



REVIEW ARTICLE

Socio-economic values and potential of jamblang (*Syzygium cumini* (L.) Skeels) for social forestry and community development in Nusantara

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Abstract

Syzygium cumini (L.) Skeels, locally known as jamblang, is a multipurpose tropical fruit tree of the Myrtaceae family with ecological, nutraceutical and livelihood relevance. This narrative review explores the socio-economic values and development potential of jamblang as a species for social forestry and community development in Indonesia. Literature was collected from Web of Science, Scopus, ScienceDirect, PubMed and relevant institutional sources using predefined keywords related to *S. cumini*, jamblang utilisation, pharmacological properties, livestock use, economic value and social forestry. The selected literature was synthesised thematically and assessed through strengths, weaknesses, opportunities and threats (SWOT) and threats, opportunities, weaknesses and strengths (TOWS)-based interpretation. The review indicates that jamblang can support community livelihoods through fresh fruit trade, processed food products, natural colorants, pharmaceutical raw materials, livestock-related uses and agroforestry-based income diversification. Its bioactive compounds, including phenolics, flavonoids, tannins, anthocyanins and terpenoids, strengthen its value for nutraceutical and biopharmaceutical development. However, its commercialisation is constrained by limited cultivation data, weak market mapping, limited processing technology and insufficient farmer-level promotion. Government support should therefore prioritise cultivation standards, post-harvest and processing guidelines, product safety standards, farmer group assistance, market-chain development and technical innovations for nursery management, fruit processing, seed flour, natural colorant production and biomass-based livestock feed. Jamblang is best positioned as a complementary multipurpose tree species in social forestry schemes, particularly community forests, village forests, forestry partnerships and privately owned people's forests.

Keywords: multipurpose tree species; social forestry; tropical fruit

Introduction

Indonesia possesses extensive forest cover, reaching 125795306 ha and supports diverse tropical flora, including *Syzygium cumini* (L.) Skeels, locally known as jamblang or duwet (1). *Syzygium cumini* is a tree species of the family Myrtaceae that originates from wet tropical biomes and is distributed across tropical Asia, subtropical regions and North Queensland (2–5). In Indonesia, jamblang commonly occurs in suboptimal lands, home gardens and community forests, making it relevant to agroforestry and social forestry development. However, its use remains limited because the fruit is primarily consumed as fresh fruit and has not been widely developed into higher-value food, nutraceutical, pharmaceutical, or livestock-related products. This

underutilisation shows a gap between biological potential and socio-economic realisation.

Jamblang has been recognized for nutraceutical and therapeutic properties, supported by bioactive compounds such as phenolic acids, gallic acid, ellagic acid, carotenoids, flavonoids, myricetin and related derivatives (5–9). Previous reviews have emphasised phytochemistry, pharmacology and nutritional properties, but fewer studies have critically connected these properties with community welfare, product development, social forestry schemes and livestock uses. Therefore, this review aims to synthesise the socio-economic value and broader development potential of jamblang as a Nusantara tropical fruit, with emphasis on its relevance to social forestry, community livelihood diversification and future research needs.

Methodology

This study used a narrative review approach supported by thematic synthesis and strengths, weaknesses, opportunities and threats (SWOT) and threats, opportunities, weaknesses and strengths (TOWS)-based interpretation. Literature was searched in Web of Science, Scopus, Science Direct, PubMed and relevant Indonesian institutional sources. The keywords included “*S. cumini*”, “jamblang”, “potential of *S. cumini*”, “utilisation of *S. cumini* for livestock”, “economic value of jamblang”, “pharmacological properties of *S. cumini*”, “social forestry” and “national forestry”. Literature was included when it discussed botanical characteristics, phytochemistry, pharmacological potential, food or industrial applications, livestock use, socio-economic contribution, agroforestry, or social forestry relevance. Literature was excluded when it was unrelated to *S. cumini*, lacked sufficient bibliographic information, duplicated information already captured by more complete sources, or did not contribute to the thematic objectives of this review. The findings were grouped into botanical and ecological relevance, phytochemical and pharmacological value, food and industrial applications, socio-economic value, social forestry potential and livestock use. The SWOT factors were derived from the reviewed evidence and then interpreted through TOWS logic to connect internal factors with external opportunities and threats. This process was used to formulate practical strategies for cultivation, processing, market development, farmer empowerment and policy support.

Results and Discussion

Botanical Description and Benefits of *Syzygium cumini*

Syzygium cumini is a tree species of the family Myrtaceae that grows well in wet tropical environments and is known in Indonesia as jamblang, juwet, jamun, black plum, or duwet (3, 5). For cultivation and utilisation purposes, the most relevant botanical traits are its adaptability to suboptimal lands, perennial tree habit, edible purple-black fruit and multiple-use biomass. The leaves are opposite, petiolate and coriaceous (leathery), while the fruits are generally green when young and turn pink to dark purple when ripe. The fruit has white flesh with a sweet, sour and slightly astringent taste and its dark colour is associated with anthocyanin compounds (7, 10, 11).

From a socio-economic perspective, jamblang is important not because of morphology alone but because its traits support agroforestry use. The tree can provide fruit, shade, ecological services and biomass while remaining compatible with community-based land management. Nevertheless, existing literature still gives more attention to medicinal and botanical descriptions than to cultivation performance, yield stability, farmer adoption and market feasibility. This gap limits the translation of botanical potential into practical social forestry development. The representation of jamblang fruit is shown in Fig. 1.

Various parts of jamblang are used in traditional medicine, including leaves, fruits, bark and seeds (7, 12). However, medicinal use should be interpreted carefully because traditional knowledge and laboratory evidence do not automatically indicate clinical efficacy or immediate commercial readiness. For social forestry, the value of this information lies in identifying which plant parts

may support value-added products, farmer training and small-scale processing while still requiring product safety evaluation and standardisation.

Phytochemical profile of *Syzygium cumini*

The primary yield of the jamblang plant is its fruit, which contains carbohydrates, fat, protein, vitamins, minerals and fibre (Table 1). The fruit, leaves, bark and seeds also contain phenolics, tannins, flavonoids, anthocyanins and other bioactive compounds (5, 7, 13). These compounds explain the interest in jamblang as a nutraceutical resource. However, the reviewed studies vary in extraction methods, plant parts, analytical techniques and reported concentrations, which makes direct comparison difficult. Future studies should standardise sampling, maturity stage, post-harvest handling and analytical units to support product development.

The bark, fruit, leaves and seeds of jamblang contain different bioactive profiles. Anthocyanins contribute to the purple colour of ripe fruit, while tannins contribute to its astringent taste (6, 7). Bioactive components such as phenolic acids, gallic acid, ellagic acid, carotenoids, flavonoids, myricetin and their derivatives have been identified in the pulp (7). These findings support the potential of jamblang as a significant source of health-related nutrients and pharmaceutical raw materials. Nevertheless, pharmacological promise must be linked with safety testing, processing standards and market feasibility before being promoted as a community-based industry.

Pharmacological potential of *Syzygium cumini*

The biomass of *Syzygium cumini* is used in traditional medicine, including Ayurvedic, Siddha, Tibetan, Sri Lankan and Indonesian practices (7, 14, 15). Reported biological activities include antioxidant, anti-inflammatory, anticancer, antidiarrheal, antimicrobial, radioprotective, gastroprotective and antidiabetic effects. The following synthesis highlights the main evidence while emphasising limitations and socio-economic relevance rather than merely listing pharmacological claims.

Antioxidant activity

Antioxidants are important compounds that can reduce oxidative stress through radical scavenging and related cellular defence mechanisms (6, 7, 16). Jamblang fruit is a notable source of anthocyanins, ascorbic acid and total phenols. This antioxidant profile supports its development as a functional food ingredient. However, most available evidence is based on laboratory or product-development studies; therefore, claims for human health benefits should be presented cautiously until supported by stronger clinical and dietary evidence.

Anti-inflammatory potential

Jamblang fruit and seed extracts have been reported to show anti-inflammatory activity through mechanisms involving ectonucleotidase, acetylcholinesterase, adenosine deaminase, nitric oxide activity, cyclooxygenase (COX), inducible nitric oxide synthase (iNOS), tumor necrosis factor-alpha (TNF-alpha) and related inflammatory pathways (7). These findings indicate potential for pharmaceutical exploration, but they also reveal the need for dose standardisation, toxicity evaluation and validation across comparable experimental models.

Table 1. Nutrient content of jamblang biomass

Part of the plant		Nutrients	Level
Fruit		Moisture content (%)	79.2–85.9
		Carbohydrate (%)	7.88–22.4
		Protein (%)	0.65–6.60
		Fats (%)	0.15–1.81
		Crude fiber (%)	0.22–3.65
		Ash content (%)	0.30–4.50
			0.02–116.0
			350–141.7
			172–1791
			0.10–4.60
			9.14–49.8
			0.01–18.5
		Zinc (mg/100 g)	0.28–2.11
		Copper (mg/100 g)	0.07–6.80
		Chlorine (mg/100 g)	8.00
		Manganese (mg/100 g)	0.57–1.33
		Chromium (mg/100 g)	0.35
		Riboflavin (mg/100 g)	0.009–0.01
		Thiamine (mg/100 g)	0.008–0.12
Leaves		Niacin (mg/100 g)	0.20–0.30
		Ascorbic acid (mg/100 g)	5.70–137
		Vitamin A (IU)	80
		Folic acid (mg/100 g)	3.00
		Protein (%)	9.10
		Fats (%)	4.30
		Fiber (%)	17.0
		Calcium (%)	1.30
		Ash (%)	6.00
		Moisture (%)	47.0–52.2
Seeds		Carbohydrate (%)	41.0–89.7
		Fats (%)	0.35–1.28
		Protein (%)	4.68–6.80
		Ash (%)	2.00–3.13
		Calcium (mg/100 g)	0.41–135
		Magnesium (mg/100 g)	111.6
		Potassium (mg/100 g)	6.06
		Phosphorus (%)	0.17
		Sodium (mg/100 g)	6.10–43.9
		Iron (mg/100 g)	4.20
	Minerals	Copper (mg/100 g)	2.13
		Ascorbic acid (%)	1.84

Source: (7).

**Fig. 1.** Representation of jamblang fruit. Source: (7).

Anti-cancer

Extracts from jamblang fruit, seed, bark and leaves have shown cytotoxic or anticancer-related effects in several cell lines (Table 2) (7). These results are scientifically promising but remain preliminary for community development purposes. Their practical socio-economic contribution will depend on whether bioactive extracts can be processed safely, regulated properly and linked to formal nutraceutical or pharmaceutical value chains.

Radioprotection

Phenolic compounds in jamblang have been associated with radioprotective potential, including DNA protection and antioxidant modulation in experimental settings (7). This evidence adds scientific value to the plant, but the application remains specialised and requires further pharmacological validation. For the present review, this finding mainly strengthens the argument that jamblang has diversified bioproduct potential beyond fresh fruit consumption.

Antidiabetic potential

Diabetes mellitus is a prevalent metabolic disorder and is associated with substantial global mortality, accounting for approximately 1.6 million deaths annually. Hyperglycemia, oxidative stress, inflammation and insulin-related dysfunction are important mechanisms in its progression (6). Jamblang has been studied as a potential antidiabetic plant because its leaves and seeds contain flavonoids, phenolics, sitosterol, betulinic acid, crategolic acid, quercetin, myricetin, kaempferol and related compounds (5, 17, 18).

Polyphenol-rich jamblang leaf extract has been associated with reduced hyperglycemia, improved liver glycogen, lower glycated hemoglobin, improved insulin sensitivity, pancreatic beta-cell protection and modulation of glucose-related enzymes in experimental studies (19). These findings provide a scientific basis for product development. However, they should be connected with standardised dosage, safety assessment and regulatory pathways before being used as claims for commercial products in social forestry enterprises.

Potential of *Syzygium cumini* as food additive and industrial ingredient

Jamblang fruit can be used as a food additive because its flavonoids, phenolics and anthocyanins support colour, functional attributes and product diversification (6, 7). Ripe fruit can be consumed fresh or processed into jam, syrup, squash, sherbet, wine, instant powder, natural colorant and other products (9, 20, 21). This processing potential is important because value addition

can extend shelf life, reduce post-harvest losses and improve market opportunities for community groups.

Jamblang pulp has been tested in ice cream at 1–4 % and optimal sensory attributes were reported at 3 % pulp addition. The addition of jamblang pulp also influenced titratable acidity, fibre, ash, hardness, total soluble solids, melting rate, pH and fat content (7). Anthocyanin-rich bark extract has also been explored as a pH-sensitive indicator for meat quality monitoring. These examples show that jamblang is not only a fresh fruit commodity but also a source of functional ingredients for food innovation.

Food applications further include wheat pasta enriched with 30 % jamblang pulp, which improved antioxidant activity, beta carotene, total phenolics, dietary fibre and ash content (7). Jamblang extract has also been explored as a natural alternative to trypan blue in laboratory applications (22). Although these findings indicate diversification potential, the scale-up of jamblang-based products still requires cost analysis, consumer acceptance studies, product safety evaluation and market-chain mapping.

Jamblang seeds can be processed into flour for bakery products or health-oriented products in powder, capsule, or tablet forms (20). This use is relevant for community enterprises because seed processing can increase product diversity and reduce waste. However, its adoption should be supported by simple processing protocols, quality standards and training for farmer groups or social forestry business groups.

Potential socio-economic value of *Syzygium cumini* as tropical fruit of the archipelago

Syzygium cumini has socio-economic value when its ecological adaptability, fruit production, processing potential, pharmacological promise and community-based cultivation are connected with practical livelihood strategies. The reviewed literature supports five main socio-economic pathways:

Community welfare

Jamblang cultivation can support community welfare by creating seasonal work, providing alternative income and stimulating small-scale processing activities. Evidence from a jamblang-based agroforestry demonstration plot in Linggajaya Village showed farmer participation and the emergence of local business interest, especially during the dry season (23). However, the reviewed studies provide limited quantitative data on farm-gate prices, yield per tree, household income contribution, or profitability. This is a major knowledge gap that future socio-economic research should address.

Table 2. Anticancer potential of jamblang plant

Part of the plant	Extraction solvent	Cell lines	Results
Bark of trees	50 % Liquid Methanol	Carcinoma of uterus and cervical cancer	Dose-dependent cell death against both cell lines
	Chloroform	PA-1	IC ₅₀ 27 µg/mL
	Methanol	Oral squamous cell carcinomas cells	IC ₅₀ 40 µg/mL IC ₅₀ < 50 µg/mL
Fruit pulp	Ethanol	Leukemia cells	Direct correlation observed between antioxidant status and anti-leukemia activity
	Methanol	Lung cancer cells (H460)	IC ₅₀ 35.2 µg/mL
	Ethanol	HT-29 Cells	IC ₅₀ 267.5 µg/mL
	Acid methanol	Colon cancer cells (HCT-116)	Dose-dependent cell death
Seeds	Ethyl acetate	Breast cancer cells (MCF-7)	Dose-dependent cell death
	Methanol	Colon cancer cells (HCT-116)	IC ₅₀ 1.24 µg/mL
Leaves	Methanol	Colon cancer cells (HCT-116)	IC ₅₀ 1.42 µg/mL

Source: (7).

Food security

Jamblang fruit can contribute to local food security because it can be consumed fresh and processed into juice, jam, syrup, sweets, instant powder, natural colorant and other products (20). Its food and nutraceutical value can diversify local diets and create small-scale processing opportunities. Nevertheless, claims of food security contribution should be supported by future data on seasonal availability, consumption patterns, processing cost, storage stability and household-level use.

Tradition and cultural identity

Jamblang also has cultural value because it appears in local names, traditional foods, traditional medicine practices and regional identity, including the use of Jamblang as a place name in Cirebon (24). This cultural association may strengthen place-based branding and agro-tourism, but it requires careful documentation to avoid reducing cultural heritage to commercial branding alone.

Education and environmental awareness

Promotion of jamblang can strengthen environmental education by linking biodiversity, local fruit conservation, healthy diets and community-based forest management. Educational campaigns should not only emphasise health claims but also explain sustainable harvesting, tree maintenance, post-harvest handling and the role of multipurpose trees in agroforestry landscapes.

Local community empowerment

Community empowerment can be developed through training in nursery management, cultivation, fruit processing, seed processing, natural colorant production and product packaging. Training conducted for a herbal plant empowerment group in the Cendrawasih Health Center Area of Makassar showed that jamblang seed processing into practical beverage products can increase community knowledge and stimulate product ideas (25). This indicates that jamblang-based empowerment is feasible, but scaling requires financial access, quality control, licensing and market linkage.

Overall, the socio-economic value of jamblang will increase if pharmacological evidence is translated into safe products, if food processing is linked with market demand and if social forestry institutions provide land access, training and collective marketing. Current evidence remains stronger for potential than for measurable economic impact. Therefore, future studies should quantify yield, price, production volume, labour absorption, household income contribution and comparisons with other agroforestry commodities.

Table 3 shows that jamblang development requires more than a general statement of potential. The TOWS interpretation suggests four practical directions. First, strengths–opportunities (SO) strategies should use jamblang adaptability, multipurpose biomass and product diversity to develop agroforestry demonstration plots, superior local fruit branding and processed products for food and nutraceutical markets. Second, weaknesses–opportunities (WO) strategies should address weak public knowledge and limited marketing by establishing farmer training, product incubation, packaging assistance and digital marketing channels. Third, strengths–threats (ST) strategies should reduce competitive threats by developing cultivation databases, product standards, market intelligence and partnerships with processors, universities and local governments. Fourth, weaknesses–threats

(WT) strategies should minimise risk by creating a national or regional jamblang working group, preparing business feasibility studies, benchmarking with established producers and developing gradual commercialisation rather than unsupported export claims. These strategies provide a more actionable basis for social forestry and community development.

Potential of *Syzygium cumini* for social forestry development

Social forestry is a sustainable forest management system implemented in state forest areas or customary forests by local communities or customary law communities as the main actors to improve welfare, environmental balance and socio-cultural dynamics (26, 27). Fruit trees are suitable for social forestry because they can generate non-timber products, provide ecological services and support livelihood diversification. In this context, jamblang is relevant as a multipurpose tree species that can be integrated into community forests, village forests, forestry partnerships and people's forests.

The relevance of jamblang to social forestry is strengthened by national policy context. Social forestry targets have reached millions of hectares; many Indonesian villages are located around forest areas and tenure conflicts remain a major governance issue (28). Within this setting, social forestry should be viewed as a mutually beneficial strategy that connects livelihood improvement with ecological rehabilitation. Jamblang can contribute to this strategy through fruit production, processed products, environmental services and potential livestock-related biomass use. However, successful adoption requires species-site suitability assessment, farmer group readiness, market access and technical guidance.

Jamblang is not a priority commercial timber species, but it can be cultivated like other multipurpose fruit trees such as *Durio spp*, *Lansium spp* and *Nephelium spp*. Its fruiting period of approximately 7–8 years from seed or seedling makes it more attractive than many timber-oriented species for community-based systems. Productive trees in river basin areas may also support environmental service schemes if managed without destructive harvesting. Among the six schemes shown in Table 4, Community Forest, Village Forest, Forestry Partnership and People's Forest appear most suitable as initial development pathways. Community Plantation Forest is more wood-oriented, while Customary Forest requires stronger attention to local norms and institutional approval if jamblang is introduced as a new species.

Potential of *Syzygium cumini* for livestock

Fresh jamblang leaves are used by some livestock farmers in Indonesia as ruminant feed because leaf biomass is locally available. Jamblang biomass also contains bioactive compounds that may function as antioxidants or antimicrobials in livestock systems (29). Studies on jamblang leaf extract have reported effects on oxidative stress, immune responses and resistance to disease in animal models (30). Jamblang leaf extract has also been tested in semen preservation, although inappropriate dosage may reduce spermatozoa activity or viability (31). These findings indicate livestock-related potential, but more research is needed on safe inclusion levels, palatability, digestibility, long-term toxicity and economic feasibility before recommending broad use in farmer systems.

Table 3. Strengths, weaknesses, opportunities and threats (SWOT) analysis of jamblang development as a source of community and state economy

Aspect	Opportunities (O)		Threats (T)	
External	1. Sufficient area for jamblang fruit cultivators, so that it can be developed into a superior tropical fruit of the archipelago, especially for the development of biopharmaceuticals.	4. The existence of other countries (competitors) that make jamblang fruit an export commodity whose market and regulations are already established.		
Internal	2. Jamblang fruit forests and plantations become tourist forests that have educational, economic and environmental conservation values.	5. Demands for strong commitment from all parties (vertical/horizontal) in utilising the potential of jamblang fruit which is a tropical fruit wealth owned by Indonesia.		
	3. Jamblang has the potential to become an export commodity considering its high demand, especially as a material for making health products and other secondary forms.	6. Product marketing requires extra efforts to promote the benefits of jamblang fruit to other countries.		
		7. There is no map of international market potential, regulations and management of jamblang fruit.		
Strength (S)	SO strategies 1. Develop jamblang agroforestry demonstration plots based on technical cultivation research. 2. Position jamblang as a superior multipurpose Nusantara tropical fruit. 3. Build partnerships among farmer groups, social forestry business groups, universities, local governments and processors. 4. Develop processed fruit, nutraceutical ingredients, livestock feed additives and complete-feed components from jamblang biomass.		ST strategies 1. Build a national or regional jamblang database covering cultivation area, production, uses, processing actors and market channels. 2. Establish development centres and cross-sector coordination among forestry, agriculture, health, industry and trade stakeholders. 3. Prepare product standards and market intelligence to respond to competition from countries with more established jamblang markets. 4. Introduce appropriate processing technology for food, nutraceutical and livestock products.	
	1. Jamblang fruit is relatively easy to grow in various ecological conditions in Indonesia;	7. Jamblang cultivation has not been widespread/encourage the development of jamblang cultivation based on technical research;	11. Detailed data/information on jamblang is relatively limited/Building a database and conducting comprehensive research on the main economic potential of jamblang fruit in collaboration with domestic and foreign institutions;	
	2. Abundant fruit, easy to obtain and affordable;	8. Utilisation of jamblang potential has not been optimal/establish jamblang as a superior archipelago and determine key partners;	12. Vertical and horizontal coordination related to jamblang fruit has not been established. Determination of Jamblang development centers and cross-sector and regional coordination have been strengthened; and	
	3. Jamblang fruit can be consumed as fresh fruit, processed and marketed in the form of advanced products;	9. Jamblang socialisation at the rural farmer level has not been widely carried out / build cooperation with farmer groups in villages or social forestry business groups (agroforestry model); and	13. Processing technology is still limited, so it is necessary to introduce modern technology in the processing of complete feed and feed additives for livestock	
	4. Other parts of the jamblang tree such as the bark for raw materials for medicine and the tree trunk can be used for household tools (including Multipurpose Tree Types);	10. Processing jamblang biomass as feed additives and complete feed for ruminants.		
	5. Jamblang leaves can be used for ruminant feed; and			
	6. The content of bioactive compounds in jamblang can be used as ingredients for feed additives for livestock			
Weakness	WO strategies 1. Expand farmer-level outreach on the nutritional, pharmacological, ecological and economic benefits of jamblang. 2. Strengthen small and medium-scale processing assistance for fruit pulp, seed flour, instant powder, natural colorant and herbal beverage products. 3. Develop marketing channels, collective branding and digital promotion through social forestry business groups. 4. Train farmers in biomass processing for safe livestock feed additives and complete feed components.		WT strategies 1. Establish a jamblang expert and practitioner forum to reduce knowledge gaps in processing and marketing. 2. Conduct benchmarking with established jamblang-producing or exporting regions. 3. Prepare feasibility studies before promoting export-oriented commercialisation. 4. Apply gradual commercialisation to reduce market, quality and regulatory risks.	
	1. The general public still does not know many other benefits of jamblang fruit.	5. Jamblang marketing channels are still limited/building marketing channels.		
	2. Consumers' love of jamblang for "exotic" (sweet) fresh fruit is still limited.	6. Jamblang processing industry provides industrial assistance for jamblang processing on a small/traditional scale (raw materials) to medium/large (pharmaceutical sector).	1. Knowledge about the jamblang processing and marketing industry is still limited and it is necessary to build a team consisting of jamblang experts and practitioners with the implementation of "benchmarking" for the main jamblang producers/exporters.	
	3. Entrepreneurs do not know much about the potential of jamblang as a high-value trading commodity.	7. Academics work with the government to socialise and conduct training on making complete feed and application of feed additives based on jamblang tree biomass		
	4. Farmers do not know much about the potential of jamblang biomass as a feed additive and complete feed component			

Table 4. Analysis of jamblang potential in supporting social forestry programs and practices

Sl.No.	Program scheme/ Practice	Development area	Products and benefits	Information
1.	Community forest	Production forest areas (not burdened with rights) and protected forests.	Non-ood (fruit; bark); wood; environmental services	Trees in protected forests, may not be cut down, except by community group members who have permission. Trees located in River Basin Areas (DAS), can receive environmental service payments (PES) if there is no felling.
2.	Community plantation forest	Only production forest areas.	Non- wood and wood	Acts as an insert plant and to complement income from wood products from the best industrial tree species.
3.	Village forest	Production forest and protected forest areas in rural areas.	Wood, non-wood and environmental services	Trees can be used by all villagers.
4.	Forestry Partnership/ Conservation Partnership	Production forest areas, protected forests and certain zones in conservation.	Non-timber service products and environmental services or agroforestry products.	Located in an area with a background of tenure conflict.
5.	Customary forest	Customary land (inside and outside the forest area).	Wood, non-wood and environmental services.	Community member agreements define the models and products/services that can be used.
6.	People's forest	Owned land (outside forest areas) both in the yard and in the garden.	Wood and non wood.	Mixed or monoculture garden forms.

Conclusion

This review shows that *Syzygium cumini* has integrated ecological, pharmacological, socio-economic and livestock-related potential for social forestry and community development in Indonesia. Its main contribution lies in its suitability as a multipurpose tree species that can generate fruit, processed food products, nutraceutical raw materials, educational value and complementary livestock uses. The strengths, weaknesses, opportunities and threats (SWOT)–threats, opportunities, weaknesses and strengths (TOWS) synthesis indicates that future development should focus on cultivation databases, farmer training, product standardisation, post-harvest technology, market-chain mapping and cautious commercialisation supported by government regulation and university-community partnerships. The strongest evidence currently supports jamblang as an underutilised species with promising livelihood potential, while the weakest evidence relates to quantitative economic impact, market value, production volume and household income contribution. Future research should therefore combine agronomic trials, socio-economic surveys, product development, safety assessment and social forestry business-model analysis.

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Authors' contributions

MAS was responsible for conducting the study, statistically analysing and rechecking the data and preparing the manuscript, including the tables and figures. AP was responsible for supervising the study and advising on the manuscript content. HM, CW and FD were responsible for advising on the experimental design and assisting with the application of nanotubes during the experiment. SW, CSDK and DPS were responsible for advising on the manuscript content, formatting the manuscript in accordance with the journal guidelines, correcting the grammar and improving the overall flow of the manuscript. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interest to declare.

Ethical issues: None

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