

Feasibility Assessment of Nampu Leaf (*Homalomena occulta*) Processing Bussines: a Case Study in The Mount Sawal Area

Suhartono^{1*}, Endah Suhaendah², Eva Fauziyah³, Aris Sudomo², Levina Augusta Geraldine⁴

¹Research Center for Ecology and Ethnobiology, National Research and Innovation Agency, Bogor, Indonesia

²Research Center for Plant Conservation, Botanic Gardens, and Forestry, National Research and Innovation Agency, Bogor, Indonesia

³Research Center for Population, National Research and Innovation Agency, Jakarta, Indonesia

⁴Research Center for Society and Culture, National Research and Innovation Agency, Jakarta, Indonesia

Received: 8 July 2022; Revised: 19 August 2022; Accepted: 25 October 2022

ABSTRACT

Dried nampu leaves have become an export commodity as raw materials for the pharmaceutical, cosmetic, and herbal cigarette industries. However, the massive exploitation of nampu leaves in their natural habitat in forest areas has raised concerns that it could disrupt forest sustainability. Therefore, financial analysis is needed to find out whether this business could be expanded or not. This study aims to examine the feasibility of processing nampu leaves into dried chopped leaves, the challenges and the prospects for its development. We conducted a case study on a nampu leaf processing business group in Cihaurbeuti Subdistrict, Ciamis, West Java. Data was collected through in-depth interviews and field observations. The results showed that the nampu leaf processing business was feasible because of the availability of resources, an easy process and a relatively short payback period as indicated by the R/C value of 1.17 and BEP production of 2,596.15 kg and BEP sales of IDR38,942,307 which can be achieved in less than 1 year. The challenges of this business are the availability of raw materials, marketing guarantees and forest sustainability. Government assistance is very important in supporting the sustainability of this business.

Keywords: feasibility assessment; nampu leaf processing; *Homalomena occulta*

How to cite :

Suhartono, Suhaendah, E., Fauziyah, E., Sudomo, A., & Geraldine, L. A. (2022). Feasibility Assessment of Nampu Leaf Processing Bussines : a Case Study in The Mount Sawal Area. *HABITAT*, 33(3), 251–262. <https://doi.org/10.21776/ub.habitat.2022.033.3.25>

1. Introduction

Mount Sawal is one of the non-volcanic mountain ranges in the north Ciamis region, West Java. Mount Sawal area includes several districts, such as Panjalu, Kawali, Cipaku, Cikoneng, Cihaurbeuti, Sadananya, and Panumbangan (Widodo, 2013). Mount Sawal provides benefits for protection and also a variety of natural resources that can be utilized by the surrounding community.

The existence of forest and owned forest areas scattered at Mount Sawal foothill has a fairly important position as a buffer for the area and adds to the adequacy of green spaces in the Ciamis Regency. Moreover, community forests are also the same as natural forests, providing

environmental services such as water management regulators, carbon storage and shelters for various organisms, both micro and macro (Arts & Koning, 2017). The people who live around Mount Sawal use a lot of forest resources to meet their needs. As mentioned (Diniyati, 2014) that forests have benefits both direct and indirect. The direct benefits of forests are in the form of timber and non-timber products.

One of the obstacles in the management of community forests in the Mount Sawal Forest area is the economic pressure of the community which causes the land use change of community forests such become tourist attraction spots such as cafés, or agricultural land (Utomo et al., 2021). As mentioned economic pressures caused communities to turn forests into intensive agriculture. This threatens the success of conservation. Therefore, a more diverse employment field is needed to meet these needs (Diniyati & Afri Awang, 2010). To reduce threats

*Correspondence Author.

E-mail: har436@gmail.com

Phone: +6285229097072

and disturbances to the sustainability of the Mount Sawal Forest area, preventive and repressive efforts are needed through the empowerment of communities around the forest (Diniyati, 2014).

Currently, forest management by communities around the forest is carried out by many tropical countries. This is due to the assumption that the awareness of local communities about forests and the involvement of communities around the forest can provide mutual benefits both socially and environmentally (Boedhihartono, 2017). These benefits include poverty alleviation, deforestation reduction, and fire reduction (Meijaard et al., 2021).

One of the efforts to empower the community around the forest is to utilize plants around the Mount Sawal Forest which have economic value. *Nampu* (*Homalomena javanica*) is a plant of the Araceae (taro-taro) family that grows a lot around the forests of Mount Sawal. Currently, *nampu* leaves have become a primadonna in the export market as a substitute for tobacco, raw materials for the cosmetics industry and biopesticides.

Research on *nampu* leaves is still limited to the chemical content (Astuti et al., 2022; Ngan et al., 2022; Wei et al., 2022; Yang et al., 2019; Zhang et al., 2021) and traditional use of *nampu* leaves (Febriyanti, Hikmat, & Zuhud, 2017; Herlina et al., 2016; Liu et al., 2014; Supiandi et al., 2020, 2021). However, information regarding the use of *nampu* leaves on a business scale is still rarely found. This study aims to examine the feasibility of processing *nampu* into dried chopped *nampu* leaves as an export commodity along with the challenges and prospects for its development.

2. Theoretical Underpinning

The plant genus *Homalomena* is predominantly found in the Neotropics and Asian tropics (Yeng et al., 2013). The *Homalomena* genus consists of more than 500 species and is the least known, which makes them very complex, most of them are used as a medicinal plant (Boyce, 2011). *Nampu* or *Homalomena javanica* is a wild plant, which has not been widely cultivated. This species; which have other heterotypic synonyms i.e. *Homalomena paliformis* Alderw. and *Homalomena latifrons* Engl., is native to Sumatra, Java and Borneo island (Royal Botanic Garden, 1912). This species has not been studied much, considering it has a large genus and a narrow species distribution. Some related research on *nampu* includes *nampu* as a cultural commodity,

nampu as a medicinal plant and *nampu* as an anti-bacterial (Andriyanti et al., 2019; Dubost et al., 2019; Gowthami et al., 2021; Islamiati et al., 2020; Kurniasih et al., 2022; Rudra et al., 2021; Siregar, 2018).

Nampu has the potential, usefulness, and market opportunity so that *nampu* in nature is taken for sale. *Nampu* leaves have become an export commodity to Japan, Australia, and America which are used as herbal raw materials and as a substitute for tobacco (Jatmika, 2022). Starting from here, the business of processing *nampu* leaves becomes interesting to be developed.

An economic feasibility study is a detailed study of a business or project to determine its likelihood to flourish in the future by considering all critical aspects, including potential problems or issues. In business, success is usually defined by the return on investment primarily, in which the breakeven point analysis viewpoint is used. However, there are other aspects to be considered on both pros and cons sides such as the environmental impact, or community approval.

The increased demand for nature-based health remedies and the integration of endemic flora into global value chains may have negative effects on ecosystems, even though improvements in the sustainable management of natural resources have developed over time (Volenzo & Odiyo, 2020). Thus, a detailed understanding of their demand and production systems is important for the exploitation and commercialization of wild medicinal plants. On the other hand, the primary justification for wild plant cultivation is through an economic feasibility study (van Wyk & Prinsloo, 2018). Therefore, an economic feasibility study of *nampu* is needed. To assess the feasibility of processing *nampu* leaves business, a cost and revenue analysis approach is used (Rahim et al., 2012; Suratiyah, 2015). Business feasibility analysis with this approach has been widely used, such as a financial analysis of the casava industry (Hardyastuti et al., 2021; Wong & Boyce, 2020), the financial feasibility of citrus (Sari et al., 2020), the economic feasibility of longevity spinach extract (Tristantini et al., 2021), and financial analysis of small-scale mango (Adams et al., 2019).

This research used Revenue Cost Ratio (R/C) dan Break Even Point analysis. R/C analysis is intended to determine the efficiency of the capital used by comparing the total revenue with the total cost. Farming is said to be feasible if the

R/C value is more than 1. While the Break Even Point analysis is the point of return that occurs in a business where the total revenue is equal to the total cost. This analysis is used to find out when the position of the business gets a profit either in production or in total sales. Both analyses are also widely used in agricultural research to assess the feasibility of their business (Arianti & Saputro, 2020; Arwati et al., 2022; Asciuto et al., 2019; Audry & Djuwendah, 2018; Fadhillah et al., 2022; Nurnimah et al., 2020).

3. Research Method

The research was conducted in Cihaurbeuti Village and Panumbangan Village, Ciamis Regency. The area is on Mount Sawal foothill with varied topography, including flatland, and hills and is traversed by several rivers. The location of community forests around Mount Sawal Area with altitudes ranging from 200 meters above sea level-700 meters above sea level with an average rainfall of 3,360 mm/year (Herdian et al., 2020). The natural shade tree for *nampu* is mahogany, *sengon*, African mahogany, bamboo, and gmelina. *Nampu* grows naturally under community forest stands without maintenance.

Data collection was carried out through in-depth interviews and field observations. Detail-oriented information can be gathered by conducting in-depth interviews. The main benefit of conducting in-depth interviews is that they offer far more thorough information than other data collection techniques, including surveys. They might also offer a more informal setting for information gathering; people might feel more at ease talking to you about their program than completing a survey (Boyce & Neale, 2006). Interviews were conducted with key respondents who were considered to understand *nampu* and its use in the Mount Sawal area. The respondents included farmers who took *nampu* from private forest/state forest areas, community leaders, village officials, as well as *nampu* collectors/dealers, and the leaf processing business actors. The gathered information includes the origin of *nampu*, cultivation, utilization, processing, and marketing of *nampu* leaves. Cost and income data to calculate the financial analysis were obtained from an interview with one of the informants, the leaf processing business actors.

The data obtained were processed and analyzed descriptively. To assess the feasibility of

the *nampu* management business, the Revenue Cost Ratio and Break Even Point analysis approach was used. Furthermore, the business is categorized as feasible if the period of return on investment from the business can be achieved less than the economic life of fixed capital (buildings and production machines).

$$R/C = \frac{T}{T} \frac{R}{C} \quad (1)$$

$$BEP \text{ Production} = \frac{T}{(P - V)} \quad (2)$$

$$BEP \text{ Sales} = \frac{T}{(1 - (T/N))} \quad (3)$$

Remark:

TFC = Total Fixed Cost

Py = Unit Price

VC = Variable Cost per kg

TVC = Total Variable Cost

NP = Total Sales

Furthermore, the business is categorized as feasible if the R/C value > 1 and the break-even point of the business can be achieved in a faster time.

4. Result and Discussion

4.1. Ethnobotany *nampu*

The Homalomena family has many species, according to (Wong & Boyce, 2020) there are already six species, and *H. javanica* is one type of wild plant that thrives in mountain areas, riverbanks, and lake banks. *Nampu* is also grown as an ornamental plant in a shaded area or the community garden. *Nampu* has regional names called *Cariyang bodas* and *Cariyang beureum* (Sundanese), *nampu* (Java) (Kurniasih et al., 2022). *Nampu* rhizomes contain several chemicals such as saponins, flavonoids, tannins and polyphenols, while the leaves contain saponins and flavonoids (Dalimartha, 2003).

Nampu is typically 50-100 cm tall when mature. They have a woody round stem, with brownish-purple colour and form an elongated rhizome. The leaves are single, around 50-60 cm long, fleshy rounded, with a heart-built shape leaf blade, pointed tip and flat edges, the leaf surface is slippery and the colour is dark green. Hump-shaped clustered with purple colour flowers grow in the leaves node and the fruits are round in red with brown seeds (Dalimartha, 2003). Two types are known, i.e. green *nampu* and red *nampu*.



Figure 1. *Nampu* grows wild on the floor of Mount Sawal Area

Nampu has several uses, such as an ornamental, medicinal plant, herbal cigarette raw material, raw material for compost, food wrapping, and also as biopesticide material as presented in Table 1. The use of *nampu* as an ornamental plant is more widely known than knowledge of the use of *nampu* as a medicinal plant and other uses, such as food wrapping (dry tape/fermented cassava) or use as a medicinal plant. In some areas, *nampu* has also been used by the community for various purposes. In Pamarican Subdistrict, Ciamis Regency, the community has used *nampu* leaves to help the fermentation process of *kepayang* or *picung* seeds and close the palm juice *pagasan* so that it is not disturbed by bees and as a protection from sunlight and rain. Not only in Ciamis, but *nampu* is also widely used by the community for various purposes as a property that must exist in traditional and cultural events.

Nampu leaves combined with other types of plants are irreplaceable conditions in the "Ngalaksa" culture which is a symbol of farmers' gratitude for the rice harvest in Rancakalong District, Sumedang Regency (Islamiati et al., 2020; Komarudin, 2016). Almost the same phenomenon also occurs in Borogojol Village, Majalengka Regency, where *nampu* leaves are used by the community in a series of cultural activities "*Buku taun*" which are held as a form of gratitude for the rice harvest. *Nampu* leaves are used in the process of squeezing rice which will be used as an ingredient in making processed food called *baliung* (Andriyanti et al., 2019). Moreover, in Sindanglaya village, Lebak Regency, Banten, *nampu* leaves are used by the people of Kasepuhan Pasir Eurih as a cover for *pagasan* (the part of the tapped bunches of palm flowers) for 2-3 days

before the sap water is accommodated in a bamboo tube for the sap to come out more (Febriyanti, Hikmat, Ervial, et al., 2017).

As a medicine, *nampu* can cure various diseases such as rheumatoid arthritis, and anti-inflammatory and abdominal pain (Kurniasih et al., 2022). Other species such as *H. aromatics* are used for gout, rheumatism, snakebite, dysentery, aromatics, stimulants, and flu (Rudra et al., 2021). This is because *nampu* has various secondary metabolite compounds, the phenolic compounds, steroids, and saponins which are useful as medicines (Siregar, 2018). The root and stem of *H. occulta* are used as a medicine for digestive and rheumatism. The rhizome of *Homalomena sp.* is used for skin ulcers (Dubost et al., 2019). *H. aromatica* in India is primarily used by locals for health care (Gowthami et al., 2021). *H. occulta* is used for rheumatism, numbness of limbs, traumatic injury, and bone fracture in China (Hong et al., 2015). *H. philippinensis* (Pajaw) is taken orally for Beri-Beri diseases in the Philippines (Langenberger et al., 2009). However, the use of *nampu* for medicine is still rarely done by the people around Mount Sawal.

Table 1. *Nampu* utilization

Utilization of <i>nampu</i>	Used part
As a medicinal plant	Leaf, tuber/root, stem
As an ornamental plant	All parts of the plant
As a raw material for herbal cigarettes	Leaf
As a raw material for compost fertilizer	Leaf
As a food wrapper	Leaf
As a biopesticide	Leaf

Source: Primary data; (Dalimartha, 2003; Hartati, 2011; Jatmika, 2022; Kurniasih et al., 2022; Rudra et al., 2021; Sihombing et al., 2016; Siregar, 2018).

4.2. Feasibility of *nampu* leaf processing business

There are several weeds such as *nampu* that could be advantageous for people, animals, and the environment. Although the ancient society's perspective does not yet have economic value, *nampu* frequently becomes a property requirement that must be present in the local tradition in West Java. However, the community's perception and value of these plants have changed recently.

Nampu leaves have been improved to the point where they are now valuable export products with a competitive advantage over other plants.

Nampu has recently been processed as the basic ingredients for cosmetics, herbal cigarettes and compost for export markets. This makes the business of processing *nampu* leaves for export commodities quite prospective during the pandemic. On the other hand, the pandemic has proven to have a significant impact on the global economy, including Indonesia. The sectors affected during the COVID-19 pandemic are transportation, tourism, trade, health and other sectors (Susilawati et al., 2020). To fulfil the demands, the community around Mount Sawal collect the *nampu* leaves from the surrounding forest intensively.



Figure 2. *Nampu* leaf processing

As news about *nampu* can be obtained from numerous internet sources, the *nampu* leaf processing industry has become increasingly widespread. Moreover, the raw materials are still abundant in the forest. The *nampu* leaf processing industry produces semi-finished goods. Typically, they purchase from local forest harvesting. The leaves are subsequently dried, wilted, and then shredded to the buyer's specifications. Because it doesn't need many employees, this kind of business is rather simple. As an illustration, one person can operate one shredding machine.

The process of shredding leaves is done well in the morning. Since the drying processes rely on sunshine. Typically, one machine unit is only utilized to process *nampu* leaves weighing approximately 200 kg. Even though the equipment is capable of processing 200 kg per hour. The yield of *nampu* leaves from wet to dry is approximately 7:1, meaning that it takes as much as 7 kg of wet leaves to generate 1 kg of dry leaves. *Nampu* leaves are fermented until they turn yellow before being collected. The quality of the dried product is greatly determined by this fermentation process. The grade and price of the leaves increase with their colour. The lighter colour of shredded leaves has better quality.

Table 2. Costs and benefits analysis of processing *nampu* leaf in one year

No.	Description	Volume	Cost (IDR)	Benefit (IDR)
1	Fixed costs:			
	-Investment costs of facilities and infrastructure of production units per year	Package	1	3,000,000
	-Land rent per year	m ²	700	1,500,000
	-Tool depreciation costs per year			3,000,000
	Total fixed cost			7,500,000
2	Variable costs:			
	-Procurement of raw materials per year	Kg	75,600	75,600,000
	-Labour costs per year	Working day	720	54,000,000
	-Electricity cost per year	Package	1	1,200,000
	Total variable cost			130,800,000
3	Total Cost			138,300,000
4	Production	Kg	10,800	
5	Price per kg			15,000
6	Income			162,000,000
7	Business feasibility criteria			
	-R/C		1.17	
	-BEP production (Kg)		2,596.15	
	-BEP sales (IDR)		38,942,307.7	

The very minimum of facilities and equipment, such as huts for the wilting and

shredding process, land, shredding machines, drying trays and equipment, are required to set up

a leaf processing operation. The minimum cost required for the investment is around IDR30,000,000 for economic use for 10 years or IDR3,000,000 per year. In addition to investment costs, other cost needs of a non-fixed nature are the purchase of raw materials, electricity tokens and labour costs. The requirement of raw materials in one-month averages 6,300 kilograms of wet *nampu* leaves or 75,600 kg per year. Meanwhile, the required workforce is IDR54,000,000 per year.

The *Nampu* leaf processing business has good prospects because it can generate positive income. The R/C value of 1.17 indicates that every IDR1,- of capital invested in the business can generate revenue of IDR1.17,-. This shows that the business of processing *nampu* leaves into dried chopped leaves is currently still feasible. From 75,600 kg of wet *nampu* leaves, on average, they can be processed into dry shredded leaves with a 14.2% yield to produce 10,800 kg of dried shredded leaves per year. The best grade of shredded leaves can be sold for Rp. 15,000 per kilogram. Therefore, the potential income of the processing business in one year reaches IDR162,000,000. It takes at least 2,596.16 kg of production to reach the *nampu* leaf processing business to reach the Break-even point or at least IDR38,942,307.7 total sales.

The *nampu* leaf processing business is very prospective from cost and benefit analysis as long as the raw material from nature is abundant and the export market are stable. As mentioned by (Nursodik et al., 2021) that the production factor is one of the factors that affect export volume. The time required to return investment capital is relatively short because it is less than two years. Therefore, this business has a positive prospect and is worth running. Based on the description above, *nampu* as an agricultural commodity contributes to the economy of the community around the Mount Sawal Forest. As stated by (Saleh et al., 2020), the agricultural sector still plays an important role in economic development in Indonesia. Moreover, it is hoped that farmers in West Java will seize this opportunity by taking part in the development of *nampu* cultivation because there is a great market demand for export (Sukmana, 2021).

4.3. Opportunities and Challenges of *nampu* in the future

This industry began with opportunities to export half-finished *nampu* leaf products. The *nampu* leaf industry is appealing to farming communities due to the high cost of processed

leaves for export and the availability of natural raw materials for free exploitation. However, middlemen and exporters of *nampu* products are still limited. This issue and closed marketing chains cause farmers or Micro, Small, and Medium Enterprises (MSMEs) to depend solely on demand from middlemen/exporters. During the Covid-19 pandemic, the market was still closed causing fluctuating demand by exporters. This is a challenge for farmers to anticipate alternative domestic markets. It is crucial for the government to promote the provision of market data and assurances that farmers' products would be accepted by the industry. When making recommendations for public policy, the relationship between the state of financial resources and the techniques used within the frameworks of market orientation and entrepreneur orientation is advantageous (Eggers, 2020).

In rural areas, small industries of cigarettes made from *nampu* are categorized as MSMEs. MSMEs tend to be low in capital and low in productivity. However, MSMEs are more flexible to adapt to a new business environment than large companies (Soriano & Dobon, 2009). Consequently, they have a stronger survival power against change (Liñán et al., 2020). The challenge is to generate innovation to maintain industry performance (Espallardo & Ballester, 2009). The market potential stimulates the community to collect leaves from natural distribution around the forest, both community forests and conservation forests (Sukamana, 2021). If this activity is prolonged, *nampu* leaves will vanish in their native habitat, endangering the operation of the business. The demise of the business is due to a lack of resources and innovation (Neil Lee et al., 2015).

The challenge is to direct the community's motivation to get income from the *nampu* plant to be sustainable while preserving the ecosystem service provided by the forest. In many cases, economic pressure often destruct the environmental services of ecosystems whilst conventional agriculture has relatively negative environmental and social effects (Godfray et al., 2010). Moreover, one of the main threats towards wild medicinal plants is the significant loss of genetic diversity driven by unsustainable exploitation and habitat destruction Awuchi (Awuchi, 2019). Therefore, it is important to cultivate *nampu* underneath the community forest, considering that its existence in nature is getting

scarce. This practice could be a long-term agricultural solution to uphold the community's ability in performing both economic and environmental functions (Hairiah & Ashari, 2013).

The other issue is the availability of farmers' capital for production facilities and infrastructure. This requires incentives from the government in the form of intensification training for farmers or funding for the development of agroforestry community forests (Achmad et al., 2022; Diniyati & Achmad, 2016; Diniyati & Afri Awang, 2010; Martini et al., 2017). It is essential to improve the managerial, technical, and social ability of farmers to provide resources, technical cultivation, product marketing, partnerships, and resource management, such as in the development of social media accounts, the design of promotional materials, and sales (Suprayitno, 2011) through training, assistance and counselling (Ruhimat, 2014). The other essential thing needed from the government is the intellectual property rights of the *Nampu*, since this species is native to Borneo, Java and Sumatra island. As stated by (Hishe et al., 2016; Volenzo & Odiyo, 2020), an inadequate regulatory framework on intellectual property rights might exacerbate the exposure of the genetic resources to biopiracy, which could become a hindrance in the flourishing the *Nampu* leaf industry.

The majority of villagers are conducting home industry, which typically has limited resources and connections in the business world (Barnawi, 2019). In order to assist its development, the Village Fund can be used as social assistance, training, and capital in empowering rural MSMEs. Furthermore, collaboration built with distributors, suppliers, and research institutions is needed (Markovic et al., 2021).

The selection of external factors is an essential factor in increasing open business to business innovation management (Bigliardi & Galati, 2016). This can be in the form of supply of raw materials, joint marketing, management and exchange of information. The working relationship is one of the factors that make SMEs survive and facilitates the provision of raw materials according to market demand (Widiyanto et al., 2021). Collective action will make the management of the SME industry that is more efficient and streamline.

Lack of digitalization, technology adoption and limited online individual and family-owned

SMEs are the problems faced recently (Bartik et al., 2020). In the era of the industrial revolution 4.0, traditional industries that do not modernize technology and develop product, output, and marketing products will be reduced or unable to compete (Barnawi et al., 2019). A strategy is needed by adopting digital transformation to maintain industry sustainability (Bai et al., 2021). This requires the support of the government, partners, marketing chain and community

5. Conclusion

Nampu leaf processing business by small and medium enterprises around the Mount Sawal area deserves to be developed because the process is easy and the time required to reach the break even point for the business is quite short. Some of the challenges in this business are the availability of raw materials, marketing guarantees, and forest sustainability. For this reason, government support and assistance is needed so that the *nampu* leaf processing business is more profitable and sustainable. Government support can be conducted in the form of community empowerment to improve management, social and technical skills as well as capital. Communication skills with foreign markets are required. Digital transformation is needed for the sustainability of small industries in rural areas. Assurance of market sustainability is important so that the *Nampu* leaf SME business continues to encourage the rural economy. Product value chain analysis is needed to determine the role between parties, effectiveness and business sustainability. Furthermore, optimization of agroforestry patterns under community forest stands is necessary so as not to depend on natural plants and to ensure the availability of raw materials for the *nampu* leaf industry.

Acknowledgments: Authors would like to thank the Agroforestry Technology Research Center who financed this research activity, village officials, extension workers and farmers in Cihaurbeuti Village and Panumbangan Village, Ciamis who were involved in this research. Authors would also thank the reviewers for their inputs on the early manuscript of the paper.

References

- Achmad, B., Siarudin, M., Widiyanto, A., Diniyati, D., Sudomo, A., Hani, A., Fauziyah, E., Suhaendah, E., Widyaningsih, T. S., Handayani, W., Maharani, D.,

- Palmolina, M., Swestiani, D., Budi, H., Sulistiadi, S., Winara, A., Nur, Y. H., Diana, M., Gartika, D., & Ruswandi, A. (2022). Traditional Subsistence Farming of Smallholder Agroforestry Systems in Indonesia: A Review. *Sustainability Review*, 14(8631). <https://doi.org/https://doi.org/10.3390/su14148631>
- Adams, F., Amankwah, K., Wongnaa, C. A., Honny, E. P., Peters, D. K., Asamoah, B. J., & Coffie, B. B. (2019). Financial analysis of small-scale mango chips processing in Ghana. *Cogent Food and Agriculture*, 5(1). <https://doi.org/10.1080/23311932.2019.1679701>
- Andriyanti, R., Haerudin, D., Kosasih, D., Pendidikan, P., Sunda, B., Universitas, S., & Indonesia, P. (2019). Tradisi Buku Taun di Desa Borogojol Kecamatan Lemah Sugih-Majalengka Untuk Bahan Ajar Bahasa Sunda di SMP (Kajian Semiotik dan Etnopedagogik). *Seminar Internasional Riksa Bahasa XIII*, 1989–1996.
- Arianti, Y. S., & Saputro, W. A. (2020). Tingkat Pendapatan dan Kelayakan Usahatani Tebu di Kabupaten Bantul Daerah Istimewa Yogyakarta. *Journal Science Innovation and Technology (SINTECH)*, 1(1), 7–12.
- Arts, B., & Koning, J. de. (2017). Community Forest Management: An Assessment and Explanation of its Performance Through QCA. *World Development*, 96, 315–325.
- Arwati, S., Husain, N., & St Aisyah, R. (2022). Analisis break even point usahatani kopi arabika di Desa Benteng Alla Utara Kecamatan Baroko Kabupaten Enrekang. *KAPITA: Jurnal Agribisnis & Pembangunan Pertanian*, 1(2), 67–72.
- Asciuto, A., Schimmenti, E., Cottone, C., & Borsellino, V. (2019). A financial feasibility study of an aquaponic system in a Mediterranean urban context. *Urban Forestry & Urban Greening*, 38, 397–402.
- Astuti, E. J., Ernawati, S., Basuki, S. A., & Muchlisin, M. A. (2022). Activity of Ethanol Extract of Homalomena Occulta Rhizome in Inhibiting Kidney Stone Formation in Wistar Rats. *KnE Medicine*, 695–703.
- Audry, R. J., & Djuwendah, E. (2018). Pendapatan Usahatani Kopi Java Preanger pada Kelompok Tani Margamulya Desa Margamulya Kecamatan Pengalengan Bandung. *Jurnal Ilmu Pertanian Dan Peternakan*, 6(1), 33–38.
- Awuchi, C. G. (2019). Medicinal plants: the medical, food, and nutritional biochemistry and uses. *International Journal of Advanced Academic Research*, 5(11), 220–241.
- Bai, C., Quayson, M., & Sarkis, J. (2021). COVID-19 pandemic digitization lessons for sustainable development of micro-and small-enterprises. *Sustainable Production and Consumption*, 27, 1989–2001.
- Barnawi. (2019). Eksistensi Home Industri Kerajinan Anyaman Bambu di Heuleut Leuwimunding Majalengka di Era Revolusi Industri 4.0. *Etos: Jurnal Pengabdian Masyarakat*, 1(1).
- Barnawi, Wulandari, P., Antika, R., Zulfah, S. N., Lestari, S., Jamaludin, Ningsih, W., Rachmawati, R., Adi, Maulana, S., & Yasin. (2019). Eksistensi Home Industri Kerajinan Anyaman Bambu di Heuleut Leuwimunding Majalengka di Era Revolusi Industri 4.0. *Etos: Jurnal Pengabdian Masyarakat*, 1(1), 34–42.
- Bartik, A. W., Bertrand, M., Cullen, Z. B., Glaeser, E. L., Luca, M., & Stanton, C. T. (2020). How are small businesses adjusting to COVID-19? Early evidence from a survey. National Bureau of Economic Research.
- Bigliardi, B., & Galati, F. (2016). Which factors hinder the adoption of open innovation in SMEs? *Technology Analysis & Strategic Management*, 28(8), 869–885.
- Boedhihartono, A. K. (2017). Can Community forests be compatible with biodiversity conservation in Indonesia? *Land*, 6(1), 1–17. <https://doi.org/10.3390/land6010021>
- Boyce, C., & Neale, P. (2006). Conducting in-Depth Interviews: A Guide for Designing and Conducting In-Depth Interviews for Evaluation Input. In *Attachment and Human Development* (pp. 207–215). Pathfinder International. <https://doi.org/10.1080/14616730210154225>

- Dalimartha, S. (2003). *Atlas Tumbuhan Obat Indonesia Jilid 3*. Trubus Agriwidaya.
- Diniyati, D. (2014). Kondisi Dan Potensi Wisata Alam Di Wilayah Gunung Sawal Kabupaten Ciamis, Jawa Barat. *Jurnal Hutan Tropis*, 2(2), 82–188.
- Diniyati, D., & Achmad, B. (2016). Pengaruh penyuluhan terhadap pengembangan kapulaga di hutan rakyat: Kasus di Kabupaten Ciamis dan Tasikmlaya, Jawa Barat. *Jurnal Penelitian Sosial Dan Ekonomi Kehutanan*, 13(April), 25–36.
- Diniyati, D., & Afri Awang, S. (2010). Kebijakan Penentuan Bentuk Insentif Pengembangan Hutan Rakyat Di Wilayah Gunung Sawal, Ciamis Dengan Metoda Ahp. *Jurnal Analisis Kebijakan Kehutanan*, 7(2), 129–143.
<https://doi.org/10.20886/jakk.2010.7.2.129-143>
- Dubost, J. M., Phakeovilay, C., Her, C., Bochaton, A., Elliott, E., Deharo, E., Xayvue, M., Bouamanivong, S., & Bourdy, G. (2019). Hmong herbal medicine and herbalists in Lao PDR: Pharmacopeia and knowledge transmission. *Journal of Ethnobiology and Ethnomedicine*, 15(1), 1–15.
<https://doi.org/10.1186/s13002-019-0307-2>
- Eggers, F. (2020). Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *Journal of Business Research*, 116, 199–208.
- Espallardo, M. H., & Ballester, E. D. (2009). Product innovation in small manufacturers, market orientation and the industry's five competitive forces: Empirical evidence from Spain. *European Journal of Innovation Management*, 12(4), 470–491.
- Fadhilah, P. D., Pangemanan, P. A., & Luminkewas, J. R. (2022). Analisis break even point usahatani cengkeh di Desa Buyat I Kecamatan Kotabunan Kabupaten Bolaang Mongondow Timur. *Agri-Socioekonomi*, 18(2), 377–382.
- Febriyanti, N., Hikmat, A., Erval, D., & Zuhud, A. M. (2017). Etnobotani dan Potensi (Arenga pinnata Merr.) pada Masyarakat Kasepuhan Pasir Eurih, Desa Sindanglaya, Kabupaten Lebak, Banten. *Media Konservasi*, 22(2), 171–180.
- Febriyanti, N., Hikmat, A., & Zuhud, E. A. M. (2017). Etnobotani dan potensi aren (Arenga pinnata, Merr.) pada masyarakat Kasepuhan Pasir Eurih, Desa Sindanglaya, Kabupaten Lebak, Banten. *Media Konservasi*, 22(2), 171–180.
- Godfray, H. C. ., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., Pretty, J., Thomas, S. R., & Toulmin, C. (2010). Food Security: The Challenge of Feeding 9 Billion People. *Science*, 327(5967),.
<https://doi.org/doi:10.1126/science.1185383>
- Gowthami, R., Sharma, N., Pandey, R., & Agrawal, A. (2021). Status and consolidated list of threatened medicinal plants of India. *Genetic Resources and Crop Evolution*, 68(6), 2235–2263.
<https://doi.org/10.1007/s10722-021-01199-0>
- Hairiah, & Ashari. (2013). Pertanian Masa depan : Agroforestri, Manfaat Dan Layanan Lingkungan. *Prosiding Smeinar Agroforestry 2013*.
- Hardyastuti, S., Subejo, & Maulida, Y. F. (2021). Financial Feasibility of Cassava Industries in Daerah Istimewa Yogyakarta and Central Java. *IOP Conference Series: Earth and Environmental Science*, 662(1).
<https://doi.org/10.1088/1755-1315/662/1/012001>
- Hartati, S. (2011). *Tanaman Hias Berkhasiat Obat*. IPB Press.
- Herdian, A., Hendrayana, Y., & Supartono, T. (2020). Aktivitas Harian Kukang Jawa (Nycticebus Javanicus) Pasca Habitiasi di Suaka Margasatwa Gunung Sawal Ciamis. *Prosiding Fahutan*.
- Herlina, N., Nurlaila, A., & Sandria, I. (2016). Keanekaragaman dan Pemanfaatan Jenis Tumbuhan Obat oleh Masyarakat Kawasan Hutan Lindung Gunung Pakuan Kabupaten Kuningan Provinsi Jawa Barat. *Wanaraksa*, 10(01).
- Hishe, M., Asfaw, Z., & Giday, M. (2016). Review on value chain analysis of medicinal plants and the associated challenges. *Journal of Medicinal Plants Studies*, 4(3), 45–55.

- Hong, L., Guo, Z., Huang, K., Wei, S., Liu, B., Meng, S., & Long, C. (2015). Ethnobotanical study on medicinal plants used by Maonan people in China. *Journal of Ethnobiology and Ethnomedicine*, 11(1). <https://doi.org/10.1186/s13002-015-0019-1>
- Islamiati, Y., Nisa, N. K., Anugrah, R., Rosma, T., & Cahyono, T. (2020). Kajian Etnobotani Budaya Ngalaksa Di Kecamatan Rancakalong Kabupaten Sumedang. *Ekologia*, 20(1), 24–30. <https://doi.org/10.33751/ekologia.v20i1.1981>
- Jatmika, H. E. (2022). *Daun Cariang, Selain Bermanfaat untuk Kesehatan Juga Memiliki Nilai Ekonomis*. Bogor.Urbanjabar.Com.
- Komarudin, D. (2016). *Makna Teologis pada Simbolisme Upacara Ngalaksa Terhadap Keberagamaan*. UIN Sunan Gunung Djati Bandung.
- Kurniasih, N., Febriani, H., & Rasyidah. (2022). Keanekaragaman Koloni Bakteri Endofit Pada Daun dan Batang Tanaman Nampu (Homalomena javanica V.A.V.R.). *Biology Education Science & Technology*, 5(1), 360–365.
- Langenberger, G., Prigge, V., Martin, K., Belonias, B., & Sauerborn, J. (2009). Ethnobotanical knowledge of Philippine lowland farmers and its application in agroforestry. *Agroforestry Systems*, 76(1), 173–194. <https://doi.org/10.1007/s10457-008-9189-3>
- Liñán, F., Paul, J., & Alain, F. (2020). SMEs and Entrepreneurship in the era of Globalization: Advances and Theoretical Approaches. *Small Business Economics*, 55(3), 695–703.
- Liu, B., Liu, Y., Cao, W., Zhang, S., Liu, Z., Ni, Y., & Li, F. (2014). Ethnobotany of Medicinal Aroids in Xishuangbanna, Yunnan Province, China. *Aroideana*, 37(2), 69–78.
- Markovic, S., Koporcic, N., Arslanagic-Kalajdzic, M., Kadic-Maglajlic, S., Bagherzadeh, M., & Islam, N. (2021). Business-to-business open innovation: COVID-19 lessons for small and medium-sized enterprises from emerging markets. *Technological Forecasting and Social Change*, 170(120883).
- Martini, E., Roshetko, J. M., & Paramita, E. (2017). Can farmer-to-farmer communication boost the dissemination of agroforestry innovations? A case study from Sulawesi, Indonesia. *Agroforestry Systems*, 91, pages811–824.
- Meijaard, E., Santika, T., Wilson, K. A., Budiharta, S., Kusworo, A., Law, E. A., Friedman, R., Hutabarat, J. A., Indrawan, T. P., Sherman, J., St. John, F. A. V., & Struebig, M. J. (2021). Toward improved impact evaluation of community forest management in Indonesia. *Conservation Science and Practice*, 3(1), 1–14. <https://doi.org/10.1111/csp2.189>
- Neil Lee, Hiba Sameen, & Marc Cowling. (2015). Access to finance for innovative SMEs since the financial crisis. *Research Policy*, 44(2), 370–380.
- Ngan, T. T. K., Hien, T. T., Tien, L. X., & Toan, T. Q. (2022). Chemical compositions and stability of Vietnamese Homalomena occulta essential oil under the influence of storage conditions. *Egyptian Journal of Chemistry*, 65(7), 23–31.
- Nurnimah, I., Prasetyo, E., & Santoso, S. I. (2020). Analisis break even point usahatani jambu air di Desa Tempuran Kecamatan Demak Kabupaten Demak. *Jurnal Agroland*, 27(1), 1–9.
- Nursodik, H., Santoso, S., & Nurfadillah, S. (2021). Competitiveness and Determining Factors of Indonesian Tea Export Volume in the World Market. *Habitat*, 32(3), 163–172. <https://doi.org/10.21776/ub.habitat.2021.032.3.18>
- Rahim, A., Supardi, S., & Hastuti, D. (2012). *Model Analisis Ekonomi Pertanian*. Universitas Negeri Makasar Press.
- Royal Botanic Garden, K. (1912). *Homalomena latifrons*. Board of Trustees of the Royal Botanic Gardens.
- Rudra, S., Rahman, M. M., & Uddin, S. B. (2021). Medicinal Plant Diversity and Their Therapeutic Uses in Selected Village Common Forests in Chittagong Hill Tracts, Bangladesh. *Journal of Herbs, Spices & Medicinal Plants*, 27(1), 83–107. <https://doi.org/10.1080/10496475.2020.1786874>

- Ruhimat, I. S. (2014). Factors Improving Self-reliance of Farmers in Community Forest Management: Case Study in Ranggalang Village, Tanah Laut Regency, South Kalimantan. *Penelitian Sosial Dan Ekonomi Kehutanan*, 11(3), 237–249.
- Saleh, H., Surya, B., Ahmad, D. N. A., & Manda, D. (2020). The role of natural and human resources on economic growth and regional development: With discussion of open innovation dynamics. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 1–23. <https://doi.org/10.3390/joitmc6040103>
- Sari, R., Nofialdi, & Putri, A. (2020). Financial feasibility of lime (*citrus aurantifolia*) farming in Tanah Datar District, West Sumatra. *IOP Conference Series: Earth and Environmental Science*, 583(1). <https://doi.org/10.1088/1755-1315/583/1/012016>
- Sihombing, Fransiscus, Azhar, Irawati, Afifuddin, & Yunus. (2016). Potensi tumbuhan beracun sebagai bahan biopestisida di Cagar Alam Dolok Saut. *Peronema Forestry Science Journal*, 5(3).
- Siregar, E. R. (2018). *Uji Aktivitas Antibakteri Ekstrak Metanol Daun Nampu (Homalomena javanica VAVR)*. repositori.usu.ac.id.
- Soriano, D. R., & Dobon, S. R. (2009). Linking globalization of entrepreneurship in small organizations. *Small Bus Econ*, 32, 233–239.
- Sukmana, I. (2021). *Daun Talas Caring Kini Jadi Komoditas Ekspor*. *Kabarpriangan.Com*.
- Supiandi, M. I., Ege, B., Julung, H., Zubaidah, S., & Mahanal, S. (2021). Ethnobotany of Traditional Medicine In Dayak Jangkang Tribe, Sanggau District, West Kalimantan, Indonesia. *Biodiversitas Journal of Biological Diversity*, 22(12).
- Supiandi, M. I., Julung, H., Ege, B., Mahanal, S., & Zubaidah, S. (2020). Potential of plant roots as traditional medicines of the Dayak Desa Tribe in Pakak, West Kalimantan, Indonesia. *Medicinal Plants-International Journal of Phytomedicines and Related Industries*, 12(2), 275–282.
- Suprayitno, A. (2011). *Model peningkatan partisipasi petani sekitar hutan dalam mengelola hutan kemiri rakyat: kasus pengelolaan hutan kemiri kawasan pegunungan Bulusaraung Kabupaten Maros Sulawesi Selatan*. Institut Pertanian Bogor.
- Suratiyah, K. (2015). *Ilmu Usaha Tani Edisi Revisi*. Penebar Swadaya.
- Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's Pandemic on the Economy of Indonesia. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 3(2), 1147–1156. <https://doi.org/10.33258/birci.v3i2.954>
- Tristantini, D., Setiawan, H., & Santoso, L. L. (2021). Feasibility assessment of an encapsulated longevity spinach (*Gynura procumbens* L.) extract plant in Indonesia. *Applied Sciences*, 11(9), 4093.
- Utomo, M. M. B., Sudomo, A., & Suhaendah, E. (2021). Recommendations for the initiation of agro-tourism establishment in Hujungtiwu Village, Panjalu District, Ciamis Regency. *IOP Conference Series: Earth and Environmental Science*, 917(1). <https://doi.org/10.1088/1755-1315/917/1/012039>
- Volenzo, T., & Odiyo, J. (2020). Integrating endemic medicinal plants into the global value chains: the ecological degradation challenges and opportunities. *Heliyon*, 6(9), e04970.
- Wei, Y. I. N., Qi, H. U., Xin-zhang, L. I., Qinghao, Z., Yang, Y. U., Zhen-guo, X. U., Gao-fu, F. A. N., & Guo-sheng, Z. (2022). Study on the chemical constituents and anti-tumor activity of *Homalomena occulta*. *NATURAL PRODUCT RESEARCH AND DEVELOPMENT*, 34(4), 563.
- Widiyanto, A., Suhartono, S., Utomo, M., Ruhimat, I. S., Widyaningsih, T. S., Palmolina, M., Fauziyah, E., & Sanudin, S. (2021). The Bamboo Business in Tasikmalaya, Indonesia, During the COVID-19 Pandemic. *Forest and Society*, 5(2), 245–260.
- Widodo, W. (2013). Kajian fauna burung sebagai indikator lingkungan di hutan Gunung Sawal, Kabupaten Ciamis, Jawa Barat. In

*Proceeding Biology Education Conference:
Biology jurnal.uns.ac.id.*

- Wong, S. Y., & Boyce, P. C. (2020). Studies on the Homalomeneae (Araceae) of Borneo XXIV: Two New Geologically-Restricted Species of Homalomena from NW Borneo. In *Annales Botanici Fennici* (Vol. 57, Issue 4). Finnish Zoological and Botanical Publishing Board.
<https://doi.org/10.5735/085.057.0412>
- Yang, J.-L., Dao, T. T., Hien, T. T., Zhao, Y.-M., & Shi, Y.-P. (2019). Further sesquiterpenoids from the rhizomes of *Homalomena occulta* and their anti-inflammatory activity. *Bioorganic & Medicinal Chemistry Letters*, 29(10), 1162–1167.
- Yeng, W. S., Jean, T. P., Kiaw, N. K., Othman, A. S., Boon, L. H., Ahmad, F. B., & Boyce, P. C. (2013). Phylogeny of Asian *Homalomena* (Araceae) based on the ITS region combined with morphological and chemical data. *Systematic Botany*, 38(3), 589–599.
- Zhang, K., Wu, K., Lu, S., Zhang, J., Ma, X., Wang, Y., Huang, L., Wang, X., & Xia, X. (2021). Characterization of the complete chloroplast genome of *Homalomena occulta* (Lour.) Schott. *Mitochondrial DNA Part B*, 6(3), 1018–1019.
- Boyce, P. C. and T. B. Croat. 2011. The Uberlist of Araceae, totals for published and estimated number of species in Aroid Genera.
<http://www.aroid.org/genera/111109uberlist.pdf>.