



The Roles of Women on Decision-Making and Implementation of Corn Planting in Wera District Bima Regency

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Abstract: Women have a role in activities in the agricultural sector including in corn cultivation. Success in corn production cannot be separated from the contribution of women who also work in corn cultivation activities. Therefore, this study aims to analyze the role of women in decision making and in the implementation of corn cultivation, its impact and the factors that influence this which is carried out in Wera Regency, Bima Regency. Retrieval of data using survey methods through interviews with questionnaires on 68 respondents. Data analysis used descriptive statistical methods and multiple linear regression tests. The results showed that the role of women in making decisions and implementing corn cultivation was included in the high category. The impact of the role of women in decision making and implementation of cultivation can be observed significantly in the managerial and optimization of corn cultivation results. Internal and external factors have no significant effect on women's role in decision making.

Keywords: Corn Cultivation; Decision Making; Implementation; Role; Women

Introduction

In general, women in Indonesia have an important role in carrying out agricultural activities both in paddy fields, yards, dry land, plantation land, forest areas. Women devote their energy and work time to carrying out activities from cultivating plants to marketing agricultural products (Paramata et al. 2020, Hayati et al. 2021, Hayati et al. 2022). In carrying out the work of cultivating food crops in paddy fields, dry land or in forest areas, there is a division of labor based on gender where women carry out activities that are deemed to require less physical exertion than the work done by men. Gender stereotypes are always attached to women in their involvement in carrying out plant cultivation activities (Mulyaningsih et al. 2018, Hayati et al. 2021, Hayati et al. 2022). In addition, women's access to and control over agricultural resources is also different where women have low access to and control over agricultural resources (Mulyaningsih et al. 2018, Hayati et al. 2021, Ayelech et al 2022, Azzarri C. and Nico G., 2022). Women's low access to and control over

agricultural resources also occurs in several developing countries. For example, in South Africa, related to agricultural resources, namely agricultural land and social resources, in this case, agricultural information through agricultural extension activities, women have little access to agricultural land resources, and women may even have no control at all. Women also do not have access to information sources and agricultural information. Women are not the target of agricultural extension activities because women are not the managers of family farming. Women are not members of farmer groups whose establishment is facilitated by related institutions (Hayati et al. 2022, Paramata et al. 2020, Hutajulu, 2015).

In practice, basically even in a very simple way or what it is, women farmers have an important role and responsibility in carrying out planning activities for plant cultivation or farming activities. Women also play a role in carrying out cultivation or farming activities so that they can benefit themselves and their families from the activities they carry out (Hayati et al. 2021, Hayati et al. 2022). This includes that women also play a role in

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corn cultivation or farming activities which are widely cultivated by agricultural communities.

It is known that corn (*Zea mays L.*) is one of the important commodities that are in great demand by farmers, both farmers who plant in paddy fields or dry land, in the hills. Particularly in West Nusa Tenggara Province, corn is one of the leading commodities. This is shown by the government's move to establish maize in the regional development flagship program. Corn is also included in the main food ingredients after rice. Corn production in 2020 reached 1,726,579.98 tonnes, increasing significantly by 1,811,120.65 tonnes in 2021 and 2,318,432.44 tonnes in 2022 (NTB One Data, 2022). The success of this achievement was due to the massive development of corn in various regions of West Nusa Tenggara Province. Bima Regency is a center for the development of corn commodities in West Nusa Tenggara. Corn production will reach 644,771.23 tonnes in 2022 (NTB One Data, 2022).

The results of observations in the field showed that the implementation of corn cultivation carried out in Bima Regency involved the role of women in the implementation of cultivation activities. In practice it is very possible to have a division of labor based on gender in the implementation of corn cultivation activities, such as land preparation, planting seeds, replanting, weeding, fertilizing, pest control, harvesting, shelling, and drying (Paramata et al. 2020). In addition to women playing a role in the implementation of corn cultivation, referring to the opinion of Hayati et al. (2015), women also have the opportunity to be involved in making decisions according to the allocation of power and the prevailing division of labor.

This study aims to analyze: (1) the role of women in decision making in the planning and implementation of corn cultivation; (2) the role of women in the implementation of corn cultivation; (3) the impact of the role of women in making decisions and implementing corn cultivation; (4) the factors that influence the role of women in making decisions and implementing corn cultivation.

Method

The research was conducted in Wera District, Bima Regency, which was selected by purposive sampling. The population in the study amounted to 211 consisting of four villages (Mandala Village, Nanga Wera Village, Hidirasa Village, Ranggalasari Village). The research sample was female farmers who were determined by Accidental Sampling using the Slovin method. Data collection was carried out directly using survey techniques through structured interviews using questionnaires to 68 respondents. Secondary data is collected from various research sources, scientific journals, and texts related to the research topic. The variables of this study are (1) The role of

women in making decisions on the planning and implementation of corn cultivation, (2) The role of women in the implementation of corn cultivation which includes soil preparation, planting seeds, stitching, weeding, fertilizing, OPT control, harvesting, shelling, drying, , marketing, (3) Impact of the role of women in corn cultivation, and (4) Factors that influence the role of women in the implementation of corn cultivation. The data obtained was scored and analyzed using descriptive statistics and multiple linear regression using the Statistical Product and Service Solution (SPSS) program.

Result and Discussion

The role of women in decision making and implementation of corn cultivation

The role of women in the practice of maize cultivation includes a whole series of stages and cultivation processes which can be divided into two parts, namely decision making and implementation. Decision making includes the planning and implementation of cultivation. Planning includes capital, sources of capital, types of seeds, planting time, types of fertilizers, types of pesticides, and harvesting times. The role of women in making decisions on cultivation planning shows the involvement of women in farming management. At the planning stage, the role of women is included in the high category with a percentage of 85.29%. A high level of role means that women have an important position besides men in farming, especially at the cultivation stage. Women have a bargaining position against their husbands.

As for the implementation stage, women take an active role in making decisions. At the implementation stage, the role of women in recruiting women is included in the high category with a percentage reaching 92.65%. After taking a role in planning, in the implementation of cultivation, women are still involved in decision making. Even though men are the head of the family and have primary rights in land management, women's involvement is needed to complete deficiencies or sharpen the right decisions in cultivation. This is because in several aspects of cultivation women are more in control than men.

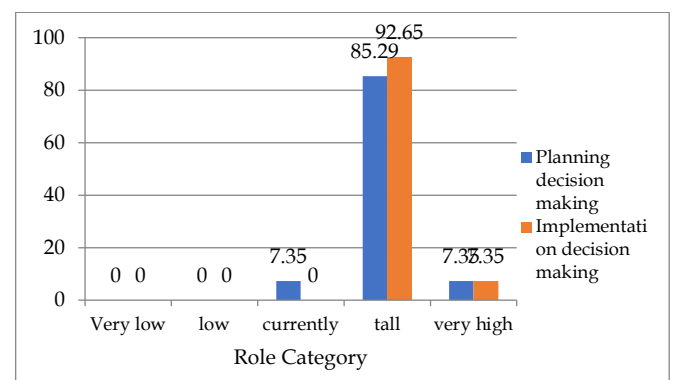


Figure 1. The role of women in decision-making in the planning and implementation of cultivation

At the cultivation implementation stage, the level of women's role is categorized as high or reaches 100%. The role of women in the implementation of corn cultivation is carried out directly and indirectly. The role directly means that women participate completely and directly come into contact with cultivation activities, while indirectly, namely their involvement includes matters that support the implementation of cultivation but do not carry out or have direct contact with cultivation activities.

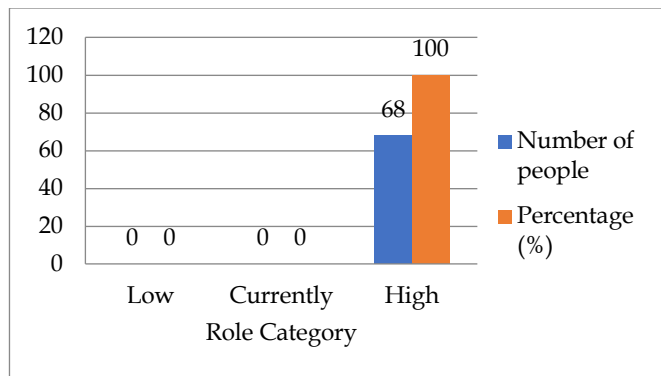


Figure 2. Level of women's role in cultivating

a. Land Processing

Land processing in corn cultivation aims to provide optimal conditions for plant growth and development (Riwandi, 2014). Prior to the implementation of land management, women either had the status of a farmer's wife or did not carry out planning with their men or husbands. Capital planning is included in this case which includes capital for the entire cultivation process. Land processing requires several preparations such as estimating labor wages, provision of tools to consumption to support land processing activities. In planning the amount of capital the role of women can be said to be balanced with men or it can be said to be in the moderate category with a percentage reaching 58.82%. The average use of capital reaches IDR 15,000,000/Ha. The source of capital in the planning that was decided generally came from the private funds of the farmer's family or from bank loans in the range of IDR 20,000,000-IDR 40,000,000 with 10% interest.

At the implementation stage, the level of women's role in land management is generally classified in the low category and shows various results with not a large difference in percentage levels. The level of women's role in the low category is 33.89%, the medium category is 26.47%, and the high category is 39.71%. Variation in the level of this role is due to differences in capacity, physical strength and financial factors. Also at this stage, the role of women in decision-making is generally in the low category with a percentage of 54.41%. Even so, the role of women is high in planning which shows the involvement of women in land management in addition to the main role of men in land management.

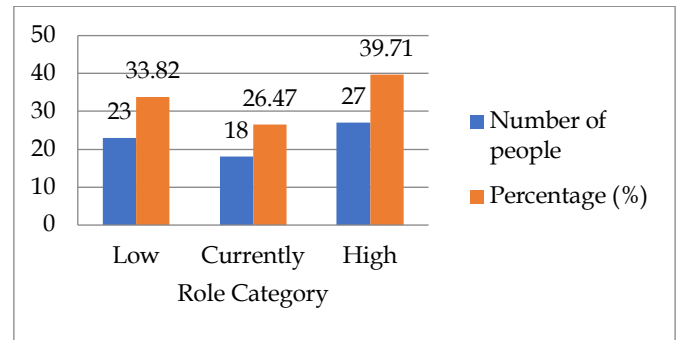


Figure 3. Level of women's role in land management

Land preparation is divided into three main stages, namely clearing the land from weeds and previous crop residues, turning the soil and making plots. The role of women in land management is greatest at the stage of clearing the land from weeds and crop residues using herbicides and machetes. The function of clearing weeds is to maximize crop yields, because if left without any control it can reduce yields by 20-80% (Bilman, 2011). Land processing is carried out for 10 days for a land area of 1 Ha. In land clearing, a machete is used to clear weeds. The use of herbicides was also applied to overcome small weeds.

b. Seed Planting

Seed planting is carried out after a series of land preparation is complete. The need for seeds per hectare is around 28,000 to 45,000 seeds depending on the variety, spacing, and seed size (Riwandi, 2014). In planting seeds, the role of women belongs to the high category. Women understand better the method of planting seeds than men and are more agile. Men will hand over the investment share to women so that the planting stage of women's roles is very high, reaching 49.41%. Decision making also shows a high role by women, reaching 40%. Men have limitations but are dominated by women.

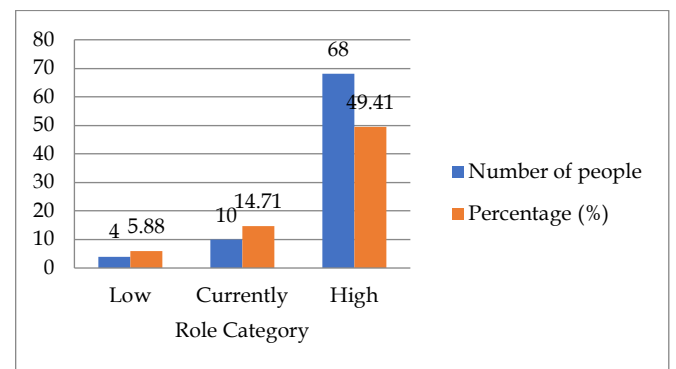


Figure 4. The level of women's role in planting seeds

At this stage, the planting method used is the singling method. Women carry out the inheritance by using a traditional tool called 'tembilang Kecil' and inserting corn seeds in each hole. The process of planting

the seeds is carried out a day or a few days after it rains to get loose soil conditions that make it easier to sow. The corn varieties that are excellent are NK sumo, pioneer, ADV 77, and BISI 18. These types of corn are considered to have a fast harvest time, have a sturdy tree structure, are not too favored by pests, and have a large corn cob size so that when planting will produce a greater weight of corn. Determination of the type of corn seed is mutually agreed upon by women and men. In planning the types of corn seeds, women take a role that is balanced with men. The percentage of women's role in the planning reached 61.76%. Seed productivity is a strict consideration in determining the type of seed.

c. Stitching

Stitching is the process of replacing plants that are experiencing a growth process that is not good. Stitching is done after the corn grows evenly and is seen growing on the soil surface or around 10 HST. The role of women in the implementation of embroidery is generally classified as a medium category with a percentage of 55.88%. The role of women at this stage adjusts the condition of the plant. If the corn plants grow optimally, no replanting is needed. Women have full participation in this stage, because the cultivation process at the embroidery stage is very easy for women to do without requiring great physical strength. In making implementation decisions, the role of women is included in the medium category with a percentage level of 67.65%. The percentage value in decision-making at the implementation stage is balanced with the percentage in the role of women in embroidery implementation.

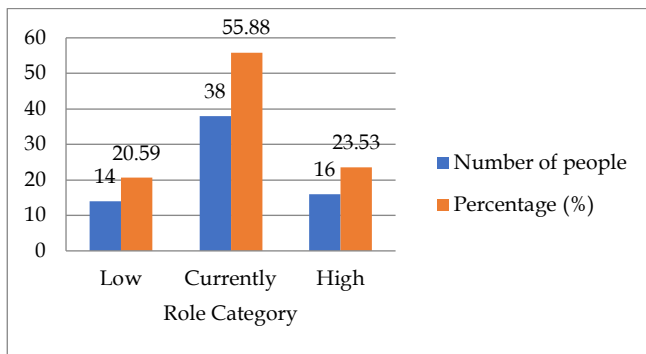


Figure 5. The level of women's role in embroidery

d. Weeding

The weeding stage is the stage of monitoring plants from weeds by cleaning or removing weeds that grow. The presence of weeds is a factor in the low yield of corn crops (Wahyudin, 2016). At the decision making stage of weeding, the role of women is classified as moderate with a percentage of 52.94%. Women make decisions together with their husbands. Discuss effective measures to control weeds including the need for additional labour.

At this stage the level of women's role is relatively low in implementation with a presentation of 48.53%. Cleaning of weeds is done carefully so as not to disturb the growth of the corn plants by manual methods or directly removed using hands and tools such as sickles or machetes. Weeds that are small and difficult to remove will be treated with herbicide spraying. The use of herbicides for weed control is of great interest to farmers, especially for large areas of land (Wahyudin, 2016). The types of herbicides used were Gramoxone, Lindomin, Basmilang and other types of herbicides.

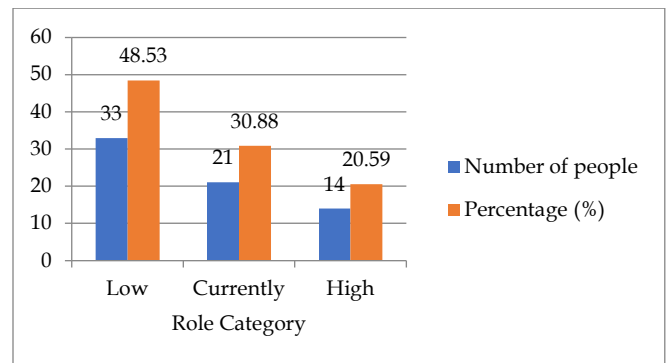


Figure 6. The level of women's role in weeding

e. Fertilization

In making decisions on the implementation of fertilization, the role of women can be categorized as moderate with a percentage of 50%. Decisions are made jointly between women and men which include fertilizer application, fertilization methods, as well as labor requirements and wages. In implementation, the role of women in fertilization is classified in the high category with a percentage reaching 75%. Women participate directly in the implementation of this fertilization stage. The fertilization process is carried out when the corn plants are 2 weeks old or 15 HST and 40 HST. Fertilization is done twice in one growing season.

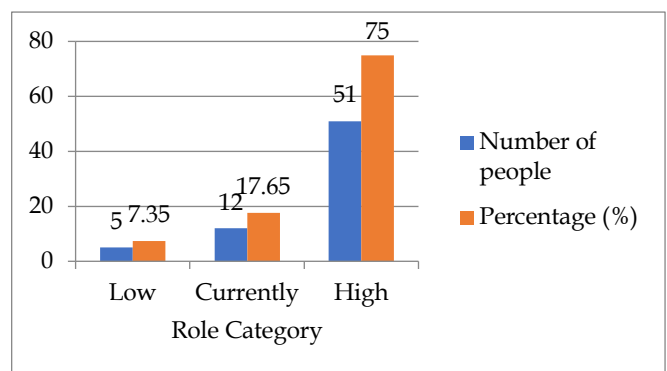


Figure 7. The level of women's role in fertilization

The types of fertilizers used are urea and NPK fertilizers purchased from retailers for IDR 200,000/50kg. In the use of this type of fertilizer, the role of women in making planning decisions for the type of

fertilizer is included in the low category with a percentage of 42.65%. The average use of fertilizers reaches 600 kg/Ha. On a land area of 1 ha, the dose for the first fertilization uses a composition of 300 kg of urea and 150 kg of NPK. The second fertilization uses 200 kg of urea and 400 kg of NPK. Women take the role of determining the type of fertilizer used. There are different fertilization methods that are adapted to land conditions. On land that has a flat surface, the fertilization method is carried out by storing grains of fertilizer around the corn plants by 2-3 cm from the corn to facilitate the absorption of fertilizer. On steep land, the grains of fertilizer are simply spread out. The method of spreading on a steep surface is to protect the safety of farmers from work accidents caused by slippery soil surfaces. The fertilization process takes one day.

f. Control of Plant Pest Organisms (OPT)

The role of women in pest control is classified as low in both decision making and implementation. In making decisions on planning the type of medicine, the role of women is included in the low category with a percentage of 45.59%. The role of women is limited due to the domination of men's roles because men understand more about pesticides, even so women are still involved in decision making. The percentage of roles in decision-making for implementation and implementation of OPT control, the role of women is included in the low category with a respective percentage of 55.88% and 70.59%. The role of women is limited by their ability to use large and heavy tools. The tool is called 'sampro' which is a tool in the form of a machine that also functions to eradicate weeds. Control of plant pests is carried out 1 or 2 days after planting. This is to anticipate organisms that eat seeds such as grasshoppers and ants. After the corn grows, the pests encountered are caterpillars that eat the corn plant parts and also mice. To control caterpillars and rats, ratol or green tonic is used. Rat poison is placed near rat nests by mixing the poison with rice or grated coconut. To control other OPT pesticides with the types of grentoni, furadan, and sidamethrin are used. In addition, stem rot disease is often encountered every season. The drugs used to treat this disease are antracol.

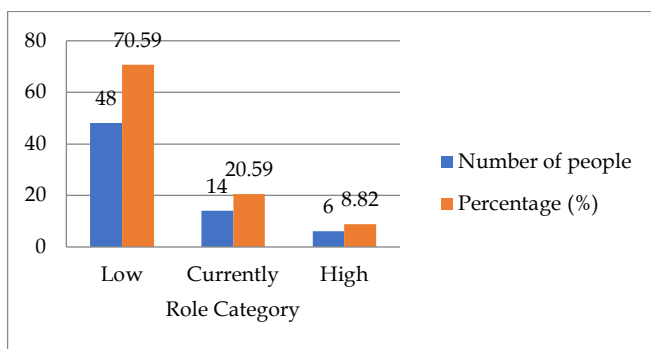


Figure 8. The level of women's role in OPT control

g. Harvesting

In the implementation of the harvesting stage, the role of women was included in the high category which reached a percentage of 86.76%, while in the decision making implementation it was in the medium category with a percentage which reached 52.94%. Decision making is done jointly between women and men. Likewise in planning harvesting time, in decision making the role of women is included in the medium category with a percentage of 61.76%. Corn harvesting is done after the corn reaches the age of 100-130 HST with a completion period of 15 to 30 days depending on the area harvested and the amount of labor used. Harvesting is done by picking corn that has been left to dry on the tree. The results of this excerpt are stored in sacks. Additional labor in the harvesting process is needed. This is to speed up the harvesting process. The workforce used is generally male and female workers. The wages given to them are different. Men earn more wages than women. The wage for male workers is around IDR 120,000/workday while for women it is IDR 80,000/workday. Even so, the use of labor outside the family is greatly minimized, labor within the family will be prioritized. This is to minimize costs. The use of labor in the family has the possibility to negotiate without giving wages so that it will reduce costs.

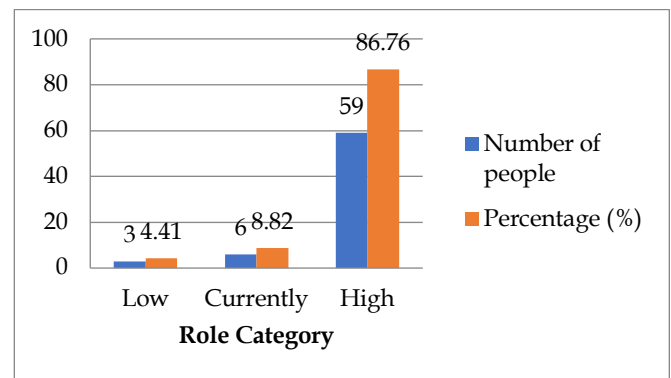


Figure 9. Level of women's role in harvesting

h. Shelling

Shelling is the process of separating the corn kernels from the cobs. Prior to the holding of the election, women and men will discuss matters relating to the preparation and timing of the election. The role of women in decision making is in the moderate category with a percentage of 66.18%. At the implementation stage, the level of women's role is included in the low category with a percentage of 79.41%. The role of women at this stage is carried out directly and indirectly. Indirectly, women's participation took the form of monitoring activities or bringing food to workers. Peeling uses a simple machine called a 'tarese'. The tool is a modification of a pick-up car or an unused car and attaches a sheller to the rear. This modification was made to facilitate the mobility of the corn sheller

machine tool. The results of the shelling will be put in a sack and stored in a tent waiting for drying time. The duration of shelling time for corn from 1 ha of land takes 2-3 hours. In this process, the role of men dominates.

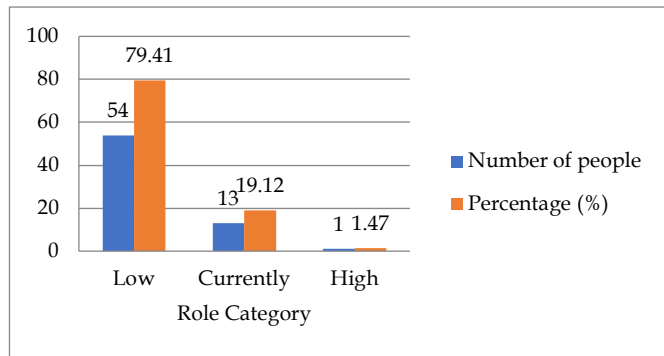


Figure 10. The level of the role of women in the election

i. Drying

The role of women in the drying stage is included in the high category with a percentage of 66.18%. Prior to implementation, women had played a role in decision making which was included in the moderate category with a percentage of 64.71%. Drying is done 2-3 days depending on the intensity of sunlight in one day. The production of corn yields 1 Ha of land takes 5-6 days to complete drying, it can also be less or more depending on land productivity. Corn kernels that have been properly dried will be put back into the sack and weighed. After weighing, sacks containing corn will be distributed to collectors. In certain conditions caused by the inability to dry the whole crop, the harvest will be sold directly to collectors without going through the drying process. In the process, the need for labor also depends on the conditions and quantity of the large harvest. The average wage is IDR 50,000/day.

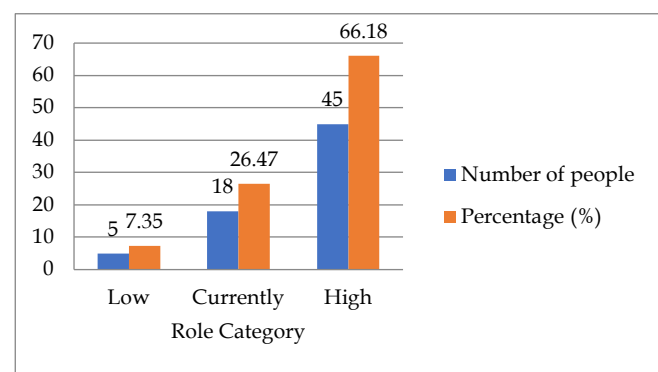


Figure 11. Level of women's role in drying

The impact of the role of women in decision making and implementation of corn cultivation

The role of women in making decisions and implementing corn cultivation has a significant impact. Even though the main actors in corn farming are still dominated by men who are supported by land

management rights that are handed over to men (Hayati et.al. 2022). The role of women in corn farming, especially in cultivation, maximizes the results of farming. This can be observed in the managerial maximization of corn cultivation which includes capital estimation and the use of capital for labor wages and procurement of inputs, determining the type of fertilizer, and determining the harvest time. Women have a role that tends to be balanced with men in the management of corn cultivation. Men as heads of management or as heads of families will be helped by the involvement of women. This is in accordance with the results of studies which show that women take a large role in decision-making in farming, one of which is as a manager who manages their own land (Moock, 1976 in Adesina & Djato 1996). In the implementation of cultivation, especially those that rely on precision and agility, such as at the stage of land preparation, planting seeds, fertilizing and drying in the sun, fill the limitations of the role of men so that optimal cultivation results are achieved. The role of women in maize cultivation complements the lack of ability and skills of men in cultivation.

Factors influencing the role of women in decision making and implementation of corn cultivation

Based on the results of multiple linear regression analysis, there are several factors that influence women's participation in decision making which are grouped as internal and external factors, showing the following results:

1. Internal Factors

Internal factors include respondent's age, education level, family income, total income, number of family dependents, and area of arable land. The results of the analysis using SPSS with multiple linear regression models show that in general these factors do not have a significant effect on decision making by women. These factors only explain 4.4% at the level of the role of women, while 95.6% is explained by other factors outside the model.

2. External Factors

External factors include the economic environment consisting of banks and the social environment, namely women's access to agricultural extension. Women have low access to information and agricultural counseling related to the implementation of corn cultivation. Women get information from family and neighbours. The results of the SPSS analysis using the multiple linear regression model show that economic environmental factors only explain 9% at the level of women's roles, and 91% are explained by factors outside the model. Even though they do not get credit from the bank, women can still carry out their farming activities. The social

environmental factor only explains the level of decision making by 5% and 95% is explained by factors outside the model. These factors generally do not significantly influence decision making by women.

Conclusion

Based on the results and discussion of the research, the things that can be concluded are: (1) The role of women in making decisions on planning and implementing cultivation is included in the high category with a respective percentage of 85.29% and 92.65%. The role of women in decision making balances the role of men who are the head of management. Women's managerial ability in decision making helps maximize the results of corn cultivation; (2) The role of women in the implementation of corn cultivation can be categorized as high with a percentage of 100%. The role of women at each stage of cultivation has various levels which are influenced by several causal factors; (3) The role of women in decision-making and implementation of farming has a significant impact that can be observed. This is related to the maximization of cultivation results which are carried out especially in managerial cultivation and several stages of cultivation which rely heavily on women's abilities in accuracy and agility; (4) Internal factors, namely the level of education, family income, total income, number of family dependents, and area of arable land as well as external factors, namely the social environment and economic environment, do not significantly influence the decision making of corn cultivation.

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