Improvement of vegetable cultivation course:
AAI's effort to link abroad experience and training in Japan <Part 2>

Local application and extension of useful technologies

This training can be divided into 2 parities and 1st part identified training needs and assembled the information in a table format using the CUDBAS method. The 2nd part involved a range of training using the 'five senses' for applying knowledge acquired from field experience, and development of a simple cultivation manual using free software for extension purposes. In our experience, extension workers and researchers in developing countries often conducted extension activities based on the themes indicated by their bosses. For example, they would conduct regular yield surveys, and they would conduct technology extension when new equipment and materials were obtained for farmers to use. However in some cases, they didn't have sufficient capacity to be able to respond to farmers' demands. I also observed laziness, lateness and incompatibility often using lack of equipment as an excuse. Our lectures and practices were designed to introduce technologies that can help participants develop capacity to be able to respond to these issues.

We at first set a training task and discussed what capacity participants needed to acquire during the training in order for them to be able to successfully complete the task. The task which we set was "What is the required capacity to provide high quality extension services to farmers in vegetable cultivation?" We divided the target group into extension workers and researchers. Then we classified the necessary capacity into three categories: knowledge, ability and attitude. For each category, we encouraged individual participants to provide ideas freely, putting down the kind of ability needed for each on a 'Post-it' sheet. The contributions from each group were put together and read in front of everybody. They were categorized per task and per type. Later on the categorization results were put into Excel charts and introduced to everybody.

Group and Region-Focused Training Course on Vegetable Cultivation Technolo

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Title : Necessary Ability for **Extension worker**

Duty	Ability									
1	1-1	A	1-2	A	1-3	B				
Field Management	Skill of Field Preparation		Can instruct to farmers on field preparation		Ability to measure approximately of farmers field					
2	2-1	A	2-2	A	2-3	A	2-4	A		
Irrigation	Know about irrigation method in field.		Have knowledge On micro irrigation system.		Can instruct for user for irrigation of vegetable.		Skill on operation of micro irrigation system.			
3	3-1	A	3-2	A	3-3	A	3-4	A	3-5	A
Nursery	Know process of sowing of vegetable seed		can instruct farmer on raising seedling.		Have knowledge on nursery management		Know the raising seedling in green house.		Skill on nursery management	
4	4-1	A	4-2	A	4-3	A	4-4	B	4-5	C
Soil	Can sample soil by using 5 sense		Know how to soil sample		Know hove to improve the soil productivity		Know about the soil condition		Can prepare soil for cultivation	

Chart systematically indicating results of discussions

CUDBAS stands for a method of Curriculum Development Based on Ability Structure. It aims to develop effective curricula by writing down the capability of people who are nurtured in vocational training and by conducting structural analysis based on the information. This method can be applied for many other purposes. It enables us to sort out vague concepts, ways of thinking and ideas and systematically structure them. (Source: Laboratory of Skill & Technology Education - Kazuo Mori)

We could only go as far as sorting the information about elements of capacity to be obtained in charts. However individual participants could self-examine which parts of individual capacity need to be strengthened, through comparing the abilities that need to be acquired as per their own assessment and abilities that are supposed to be acquired through existing training courses. This method should be understood as an approach that allows self-examination of necessary abilities to complete particular given tasks and to deliver training tasks based on farmers' demands, rather than simply enabling people to complete given tasks.

Now, we would also like to introduce a training method that utilizes 'five senses', which is the 2nd part of the training. As mentioned earlier, in developing countries, so often one doesn't have access to a kind of equipment that could help extension work. For instance, when asked questions such as "What is the size of this field and how much fertilizer input is necessary?" or "What is the level of sweetness of this watermelon?", some extension workers may respond with ambiguous answer such as "I cannot tell because I don't have measuring equipment." or "It is very sweet.", blaming the lack of equipment. This often results in farmers losing trust in extension workers. We ourselves have experience in recognizing our lack of ability to respond to farmers' demands and receiving a look of no-confidence from farmers.

We had a practice to use 'five senses' for measuring in their daily lives. For example we taught how to roughly determine salt concentration, and sugar concentration of various vegetables by tasting. We also taught how to estimate soil texture by touching, how to measure field size using stride length, and how to estimate weight using various containers. We also introduced methods to estimate yields from rice panicle from their drooping level, to judge gradient of slope, and to estimate water volume looking at river flow speed. By having this type of knowledge, extension workers can answer all the aforementioned questions from farmers. This kind of sense-based ability will enable extension workers to garner farmers' trust, and enable them to carry out training of farmers even without equipment.

Training scene

Simultaneously, many cultivation manuals in developing countries are packed with letters. Guidance is often given with numbers (e.g. 35 kg/ha of synthetic fertilizer), and it is hard for farmers who may be illiterate to use the manuals. In order to deal with this kind of situation, we provide a practice to develop a simple 1-2 page manual which is coated with a water proof sheet, which is picture oriented and with less letters. This manual is produced using extension workers' PC, camera, free software and a simple printer, as well as plastic bags. In this manual, we try to avoid number based expressions as much as possible. Instead we frequently use other ways of measurement such as use of different types of containers (e.g. one bucketful), or expression of lengths using body parts (e.g. arm length and finger width). Through this training, we hope that the participants will enhance their extension capacity based on improved ability to think and judge.