcers and with cat's whiskers for diabetes. This suggests that the community is increasingly recognizing the benefits of medicine.

2 .Economic Aspects

Since 1980, the medicinal benefits of this species as a herbal medicine ingredient have become known to people outside of the Kare Regency. This has created a business opportunity for local entrepreneurs, who utilize the stems of this species as the main ingredient in herbal medicines, which are promoted as being effective as a panacea. Available information indicates that the production of herbal medicines yields comparable results when marketed using modern marketing techniques and intensive promotion outside of Madiun Regency. Herbal medicine entrepreneurs who are not from the Kare community reap substantial profits because traders can sell the medicinal ingredients outside of Kare village at a relatively high price.

3. Technical Aspects

Generally, local communities have not made any efforts to cultivate medicinal plants. According to information, several entrepreneurs have attempted to cultivate nurseries but have experienced significant progress. Therefore, to accelerate the target development efforts, planting is carried out under natural growth conditions. Furthermore, the success of agroforestry is highly dependent on the exploitation of component interactions. Furthermore, in agronomy and ecology, there are interspecific and intraspecific interactions, which refer to interactions between plants of the same species and those of different species. Component interactions refer to the influence of one component of the system on the performance of other components and the system as a whole. Based on this, interactions between components can be beneficial or detrimental. The magnitude of the interactive effect between trees

and other components in an agroforestry system depends on the characteristics of the species, their density, and the spatial layout and management of tree planting

Based on observations, it was found that medicinal plants in the observation plots dominated at the sapling and seedling levels, with relative dominance (DR) values of 45.51% and 71.76%, respectively. Average heights ranged from 1.61 m to 2.16 m, and average stem diameters ranged from 2.12 cm to 3.13 cm. Analysis of the potential of these medicinal plants also indicated a relatively high potential, with rhizomes weighing up to 250 grams (Syarifah et al., 2019).

The medicinal plants growing in Kare Village, Kare Regency, are found in sandy loam soil with a moderate total N content and moderate to high organic C content, characterized by an average annual rainfall of 1,418.1 mm and an air temperature range of 20°C to 30°C. These conditions are pretty supportive and conducive to good regeneration, with plants found growing at all soil elevations.
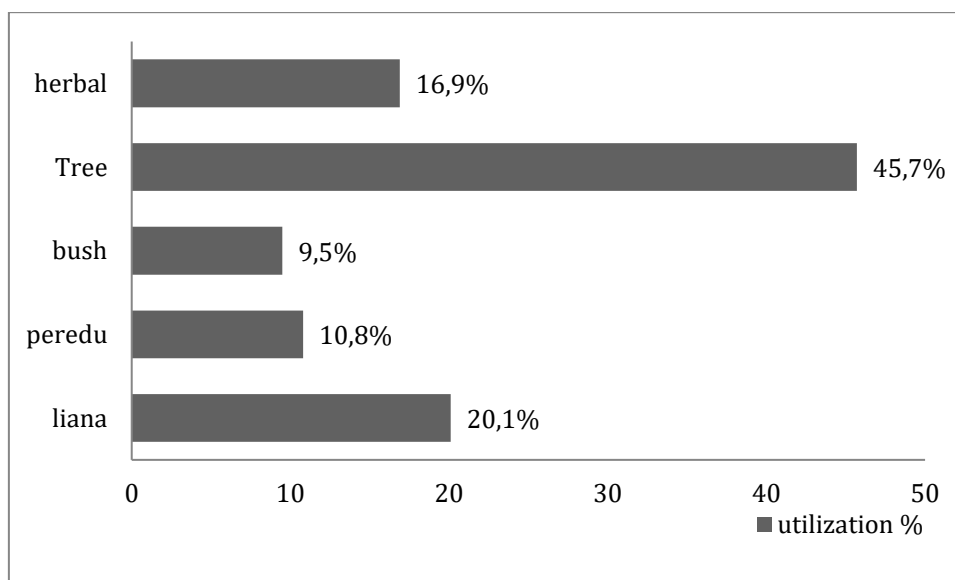

Figure 1. Diversity of Medicinal Plants Based on Habitus

The utilization of medicinal plants, especially trees, mainly sap, roots, bark, flowers, fruit, stems, and leaves (Freiburghaus et al, 2017). Conducted by the community around Kare Village and originating from the forest, the study identified as many as five types of habitus, including trees, lianas, herbs, shrubs, and bushes. The highest habitus type is trees at 45.7%. The lowest habitus type is bushes with 9.5%. Habitat types other than trees are rarely found in the forest because the dense tree canopy blocks sunlight from entering the forest floor. In addition, almost all parts of the tree are utilized. Medicinal plants in the forest are generally plants that have other potentials, such as food plants and plants that produce fruit for consumption. Part of

utilizing natural resources and the environment to provide benefits to humans is the use of forests.
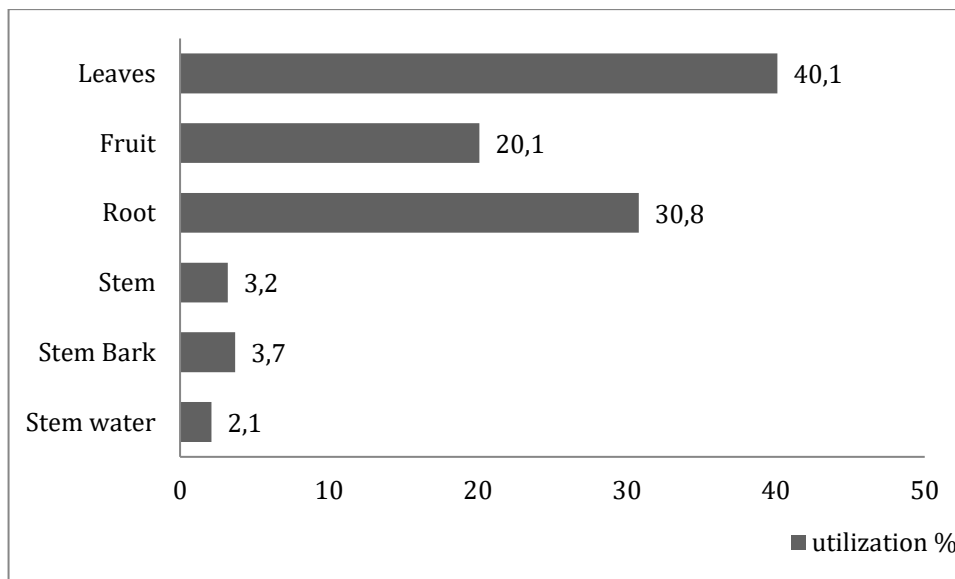

Figure 2. Use of plant parts

The Kare Village community utilizes various plant parts, including leaves, stems, fruit, bark, sap, roots, and leaves. The leaves themselves are the site of plant food processing, thus serving as a source of medicinal and herbal remedies. Therefore, the utilization of plants is easy to obtain and produce, and occurs in all parts of the plant. The leaves are the most widely used part of medicinal plants (40.1%), compared to other plant parts.

CONCLUSION

The community has widely utilized the cultural aspect of using medicinal plants. At the same time, from an economic perspective, it can provide income for several residents of Kare village and entrepreneurs in Madiun Regency. Based on the technical aspect, seeding can be done either vegetatively, namely by rhizomes. Growing in nature, medicinal plants can thrive in shade and regenerate through agroforestry systems. Development locations should be prioritized around their natural growth locations or in Kare Village itself. This will facilitate the sourcing of seed sources and is expected to increase plant growth because the rhizome strength is considered relatively good. It can also benefit the local community's economy. Further planting trials are needed with various planting patterns.

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