

Tsukuba Kid Doctor

Tsukuba Kid Doctor is a summer holiday event which is organized by the Tsukuba City targeting elementary and junior high school students around the country. Participating children carry a special passport and go around various exhibits and events organized by research and other organizations, where they can learn cutting edge technologies and natural sciences. At each place, children receive a stamp on their passport, encouraging them to visit as many places as possible. This year a total of 39 facilities are participating in this event. Children can visit experimental research centers which are usually off limits to the public as well as company research centers. Some offer events where kids can gain hands-on experiences such as extraction of DNA, wearing robot suits and conducting concrete destruction experimentation, experiences which are new and surprising to adults, too.

JICA Tsukuba also participates in this event every year, and during the summer holiday, permanent exhibits in public areas are consolidated and the number of “ethnic cuisines” from different countries increases in canteens. During the event, JICA Tsukuba also organizes four events where ‘Tsukuba Kid Doctor’ participants can interact with JICA training participants and enhance their familiarity with international understanding and agriculture.

AAI is also running one of the events through our training course on vegetable cultivation technology and marketing method for small scale farmers. This year’s theme is “Let’s become a watermelon doctor!” We offered a lecture on watermelons and measuring of sugar content of watermelons. Children can also eat the watermelons! Although our participants who were at the event did not necessarily speak Japanese, we could observe children enjoying interacting with them, cutting watermelon and looking into Brix meter (sugar content gauges) to compare the sweetness of different watermelons. We hope that we offered an event which left good memories for the children who came to Tsukuba during their summer holiday.

By the way, every year, we are struggling to come up with ideas for a good hands-on event. It is actually one of the more difficult duties of ours!

The reasons for the difficulties are as follows. Firstly, the target age group (elementary and junior high school students) is very wide ranging from 6 to 15 years old. The majority of child participants are elementary school students. It is a

challenge to draw interest from every child participant given the age differences. In addition, although children’s concentration levels are high, they do not last long. Therefore we need to communicate key elements in a short time. At the same time, we cannot use technical terms which we often use and we should not talk fast. Given these factors, we decided to run the session using quizzes. We organized the session so that we gradually shifted from easy questions to more difficult questions in order to cater for the wide age group. We also tried to draw their attention to the speaker away from slides from time to time. I think it went pretty well. But there are quite a few children who are rather knowledgeable and they sometimes provided the right answer as soon as questions were asked. Apparently, these facts are often used as trivia in Atlas and school correspondence notebooks.

After generally studying about watermelons, we conducted hands on measurement of sugar contents using Brix meters. Sugar content gauges are actually well known among children thanks to a TV program featuring idol singers working on farms. However, nobody has really used one before and they tended to enjoy it a lot. We asked children to check sugar contents of different parts of a watermelon – the middle part, around seeds and the outside part. This showed the difference with numbers and they then ate the experimentation material to confirm the results with their taste buds. Often older children tend to dominate a group. Therefore we specifically asked our JICA training participants who were facilitating each group’s work to ensure that everybody had a chance to speak and contribute. Of course we also conducted a rehearsal with the participants. We also paid attention to the disinfecting of knives and cutting boards and make sure that towels were clean in order to ensure hygiene.

Although it is quite difficult work, children’s smiles are a special reward which we can only obtain from this event. I am happy when we receive positive comments in the post-session questionnaires, such as “lecture was easy to understand,” and “I was happy to be able to talk to the participants (from other countries).” Still the most common comment was that “the watermelon was delicious!” The watermelons we used were harvested in our experimental plots as part of the vegetable cultivation course. Therefore what better reward could there be for the producers, than people enjoying eating our watermelons!

(By Sawada, August 2014)



Being a good “interface” <Part 2>

Extension workers, linking farmers and researchers

In this series, we try to discuss the interface between farmers and researchers, using “linkage” as a key word. The importance of extension workers in creating linkage is obvious. We have been introducing various examples from our extension projects in AAINews. We may be repeating ourselves to some extent, however, in this series, we would like to summarize the important points sorting different issues from the viewpoint of interface.

Efforts to reduce the distance between farmers and researchers

In order to communicate information and technologies smoothly, it is important to have established organizational and individual linkages for communication. Largely, such linkages “appear” to exist in many developing countries. However, often the problem is that these linkages are not properly functioning. Their establishment has been, something like “building a Buddha statue without putting any soul into the endeavor.” What we learned through project implementation is that it is important to build close relationships between people, because what is effective is to increase time and opportunities for extension workers and researchers to be together working jointly. By getting to know each other, “blood” flows through existing organizations and systems, which makes them work organically.



Linking extension workers and researchers through practical training on how to use a pressure meter

Necessity of communication skills

Communication is also an important key word in this series. During implementation of projects, we often receive requests from partner organizations and counterparts to improve communication skills of extension workers. There are kinds of skills that can be nurtured through training, and there are others that can be obtained through on-the-job experience. What projects can do is to offer places and opportunities for extension activities in order for extension workers to gain experiences. Through this type of support we can

achieve autonomous enhancement of communication skills, and this was our project’s intention. On the other hand, listening is a skill which extension workers are supposed to possess and it is important to strengthen such a skill through technical training.



Linking extension workers and women in farming communities through surveying household finance

Use of equipment that leads to trust and confidence

In addition to communication skills, what is necessary for effective extension activities is equipment which extension workers can use in farms. For example, if extension workers have simple equipment to measure irrigation pressure or salt content of irrigation water, they can provide appropriate advice based on the measurement results. This will increase trust of farmers towards extension workers as well as developing extension workers’ self-confidence.

Could we nurture super extension workers?

Incidentally, when implementing projects we sometimes meet super extension workers or super counterparts whose existence affects a project’s success in a major way. Is it possible to nurture potential of any extension worker to make them a super extension worker through training and accumulation of experience? How can one become super extension workers? These are some of the questions we need to seek answers for.

Changing Roles of Extension Workers

It has been some time since the separation of research and actual needs of farmers was identified as an issue and we described the background to this concern in the first part of this series. In addition, diversification and sophistication of extension needs are making extension activities more difficult. For example, rather than extending technologies, extension workers nowadays need to play a coordinator’s role in establishing organizations or systems for sales of agricultural products, placing importance on marketing for profitable agriculture. We need to pay attention to the changing roles of extension workers, when considering them as an “interface”.

A Memoir of Kassala, Sudan <Part 2>

Sorghum and rain-fed agriculture

On my way from the capital Khartoum to Kassala, as the Nile recedes, sorghum fields start to dominate the landscape. In the rainy season, dark green plants shoot up to 2m. During the dry season they wither, and, after harvest, the land is used for cattle grazing and grass collecting. Sorghum is not familiar to many people in Japan. However globally, is it the 5th most commonly traded cereal after wheat, rice, maize and barley.



Harvesting sorghum



Varieties of sorghum

In Sudan, there are some wheat schemes with river irrigation originating from the cultural complexes of Mediterranean cultivation. However there is hardly any maize cultivation which originates from the cultural complexes of New World's cultivation. What is predominant in the vast landscape is sorghum cultivation which came from the Ethiopian highlands in old times. Most of the farms are dependent on rain for water. Sometimes small fields of millet are seen at the edge of the sorghum fields. In Sudan, sorghum is used for traditional food such as *kisra* (fermented bread) and *aseeda* (paste product) and drinks such as *helamor* which is drunk during Ramadan. While grains are the main food in Sudan, stalks and leaves are important livestock fodder and are exported to neighboring countries.



Raw material for fermented drink *helamor*



Sorghum juice

In Sudan, sorghum is still the most important crop, however its characteristics are that the crop is cultivated under a highly unstable rain-fed environment. Rain-fed agriculture is often like gambling, and is often jokingly referred to as *Insha Allah* (as God wills it) agriculture. Cultivation success is outside human control and things do not often go at one's will. Also in Kassala, most sorghum cultivation is rain-fed, and agricultural areas are divided into mechanized rain-fed farming areas and traditional rain-fed farming areas. In the mechanized rain-fed farming areas, the average precipitation is between 400-500mm. Plowing and seeding machine have been used for a long time introduced in the period when the British were



Extension workers and



Growing sorghum

indirectly administering the area, and large scale farming is common for cultivating sorghum and sesame. In contrast, in the traditional rain-fed farming areas, the average precipitation is much less 200-300mm. In these areas, most work including plowing, seed sowing and weeding, is done manually by pastoralists using simple hand tools. Reasons why mechanization did not happen in these areas include low level of average rainfall and harsher climate and environmental conditions.



Drought damaged sorghum



Flour mill



Grains of variety Acramoi

Farmers in arid areas must have been devising various ways to overcome obstacles they face in undertaking rain-fed cultivation. These could include selection of adaptable varieties and planting at appropriate timing, predicting rains. In the next part of this series, we would like to dig a little deeper into these plans and improvement measures.



Use of stalks and leaves for fodder



Rain-fed field

Mini series

Greenhouses in the Middle East <Part 1>

Middle Eastern greenhouses are yellow! This is the first impression I had when I saw greenhouses for horticulture for the first time in Syria. After this initial encounter, I subsequently had opportunities to see greenhouses in various parts of the Middle East including Jordan, Iraq, UAE and other areas. The vast majority of greenhouse coloring was yellow. As I was used to Japanese greenhouses, the yellow greenhouses looked a bit peculiar! In this new series, I would like to discuss greenhouses in the Middle East which has been one of my interests for a long time, and make comparisons with greenhouses in Japan. This time I would like to focus on single-span greenhouses which are owned by private farmers, rather than the large scale multi-span greenhouses in the Gulf States constructed in what is commonly called the Venlo type greenhouse.



Yellow arch greenhouse seen in Syria

Difference in concept

Horticulture involves intensive cultivation of vegetables, fruits and flowers in structures such as greenhouses. The main reason for using greenhouses is to prolong the period of cultivation by controlling the environment inside the greenhouse to be appropriate for crop growth and minimize external environmental impact such as changing seasons. However, the purpose of greenhouses for cultivation in the Middle East seems to be totally opposite to that in Japan.

In many parts of Japan, greenhouses are used for heating and maintaining temperature. Generally speaking, greenhouses in Japan focus on extending the cultivation period into colder winter months by artificially heating the greenhouses. Therefore most Japanese farmers naturally introduce heating rather than cooling facilities. In addition, greenhouses in Japan are becoming increasingly high-tech, controlling non temperature elements such as humidity and CO₂ concentrations to promote crop growth.

On the other hand, greenhouses in the Middle East

where the summer temperature is extreme often rising above 40°C, the priority consideration is how to cool greenhouse interiors. Many greenhouses have cooling facilities but not heating facilities. In particular in the Gulf States such as UAE rich in oil, every ordinary greenhouse has a cooling facility. These differences in terms of the purposes of greenhouses may well be affecting the shapes and facilities of greenhouses.

Roof shape of greenhouses in the Middle East

Japanese greenhouses come built of many materials and in many shapes. There are glass greenhouses or many kinds of soft plastic film greenhouses. Roof shapes could be even-span, quonset or three-quarter. Whatever their shape and size, Japanese greenhouses usually have windows on the side wall and a sky window on the roof. By opening and closing the windows, air gets circulated inside the greenhouse and the temperature can be controlled.

By contrast, most greenhouses in the Middle East are arch greenhouse and quonset greenhouse. As far as the author could see, greenhouses in UAE have a quonset greenhouse, and in the Gulf States such as Iraq, Syria and Jordan, they are simple arch greenhouse. There are no windows. Working inside these arch greenhouses, low ceilinged greenhouses is difficult at the edges and corners. Even though quonset greenhouses are superior to the arch greenhouses for actual work inside, they are not commonly used. One reason for this probably is that materials to construct quonset greenhouses are more costly than arch greenhouses.



Greenhouse in UAE (Quonset greenhouse)



Even-span greenhouse in Japan



Quonset greenhouse in Japan



Three-quarter greenhouse in Japan