

# The 6th Niigata International Food Award Commemorative lecture of laureates

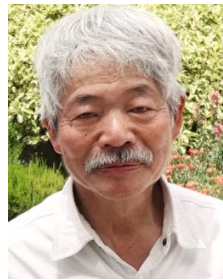
Grand Prix : NAKAMURA Tetsu MR. / Peshawar-kai / PMS (Peace(Japan) Medical Services)  
【Lecture Speaker】 MURAKAMI Masaru MR. : Chairman of Peshawar-kai / Executive Director of PMS

Dr. Tetsu Nakamura always worked at the front. Starting with medical treatment in 1984, he broadened the scope of his work to water supply establishment and agriculture.

When Dr. Nakamura started working at the Mission Hospital in Peshawar, Pakistan that same year, war had already broken out, and it was said that there were 3,000,000 Afghan refugees in Pakistan. It became necessary for Dr. Nakamura to handle the medical treatment for refugees and as a result, founded the Japan Afghan Medical Service (JAMS), which later became the Peace Japan Medical Services (PMS).

After the war ended and the refugees began to return home, Dr. Nakamura built a clinic in the eastern mountainous region where many refugees were returning to since this area was plagued with leprosy. Dr. Nakamura saw farming villages being devastated by a drought in 2000 and children with weak bodies, dying of diseases caused by drinking dirty water. He thought, "We need water more than medicine to save lives" and started digging wells. He dug as many as 1600 wells, but the wells dried up one after another. Therefore, in 2003, Dr. Nakamura started construction on the Marwarid Canal.

In addition to the labor-intensive construction method employing local technology, Dr. Nakamura combined the techniques used in the Yamada oblique weir, which was built on the Chikugo River in Kyushu more than 200 years ago. He made it as a model for canal construction so that the locals could repair the canal by themselves in case it ever collapsed. By constructing the canal, the land that used to be a desert became full of lush greenery. Dr. Nakamura built the foundation for life needed for the refugees to return to their homes.



Dr. Nakamura's goals for medical treatment, his work on the water supply project and agriculture were the same - "To help people survive". There is the threat of ever encroaching poverty, war and droughts caused by the global warming in the background. He always said, "Peace is not a concept but a real state. Without food, people fight. Therefore, I need to make people able to eat. That is the truth about peace".

In 2018, the Afghan Government decided to adopt the project using the PMS method which Dr. Nakamura had practiced. On December 4th, 2019, when "The Afghan Green Ground Project," a project for solving drought problems, was about to spread further, he passed away.

The project has succeeded so far thanks to Dr. Nakamura's effort and energy. His death came as a shock to us. However, the PMS will continue its work. The Peshawar-kai, which has supported Dr. Nakamura's endeavors, will commit to a 20-year support plan until the project can operate peacefully and independently.

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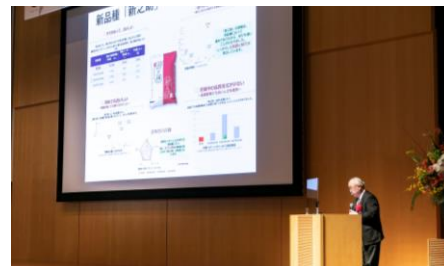
## Sano Touzaburo Special Prize : Dr. OTSUBO Ken'ichi

Fellow, Institute of Science and Technology, Niigata University  
Professor for Research, Niigata University of Pharmacy and Applied Life Sciences

I am deeply grateful to be awarded a special prize of Mr. Touzaburo Sano, who I respect. I have been working on the eating quality evaluation of rice, technology to identify the different rice varieties, rice production districts from the DNA and developing new processed rice foods that are good for health.

The eating quality evaluation of rice is mainly carried out by sensory testing, in which people taste cooked rice samples and give scores on the basis of appearance, taste, flavor, hardness and so on. However, my research is about measuring the quality and predicting the taste from the results of chemical analysis, etc. When Uonuma Koshihikari was dropped from the Japan Grain Inspection Association's Special A quality rank in 2017, I conducted a physicochemical assessment. My tests showed the same result for Uonuma Koshihikari as other brand varieties ranked Special A from other districts. I presented a paper detailing my findings. Recently, I also elucidated the taste characteristics of "Shinnosuke," the new variety produced in the prefecture.

Since false labelling cases such as misrepresenting the area of rice production, the law was amended to make the labelling of varieties and production districts compulsory. The identification technology using the PCR method that I developed can identify the strain of rice plant, the varieties of rice and the production district from the DNA of polished rice. Eventually, it became possible to identify them by using only one grain of polished rice or cooked rice.



The major varieties in Japan are related species similar to Koshi and their DNA is also remarkably similar. We developed an identification kit for Koshihikari produced in Niigata and put it to practical use. The sales of various identification kits, not just ours, increased, and as a result, it became possible to identify Koshihikari produced in Niigata from that produced in other prefectures. Consequentially, the number of false labelling cases has decreased. This technology is being broadly applied to quality control at the breeding stage, the seeds distribution stage, and during the agricultural product inspections. It is also used in the judgement of smuggled rice, to confirm the varieties of rice used to make lunch boxes, prepackaged cooked rice, and so on.

Functional processed rice food research has evolved into a collaborative project aimed to "develop processed rice food with a prophylactic effect on both diabetes and dementia" with project members including: the Niigata University of Pharmacy and Applied Life Sciences, Niigata Prefecture, Niigata City, Niigata University, food companies and agricultural producers' cooperative corporations. The project is currently underway.

Receiving this award is an opportunity for me to continue the research and development of rice as well as to tell the younger generations about Mr. Sano's achievements. I hope that my work can contribute to the international exchange of technology and advancing communication.

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## 21st Century hope Prize : Dr. YANO Hiroyuki

Unit Leader, Food Resource Utilization Unit, Division of Food Processing and Distribution Research, Food Research Institute, National Agriculture and Food Research Organization (NARO)

Dr. Yano has developed a method to produce additive-free, gluten-free rice bread using only basic ingredients for patients of wheat allergy or Celiac disease. This technique has been patented in 2019. He has also clarified the swelling mechanism of the bread in a cooperative study with the Hiroshima University.

In the case of wheat dough, gluten, a highly viscous protein network, confines the fermentation gas yielded by yeast. Thus, the dough swells like assembly of balloons. In contrast, it was not easy to make rice bread without additives because rice batter does not have gluten. The collaborative study with the Hiroshima University elucidated that the rice batter swells by the "particle-foam" mechanism, in which rice starch granules surround the fermentation gas like a soap bubble. Wheat dough made by the gluten network is so resilient. On the other hand, the rice batter is so fragile as it is as if made of many soap bubbles. Thus, a key for the successful breadmaking is not to break the bubbles in the fermentation/ baking processes. A stable temperature in fermentation and rapid heat up in baking are both important.



A home-bakery has been developed in the joint study with the Tiger Corporation and it has been on the market since 2017. It won the Kids Design Award (Ministers of State for Measures for Declining Birthrate Prize) in 2019. Based on his technique, the Natural Food Co., LTD has developed "Wada's Rice Bread". The high-quality bread hit the market in 2019. It is shelf-stable for a month.

He is motivated to prevail the breadmaking technology and export the bread as well as the home-bakery for the wheat-allergy/ Celiac patients. The effort is also expected to boost the demand for the Japanese rice.

He has developed a method to produce additive-free, gluten-free rice bread. The technique has been applied to commercially available home-bakery and bread. It is expected to prevail worldwide in the 21st Century. By helping wheat-allergy patients it contributes to one of the SDGs: Good health and well-being.

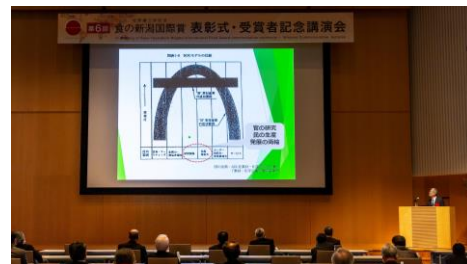
## Prize for Bright Future of Niigata : Mr. EGAWA Kazunori

Principal, Egawa Professional Engineer Office (Technical Discipline:Agriculture)  
Former-Director of Niigata Agricultural Research Institute Food Research Center

I started my research career decades ago at Food Research Center, Niigata Agricultural Research Institute. In the 1950's, when frozen foods were not widely distributed, we worked on a pioneer project developing techniques to freeze/thaw Sasadango, a traditional dumpling wrapped with Bamboo leaves. Our prefecture was the first in Japan to develop aseptic manufacturing processes for packaged rice cakes. The technology we developed was also applied to packaged rice, and eventually led to labor saving in household chores.

As consumer needs diversified in the Heisei era, we promoted research on multi-functional fine rice flour and paved the way for the rice flour bread production. We also conducted R&D on low-protein rice that can decrease the risk of renal insufficiency, and put the technology to practical use for the first time.

After retiring the Food Research Center in 2005, I decided to follow my mentor's word that Niigata needs a new industry connecting agriculture and industry. As a new industry in which agriculture and industry could work together, I focused on processing brown rice, considering that brown rice has great potential in health improvement.



According to the Ministry of Health, Labor and Welfare, the incidences of cerebrovascular diseases and stomach cancer as a cause of death are higher in Niigata than the national average. I expected that diet involving brown rice could decrease the risk of such fatal diseases and might contribute to increasing health span. Now I am developing a technique to make high-quality brown rice bread as fluffy as normal rice bread.

My dream is to create new "Niigata cuisine" with brown rice. I am hoping that not only residents of the prefecture, but also people visiting Niigata, will feel invigorated by eating local food made of local fresh materials. I keep asking myself if I, a late elderly, am worthy of the prestigious Future Award. However, now I would like to take it as an encouragement, and hope to continue to work with a renewed feeling and gratitude.