

Three years of “Upland Rice Variety Selection Techniques Course for Sub-Saharan African Countries.”

AAI undertook three assignments to lead the region-specific training course, “Upland Rice Variety Selection Techniques Course for Sub-Saharan African Countries” during the three years from 2006 to 2008. Even after the three-year training program ended as planned, we have been feeling the continued need for this kind of training. The importance of rice cultivation in Africa was reaffirmed at the TICAD IV held in May 2008. This is manifested in the establishment of the Coalition for African Rice Development (CARD) initiative. JICA Tsukuba is examining the possibility of continuing to organize similar courses. At this juncture I would like to report on the profiles of trainees over the last three years.

A total of 30 trainees from 12 countries completed the courses in the last three years’ three training courses. The country providing the largest number of trainees was Tanzania (six trainees), the second country was Zimbabwe (four trainees) but the total number of trainees from West Africa was just seven. There were no Francophone participants, with the exception of trainees from Benin, who were accepted within the framework of individual training as a counterpart for a JICA expert. The first year’s training course in 2006 was designated for Anglophone African countries, most of the participants came from east and southern African countries.

As shown in Table 2, all the Anglophone countries in Group 1 have been accepted into the training course, with the exception of the five Francophone countries. Gambia and Benin from Group 2 have been admitted to the course but none from the seven remaining countries. If JICA is to continue offering similar courses, it is necessary to explore the possibility of accepting the 12 countries that were not admitted in the past. In order to achieve this, a course must be designed that would suit Francophone participants. At the same time, it is necessary to continue to accept trainees from countries such as Ethiopia, Malawi and Zimbabwe. Although these countries are not CARD candidate countries, there are great needs for upland rice cultivation and there are many enthusiastic trainees in these countries.

Furthermore, as emphasized in the previous issues of AAI News, it is highly important to support activities of trainees in their countries after training has been completed, in addition to continuing to support new trainees. The former trainees in the 12 countries are important human resources who could play a significant role in the CARD related projects that will be developed in coming years. We have put together a list of all the trainees and their achievements last year so that we can share the information with JICA and other offices in their countries. We will continue our support for the ex-trainees to assist them, so that they can make full use of what they have learned in the training courses. (Kojima, Feb.2009)

Table 1: Number and Nationality of Trainees for the Upland Rice Variety Selection Techniques Course for Sub-Saharan African Countries from 2006 to 2008

Participating Countries	Number of Trainees
Benin	2
Ethiopia	2
Gambia	1
Ghana	1
Nigeria	2
Malawi	4
Mozambique	2
Kenya	2
Tanzania	6
Sierra Leone	1
Uganda	3
Zimbabwe	4
Total	30

Table 2: Candidate countries for the CARD initiative and countries that were admitted to the training course for sub-Saharan African countries
Note: Shaded countries are participating countries for the training course

		West Africa	Central Africa	East Africa	Southern Africa
Candidate Countries for CARD Support	Group 1	Ghana Guinea Mali Nigeria Senegal Sierra Leone	Cameroon	Kenya Tanzania Uganda	Madagascar Mozambique
	Group 2	Benin Burkina Faso Ivory Coast Gambia Liberia Togo	Congo (DRC) Central African Republic Rwanda		
Non CARD Candidate Countries that were admitted to the course				Ethiopia	Malawi Zimbabwe

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

Part 5: Supporting efforts to reduce pesticides use

Since 1992, improvement and development of environmentally friendly agricultural technologies has been promoting in Japan, in order to reduce the use of chemical fertilizers and pesticides. A number of technologies are being improved and developed for application, which include weeding by machinery, use of animals for weeding, use of biological pesticides (natural enemies), antagonistic plants, tunnel culture, pheromones and mulching. This has been prompted by the growing interest expressed by consumers in safe agricultural products. Consumers are aware of environmental risks and producer safety issues posed by excessive use of chemical fertilizers and pesticides applied to increase yields. In the vegetable cultivation training courses held in Tsukuba, technologies to reduce pesticides are introduced, in particular, emphasis is placed on the use of natural enemies as a means of preventing insect damage to crops, as this strategy is considered to be an effective technology to reduce use of chemical pesticides and respond to consumers' expectations. However, the technology is quite complicated and it is difficult to teach the trainees to master it. Through the farm visits, the following examples of the use of natural enemies for pesticides reduction have been introduced to the trainees.

Vegetable	Cultivation Methods	Location	Control Methods	Effects on Pesticide Reduction
Eggplant	Green house	Miyazaki	Bring in <i>Diglyphus</i> larvae that are parasitic on <i>Liriomyza</i> damaging string beans.	Use of indigenous parasites on <i>Liriomyza</i> that damages eggplant leaves, reducing the pest density leading to reduction of pesticide use.
Eggplant	Open-field	Kyoto	Surround eggplant plots with sorghums to attract aphids which in turn attract parasitoid wasps.	The indigenous parasitic wasps that come to sorghums attach themselves to aphids on eggplant. This reduces pest density and use of pesticides.
Cabbage	Open-field	Aichi	Sprinkle sex pheromones around plots and derange communication between pests and disturb coupling, reducing the pest density.	For eradication of low density cabbage moth (<i>Plutella xylostella</i> Linnaeus), indigenous spider species (natural enemies) are used. For other pests, chemicals that nurture natural enemies are used, reducing overall use of pesticides.
Paprika	Green house	Ibaraki	1) Special entrances to the green houses that prevent pests flying in, using insect proof nets and yellow lights which insects dislike. 2) Reduction of pest density using traps with sticky tapes, and prediction of outbreaks 3) Mass release of natural enemies available in the marketplace	Prevent entry of pests through seedlings and facility entrance and control initial outbreak of pests with yellow and blue luring tapes. At the same time, observe pest density to judge the timing for natural enemy release. When the density is low, natural enemy is used for control. Once the density starts increasing, use selective pesticides, reducing overall amount of pesticides use.

In all the examples, it is understood that application of non-selective pesticides could actually increase pest numbers. This is called a resurgence phenomenon and the pest density could be higher than a situation without any application of pesticides. While natural enemies are controlling pest density, pesticides should not be used. Once the pest density starts increasing, selective pesticides that do not harm natural enemies are used. When using natural enemies for pest control, appropriate application of pesticides is highly important.

In 2008, a trainee from Mongolia conducted individual experiments on pest control methods that use natural enemies and do not rely solely on pesticides. In Mongolia, cabbage farmers were troubled by pests such as the diamondback moth (*Plutella xylostella*), the small white butterfly (*Pieris rapae*) and the cabbage moth (*Mamestra brassicae*). As a result of repeatedly applying synthetic pyrethroid, a non-selective pesticide, it has become difficult to control the diamondback moths that are reducing crop yields. In the individual experiments of the Mongolian trainee, four different sections were created in a cabbage plot, and cabbage yields and mortality rates of the moth's 3-stage larvae against the five different pesticides used in the experiment were compared. The result shows that the synthetic pyrethroid pesticides when used repeatedly in large quantities kill natural enemies and lead to a resurgence of moths and an outbreak of resistant moths, which in turn make pest control difficult.

In order to control and eliminate pests, it is essential to establish effective preventative measures for pest control and methods that enable accurate judgment in timing and application of appropriate measures. These measures could include some preventative tactics such as growing the right crops in the right areas, rotational cropping, use of low competitive varieties, selective use of pesticides, creation of desirable habitats for natural enemies with the right temperature and humidity and laying banker plants that lure their prey (pests), and appropriate application of fertilizers. Monitoring of pests and natural enemies through plot observation and accumulation of data and data analysis are critical for determining pest control measures. The combination of different techniques is also essential for reducing pesticide use. It is expected that trainees will learn about the importance of integrated pest management (IPM) from our training, and will promote this approach in their own countries.

Japan's agriculture and AAI

Part 5: Report from Hamamatsu – Agriculture as business and marketing

In the previous parts of this series, we introduced organic farmers in Satomi, Ibaraki Prefecture and Ushimado, Okayama Prefecture, as well as non-profit organizations (NPOs) in Kanra, Gunma Prefecture. In this part, we would like to introduce some examples of agricultural business, focusing on production and sales of agricultural produce by corporate and NPO organizations. These examples are based on the activities of people whom we happen to know, and are not really representative examples of today's agricultural business in Japan. However, we believe they are typical examples of different types of agriculture in Japan.

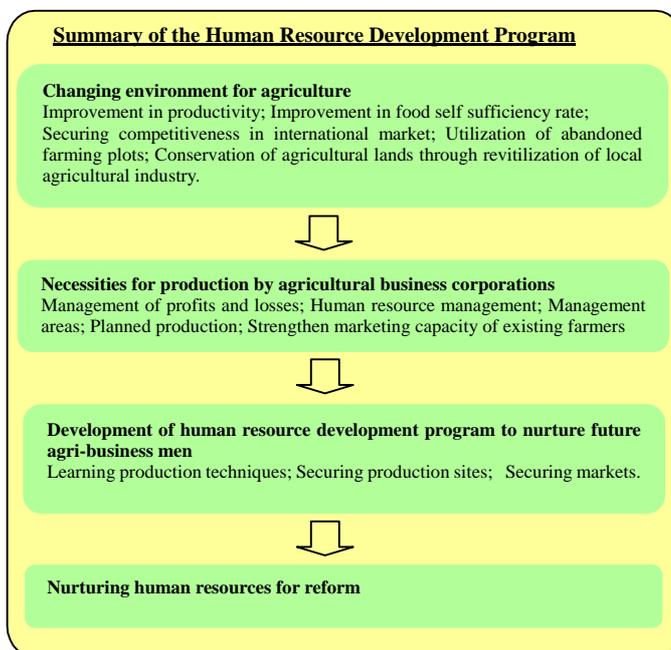
This time, we visited two farmers in Hamamatsu. One is Mr. S, who recently started an agricultural business, running open-field broccoli farms using abandoned farming plots. Another farmer is Mr. K who was born into a melon farming family, and was in the process of starting up an NPO with colleagues. At first glance, the two men look totally different, but there is one thing in common. Both of them strongly recognize the importance of a business sense in future agriculture. They are conscious of agriculture product marketing and are aiming for profitable agriculture businesses. (See page 4 for their business situations.)

Mr. S used to work for a catalogue sales company. As he comes from a marketing background, he is highly knowledgeable about marketing mechanisms and has been in the agricultural business focusing on sales. In a way, he could compensate for his insufficient experience in cultivation techniques by applying his marketing capacity. However, it is difficult to expect this kind of marketing capacity from ordinary farmers. Recently, some farmers have started bringing their produce to Mr. S, asking him to sell it together with his products. The trend for forming farmer groups and joint marketing would probably become increasingly necessary for achieving profitable agriculture.

Mr. K, the melon farmer, on the other hand, is establishing an NPO with his friends and colleagues after much discussion on the future of Japanese agriculture. Their plan is to create an agricultural business body through the NPO. Although people recognize the importance of having good business sense, some farmers are better at producing vegetables than selling them. Through the creation of the business organization, people can specialize in what they are good at, and collectively realize profitable agricultural business. In addition, Mr. K participates actively in the "Agricultural Business Human Resource Development Program" that was jointly launched by the local university, the industry section of the prefectural government and business corporations, contributing to human resource development for agricultural business promotion.

Promotion of organization of farmers and joint marketing was originally the role of agricultural cooperatives. However, the reality is that many farmers, who are selling their products through agricultural cooperatives (JA), are having difficulty breaking even due to the suboptimal prices they can obtain. Some would even want to stop sales to cooperatives (JA), yet it is difficult to find an alternative market. What is needed is an entity between the producers and sellers, which facilitates sales of produce, playing "agricultural cooperative"-like roles. Such an entity will support producers and help the farmers do what they cannot do by themselves.

Incidentally, what can the AAI do to help between the producers and sellers? As reported in the previous parts of this series, AAI could provide support to producers using its experiences gained from vegetable cultivation technique courses and other activities. On the sales side, AAI does not really have much experience, but it has a wealth of information and good connections with people, which have been developed through past training activities. Using these strengths, AAI may be able to contribute to the aforementioned human resource development program in some ways. Objectives of the program are; to improve productivity and food self-sufficiency rates; secure international competitiveness; utilize abandoned farming plots; and revitalize the activities of local agriculture industry. These objectives are compatible with the AAI's objectives. We will continue to explore possible ways for collaboration, keeping an eye on the future development of this program.



Mini Series: – Field Note from Visit to Farmers in Hamamatsu

Mr. S produces and sells broccoli and other vegetables grown in the field in Toyooka town, Kita Ward, Hamamatsu City. He quit work at a mail catalogue shopping company six years ago, established his company and entered into the agricultural business. His company now has five full-time employees and 15 part-time employees. As the company rents abandoned farming plots, over 30 farms are scattered around the area. The average size of the farms is approximately 30a and the total size of the farms is 12 hectares. The area is about 10 km from central Hamamatsu City, and the landscape is a matrix of farms, degraded lands and residential lands. With the proximity to the large Hamamatsu city with 800,000 people, the company can target the city as a main consumer. The chief clients are supermarkets, which account for 70% of the total shipment, and the remaining 30% is sold to agricultural cooperatives. Basically, the buyers are local supermarkets and cooperatives, and the company is extremely conscious about the “*chisan chisho* (local production for local consumption)” movement and is capitalizing on its products being fresh, safe and its low “food mileage” (the distance food travels between the producers and consumers). Agricultural cooperatives require vegetables to meet certain standards eg. size and other attributes. This necessitates expending a vast amount of energy. On the other hand, with the supermarkets, it is possible to include products outside the formal standard, adjusting packages by adding extra vegetables if they are small, resulting in less waste. It also reduces distribution cost. Still, the company is not planning to increase the business with supermarkets to 100 %, in order to keep a “buffer” against over production and to maintain its good relationship with agricultural cooperatives (JA).

Given that people are increasingly concerned about food safety and security, while, at the same time more agricultural land is being abandoned, Mr. S. thinks that agricultural business run by corporations has a great growth potential. The fact that he has come into this business from outside without a farming background while he has working experience in marketing techniques makes him very innovative. He sees that there is still a lot of room for reducing intermediate costs as well as for cultivating new markets. He can also see what producers should do to increase customer satisfaction from the view point of consumers. A key for his company’s growth is to expand its business scale. Another important challenge is to achieve efficiency in the production process through mechanization.

Going down the coastal terrace of Tenryu River, in Higashi-ward, Hamamatsu City, Mr. K grows muskmelons in green houses. His family has been producing melons since his parents’ generation and he has 20 years of experience in melon growing. There has been substantial residential development in this area, and his green houses are located in the middle of residential lands. There is no atmosphere of a typical farming village. In the 1,000 tsubo (3,306 m²) plot, eight green houses (300 tsubo or 991 m²) are standing. Planting is done every 10 days for different green houses, and there are series of green houses that have been just planted and those that are about to be harvested. There is no off-day for 365 days a year. The amazing thing is that each melon stump is hand watered with great care. A uniform dripping system is not desirable as there are subtle differences in water requirements depending on the exact position of stumps in each green house. For instance, stumps in the southern row will require different amounts and timing of water from those in the north row and differences emerge if the stumps are on the eastern or western sides of the rows. Much work is put into creating melons with a perfect “net” pattern on their skins. It seems to be more like art production rather than agricultural production. Each muskmelon can fetch a retail price of between 5,000 and 20,000 yen. This is an ultimate form of Japan’s horticultural business which add value to agricultural products through labor intensification.

According to Mr. K, one should not try to grow melons. One must nurture melons. Growing melons mean watering and applying fertilizers and pesticides when it suits farmers. Nurturing means that one judges what each melon needs by looking at its “face” and providing what it lacks. It took Mr. K ten years until he understood this. Artistic melons are created by such workmanship.



Broccoli farms of Mr. S



Broccoli waiting to be shipped in a cool room



Melon greenhouse of Mr. K