Let's think about seed quality < Part 4 >

Health of seeds and seed disinfection technology in Sri Lanka

Risk of seed-borne diseases and seed disinfection

Germination rate and genetic purity are the first things to mention as a seed quality factor, but health of seeds is also important. Healthy seedlings cannot be obtained from disease infected seeds, and using infected seeds could even bring pathogens into healthy fields. In addition, it is not easy to regain seed health once a seed-borne disease is established, in the case of local varieties which repeat in-house seed production. Local varieties of chily is popular in northern Uganda, where mosaic symptoms are often found caused by a virus.

Local chilies showing mosaic symptom (Northern Uganda)

In order to produce healthy seeds, it is necessary to control diseases appropriately in the seed production field. On the other hand, the risk of disease infection cannot be reduced to zero as long as it is cultivated in open fields. Therefore, if seeds are affected by disease or at risk of disease, seed disinfection is necessary to ensure seed health. Seed disinfection includes agrochemicals, hot water, or dry heat treatment, and seed companies treat seeds with the necessary measures. Fungicide dressing and soaking are relatively simple treatments, but basically all of them require delicate temperature control and special equipment, so individual farmers rarely implement these treatments. In the case of the above-mentioned mosaic disease, it is necessary to apply dry heat treatment, if it is caused by a virus. Otherwise a non-infected strain should be carefully selected in order to collect healthy seeds from the strain.

Proposing seed disinfection technology in Sri Lanka

The author was dispatched as a short-term expert of "vegetable seed postharvest technology" to "The Project for Enhancement of production system of certified vegetable seed in Sri Lanka" which had been implementing by JICA from 2012 until 2017. In general, "postharvest" includes harvesting, postharvest ripening, pre-cooling, selection, grading and packaging, but in a broad sense it may include transportation, processing, and marketing. Under this project, I divided the series of processes from harvesting to packaging of vegetable seeds into four fields, namely, "Pre-/Post-harvest technology", " Pre-storage processing technology", "Storage technology", and "Seed treatment technology for shipping". My assignment covered a rather wide range of activities, including technical guidance to farmers, review of inspection standards and management methods after harvest, adjustment of seed selection machines, advice on storage environment and packing, although the title was simply "postharvest".

The most problematic subject among them was seed disease infection. When I visited a seed production field, major seed-borne diseases such as tomato bacterial canker and virus diseases were observed, but no appropriate management was done. In addition, disease pathogens were detected from domestic and imported seeds. Therefore, seed disinfection seemed to be an indispensable technology for the seed business in Sri Lanka, whose mission is to produce and supply good quality seeds.

Training on seed disinfection technology was conducted for 20 staff in charge of departments responsible for seed production and quality control. Due to time constraints, only training was able to be implemented, but necessary technologies were transferred as much as possible by combining lectures and practical training. It was regrettable for me that I could not be involved in the subsequent process, because it takes time with trials and errors to apply and establish the technology. However, later I was told that they were continuing seed disinfection seeking better solutions. We hope that introduced post-harvesting technologies including seed disinfection will be useful to improve the quality of vegetable seeds in Sri Lanka.

Training on seed disinfection technology