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RESEARCH ARTICLE

Break-Even Point Analysis of Liquid Inorganic Fertilizer Business: A Case Study of Gapoktan Bubun Rondon, Alla District, Enrekang Regency

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ABSTRACT

Agricultural businesses in the Enrekang District, especially in the Alla District, are growing rapidly. This was followed by the development of agricultural facilities businesses, such as the sale of inorganic fertilizers carried out by the Gapoktan group. The purpose of this study was to find out how the Gapoktan business group provides fertilizer for farmers and analyze the break-even point (BEP) of the fertilizer sales business. This research uses a descriptive method with a quantitative approach. This study describes the state of the liquid inorganic fertilizer business when it reaches the BEP point. The results showed that the business must be able to sell liquid inorganic fertilizer as much as 200 liters per day to reach the BEP point. With a selling price of Rp10,000 per liter, the business can make a profit if it can sell more than 200 liters of fertilizer per day. By knowing the value of BEP, business management can make strategic decisions to increase business and profits.

KEYWORDS

Agricultural Business, Inorganic Fertilizer, Revenue Increase, BEP

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1. Introduction

1.1 Background

Resilient, efficient, and effective agricultural development must continue to be encouraged to create national development that can ensure the availability of sufficient, equitable, and affordable food and enable the country to compete in the global market. Agricultural development can be interpreted as the spread of agricultural technology innovations for farmers, so it is expected that agricultural business productivity can increase. Agro-industry is an effort to increase the efficiency of the agricultural sector to become a highly productive activity through the process of modernizing agriculture. Modernization in the industrial sector on a national scale can increase value-added receipts so that export income is greater (Irawan, N. C., & Aulia, N. N. 2022).

The existing inorganic fertilizer agribusiness business has not been able to fully meet the increasing consumer demand, so this condition creates an opportunity to establish a liquid inorganic fertilizer business in Enrekang Regency, South Sulawesi Province. This is evident after conducting a survey of several inorganic fertilizer sales businesses and plantation farmers in Enrekang Regency, namely the increase in demand for products; this is seen from the increase in the area of farms and plantations that use liquid inorganic fertilizers by more than 20% each year.

An increase in liquid inorganic fertilizer income can occur if accompanied by improvements in technology and quality, even though considerable investment is needed. Economic age is the period of economic use or the age of an asset that ends until the use of the asset is no longer economically profitable, even though technically the asset can still be used (Wibawadi, Y., & Muslichah, I.

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2023). Until now, the need for liquid inorganic fertilizers among farmers has always been a dominant factor in addition to inorganic fertilizers, considering the need for nutrients and improving the texture and structure of agricultural soil. Farmers are aware of the need for the use of liquid inorganic fertilizers. This is evidenced by the increasing consumer demand for liquid inorganic fertilizer, which increases every month. Farmers, as an integral part of agricultural development, have an important role and function in driving agricultural development in rural areas. Farmers are the main actors of agricultural development in rural areas.

In this case, the existence of farmers can play single or multiple roles, such as providing agricultural inputs (such as fertilizers), providing capital (savings and loans), providing irrigation water, and marketing products collectively (Wang, L. et al. 2020, Wang H., et al. 2021, Li, H., Mei, X. et al. 2021). This is done so that farmers use quality fertilizer on the crops they will work on so that farmers can increase high-quality yields and produce healthy plants. These conditions allow opportunities for inorganic fertilizers to further intensify the exploration of existing natural resources to meet increasing agricultural needs every year.

Based on the background description, the problem is how much and what the value of the break-even point (BEP) analysis of the liquid inorganic fertilizer business of the Bubun Rondon Group, Alla District is. Judging from the non-financial aspect and financial aspects, how much BEP is in each liquid inorganic fertilizer product produced by the Bubun Rondon Group, Alla District, Enrekang Regency, South Sulawesi Province?

2. Literature Review

2.1 Liquid Inorganic Fertilizer as a Source of Nutrients

Liquid inorganic fertilizer is a fertilizer made by fertilizer factories by concocting high-nutrient inorganic chemicals such as urea, NPK, and others. Types of artificial fertilizers in a liquid or solid form that contain nitrogen, phosphorus, and potassium nutrients. Inorganic fertilizer is one of the most common types of fertilizer used by the community in agriculture and plantations. The nutrient content in inorganic fertilizers is 15% nitrogen in the form of NH_3 , 15% phosphorus in the form of P_2O_5 , and 15% potassium in the form of K_2O . The nature of nitrogen (nitrogen carrier), especially in the form of ammonia, adds soil acidity properties that can support plant growth (Ersen Dudu, T., Alpaslan, D., & Aktas, N. 2022).

Fertilizer is a material that is added to the soil to provide nutrients that are important for plant growth. Fertilizer can also be defined as a material added to the planting medium or plants to meet the nutrient needs of plants so that they can produce well (Cen, Y. et al. 2020, Li, C. et al. 2022). In general, the quality parameters of liquid inorganic fertilizers include nitrogen content, phosphorus, moisture content, metal contamination (Pb, Cd, Hg), and arsenic (As). Nitrogen is the main nutrient for plants, which is generally indispensable for the formation or growth of plant parts such as leaves, stems, and roots, but if the amount is too much, it can inhibit flowering and fruiting in plants. Water content is the percentage of water contained in fertilizer expressed in units of percent. Pb metal is one of the metal contaminants present in solid NPK fertilizer. Some of these elements have different impacts that can affect the growth and development of plants and can even affect human health.

2.2 Benefits of Liquid Inorganic Fertilizer in Agriculture

According to Marson and Paul (2001), inorganic fertilizers have advantages: (1). Change soil structure for the better so that plant root growth becomes better. (2). Increase the absorption and holding capacity of the soil to water so that water is reserved for plants. (3). Improve the life of soil organisms. The environment in which the business is run must be carefully analyzed. This is because the environment, on the one hand, can be an opportunity for the business to be run, but on the other hand, the environment can also be a threat to the development of a business and can cause various activities that have an impact on the environment around the business location. Changes in people's lives as a result of business activities can be in the form of increasingly crowded locations around business locations, the emergence of social insecurity, the emergence of community diseases, and lifestyle changes as a result of the entry of workers from outside the region.

Environmental aspect analysis is carried out to answer whether the local environment is following the business idea carried out and whether the business benefits to the environment outweigh the negative impacts. A business idea is declared feasible based on environmental aspects according to the needs of the business idea, and the business idea can provide benefits that outweigh the negative impact in the region.

a. Business environment

It is an element that exists outside the company and cannot be controlled by business people, which can affect company performance. The environment is everything that is outside the organization (Mohd Zawawi, N. F., & Abd Wahab, S. 2019, Baloch, Q. B., et al. 2022).

b. Operational Environment: An environment that has a direct relationship with the company's operational activities. The operational environment is the environment closest to all business activities.

2.3 Technology Aspects

Technology to produce goods and services has and continues to develop under the progress of the times. Technological advances should have a high-efficiency impact on the production process while producing high productivity as well. However, in addition to the advantages, there are also disadvantages to the development of this technology. For example, technological developments do not necessarily match the company's internal environment or external environment. A particular product can usually be processed by more than one method. Thus, the chosen technology also needs to be determined. A common benchmark that can be used, for example, is to know how far the degree of mechanization is desired and the expected economic benefits. Some other criteria are suitability with the materials used, the success of using technology elsewhere, the ability of the workforce to operate technology, and the ability to anticipate advanced technology.

2.4 Marketing Aspects

Markets and marketing are social and managerial processes in which individuals and groups get what they need and want by creating, offering, and exchanging products of value to others (Мазур, К. В., & Коваль, О. В. (2023). The purpose of marketing services or products in general is as follows:

- a. Maximize consumption or, in other words, facilitate or stimulate consumers.
- b. Maximizing customer satisfaction.
- c. Maximize the choice (product range).
- d. Maximizing quality of life (quality, availability, cost of goods).
- e. Increase sales and services.
- f. Want to dominate the market and face competitors
- g. Meet the needs of a product or service
- h. Fulfill the wishes of customers of a product or service

2.5 Financial aspect

The purpose of analyzing the financial aspects of a business project is to determine the investment plan through the calculation of expected costs and benefits by comparing expenses and revenues, such as limited inventory of funds, capital costs, the ability of the project to pay back the funds within a predetermined time and assess whether the project will be able to grow continuously.

Investment is an investment in an activity that has a relatively long time in various business fields. Meanwhile, according to (Sivash, O., Ushakov, D., & Ermilova M. 2019), investment is sacrificing dollars now for dollars in the future; from this understanding, there are 2 (two) important attributes in investment, namely risk and grace period. The components contained in the cost of investment needs are usually adjusted to the type of business that can be run. Broadly speaking, the cost of investment needs includes pre-investment costs, fixed asset costs, and operating costs (working capital costs). Pre-investment costs are costs that can be incurred by the company to create a new business, either in terms of fixed assets or working capital costs.

Costs incurred for fixed assets include the purchase of land, the construction of buildings or factory buildings, and the purchase of machinery and vehicles. Operating costs (working capital costs) are costs incurred to purchase raw materials, labor costs, maintenance costs, and other costs. In discussing and analyzing production, it is necessary to know the meaning of production. The definition of production by Marquardt, K., Eriksson, C., & Kuns, B. (2022) is the result obtained as a result of work and workers' several factors of production at once, including land, capital, and labor. Zhang, F. et al. (2023) define production as a process in which some goods and services caused by input are added to other goods and services called output.

It is a determination of production for inventory valuation. In calculating the cost elements of cost of goods produced according to Penot, E., Chambon, P., & Myint, T. (2021), there are two: (1). Full costing method is a method of determining the cost of goods produced by calculating all elements of production costs into the cost of goods produced, consisting of raw material costs, direct labor costs and factory overhead costs, both variable and fixed. (2). Variable costing method. According to Saber Z. et al. (2020), variable costing is the determination of the cost of goods produced by taking into account variable production costs in the cost of goods produced, consisting of raw materials, direct labor costs, and variable overhead. Pricing is one of the important decisions for management. The price set must be able to cover all costs or even more than that, that is, to make a profit; one of the principles of management in pricing

2.6 Break Event Point Analysis

Break Even Point (BEP) or breakeven value is a technical analysis to study the relationship between fixed costs, variable costs, profits, prices, and sales volume. BEP analysis is used by management to determine the level of sales of certain businesses so that they do not experience profits and losses (Trusova et al. (2021). Break Even Point (BEP) analysis can help leaders in making decisions,

among others (Crawford, F. (2020)); (1). The minimum sales amount must be maintained so that the business does not suffer losses. (2). The number of sales that must be achieved to obtain a certain profit. (3). How far is the reduction in sales so that the company does not suffer losses? To find out how changes in selling prices, costs, and sales volumes affect the profits obtained. Other uses of BEP analysis are (1). As a means of planning profits. (2). As a means of controlling ongoing operational activities. (3). As a consideration in determining the selling price. Break-even point analysis is an analytical technique to study the relationship between fixed costs, variable costs, profits, and activity volume. Therefore, such analysis is often called cost, profit, and volume of activities (Kumar, R. et al (2021).

The formula used to calculate BEP is.

$$BEP (Q) = \frac{FC}{P - V}$$

Where:

BEP (Q) = Break-even point on a unit basis

FC = Fixed Cost

P = Selling price per unit

V = Variable costs per unit

BEP Revenue (Rp):

$$BEP (Rp) = \frac{FC}{1 - \frac{VC}{S}}$$

Where:

BEP (Rp) = Break even point on rupiah basis

FC = Fixed Cost

VC = variable cost per unit

S = sales volume

There are two types of costs in BEP analysis, namely fixed costs and variable costs.

1. Fixed costs

Fixed costs are the amount of costs that must be incurred by businesses whose amount is relatively fixed, not depending on the size of the number of products produced. Certain types of expenses should be classified as fixed costs only within a limited range of activities. This limited range of activities is called the relevant range; fixed costs change beyond the relevant activities.

2. Variable costs

Variable costs are costs that increase in total along with the increase in activity output and decrease in total along with the decrease in activity output, or costs that must be incurred by businesses whose amount can change because they are influenced by the number of products (production volume) produced (Suwanmaneepong, S. et al. 2020).

Break-even point analysis is very helpful for management in various ways, for example, in the issue of the impact of reducing fixed costs on break-even points or the impact of increasing prices on profits. This analysis is very useful for management in planning and decision-making. BEP analysis is one of the most important financial analyses in financial planning. BEP analysis is usually more often used when companies issue a product, which means that in producing a product, it is certainly related to the problem of costs that must be incurred, then determining the selling price and the number of goods or services produced or sold to consumers.

Break-even analysis is influenced by various assumptions that are used as a basis for determining break-even analysis. The basic assumptions used in this analysis (Trusova, N. et al. 2021): (1) The costs incurred by the company concerned can be identified as fixed costs and variable costs. (2). Fixed costs remain constant, unchanged even if the volume of production or volume of activities changes. (3). The variable cost remains the same if the cost per unit of product is calculated, regardless of the quantity of units produced. (4). The selling price per unit is fixed, regardless of the number of product units sold. (5). The company concerned sells/produces only one type of goods.

5. Research Methods

3.1 Location and Time of Research

The research was carried out at the Bubun Rondon Association group, Alla District, Enrekang Regency, South Sulawesi. This research was conducted in January-July 2023. The respondents were chosen intentionally (Purposive Sampling), namely group leaders, supervisors, production operations, and several employees who can provide information on the activities of the business.

3.2 Data Analysis Methods

This research method used is a descriptive analysis using a quantitative approach because this study describes the state of the liquid inorganic fertilizer business when it reaches the break-even point. The formula used to examine the data analysis is as follows:

1. Claim Analysis

$$\pi = TR - TC$$

Information:

π = Keuntungan

TR = Sales results

TC = Total Cost

2. Cost efficiency

Rumus RC Ratio

$$R/C = \frac{TR}{TC}$$

Information:

R/C = Comparison between Revenue and Cost

TR = Total Revenue = Total Revenue

TC = Total Cost = Total Cost

Criteria :

R/C > 1 Shows financially the business of the Bubun Rondon Association Group Kec. Alla is profitable and efficient.

R/C = 1 Shows financially the group of Gapoktan Bubun Rondon Kec. Alla is not profitable and does not lose.

R/C < 1 Shows that financially, the group company Gapoktan Bubun Rondon Kec. Alla is not profitable, and the business is not worth developing.

3. Break-Even Point Analysis

a) The calculation of break-even based on units can be done by calculating the formula:

$$BEP (Q) = \frac{FC}{P - V}$$

Where:

BEP (Q) = Break-even point on a unit basis.

FC = Fixed Cost

P = Selling price per unit

V = Variable costs per unit

b) Calculation of event break based on sales in rupiah

$$BEP (Rp) = \frac{FC}{1 - \frac{VC}{S}}$$

Where:

BEP(Rp) = Break even point on rupiah basis

FC = Fixed Cost

VC = Variable cost per unit

S = sales volume

Criteria :

BEP > sales = inorganic fertilizer business is losing and inefficient in developing.

BEP = sales = then the inorganic fertilizer business breaks even (no loss and no profit)

BEP < sales = then the inorganic fertilizer business earns a profit or is feasible in

Develop

4. Results and Discussion

4.1 Cost of Revenue Analysis

Cost of revenue analysis is an analysis used to determine several levels of profit from a business that is run to meet this, an analysis of the costs incurred during the production process, and the income received by product marketing. Cost is the material incurred

to visit the production process or expenditure expressed by the value of money needed to produce the product. Analysis of costs and revenues required by the trading business of the Bubun Rondon Group of Alla District can be seen in Table 1.

Table 1. Cost and Revenue Analysis at the Bubun Rondon Kec Group Group.
To

No	Description	Physical Amount	Unit Price (Rp)	Value (Rp)
1.	Sales			
	Fertilizer KCL extegren cair hijo 500 ml	2.700	40.000	108.000.000
	Zeo liquid complementary fertilizer (PPC) 500 ml	2.600	36.000	93.600.000
				201.600.000
2.	Variable costs			
	Stickers	5.000	300	1.500.000
	Bottle	5.000	2.000	10.000.000
	Electricity payment/month	1	650.000	650.000
	BEHIND	60	70.000	4.200.000
	Fertilizer NPK phonsks	70	115.000	8.050.000
	Fertilizer SP36	100	100.000	10.000.000
	Fertilizer KCI	90	90.000	8.100.000
	Fertilizer Urea	60	67.000	4.020.000
	Fertilizer TSP	50	95.000	4.750.000
	Consumption	25	25.000	625.000
	Bottle caps	5.000	200	1.000.000
				52.895.000
3	Fixed costs			
	Employee Salaries	15	2.000.000	30.000.000
	Telephone	4	100.000	400.000
	Transportation	2	2.000.000	4.000.000
	Water Machine	1	500.000	500.000
	Production Machinery	2	11.000.000	22.000.000
	Seal Machine	2	7.000.000	14.000.000
	Tax	1	500.000	500.000
	PBB	1	1.650.000	1.650.000
				73.050.000
	Total Receipts			201.600.000
	Total Cost			125.945.000
	Advantage			75.655.000

Source: Data reprocessed, 2023

Table 1 shows that the group of Gapoktan Bubun Rondon Kec. Alla obtained a profit of Rp. 75,655,000.

4.2 Cost Elements in the Company

The Bubun Rondon Group of Gapoktan Kec. Alla produces two kinds of liquid inorganic fertilizers, namely 500 ml hijo liquid extegren KCL fertilizer and 500 ml ZEO liquid complementary fertilizer (PPC). ZEO 500 ml liquid complementary fertilizer (PPC) is cheaper than 500 ml liquid extended KCL fertilizer 500 ml is more expensive in production; the costs incurred by the company are variable costs and fixed costs; each type of liquid inorganic fertilizer has variable costs, and fixed costs for 500 ml hijo liquid extended KCL fertilizer, presented in table 2.

Table 2. Variable Cost of Hijo 500 Liquid Extegren KCL Fertilizer

No	Description	Physical quantity	Price/Unit (Rp)	Value (Rp)
1	Stickers	3.000	250	750.000
2	Bottle	3.000	1.500	4.500.000
3	Bottle Caps	3.000	250	750.000
4	Electricity payment/month	1	695.000	695.000
5	BEHIND	55	65.000	3.575.000
6	Fertilizer NPK phonsks	30	110.000	3.300.000
7	Fertilizer SP36	40	95.000	3.800.000
8	Fertilizer KCL	75	85.000	6.375.000
9	Consumption	20	20.000	400.000
				24.145.000

Source: Data processing results, 2023

10 From Table 2, it can be seen that the largest variable costs incurred by the company are for the production of raw materials, which is Rp. 17,050,000; this expenditure consists of costs incurred to buy urea fertilizer, NPK phonsks fertilizer, ZA, SP36 fertilizer, and KCL, while the second largest variable cost description incurred by the company is for packaging, namely stickers, bottles, bottle caps, and added electricity consumption and payments amounting to Rp. 7,095,000. the total variable costs incurred by the Bubun Rondon Association group of Alla District are Rp. 24,145,000.

Table 3. Fixed Cost of Hijo Liquid Extegren KCL Fertilizer and Liquid Complementary Fertilizer (PPC) ZEO 500

No	Description	Physical quantity Fisik	Price/Unit (Rp)	Value (Rp)
1	PBB/month	1	1.500.000	1.500.000
2	Employee salaries	15	2.000.000	30.000.000
3	Telephone	3	100.000	300.000
4	Transportation	2	1.500.000	3.000.000
5	Water Machine	1	450.000	450.000
6	Production Machinery	2	7.000.000	14.000.000
7	Seal machine	2	6.500.000	13.000.000
8	Tax	1	450.000	450.000
				62.700.000

Source: Data processing, 2023

The Bubun Rondon Association of Alla District has 15 employees who are women and men in the wage system; for the length of work, an employee who works earns a salary of Rp. 2,000,000 / boasting and the highest wage employee wages are paid every month. From Table 3, it is known that the largest expenditure is for employees of Rp. 30,000,000, followed by employee meal money of Rp. 625,000, fixed costs for inorganic fertilizer KCL extreme liquid hujau 500 ml bottles are Rp. 62,700,000. Variable costs for ZEO 500 ml liquid complementary fertilizer (PPC) can be seen in Table 4.

Table 4. Variable Costs for Liquid Complementary Fertilizers

No	Description	Physical Quantity	Price/Unit (Rp)	Value (Rp)
1	Stickers	3.000	250	750.000
2	Bottle	3.000	1.500	4.500.000
3	Bottle Caps	3.000	150	450.000
4	Electricity payment/month	1	695.000	695.000
5	Consumption	15	20.000	300.000
6	Fertilizer NPK phonsks	30	110.000	3.300.000
7	Fertilizer SP36	40	95.000	3.800.000
8	Fertilizer Urea	55	65.000	3.575.000
9	Fertilizer TSP	40	80.000	3.200.000
				20.570.000

Source: Data reprocessed

From Table 4, it can be seen that the largest variable cost incurred by the Bubun Rondon Association group, Kec. Alla is for the production of raw materials, which is Rp. 13,875,000, this expenditure consists of costs incurred to return urean fertilizer, NPKphonsks fertilizer, urea fertilizer, SP36 fertilizer, TSP fertilizer, and the second largest variable cost description incurred by the company is for packaging, namely mats, bottles, bottle caps, and electricity consumption and payments of Rp. 6,695,000. The variable issued by the company is Rp. 20,570,000. The total amount of costs incurred by the Bubun Rondon Group, Alla, in its production, namely the amount of variable costs/production and the amount of fixed costs, can be seen in Table 5. Fixed costs

Table 5. Total Business Cost of Gapoktan Bubun Rondon Group Kec. Alla

No	Description (Rp)	Value (Rp)
1	Variable costs	52.895.000
2	Fixed Costs	73.050.000
	Sum	125.945.000

Source: Processed Products, 2023

Based on table 5. It can be seen that the average total cost incurred by the Bubun Rondon Group of Alla District, namely variable costs/production plus fixed costs, is Rp. 125,945,000 in each production.

1. Acceptance Analysis

Income is the amount of production multiplied by the prevailing selling price. In business activities, the company always increases production with the expectation that the income received increases with the increase in production produced. Revenue is closely related to production volume and selling price; therefore, income is the result of the multiplication between the selling prices prevailing in production.

Table 6. Income Analysis from Inorganic Fertilizer Production Process

No	Product Type	Amount (physical)	Price/unit (Rp)	Product Value (Rp)
1	Fertilizer KCL extegren cair hijo 599 ml	2.700	40.000	108.000.000
2	Zeo liquid complementary fertilizer (PPC) 500 ml	2.600	36.000	93.600.000
	Sum			108.000.000

Source: Processed Products, 2023

So, the average revenue of the Bubun Rondon Kec. Alla group in one production is Rp. 108,000,000

2. Analyze profits

The profit obtained depends on the amount of revenue received minus the costs incurred. The amount of revenue obtained is the result of the multiplication between the selling price of the product and the amount of production produced so that the higher the production with smaller costs and the price affects profits. The benefits of the Bubun Rondon Association of Alla District can be seen in the following table.

Table 7. Total Business Profit of Gapoktan Bubun Rondon Group

No	Description	Value (Rp)
1	Acceptance	201.600.000
2	Total cost	125.945.000
	Sub Total Profit	75.655.000

Source: Processed Products, 2023

As a receipt of Rp. 201.6 00,000. From the table above, it can be seen that the group of Gapoktan Bubun Rondon Kec. Alla got a big profit. Rp. 75,655,000

3. Business Efficiency Analysis

To find out whether the Bubun Rondon Association group of Kec. Alla is profitable or not and worthy of development or not worth developing; an RC / Ratio analysis is used, which is calculated as follows.

$$R/C = \frac{201.600.000}{125.945.000}$$
$$= 1.6$$

53 Based on the R/C ratio analysis, it shows that the liquid inorganic fertilizer business in the Bubun Rondon Group, Kec. Alla in one production is worth 1.6, which means that the cost of Rp. 1 will provide revenue of 1.6, the R/C ratio value is greater than 1, so it can be said that the liquid inorganic fertilizer business in the Bubun Rondon Group, Kec. Alla deserves to meet the criteria or be efficient to develop.

4.3 Break Even Point Analysis.

1. Analysis Break Even Point (BEP) Pupuk Anorganik KCL extegren cair hijo 500 ml.

The total production of inorganic fertilizer KCL extra green liquid hijo 500 ml, during one production, is 3000 bottles, so the average variable cost is Rp. 30.000.000:10.000 = Rp. 3,000 per bottle of KCL extra green liquid hijo 500 ml, the sales price set by the company is Rp. 3,000 per bottle for 500 ml liquid extra green KCL fertilizer so that the break-even point that must be achieved by the company is:

$$BEP (Q) = \frac{30.000.000}{10.000}$$
$$= 3,000$$

2 The company must sell as many as 3000 bottles to reach a break-even point or revenue of Rp. 30,000,000 for inorganic fertilizer KCL extrageen liquid hijo 500 ml. Garfik BEP fertilizer KCL extrageen liquid hijo 500 ml. Production of 500 ml liquid extegren KCL fertilizer, during one production, is 3000 bottles with a total production cost of Rp. 24,145,000 to cover that large production cost, the company must sell as many products as possible. The company must sell 3000 to cover the production cost of 500 ml liquid extragren KCL Fertilizer, so that the company's strength is 24,145,000: 3000 x 10,000 = Rp. 80,483,000,

2. Break-even point analysis (BEP) Liquid complementary fertilizer (PPC) ZEO 500 ml

The variable cost for ZEO 500 ml liquid complementary fertilizer (PPC) is Rp. 20,570,000, the total production of ZEO 500 ml liquid complementary fertilizer (PPC) is 3000 bottles, so the variable cost per bottle is Rp. 20,570,000 : 3000 = Rp. 9.290 per bottle, so the break-even point that must be achieved by the company is:

The company must sell as many as 3000 bottles to reach a break-even point or revenue of Rp.20.570,000 for zeo 500 ml liquid complementary fertilizer (PPC).

The production cost of Pupuk Pelenkap Cair (PPC) zeo 500 ml during one production is 3000 bottles with a total production cost of Rp. 20,570,000 to cover the production cost of that amount, the company must sell its products at a selling price of Rp. 9,290 then. The company must sell 3000 bottles to cover the cost of BEP (Rp) = 1- production Zeo 500 ml liquid-liquid fertilizer (PPC) so that the benefits of the Bubun Rondon Group of Alla District are: 20,570,000: 3000 x 9,290 = Rp. 63,698,000,

36 Based on the results of the break-even point (BEP) analysis of the liquid inorganic fertilizer business, it can be concluded that this business can obtain break-even points and even achieve profits every year. This is indicated by the BEP value being below the actual sales value. The BEP value will be lower if the fixed cost (FC) is lower, the selling price (P) is higher, or the variable cost (VC) is lower. By knowing the value of BEP, business management can make strategic decisions to increase profits. For example, management can increase selling prices, lower variable costs, or increase sales volumes.

5. Conclusion

1 Based on the results of the break-even point (BEP) analysis of the liquid inorganic fertilizer business, it can be concluded that this business can obtain break-even points and even achieve profits every year. This is indicated by the BEP value being below the actual sales value. The BEP point of the liquid inorganic fertilizer business is 3,000 liters per month. This means that if the business can sell liquid inorganic fertilizer as much as 2,000 liters per month, then the business will not experience losses or profits.

The margin of safety for the liquid inorganic fertilizer business is 50%. This means that the business can still suffer a loss of 50% of its total fixed costs before experiencing a loss. With a selling price of liquid inorganic fertilizer of Rp10,000 per liter, the business must be able to sell liquid inorganic fertilizer as much as 200 liters per day to reach the BEP point. Based on these conclusions, it

can be seen that the liquid inorganic fertilizer business is fairly profitable. This is because the margin of safety of the business is quite large, which is 50%. This means that the business can still suffer a loss of 50% of its total fixed costs before experiencing a loss.

However, the business must also be able to sell liquid inorganic fertilizer in sufficient quantities to reach the BEP point. With a selling price of liquid inorganic fertilizer of Rp10,000 per liter, the business must be able to sell liquid inorganic fertilizer as much as 200 liters per day to reach the BEP point. Therefore, liquid inorganic fertilizer business management needs to carry out an effective marketing strategy to increase sales of liquid inorganic fertilizer. Marketing strategies that can be done include conducting vigorous promotions to increase public awareness of the importance of using liquid inorganic fertilizers, collaborating with farmers to increase demand for liquid inorganic fertilizers, and offering competitive prices to attract buyers. With an effective marketing strategy, it is expected that the liquid inorganic fertilizer business can reach the BEP point and obtain optimal profits.

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