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Original Article

Analyzing Bendi Bean Farming: Comparative Study between Indonesia and Malaysia

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Abstract: Hibiscus esculentus is a simple plantation activity that may produce significant returns. In addition to garden planting, fertilization technology can now be used for Bendi planting. This study was conducted to analyze Bendi bean farming in Indonesia and Malaysia. The data used in this research is secondary data from September 2023. The methods used in this research are descriptive and cost analysis. The study's findings are that okra farmers in Indonesia earned Rp. 36,316,362.5 per hectare, while farmers in Malaysia earned Rp. 46,391,400 per hectare after conversion. This study found that factors caused this price difference between Indonesia and Malaysia, such as a combination of cultivation challenges, market factors, and cultural preferences. While soil quality, pests, and low demand are important factors, the availability of imports from Malaysia increases competition and limits domestic production. This study concludes that Bendi beans are scarcer and more expensive in Indonesia than in Malaysia due to a combination of cultivation challenges, market factors, and cultural preferences. While soil quality, pests, and low demand are important factors, the availability of imports from Malaysia increases competition and limits domestic production. To close this gap, Indonesia may need to invest in agricultural research and infrastructure to improve cultivation practices and lower production costs.

Keywords: Bendi farmers; Beans farming; Cost analysis, Indonesia and Malaysia.

1. Introduction

Planting Bendi (Hibiscus esculentus) is a simple plantation activity that may produce significant returns. In addition to garden planting, fertilization technology can now be used for Bendi planting. This type of fruit vegetable is also known as 'Bendi Beans', a Malvaceae family plant planted on 3,283 hectares in Malaysia in 2021, with a potential yield of 62,796 metric tons. Negeri Perak planted the most bendi, with 1,169 hectares producing 23,557 metric tonnes, followed by Negeri Johor (842 hectares) and Sarawak (395 hectares) (Department of Agriculture, 2022). In some countries, Bendi planting is commonly combined with other fruit vegetables such as eggplant, cucumber, peria, and leafy vegetables. In addition, bendi is planted around the house in pasu or polybags as part of the famous green earth program. Bendi, a slimy fruit vegetable, is considered native to North Africa. It is easy to grow and less susceptible to diseases and spoilers. The fruit and other parts of the plant are used for various purposes, including curries, ulam, salads,

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and frying. The fruit is also processed, salted, frozen, and cracked with salt. Mucilage is also used to concentrate tomato sauce.

The Dutch introduced okra cultivation to Indonesia in the 1920s, spreading to Java, Sumatra, and Sulawesi regions. However, okra production in Indonesia remained extremely low, serving only the local market. In the 1990s, the development of okra cultivation accelerated, and many farmers switched to okra cultivation because it was perceived to be more profitable and easier to maintain. In general, small-scale small-scale farmers still dominate okra cultivation in Indonesia, with few large entrepreneurs focusing on okra cultivation. As a result, the government must provide farmers with training and technical assistance for okra cultivation to continue to grow and thrive. Vegetables are a high-demand food item containing various beneficial nutrients that the body requires to improve its overall health. Vegetables are a type of plant grown using modern horticultural farming methods. Farmers can use this method to produce vegetables on a large scale, meeting the needs of the national community.

Horticulture is one of the potential agricultural sub-sectors. It is encouraged to improve the welfare of farmers, the regional economy, and the national economy and increase foreign exchange through exports. In the first and second quarters of 2021, the horticulture sub-sector recorded growth of 3.01% and 1.84%. This indicates an outstanding contribution of the horticulture sub-sector to the structure of the National GDP (Pusat data dan Sistem Informasi Pertanian, 2020). In 2020, horticultural exports reached USD 645.48 million, an increase of 37.75% compared to 2019. Fruit commodities dominated this increase in exports during the COVID-19 pandemic in 2020. The realized value of fruit exports in 2020 was recorded at USD 389.9 million, an increase of 30.31% compared to 2019 (Pusat data dan Sistem Informasi Pertanian, 2020).

The okra plant (Abelmoschus esculentus L.), better known as chickpea, is a vegetable native to Africa. Okra belongs to the Malvaceae family (cotton-cabbage) and is distributed in tropical and subtropical regions such as India, West Africa, and Brazil. This plant is trendy in European countries and Australia. Thai people call this plant lady's finger because of its cylindrical shape with pointed ends like a noblewoman's finger (Idawati, 2012). Okra plants include plants with indeterminate growth types. Okra plants have a deep taproot. The stem of the okra plant is semi-woody and green or reddish-green. Leaves appear alternately heart-shaped and usually have five leaf lobes. Okra is a long capsule cone comprising 5 locules (Werdhiwati, 2016).

The okra plant (Abelmoschus esculentus L) is an economically important vegetable crop worldwide in tropical and subtropical regions. It is suitable for cultivation as a cash crop. Okra is grown commercially in India, which ranks first in the world, with 3.5 million tonnes (70% of total world production) produced from over 350 hectares of land (Widiansyah, 2024). Okra is also low in calories, so it can be used as a menu in a diet or in losing weight. Here are the health benefits of okra: 1) Good for the heart because the fiber in okra dissolves easily; 2) Good for diabetes; scientific research shows that the fiber in okra helps stabilize blood sugar. Okra controls sugar from the blood by the liver; 3) Overcome constipation; the fibre content in okra is easily digested and facilitates bowel movements. Okra helps absorb excess water in the stomach and other intestinal irritations; 4) Rich in vitamins A and C.

Vitamin A content is very good for maintaining eye health. Vitamin C is indispensable for maintaining mucous membranes that contribute to keeping the skin healthy. Vitamin C is very good for maintaining healthy skin and preventing various skin problems. Vitamin C boosts immunity. Vitamin B in okra prevents acne and keeps the skin smooth and glowing ((Reddy and Kumar, 2022)). 5) Protects the lungs. Okra contains nutrients needed by the body. One of them is flavonoid compounds that function as antioxidants, such as beta-carotene, xanthin, and lutein, which can protect the lungs. 6) Prevent oral cancer One of the compounds contained in okra is antioxidants. Antioxidants contained are one of the compounds that can help prevent oral cancer (Widiansyah, 2024). 7) Risk of defects in the fetus Okra plant as a good producer of folic acid. 100 grams of fresh okra contains about 22% RDA of folic acid. 8) Helps maintain the immune system.

In okra, 36% of the vitamin C content is derived from daily recommendations for the body. In addition, the iron benefits in okra help regulate hemoglobin and play a role in energy metabolic processes, including DNA by enzymes and the immune system. 9) Strengthens bones and teeth. Vitamin K found in okra is a co-factor for blood clotting enzymes and is needed to strengthen bones. In addition, okra is also a producer of calcium that benefits bone and tooth health. 10) Maintain body balance. Okra plants are rich in B-complex vitamins such as niacin, vitamin B-6 (pyridoxin), thiamin, and pantothenic acid. The body needs all these vitamins for energy, the nervous system, and digestion. 11) Aids in energy metabolism Mangaan and magnesium content act as co-factors for various types of enzymes in the body. Magnesium is a catalyst for ten biological reactions in the body, and it functions as urea synthesis, connective tissue, and bone formation. It prevents fat peroxidation by free radicals, which are very important in controlling energy metabolism in the body (Widiansyah, 2024).

Okra farming can be said to be feasible or not feasible by calculating business feasibility analysis and looking at existing costs, namely fixed and variable costs (Arunkumar, 2002; Panancheri, 2023). Farm

feasibility analysis/is carried out to see the relative profit in a business obtained in one production period against the expenses incurred in these business activities. Revenue Cost Ratio is an analysis that aims to determine how far each rupiah used can provide revenue value as a benefit (Magdalena, 2017; Panancheri, 2023). King et al. (2010) and Schoneveld (2022) state that agribusiness is the concept of an integrative system consisting of several subsystems, namely: a) Subsystem of procurement of agricultural inputs, b) Subsystem of farming, c) Subsystem of agricultural product processing, d) Subsystem of marketing, e) Subsystem of supporting services. It is said to be effective if farmers or producers can allocate the resources they have (which are controlled) as well as possible. It is said to be efficient if utilizing these resources produces outputs that exceed inputs (Sanjaya & Rizky, 2018).

According to Benchasri (2012) and Oluwasemire & Oladuji (2018), Okra (Abelmoschus esculentus) can be grown in various well-drained soils - sandy soils are best. Okra plants have reddish-green stems, with fertile plant stems reaching 1.5-2 m in height. Okra leaves are five-fingered and pinnate in shape, and the petiole is 10-25 cm long. The trumpet-shaped okra flower is yellowish and dark red underneath (Kreissig, 2019; Kumar et al., 2016). To achieve a more advanced farming business, it needs to be supported by several elements: land, labor, capital, and management (Tjakrawiralaksana & Soeriaatmadja, 1983). Okra farmers generally have obstacles in running their farms; limited costs are available in addition to the cultivated area. The most challenging problem in agricultural economics is the issue of costs, so farmers cannot increase their farms and production due to lack of costs. According to Agustina et al. (2015) and Nazar et al. (2023), business feasibility analysis is very important for business actors with the aim of 1) Establishing a business plan in terms of the business location, scale or volume of business, the number of capital requirements, and business facilities, technology and marketing 2) Establish a profit-oriented business processing strategy by taking into account the risks or obstacles faced in the production process, so that anticipation can be made to avoid losses.

Fertilization is needed by plants, especially fertilization that contributes to macronutrients, namely N, P, and K (Cissé, 2007; Hawkesford et al., 2023). Based on the research results, it can be stated that plants need various nutrients for their growth and development. The type of okra with green stems can reach more than 2 meters, which is higher than okra with sorrel stems (Benchasri, 2012). Price determines buyers' purchase decisions for a product or service. Especially if the product or service to be purchased is a daily necessity such as food or health, buyers will pay close attention to the price (Ghanimata and Kamal, 2012). The increase in Indonesia's population parallels the increase in vegetable consumption. The frequency of consumption or eating vegetables in big cities has not decreased much. This is because there is a high purchasing power for public consumption of vegetables. Like other horticultural products, vegetables are highly perishable and rot relatively quickly, so the quality decreases and cannot even be consumed. This means the market must always be supplied with fresh vegetables daily (Fissamawaty, 2014).

Of the three types of horticultural products, vegetables have great benefits for human life, including being a source of food and nutrition, family income, and state income (Ashari, 2006). Farming analysis can determine the success of farming activities and establish benchmarks for designing future circumstances. Farm income is the multiplication of the volume of production obtained by the selling price (Normansyah et al., 2014). The problems often encountered are farmers' low bargaining position due to high transaction costs, the absence of risk-bearing in the event of crop failure, the small scale and largely (semi)subsistence nature of farming, and inefficient information flows, resulting in a very limited choice of marketing channels (Poulton et al., 2006).

2. Materials and Methods

This study uses a quantitative descriptive approach with comparative analysis, where the author will analyze and compare different aspects. The study was carried out at Bukit Kor, Terengganu, an agricultural region known for cultivating vegetables and fruits. Bukit Kor serves as a hub for vegetable farming in Terengganu, functioning as a marketing centre, a vegetable care facility, and a pest research laboratory. This research, conducted in September 2023, investigated methods of improving agricultural operations, including pest management and marketing strategies. The sampling method used is purposive sampling. This study compared the incomes of okra nut farmers in Bukit Khor, Terengganu, Malaysia, and okra nut farmers in North Sumatra, Indonesia. The analysis calculates farming costs and income at each research location.

Total cost is the overall cost required in production. In other words, total cost is the total cost incurred, both explicit and implicit, on resources to obtain a specific output level. Total cost is also referred to as operating costs, calculated as fixed costs + variable costs (Delfianda et al., 2015). Total cost is a fixed cost that can also be referred to as operating costs. Fixed costs are also defined as the minimum costs a company must incur to carry out the production process in the form of goods or services. This cost is not affected by the number of products or services that can be produced. Fixed costs are a type of cost that is

static (unchanging) in a specific size. This cost will still be incurred even though it does not carry out any activities or when carrying out many activities (Sembiring & Utomo, 2016).

Variable costs are the sum of marginal costs over all units produced. They can also be considered average costs. Fixed costs and variable costs form two components of total costs. Direct costs, however, are costs that can be easily attributed to a specific cost object. However, not all variable costs are direct costs. For example, production variable overhead costs are variable costs that are indirect, not directly into a cost. Variable costs are sometimes called unit-level costs because they vary with the number of units produced (Sembiring & Utomo, 2016). Revenue is obtained from selling goods or services in a company within a certain period (Arrasyid, 2021).

The result obtained from land, efforts and activities, etc., income, acquisition, and results can also be said to be attempted to produce results (Arrasyid, 2021). Price is the value or money customers give in exchange for specific offers that satisfy their needs and desires. In simple terms, price is a measure of the value exchanged by customers buying an offer (Arrasyid, 2021). Total profit or profit is the difference between total revenue and total costs. This has been summed up from the expenditure of fixed and variable costs, which has been calculated net obtained without any more gross costs (Nasution et al., 2016). Total revenue is all revenues obtained from the selling price per unit multiplied by the sales volume of goods/services and summed overall sales. The greater the volume sold, the greater the revenue. Likewise, when prices rise, revenue will also increase. Therefore, an increase in revenue can occur due to the rise in price, sales volume, or a combination of both (Nainggolan et al., 2022). Total Operational Costs: A farmer incurs operational costs for daily activities. These costs include fixed and variable costs (Ramadhan, 2015).

3. Results

Table 1. Fixed costs incurred by farmers in Bukit Khor

Fixed Cost	Quantity	Unit	Unit Price (RM)	Total Cost (RM)
Land Cultivation	1	Ha	350	350
Seeds	3	Set	90	270
Water hose	300	M	300	300
water pump	1	Unit	1200	1200
Petronas Oil	40	Liters	2,05	82
Moses	7	Roll	130	910
Seedbed	20	Puck	4	80
Labor wages	2	People	40	80
Total Fixed cost				3272

Table 1 shows the fixed costs of okra farmers incurred each season, amounting to RM 3272. This cost is generated by using tools and materials to produce okra beans per season. The land cultivated is land with ownership status and an area of 1 Ha. Land cultivation is done by using machine technology to plough the land for RM 350, Seeds used in 1 Ha 3 sets in one season for RM 270, a Water hose used 300 m in 1 Ha of land for RM 300, and a water pump used 1 unit in 10 years for RM 1200, Petronas oil the amount used 40 liters in each season for RM 82, Musa is used in 1 Ha 7 rolls in each season for RM 910, Seedling beds are used before planting in the field because okra cannot be planted directly in the field because it can die quickly used 20 pieces for each season for RM 80, Labour wages two people per day with a salary of RM 80 per 1 person.

When analyzing labour salaries in farming between Malaysia and Indonesia, it is imperative to consider variables such as wage rates, labour productivity, and the influence of evolving agricultural methods on labour expenses. Rusmayadi et al. (2023) highlight the importance of mechanization in lowering production costs in nations such as Indonesia, where wage rates are rising. Indonesia's agriculture sector may experience a decline in competitiveness compared to Malaysia due to the anticipated increase in labour expenses. Wang et al. (2016) examine the correlation between the rise in actual salaries, the implementation of mechanization, and the benefits of large farms in Indonesia. This suggests that bigger farms may have a greater advantage as wages rise since they can afford to engage in mechanization. This, in turn, could impact how wages change in the agricultural industry.

Alola et al. (2024) emphasize that literacy rates and social standing impact the female labour supply decision-making in rural marketplaces. This observation could be relevant when analyzing the makeup of the workforce in Indonesia and Malaysia, especially concerning gender-based wage disparities. In addition, Hill et al. (2021) emphasize the significance of the labour supply reaction to agricultural wages for the long-term viability of crop production. A crucial aspect of measuring the overall influence on agricultural

production and competitiveness between Indonesia and Malaysia is comprehending how labour supply in both countries responds to wage fluctuations.

Table 2. Variable costs incurred by farmers in Bukit Khor

Variable Cost	Quantity	Unit	Price Unit (RM)	Amount (RM)
Organic Fertiliser	100	Set	60	6000
NPK Green Fertilizer	2	Sacks	250	500
NPK Blue Fertilizer	2	Sacks	250	500
Folio Liquid Fertilizer	4	Litre	30	120
Insect Poison (Alosa)	1000	Mil	150	150
Grass Poison	4	Litre	100	400
Pest Poison	10	Litre	200	2000
Total Variable cost				9670

Table 2 captures the variable costs okra farmers incur each season, amounting to RM 9670 per season; this cost is generated from using materials to produce okra beans per season. Organic fertilizer used in 1Ha required 100 seet per sack at RM 60 per set total cost incurred for organic fertilizer in a season RM 6000 per season, NPK Green fertilizer used in 1 Ha 2 sacks for RM 500, NPK Blue fertilizer used in 1 Ha 2 sacks for RM 500 / season, folio liquid fertilizer used in 1Ha 4 liters for RM 120 per season, insect poison used in 1Ha 1000 ml for RM 150/season, grass poison used in 1Ha 4 liters for RM 400/season, pest poison used 10 liters for 1 Ha for RM 2000/season.

Table 3. Total Cost, Income, and Profit by farmers in Bukit Khor

Description		Amount
Fix cost	RM	3272
Variable cost	RM	9670
Total Cost	RM	12942
Production	Kg	4500
Price	RM	6
Income	RM	27000
Profit	RM	14058

Table 3 displays that the total operational cost of okra farmers incurred is RM 12942, and the income of okra farmers is RM 27000, with a total profit of RM 14058 per hectare per season—results of interviews with bendi bean (okra) farmers in North Sumatra, Indonesia.

Table 4. Fixed costs incurred by farmers in North Sumatera

Operating Expenses per month	Amount
Fix Cost	
Depreciation of okra farm clearing 1/12 x Rp. 1.355.650	Rp 112.971
Depreciation of procurement of okra seeds 1/62 x Rp. 782.760	Rp 12.625
Depreciation of okra land rent 1/62 x Rp. 1.362.860	Rp 21.982
Shrinkage of liquid sprayer 1/62 x Rp 237.350	Rp 3.828
Depreciation of pails and knives 1/44 x Rp. 63.850	Rp 1.451
Depreciation of the scales 1/62 x Rp 133.650	Rp 3.038
Depreciation of water hose 1/62 x Rp 131.750	Rp 2.125
Depreciation of hoe1/44 x Rp. 93.850	Rp 2.133
Depreciation of water pump 1/62 x Rp 232.050	Rp 3.743
Depreciation of cleaver and sickle 1/62 x Rp. 83.700	Rp 1.350
Depreciation of wheelbarrow 1/62 x Rp 238.750	Rp 3.851
Tarpaulin depreciation 1/62 x Rp 132.850	Rp 2.143

Depreciation of basket 1/44 x Rp 83.720	Rp 1.903
Depreciation of additional equipment 1/44 x Rp. 63.760	Rp 1.449
Workers wage	Rp 1.400.000
Total Fix Cost	Rp 1.574.591

Table 4 captures the fixed costs incurred by okra farmers every season, amounting to Rp 1,574,591. This cost is generated by using tools and materials to produce okra beans per season. The land cultivated is land with land lease status with an area of 0.08 Ha. The depreciation of the okra plantation opening is done on 1/12 by using machine technology to plough the land at the cost of Rp. 1,355,650 with a depreciation value of Rp112,971. Depreciation of okra seed procurement is used 1/62 at Rp 782,760 with a depreciation value of Rp 12,625. Depreciation of okra land rent 1/62 at 1,362,860 with a depreciation value of Rp 21,982. The depreciation of liquid spray equipment is used at 1/62 at a cost of Rp237,350 with a depreciation value of Rp.3,828. The depreciation of the bucket and knife was used 1/44 at a cost of Rp.63,850 with a depreciation value of 1,451. Depreciation scales are used 1/62 at Rp. 133,650 with a depreciation value of Rp. 3,038. Depreciation of water hoses and knives used 1/62 at Rp. 131,750 with a depreciation value of Rp. 2,125. Depreciation of hoes 1/44 at Rp. 93,850 with a depreciation value of Rp. 2,133. Water pump depreciation is used 1/62, with costs incurred at Rp. 232,050 with a depreciation value of Rp. 3,743. The depreciation of machetes and sickles was used 1/62 at Rp. 238,750 with a depreciation value of Rp. 3,851. Tarpaulin depreciation is used 1/62 at Rp. 132,850 with a depreciation value of Rp. 2,143. Basket depreciation is used 1/44 at Rp. 83,720 with a depreciation value of Rp. 1,903. Depreciation of additional equipment 1/44 Rp. 63,760 with a depreciation value of Rp. 1,449, labor wages of 2 workers per season Rp. 1,400,000.

Table 5. Variable Costs incurred by farmers in North Sumatera

Variable Cost	Price per Unit	Quantity	Total
Fertiliser	Rp. 27.350	30	Rp 820.500
Chemical fertilizer	Rp. 35.350	30	Rp 1.060.500
Pesticides and drugs	Rp. 23.800	30	Rp 714.000
Another cost	Rp. 13.270	30	Rp 398.100
Transportation Cost	Rp. 26.300	30	Rp 789.000
Packaging	Rp. 14.300	30	Rp 429.000
Fuel	Rp. 25.300	30	Rp 759.000
Total Variable Cost			**Rp 4.970.100**

Table 5 indicates that the variable costs of okra farmers each season amounting to Rp. 4,970,100. This cost is generated from the use of materials to produce okra beans per season. Fertilizers used in 30 days at a cost of Rp.820,500, chemical fertilizers used in 30 days at a cost of Rp.1,060,500, pesticides and drugs used in 30 days at a cost of Rp.714,000, other costs for 30 days at a cost of Rp.398,100, transportation costs for 30 days at a cost of Rp.789,000, packaging for 30 days at a cost of Rp.429,000, fuel used for 30 days at a cost of Rp.759,000.

Table 6. Total Cost, Income, and Profit by farmers in North Sumatera

Description		Total amount
Fix cost	Rp.	1.574.591
Variable cost	Rp.	4.970.100
Total Cost	Rp	6.544.691
Production	Kg	210
Price	Rp.	45
Income	Rp.	9.450.000
Profit	Rp	2.905.309

Table 6 shows that the total operational costs of okra farmers incurred are Rp. 6,544,691, the income of okra farmers is Rp. 9,450,000 with a total profit of Rp. 2,905,309 per 0.08 hectares per season. Bendi beans, also known as okra, are a staple in many cuisines worldwide. However, they are surprisingly difficult to find in Indonesia and frequently more expensive than in their neighboring country, Malaysia. These factors contribute to this disparity.

1. Cultivation Challenges.
   - Climate: Bendi beans thrive in warm, humid environments. Malaysia's equatorial climate is ideal for growing these beans, whereas Indonesia's tropical climate features more extreme weather patterns, such as prolonged droughts and heavy rainfall, which can reduce crop yield.
   - Soil Quality: Bendi beans require well-drained, fertile soil with a pH of 6.0-6.8. Soil quality varies significantly throughout Indonesia, and many areas lack the ideal conditions for bendi bean cultivation.
   - Bendi beans are susceptible to several pests and diseases, including aphids, whiteflies, and fungal infections. Limited access to pesticides and agricultural expertise in Indonesia can make controlling these threats difficult, resulting in lower crop yields.
2. Market factors.
   - Low Demand: Bendi beans are less prevalent in Indonesia than in Malaysia. Lower demand reduces farmers' incentives to cultivate them on a large scale.
   - Import Competition: Indonesia imports many bendi beans from Malaysia, reducing domestic production. Malaysian farmers can benefit from lower production costs and more significant economies of scale.
   - Lack of Infrastructure: Indonesia's limited cold storage and transportation facilities make it difficult to preserve and distribute bendi beans effectively, contributing to their high cost.
3. Cultural Preferences.
   - Bendi beans are a staple ingredient in many Malaysian dishes, such as 'laksa' and sambal belacan.' They are less commonly used in Indonesia and frequently substituted with other vegetables such as spinach or green beans.
   - Traditional Beliefs: Some Indonesians believe that bendi beans cause bloating and indigestion. This perception further reduces their popularity and demand.

4. Conclusions

This study concludes that Bendi beans are scarcer and more expensive in Indonesia than Malaysia due to a combination of cultivation challenges, market factors, and cultural preferences. While soil quality, pests, and low demand are important factors, the availability of imports from Malaysia increases competition and limits domestic production. To close this gap, Indonesia may need to invest in agricultural research and infrastructure to improve cultivation practices and lower production costs. Furthermore, promoting the consumption of Bendi beans through culinary promotions and dispelling traditional myths could boost demand and domestic output.

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