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AMPEK ANGKEK AND KUSUIK PUTIAH RICE VARIETIES TO INCREASE RICE PRODUCTION IN AGAM REGENCY

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Abstract

This study is about the agricultural innovation of the Agam Regency Government in an effort to increase rice crop production . This study was conducted by the Regional Government of Agam Regency, West Sumatra Province, Indonesia to increase rice production by farmers. by releasing new superior local varieties Ampek Angkek and Kusuik Putih. Both superior local varieties have a relatively high competitive advantage, as indicated by the wide distribution of local rice varieties and farmers' positive perceptions of local rice varieties. This study uses a qualitative approach research method. Data collection uses a literature review technique . A literature review is a systematic examination of critical scientific literature in analyzing, evaluating, and synthesizing research findings, theories, and practices. Literature reviews provide an overview of the development of a particular topic. The results of the innovation of the superior local varieties Ampek Angkek and Kusuik Putih have been proven to have advantages including relatively high productivity levels, resistance to pests and diseases, high selling prices and having a soft, savory and fragrant rice taste and a clean white rice color. In addition, farming communities in highland areas can have more alternative choices of rice seeds. Therefore, it is hoped that the Ampek Angkek and Kusuik Putih varieties can expand their distribution in various regions in West Sumatra Province.

Keywords : Innovation, Rice Production, Varieties, Food, Farmers.

I. INTRODUCTION

This research is about agricultural innovation in the form of innovation in releasing new local superior varieties Ampek Angkek and Kusuik Putih in an effort to increase rice production. in Agam Regency. Food Security is a condition where food is fulfilled for the country down to the individual, which is reflected in the availability of food that is sufficient in quantity and quality, safe, diverse, nutritious, evenly distributed, affordable and does not conflict with the religion, beliefs, and culture of the community to live healthily, actively, and productively in a sustainable manner (Food Security Agency, 2012) . Food is a necessity that must be fulfilled to ensure the survival of humankind (Yunianti & Fauziah, 2017) . Indonesia is a country with a high population density. The demand for rice continues to increase in line with population growth of 1.9% per year (Mahmud et al., 2010) . This opinion is supported by Riyanto et al., 2013. that approximately 95% of the Indonesian population still relies on rice as their primary food commodity. This is further supplemented by a statement from (IRRI, 2001) that until now, calorie and protein needs are still met from rice, namely around 56% and 46% respectively . Therefore, rice is a primary commodity

whose demand continues to increase along with population growth, so the government's obligation is to create policies that can guarantee food security and food self-sufficiency for the community.

Agam Regency is one of the centers of paddy rice production in West Sumatra, with potential for development in both lowlands and highlands. Twenty-one local West Sumatran rice varieties have been identified that provide high yields (>7 tons/ha). However, only a few varieties have medium maturity and plant height (Syarif and Zen, 2013). The problem that has occurred is that in recent years, rice production in the Agam Regency area has decreased. There is a rice harvest area, namely in 2018 of 34,560.17 ha, decreasing by 5.61% in 2019 to 32,622.02 ha. Rice production in 2018 was 178,557 tons/GKG, decreasing by 9.9% in 2019 to 160,888.26 tons/ha (Central Statistics Agency, 2020). The efforts made by the Agam Regency Government are through various policies and activity programs, one of which is the introduction of new local superior varieties. The government distributes local superior seeds that vary according to the agro-ecosystem conditions and socio-economic conditions of the population in a region. The approach of implementing new local superior varieties that are appropriate to local agro-ecology can effectively increase crop productivity (Hastuti et al., 2020). This new local superior rice variety in Agam Regency has been proven to have a relatively high competitive advantage as indicated by the wide distribution of local rice variety planting and supported by the positive perception of local rice varieties by most farmers. These local varieties include Ampek Angkek and Kusuik Putih. (Aldi, N & Catur Oktivian., 2019).

The purpose of this study is to describe the efforts of the local government to increase rice production, especially by farmers in Agam Regency, by releasing new, more profitable local superior varieties. This research focuses on the innovations undertaken by the Regional Government in an effort to increase farmer production in Agam Regency through the use of new local superior rice varieties, Ampek Angkek and Kusuik Putih. Both varieties have advantages, so it is hoped that they will be accepted and preferred by the community in crop cultivation activities.

Increasing food production can be achieved by diversifying food consumption (food diversification) from other commodities. According to the Food Security Agency (2013), food diversification is an effort to cultivate a diverse, nutritionally balanced food consumption pattern, sufficient in quantity and composition for a healthy and productive life. Food diversification encourages the provision of diverse staple food products, safe for consumption, and based on local resources, thereby reducing food imports. According to the Directorate General of Food Crops (2013), other food commodities that can be used for food diversification besides rice include: corn, soybeans, cassava, sweet potatoes, and various other carbohydrate tubers. In addition, these commodities are plants with easy adaptation, long shelf life, and delicious taste. Such as research that has been conducted (Leovita et al., 2017) on the Analysis of Income and Technical Efficiency of Sweet Potato Farming in Ampek Angkek District, Agam Regency, West Sumatra Province. The study analyzed the income of sweet potato farming, identified factors affecting sweet potato production, analyzed the technical efficiency and technical inefficiency factors of sweet potato farming, the results of which showed that sweet potato farming is feasible and profitable to cultivate. Another study by (Hastuti et al., 2020) on the Effect of Subsidized Rice Seeds (*Oryza sativa L.*) on the Production and Income of Rice Farmers in Bogor Regency. This study analyzed the form of increasing rice food production through the use of subsidized national (not local) superior varieties (VUB), namely Mekongga and non-subsidized Inpari 13, Inpari 16 and Ciherang. However, efforts to introduce these superior varieties of rice seeds in the field are not easy. Farmers who are the main actors in planting these superior varieties of rice seeds are faced with problems including land degradation, climate deviations, and pest and disease attacks.

However, existing studies have focused more on: first, the use of food diversification with commodities other than rice, such as sweet potatoes, the results of which do show that sweet potato farming is feasible and profitable, but in reality, people still consume rice as their main food. Second, the use of new, superior rice varieties (VUB) nationally (not local) that are not region-specific, resulting in

cultivation constraints that lead to less than optimal harvests. This is certainly different from this study, which emphasizes the use of superior local varieties from Agam Regency, including Ampek Angkek and Kusuik Putih. Where these local varieties adapt to the land and climate conditions in the area (Regional Index Report, 2017) . This study is also considered important and relevant because it examines the condition of agricultural land in the Agam Regency area. In addition, this study is a form of local government effort to increase rice production by using superior local varieties, which are easy to adopt and preferred by the local community.

II. METHOD

This study uses a qualitative research approach. Data collection uses a literature review technique. According to (Efron & Ravid, 2015) *Literature review* is a systematic examination of critical scientific literature in analyzing, evaluating, and synthesizing research findings, theories, and practices . Literature review will provide an overview of the development of a particular topic. The preparation of scientific literature involves several stages of the process including finding relevant literature, evaluating literature review sources, identifying themes, gaps between theory and field conditions if any, creating an outline structure and compiling a literature review review. (Cahyono et al., 2019) . This research was conducted by presenting agricultural innovations , namely local superior rice varieties Ampek Angkek and Kusuik Putih along with their advantages to increase rice production in the Agam Regency area . This research was systematically structured. Data collection was also conducted through searching various sources, which were then processed and described in narrative form according to data requirements. The data used came from reports, journals, books, scientific articles, and literature reviews containing the concepts being studied.

III. RESULTS AND DISCUSSION

A. Food Security Regulation

According to the Law of the Republic of Indonesia Number 18 of 2012 concerning Food in Article 1, Food is everything that comes from biological sources of agricultural, plantation,

forestry, fishery, livestock, aquatic and water products, whether processed or unprocessed, which are intended as food or drink for human consumption, including food additives, food raw materials, and other materials used in the process of preparing, processing, and/or making food or drink. Meanwhile, Food Security is a condition of fulfilling food for the country up to individuals, which is reflected in the availability of sufficient food in both quantity and quality, safe, diverse, nutritious, evenly distributed, and affordable and does not conflict with religion, beliefs, and culture of the community, to be able to live healthy, active, and productively in a sustainable manner. Furthermore, Law of the Republic of Indonesia Number 41 of 2009 concerning the Protection of Sustainable Food Agricultural Land, Article 1 states that Sustainable Food Agricultural Areas are areas that have expanses of sustainable food agricultural land and/or expanses of sustainable food agricultural reserve land and its supporting elements with the main function of supporting national food independence, resilience, and sovereignty. In this case, the Agam Regency area is a sustainable food agricultural area.

The Government Regulation of the Republic of Indonesia Number 17 of 2015 concerning Food Security and Nutrition Article 1 states that Certain Staple Foods are Staple Foods produced and consumed by the majority of the Indonesian people whose availability and prices are disrupted can affect economic stability and cause social unrest in the community. Local Food is food consumed by the local community in accordance with local potential and wisdom. In this case, Rice is a local staple food. Furthermore, the Regulation of the Minister of Agriculture of the Republic of Indonesia Number 40 of 2017 concerning the Release of Plant Varieties states that Release is government recognition of a Variety resulting from domestic breeding or introduction from abroad which states that the Variety is a Superior Variety that can be distributed. Superior Varieties are Varieties that have been released by the government that have advantages in yield potential or other characteristics. Meanwhile, Local Varieties are Varieties that have existed and been cultivated for generations by farmers, and are owned by the community and controlled by the State. In this case, the Ampek Angkek and Kusuik Putih

varieties are local superior varieties recommended by the government to increase regional food production in Agam Regency.

B. Obstacles and Efforts

Rice is a major commodity in Indonesia that continues to experience increasing demand along with population growth. To support this demand, agricultural business activities are needed. The availability and stability of clean rice prices (rice) are also key to achieving national stability, especially economic stability. Data found that rice production in the Agam Regency area has decreased. The rice harvested area in 2018 was 34,560.17 ha, decreasing by 5.61% in 2019 to 32,622.02 ha. Rice production in 2018 was 178,557 tons/GKG, decreasing by 9.9% in 2019 to 160,888.26 tons/ha (Central Statistics Agency, 2020) . The efforts of the Agam Regency Regional Government are through policies and activity programs, one of which is the introduction of new local superior rice varieties Ampek Angkek and Kusuik Putih with several advantages . The government is distributing new, local, superior rice varieties tailored to the agro-ecosystem and socio-economic conditions of the population in a given region. This approach of effectively implementing new, local, superior varieties suited to local agro-ecology is expected to increase crop productivity and farmer incomes.

C. Agricultural Innovation: Ampek Angkek and Kusuik Putih Varieties

The Ampek Angkek rice variety is a superior local variety native to Agam Regency, West Sumatra Province. The local Ampek Angkek rice variety has been registered with the Center for Plant Variety Protection and Agricultural Licensing under No. 62/PVL/2013, dated November 18, 2013.



Figure 1. Ampek Angkek Rice Variety

The characteristics of the Ampek Angkek rice variety are as follows: First, the plant is a cere group, the plant age is 170 days after

sowing, the height is 118 cm, the plant shape is upright, the stem thickness is 0.5 cm, the leaf length is about 62 cm, the leaf width is about 1.3 cm, the panicle length is 24-25 cm, the productive child is 30 stems and the growth is compact. Second, the grain and rice are slender, about 1 cm long, about 0.25 cm wide, easy to fall and the yield is 7 tons/ha, the weight of 1000 grains is 23.72 gr, the grain color is like straw. Third, the length of broken rice is about 0.75 cm, the width of broken rice is about 0.2 cm, the shape is slender, the color is brownish white and there is no aroma. Fourth, the amylose content is 27%, disease resistant, the height of the growing place is about 700 to 900 meters above sea level and the temperature of the growing place is about 20-30 degrees Celsius. The advantages of the Ampek Angkek variety are its relatively high productivity of 7 tons/ha, good adaptability to highland elevations up to 1,000 m above sea level, higher yields of broken rice, milled rice, and head rice compared to other local rice varieties. The Ampek Angkek variety is resistant to blast disease race 073 and somewhat resistant to race 133, somewhat resistant to bacterial leaf blight pathotype III in the nursery and generative phases.

The Kusuik Putih Rice Variety is a superior local variety belonging to Agam Regency, West Sumatra Province. The selection of superior varieties that are suitable for field conditions and the taste of dry rice according to the preferences of West Sumatran consumers, has led to the cultivation of local varieties that have long adapted to certain agro-ecosystems continuing to grow. One of them is Kusuik Putih rice from Agam Regency. The Kusuik Putih rice variety already has a local variety registration mark no. 989 / PVL / 2018. The characteristics of Kusuik Putih rice are almost similar to the previous superior varieties, namely Kuriak Kusuik and Putih as follows: First, it has a soft, savory and delicious rice taste and a clean white rice color. These conditions cause many enthusiasts, Second, the potential harvest is around 7.53 tons / ha and the selling price of rice is high. Third, the physical quality of rice is better than local varieties in Padang Pariaman. Fourth, it has a medium rice shape as a characteristic of rice that is favored by West Sumatran consumers. Fifth, somewhat resistant to tungro strains 033 and 073, resistant to blast disease race 033 and somewhat resistant to race 073.

Unfortunately, not many people have documented the use of the White Kusuik variety. However, the shape of this plant is more or less similar to the Kuriak Kusuik variety, as seen in Figure 2.



Figure 4.2 Kuriak Kusuik Rice Variety

Success in the agricultural sector is also inseparable from the support of agricultural extension workers. The process of introducing new varieties requires the role of extension workers. Extension workers and farmers who have carried out planting activities using the Kusuik Putih variety are in the Rimbun Farmers Group (Poktan), Limo Jurai Farmers Group Association (Gapoktan), Ampang Gadang Village, Ampek Angkek District, Agam Regency, West Sumatra Province. Farmers are very enthusiastic about planting the local Kusuik Putih rice variety. Previously, farmers here used rice seeds from the previous harvest. After the emergence of Kusuik Putih rice seeds, it is hoped that farmers will become accustomed to using certified or labeled seeds to increase harvest yields for the welfare of farmers and the achievement of food sovereignty. Based on these criteria and advantages, the Ampek Angkek and Kusuik Putih rice varieties also have great potential for rice production in highland areas. The people of Agam Regency in the highland area will also have a wider choice of alternative rice seeds. Region-specific superior varieties are recommended for release. This will increase the efficiency and effectiveness of the variety release process and create a "regional buffer" that will reduce the spread of pests and diseases. This will allow the Ampek Angkek and Kusuik Putih varieties to expand and spread throughout West Sumatra Province.

The mechanism for using superior rice seeds of Ampek Angkek and Kusuik Putih varieties includes: First, selecting a nursery

location with a reference to the ideal land area for the nursery being 4% of the planting area, for example around 400 m² per hectare. The best land for seed production, including for the nursery, is fallow land in the previous season or land planted with the same variety in the previous season. Second, making beds with a height of 5-10 cm, a width of 110 cm and a length adjusted to the size of the plot and needs. Third, making the nursery: the land is cultivated, hoed or plowed, left in a macak-macak condition for at least 2 days, then allowed to dry for up to 7 days, so that the grain in the soil grows. Then the second cultivation is carried out while clearing the land of wild rice plants and weeds. Fourth, fertilize the nursery with urea, TSP, and KCl, each at 15 g/m². Fifth, seed distribution, but before distribution, the seeds are soaked for 24 hours, then incubated for 24 hours, sow the seeds that have begun to germinate at a density of 25-50 g/m² or 0.5-1 kg of seeds per 20 m² of land. The seed requirement for 1 ha of planting area is 10-20 kg (Source: <http://sulbar.litbang.pertanian.go.id/>).

IV. CONCLUSION

Food is a necessity Needs must be met to ensure human survival . Rice is a primary commodity whose demand continues to increase along with population growth. To support this demand, agricultural activities are necessary. The availability and stability of clean rice prices are also key to achieving national stability, particularly economic stability. However, there has been a decline in rice production in Agam Regency, while demand for rice continues to increase. Food needs must be met to ensure human survival . The efforts made by the Regional Government include releasing new local superior rice varieties, Ampek Angkek and Kusuik Putih. The approach of implementing new local superior varieties that are suited to local agroecology can effectively increase crop productivity. Some of the advantages of these two varieties include: a relatively high level of productivity, resistance to pests and diseases, a high selling price, and having a soft, savory and fragrant rice taste and a clean white rice color. These conditions have led to many enthusiasts. Furthermore, farmers in Agam Regency, located in the highlands, will have a wider choice of rice seeds. It is hoped that the Ampek Angkek and Kusuik Putih

varieties will expand and spread throughout West Sumatra Province.

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