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The Role of Women Farmers' Human Resources in Production Activities in Corn Farming at Karo District, North Sumatra Province

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ABSTRACT

The food crop commodity whose production continues to be increased to support national food needs is corn. Karo Regency is the largest corn producer in North Sumatra. In production activities on corn farming, the role ratio between the human resources of male farmers and female farmers are balanced, but the ratio of workers is more female farmers than male farmers. This research aims to analyze the role of female farmers' human resources in production activities and decision-making in corn farming in Karo Regency. This type of research is a quantitative research method. method for determining the research area was carried out purposively. The sampling method was carried out using Nonprobability Sampling using Accidental Sampling technique. The data analysis method is in the form of qualitative and quantitative analysis based on the primary data and secondary data obtained. The research results show that the amount of labor provided by female farmers is higher than that of male farmers and the contribution of female farmers in decision-making is very influential. In conclusion, the number of workers employed by female farmers is higher than that of men and the role of female farmers in the decision-making process is very influential in production activities in corn farming.

Keywords: Corn Farming; Human Resources; Karo Regency; Production; Women Farmers

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INTRODUCTION

In Indonesia, particularly in the agricultural sector, labor holds the utmost importance in employment because it is the primary aspect of farming. Within farming, human labor is categorized into three groups: male labor, female labor, and child labor.

Human resources are one of the resources found in an organization, including all people who carry out activities (Sutanto et al., 2022). In general, the resources contained in an organization can be grouped into two types, namely human resources and non-human resources. These non-human resources include capital, machines, technology, materials, etc. (Faustino, 2003).

Labor is a production factor. Therefore, it has a big influence on farming management. Labor in farming has very different characteristics from labor in other business fields other than agriculture because the need for labor in farming is not continuous, limited, unspecialized, and varied. Besides that, the source of labor can be from within the family or outside the family.

Women farmers are figures to be reckoned with. A woman who is willing to carry a double workload in her life, namely domestic/private roles as well as public roles. Domestic role, namely the main role of a woman in the household. Caring for children, taking care of the household, and preparing for school are some of the many tasks that are their responsibility at home. Moreover, when they work outside the home, such as farmers, they have even more roles to play.

Women farmers have an important role in farming, namely to increase corn production. Farming activities carried out by female farmers are influenced by the amount of work time. Farming women's work time in productive activities depends largely on socioeconomic factors and family conditions. Socio-economic factors that influence the amount of working time of women farmers are age level, number of family dependents, wage level, land area, marital status, education level, and experience level (Rista, 2012).

Corn is a type of food plant that has many benefits, including as a source of carbohydrates, as feed in the livestock industry, and can be processed into various food preparations. With so many benefits from corn, domestic corn production is expected to be able to meet the needs of various industrial sectors that need it. Corn farming is a process or activity carried out by farmers to manage corn production factors (land, labor, technology, fertilizer, seeds, and pesticides) effectively, efficiently, and continuously to produce high production, so that income will be received. farmers will increase and meet their needs.

North Sumatra Province is the fifth largest corn producer in Indonesia and one of the central areas for corn production, namely Karo Regency (Central Bureau of Statistics of North Sumatra [BPS North Sumatera], 2022). The Karo Regency Government has made corn one of its leading commodities. However, the competitiveness of local corn is thought to still be low. So, the government adopted a corn import tariff policy to protect domestic corn farmers. Likewise, price policies are not yet fully effective, so farmers have not been helped because corn prices are still completely dependent on market mechanisms, which sometimes always harm corn farmers.

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This research was carried out in the Karo Regency area, namely Tigabinanga District. The research location was selected with the consideration that the area is one of the corn production centers in Karo Regency, North Sumatra Province. In 2022, the corn harvest area in Tigabinanga District will be 24099.49 hectares or 23.14% of the total corn harvest area in Karo Regency (BPS North Sumatera, 2022).

Based on data from the Central Bureau of Statistics of Karo Regency (BPS Karo Regency, n.d.), Kuala Village, Tigabinanga District, Karo Regency, is the village with the largest corn harvested area in Tigabinanga District, namely 3,033 ha. But in reality, in 2019 corn production in Kuala Village was not optimal, so causing the productivity level of corn plants in Kuala Village to be 5.96 ku/ha lower than the total value of corn productivity as a whole, which is 6.18 ku/ha.

In a society dominated by agriculture, there are many women who work as farmers, especially corn farmers. Women farmers are involved in every corn farming activity, from tilling the land to harvesting. Each female farmer has different working hours in each corn farming activity. The involvement of women in corn farming has attracted researchers' interest in researching the role of female farming human resources in production activities in corn farming in Karo Regency, North Sumatra Province.

The research aims to analyze the involvement of female farmers in human resources within the context of corn farming in Karo Regency, North Sumatra Province, particularly focusing on their participation in production activities and decision-making processes. The study holds significance as it serves as a valuable source of insights into the role played by female farmers in corn farming, contributing to the existing knowledge base in this field. Additionally, the findings of this research can serve as a reference for future studies and aid in the planning and development of subsequent research endeavors related to this topic.

LITERATURE REVIEW

Corn

Corn (Zea Mays L.) is a seasonal food crop commodity that has been cultivated by farming communities for generations. This commodity has a multipurpose function, both for consumption as a vegetable and also for the distribution of rice, as well as being used as the main raw material for the animal feed industry and processed food industry. Apart from having a multipurpose function, corn commodities have nutritional content that is good for health (Rukmana, 1997).

Farming

Farming is a science that studies how a person allocates existing resources effectively and efficiently to obtain very high profits at a certain time. The farming business is said to be effective if farmers allocate the resources they have well, while it is said to be efficient if the use of resources can produce output that exceeds input (Soekartawi, 2005).

Production

Farming is the study of efficiently allocating resources to maximize profits at a specific time. Effective resource allocation ensures optimal use of farming resources (Soekartawi, 2019).

May, 2024

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https://www.ejournal.aibpmjournals.com/index.php/JICP

Production is creating, producing, and making. To carry out production, labor, natural resources, and capital in all its forms are needed, as well as the ability to create value or increase the value of goods, which are usually referred to as factors of production. With this understanding, it can be understood that production activities can be defined as activities in producing output by using certain production techniques to process or process inputs in such a way.

Input elements can still be described based on the type or characteristics of input, namely labor, capital, materials or raw materials, energy sources, land, information, managerial aspects, or entrepreneurial abilities.

In a production system based on agriculture, the definition of input or output and the relationship between the two applies in accordance with the understanding and concepts of production theory. This production theory can also be applied to explain the production system in the agricultural sector.

Human Resources

The term "human resource management" (HRM) encompasses a range of organizational management functions in addition to policies pertaining to human resources. Creating an organization's human resources strategy, hiring and selecting staff, offering training and development, assessing worker performance, controlling pay, and maintaining employee relations are some of the duties that fall under this category (Chen, 2022). Effective human resource management can be a source of sustainable competitive advantage for organizations. It allows them to build a strong and unique workforce that's difficult for competitors to replicate. As a result, traditional competitive advantages like advanced technology or economies of scale become less important, and efficiency in utilizing these resources becomes more crucial (Rumawas, 2018).

Human resources are the only resources that have reason, feelings, desires, abilities, skills, knowledge, encouragement, power, and work. They are the only resource that has rationality, taste, and intention. Human resource potential greatly influences the organization's efforts to achieve its goals (Yusnandar, 2022). Even though technology is increasingly advanced and information is developing rapidly, without human resources, it will be difficult for organizations to achieve their goals. Agricultural land can be likened to an organizational field, which means that farmers are human resources who play an important role in it. No matter how good the formulation of organizational goals and plans is, the results will be in vain if human resources are not paid attention to or even neglected.

Gender in Agriculture

The concept of gender is a characteristic inherent in men and women, formed by social and cultural factors, leading to several assumptions about the social and cultural roles of men and women. Therefore, gender can be interpreted as a social concept that distinguishes the roles between men and women.

The differences in the functions and roles of men and women are not determined by their biological or natural differences but are differentiated or categorized according to their respective positions, functions, and roles in various areas of life and development, including agricultural activities.

May, 2024

P-ISSN: 2622-0989/E-ISSN: 2621-993X

https://www.ejournal.aibpmjournals.com/index.php/JICP

Female Farmer-Labor

Women farmers engage in agricultural work typically carried out by women. When women choose farming, it indicates their readiness to shoulder a dual workload, balancing responsibilities as both homemakers and agricultural laborers. Advancements in agricultural technology, such as mechanization, the adoption of high-yield crop varieties, and synchronized planting schedules, have led to a reduction in employment opportunities for women. This decrease in opportunities extends to tasks like planting, weeding, and harvesting.

The entry of female workers into certain employment sectors due to low wages/salaries reflects the challenges women face in accessing employment (Sulaksana et al., 2014).

In agriculture, women not only fulfill their roles as homemakers but also actively contribute work hours to farm operations. They participate not only in income-generating agricultural activities but also in decision-making processes (Damatun et al., 2017).

The Role of Women Farmers

According to Sajogyo (1985), the role of women farmers in agriculture began when people became familiar with nature and farming. Since then, a real division of labor between men and women has begun to develop in various jobs both within the household and in wider society. Women have a dual role, namely as household builders (domestic sector) and breadwinners (public sector). Women's involvement in work is often not taken into account. According to Ningtiyas et al. (2015), the role of women in increasing family income is not pursued only by men or husbands, meaning that not only men will contribute to family income, but most women will also contribute to increasing income.

The work of women farmers in their farming business must be balanced with attention to women farmers regarding the risks of farming work. The contribution of female farmers to the social economy of the family receives less attention to their social role. The nature of women and the ideas about women's nature that women are still dominated by men still greatly influence women's contribution to socio-economic life. There is a triple role that a woman has, namely the role of earning a living (productive role), the role of taking care of household activities (reproductive role), plus a social role in the community (community role).

Women's Economic Contribution

In general, women's economic role is to increase family income. Therefore, additional income from women's economic activities can help meet the family's needs from poverty. Economic allocation within the family is closely related to the structure of employment opportunities in society at large. If there is a change in the economic factors of a society, then the economic allocation within the family will change (Rahardjo, 1983).

Low family economic conditions will affect women's economic activities. The economic condition in question is low family income while a large number of family dependents requires large expenditures. The contribution of women as secondary workers is very important in the family economy as an economic buffer (Elfindri, 2004).

Family Decision-Making Patterns

In everyday life, families are often expected to make decisions about matters relating to the interests of their family members. Generally, because it concerns the interests of all family members, the decisions taken should be the result of mutual agreement. Whether

May, 2024

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https://www.ejournal.aibpmjournals.com/index.php/JICP

it is about the content of the decision taken or about who is considered most entitled to make the final decision.

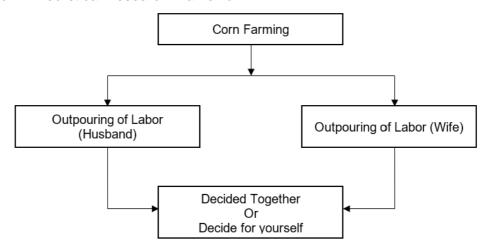
In reality, there are various variations regarding decision-making in these families. Sometimes women are not included, but sometimes women are the ones who determine decision-making. Many decisions in the family are also made jointly between husband and wife, for example, in the areas of consumption, children's education, health, and so on (Ihrom, 1990).

According to Amanah et al. (2015), women can play a role in decision-making in accordance with the division of labor and allocation of power in the household. In the decision-making process, women are more dominant in decision-making related to determining the type of food and meeting household nutritional needs. Apart from that, women farmers also have a role in determining food distribution, determining the allocation of their own income and that of their husbands to meet household needs, spending household income in markets and stalls, and collecting food that has been planted on the land they own. Women farmers have relatively high access to production facilities. This is due to the high involvement of female farmers in planting, weeding, and fertilizing activities or it could be said that these activities are mostly carried out by women.

Thus, it can be seen that female farmers have a role in the decision-making process in the farming household, involving themselves in several cultivation activities, and also enjoying the results of the farming they do.

Theoretical Framework of Research

Figure 1. Theoretical Research Framework



Research Hypothesis

H1: The amount of labor provided by female farmers is higher than that of male farmers in production activities in corn farming.

H2: Female farmers play a dominant role in decision-making on production activities in corn farming.

May, 2024

P-ISSN: 2622-0989/E-ISSN: 2621-993X

https://www.ejournal.aibpmjournals.com/index.php/JICP

RESEARCH METHOD

Types of Research

This type of research is quantitative research because it uses data in the form of numbers measured on a numerical scale obtained from questionnaire data conducted at the research location.

Place and Time of Research

The research location was Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province. The method for determining the research location is carried out purposively based on certain criteria and objectives. It was chosen deliberately because the area was believed to be in the best position to provide the required information. Based on the consideration that this location generally comprises families engaged in corn farming or husband and wife teams involved in corn farming. The research period was carried out for 4 months, starting from August to November 2023.

Population and Research Sample Collection Methods

The research sampling method was carried out non-randomly (Nonprobability Sampling) with a sampling technique based on people who were met by chance or anyone whom the researchers deemed worthy as a data source (Accidental Sampling). The population in this study was 407 heads of families who were corn farming families and corn farmers. So, determining the sample size in this study was taken using the Slovin formula, namely:

$$n = \frac{N}{1 + N(e)^2} = \frac{407}{1 + 407(0,1)^2} = 80.27 \text{ samples}$$

Where:

n = Number of sampelN = Number of population

e = Tolerance limit kerror = 0.1 (10%)

So, the sample taken in this research was 80.27 samples, which were combined into 80 samples of female farmers in production activities in corn farming.

Method of Collecting Data

The data collection method in this research consists of primary data and secondary data. Primary data were obtained from research results in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province by interviewing respondents using a questionnaire or a prepared list of questions. Secondary data were obtained from agencies related to this research, such as the BPS of Karo Regency and North Sumatra Province, scientific literature, and other supporting books.

Data Analysis Method

The data analysis and processing methods used in this research are qualitative and quantitative analyses based on primary and secondary data obtained from the research results. Data processing using qualitative analysis methods is described descriptively to explain the general picture of farmer characteristics and the decision-making process in production activities in corn farming in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province.

P-ISSN: 2622-0989/E-ISSN: 2621-993X

https://www.ejournal.aibpmjournals.com/index.php/JICP

To analyze hypothesis 1, namely explaining the amount of labor devoted to production activities in corn farming in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province using the Main's Workday (HKP) analysis method.

According to Hernanto (1993), labor output is the number of working hours that a person devotes to work to achieve economic goals. The units commonly used to measure the volume of labor are the number of workers and total working days or Main's Working Days (HKP) with the following systematic formula:

$$HKP = \sum \frac{TK \times JK \times HKO}{8}$$

Where:

HKP = Men's Workday

8 = Maximum working hours of labor in 1 day

Kindergarten = Number of workers (people)

JK = Number of hours worked

HKO = Person Working Days

To analyze hypothesis 2, namely explaining the role of women farmers in making decisions in production activities on corn farming in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province using scoring and categorization analysis methods. Categorization uses descriptive qualitative analysis methods with the help of cross-tabulation. Sajogyo (1985) categorized gender decision-making dynamics between husbands and wives into five distinct types. Firstly, decisions are solely made by the wife, without consulting her husband. Alternatively, joint decision-making occurs, where the wife's influence holds more sway.

There's also joint decision-making with equal input from both spouses, without dominance from either party. In contrast, joint decision-making may be skewed towards the husband's influence. Lastly, decisions can be made solely by the husband and wife, excluding consultation with the wife. These categories shed light on the varied dynamics of decision-making within marital relationships, illustrating the complexity of gender roles and power dynamics within households.

Table 1. Decision-Making Answer Categories

Category	Decision	Value Score
Own Wife	100%	1
Dominant Wife	75%	2
Husband and Wife	50%	3
Dominant Husband	25%	4
Own Husband	0%	5

According to Sugiyono (2007), the total value of products on this scale is grouped into 5 categories, and determining the decision category is carried out using the following formula:

Scale Range =
$$\frac{5-1}{5}$$
 - 0.1 = 0.79

P-ISSN: 2622-0989/E-ISSN: 2621-993X

https://www.ejournal.aibpmjournals.com/index.php/JICP

The scale ranges from 1 to 5, representing the highest value in this study. Thus, the research scale range for the percentage of the role of female farmers in making decisions for household and productive businesses is as follows:

Table 2. Score Assessment of the Role of Women Farmers in Production Activities in Corn Farming in Decision Making in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province

The Role of Women Farmers	Scale Range		
Own Wife	1.00-1.79		
Husband	2.60-3.39		
Dominant Husband	3.40-4.19		
Own Husband	4.20-5.00		

RESULTS

Below you can see the total expenditure of labor in production activities at corn farming according to gender and stages of the planting season is as follows:

Table 3. Total Labor Deployment in Production Activities in Corn Farming According to Gender and Stages of the Planting Season

No.	Stages of Farmer Activities	HKO Planting Season in the Family		HKO Planting Season Outside the Family	
		Man	Woman	Man	Woman
1.	Soil Cultivation	0.40	-	0.23	-
2.	Formation of Planting Holes	-	1.40	-	0.27
3.	Fertilization I	-	1.20	-	0.30
4.	Spraying	0.60	-	0.13	-
5.	Weeding	-	0.58	-	0.25
6.	Fertilization II	-	1.20	-	0.30
7.	Harvest	2.24	8.55	0.71	1.96
8.	Post-harvest	2.91	5.26	0.71	1.96
9.	Transportation	2.00	-	0.32	-
Tota		8.15	21.19	2.10	5.04
Aver	age	1.63	3.53	0.42	0.84

Table 3 shows that the amount of labor of female farmers is involved in production activities in corn farming, namely tilling the land, forming planting holes, fertilizing I, spraying, weeding, fertilizing II, harvesting, post-harvest, and transportation. The total outpouring of labor for female farmers in the first planting season was 21.19 HKO/planting season out of the total outpouring of labor for all respondents in each stage of production activities in corn farming from land processing to transportation of 36.48 HKO/planting season with an average of 3.53 HKO, for a total land requirement of 1-2 ha or a total of 10 ha. Thus, hypothesis 1 states that the amount of labor devoted by female farmers is higher than the amount of labor devoted by male farmers in production activities in corn farming.

The results of the research show that the role of women farmers in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province in production activities on corn farming is included in the very important category with scores of SS (Strongly Agree), S (Agree), R (Undecided), TS (Disagree), STS (Strongly Disagree). Decision-making is a response to something felt or experienced by farmers. Decision-making in

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https://www.ejournal.aibpmjournals.com/index.php/JICP

production activities on corn farming regarding the female farmer's workforce in choosing to plant corn can be seen through the farmer's answers to the statements given by the corn farmer. The attitudes of corn farmers towards the role of female farmer labor in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province can be seen in Table 4 as follows:

 Table 4. Respondents' Decision-Making Regarding the Role of Labor Women Farmers

in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province

Activity Aspects	Average Score	Information	
Soil Cultivation	5	Own Husband	
Formation of Planting Holes	1	Own Wife	
Fertilization I	1	Own wife	
Spraying	4	Dominant Husband	
Weeding	1	Own Wife	
Fertilization II	1	Own Wife	
Harvest	3	Husband and wife	
Post-harvest	3	Husband and wife	
Transportation	5	Own Husband	
Sub-Total	24		
Average	2.4		

Decision-making in production activities on corn farming in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province, as shown in Table 4, obtained an average score of 2.4. This score indicates that decision-making in production activities on corn farming, which includes land tilling, forming planting holes, fertilizing I, spraying, weeding, fertilizing II, harvesting, post-harvest, and hauling, involves various tasks. Specifically, land processing, spraying, and transportation activities are carried out by the husband himself, while the formation of planting holes, first fertilization, weeding, and second fertilization are handled by the wife herself. Harvesting and post-harvest activities are conducted jointly by the husband and wife. Thus, Hypothesis 2 asserts that the role of women farmers in decision-making in production activities on corn farming significantly influences the decision-making process in such activities in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province.

DISCUSSION

The Role of Female Farmers' Human Resources in Production Activities in Corn Farming in Karo Regency, North Sumatra Province Family Workers (TKDK)

The results obtained for Family Workforce (TKDK) in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province, namely that their adult female farmer workforce (wives) dominates more than the male farmer workforce (husbands) because the workforce Women farmers are neater and more thorough in their work and can help the family economy. This is supported by the opinion of Rahardjo (1983), who states that in general the role of women economically is to increase family income. Therefore, additional income from women's economic activities can help meet family needs from poverty. It can be seen from the results that for 1 corn farm, the average number of workers in the family (TKDK) is 59 people, with a ratio of 49 female farmer workers and 10 male farmer workers according to the attached results.

May, 2024

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https://www.ejournal.aibpmjournals.com/index.php/JICP

Outside Family Workers (TKLK)

The results obtained for non-family workers (TKLK) in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province, namely that the average number of non-family workers is 20 people with a division of 15 female farmer workers and 5 farmer workers. male farmers, where male farmer workers are empowered during harvest and post-harvest, while female farmer workers are empowered for land processing activities, forming planting holes, and fertilizing according to the attached results.

CONCLUSION

In conclusion, the research findings indicate that female farmers contribute significantly more labor than their male counterparts in production activities within the corn farming sector in Kuala Village, Tigabinanga District, Karo Regency, North Sumatra Province. Moreover, the study underscores the influential role played by women farmers in the decision-making process concerning these production activities in the same region.

Moving forward, there are several suggestions to enhance the productivity and efficiency of corn farming in Kuala Village. Firstly, it is recommended that the government provide increased guidance, outreach, and support to farmers. This support should encompass initiatives to boost production capacity, facilitate access to superior seed varieties, ensure consistent subsidies for fertilizers and pesticides, improve harvest and post-harvest technologies, and stabilize market prices for corn.

Secondly, farmers themselves are encouraged to minimize reliance on manual labor and instead focus on leveraging technological advancements throughout the farming process, from cultivation to post-harvest stages. By optimizing the allocation of technology and enhancing knowledge application, farmers can streamline production activities, reduce processing time, and gain a better understanding of cost management, thereby improving overall efficiency.

Lastly, future research endeavors should delve deeper into more advanced and intriguing topics related to corn cultivation and marketing. These studies can serve as conduits for fostering collaboration and synergy among various stakeholders, including educational institutions, government bodies, businesses, and entrepreneurs. Such collaboration can lead to more targeted interventions and initiatives aimed at further enhancing the corn farming sector in Kuala Village and beyond.

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DECLARATION OF CONFLICTING INTERESTS

We declare no potential conflicts of interest regarding the research, authorship, and publication of this paper.

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https://www.ejournal.aibpmjournals.com/index.php/JICP

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