

SFRN 2019

Security in
food,
renewable
resources,
and
natural
medicines



PROCEEDING

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**3rd INTERNATIONAL CONFER-
ENCE ON SECURITY IN FOOD,
RENEWABLE RESOURCES, AND
NATURAL MEDICINES 2019
(SFRN 2019)**



hosted by,
Politeknik Pertanian
Negeri Payakumbuh



co-Hosted by,
Universitas Andalas
(UNAND)

Convention Hall Politeknik Pertanian Negeri Payakumbuh
INDONESIA

QUANTUM-LEAP OF AGRI-FOOD SYSTEM 4.0 AND DELIVERY OF SUSTAINABLE DE- VELOPMENTS GOALS (SDGS)

September 25-26, 2019



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Theme:
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SUSTAINABLE DEVELOPMENTS GOALS (SDGS)”**

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Welcome Message
**Executive Chairman of The 3rd International Conference on Security in Food,
Renewable resources, and Natural Medicines (SFRN) 2019**



Dear Honorable ladies and gentlemen,

Good Morning and Assalamu'alaikum wr.wb

On behalf of the SFRN 2019 organizing committee, I am really honoured and delighted to welcome all of you to the 3rd International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019 at the State Polytechnic of Agriculture Payakumbuh, West Sumatra Indonesia

Our technical program is rich and varied with 8 keynote speeches and 4 invited talks and more than 170 technical papers split between 8 parallel oral sessions and 1 poster sessions. The speakers and participants came from 8 different countries, consist of Academicians, Scientists, Researchers, Practitioners, Professionals, and Government Officials in multidiscipline branch of knowledge, who gathered here today to share and discuss new findings and applications of innovations for promoting Food Security, Renewable Energy, Sustainable Resources and HealthCare Free for All, in particular for those who in needs. As the chairman of conference 2019 SFRN, I know that the success of the conference depends ultimately on the how many people who have worked in planning and organizing both the technical program and supporting social arrangements. This year, the conference is jointly organized by the Payakumbuh State Agricultural Polytechnic and Andalas University. We also thank to the steering committee for their wise and brilliant advice on organizing the technical program; and also to the the Program Committee, both from the Payakumbuh State Agricultural Polytechnic and Andalas University, for their thorough and timely reviewing of the papers and to the Director of Payakumbuh State Agricultural Polytechnic and the rector of Andalas University, and the Head of the Institute for Research and Community Service of Andalas University, and Payakumbuh State Agricultural Polytechnic. Our recognition should go to the Organizing Committee members who have all worked really hard for the details of the important aspects of the conference programs and social activities, and then we extend our gratitude to our students who bore the arduous burden for preparing this event.

We hope this event is also a good step in gaining strengthened cooperation between our universities as we know that the State Agricultural Polytechnic of Payakumbuh is part of the Andalas University previously, of course the psychological relationship between the State Agricultural Polytechnic and the Andalas University is really close.

Finally on behalf of the committee, we apologize profusely for all the shortcomings and everything that is not properly in organizing this event and hopefully AES-Network contributes significantly to the research and technology for the good of humanity.

Thank you

Fithra Herdian, S.TP, MP

**Message from Afro-Eurasia Scientific (AES) Network
3rd International Conference on Security in Food, Renewable resources, and
Natural Medicines (SFRN) 2019**



Dear Honorable and Distinguished guests,
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

On behalf of the AES Network, I am honored and delighted to welcome you to the 3rd International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019 at the Agricultural State Poly Technique of Payakumbuh, Indonesia. I believe we have chosen a venue that guarantees a successful technical conference amid the culture, delicacy and scenery of Payakumbuh, the city of "Rendang".

The AES-Network aims to Promote Livelihood Through Food Security, Promote Future Smart and Green Mobility by Using Renewable Energy, Promote Prosperity by Equally Managing and Distributing the Sustainable Resources and Promoting Enjoyable Long-Life by using Natural Medicines With Free Health Care For All. The AES-Network was established in 2018 and already have memberships from 12 countries. Our members consist of Academicians, Scientists, Researchers, practitioners, professionals, and government officials from multidiscipline branch of knowledge, who gathered and contributed their expertise to share and discuss new findings and applications of innovations for promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care for All. In particular, the network aims to alleviate the condition of those who in dire needs. In the future, we also expect to provide technical demonstrations, and numerous opportunities for informal networking for Promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care for All. In this opportunity, we invited you to become our members and join our efforts for a better life to all of mankind.

As a team, we acknowledge the existence of mutual interest among university and college educators, researchers, activists, business sector, entrepreneurs, policy

makers, and all society members. We must promote the need to strengthen cooperation for establishing Security in Food, Renewable Resources, and Natural Medicines in Africa, Europe, and Asia.

The AES-Network believe, a firm foundation for mutual collaboration with the spirit of equality and partnership and thereby contribute towards sustainable development in these three regions.

Therefore, through networking, friendships, and joint efforts, the capacity of our network can be enhanced to address major challenges in securing the Food, Renewable Resources, and Natural Medicines in Africa, Europa, and Asia. Our Network goals are to increase the awareness of educators, researchers, scientific community, business sector, entrepreneurs, and policy makers in Africa, Europa, and Asia, that the future of a better world, lies within their responsibilities, and to improve the networking, mobility and mutual collaboration of scientific community, business sector, entrepreneurs, and policy makers in Africa, Europe, and Asia to energize the delivery of Sustainable Development Goals.

Finally, I hope that, by registering our network, you will be provided a common platform and support the exchange of knowledge, while at the same time, we offer constructive dialogue across and within the various interest and stakeholder groups, including the intended beneficiaries, and arrived at the best solutions to our terminal goal, Promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care based on scientific evidence in Africa, Europa, and Asian region.

Thank You for Joining us!

President

Assoc. Prof. Dr. Eng. Muhammad Makky

Welcome Message
Head of Institute for Research and Community Service
Universitas Andalas



Dear Honorable and Distinguished guests,
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

It is with great pleasure that I welcome the participants of the SFRN 2019 in Payakumbuh, the city of “Rendang”, the prime of Indonesian delicacy.

In this esteem event, we share the knowledges, and imparted it to the people. The quest for knowledge has been from the beginning of time but knowledge only becomes valuable when it is disseminated and applied to benefit humankind. It is hoped that this conference will become a platform to gather and disseminate the latest knowledge which can be adopted for securing the food, resources, and health for mankind, in Asian, European and African region.

Academics, Scientists, Researchers and practitioners from multidiscipline branch of knowledge who gathered here today will be able to share and discuss new findings and applications of innovations for ensuring food security, in particular for those who reside in developing countries. It is envisaged that the intellectual discourse will result in future collaborations between universities, research institutions and industry both locally and internationally. In particular it is expected that focus will be given to issues on environmental and sustainability. Therefore, we urge to all participants, to establish a scientific network that will voice the needs

Researchers in the multi sectoral aspects related to the benefit of mankind have been progressing worldwide. Food is a basic right, while energy drive the world. Human need a lot of resources so the civilization can be flourished. But human is not immune, and thus, ones need to take care of their health regularly. Modern Agri-food systems is the foundations of a decent life, a sound education and the achievement of

the Sustainable Development Goals. Over the past decade, we have witnessed a chain reaction that threatens the very foundations of life for millions of the world's people. Rising energy prices drove up the cost of food and ate away the savings that people otherwise would have spent on health care or education. Unsustainable plantation management induced forest fire and posed haze hazard to the whole Sumatra island and our neighboring countries.

The human cost of the food and energy crisis has been enormous. Millions of families have been pushed into poverty and hunger. Thousands more suffering from the collateral effects. Over the past year, food insecurity led to political unrest in some 30 countries. Yet because the underlying problems persist, we will continue to experience such crises, again and again -- unless we act now. That is why we are here today.

We must make significant changes to feed ourselves, and most especially, to safeguard the poorest and most vulnerable. We must ensure safety nets for those who cannot afford food, or energy, nor even a health service. We must transform agricultural development, markets and how resources is distributed. We must do so based on a thorough understanding of the issues. That is the only possible way we can meet the Goals of Sustainable Development.

Thank You,

Assoc. Prof. Dr.-Ing. Uyung Gatot S. Dinata,MT.

**Opening Ceremony
Rector of Andalas University**



Dear Honorable and Distinguished guests,
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

I welcome the opportunity to address you at this important event.

It gives me great pleasure in welcoming you to this 3rd Conference on "Security in Food, Renewable resources, and Natural Medicines (SFRN)" 2019. I am delighted that so many have accepted our invitation. I am particularly happy that we have in this room, dedicated individuals from so many stakeholder groups — including our most respected and distinguished guest “The ministry of Agriculture of the Republic of Indonesia”. We also welcome the mayor of Payakumbuh and the Regent of Lima Puluh Kota. We extend our welcome to the civil society, the private sector, international organizations; the science community; and others dedicated to help create an environment in which people can escape food insecurity. Imagine what we can do together if we make the security for all as an our top priority, and pull in the same direction. We can make a difference in the lives of millions.

Food is a basic right. Food security are the foundations of a decent life, a sound education and the achievement of the Sustainable Development Goals Access to medicines - a fundamental element of the right to health. Health is a fundamental human right, indispensable for the exercise of many other rights in particular the right to development, and necessary for living a life in dignity. Moreover, human rights principles and language are being used to support resource access claims as rights-based approaches empower individuals and groups to gain or maintain access to natural resources

Much progress has been made during the last decades but much more needs to be done. Millions of people are Insecure worldwide, meaning that they either starve or they do not know from where their next meal, health care or resources will come.

Much of the progress on security has occurred at the expense of our environment. With business as usual, we foresee that the production improvements during the next decade will be less than the last one, while the environmental degradation will continue, and health will deteriorate significantly. Without available resources to seek, mankind will become endanger species in a very short time.

Solutions to the security problems need to be designed and implemented within a new and rapidly changing environment. Globalization and sweeping technological changes offer new opportunities for solving these problems. A number driving forces or trends must be taken into account in developing appropriate action. Some of the action needed, such as appropriate technology for small farms, is not new but it must be cast in the new and changing global and national environment, taking into account new opportunities and risks. I hope that by providing a forum for knowledge exchange, this conference will help identify the action to be taken. Furthermore, this conference will help to provide constructive dialogue across and within the various interest and stakeholder groups, including the intended beneficiaries, and arrive at the best solutions.

In conclusion, even if those responsible give high priority to achieving sustainable security for all and back it up with action, the world may not achieve the goal by 2030. But we will be much closer than with business as usual. I urge all of us to provide the strongest support for this event, to enable securing the food for all in the closest time possible. It is my sincere optimism that through the accomplishment of the objectives of this event, we will come to an important step nearer to secure the food for all.

Finally, I would like to thank the organizing committee who have spent their utmost efforts to prepare and manage this event successfully. Let me conclude my remarks by wishing our guests happiness, good luck and great success in the conference.

May I announce now the opening of the “3rd International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019” in Payakumbuh.

Thank you.

Rector,
Prof. Tafdil Husni, SE, MBA, PhD

Welcome Message
Director of Politeknik Pertanian Negeri Payakumbuh



Dear Honorable ladies and gentlemen,

Good Morning and Assalamu'alaikumwr.wb

I congratulate to all participants on the invitation and participate at our beloved campus Payakumbuh State Agricultural Polytechnic. I feel really honoured to welcome all of you at our event, the 3rd International Conference on Security in Food, Renewable Resources, and Natural Medicines (SFRN) 2019 at the Payakumbuh State Agricultural Polytechnic, Indonesia.

Food security is a very important aspect in a country's sovereignty. Food also determines the future direction of a nation. Many social and political fluctuation can also occur if food security is disrupted. Food availability that is smaller than its needs can create economic instability. This critical food condition can even endanger economic and national stability. In the current situation, there are many challenges in exteriorize food security, such as climate change, population, limited natural resources and other challenges both locally, regionally and globally.

Renewable resources are also our starting point to start sustainable development. Research on renewable resources is also very important as the solution in meeting the principles of sustainable development. As we know that Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainability is the foundation for today's leading global framework for international cooperation - the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs)

The discovery of treatment based on local culture also contributes greatly to the good of humanity. Unfortunately, there are still many treatments that have not been carried out by scientific research. So, through this conference we hope it can be a trigger to increase in traditional plant-based treatments that not go through complex

chemical processes, so that the effectiveness of the pillars can be further suppressed and also contribute to the community's economy.

Finally, I would like to express my gratitude to all people who involved in organizing this event and to all of stakeholders who have helped to make this event go on successfully. Please accept my apologize for any shortage, Assalamu'alaikumwr.wb.

Thank you

Ir. Elvin Hasman, MP

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Analysis of Inpara 3 Variety of Seed Farming Production

Firdaus, Adri, Erwan

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Abstract. This study aims to determine the level of feasibility of Inpara 3 rice seed production. The study was conducted in two locations, Bungo District, and Tanjung Jabung Barat District, from March to August 2018. The technological innovation applied is the concept of integrated crop management (PTT). To find out the level of farm feasibility, all input-output farms of Inpara 3 variety rice seed production are one hectare in a season (MT). The results showed that Inpara 3 farmers based seeds production is profitable. A higher level of profit is obtained at the Bungo District research location. Farmers' income and income in Bungo District is IDR 41,250,000, with a profit of IDR 31,835,000 and R/C of 4.38/ha/MT. While farm income and income in the West Tanjung Jabung District amounted to Rp. 32,750,000, with a profit of Rp. 23,805,000 and R/C of 3.67/MT.

Keywords: Analysis of farming, Inpara 3, Rice, Seed production

INTRODUCTION

Farming is a way of determining, organizing, and coordinating the use of production factors as effectively and efficiently as possible so that the business provides maximum income (Suratiah, 2008). Rice, as the main food commodity, has a very high strategic value, so it needs serious handling in an effort to increase its productivity.

The efforts to increase production and income of rice farming will not succeed without using new technologies in the technical fields of cultivation, seeds, pest control, and fertilization (Ilham, 2010). The numbers of productivity can be influenced by external and internal factors. The external factors such as pest, disease and weather condition, while the internal factors, namely the application of suboptimal technologies such as the cropping systems and the use of balanced fertilizers. According to Prasojo, (2004), one of the efforts to increase rice productivity is to improve the quality of farming, namely the way of planting. For the example, the application of Jajar Legowo planting system, and SRI (Rice Intensification System).

World Bank research concluded that certified superior varieties (VUB) were the largest single contributors (16%) to increased rice production, followed by irrigation (5%) and fertilizer (4%). The interaction of VUB, irrigation, and fertilizer can increase productivity up to 75%, while the contribution from the expansion of the planting area is only 25%. (Fagi *et al.*, 2001) stated that the majority of national rice production (69%) was contributed by the use of VUB seeds and the rest by medium varieties (16%), and low varieties (15%).

The population of Jambi Province in 2015 amounted to 3,402,052 people with population growth from 2005 to 2015 an average of 2.61% per year (BPS 2016). The average growth of lowland rice production in Jambi Province from 2005-2015 was 0.34% per year. The high population growth is not matched by the rate of growth of lowland rice production. This indicates that the unstable growth of lowland rice production in Jambi Province.

To fulfill food needs, one can be done by increase rice production of quality seeds, balanced use of fertilizers, and better planting methods. The seed is one of the production inputs that have a significant contribution to increasing production.

MATERIALS AND METHODS

The farm analysis was carried out in Lubuk Benteng Village, Bungo District, and Sri Agung Village, Tanjung Jabung Barat District, from January to August 2018. The study was conducted in one hectare per location, using Inpara 3 varieties of Foundation Seed. The planting system uses Jarwo 2: 1 and 4: 1 for Bungo District and Jarwo 6: 1 and 8: 1 for Tanjung Jabung Barat District. Fertilization for both locations is given at the same dose, namely Urea 200 kg/ha, SP36 100 kg/ha and KCl 100 kg/ha and 1000 kg of organic fertilizer. Farmers play an active role in seeding activities, all processes of seeding activities such as land preparation, seeding, planting, maintenance, harvesting, and processing are carried out by farmers.

Furthermore, seed quality testing is carried out at the BPSBT Laboratory of Jambi Province. The seed that passes the standard is given a certification label. The label is a proof that the seed produced in good quality (quality seed) so that the seed is suitable to be distributed to local farmers.

Data Analysis

Data analysis includes total costs, revenue, income, and R/C.

- a. Total cost for seed rice production account by formula (Soekartawi 2002):

$$TC = FC + VC$$

Formula Description:

TC = Total Cost

FC = Fixed Cost

VC = Variabel Cost

- b. Farming revenue analisis with formula (Kasim, 2004):

$$TR = Y \times Py$$

Formula Description:

TR = Total Revenue

Y = Output

Py = Price of product

- c. Income analisis:

$$I = TR - TC$$

Formula Description:

I = Income

TR = Total Revenue

TC = Total Cost

- d. R/C analisis and farming profit (Rahim dan Hastuti 2007):

$$RC\ ratio = \frac{TR}{TC}$$

Formula Description:

RC ratio = Return Cost Ratio

TR = Total Revenue

TC = Total cost

RESULTS AND DISCUSSION

Inpara 3 Variety Productivity

Productivity is the ratio of total output to the inputs used in production (Suwanto, 2012). Heady (1952) in Suwanto (2012), explained that about concerning to land, land productivity is in accordance by the capacity of the land to absorb production inputs and produce outputs in agricultural production. Rice productivity is the contribution and interaction of various components of production technology. According to Sembiring (2008) the success of increasing rice production was more contributed by increasing productivity compared to the increasing in harvested area. Increasing productivity contributed around 56.1% to the increasing in rice production, while the increasing in harvested area and interaction between the two contributed only 26.3% and 17.5%, respectively.

Inpara 3 is a rice variety that is well known, developed, and much liked by farmers in both research are (Bungo and Tanjung Jabung Barat district). The productivity of Inpara 3 at each location can be seen in Table 1. Two important factors affect the growth of a plant, namely genetic and environmental factors. Genetic factors are related to the inheritance of the nature or behavior of the plant itself, while environmental factors are related to the environmental conditions in which the plant grows. Each plant variety has different capabilities in terms of utilizing growth facilities and adapting to the surrounding environment; under these conditions, it will have implications for crop yields (Yong and Sigid, 2016). The high and low productivity obtained is also influenced by human factors that carry out captive management activities, both individually and institutionally.

Table 1. Productivity and Production of Inpara 3 Varieties of Rice Seed in Bungo District and Tanjung Jabung Barat, 2018

No.	Variety	Locations	Produktiviti GKP (ton/ha)	Total Production (ton/ha)
1.	Inpara 3	Bungo District	6.7	3.7
2.	Inpara 3	Tanjung Jabung Barat District	5.5	3.0

Of the two assessment sites, the productivity of Inpara 3 in Bungo District provided productivity of 1.2 tons/ha higher than the productivity in Tanjung Barat District. This difference in productivity is due to differences in the planting system. Bungo District uses 2:1 line of Jajar Legowo planting system, while Tanjung Jabung

Barat District uses the 6:1 and 8:1 line of Jajar Legowo row planting system with the population of rice plants to 213,300 clusters/ha (up to 33.3%) compared to the 25 cm × 25 cm tile system which is only 160,000 clusters/ha.

According to Diratmaja, *et al.* (2001), the use of Jajar Legowo row planting technology has a significant impact on the increase in the yield of unity hectares of rice which is quite large at 1.01 tons/ha GKP (17.56%) compared to non-Jajar Legowo row planting.

This shows that the method of planting Jajar Legowo is more profitable compared to the method of planting non Jajar Legowo. The results of the Witjaksono study (2018) showed that the legowo row planting system was able to increase rice production by 16.44% compared to conventional planting systems. Susilastuti, *et al* (2018) added. Jajar Legowo planting system 2:1 gives the highest productivity compared to other planting systems.

Jajar Legowo row planting system is one of the technologies in increasing the productivity of rice produced. According to Lalla *et al.* (2012), the increase in productivity using the Legowo row planting system is caused by the space between plants, so that all plants have the same opportunity in getting sunlight. Azwir *et al.* (2009) states that the Jajar Legowo row planting system can increase rice productivity, although it does not have a lot of panicles or clumps at the time of planting, the population of plants produced is higher because it has a tight spacing of 20 x 20 cm. In addition, efforts to tackle weeds and fertilizing can be made more easily (Director General of Food Crops, 2016). Jajar Legowo row planting system 4:1 type is the best type in producing high grain production, while 2:1 type can be applied to get grain quality grain seeds (Balai Agricultural Technology Study, 2010). Based on the research conducted by Anggraini (2013), Jajar Legowo planting system can increase paddy rice production by 6.47 tons or by 12.36% when compared to using conventional planting systems, as well as being able to increase the number of panicles per clump by 39.53 %. Meanwhile, Diratmaja (2001) states that the Jajar Legowo row planting system can increase rice production by 17.56%. In addition, the Legowo row planting system regulates plants by placing all plant rows on the edge of the rows, so that the plants get sunlight and better air circulation (Ministry of Agriculture, 2015).

Farming Costs

Jajar Legowo planting system requires higher and longer labor force compared to farmers using the regular planting system. So the costs incurred for labor costs are also higher. According to Mulyadi (2015), the shortcomings of the Jajar Legowo planting system are that it will require more labor and longer time, due to more complicated cropping patterns. Farming costs are calculated based on the amount of money spent to finance farming activities, which include the costs of production facilities, labor costs and other costs. The cost of farming for Inpara 3 varieties seed breeding is presented in Table 2.

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Table 2. Analysis of Farming Costs for Captivity of Inpara 3 Varieties of Rice Seeds in Bungo District and Tanjung Jabung Barat, 2018.

No	Cost	Bungo District		Tanjung Jabung Barat District	
		Cost (Rp)	Percentage (%)	Cost (Rp)	Percentage (%)
	Permanent cost	2.835.000	27,06	2.433.000	25.71
1.	Traktor rent	1.200.000		1.200.000	
2.	Combine harvester rent	1.200.000		1.200.000	
3.	Land rent	35.000		33.000	
	Variable cost	7.640.000	72,94	7.030.000	74,29
1.	Seeds	225.000		225.000	
2.	Pesticida	1.025.000		1.110.000	
3.	Urea fertilizer	440.000		440.000	
4.	SP-36 fertilizer	480.000		480.000	
5.	KCl fertilizer	420.000		420.000	
6.	Organic fertilizer	625.000		650.000	
7.	liquid fertilizer	300.000		225.000	
8.	Labor	3.425.000		3.480.000	
9.	Label cost	700.000		600.000	

Table 3. Total Costs of Inpara 3 Varieties of Rice Breeding Farming in Bungo District and Tanjung Jabung Barat District, 2018

No.	Cost	Bungo District		Tanjung Jabung Barat District	
		Cost (Rp)	Percentage (%)	Cost (Rp)	Percentage (%)
1.	Permanent cost	2.835.000	27,06	2.433.000	25.71
2.	Variable cost	7.640.000	72,94	7.030.000	74,29
3.	Total cot	10.475.000	100	9.463.000	100

Costs in this activity include fixed costs, variable costs, and other costs. Each fee is paid after the work phase completed. Labor wages are classified into two sources of labor used, namely labor in the family (father, mother, and child labor), meaning the wage paid is income for the family. The work of fertilizing, and spraying pesticide in paddy fields/drainage channel are generally carried out by workers in the family. Wages for non-family laborers are work done by workers other than fathers, mothers, and children, the costs incurred do not constitute income for the family such as land management, planting, and harvesting work.

From Tables 2 and 3, it can be seen that the highest costs incurred to produce rice seeds are variable costs, which are costs incurred for the purchase of production facilities (seeds, fertilizers, and pesticides) and labor costs. Variable costs range from 72.94 to 74.29% of the total costs incurred, while fixed costs range from 25.71 to 27.06% of the total farming costs incurred for breeding rice seeds of Inpara 3 varieties per planting season.

Revenue, Revenue and R/C

In Table 4, it can be seen that farm receipts of Inpara 3 rice seed breeding activities. Bungo in the amount of Rp. 38,654,000, and Kab. West Tanjung Jabung Rp. 31,636,000. This revenue comes from two sources, namely 1) proceeds from the sale of seeds (the grain that has passed laboratory tests and certified), 2) proceeds from sales of rice (unhusked rice is tested for rice).

Table 4. Receipt of Inpara 3 Variety Rice Cultivation Farmers of Bungo District and District. Tanjung Jabung Barat, 2018

No	Variable	Bungo District		Tanjung Jabung Barat District	
		Seeds	Rice consumption	Seeds	Rice consumption
1.	Total Production (kg)	3.700	1.362	3.000	1.142
2.	Price of product (Rp/kg)	7.500	8.000	7.500	8.000
3.	Revenue (Rp)	27.750.000	10.904.000	22.500.000	9.136.000
4.	Total revenue (Rp)	38.654.000		31.636.000	

Revenue is the difference between the amount of revenue and costs incurred. Income for breeder farmers is a number of certified rice seeds and unhusked rice yields that are not processed to be made into seeds or grain that does not pass the quality testing of seeds. The amount of seeds and grain produced is multiplied by the selling price of each and reduced by costs incurred during the production process.

Table 5. Income and Efficiency of Rice Farming in Bungo District and Tanjung Jabung Barat District, 2018

No.	Variable	Bungo District	Tanjung Jabung Barat District
1.	Farming revenue (Rp)	38.654.000	31.636.000
2.	Cost of farming (Rp)	10.475.000	9.463.000
3.	Income of farming (Rp)	28.179.000	22.173.000
4.	Efficiency (R/C)	3.69	3.34

R/C is the ratio or ratio between total revenues and total production costs. Suratiyah (2006) states that the higher the ratio of income received by farmers, the more profitable the business is and worth the effort. From Table 4 it can be seen that the acceptance of farming activities carried out in Bungo District as much as Rp. 38,654,000 or higher than Rp. 7,018,000 per hectare per planting season compared to Tanjung Jabung Barat District which is only Rp. 31,636,000. Then the income or profits obtained by farmers in Bungo District is also Rp 6,006,000 higher than the profits earned by farmers in Tanjung Jabung Barat District. In Table 6, it can be seen that the R/C of farms from the two breeding sites both provide R /C higher than zero, whereas the R /C in Bungo 3.69, means that for every one rupiah cost incurred, the farmer will get an income of 3.69 rupiah and an income or profit of 1.69 rupiahs.

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While the Inpara 3 rice seed farming in Tanjung Jabung Barat District is only gets R/C 3.34, meaning that for every one rupiah the costs incurred by farmers will receive 3.34s rupiah of revenue and 1.34 rupiah of income. Meanwhile, the grain that cannot be used as seed is converted to rice and is valued at the prevailing rice price at each location. It can be concluded that Inpara 3 rice farming in Bungo District and Tanjung Jabung Barat District is feasible; this is in accordance with the opinion of Rahim and Hastuti (2007) stating that R/C of more than 1 is profitable and feasible.

CONCLUSION

- Total revenue of Inpara 3 captive farming in Bungo District is Rp. 38,654,000 or Rp. 7,018,000, higher than the receipt of Inpara 3 rice farming in Tanjung Jabung Barat District.
- Inpara 3 varieties rice farming in Bungo District, gives a profit of Rp. 28,179,000 per ha per planting season with R/C 3,69 and Rp. 22,173,000 with R/C 3,34 for Tanjung Jabung Barat District.

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