

Are Japan's cultivation techniques and the wisdom of creative Japanese farmers applicable?
– Case study of training activities at Tsukuba International Center -

Part 3: Should we plant a whole potato or cut a potato before planting?

In Japan, it is common to prepare seed potatoes three weeks prior to planting. First comes the nurturing process; sprouting in an environment that has a low temperature (10 – 20°C) and strong sun light. Then, before planting, seed potatoes are cut into two or four 50g pieces. The potatoes are normally cut through the apical bud to the apical end, however some large scale farmers use smaller 30g uncut seed potatoes that are planted using a machine after sprouting in sun light. Seed potatoes should normally be 40-60g and if a very small seed potato is planted, it may delay the growth and reduce production. However, it is not guaranteed that a large seed potato will yield more crops.

In high yield cultivation techniques, the quality and size of seed potatoes, as well as whether they are cut or uncut seed potatoes, greatly influence the growth and harvest. Therefore, the vegetable cultivation technique courses include experimentations on harvest amounts from cut seed potatoes and small uncut seed potatoes. They also include lectures on potato cultivation, a visit to the National Center for Seeds and Seedlings (NCSS) in Hokkaido to learn about seed potato production and distribution, and a visit to farms employing machine planting. Advantages of using small size uncut seed potatoes are that one can avoid section work, reduce the danger of virus transmission, and one can machine plant them. However, we tell our trainees that, as it is not necessarily easy to produce small size uncut seed potatoes, it is more common to use cut potatoes. We try to assist trainees in how to choose which kinds of seed potatoes are better suited to them, looking at cultivation size, status of machine use and the cost of production including the cost of seed potato production.

In the training course for Tajikistan, which began in 2000 and was held for four consecutive years, we had experiments for summer/autumn potato cultivation using cut seed potatoes. For the trainees from Tajikistan, it was the first time to encounter the section treatment of seed potatoes. The result of the experiment was beyond their expectation, and the trainees were discussing their plans to cultivate potatoes in their country using the newly acquired method. When Mr. Zaitso of AAI visited Tajikistan in 2002, he received a report from a former trainee. “We used to plant uncut potatoes, but by cutting seed potatoes, we could increase seed potato numbers and increase the planting area.”

On the other hand, a Nicaraguan trainee who participated in one of the vegetable cultivation technique courses in 2006, reported the low production of potatoes in his work area. He cited three main reasons for the low productivity. These were 1) difficulty in obtaining seed potatoes; 2) the high price of seed potatoes; and 3) the small number of available disease-free seed potatoes. He also reported that uncut seed potatoes are used in his area. They are imported in 20 kg sacks, and the size of the seed potatoes in the sacks varies significantly. There has been no examination conducted to test the productivity of different sizes of the imported seed potatoes. Therefore, he stressed that it was urgent for him to find out how different sizes of seed potatoes influence harvests and an individual experiment was conducted to look into this. In this experiment, we used four different sizes (20g, 40g, 60g and 85g) of uncut seed potatoes, using a variety called ‘Dejima’. We compared stem numbers in each treatment plot, the number, weight and total yield of different size categories of crops (<50 g, 50-100g, >100g). The results were that the bigger seed potatoes sprouted faster than others, had more stems, grew more vigorously and yielded more crops. Seed potatoes in the 85g group had the highest yields. Seed potatoes in the 40g group also had satisfactory yields and this proved that small, uncut seed potatoes, with adequate sunlight sprouting treatment, can be used as a viable seed potato. Based on the results of this individual experiment and as an output of the training course, an action plan was formulated to conduct a similar potato cultivation experiment under the local environmental conditions in Nicaragua after his return, and to share the results with local farmers. We expect that the trainee will be able to provide appropriate advice to local farmers based on the results.



Potato cultivation training (Nicaragua)

As introduced here, trainees continue to experiment in the environmental conditions in their countries and conduct extension activities, based on what they learned and experienced in potato cultivation technique training courses in Japan. This kind of support will be even more effective if we continue to provide advice through strengthening post-training follow-up support in the trainees' home countries.