

Let's think about seed quality <Part 2>

What is the quality of seeds?

In-house seed production and purchased seeds

Seeds are essential materials in crop production. There are two ways for farmers to obtain seeds; one is in-house seed production and the other is purchasing seeds from the market. In this part, we examine the advantages and disadvantages of each method of seed procurement.

Obtaining vegetable seeds

In the case of vegetable production cultivated for the market, purchased seeds are often used. In Japan, it is inevitable to purchase seeds because hybrid varieties are common. On the other hand, in developing countries, it is also popular to purchase seeds, although farmers are relatively poor and open pollinated (OP) varieties are widely used.

The primary advantage of in-house seed production is saving the cost of seeds for farmers. Secondly, it is anticipated to be able to select favorable strains adapted to the land and climate, through breeding seeds in the same area on a continuous basis. However, seed production technology differs from fresh vegetable production in various ways. Unless farmers know the proper techniques, there are risks such as deterioration or diminishing of strain characteristics and a decline in seed quality. In addition, seed production requires a long time in the field, and cleaning and storing the seeds after harvest also needs labor and technology. These are the factors impeding the in-house seed production approach.

By contrast, in the case of purchasing seeds, specialized technicians are responsible for seed production, and the seeds which have passed quality inspections are served for sale. Therefore, it is an advantage that farmers can obtain stable quality seeds, if an appropriate charge is paid. Even in developing countries, use of hybrid varieties is getting popular because disease resistance and strong vigor of hybrid varieties are advantageous in developing countries, where poor pest control materials are available. Its uniformity and higher yield are likely to be desirable characteristics for market-oriented vegetable production. In the case of using hybrid varieties, the way of obtaining seed is limited to purchase only.

Considering the required effort on seed production, the stability of seed quality and the superiority of varieties, it is likely that purchasing seeds is more advantageous than in-house seed production in developing countries. However, often seed companies in these countries do not have adequate seed production techniques and quality control abilities. For example, in the case of Uganda, most vegetable seeds are imported from Kenya, and there are problems with germination rates and vigor, resulting in poor seedling rates and bad germination uniformity. Furthermore, different varieties were sometimes contaminated. In Sri Lanka, bacterial

canker disease was detected from imported tomato seeds sold in the market. Regardless of in-house produced and purchased, it is indispensable to obtain good quality seed that personnel engaging in seed production and quality control have proper knowledge and skills.



Farmers threshing brassica seeds; a completely different technique from fresh vegetable production is required.

Germination test of seeds purchased in Uganda: germination rate was inferior to package display. Germination vigor was also bad.

Obtaining cereal seeds

Since crops such as beans are themselves crops seeds, preserved products can be used as seed as they are, and in-house seed production is easy, unlike the case of vegetables. Corn is a cross-pollination plant, which is easily deteriorated due to out-cross pollination or inbreeding depression. On the contrary, in the case of most grains and beans except for corn, degradation of varieties is relatively unlikely to occur, because they are self-pollination plants.

In the case of rice, even if recommending the use of purchased seeds, it can be updated once every three years. Generally, a system that uses both in-house produced and purchased seeds is recommended. In the rice promotion project in Uganda in which AAI is involved, we are trying to disseminate upland rice and paddy rice cultivation with in-house seed production by farmers. The next issue will discuss efforts related to rice seed production in this project.

Seed supply system in Japan

In Japan, private sector companies are responsible for supplying vegetable seeds, and they provide quality seeds under the principle of market competition. Meanwhile, for major crop seeds such as rice, wheat and soybean, the national or local governments have been responsible for producing and supplying quality seeds, under the "Main Crop Seeds Act (seed law)". However, in April 2017, legislation was passed to abolish this seed law. It is an event that greatly changes the supply system of major crop seeds in Japan. Private enterprises are expected to start breeding and supplying the major crop seeds after the abolition of the seed law. On the other hand, there is also anxiety about the stability of supply of major crop seeds including rice or the diminishing of local varieties. The seed supply system in Japan is also in transition.