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Effect of agricultural system on seed selection in the Rappang Sidenreng Regency

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Abstract. Increased grain production is strongly influenced by the irrigation system owned by farmers. With optimal irrigation system then the farmer will dare to buy more expensive seeds. Farmers will be willing to take greater risks because of grain production to be acquired greater. According to the Data Collection Guidelines for Food Crops and Horticulture, Ministry of Agriculture, several factors can affect the rise and fall of the average rice production per hectare is the problem of soil fertility, use of fertilizers, seeds, how to grow crops, pests and many more. The purpose of this study to determine the effect of agricultural systems on seed selection in Sidrap. This study was conducted in 11 districts in Sidrap, using 99 samples. To answer the purposes of this study, the research institute using logistic regression data analysis is an approach to create predictive models such as linear regression, or commonly referred to as Ordinary Least Squares (OLS). The results showed that a good irrigation system such as the system of irrigation the farmers are more willing to take the risk to buy seed expensive that have good quality, unlike the case with rainfed and pumping which tends to farmers choose to use seed that relatively cheaper, because farmers do not dare to take the risk of failure of grain production because irrigation systems are less supportive. The conclusion of the research is that good irrigation will have an impact on farmers' preferences to use better seedlings and be prepared to take risks.

1. Introduction

Sidrap which has an area of 2.506,19 km² is a center of rice production in South Sulawesi province, Indonesia. This is because of technical irrigation network is able to irrigate the paddy fields. There are several irrigation networks located in Sidrap ie. irrigation networks Bulu' Cenrana river that irrigates 6.000 hectares of paddy fields, irrigation networks Bulu' Timoreng rivers that irrigate around 5.400 hectares and around 5.400 hectares were irrigated with Bila river irrigation network. Various recent research shows that rice is a commodity which occupies a strategic position in the agricultural development process, because the rice has become a political commodity and dominate the life of the people of Indonesia [1].

Sidrap is one of the districts in South Sulawesi province, dubbed the granary. Sidrap has an area of 2.506,19 km² and a population of approximately 264.955 inhabitants. Sidrap has an area of 47.947,3 hectares of paddy fields and capable of harvesting up to three times a year with the implementation of the accelerated program of planting. Agricultural potential possessed by Sidrap then to maintain and



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increase rice production, Sidrap becomes one of the districts that received the new paddy fields program conducted by the Ministry of Agriculture [2]. In Sidrap, rice is the staple crop produced largely by farmers. Sidrap famous as a center for rice should be able to meet the needs Sidrap rice good for itself and for regions outside Sidrap, so it is important to control rice production for national food sustainability [3]. Hence productivity technology to increase rice should be increased. Increased rice production it should be affected by the cultivation of rice fields, seed selection, irrigation up to production. Efforts to increase national rice production is to increase productivity and expansion. From a technical aspect, the technology used is the use of seeds. The high level of the national rice requirement which tends to increase every year requires efforts to increase rice production significantly to meet the needs of the community. To meet the needs of the national rice then launched the National Rice Production Enhancement Program (P2BN) to implement the four (4) strategies, namely; (1) increased productivity, (2) expansion of the area, (3) securing production and (4) institutional and financing as well as increased coordination [4].

The use of quality seeds is the first key to success in rice farming. Irrigation system in Sidrap not only use the irrigation system but some rainfed systems and pumping. This prompted the researchers to see how the effect of the irrigation system for the selection of seeds. Could the better the irrigation system then the election will be the seeds is also quite good. Could the relevant level between the use of seeds with an irrigation system be aligned so that the rice production increased? The selection of seeds for seedling depending on the wishes of the farmers with the following considerations: First, seed selection is based on the experience of previous years if these seeds provide a satisfactory harvest or not. Second, the desire to get tasty rice for everyday meals. Third, select seeds that have resistance to disease and pests. Fourth, select seeds that are considered in accordance with the planting season that will take place [5].

2. Materials and methods

2.1. Implementation and research location

This study was conducted in Sidrap, South Sulawesi province. The location determination is done intentionally (purposive sampling) with the consideration that Sidrap is central of rice production is quite large even become rice barns in South Sulawesi to the national level.

2.2. Research objects and methods

The following table describes the population of farmers group in Sidrap

Table 1. Institutional development of farmers group in Sidrap, South Sulawesi province, 2019.

District	Village	Data Group Farmers	Number of Members
Maritenggae	12	147	4.643
Watang Pulu	10	136	6.797
Panca Lautang	10	117	5.468
Tellu Limpoe	9	113	4.248
Baranti	9	125	7.127
Kulo	6	120	4.894
Panca Rijang	8	139	10.893
Watang Sidenreng	8	166	7.932
Pitu Riawa	12	217	11.275
Dua Pitue	10	119	7.088
Pitu Riase	12	181	6.665
Total	106	1.580	77.030

Source: Sidenreng Rappang regional development plan 2016–2018.

Based on the above data it is clear that the population of farmers group in Sidrap. With a total population of 77.030 members of farmers groups. So that the sampling in this study using a method with the following Solvin assumptions [6]. Table 2. shows the sample used in the study in each subdistrict in Sidrap.

Table 2. Sample of respondents in Sidrap, 2019.

District	Village
Maritenggae	6
Watang Pulu	9
Panca Lautang	7
Tellu Limpoe	5
Baranti	9
Kulo	6
Panca Rijang	14
Watang Sidenreng	10
Pitu Riawa	15
Dua Pitue	9
Pitu Riase	9
Total	99

Sources: Primary data on sample research in Sidrap 2019.

2.3. Data analysis

The observed data were analyzed descriptively quantitatively with analysis logistic regression. Logistic regression is an approach to create predictive models such as linear regression, or commonly referred to as Ordinary Least Squares (OLS) regression.

3. Results and discussion

Rice fields owned by farmers in Sidrap generally divided into three types of irrigation systems. The three types of irrigation systems were technical, rainfed, and pumping irrigation systems. Of the three it is shown that the water system is largely farmers who own paddy rice fields belonging to the technical irrigation system. No wonder if Sidrap became one of the rice granaries in South Sulawesi. Please note that the irrigated fields usually can harvest up to 3 times different from the case with rainfed and pumping irrigation. In addition irrigated fields also have a great opportunity to get more rice production compared to rainfed and pumping. Table 3 describes the existing agricultural system in Sidrap.

Tabel 3. Agricultural systems in Sidrap, South Sulawesi Province in 2019.

Irrigation System	Percentage (%)	Seed Price (Rp.)	Grain Production (Ton)
Technical	47.5	>10.000	> 9
Rainfed	23.2	8.000	< 9
Pumping	29.3	< 8.000	< 9

A total of 47.5% of the farmers use technical irrigation systems, as much as 23.2% rainfed and pumping as much as 29.3%. In the irrigation system seen prices of seeds bought by farmers more than Rp.10.000/kg. For irrigation system rainfed farmers typically spends up to Rp. 8.000/kg. As for pumping irrigation system to pay farmers to buy seed less than Rp. 8.000/kg. For the production of grain is visible, With in the technical irrigation, farmers could produce grains more than 9 tons. As for rainfed and rice fields pumping resulted in the production of less than 9 tons.

Based on the above table shows that among three existing irrigation system in Sidrap seen more farmers who own paddy field with a technical irrigation system. It is directly proportional to the use of rice seed. Farmers who have more dominant irrigated rice seed wear expensive is the price of Rp. 10.000. The use of these seeds is directly proportional to the results of grain production. Grain production with the use of more expensive seeds produces more grain production compared with the use of cheaper grain. From the table above shows that the yield of irrigated rice grain production above 9 tons. This is in accordance with the opinion of [7], Price is the amount of money and other aspects that contain specific uses are required to obtain a product. Prices can provide income to the company, in addition to the price of a role as the most visible aspect for a buyer so the price is considered as an indicator of the quality of a product by consumers. The company has a program pricing refers to the general level of prices for certain products and relative to the price of competitors. Farmers dare to use the more expensive seeds because no guarantees obtained by the farmer, that the seeds are more expensive produce larger grain production. More grain production is not only influenced by the seeds that have very good quality but is also influenced by the irrigation system. The irrigation system is a way or a human effort to provide a flow of water to the fields. With the flow of the water made it easier for farmers in terms regulate the supply of water to the fields. With this irrigation system, farmers will also be easier to control the water needs of the rice fields.

The purpose of irrigation is wet ground, in order to achieve good soil conditions for crops growth in relation to the percentage content of water and air between soil grains. This is what makes the farmers dared to use more expensive quality seed so that a larger grain production compared with rainfed and pumping. In order to achieve good soil conditions for crops growth in relation to the percentage content of water and air between soil grains.

A total of 23.2% of the farmers in Sidrap who have rainfed. With rainfed owned by farmers seen the use of prices of seeds used by farmers Rp. 8.000. Farmers do not dare to spend the cost is quite expensive to buy higher quality seed because there is no guarantee of increased grain production. In table shows the production of grain farmers with rainfed less than irrigated rice production. This proves the irrigation system greatly affect grain production in Sidrap which is one of the barns of rice in South Sulawesi. Grain production in rainfed of < 9 tons.

In addition to the existing irrigation system in Sidrap, there are as many as 29% of farmers who use irrigation system pumping. No pumping is meant here, the actual irrigation system is paddy farmers with rainfed irrigation system. Only with the creativity of farmers so they do well drilling and then drain the paddy fields with water. This is done to provide water supply to the rice when the dry season comes. If the water system is not good, then agriculture will be hampered. Because one of the benchmarks of success of agriculture is the water supply. Basically, by pumping the water system is part of the irrigation system.

4. Conclusion

The conclusion of the research is that good irrigation will have an impact on farmers' preferences to use better seedlings and be prepared to take risks

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References

- [1] Defidelwina, Ariyanto A and Aini Y 2017 Strategies for increasing production and productivity of rice field in Rokan Hulu regency *Prosiding Seminar Nasional dan Call for Papers VII* pp 1266 - 1275
- [2] Nurhana, Rukka M R Diansari P Rukmana D Bulkis S and Bakri R 2019 Analisis aspek sosial ekonomi petani padi peserta program pencetakan sawah baru *Jurnal Sosial Ekonomi Pertanian*. **15** 17-30

- [3] Mardianto M F F, Tjahjono E and Rifada M 2019 Statistical modelling for prediction of rice production in Indonesia using semiparametric regression based on three forms of fourier series estimator *ARPJ. Eng. Appl. Sci.* **14** 2763–70
- [4] Abbas W, Riadi M and Ridwan I 2018 Response of three varieties of Indonesian rice (*Oryza sativa* L.) to various Legowo cropping systems *Jurnal Penelitian dan Pengembangan Agrokompleks* **1** 45 - 55
- [5] Hijjang P, Lampe M and Basir M 2014 Aneka ragam pengetahuan lokal dan kreatifitas petani yang mendukung agroecopreneuer ramah lingkungan di Sulawesi Selatan. *Sosiohumaniora Journal of Social Sciences and Humanities* **16** 143–148
- [6] Ryan T P 2013 *Sample Size Determination and Power* (New Jersey : John Wiley and Sons)
- [7] Tjiptono F 2016 *Pemasaran Jasa. 1st Ed.* (Malang : Bayu Media Publishing)