"I'll Make 17 Years of Bio Research Bloom with Technology that Makes Food Live"

Basic Technologies Group Leader, Planning & Coordination Division,
Food & Packaging Business Sector, Mitsui Chemicals, Inc.

Nobumasa Yoshida

Food loss and waste is a problem worldwide. Nobumasa Yoshida leads the development of freshness-keeping film that enables long-term preservation of fresh fruits and vegetables as one prescription for the problem. His career as an engineer is a unique one. For 17 years after joining Mitsui Chemicals, he undertook bio research including genetic modification of plants. After a 10-year gap, he is now tackling the development of packaging material that protects the "life of fresh fruits and vegetables."

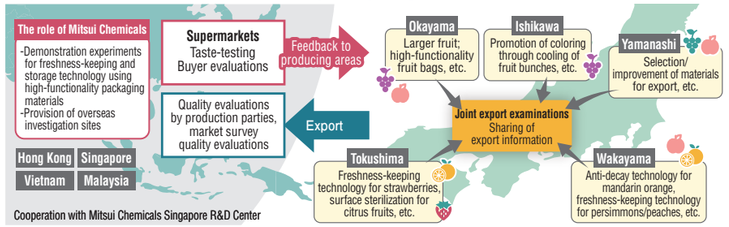
Film that Maintains Freshness

Driving along Prefectural Road 151 running east-west through Fukuoka Prefecture, greenery-rich scenes of vineyards catch the eye. In one section of this farmland is Yamaguchi Farm, which grows "Shine Muscat" and is frequently visited by a Mitsui Chemicals engineer. Nobumasa Yoshida leads the development of packaging films for the long-term preservation of fresh fruits and vegetables.

Upon reaching the vineyard, he puts on a windbreaker and enters a large cold room kept at a low temperature. He is there to perform the work of putting pre-cooled "Shine Muscat" into bags made from modified atmosphere film that is under development. When the work is finished, he takes out "Shine Muscat" that were stored earlier, and checks sugar content and other properties using analytical equipment. He will perform those checks regularly for several months, to assess the storage status of the grapes.

"Our company has demonstrated examples of 'Shine Muscat', placed in cold storage inside modified atmosphere film, that maintained freshness with nearly no change in appearance for about five months. If 'Shine Muscat' harvested in summer and autumn are shipped around the end of the year, they'll fetch a high price in the market," Yoshida says with a smile.

The National Agriculture and Food Research Organization (NARO) Japan-local strategic projection in which Mitsui Chemicals is participating



Under the leadership of Okayama University, producers from Yamanashi, Tokushima, and three other prefectures, distribution businesses, and other parties are taking part in joint examinations for the export of local specialty produce, primarily to Asia. Mitsui Chemicals will provide high-functionality packaging materials, and will undertake the development of freshness-keeping and storage technology.

Making use of polymerization technology in freshness-keeping

Food loss and waste has become a problem worldwide. A large amount of food is wasted not only when uneaten by consumers but also at the stages of production, processing, distribution, and retail. Mitsui Chemicals has strengths in a variety of products and technologies, from resin raw materials to processes for films and packaging. Yoshida's team wondered whether new solutions could be built on this base, taking freshness-keeping as their approach.

"We'll offer fresh fruit and vegetable producers, distribution and retail businesses, and other customers not only film for use as packaging material, but also know-how for maintaining high freshness. By doing so, we believe we can offer a number of merits, including improvement of profits by reducing losses from waste, and the creation of business opportunities."

The deciding factor in packaging material for maintaining freshness is the permeability of oxygen, carbon dioxide, and other gases. This is because fresh fruits and vegetables live and breathe until they are consumed. In general, perforations are made in films to allow gases to pass through. In Mitsui Chemicals' films, however, the raw material, the resin itself, controls gas permeability. This lessens the risk of various bacteria entering, and simplifies manufacturing processes by not requiring process for creating perforations.

"We've developed technology that controls gas permeability by compounding resins that have exceptionally high carbon dioxide permeability with resins that have other properties. As the concentrations of carbon dioxide and oxygen that are optimal for freshness-keeping vary according to the type, variety, and producing area of fresh fruits and vegetables, demonstration experiments are vital," says Yoshida.

That is the reason why Yoshida travels to vineyards in Fukuoka Prefecture and to peach, mango, strawberry, and other farms around the country. Mitsui Chemicals began with the composition of the resins that form the raw material for the films, and through demonstration experiments is discovering an operation manual for storage optimized for the producing region, such as storage methods (including temperature management), shipping timing, and transport methods.

As a part of this effort, from this year the company has begun full-scale participation in a Japan-local strategic projection conducted by the National Agriculture and Food Research Organization (NARO). Through industry-academia-government collaboration, the project will perform demonstration research on technology for exporting fresh fruits and vegetables at low cost while preserving freshness. Mitsui Chemicals will provide high-functionality packaging materials, and will undertake the development of freshness-keeping and storage technology.

Don't give up before achieving results

Yoshida has a unique career as an engineer. He joined Mitsui Chemicals as a researcher in 1989, and spent 17 years in areas including research to control the timing of flower blooming through genetic modification. Following that, he was transferred under organizational restructuring and worked for 10 years in personnel placement and training within the Human Resources Division. Last year, he returned to the Development Department for food evaluation.

"I had invaluable experiences during my time in the Human Resources Division, but I'm deeply grateful for this chance to leverage my experience as a researcher after 10 years. I hope to make this business grow large, however I can," he says. The eyes of the development members watching over Yoshida hold expectations for this quiet but passionate leader.

Revolutionizing distribution in Japan's agriculture

Extending the period for freshness-keeping broadens the trading zone for producers. As an example, as cherries are prone to damage, harvesting cherries in Yamagata Prefecture for sale in Western Japan had been difficult. However, improvements to packaging materials make this possible. In addition, to contribute to the promotion of exports of domestic fresh fruits and vegetables to the ASEAN region, where wealthy and middle-class consumers are increasing rapidly, the project is undertaking development of freshness-keeping technology aimed at long-distance transport.