



# Income and Marketing of Hibryd Corn in Rarampadende Village West Dolo District Sigi Regency Central Sulawesi Province

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**ABSTRACT:** Corn has an important role because it is a food ingredient for the community, as well as an ingredient for the livestock industry, so corn is considered a strategic commodity and has economic value in increasing farmers' income and the regional economy. This research aims to determine the income and marketing of hybrid corn farming in Rarampadende Village, West Dolo District, Sigi Regency. This research uses a case study approach aimed at exploring certain research problems with quantitative and qualitative research types. Determining respondents using a simple random sampling method (Simple Random Sampling) with a sample size of 23 farmers from 150 farmers. The analytical methods used are income analysis, farming feasibility analysis, and marketing analysis. The research results show that the average farmer's income is IDR 2,378,753. Analysis of the feasibility of hybrid corn farming produces an R/C ratio of 1.36, which means that hybrid corn farming in Rarampadende village is worth pursuing because the balance between revenue and costs is greater than one. There are two marketing channels for hybrid corn which involve collectors and wholesalers. The total margin for the first marketing channel is IDR 550/kg, which is greater than the second marketing channel's margin of IDR 200/kg. The marketing efficiency value for the first channel is 10.4% and for the second channel, it is 1.9%. So the second channel is more efficient than the first channel because the price at the farm level is higher in the second channel.

**KEYWORDS:** Revenue, Business Feasibility, Hybrid Corn, Marketing Margin.

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## I. INTRODUCTION

Corn is one of the secondary crops which is an important food product in Indonesia and is one of the contributors to the Gross Regional Domestic Product (GRDP). The role of corn in the food crop subsector has been proven to make a significant contribution to food security and also to the Indonesian economy [1]. Corn is the main food ingredient because it is a food ingredient for the community, as well as an ingredient for the livestock industry, so corn is considered a strategic commodity and has economic value in increasing farmers' income and the regional economy [2].

Indonesia is one of the ten countries with the largest availability of corn for consumption in the world in 2013 - 2018, with an average corn supply of 12,200 tons (Pusdatin, 2018). Half of corn currently used is the main raw material for the animal feed industry, with consumption in 2017 reaching 12.7 tons, and in the following year increasing to 13.8 million tons. According to data from the Central Statistics Agency, the harvested area for shelled corn in 2023 is estimated at 2.49 million hectares and the production of dry-shelled corn with a moisture content of 14 percent in 2023 will be 14.46 million tons. The demand for corn for food, feed, and other industrial needs in the next five years is projected to continue to increase along with the continuing increase in population [3]. Therefore, efforts are needed to increase production, land availability, yield potential, and technology. This condition makes corn cultivation have very promising prospects, both in terms of demand and selling price.

Central Sulawesi Province is one of the corn-producing areas in Indonesia and is a plant that has an important role in society. Apart from being used for daily consumption, people also use it as animal feed. Central Sulawesi Province's corn production for 2022 has increased compared to 2021 by 29.44% or 118 tons of dry flakes. According to data from related agencies, the potential area of corn planting land in Central Sulawesi is approximately 70 thousand hectares in 13 districts/cities. One of the largest corn-producing areas in Central Sulawesi is Sigi Regency, with a harvest area in 2019 of 12,055 ha compared to 2017 which was only 8,988 hectares. The increase in corn harvested area in Sigi Regency by 3,067 ha in 2 years is a good sign that there is an increase in corn harvested area in this area which should be in line with increased production.

Rarampadende Village is one of the hybrid corn-producing areas and is the third largest in West Dolo District, Sigi Regency. Corn productivity obtained in 2019 was 3.40 tonnes/hectare with a harvest area of 137 ha, so farmers are always trying to increase corn production in their region. Efforts to increase production are related to the utilization of production factors in the farming business. Farmers' lack of knowledge results in the use and utilization of production factors not being optimal, causing opportunities for production failure. Production risk affects income. [4]. The high and low income of farmers is influenced by many factors, including; production costs, selling prices, and marketing systems.

Previous research on corn farming income analysis has been carried out by several researchers, namely: [5]; [6]; [7]; [8]; [9]; [10]; [11]; [12]. Research on the income and marketing of hybrid corn is still rarely carried out. Therefore, this research seeks to examine the income and marketing of hybrid corn in Rarampadende Village, West Dolo District, Sigi Regency.

## **II. RESEARCH METHODS**

Rarampadende village was chosen purposively as a research location with the consideration that Rarampadende village has a large area of land and high corn productivity compared to other villages in West Dolo District.

The number of respondents in the study was 23 people, coming from 15% of the 150 corn farmer population. The sampling method is Simple Random Sampling. Determining the sample for marketing institutions uses Snowball Sampling, which is a sampling method where sampling is illustrated with a snowball. Implementation techniques are obtained on a rolling basis through one respondent to obtain the next respondent [13].

The analysis used is quantitative and qualitative descriptive. Quantitative and qualitative descriptive analysis is research carried out by collecting, analyzing, and mixing quantitative and qualitative methods in research to understand problems [14]. Descriptive analysis is intended to describe the characteristics of hybrid corn farmers, qualitative analysis to determine the marketing channels for hybrid corn in Rarampadende village, use of quantitative analysis to calculate production costs and income from hybrid corn farming, marketing margins, and marketing efficiency values for hybrid corn in Rarampadende village.

Agricultural business income is the difference between revenue and all costs incurred by farmers, fishermen, and livestock [15]. The method used to calculate farming income is [16]:

$$I = TR - TC$$

Information:

I = *Income* (Rp)

TR = *Total Revenue* (Rp)

TC = *Total Cost* (Rp)

Then, to find out if the farming business is worth continuing or not, an analysis of the feasibility of the farming using the R/C Ratio or the comparison ratio between revenue (sales proceeds) and total production costs incurred is carried out, then the formula is [17]:

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

Information:

R/C = 1, then the agricultural business does not make a profit or loss, ,

R/C > 1, then this agricultural business is worth running and continuing,

R/C < 1, the agricultural business is not feasible.

Next, calculations need to be carried out to determine the marketing margin value. Marketing margin is the difference between the selling price and the purchasing price of the product at each marketing institution involved in marketing activities [18]. The method that can be used to calculate the total marketing margin for each marketing institution involved is as follows [19]:

$$MP = Pr - Pf$$

Information:

- MP = Marketing Margin (Rp/Kg)
- Pr = Prices at the consumer level (Rp/Kg)
- Pf = Prices at the farm level (Rp/Kg)

Formulated that to find out the Total Marketing Margin (MT) of all marketing institutions involved in marketing hybrid corn, it can be calculated using the formula [20]:

$$MT = M1 + M2 + M3 + \dots + Mn$$

Information:

- MT = Total Marketing Margin (Rp/Kg)
- M1+M2+M3+...Mn= Margin From Each Marketing (Rp/kg)

To find out whether marketing channels are efficient or not, marketing efficiency analysis is used. Marketing efficiency is the ratio between product marketing costs and product prices [21]. The method used to determine marketing efficiency in each marketing channel involved is as follows (Afriani, 2021):

$$EP = \frac{Pr - Pf}{Pr} \times 100\%$$

Information:

- EP = Marketing efficiency
- Pf = Prices at the producer/farmer level (Rp)
- Pr = Prices at the consumer level (Rp)

Marketing efficiency decision-making rules are:

- 0-33% = efficient
- 34-67% = less efficient
- 68-100% = inefficient

### III. RESULT AND DISCUSSION

#### Respondent Characteristics

Respondent characteristics are characteristics inherent in individuals that can differentiate them from other individuals. Each individual has characteristics that are different from each other. These characteristics are several aspects that influence farmers' skills in managing their farming [22]. The characteristics of respondents in this study include various information about their internal conditions, including age, level of formal education, number of family dependents, and experience in farming. The following is a description of the characteristics of the respondents:

**Table 1.** Characteristics of Respondent Farmers in Rarampadende Village

Number	Description	Number of farmers (people)	Percentage (%)
1	Farmer's age		
	a. < 20 years	2	8,70
	b. 20 - 50 years	14	60,87
	c. > 50 years	7	30,43
2	Level of education		
	a. Finished elementary school	5	21,74
	b. Finished middle school	10	43,48
	c. Finished high school	7	30,43
	d. Graduated from college	1	4,35

3	Number of family dependent		
	a. < 1 people	2	8,70
	b. 1- 3 people	14	60,87
	c. > 3 people	7	30,43
4	Farming experience		
	a. < 10 years	5	21,74
	b. 10- 20 years	12	52,17
	c. > 20 years	6	26,09
5	Land area		
	a. < 0,5 hectare	4	17,39
	b. 0,5-1 hectare	10	43,48
	c. > 1 hectare	9	39,13

Source: processed primary data, 2022

Based on Table 1, farmer respondents are in the productive age, namely 20 years to 50 years or the average age of farmers is 46.3 years, with 14 people or 60.87%. In terms of age, it can be concluded that farmers are generally productive, physically strong, think innovatively, and can make the right decisions in understanding and applying technology in farming which can have a good impact on farmers.

The formal education of the majority of farmers (73.91%) only had a junior high school and 17 high school education. Low education will influence farmers' mindset in carrying out farming activities and making decisions in marketing the hybrid corn they produce. Apart from that, the level of education will also influence farmers in absorbing new information and innovations as well as technology transfer that can be applied in farming activities. Someone who studies gets broad knowledge, can easily innovate, and easily adapt to technology [23].

Family for farmers is a goal and motivation to earn a high income because they are the backbone to support their families. So when the corn is harvested, it is immediately sold to meet daily needs. Family dependents of 1 to 3 people are dominated by 14 farmers (60.87%).

The average experience of farmers in cultivating hybrid corn is more than 10 years, and the majority (52.17%) of farmers have an average of 14.4 years of experience, this shows that hybrid corn farmers in West Dolo District are quite experienced in cultivating hybrid corn. The success of farming can be helped by farming experience even if you do not have a high level of education. The more experience, the more understanding farmers have to deal with problems and know the solutions.

On average, hybrid corn farmers have 1.10 ha of land under management, or as many as 10 people (43.48%) have land of 0.5 to 1 hectare. The remaining farmers who have a land area of more than 1 hectare are 9 people or 39.13%. This shows that the average farmer has a large area of land to cultivate hybrid corn.

### Revenue, Production Costs, and Income from Hybrid Corn Farming

Farming income is the difference between income and all costs incurred by farmers [24]. Farming income is the multiplication of the production produced by the selling price. Meanwhile, the production costs incurred by farmers during the farming process in one planting season are fixed costs and variable costs [25]. The following is a table of receipts, costs, and income from hybrid corn farming.

**Table 2.** Revenue, Production Costs, and Income from Hybrid Corn Farming in Rarampadende Village

Description	Value
<b>Revenue</b>	
Production	1783,5 kg
Selling price	IDR 5,000/kg
<b>I. Total Revenue</b>	<b>IDR 8,917,500</b>
<b>Production cost</b>	
Variable costs	
Seedlings	IDR 645,090
Fertilizer	IDR 2,988,242
Pesticides	IDR 323,688
Labor Wages	IDR 1,882,479
Cultivating/ContractingLand	IDR 440,000
<b>Total Variable Costs</b>	<b>IDR 6,279,499</b>
Fixed cost	
Equipment depreciation	IDR 248,790
Property tax	IDR 10,458
<b>Total Fixed Costs</b>	<b>IDR 259,248</b>
<b>II. Total Production Cost</b>	<b>IDR 6,538,747</b>

<b>III. Income (I-II)</b>	<b>IDR 2.378.753</b>
<b>R/C Ratio (I/II)</b>	<b>1,36</b>

Source: processed primary data, 2022.

Based on Table 3, the revenue from hybrid corn farming in Rarampadende Village with an average land area of 1.1 hectares is IDR 8,917,609 with an average hybrid corn production of 1783.5 kg. The total costs used for hybrid corn production are IDR 6,538,747,- resulting from the sum of variable costs of IDR 6,279,499 and fixed costs of IDR 259,248,-. So the income obtained by hybrid corn farming is IDR 2,378,753. The results of the feasibility analysis of farming using the R/C ratio by comparing revenues of IDR 8,917,500 and production costs of IDR 6,538,747 produce an R/C ratio of 1.36, which means that hybrid corn farming in Rarampadende village is worth pursuing because the balance between revenues and costs is greater. bigger than one.

### **Channels, Margins, and Marketing Efficiency of Hybrid Corn**

Marketing channels are the people, organizations, and activities needed to transfer ownership of goods from the point of production to the point of consumption. This is the way the product gets to the end user, the consumer; and also known as distribution channels. A marketing channel is a distribution channel that summarizes a group of institutions that carry out all activities in directing products and property rights from production to consumers [26]. The purpose of channel separation is often used to align them to certain groups so that targeted segments do not overlap and cannibalize each other [27]. After knowing the marketing channels, you need to know the marketing margin for each product marketing channel. Marketing margin is the difference between the selling price and the purchasing price of the product at each marketing institution involved in marketing activities [28]. The channels, margins, and marketing efficiency can be seen in the following table.

**Table 3.** Channels, Margins, and Marketing Efficiency of Hybrid Corn in Rarampadende Village

Number	Description	Marketing Channels	
		Channel I	Channel II
1	<b>Farmer</b>		
	Selling Price	4.850	5.000
2	<b>Collector Trader</b>		
	Purchase Price (Rp/kg)	4.850	5.000
	Selling Price (Rp/kg)	5.000	5.200
	Margins	150	200
	Marketing Costs	120	100
	Profit	30	100
	Marketing Efficiency	3	1,9
3	<b>Wholesalers</b>		
	Purchase Price (Rp/kg)	5.000	
	Selling Price (Rp/kg)	5.400	
	Margins	400	
	Marketing Costs	250	
	Profit	150	
	Marketing Efficiency	7,4	
4	<b>Total Margin</b>	<b>550</b>	<b>200</b>
5	<b>Marketing Efficiency</b>	<b>10,4</b>	<b>1,9</b>

Source: processed primary data, 2022

Based on Table 3, the results of research on marketing channels for hybrid corn in Rarampadende village are:

1. Farmers → Traders Collectors → Wholesalers → Consumers
2. Farmers → Traders → Consumers (Breeders)

In the first marketing channel, 18 farmers (78.26%) sold hybrid corn to collectors and the collectors resold it to wholesalers and the wholesalers delivered it out of town. Farmers who use the first marketing channel already have a contract with collecting traders, in the form of providing capital and seeds so that farmers must sell all their production to collecting traders. The existence of collector traders for farmers is because they can lend capital, help farmers' markets, and farmers feel that they are working with collectors according to the farmer's expectations [29].

In the first channel, the selling price of farmers to collecting traders is IDR 4,850/kg. In this channel, collecting traders sell to wholesalers for IDR 5,000/kg so that the marketing margin received at the collecting trader level is IDR 150/kg. The marketing costs incurred are IDR 120/kg consisting of; fuel costs, labor costs, and packaging costs so the profit obtained is IDR 30/kg. Furthermore, the wholesaler's purchasing price is IDR 5,000/kg and the wholesaler's selling price is IDR 5,400/kg, so the marketing margin received at the wholesaler level is IDR 400/kg. Marketing costs incurred at the wholesaler level consist of transportation costs, labor costs, loading and unloading costs, and levy costs of IDR 250/kg, and the profit obtained is IDR 150/kg.

Five farmers use the second marketing channel (21.74%) who sell to collectors and have no ties to collectors. Farmers sell hybrid corn to collectors for IDR 5,000 per kilogram. Collecting traders who sell to consumers for IDR 5,200 per kilogram, in markets or breeders in Sigi Regency. The marketing margin in the second channel is IDR 200 per kilogram. Marketing costs incurred by collecting traders are IDR 100/kg. The profit earned by collecting traders is IDR 100 per kilogram.

The total margin obtained from the first channel is IDR 550,- while the total margin obtained from the second channel is IDR 200,-. Based on the results obtained, it can be concluded that the length and shortness of the marketing channel, or the number of marketing institutions involved will determine the total marketing margin [30].

Marketing is efficient if marketing costs are lower than the value of the product being marketed, the lower the marketing costs are compared to the value of the product being marketed, the more efficient the marketing channels for the product are [31]. Marketing efficiency in the first channel was 10.4%, while in the second marketing channel, the marketing efficiency value was 1.9%. Thus, for a more efficient marketing channel, hybrid corn farmers in Rarampadende Village, West Dolo District, Sigi Regency should market their products through the second channel, because the share of the price received by farmers is higher compared to the first channel.

#### **IV. CONCLUSION**

Based on the research results described in the discussion, the following conclusions can be drawn:

1. Revenue from hybrid corn farming in Rarampadende Village with an average land area of 1.1 hectares is IDR 8,917,609,- with an average hybrid corn production of 1783.5 kg. The total costs used for hybrid corn production are IDR 6,538,747,- so the income obtained by hybrid corn farming is IDR 2,378,753. Feasibility analysis of hybrid corn farming produces an R/C ratio of 1.36, which means that hybrid corn farming in Rarampadende village is feasible because the balance between revenue and costs is greater than one.
2. There are two marketing channels for hybrid corn in Rarampadende Village which involve several marketing institutions, namely, collecting traders and wholesalers. The analysis results show that the total hybrid corn marketing margin obtained for the first channel is IDR 550/kg and the hybrid corn marketing margin obtained for the second channel is IDR 200/kg. The margin on the second channel is smaller than on the first channel. Marketing costs for the first channel are IDR 370 per kilogram, higher than the second channel at IDR 100 per kilogram. The marketing efficiency value for the first channel is 10.4% and for the second channel, it is 1.9%. So the second channel is more efficient than the first channel because the price at the farm level is higher in the second channel.

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