Chairman Kano : Thank you for the introduction. I would like to start the afternoon session. Good afternoon, ladies and gentlemen, I am Takeshi Kano, Program Director of Stable Food Production Program of JIRCAS. I would like to introduce Dr. Seiji Yanagihara. He is a project leader of Development of Rice Production Technologies in Africa of JIRCAS. We chair this session. First, I would like to introduce the session briefly. Session title is "Approaches to Enhance Stable Food Production and Consumption in Africa ." After the Tokyo International Conference on African development, TICAD-IV in 2008, JIRCAS strengthened research activity and even implemented a new one relating to crop production technology in Sub-Saharan Africa. There are several achievements successfully obtained from those activities. However, focusing on the next stage of our research beyond satisfying quantity of production, farmers' choice of crops to cultivate and consumers' preference for consumption are considered one of the important issues. So we set up this session. So this session has two speakers. First, it's my pleasure to introduce the first speaker of this session. The first speaker is Dr. Satoru Muranaka of JIRCAS. He holds a PhD from the University of Tsukuba, Japan. Dr. Muranaka worked as a plant physiologist at the Arid Land Research Center, Tottori University, Japan, and the International Institute of Tropical Agriculture in Nigeria. Currently he is a researcher of JIRCAS tackling the evaluation and utilization of genetic resources of cowpea and yam, important regional crops of West Africa. The title of his presentation is "A way to strengthen the role of cowpea in West Africa". Dr. Muranaka the floor is yours, please.

Dr. Satoru Muranaka : Thank you very much, Chairman for the introduction. Satoru Muranaka is my name. I'm from JIRCAS. I am pleased to have this opportunity to present our challenge with the crop called the cowpea, which is a very important crop in West Africa. It is also a traditional crop in Japan, where it is called "sasage".

But before going deep into the cowpea story, which I like, I would like to overview the characteristic of African agriculture. As you many of you know, in most African countries, and thus Africa in general, the agricultural sector employs 65 to 70 percent of the available work force and generates one-third of the GDP. This data alone shows the great impact of agriculture to the African economy. Also it shows we already have the quite many people depending on agriculture. Though the importance of the agriculture in Africa is obvious, we could see the food importation is still remaining high in African countries. A large area of the arable land is remaining uncultivated. Agriculture producers, which are farmers, are still remaining poor and growth of the per capita agriculture income is very slow. But please don't be upset about this because this also show the great potential of African agriculture for further growth, we have an area to grow. However, considering the situation of African agriculture, and the recent success in Ethiopia and Kenya, that enhancement of the productivity of the small scale farmer is the key to strengthen the African agriculture and then also reduce poverty.

Among the various crops growing in Africa, I would like to emphasize the role of the regional crop. These crops traditionally are important in these countries and they hold great potential to bolster the livelihoods and then economics—especially of small scale farmers.

With the long history and the deep culture interactions regional, crops play critical roles in the region, such as increasing the resilience of the system by the diversifying the cropping system, conserving soil and the soil fertility and then also reducing the food importation from outside. The crop also helps to broadening the food bases and enhance the nutritional status which can contribute to better nutrition and health in the region. These crops are not only food, but also hold the critical role to enhance the quality of life in these regions. As we, Japanese, cook "Azuki bean" and the cowpea with rice when we have the ceremonial occasions, just like this, this crop has a special meanings in these African countries. Also due to the importance of this crop, this crop can be cash income source to support the farmers' needs for the cash.

Among the regional crops we have, our team is focusing on the cowpea, a major legume crop in West Africa. The cowpea is mainly cultivated in the drier regions of Africa and produced cowpea is consumed in the area where it is produced, but also traded to the different areas where cultivation is not there and then consumed. So cowpea is a food crop for the peoples all over the Africa. But it also contributes economically to the farmers' households as a cash crop and regional economy.

The cowpea has a good adaptability to the local environments especially severe conditions in the drier region. Also as a legume it serves as cheap protein and a micronutrient source, especially for the poor people who cannot afford the expensive meat. Protein-rich fodder is used as an important nutritional source for the household animal especially during the long, long dry season of this region. And then both the grain and then

fodder have the marketability to generate cash.

So for the small-scale farmers in the drier region who are facing short and unstable rainy seasons, limited land availability, low soil fertility, the lack of the resource for investment. The cowpea serves as food and a nutritional source and a cash income source and then also provides the farmers the options to reduce the risks of cultivation.

In the cowpea, rich genetic resources with wide genetic diversity in both agronomic traits and then grain quality-related traits are available. And this genetic diversity is an advantage for the further crop improvement. For the crop improvement, of course yield is a primary target but in the cowpea, with the existing rich genetic diversity in grain quality, if we can use wisely as Dr. Tutwiler mentioned in her presentation. Value-addition can be a way to amplify the role of the cowpea as a regional crop. Utilizing diverse grain quality-related traits, if we could develop a good variety with good quality traits which meets the consumer's preference, we can expect to influence an increase the consumption to provide a better nutritional supply, and then also activate market and in trending, which influence the regional economy and then we also expect the enhancement of the food processing sectors.

However, for the value-additions in the cowpea there is missing scientific information. What are the key traits preferred by the consumers? Which genetic material has the target key traits? Who needs the variety? Where can we grow high-value cowpea? How are we evaluating the quality-related trait efficiently? We need to have the answers to those questions to achieve the development of a suitable variety with high value.

To answer these questions, in 2011 we started the project "Strategic Approach to Develop Value-Added Cowpea Varieties with Higher Food and in Nutritional Quality ," we call EDITS-Cowpea. Under the EDITS-Cowpea we aim to generate the information needs and the preference of the consumers, diversity and the characteristics of the available genetic resources, environmental factors on the quality related traits and tools, and information for the efficient evaluation of the quality-related trait. And then also probably this could be the most important, we need proof and then demonstrate the possibility of the value-addition in cowpea and in even in Africa.

Let me just briefly introduce our findings we could obtain under the project. There are very, very critical questions. Is there any quality-related trait which alter the consumers' decision when they are buying cowpeas in the market? If the answer is no, quality cannot work. There is no possibility of value-addition. However, for the Nigerian market where we could have the three year survey, we could identify several key quality traits, which have a significant influence on the price.

This indicates the consumers in Nigeria are paying extra costs from their pockets to have those additional values such as large seed size, adequate colors, and better cleanness. And then we also find that the market and the consumer have a good recognition of the variety. It suggests the role of a variety name as an indicator of invisible quality traits like cooking time, nutritional value, and taste, which you cannot judge by the look of the cowpea in the market. So people are using the variety name as an indicator of the quality. It seems there are several quality-related traits linked with the consumers' preferences.

Then the question is which genetic material has the target key traits? To answer the questions we evaluate basic quality related traits of the 240 genotypes of cowpea and then detailed traits on the selected 20 varieties. Based on the results among the 26 quality-related traits we evaluated, only fatty acid content and compositions and then amino acid compositions only show narrow genetic diversity. And then among the traits, which show wide genetic diversity, we could not see any negative correlations. This result suggests we have the potential to introgress these favorable traits into the variety through the breeding process.

To enhance the utilization of the information generated and the materials, which have these traits, characteristics of the 240 genotypes are summarized in a database with an interactive searching interface. And we are expecting to make this database public by on February, 2016, and then we are expecting lots of cowpea breeders to use to select their good material.

Where can we grow high-quality cowpea? On quality traits, though the interactions between the genotypes and the environments are remaining at a low level, we could identify certain effects of the environment which influence the quality. For example, grain protein contents tend to be higher in Southern Nigeria where there is a longer rainy season and higher soil fertility. So I think we need to be a bit careful where and how we should

grow cowpea to obtain sufficient level of the quality of the grain.

For the breeding process, an efficient evaluation methodology of the quality-related traits is essential to develop high value varieties. During a project period we develop several tools to support the efficient evaluation of quality related traits such as the quicker estimations of the grain nitrogen which are easily converted to the protein content using IR, image analysis for the grain size and then its stability, viscosity analysis for the starch characterization, and then a data entry supporting system using barcodes and tablets and other tools to reduce the error during the measurements and then recording. I'm not going to go deeply into my results but as briefly presented here, through the activity of EDITS cowpea project we could suggest the possibility of value-addition in cowpea even in Africa.

And we generate the primal elements which are essential for the development of the cowpea varieties with high value. Though there is various information we still need to add, we believe our findings promote the development of the breeding strategy for the value-added cowpea.

However, do any of you recognize that we still have one more question we didn't answer in our project of five years? The question is "Who needs the variety?" Consumers, yes of course, but also farmers. Especially for small-scale farmers, cowpea is not the crop for cash. For the food and cash requirements, farmers want high grain and fodder productivity in cowpeas, but the cowpea also serves as emergency food during hungry periods when cereals are not yet ready for the harvesting. The developed variety has to adapt to the cropping system with the combinations of several crops depending on the farmers' need and preferences.

For adding value to meet the requirement of the farmers as well as consumers we still need to generate more scientific information and then emphasize the utilization of wide genetic diversity existing in the cowpea. To amplify the achievements we had in a current project, we are advancing our activity on the cowpea to strengthen our capacity of the phenotyping, which leads our understanding of genetic resources, farmers' needs, and cropping systems into a much deeper level.

For further activities, in addition to Nigeria, we selected Burkina Faso, which holds three roles. Burkina Faso is a major cowpea producer and consumes a lot of cowpeas themselves, but is also exporting to neighboring countries. By the comparison of the three roles as producers, consumers, and exporters in three different agro-ecological zones available in Burkina Faso with farmers, we believe we could grasp the interactions between genetic resources, cropping systems, and then also farmers' needs. If the cowpea breeder can develop the variety based on a better understanding of the genetic resources, the consumer preferences, producers need, and the interactions of all these three components, the variety will provide better resource utilization options for the cropping system and the people who live on the cropping system.

To achieve this, with the focus on the linking of these partners, JIRCAS will generate and provide scientific information and the tools, which enable breeders to develop better variety efficiently and then also effectively.

With the strengthened role of the developed cowpea as a regional crop, we could contribute to improve the farmers' livelihoods and provide more resilience under challenging conditions they are facing which leads to the quality of development to achieve quality of growth.

As is well known and emphasized in other presentations, partnership is a key to success.

I would like to emphasize here the critical role of JIRCAS to strengthen this partnership among the competent players in the field and research capacities in Japan using the central function, which JIRCAS has. We can be much stronger if we could work as a team as we did under the current EDITS cowpea project.

Before closing my presentation, here taking this opportunity I would like to express my and project members gratitude to Dr. Hiroko Takagi, project leader of EDITS who holds the great leadership to unite our members. Also I would like to thank our two staff members, Gaba and Jummy for their sincere contribution to the project. Finally I sincerely appreciate your kind attention to my presentation. Thank you very much.

Chairman Kano : Thank you very much, Dr. Muranaka. We have a few minutes so may I have a question for clarification, please. If not I'd like to have one question. In your last slide you showed your research team. Probably they have several different specialities. Could you explain briefly?

Dr. Satoru Muranaka : Okay. We wants to be a kind of a complemental team so we have the crop physiologist, crop scientist, agronomist, breeder, food scientist, and then market people who help us to generate data of the market preferences and then we have a lot of the people helping us to provides the other local information to grasp. So I cannot just tell which kind of area is more important but if we could generate the information as a team, I think we are very efficient to generate those kind of a complemental data so these are our members and then I'm really happy to work with them.

Chairman Kano : Thank you very much. May I have one more question? No? Okay, thank you very much once again. Once again, a big hand for his presentation. Thank you very much. Thank you. I'm pleased to introduce our next speaker of this session. Next speaker is Dr. Rose Fiamohe, AfricaRice, so please prepare. She holds a doctorate degree in Agricultural Economics from the Catholic University of Louvain and is lecturer at University of Abomey-Calavi, Benin. Her expertise is in the area of marketing and consumers preference research. Currently she is Associate Principle Staff at Africa Rice Center in the Policy Impact Assessment and Innovation Systems Program, Benin. The title of her presentation is "Responding to Consumers' Preference in African Rice Markets: Experiences of Africa Rice Center" Dr. Fiamohe, the floor is yours, please.

Dr. Rose Fiamohe : Thank you very much, Dr. Kano for introducing me. It is really a pleasure for me to attend this important symposium as a representative of AfricaRice, which is one of a 15 centers of CGIAR. My contribution to the approach to enhance stable food production and consumption in Africa will focus on a relevant AfricaRice research and development products to respond to consumer preference in the African rice market. So quickly I want to first to recall that it is a collaborative work with my other colleague from value addition and the innovation platform unit so first I will provide an overview of rice growing in Africa. Talk a little bit about the marketing of both imported and locally produced rice. The key challenges first in rice marketing in Africa and what AfricaRice is doing to respond to consumer demand for rice in the continent. And then the relevant rice products by AfricaRice and finally I will give the conclusion and a way forward. So as we can see here many programs have been supporting the development of technology including the rice varieties so since 2013 AfricaRice has decided to conduct a baseline survey to have a global picture on the rice variety grown in Africa. This survey has focused on a rice sector development hubs which are the main rice growing environments and where research products are integrated along the value chain to achieve development outcomes and impacts.

The baseline survey was conducted in nine selected countries and, as you can see, the traditional variety remains very dominant in many countries except in Benin and Cameroun where NERICA variety are much grown in those countries. This result outline the challenges in dissemination of improved seeds leading to low adoption of a improved variety by famers in Africa. These results show that there is a need to call for an increasing effort on seed system development in order to ensure an increase in rice production and then food and nutrition security in the continent.

Now, what about the markets of rice in key urban areas in African countries? Here again the result obtained from the baseline study show that imported rice brands are still prevailing in the hub and in key urban markets near the hub. This is the blue one so in Senegal and Tanzania it is observed that locally produced rice is mainly dominant in that area especially in the rural area and in key urban markets. We think that in the near future, the remaining countries can follow the example of Senegal and the Tanzania.

What are the key challenges faced in the rice marketing in Africa? As we can see in these two pictures, here this is a local rice market and here are both imported and local rice markets, we can see that the main challenges that local rice is not frequently found in the market in major African towns. But when it is available, it is generally sold in bulk and not branded to attract consumers. This means that African rice does not have at all an identity that is easily recognizable and attractive to the consumer and we think that it is a huge drawback compared to imported rice.

What's are we doing at the AfricaRice in the marketing team to address these challenges? First, we developed tools to analyze consumer buying decision and identify a popular type of rice sold in the market. And second, we start evaluation of the quality of rice by consumers in urban markets using an experimental approach to elicit the willingness by consumer to pay for the most preferred products. And then we strengthen the capacity of the value chain in the market-oriented production on the use of improved technology to improve the grain quality. We develop also a women-friendly parboiling technology and management options to increase post-harvest yield on the grain quality to mimic the standard of imported rice.

We support the value chain actors in the innovations platforms to improve the attractiveness and image of rice produced locally using novel processing facilities. We are also promoting the locally produced rice in the African through trade fairs, conferences, and development exhibition events for the visibility of the products. And finally, we are trying to establish marketing contract between the relevant value chain actor as a woman processor and the over value chain actors such as supermarket, food shops, etc.

What are the first products we develop or in the marketing team? This is a marketing tool which allow to evaluate the quality of local rice both imported and local rice in order to identify the most preferred rice in the selected country. As we can see here, this tool is comprised of seven steps. The first step is the recruitment of consumers in the market. And once they are in the experimental hall we have an introduction session and biscuit session. We try to explain to consumer what do we expect from them and then they started to evaluate one cook which we call pre-tasting auction and then the cooked rice evaluation we call post-tasting auction and then the collective auction and finally the post-collective induction which has an individual evaluation and which allows us to capture the effect of group on the individual choice and finally because it is a an experimental auction, we need to have a winner and we end the session with a group picture. This experiment was done two times, one in the morning and another in the afternoon. So per session we recruited around 15 consumers given a total of 30 consumers by day and the sessions are conducted during five or six days depending on the budgets.

With this tool we are able to identify the most preferred rice in the selected country in Africa. The results showed that the locally produced rice is clearly more preferred among the alternatives rice compared to the benchmark rice which is low quality rice or market mixed rice in the pre-tasting and post-tasting auctions. These are the most preferred variety we identify in the selected countries except in Benin where the imported brand was the most preferred.

With this most preferred rice, we can see here that urban consumers are willing to pay a high premium if the products are properly processed. We can say that this first analysis reveal a different market segment of urban market in terms of paying high price premiums for the quality and the price for sensitive consumers who try to feed their family at lower costs.

The tool also allows us to identify the key determinant of urban consumer choice for rice. In addition to the free of impurity, the following criteria determine urban consumer choice for local or imported rice. There are three, first we have taste, whiteness the color, and the aroma. This result is common in all selected countries we covered in Africa.

We were able also to estimate the potential demand for the most preferred rice using this tool. The results have shown that there is high demand for the well processed locally produced rice over the average in a selected countries except in Benin where the higher demand is observed for imported brand, Gino, probably due to the urban bias in this country.

Another relevant product developed by AfricaRice is improved parboiling technology. This parboiling technology compared to the traditional one can increase the parboiled rice by 55 percent by month compared to the traditional technology. It produces high quality rice with a 95 percent whole grain and it is energy, efficient, durable, and laborsaving. Here is the plant which produces the quality parboiled rice with high quality compared to imported rice. This is the evidence from Benin—in the center of Benin—and its will be replicated in Malanville and already ongoing in Nigeria. The technical information can be found on the AfricaRice eHub website or though direct contact with the scientists who are in charge of development of these technologies.

Another relevant product is a capacity building. We know that to improve the quality of rice, we need to reinforce the capacity of the value chain actors including women and the youth in rice businesses, so this capacity has been done in Benin, Cote d’lvoire, Senegal, and Tanzania on a market oriented-production and on the use of improve technology to improve the grain quality.

We also developed brand and packaging material to improve the attractiveness and visibility of locally produced rice in the innovations platforms. This activity has been achieved already in Senegal and is still ongoing in Benin and the Cote d’lvoire, to improve the attractiveness and the visibility of the products, also to increase the product access to urban markets, and the finally to improve the revenue of the all the value chain

actors.
With the well processed products we support the value chain actor to participate in the trade fair, in the exhibition, and in the conference to promote their products. We have evidence in Benin and the Kenya for the participation of value chain actors in the trade fair, the result showing that with the 2015 trade fair participation the sale of a rice products has been increased from 90 percent to 173 percent compared to the trade fair in 2014.

As a conclusion, we can say that rice variety grown in many African countries has a good organoleptic and nutritional attributes that meets urban consumer preference if properly processed, branded, and well packaged. So we think that the improved rice processing technology developed by AfricaRice is playing a significant role in the rice quality upgrading through the innovation platform of the rice sector development hub. And before that, key investments in postharvest are needed to address the physical appearance of products such as sorting, grading, branding, and attractive packaging and to achieve that we think private sector partners and key entrepreneurs are needed to out-scale the technology and innovation we have developed.

So, For the sustainability of the commercialization of local rice products we think that we need an engagement of supermarkets, restaurants, and school canteens in order to increase the sale and consumption of the product and this can lead to the strategic re-positioning of the product in the urban market. For the next year, research and development will continue to focus on the field experimental auction to gather the overall picture of the most preferred products in the remaining countries, we will continue to install the improved technology to upgrade the quality of the products. Branding and packaging will continue, and particularly we will focus on the establishment of the marketing contract between processor and other value chain actors such as the supermarket. We will also publish our products to have more visibility for the center and their strategic partner. Thank you very much for your kind attention.

Chairman Kano : Thank you very much, Dr. Fiamohe. Very new and very useful information for us. Thank you very much. So we have enough time for question-and-answer. First I would like to have a question for clarification and later I would like to have a comment from the floor. So do you have any questions for clarification? Please.

Tutwieler- : Thank you very much for the presentation. I wanted to ask whether the results that your finding about which varieties consumers prefer are being communicated back to the breeders in AfricaRice so that they can incorporate those traits and those varieties into their breeding programs.

Dr. Rose Fiamohe : Can I reply directly? I can go ahead? Okay. Thank you very much for your question. It is very interesting. For this activity firstly we discuss with breeders to have information, on the varieties we can use to do this marketing activity. So for the result, we think that the results can be used directly by the value addition unit and not directly by breeder because the varieties which have been highlighted as the most preferred does not have problems. It is not a breeding problem. It is a post-harvest issue which needs to be address by value addition and the mechanization unit, so for the beginning we have a common understanding on the what varieties we can use to do the study in collaboration with the breeder. There is no issue for the breeders but for the post-harvest specialist and the mechanization to develop improved technology, which can address the quality of the rice.

Chairman Kano : Thank you very much. So any other questions? Please. Please mention your name and organization name.

Tsujimoto : I'm Tsujimoto from JIRCAS. Thank you for your presentation. I'm interested in one of your slides comparing the consumers' preference between the locally produced rice and the imported rice among different countries. And in Senegal and Tanzania as far as I remember correctly, they, the consumers prefer locally produced rice relative to the other countries. Is this because in those countries, locally produced rice is well packaged, branded, and well processed, or if there are any other reasons in those countries people prefer the locally produced rice.

Dr. Rose Fiamohe : Thank you very much for your question. I think that you have provided already a part of response in your comment because in Senegal as I have shown, we moved to the branding and packaging. So this means that local rice is preferred over imported rice in Senegal and the issue in some regions is the local rice is not branded and packaged. So this poses a challenge for the consumer that's why for Senegal now we are trying to continue the branding and packaging. There are many countries like Senegal, for instance,

Tanzania, Uganda and Nigeria, a part of Nigeria, the local rice is preferred to imported rice. The issue is the physical appearance. The product contains a lot of impurities which need to be addressed using improved technology, but in term of organoleptic attributes, local rice tastes well and have a good aroma compared to imported rice and I think that in the next year the local rice will compete very well with imported rice from Thailand, America, and elsewhere.

Tsujimoto : So packaging and branding got the ways we can compete in different...

Dr. Rose Fiamohe : Yeah. I think it is one of the issue we are trying to address.

Dr. Kano : Thank you very much. So any other question and also comment is okay. Please. Your name and organization name, please.

Kobayashi : My name is Kobayashi from JAICAF. Thank you for your presentation and regarding her last question, so I was working in Cote d'ivoire for several months and I saw very big amount of imported rice, so imported rice is very whiteness and has very good packaging. But unfortunately, local rice we find contamination. Any contamination, such as stones and weed seeds so and in general the many kind of good, many consumers are not buying local rice for what you think about local rice for good sales in African countries.

Dr. Rose Fiamohe : Thank you very much. I think your question joined the previous one and we think that the common problem for the locally produced rice in Africa it is a post-harvest issue. Yeah, like an imported rice we need to improve the quality, the grain quality of the products using innovative technology—improved technology—compared to the previous traditional technology which does not add value to the products. So the main challenges we need to address, it is a common in the all African countries. It is the problem of impurity. As we know already in the urban area consumers have not much time to try to separate impurities from the rice. So that's why when they go to the market they want to save time, so they buy the imported rice which is a free of impurities and is well packaged. So that is the main issue we need to address because much effort has been focused on rice production increasing, now we need to address the problem from the consumer to the farmer now.

Chairman Kano : Okay, thank you very much. So may I have a last question or comment? Dr. Yoshihashi.

Yoshihashi : My name is Tadashi Yoshihashi from JIRCAS. I'm a senior chemist working on the Southeast Asian rice value chains. I understood that the market oriented approach that you are attended to is really needed for the next stage of the African rice production development. But, at the same time, I understood that the quality aspects, actually there are at least two stages. One is a matter of economical aspects that you mentioned about appearance, that is visible so that part usually is a in case Asia middleman use such kind of aspects. If there is so much stuff that is yellowish-grayish, the price will be reduced by the selection of the middleman. But, at the same time, there is an aspect that is relating to the consumer directly that is palatability or the organoleptic. I support that the under your presentation, African rice consumers already know that the such kind of palatability or maybe the something of relating to the freshness they've already understood that local varieties are quite good quality, I suppose. So as you have shown in the presentation, there is an issue relating to the branding of the rice, but at the same time how can the farmers maintain the brand in terms of the quality? That is my question. A big question, how in terms of what they can make a package?

Dr. Rose Fiamohe : A farmer, you are talking about farmer?

Yoshihashi : Yes.

Dr. Rose Fiamohe : You know, farmer produce two kinds of rice. There are seed producer and paddy producer and the key challenge is the missing of a variety at the seed production level and paddy production level. So the branding and packaging is also very important to separate each variety because when the variety is missed from the seed producer this will have negative impacts on the end products. So I think as I mentioned maybe I didn't clearly mention it in my introduction, the packaging branding and packaging is very important from seed producer, paddy producer and the processor and the traders to avoid missing of the variety and missing of different end products.

Yoshihashi : Thank you very much. So I understood that the studying from the breeders makings from the

variety selection to the seed producer and the farmers and the middleman and then finally lead to the retail market. So throughout the value chain is needed to considering about how to obtain the value. How to obtain the profit.

Dr. Rose Fiamohe : Yeah, open.

Yoshihashi : Yes. It's a value chain so that's why we may create value so I understood that. Thank you very much.

Dr. Rose Fiamohe : Yeah, you are welcome.

Chairman Kano : Thank you very much. So thank you very much, Dr. Fiamohe, so once again a big hand for her presentation. I would like to summarize this session briefly for the further discussion and general discussion. Dr. Muranaka introduced us the importance of cowpea quality and other issues. The project has widely analyzed quality of genetic resources of the cowpea. They have also analyzed the varieties sold in the market. And the project team is well composed of several experts on breeding, agronomy, food science, and social science. So I think the project can promote the next stage of their research activity to strengthen the role of the cowpea in West Africa. And Dr. Fiamohe introduced to us the importance of customers' preference for quality and brand of rice. And also she introduced new technology on parboiling as an example of post-harvest technology. Since JIRCAS research activity has been related to breeding, agricultural engineering and agronomy mostly, I think consideration for consumption, marketing, or the value chain is necessary for the next stage of research to contribute to the small scale farmers. Okay I'd like to close this session. Last, again please, a big hand for our two speakers.