FEASIBILITY ANALYSIS OF A CERTIFIED DURIAN (Durio zibethinus) PLANT BREEDING BUSINESS IN A BREEDER GUIDED BY THE UPTD HORTICULTURE PARENT SEED GEDUNG JOHOR

Fitri Yenti[1], Tri Martial[2], Zulheri Noer[3]
[1,2,3]Agribusiness Master's Postgraduate Program, Universitas Medan Area
Corresponding E-mail: 221802003@students.uma.ac.id

Abstract

This research aims to determine the durian breeding business and analyze the feasibility of a certified durian (Durio zibethinus) plant nursery business in breeders assisted by UPTD Building Horticulture Parent Seeds. This research was carried out for 1 (one) month using a census method among captive farmers. Feasibility Analysis of Certified Durian (Durio zibethinus) Plant Breeding Business at the Breeder Assisted by UPTD Horticulture Parent Seeds Gedung Johor, shows that the average total production cost is IDR 174,451,854, while the revenue is IDR. 308,706,641 and income of Rp. 134,254,786 To find out whether the business is feasible or not, it can be used to analyze the business by calculating production costs, calculating revenue and analyzing the results then calculating the results using the R/C Ratio and B/C Ratio methods. The research results show that the R/C Ratio value is 1.58 and the B/C Ratio value is 0.58, production productivity is greater than the production BEP, namely 13,891 and the price received by the nursery owner is greater than the BEP price, namely Rp. 5,550. From the research results, it was concluded that the durian breeding business was profitable and worth pursuing. In developing the durian agribusiness, the support of the availability of quality seeds from superior varieties is critical to success. The reality in the field shows that the availability of quality seeds is still an obstacle, so many farmers still use random seeds.

Keywords: ***Feasibility Analysis, Business, Durian Seeds***

1. INTRODUCTION

Durian is a fruit commodity that is popular with the public and has good economic value besides other fruits, because demand and prices for durian fruit commodities are relatively high. So, growing durian is a big opportunity and a good agribusiness prospect. This has an impact on increasing demand for durian seeds as the main raw material for growing durian. However, the lack of durian seed breeders/farmers is a problem in itself in meeting the demand for durian seeds. The problem of low fruit quality can be overcome by using labeled seeds. Labeled seeds are seeds that have received a certificate from the Certification Organizing Agency or the Seed Supervision and Certification Center (BPSB) and have been tested for authenticity. However, to get certified seeds, a significant amount of money is required. To produce labeled seeds in order to produce high quality fruit, a fruit plant nursery business is needed. The durian breeding business in the breeders assisted by UPTD Horticulture Master Seeds Gedung Johor, namely the UPTD Gedung Johor nursery, Deli Serdang Regency, Langkat Regency and Binjai City are farmers/breeders who produce labeled seeds, not many farmers or breeders produce labeled seeds, p. This is because according to farmers or breeders the process of producing labeled seeds is not easy, because it requires a lot of money. Labeled seeds, namely seeds that have received a certificate from the Seed Supervision and Certification Center (BPSB). The use of labeled seeds is very important to produce good quality durian fruit. The fruit plant nursery business is one of the agricultural activities that aims to meet the community's need for fruit in the future (Suhardi et al, 2018). North Sumatra Province is one of the provinces that has potential in developing the agricultural sector, namely in the field of durian plant breeding, especially Deli Serdang Regency, Langkat Regency and Binjai City. Consumers can now buy them online on the website provided by the breeder, making it easier for buyers to buy durian plant seeds, or by coming directly to the nursery.

In this research, the respondents were farmers/certified durian seed breeders assisted by the Johor Building Horticulture Master Seed UPTD located in Deli Serdang Regency, Binjai City and

Langkat Regency. Superior seeds must have superior characteristics such as high yield potential, fast fruiting, resistance to certain pests and diseases, resistance to environmental stress and so on. The difference between superior (certified) seeds and non-superior seeds is that superior durian seeds produce healthy seeds with lots of roots, their growth is uniform, when transplanted, seeds from good seeds can grow faster and stronger, giving high yields. However, despite this fact in the field there are still many farmers who do not use certified seeds, this is because uncertified seeds are cheaper and more affordable (Regional Technical Implementation Unit for Horticulture Parent Seeds Gedung Johor, 2023). The Durian Breeding Business is interesting to develop considering the community's need for durian seeds in the durian plant development program in several districts such as Dairi, Central Tapanuli, North Tapanuli, Deli Serdang, South Tapanuli, and Serdang Bedagai. There are several types of durian varieties developed in North Sumatra, such as bintana, otong, kani, and Matahari.

2. IMPLEMENTATION METHOD

Place and time of research

The research location was carried out at the UPTD (Regional Technical Implementation Unit) Horticulture Parent Seeds, Gedung Johor, Food Security Service for Food Crops and Horticulture, North Sumatra Province, which is in four locations, namely in the UPTD Garden of Horticulture Parent Seeds, Gedung Johor, Deli Serdang Regency, Langkat Regency. and Binjai City. This was carried out using a purposive method (deliberately) with consideration because the UPTD (Regional Technical Implementation Unit) for Horticultural Seeds, Gedung Johor, is a farming center for the propagation of certified superior durian seeds which has 8 breeders assisted by Binjai City, 5 people in Langkat and 6 people in Deli Serdang Regency.

Research methods

The data analysis methods used are qualitative and quantitative methods. The qualitative method was carried out using descriptive analysis to look at the durian plant breeding business activities in breeders assisted by the Johor Building Horticulture Master Seed UPTD, while the quantitative method was carried out using financial analysis to determine the costs, income level and feasibility of the durian plant breeding business.

Method of collecting data

The data collected is primary data and secondary data. Primary data was obtained from direct interviews with farmers who were entrepreneurs of durian seed propagation using a questionnaire that had been prepared previously. Secondary data was obtained from a study of bibliography, books and journals, statistical data from agencies related to the research conducted.

Sampling Method

The samples in this study were 20 farmers who reproduced certified superior durian seeds, these were durian seed breeders assisted by the Johor Building Horticulture Regional Technical Implementation Unit in the Johor Building Unit Garden, Binjai City. 8 farmers/breeders , Langkat Regency 5 farmers/breeders and Deli Serdang Regency 6 farmers/breeders. This number is the total number of farmers or durian seed breeders in the research area referring to the opinion of Arikunto (2011), namely if the number of research subjects is less than 100 then it is better to take all are respondents so that the research is population or census research.

3. RESULTS AND DISCUSSION

Durian Nursery Management at Research Locations

1. Sowing Durian Seeds

When starting to sow durian seeds, you should choose good quality ones, durian seeds can be found in ripe durian fruit. Before sowing the seeds, first clean them with clean water until there is no flesh on the seeds, if there is any it can cause mold or fungus on the seeds.

2. Durian Rootstock Preparation and Care

Durian seeds that have been sown for 1 (one) month have grown and produced leaf shoots, the rootstock should be given the best care before the next stage, by providing ZA fertilizer to increase the quantity of cambium on the durian rootstock and applying fungicide to prevent fungus from growing by applying it once a week .

3. Selection of Entres durian (Top shoots of durian)

When selecting the top part of a durian shoot or Entres, you should look at the parent durian tree, the parent durian tree must be of superior quality and have previously borne fruit. Entres are taken only the tips of the leaf branches with a length of 5 cm.

4. Entres Taking Cutting Process:
   a. Entres are taken in the morning and evening to maintain the moisture of the entres
   b. Cut the scion from the branch of the main tree using cutting scissors with a length of 5 cm
   c. The cut shoots are put in plastic so they don't scatter
   d. Sprinkle with water to maintain freshness
   e. Entres should not be exposed to sunlight which can cause the leaves to wilt.

5. Stages in starting the connection process:
   a. One durian rootstock seedling is cut evenly across the circle of the rootstock ring with a razor blade
   b. Cut down the stem of the durian seedling to a depth of 1.5 cm
   c. The base of the scion is sliced on both sides up and down with a length of 1 cm so that the slices are shaped like the blade of an axe.
   d. Next, the scion that has been cut is inserted into the rootstock section. When inserting the scion into the rootstock section, care must be taken so that the scion cambium can come into contact with the rootstock cambium.
   e. Tie the seedling halves with jute rope, wrap it from top to bottom and tie.
   f. Next, cover the connecting seeds with sugar plastic from top to bottom. At the bottom, jute rope is tied to prevent air from entering.
   g. The seeds are placed in a shady place under a tree, for up to 1 month the results will appear with signs of the emergence of new young leaf shoots on the seedlings

6. Acclimatization of Connected Durian Seedlings

After 1 month of connection of the seedlings in the enclosure, signs of the emergence of new shoots have appeared, then carry out acclimatization of the seedlings. Seedlings that have been covered with plastic cover are moved to an acclimatization shelter to get watering and fresh air, but the seedlings cannot yet be exposed to direct sunlight, they are still in a shady place for 1 week.

7. Replacement of Media for Durian Polybags from Connections

Durian seedlings that have been acclimated must be given care in the form of changing the soil medium. Durian seedlings that are acclimated still use size 12 polybags, this makes the growth of the seedlings slow. The polybag media must be changed to polybag size 20 so that the roots grow quickly and the same goes for the durian seedlings.

8. Care for grafted durian seeds

Seedlings that have had their polybag planting media replaced must be given good care by providing watering, fertilizer and foliar pesticides to the connection durian seedlings.

Condition of Durian Breeding

Durian nurseries in each breeder assisted by the Johor Building Master Seed UPTD (Johor Building Unit Gardens, Deli Serdang Regency, Binjai Regency and Langkat Regency) with a seed capacity of up to 100,000 seeds are very strategic because the nurseries are located on the side of the road. Nurseries that provide large enough seedlings will be able to supply ready-to-plant seedlings in areas with potential for Durian planting. Management of non-financial aspects includes market aspects, technical aspects, legal aspects, socio-economic and environmental aspects. In this aspect, the market potential for durian breeding at the Johor Building UPTD Main Seeds, in Deli Serdang Regency, Langkat Regency and Binjai City is explained. Meanwhile, the socio-economic and environmental aspects examine the benefits and risks received by the owner, government, surrounding community and the environment.

Cost management

Durian seedlings take 6-12 months before they can be planted in the field, therefore durian seedlings require an investment of around 2 years. Investment and maintenance costs for seedlings before they are planted in the field are arranged based on inputs/costs consisting of fixed costs and variable costs consisting of:

1. Fixed Costs and Variable Costs

Fixed costs in this case are equipment depreciation costs. The amount of costs incurred for fixed costs is IDR. 1,611,825 by the Johor Building Horticulture Master Seed UPTD garden, while each breeder incurs a fixed fee of Rp. 1,175,000 for Deli Serdang Breeders, Rp. 1,333,000 for Binjai breeders and Rp. 1,084,500 for Langkat breeders. Non-fixed costs (variable costs) are costs incurred during the seeding process. Variable costs are costs incurred for cultivating Durian fruit, including the costs of seed propagation, seed propagation (purchasing durian seeds, fertilizer, herbicides, labor wages and seed certification costs. These costs are grouped into two, namely first, production facilities and infrastructure, secondly wages labor Details of average total costs can be seen in Table 1 below:

Table 1. Details of Average Fixed Costs and Non-Fixed Costs for Durian Nursery Management at the Research Location in 1,000 Seeds

No	Respondent	Tool Depreciation	Seed Propagation	Seed Propagation	Labor	Certification Fee	Total cost
1	UPTD	1,611,825	342,500	1,588,100	2,025,000	199,500	5,766,925
2	Deli Serdang Breeder	1,175,000	274,450	1,946,387	1,731,313	189,875	5,317,025
3	Binjai Breeder	1,333,000	301,250	2,009,490	1,250,000	195,169	5,088,909
4	Langkat Breeder	1,084,500	235,800	2,098,798	2,412,500	196,350	6,027,948

Source: Primary data processed, 2024

2. Seed Production in Durian Nurseries

Seed production in the nursery of the Johor Building Horticulture Master Seed UPTD Unit Garden, Deli Serdang Regency, Langkat Regency and Binjai City based on the results of observations and research, durian seed production can reach 741,000 ready-to-plant seedlings every

6-12 months. If the production of these seeds is adjusted to the current market price, you can get a product yield of Rp. 9,245,457,000. In 1 year the seeds sold reached 567,500 seeds.

Table 2. Durian Breeding Production at the Research Location in 1,000 Seeds

No	Respondent	Number of Seeds	Seed Production
1	UPTD	1,000	950
2	Deli Serdang Breeder	1,000	922
3	Binjai Breeder	1,000	929
4	Langkat Breeder	1,000	935

Source: Primary data processed, 2024

3. Socioeconomic Value of Durian Breeding and Its Benefits

a. Socioeconomic Value of Durian Breeding

The general culture of society in Deli Serdang Regency, Langkat Regency and Binjai City is farmers. Especially in the nursery sector, the prospects are also very good. The community needs to be given education about how to carry out nurseries properly and correctly so that the nursery business will be more successful in the future. Various economic benefits such as those mentioned above in durian nurseries provide social benefits in the form of empowering the community around the nursery such as daily or contract labor and the residual value of the nursery results which can still be utilized by the community. Durian in North Sumatra attracts interest from the local market to international consumers. Apart from driving the community's economy, durian plays a role in preserving nature on the slopes of Bukit Barisan.

b. Marketing

Marketing durian seeds is very easy because buyers can come directly to the nursery and choose good seeds themselves. Consumers can buy them online on the website provided by the breeder, making it easier for buyers. You can also buy durian plant seeds by telephone, sellers can send seeds to consumers according to the variety, quantity and delivery address and can also come directly to the nursery location.

c. Land Potential

There is still a lot of empty land, especially those that only grow weeds. In general, it is very good for developing nurseries because apart from using land, it can also improve the community's economy.

Analysis of Durian Breeding Business in 2023 at the Research Location

Production costs and receipts for Durian Nursery Management in 2023 at the four nursery locations assisted by the Johor Building Horticulture Master Seed UPTD are an average total production cost of IDR. 174,451,854 and the average receipt is Rp. 308,706,641.

Table 3. Production Costs and Revenue from Durian Nursery Management in 2023

No	Respondent	Seed Production	Production costs per 1000 seeds	Total Production Costs	Seed Sales	Price	Reception
1	UPTD	11,000	5,766,925	63,436,175	5,000	10,000	50,000,000
2	Deli Serdang Breeder	49,167	5,317,025	261,420,379	45,750	12,833	587,125,000
3	Binjai Breeder	33,250	5,088,909	169,206,208	23,188	15,875	368,101,563

4	Langkat Breeder	33,800	6,027,948	203,744,656	20,500	11,200	229,600,000
	Total	127,217	22,200,807	697,807,418	94,438	49,908	1,234,826,563
	Average	31,804	5,550,202	174,451,854	23,609	12,477	308,706,641

Source: Primary data processed, 2024

Feasibility analysis of the Durian Breeding Business in 2023 at the four nursery locations assisted by UPTD of the Johor Building Horticulture Master Seed Breeders, the average R/C is 1.58 and the average B/C is 0.58. From the research results, businesses are efficient and worth developing because R/C > 1 and B/C > 0.

Table 4. easibility Analysis of Durian Breeding Business in 2023

Respondent	Seed Production	Total Production Costs	Seed Sales	Price	Reception	Income	R/C Ratio	B/C Ratio
UPTD	11,000	63,436,175	5,000	10,000	50,000,000	-13,436,175	0.79	-0.21
Deli Serdang Breeder	49,167	261,420,379	45,750	12,833	587,125,000	325,704,621	2.25	1.25
Binjai Breeder	33,250	169,206,208	23,188	15,875	368,101,563	198,895,355	2.18	1.18
Langkat Breeder	33,800	203,744,656	20,500	11,200	229,600,000	25,855,344	1.13	0.13
Total	127,217	697,807,418	94,438	49,908	1,234,826,563	537,019,145	6.34	2.34
Average	31,804	174,451,854	23,610	12,477	308,706,641	134,254,786	1.58	0.58

Source: Primary data processed, 2024

Calculation of the Break Event Point (BEP) for the Durian Breeding Business in 2023 at the four nursery locations assisted by the Johor Building Horticulture Master Seed UPTD is an average Production BEP of 13,891 and an average price BEP of 5,550, meaning that the durian nursery will reach the BEP after selling as many as 13,891 seeds, and the price received was greater than the BEP price, namely Rp. 12,477> Rp. 5,550,-From the research results, the business is worth developing. This is in line with the results of research by Lutfi, et al, on durian seed breeders in Langkat in 2021 with R/C ratio analysis results of 2.13 and B/C ratio analysis results of 1.13. Meri et al., 2017, in research on the Financial Analysis of Local Durian Fruit Nursery Farming at the Farmer Group Level, Barong Tongkok District, West Kutai Regency, concluded that Local Durian Fruit Nursery Farming in Ombau Asa and Geleo Asa Villages is worth pursuing. The B/C ratio obtained is 3.91, production productivity is greater than the production BEP, namely 110,000 seeds > 5,679 seeds and the price received by the nursery owner is greater than the BEP price, namely Rp. 2,000 > Rp. 348.45.

Table 5. Calculation of Break Event Point (BEP) for Durian Breeding Business in 2023

Respondent	Seed Production	Total Production Costs	Seed Sales	Selling price	Reception	Production BEP	BEP Selling Price
1	**2**	**3**	**4**	**5**	**6**	**7 =3/5**	**8=3/2**
UPTD	11,000	63,436,175	5,000	10,000	50,000,000	6,344	5,767
Deli Serdang Breeder	49,167	261,420,379	45,750	12,833	587,125,000	20,371	5,317
Binjai Breeder	33,250	169,206,208	23,188	15,875	368,101,563	10,659	5,089
Langkat Breeder	33,800	203,744,656	20,500	11,200	229,600,000	18,191	6,028
Total	127,217	697,807,418	94,438	49,908	1,234,826,563	55,565	22,201
Average	31,804	174,451,854	23,610	12,477	308,706,641	13,891	5,550

Source: Primary data processed, 2024

4. CONCLUSION

Based on the research results, it can be concluded that:

1. The average cost of producing durian seeds at UPTD and in the breeders assisted by UPTD Gedung Johor Horticulture Parent Seeds in the gardens of Johor Building Horticulture Parent Seed UPTD, Deli Serdang Regency, Binjai City and Langkat Regency in 2023 is IDR. 174,451,854.
2. The average total revenue is IDR. 308,706,641.
3. The average total income is IDR. 134,254,786 in one production for 1 year for the production of 31,804 durian seeds.
4. The average R/C ratio and B/C ratio values in the durian breeding business are 1.58 and 0.58. This means that the R/C ratio > 1 and B/C ratio > 0 indicates that the durian seed business is very worthy of cultivation and development.
5. The break-even point (BEP) for average production is 13,891 seedlings.
6. Meanwhile, the average break-even point (BEP) price is IDR 5,550 per seed.

REFERENCES

Arikunto, S. (2011). Prosedur Penelitian : Suatu Pendekatan Praktik. Jakarta: PT. Rineka Cipta.

Balai Pengkajian Teknologi Pertanian Jawa Barat (2017), Badan Penelitian dan Pengembangan Pertanian, Kementrian Pertanian.

Febriati, et al. 2017. Analisis Finansial Usahatani Pembibitan Buah Durian Lokal (*Durio zibethinus* L.) Pada Tingkat Kelompok Tani Kecamatan Barong Tongkok Kabupaten Kutai Barat, Semarang

Hanani N., 2023. *Pengantar Ekonomi Pertanian.* UB Press,Brawijaya.

Rahim Abdul, dkk (2007: 168), Ekonomika Pertanian, Pengantar Teori dan Kasus, Penebar Swadaya.

Ruskan S., dkk. 2024. Ilmu Usahatani. Widina Media Utama. Bandung.

Soekartawi. 2016. *Analisa Usahatani*. UI- Pres. Jakarta.

Suciaty, T, Setiawan, I, 2023. Analisis Kelayakan Usaha Bibit Durian (*Duriozibethinus*) Studi Kasus di Desa Teja Kecamatan Raja Galuh Kabupaten Majalengka.

Suhardi A., Anas Z., dan Dian L.M, 2018. Analisis Pendapatan Usaha Pembibitan Tanaman Buah-Buahan Di Kecamatan Lingsar Kabupaten Lombok Barat. Fakultas Pertanian Universitas Mataram.

Unit Pelaksana Teknis Daerah Benih Induk Hortikultura Gedung Johor,2023 Dinas Ketahanan Pangan Tanaman Pangan dan Hortikultura Provsu.

Wibowo, Singgih. 2000. *Petunjuk Mendirikan Perusahaan Kecil*. Penebar Swadaya. Jakarta.