



CSIR-FOOD RESEARCH INSTITUTE



TECHNICAL REPORT

TRAINING WORKSHOP FOR RICE FARMERS/PROCESSORS ON RICE- BASED NOODLES PRODUCTION AND MUSHROOM CULTIVATION AT NKAWIE –TOASE, ASHANTI REGION GHANA.

FROM

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By

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BACKGROUND

AfricaRice Center, head quartered in Benin, focuses on outcome-driven innovations through interdisciplinary product-oriented Research and Development (R&D). Using the hub concept, AfricaRice proposes to build critical mass in rice production, postharvest and grain quality improvement research in 24 member countries. There are six main R&D themes including Genetic Resources, New Varieties, Production Systems, New Products and Value Chain, Targeting and policy and Regional Delivery. Under the new products and value chain R&D theme, research efforts include technologies and business models to improve rice post-harvest practices, processing and marketing, rice-based food products as well as innovative uses of rice by-products (e.g. straw and rice husks). AfricaRice has five key taskforces namely, (i) Policy, (ii) Gender, (iii) Processing & Value addition, (iv) Agronomy and (v) Breeding. Research activities by the various taskforces focus on building the critical mass in demand-driven research and creating the appropriate policy environment for dissemination of results.

The AfricaRice CIDA project is being implemented in Cameroon, The Gambia, Ghana, Mali, Nigeria, Senegal, Sierra Leone and Uganda. The objective of the AfricaRice CIDA project entitled “Enhancing food security in Africa through the improvement of rice post-harvest handling, marketing and the development of new rice-based products” is to increase food security and sustainable livelihoods among rice value-chain actors in Africa. The direct beneficiaries of the project include smallholder rice producers, women rice parboilers and small to medium-scale rice processors, local artisans and local rice traders in the target countries, as well as scientists and agricultural extension staff¹ from governmental and non-governmental agencies. The Ghana AfricaRice CIDA project is being implemented in three hubs. These include Afife hub managed by CSIR-FRI, Kumasi hub managed by CSIR-CRI and Navrongo hub managed by CSIR-SARI.

EXPECTED RESULTS

The project has six main Immediate Outcomes:

1. Increased access to improved harvest and post-harvest rice processing practices and equipment for farmers, millers, parboilers and marketers in “good-practice concentration areas” of targeted countries.
 2. Rice producers, processors and consumers in the targeted countries have increased applied knowledge of new rice-based products developed from slower-digesting varieties, broken rice fractions and rice by-products.
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3. Rice value-chain actors in target countries have enhanced applied knowledge of improved harvest and post-harvest rice processing practices, and the making and use of new value-added rice-based products and by-products.
4. Improved evidence-based rice policy formulation and adoption by policy-makers in targeted pilot countries.
5. Increased coordination and harmonization of regional rice policy in the Regional Economic Communities (ECOWAS and CEMAC).
6. Scientists and agricultural extension agents in selected pilot countries have increased applied knowledge on rice harvesting, processing, marketing and policy analysis.

NEW INFORMATION

The training workshop was aimed at training rice farmers how to formulate noodles from rice flour and also utilize their rice straw waste for the cultivation of mushrooms. On the 16th of October 2016, resource persons set off from Accra to Nkawie. At around 09:00pm, facilitators arrived in Nkawie and were hosted by a local hotel where they lodged and passed the night. The first day of a series of trainings was scheduled for the next day, Monday, 17th October. At the end of these five days of project results dissemination, it is anticipated that beneficiaries will be empowered with entrepreneurial capabilities which will go a long way to support their livelihoods. Also on the part of the local coordinating institution (FRI) and funders, project outcomes will be achieved.

Keywords: Rice noodles, mushrooms, rice waste material, farmers, processors, consumers.

INTRODUCTION

The training program began on Monday, the 17th of October 2016 at the premises of the BAC office at Nkawie - Toase. At around 10:00am all the participants had arrived. A total of 54 participants took part in the training program. The training started with an opening prayer by one of the participants. The project coordinator, Mrs. Hannah Obeng welcomed all participants to the program. She introduced all the facilitators to the participants; Ms. Dzomeku, Mrs. Alice Padi,

Mrs. Joyce Agbezudor and Ms. Prempeh. Mrs. Obeng explained to the participants the main purpose of the project and how it was intended to help the local rice farmers benefit from their harvests and wastes. She urged all participants to take advantage of the training and learn as much as possible. The coordinator for the rice producers, Madam Akua also welcomed the facilitators after which the participants introduced themselves.



Fig 1. Introduction of training by the Project coordinator



Fig 2. A cross section of participants

The first practical for the day was on rice noodles production technology and this was facilitated by Mrs. Alice Padi and Mrs. Joyce Agbezudor. The facilitators gave a brief introduction into the benefits of formulating noodles for home consumption and sale. All materials needed for the noodles formulation were displayed on the working table. They included a weighing scale, rice flour, wheat flour, eggs, salt, xanthan gum, food color and a noodles making machine. The facilitators demonstrated how to measure and mix all the ingredients together after which the mixture was kneaded and rolled. It was then cut with the noodles making machine into various sizes. The noodles were then steamed and left in the sun to dry. The participants were amazed at how simple and fast the preparation was and the participants were all eager to try it. At 12noon, the participants had their snack.



Fig 3. Weighing of ingredients for rice noodles



Fig 4. Rice Noodles preparation

The next practical session was on how to use rice straw as a substrate for mushroom production and this was facilitated by Ms. Dzomeku and Ms. Prempeh. Participants gathered together to cut the rice straw into smaller sizes to be used for the plastic bag method of oyster mushroom production, after which some rice straw was soaked with lime for domo bed preparation the following day.



Fig 5. Cutting of rice straw



Fig 6. Soaking of rice straw

Participants had their lunch at 1:30 pm after which they asked questions about the day's activities. At about 4pm all participants departed.

DAY TWO

The second day began with a practical demonstration on oyster mushroom cultivation using the plastic bag method with rice straw as substrate. Two formulations were demonstrated, preparation with 50% sawdust 50% rice straw and a preparation with 100% rice straw. Ms. Dzomeku explained the various stages that the substrate undergoes as well as calculation for the additives needed and stressed on the importance of every stage.

Ms. Prempeh demonstrated how to mix the additives with the substrate and stack into the polypropylene bags. All participants took turns to mix the substrate after which the substrate was bagged.



Fig 7. Mixing of cut rice straw, quicklime and rice bran



Fig 8. Demonstration of bagging



Fig 9. Bagging of rice straw by participants

The next stage was sterilization of the bagged substrate. Ms. Dzomeku listed the materials needed for the sterilization and explained the importance of the sterilization process. She demonstrated how to pack the bagged substrate into oil drums for sterilization. Participants took turns to arrange the bags in the drum until it was filled.



Fig 10. Lectures on sterilization of prepared compost bags



Fig 11. Stacking of bags into oil drum for sterilization

The afternoon session was a recap of the noodles production technology. It was time for the participants to have hands on practical on what they had learnt. 5 participants volunteered to lead the group. The participants recalled all they had learnt and successfully formulated the noodles after which they had lunch with a side dish made from the noodles that had been formulated.



Fig 12. Participants practicing kneading of the rice dough



Fig 13. Noodles making by participants

The last practical for the day was on domo bed preparation. Participants were very keen to learn about this since most of them enjoyed eating the domo mushroom. The practical began with draining water from the rice straw that had been soaked overnight. Participants were informed that combining rice straw with cotton waste was the best substrate for domo mushroom cultivation. The cotton waste was also soaked in lime water. Ms. Prempeh demonstrated how to stack the rice straw and cotton waste in the trapezoid box and inoculate with spawn. The participants also took turns to make similar domo beds and were all impressed at how simple the process was as compared to the compost bag preparation method.



Fig 14. Draining of the soaked rice straw



Fig 15. Volvariella cultivation using the trapezoid box



Fig 16. Stacking of bed with cotton waste.



Fig 17. Bed making by a participant.

DAY THREE

The morning session was a practical demonstration on inoculation facilitated by Ms. Prempeh. The sterilized compost bags were brought into the inoculation room. Participants were divided into two groups and ushered into the inoculating room. Ms. Prempeh educated the participants about the basic principles of inoculation and all the sanitary measures needed. She demonstrated how to introduce the spawn unto the substrate. All the participants took turns to inoculate the bags after which the same process was repeated for the second batch.



Fig 18. Lectures of Inoculation of sterilised compost bags



Fig 19. Inoculation of sterilised compost bags by participants

DAY FOUR

The morning session was a practical demonstration on cropping of mushrooms. Participants were ushered into the cropping house to have a look at ready compost bags that were flushing. Ms. Dzomeku informed members how to identify mushrooms that were ready to be harvested and demonstrated how harvesting of mushrooms should be done. Participants all took turns to harvest the mushrooms after which they had snacks.



Fig 20. Introduction to harvesting of mushrooms



Fig 21. Lectures on harvesting practices



Fig 22. Participant harvesting fresh mushrooms

This was followed by the formulation of 100% rice flour noodles. Mrs. Padi explained to participants that it was the same process they had used in the initial demonstration of the 70% rice noodles. One participant listed all the materials that would be needed for the formulation in their right proportions after which another explained the various stages for the formulation. The facilitators were very impressed at the turn out of the practical work of the participants. After the noodles had been formulated, participants had lunch after which they departed at about 3:45pm

DAY FIVE

On the fifth and final day of the program, all participants were seated at 9:00am. Participants were given the opportunity to ask questions about all they had been trained on and comment on the organization of the program. Participants later evaluated the course by filling out evaluation forms. The closing ceremony began at 1:30 pm; Madam Akua thanked facilitators for a successful training program after which a representative from the participants also expressed their appreciation for the technology transfer. Facilitators also expressed their gratitude to participants for their attention and time. The team was presented with a noodle making machine and starter pack materials for the mushroom production which included a sterilization unit,

humidity box, Trapezoid box, Polyethylene bags, Ready mushroom bags etc. for the benefit of the whole community. The day ended with a group picture of all participants and facilitators.



Fig 23. Presentation of noodle maker to Participants.



Fig 24. Group picture of Participants and Resource Persons.

EVALUATION AND RECOMMENDATION

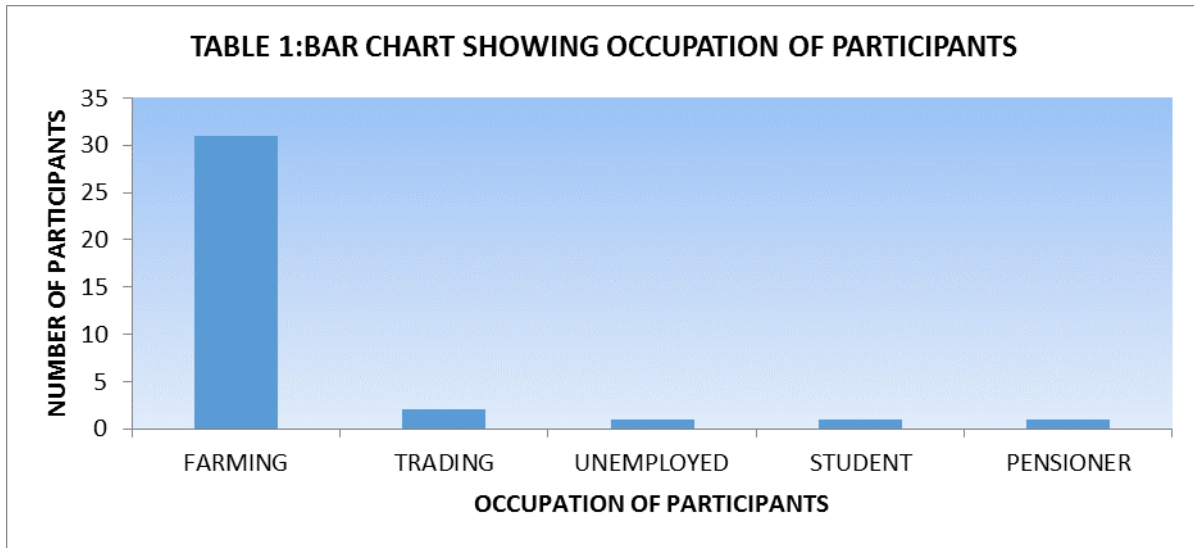


Table 1 show the variations in the occupation of the participants that were trained. The majority were farmers, the traders , unemployed, pensioners and students (National service personnels attached to the Ministry of Agriculture took advantage of being trained as well).

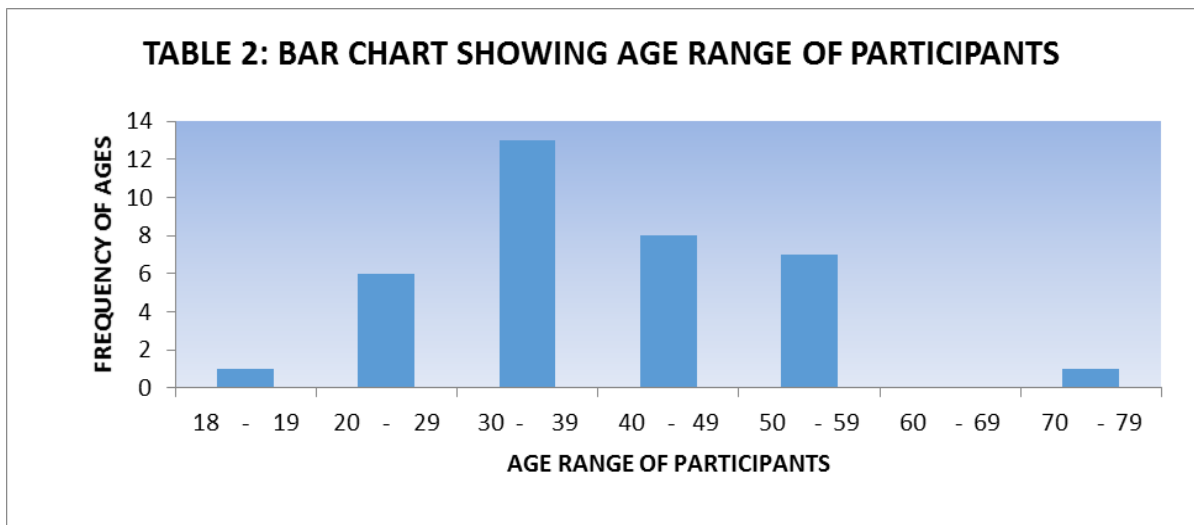


Table 2 displays the age ranges of the participants that under went training. Thirteen participants fell within the age range of 30-39 years. The age range of 40 -49 were represented by 9 participants, while 8

participants were in the age range of 50-59 years. Least number of participant is in the age range of 18-19 and 70-79 years.

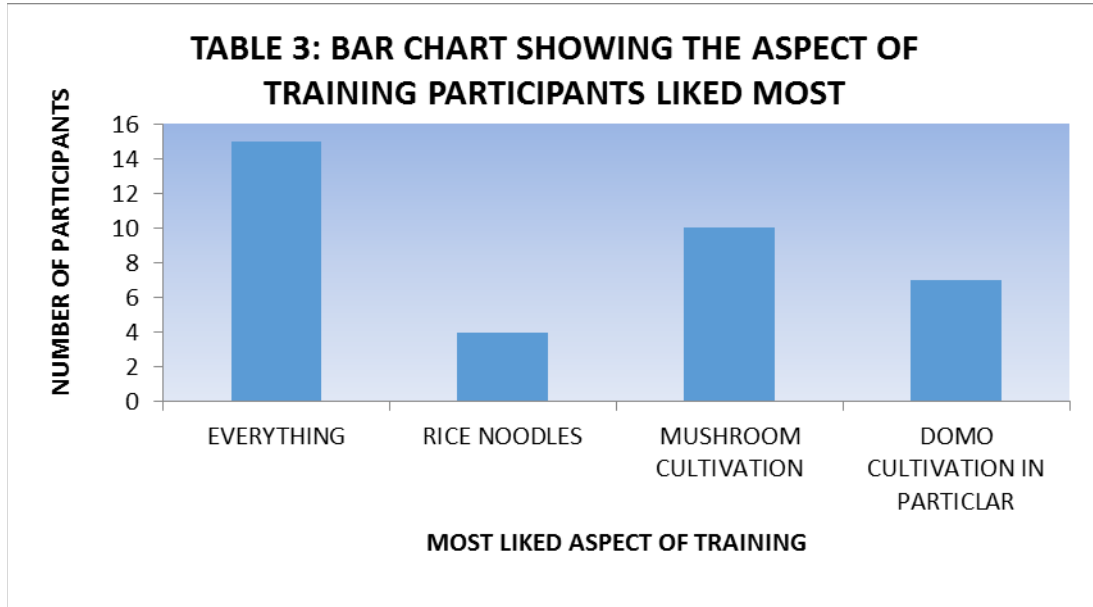


Table 3 shows the various aspect of technologies transfered that the participants liked most. 15 participants said they liked all that was covered. 10 People liked the mushroom cultivation technology and 7 participants particularly preferred the Domo(Straw mushroom) cultivation. And 4 liked the rice noodle technology.

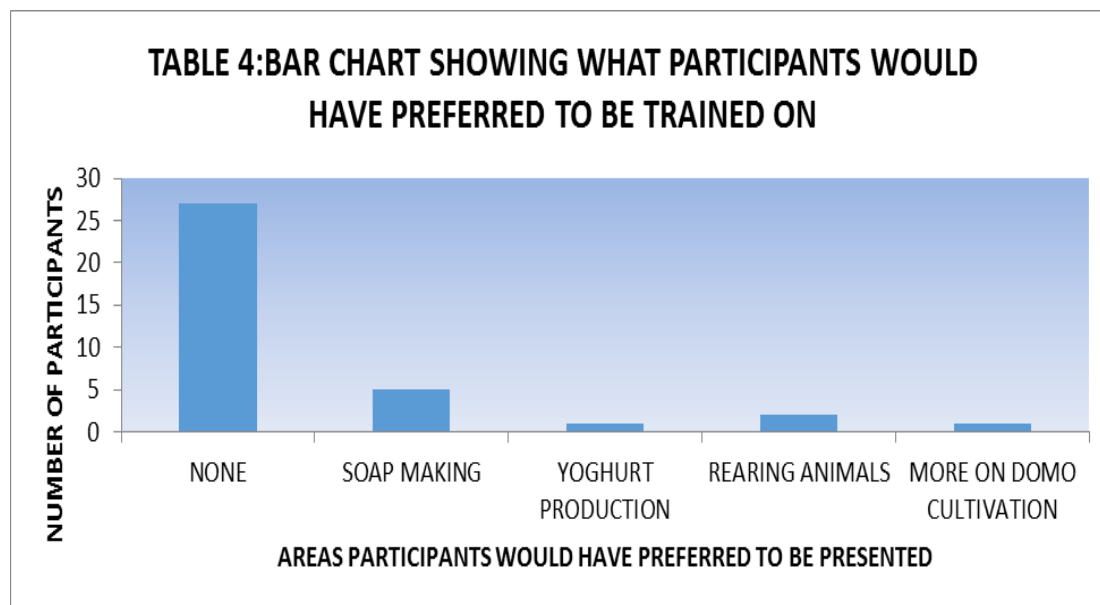


Table 4 throws a light on what other technologist the participants would have preferred to be added on to what they were trained on. 27 participants were satisfied with the technology they got. 5 people would have preferred that soap making be added to what they have been trained on. 3 participants said they would have loved to learn about animal rearing. Another 2 participants wanted more technology on the Domo mushroom cultivation. 1 participant said yoghurt production should have been preferred.

Main Messages/ Conclusion

At the end of this training workshop, participants gained practical knowledge on the use of broken rice flour and other rice waste materials for the production of rice-based byproducts. Beneficiaries were shown a lot of enthusiasm throughout the training period as well as appreciation to the CIDA funded-Food Research Institute AfricaRice project for the opportunity. They however asked for more platforms to be able to reach a larger target audience as well the support to be able to establish as a medium or small scale entrepreneur by way of meeting product standards and registration per the Ghana Standards Authority (GSA) and the Food and Drugs Authority (FDA) regulations.

It is our hope that farmers and other beneficiaries of the project will broaden their capacity and skills beyond paddy rice cultivation into other income generating ventures using rice waste materials.

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