

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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Community Partnership Program in Processing Cassava Into Mocaf on Woman Farmers in Petapahan District

Amelira Haris Nasution*¹, Nirmala Purba², Salvia S³

Wilmar Bisnis Indonesia Polytechnic, Horticultural Agribusiness Study Program;

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Abstract. Today's women are no longer engaged in the domestic sector only but have explored the public sector, one of which is in agriculture as a female farmer. The choice of this profession as a female farmer is inseparable from economic factors and the demands of life. Ironically, even though it aims to increase family income, women farmers still have a relatively low income. It is caused by a lack of knowledge to take advantage of opportunities through innovative processing of agricultural products. Among the many agricultural products, one of the efforts that can be done is processing cassava into MOCAF (Modified Cassava Flour). This process is an agro-industry based innovation on agricultural products that utilizes fermentation in its processing. This activity is new for partner farmers in Petapahan Village, Lubuk Pakam District, Deli Serdang Regency. This condition is caused by 1) lack of knowledge partner in processing cassava into MOCAF, 2) Limitations in access to get a quality fermentation starter for MOCAF fermentation. Therefore, training and extension activities will be essential to improve the knowledge and ability of partner farmers in processing cassava into MOCAF, including counseling and training related to the fermentation starter. Moreover, the provision of production equipment (processing) for partner farmers must also be a concern, to facilitate partner farmers in processing cassava processing into MOCAF. So the opportunity for the emergence of new entrepreneurs in the processing of MOCAF will be greater.

Keywords: Cassava, Female Farmer, MOCAF, Processing

INTRODUCTION

Women, farmers, and woman farmers are always interesting topics to discuss. In the past, women have always been homemakers who are dependent. Over time, women today no longer exist in the domestic sector only but also in the public sector. It is proven by the number of jobs that have been undertaken by strong women, including in the agricultural industry as a female farmer.

Being a female farmer is inseparable from the needs and demands of life; to increase family income. Based on the interviews, the position of female farmers as one of the supporters of the family economy was apparently not significant enough to improve the family's economy due to the low ability of female farmers to take advantage of opportunities through the processing of agricultural products.

The development of agro-industry has a bright prospect to increase the added value of agricultural products, namely innovation-based agro-industries that are worth trying and applying to various agricultural products. One of them is cassava because of the characteristics of cassava which can adapt to climatic change and can

strive less productive fertile land (Asnawi.,2003). Cassava has a strategic value to be processed into MOCAF (Modified Cassava Flour) (Amri., 2014; Subagio., 2007; Subagio., 2008)

MOCAF is a processed product of cassava flour which uses modified fermented cassava cells (Subagio, 2006) in (Hartati, *et al.*, 2011). Technically, the MOCAF processing method is similar to cassava flour processing in general but accompanied by a fermentation process using a variety of starter choices that depend on the needs and availability on the market. Microbes grow and cause increased viscosity of flour and change flour characteristics, gelatinization ability, rehydration power, and ease of dissolution (Subagio., 2007). Processing cassava into MOCAF is another effort in opening opportunities for food diversification (Yulifianti, *et al.*, 2012).

The activity of processing cassava into MOCAF is something new for female farmers in Petapahan Village, Lubuk Pakam District, Deli Serdang Regency. The group of female farmers consists of housewives. These female farmers are cultivators or woman farmers who are also landowners who are interested in processing cassava into MOCAF. The diversity of backgrounds in this group provides the benefit of making other derivative products from MOCAF flour, especially to open new business opportunities to increase the income of female farmers as a formidable female farmer.

Although partner farmers are interested in processing cassava into MOCAF, until now, this processing has never been done. This reluctance is caused by several things such as 1) the limitations of farmers in the knowledge of processing cassava into MOCAF, 2) limitations in access to get a high-quality fermented starter for MOCAF fermentation, and 3) the limitations of farmers' financial resource for processing cassava into MOCAF.

Therefore, training and extension activities are essential to improve the knowledge and ability of partner farmers in processing cassava into MOCAF, including counseling and training related to the fermentation starter. Furthermore, the provision of production equipment (processing) for partner farmers must also be a concern for the convenience of partner farmers in processing cassava processing into MOCAF. So the opportunities for new entrepreneurship in processing MOCAF will be even greater. Moreover, there are so many opportunities for MOCAF-based food processing derivative products that can also be developed in the future (Nur'aini, *et al.*, 2018).

METHODS

In Community Service activities through the Community Partnership Program from the Wilmar Bisnis Indonesia Polytechnic team, the partner farmers have been trained through several stages. The stages of training on processing cassava into MOCAF began with the preparatory and preliminary stages of the survey in June 2019 in Petapahan Village, Lubuk Pakam District, Deli Serdang Regency. After the initial survey activity had been done, the next step was the training activities in July and August 2019. And the final stage was assistance.

On the one hand, the focus of this activity was to provide training and assistance in the introduction and enhancement of the knowledge and abilities of woman farmers in processing cassava into MOCAF. On the other hand, it also aimed to accelerate processing activities. This activity also focused on providing cassava processing equipment assistance became MOCAF. It is hoped that the success of this program will open opportunities for the initiation of new agro-industrial processing industries for woman farmers.

Training activities with two-way extension and discussion format were chosen because it provides convenience to increase the knowledge and skills of partner farmers, and at the same time, it was easier for the team to respond to the opinions of partner farmers. Activities like these are mostly done in the service activities that seem to have been carried out by local authorities (Widiyanto, *et al.*,2015). The stages of this activity are:

1. Training on Processing Cassava into MOCAF

The purpose of this training was to levitate the knowledge of woman farmers about the process of making MOCAF with extension methods that are equipped with demonstration activities and the practice of making MOCAF. Counseling was done by two-way communication and discussion with laptop and modules. The module was intended to help woman farmers understand more about MOCAF and the stages of making MOCAF. Moreover, this module was considered useful as a guide for partner farmers when making their own MOCAF later.

In training activities of processing cassava into MOCAF, equipment needed were knives, placemat, chopper machines, buckets, fermentation boxes, placemats (woven), flour machines, sieves, sieves, plastics, and scales. Furthermore, it also required three main ingredients, namely, cassava, water, and a fermentation starter. The stages of this activity are explained in (Figure 1).



Figure 1. Stages of processing cassava into MOCAF

2. Multiplication of Starter Fermentation Training

Similar to the first training, the aim of this training was also to increase the knowledge of partner farmers in supplementing the main raw materials for making MOCAF. The differences with the first training were the multiplication of the fermentation starter, demonstration activities, and practice. It was expected that female farmers could multiply their own fermentation starters, without significant obstacles when producing MOCAF.

A fermentation starter was needed, to make this, the process required equipment consisting of buckets, measuring cups, plastic boxes, and stirring rods. While the materials needed are water, molasses, and *Lactobacillus Plantarum*.



Figure 2. Stages of Multiplication Fermentation Starter

3. Provision Of Cassava Processing Equipment Into MOCAF

Due to processing activities, processing equipment was unquestionably needed. The pieces of equipment given to woman farmers were cassava chopper equipment, MOCAF flour making equipment, and drying ovens. After the training and provision of equipment, the next activity was to continuously mentor and assist partner farmers overcome obstacles such as the use of the equipment and the processing of cassava into MOCAF.

RESULTS AND DISCUSSION

This activity began by visiting the location of partner farmers to ensure the readiness and the willingness of partner farmers to participate in processing cassava into MOCAF. In this case, other matters, such as technical matters and potential

training participants, are also discussed. After all the preparations are made, the following steps are taken:

1. Multiplication of Fermentation Starter Training

The training activities are divided into two parts, the first training is making fermented stater, and the second is processing cassava into MOCAF. In the multiplication of fermentation starter training activities, equipped with modules that can help partner farmers in practical training, as well as Guide for partner farmers to increase the MOCAF fermentation starter independently.

In processing cassava into MOCAF, various kinds of starters can be utilized, such as *Lactobacillus Plantarium*, *Rhizopus Oryzae*, *Saccharomyces cerevisiae*, yeast, permifan or Bimo CF. From the various types of starters above, *LactobasilusPlantarium* is a starter that was chosen to be introduced to partner farmers as well as being the topic of starter multiplication fermentation training for farmers. The reason for selecting *Lactobacillus Plantarum* is because of the consideration of the results of research (Subagio., 2007; Subagio., 2008) showing that MOCAF flour produced from this starter has a protein content that is close to protein levels and flour starch levels of 7.82% and 60-70% (protein content wheat flour: 7% and flour content: 60-70%). Research results (Noor, *et al.*, 2017) show that *LactobasilusPlantarium* has the potential to be developed as a single starter powder. So that in this training activity, *Lactobacillus Plantarum* becomes the main starter. In this activity, BIMO CF is also introduced as a starter.

2. Cassava Processing Training Into MOCAF

The next training is processing cassava into MOCAF. Training activities to process cassava into MOCAF is a 2-way discussion system with training modules and practical activities.



Figure 3. Discussion with Train Participants in Processing Cassava Into MOCAF

The training activities of processing cassava into MOCAF were carried out with two models, namely the use of *Lactobacillus Plantarum* and BIMO CF as fermentation materials. The stages of this training activity can be seen in Figure 4.



Figure 4. Cassava Processing Activity Into MOCAF

To be able to measure the success of the training activities, questionnaires were distributed to the trainees. From the questionnaire, the results obtained in the form of Table 1.

Table 1. Level Of Knowledge Before And After The Training Activities Of Processing Cassava Into MOCAF And Starter Fermentation Starter Activity

No	Information	KnowledgeLevel
1	Knowledge BEFORE training activities on making MOCAF	Low (100%)
2	Knowledge AFTER training activities on making MOCAF	Incredible (33,33%) Very Good (66,67%)
3	Knowledge BEFORE training activities on multiplication fermentation starter	Low (100%)
4	Knowledge AFTER training activities on multiplication fermentation starter	Incredible (16,67%) Very Good (83,33%)

Table 1 shows that the knowledge of partner farmers before the training activities for making MOCAF can be categorized as low (100%). This happens because the processing of cassava into MOCAF is a new thing for partner farmers and has never been learned before. The knowledge of partner farmers about processing cassava into MOCAF is only limited to making tapioca flour, as well as food processing activities such as *gapek* or other traditional food made from cassava.

Increased knowledge of partner farmers after the training activities of processing cassava into MOCAF is measured 66.67% as very good and 33,7 as extraordinary. It means that the uptake of partner farmers in receiving new knowledge and skills can be categorized as excellent. This positive response is undoubtedly expected to have an impact on increasing farmers' desire to process cassava into MOCAF to increase the added value of cassava.

Table 1. reveals that there was an increase in the knowledge of partner farmers after the fermentation starter multiplication training. Before the training activities, it was found that the understanding of partner farmers was shallow (100%) in the multiplication activity of the fermentation starter. However, after the fermentation starter multiplication training activity, 83, 33% stated their level of knowledge was very good. From Table 1. it can also be understood that there was an increase in the understanding of partner farmers after the fermentation starter multiplication training. Before the training activities, it was found that the knowledge of partner farmers was deficient (100%) in the multiplication activity of the fermentation starter. However, after the fermentation starter multiplication training activity, 83, 33% stated their level of knowledge was very good. It happens because, for partners, the activity is an entirely new experience. So that a positive response can be obtained from the training and participation of partner farmers in this activity.

In general, the response of farmers to this activity can also be categorized as very good. It can be seen from the eagerness of partner farmers in asking questions and participating in the training activities. This training activity provides new knowledge to partner farmers about the opportunity to process cassava into MOCAF. Training and service activities similar to these activities also basically provide enthusiasm for participants such as (Cahyanto., *et al.*, 2018; Rachman, *et al.*, 2016).

Based on the results of the final discussion, female farmers (partner farmers) receive new insights related to the activities of processing cassava into MOCAF. Ability to process cassava into MOCAF gives them the opportunity to sell their agroindustry products better without having to sell raw cassava at an uncompetitive price. From the results of the training activities, there are some inquiries made by partner farmers about the *Lactobacillus Plantarum* fermentation starter or BIMO CF. Therefore, the writer (executor) provides the starter with the hope that it can be developed (reproduced) as a source of further multiplication.

3. Processing Equipment

As mentioned before, the next stage was supplying processing equipment. This processing equipment is a piece of supporting equipment that can facilitate partner farmers in processing cassava into MOCAF. The equipment provided is a slicing machine, flour machine, and oven (Figure 5). The slicing machine uses electric power and dynamo, while the flouring machine used gasoline, considering the partner's electrical capacity of only 450 watts. As for the oven, it uses gas. With this aid, it is hoped that partner farmers will take the opportunity to increase the added value of wood by processing it into MOCAF. For specifications, the flour machine

that receives by the partner is greater than what was requested because of the partner's electrical connection.



Figure 5. Processing Equipment

4. Hand over processing equipment

Symbolically, the activity of delivering aid had been carried out (Figure 6). The equipment delivered consist of a slicing machine, flour machine, and oven.



Figure 6. Activities of handing over cassava processing equipment to MOCAF

5. Assistance Activities

The next activities carried out were assistance to use the processing equipment. One of the agendas was discussion facilitation that brainstorms the obstacles in processing cassava into MOCAF and obstacles in cassava cultivation activities. Meanwhile, evaluation and monitoring activities are also being carried out. This stage will show the final results of this activity.

CONCLUSIONS

In this activity, a multiplication of *Lactobacillus Plantarum* fermentation starter training was carried out; this is to facilitate partner farmers to meet the needs of fermentation materials for processing cassava into MOCAF. On the other hand,

training activities have also been carried out on the topic of processing cassava into MOCAF by using the starter *Lactobacillus Plantarum* and BIMO CF.

Based on the questionnaire responses, it can be concluded that both of the training activities had an impact on increasing knowledge of the farmers, which was very good at 66.67% for the training activities of processing cassava into MOCAF and 83.33% for the multiplication activities of starter fermentation training.

The delivery of cassava processing equipment had also been carried out. The assistance program has an impact on the willingness of partner farmers to carry out program activities to increase the added value of agricultural products.

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