

REPORT ON S.R.I. VISIT TO MALAYSIA, July 1-9, 2011
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Malaysia started later than most other Asian countries to begin utilizing the opportunities offered by the System of Rice Intensification (SRI) for raising the productivity of its rice sector. However, interest in SRI has grown rapidly within government, university, NGO, and private sectors after the first SRI trials were initiated, and SRI colleagues have proceeded more cooperatively in Malaysia than in some other places. In this effort they have been assisted by SRI colleagues in neighboring Indonesia, who deal with similar climatic conditions and speak a similar language. During this visit, we saw how camaraderie and ease of communication between the two countries are playing a role in SRI uptake in Malaysia, as is the complementarity of their respective agronomic situations. This trip report summarizes things seen, heard and learned during a one-week visit made exactly in the middle of 2011.

Overview of the Visit: Our visit was built around Malaysia's **1st National SRI Conference**, held July 5-6 at the Palm Garden Hotel in Putra Jaya, the very modern national capital built near to Kuala Lumpur (KL). We expected this meeting to give us a good opportunity to learn about SRI progress and problems in Malaysia, so wanted to attend and participate on behalf of **SRI-Rice**, the SRI International Network and Resources Center, which is operating at Cornell University. Much of the cost of the conference and of our visit was supported by the Malaysian Government's **Federal Land Consolidation and Rehabilitation Authority**, known popularly as FELCRA. The first three days of the visit were based at FELCRA's Training Center at **Sebarang Perak**, three hours' drive north of KL, with FELCRA administrators as our hosts.

One of the first three days was spent in a long, rewarding field visit to the state of Kedah, on Malaysia's border with Thailand, roughly five hours' drive north from the training center. After the national conference finished on the afternoon of July 6, a planning meeting of the various SRI stakeholders was held. Then on July 7, together with leaders of **SRI-Mas**, the new national SRI network for Malaysia, we met with senior executives of both FELCRA and the Ministry of Agriculture. On July 8, Lucy traveled to Kelantan province with Dr. Anizan Isahak, the new secretary of SRI-Mas, to observe SRI training and harvesting there, while Norman traveled to Indonesia for a 5-day visit with meetings and lectures in East and West Java. On Sunday, July 9, Lucy flew to Bangkok for a visit in Thailand with SRI colleagues there.

Context: On the long drive to Kedah on Sunday, the host for the first part of our visit, **Haji Annuar bin Yahya**, managing director of FELCRA's **Training and Consultancy Services**, reviewed a planning document that he had recently received from the Ministry of Agriculture. He discussed with Norman the data which showed Malaysia's rice imports continuing to increase, despite substantial gains in paddy yield. The area devoted to rice cultivation has been essentially unchanged since the 1970s, so the rice sector needs to keep raising its productivity to keep up with population growth, rather than to meet food needs by expanding the cultivated area.

Between 1980 and 2009, paddy yields in Malaysia almost doubled, going from 1.85 tons/ha to 3.68 tons/ha, a respectable increase. However, **during this same time, the country's rice imports rose 6-fold** -- from 167,000 tons to 1,070,000 tons. Due to a larger population and higher per capita incomes, domestic rice consumption rose over this period from about 1.5 million tons to 2.4 million tons, while domestic paddy production rose only from 1.3 million tons in 1980 to 1.6 million tons in 2010. Over these three decades, **Malaysia's rice self-sufficiency declined from 89% to 63%**. These numbers are all indicative of a rice sector that -- despite substantial yield increases achieved with conventional 'modern agriculture' methods -- is not meeting the country's food security needs.

The Ministry's planning document, Annuar and Norman noted, did not consider any data on *labor productivity*, on *water productivity*, or on *profitability* (farmer net income), even though the productivity of each of these factors of production is very important for farmers and for the country. Like a majority of agricultural reports, this one was preoccupied with **yield**, just land productivity, to the neglect of the productivity of these other factors of production.

One of the government's biggest concerns is that the number of rice farmers in Malaysia has been contracting, as tens of thousands of them leave rice cultivation every year. Data downloaded from the internet showed that between 1999 and 2005, **the number of rice farmers in the country dropped by roughly half**, from almost 300,000 to 156,000. In part this was because of the greater attractiveness of urban living. But a more powerful and pervasive influence appears to be the very low incomes that farmers have been earning from their rice farming in recent years.

Farmers are confronted with rising input costs that outstrip their gains in productivity. A newspaper that we had with us in the car on the drive reported a government announcement just the day before that while other subsidies are going to be cut, due to the need for fiscal austerity, subsidies for rice farmers will not be reduced because the difficult, even dire economic situation they are in (and also, not stated, because farmers continue to make up a large voting bloc within the electorate in Malaysia).

Given that Malaysia has a relatively little arable land area compared to most other Asian countries, raising the **average yield per unit area** looms large in policy-makers' thinking. Imports of rice have risen dramatically, as noted above. The worldwide 'price shock' in 2008-09, when prices for rice and other cereals shot up, made Malaysians very aware of how costly it can be for their country to continue to neglect agriculture, and particularly to neglect the rice sector. A strategy to raise productivity through subsidies is very expensive fiscally, and it becomes self-defeating if factor productivity is not increased, i.e., if higher returns from the country's land, labor, capital, and water are not attained.

These considerations figured in the thinking of all of the SRI colleagues with whom we talked during our visit to Malaysia. Given the ability of SRI crop management practices to raise, simultaneously, the factor productivities of all inputs across the board -- demonstrated now in most other Asia countries and in Africa and Latin America -- one would think that SRI would be broadly and enthusiastically welcomed, at least enough to be tried out and evaluated. However, there has not been much interest shown from the Ministry of Agriculture or its agricultural research and development institute, MARDI.

Scientific explanations and justifications for SRI continue to accumulate in the published literature, so we expect resistance to diminish in the future. Remaining reservations should be put to rest by the scientific evaluations, plus country reports ranging from Indonesia to Panama, published in a recent issue of the journal *Paddy and Water Environment* (9:1, 2011).

It was hoped by colleagues who have begun working with SRI practices in Malaysia for three years now that convening a national conference which brings together and publicizes various SRI experiences could reduce lingering skepticism. Further, it was hoped that through the conference, various stakeholders in government agencies, NGOs, universities, private sector, and particularly farmers and their organizations could become more engaged with SRI ideas and practices, working together, evaluating and adapting them to local conditions, making them more widely known and available.

Friday, July 1: Arrival and Travel to Sebarang Perak

Norman arrived at Kuala Lumpur International Airport about 11 am and was met by two executives of the **FELCRA Training and Consultancy Service** who were hosting our visit, the Service's managing director, **Haji Annuar bin Yahya**, and his associate, **Rohaizat bin Ahmad**, senior manager and knowledge facilitator for the Service. Coincidentally on the same flight from Manila with Norman was **Victor Lee**, who has been working on the introduction of SRI methods in the Malaysian state of Sabah, on the island of Borneo/Kalimantan, having previously contributed to SRI's introduction in Indonesia.

Soon Annuar, Rohaizat, Victor, and Norman were joined by two SRI colleagues from Indonesia: **Dr. Iswandi Anas**, director of the Soil Biotechnology Laboratory at the Institut Pertanian Bogor (IPB), and Pak **Ahmad Jatika**, co-founder and director of the **Nusantara Organic SRI Centre (NOSC)**. Pak Iswandi is also chairman of the **Indonesian Association for SRI (Ina-SRI)**, and a senior advisor to NOSC. This NGO was started as a training center in Nagrak, West Java, but it now has affiliated training centers in eight locations throughout Indonesia, and is soon expanding with three more local centers being planned. NOSC has been assisting FELCRA with its SRI curriculum and training since an agreement was signed between the two organizations in early 2011.

Also joining us at the airport was Dr. **Anizan**, an associate professor at the national university, **UKM (Universiti Kebangsaan Malaysia)**. She has been since 2008 the voluntary national coordinator for an emerging SRI-Malaysia group. She headed the organizing committee for the national SRI conference, working closely with all the various stakeholders who are introducing SRI in different parts of the country.

After going to the airport mosque for mid-day Friday prayers, the group returned to the airport terminal to meet **Lucy**, who arrived about 3:00 from Bangkok. After lunch at the airport, the long drive to **Seberang Perak** was made in two cars, and that evening everyone got settled in at the training center for the next day's activities, first having supper with Center staff and a third batch of trainees who were scheduled to complete their SRI training on the next day.

Saturday, July 2: Agroecological Activities in and around the Center, and Meeting with Trainees

After breakfast, the first activity was a field visit within the Center itself, going to the plots where the participants in the third SRI training course at Seberang Perak have been practicing SRI transplanting methods and observing subsequent plant growth. The course has been assisted by Indonesian trainers from NOSC who have extensive experience both with SRI methods and with training farmers and technicians in the methods. During the course (and during the previous two SRI courses at the Center), FELCRA staff have gained experience and skill in training, so that the Center can become self-sufficient in this capability and can give leadership within Malaysia on SRI training and dissemination.

The second activity that morning was a visit to two large paddy fields about 5 km away where agroecological methods are being introduced. FELCRA faces several challenges for more widespread SRI adoption. Its methods can be fairly easily managed by smallholders on relatively small plots. But FELCRA has responsibility for much larger-scale production. A large signboard that we passed announced that this is 'The largest alienated paddy estate in the world,' meaning it is the largest contiguous rice area with a single legal title.

There is interest in utilizing, adapting or inventing appropriate implements to 'mechanize' the transplanting, weeding and harvesting of SRI paddy rice. Crop establishment in large-scale operations is a challenge, since young seedlings, until their roots get well established, are vulnerable to flooding by

torrential rains, and also to predation by golden apple snails. Until they are satisfied that they can cope with these factors, FELCRA crop managers are hesitant to proceed very far with SRI.

SRI farmers in other Southeast Asian countries that have similar climatic conditions have been figuring out how to deal with such stresses while benefiting from adaptation of SRI methods. But there has not been enough communication across national boundaries to help Malaysian farmers and technicians gain ideas and confidence for dealing with these crop-establishment and crop-protection problems. This is something that cross-visits to Indonesia, Philippines, Thailand, Cambodia and/or Vietnam could help with. We suggested that FELCRA might facilitate such exchanges of knowledge and experience.

After a brief visit to a FELCRA facility for **paddy seed processing**, the group – quite large as it included some faculty from the agricultural university of Malaysia (UPM) and others interested in SRI –went to FELCRA's **Biovalley Facility**, to see its biofertilizer production. The source of raw material for this operation is a large herd of cattle, stall-fed with rice straw and napier grass, and given appropriate nutritional concentrates. The facility was constructed as a fertilizer production operation, but there are now plans to get into the production of milk for additional income. As someone who grew up on a dairy farm in the U.S. with pasture-raised cattle, Norman was impressed that the cattle looked quite healthy under their confined conditions. The biofertilizer operation, quite mechanized, is turning out several tons of biofertilizer each day. Experimentations are ongoing with a variety of microorganisms, both to improve the speed of decomposition and to boost the efficacy of the final product.

The last visit before lunch was to a large FELCRA facility for making biofertilizer from the husks of palm-nut bunches remaining after the extraction of palm oil. FELCRA is embarked on a **Waste-to-Wealth** program, known as **W2W**. This seeks to produce both higher profits with environmental benefits from the recycling of waste materials. This facility is one of eight built within the last two years. Already FELCRA, which operates vast oil palm plantations in Malaysia, has been able to cut its use of purchased nitrogen fertilizer by 20%, quite a large financial saving. The facility manager said that the facility's building and machinery cost about 3 million Malaysian ringgits (\$750,000). This cost can be recovered within 3-4 years, a rather high rate of return. FELCRA aims to become self-sufficient in nutrient management for its agricultural operations in this way.

The main constraint is that some of the waste material can take as long as 8 months to decompose. Iswandi and others suggested that with use of suitable microorganisms, such as trichoderma, the rate of decomposition could be considerably accelerated. Victor Lee later suggested that by introducing some heat-process steps together with suitable microorganisms, the period of time required for converting these wastes into biofertilizer could be shortened from months to days, especially if vermicompost elements are added. This is also something that could be tried and evaluated.

Much experimentation and evaluation are still needed to refine these agro-industrial processes, although FELCRA has made an impressive start. This innovation could become profitable (cost-cutting) enough that it improves Malaysia's standing in the very competitive world market for palm oil. Disposing of massive oil palm wastes in environmentally-benign ways is itself a benefit, not evidently being worked into the financial calculations. Benefit-cost ratios are very positive without this consideration. It appears that environmental impacts are starting to be assessed and mitigated more seriously in Malaysia than in most other countries.

Back at the training center, we were shown some of the demonstrations and techniques for on-farm production of biological materials that NOSC trainers have been providing in their SRI courses. The aim is to enhance production with 'MOL,' a Malay language acronym for '**local microorganisms.**'

After a brief explanation on MOL, we joined the group of trainees for their **graduation ceremony**. Norman was asked to give a short discussion of SRI concepts and principles, which he kept within 20 minutes. Then, Haji Annuar and he handed out the certificates for course completion to the 32 trainees. This was done quickly, although still with individual pictures, before everyone joined in a splendid if late lunch to mark the end of the training program.

The group of trainees included FELCRA staff, some university faculty, two technicians from the Department of Agriculture, a number of NGO personnel and trainers, and also a similar number of farmers. The diversity confirmed Norman's conclusion from years of rural development experience that *heterogeneous* groups can be more conducive for lively and effective training programs than *homogeneous* ones. With diverse participation, more perspectives are considered, and people are less hesitant to ask questions.

In one of the trainees' group-building sessions, we were told that they had composed a song for SRI. Its words proclaimed in Bahasa Malay: '*We are crazy people, crazy people are we,*' The song used the word *gila* which in Malay means 'crazy.' As used here, however, GILA is an acronym for the expression *Gerakan Insan Lestarian Alam* -- which means 'People's Movement for Nature Conservation.' In Malay, *Insan* means 'people,' not 'insane.' The trainees were expressing their aspiration for sustainable development, designating themselves in an attention-getting way as 'crazy,' i.e., 'crazy for SRI.'

At 5 in the afternoon, a number of FELCRA staff and SRI colleagues from various institutions, most of whom had just gone through the SRI course, gathered for a discussion session on SRI and agroecology. Norman and Iswandi were invited to share some thoughts on this subject, with questions and responses continuing until almost 8.

The main focus of discussion was on **how soil fertility can be maintained** without additions of inorganic nutrients. How can reliance on compost alone give yields of 8 tons or 10 tons per hectare, or more? While fully satisfactory answers cannot yet be given, better understanding of soil microbiology and soil ecology, supported by solid scientific research findings, is shifting the paradigm for soil nutrition.

Norman pointed out that the present soil science paradigm is based mostly on analyses of soil samples evaluated under 'axenic' conditions. This means that all living organisms in the soil have been killed by sterilization or fumigation before analysis. The results of such assessment are questionable if not obsolete because dead soil functions differently from living soil. The current paradigm for assessing soil nutrients can be summarized by the dictum: *if you take them out, you have to put them back*. The implication of this assertion is that certain amounts of inorganic fertilizer have to be applied to soil to compensate for whatever nutrients have been removed by harvesting.

But this thinking, which considers mineral soils as inert, is not necessarily valid for **actual soil systems**, in which soil organisms, from micro to macro, are abundant and active. This view regards soil systems as being 'closed' -- as *zero-sum* -- rather than the open systems which they are, with solar energy absorbed and stored via various pathways. Soil systems are at least potentially *positive-sum* and can utilize the vast stocks of 'unavailable' nutrients that exist even in most 'poor' soils. Evaluating dead soils (cadavers) can give misleading conclusions about soil management where the life in the soil is mobilized.

Norman discussed some research published in *Nature* in 2001 (May 17), on how wetting and drying of soils can increase the **available phosphorus** (P) by hundreds of times -- between 185% and 1900% -- through the activity of P-solubilizing microbes, which are aerobic and thus not active in continuously flooded soils. Mycorrhizal fungi, which require oxygen to survive and to provide their beneficial services through plant roots, will also be missing or suppressed in anaerobic soil, such as flooded rice paddies. There is much still to be learned about such dynamics, but we should acknowledge that much current soil science based on analyzing cadaverous soil is not necessarily applicable to the real world.

Norman also cited research which showed how the ‘infection’ of rice plant leaves by **soil** bacteria (rhizobia) increases parameters like chlorophyll levels, photosynthetic rates, and ultimately yield. Other research has documented how the ‘inoculation’ of rice **seeds** with a certain fungus (*Fusarium culmorum*) greatly accelerates the root growth in seedlings. There is much still to be learned about the significance of symbiotic relationships between microorganisms and plants (as well as animals, including humans).

This discussion could have gone on for a long time, but it was adjourned at 8 so that all could participate in the elegant dinner that had been prepared as part of the SRI course graduation festivities, attended by the deputy president of FELCRA, **Dato Haji Abdul Fattah bin Abdullah**. There were many lively conversations all around the tables and evident enthusiasm for what had been learned.

Sunday, July 3 – Field Trip to Kedah State in the North

At 7:30 the next morning, in a couple of cars and in a rented bus, a large group drove to the northern state of Kedah, arriving about noon at a small farmhouse there, where those riding in the bus redeployed into a series of cars that were waiting for us, to drive the last 3 miles of the trip along a one-way road through patchy rain forest to reach the village in Lintong Valley which was our destination.

The rain that we had experienced along the way abated once we got to the village, and there was a large meeting hall (community center) where we could meet in relative dryness, under a big canvas roof held up by bamboo and timber supports. With us on the trip, as they had been the day before, were two **Universiti Putra Malaysia** (UPM) faculty members, **Dr. Rosenani Abu Bakar**, professor of soil chemistry and plant nutrition, and **Dr. Siti Hajar Ahmad**, professor of post-harvest processing. UPM was originally the *Universiti Pertanian Malaysia*, i.e., the Malaysian university of agriculture. But now it has been expanded and includes many other faculties and departments.

First to welcome us upon arriving in the village was **Haji Marzuki Mat Zain**, who works with the **Kedah Economic Development Authority** (KEDA), which has been supporting both technically and financially the farmers’ cooperative that hosted our field visit. Many of the 50 members of the cooperative were there to greet us, along with others who have been working with the cooperative in its introduction of SRI and its broader engagement with agroecological innovations.

The level of local enthusiasm and engagement was immediately impressive, manifesting what the late economist Albert Hirschman has dubbed ‘social energy’-- or what some others characterize in terms of ‘social capital.’ In this relatively remote location of the country, there was palpable interest in what could be learned from the rest of the world, a disposition of cooperation among the people, and a willingness to try out new ideas. Marzuki was previously involved in politics, which was evident from his articulation and style, but he is now devoting his energies to promoting environmentally-sound agriculture and broader social and economic development.

An administrative officer for KEDA, **Ms. Afifa**, who has been working with the cooperative for several years, told us something about its activities in excellent English. Her university training was in environmental science, and she has broad interests in ecologically-based development. Participating in the visit were also faculty from the **University Malaysia Perlis** (UniMAP), a regional university located in the neighboring state of Perlis, who have been working with the farmer cooperative here.

Dr. Madya Mahmud Nor Jaafar, director of the UniMAP Agrotechnology Development Unit, introduced himself and a colleague from the university, **Mohammed Zaki Abdulmuin**, to us. Zaki is an agricultural engineer who has been assisting with the development of appropriate mechanical weeders that can accomplish weeding objectives in these local soils. With them was a graduate student from UniMAP, **Abdul Halim**, who has studied in Japan and knew about J-SRI, the Japan Association for SRI established by SRI colleagues in that country.

Most interesting to us was Zaki's description of a '**robovator**' that he has developed to control weeds and promote plant growth with SRI in quite an innovative way. Farmers have observed that weed growth is less when the water in their rice paddies is turbulent, i.e., cloudy, because less sunlight passes through it than through clear water. Accordingly, Zaki designed a machine that can go up and down rows between plants by itself, with no labor required, churning up the soil and making the water above it more opaque.

The machine is used between 10 am and 2 pm, the period of greatest sunlight. As stirring up the water also disturbs the soil between rows, the operation has the effect of oxygenating the water in the paddy field. This benefits organisms in the soil beneath the layer of water because this contains more dissolved oxygen, at the same time weed seeds and young weeds receive less solar energy.

Neither Zaki nor Nor had any data yet on yield improvement with this device, but they said that one can see more tillering and more vigorous plant growth with this intervention, which reduces competition from weeds. This could become a novel and productive implement for improving SRI productivity.

In his work with rice in Madagascar, Fr. Laulanié found that there is better plant growth when the water supplied to a rice paddy, rather than just flowing in, is run into the field through a length of bamboo that drops the water onto the field from a height of several feet. This way the water splashes and make the water already in the field circulate more. Zaki's robovator takes this dynamic one step further. A higher-tech device than just a bamboo 'pipe' can provide beneficial disturbance of the soil's surface.

Marzuki's powerpoint presentation for the visiting group was titled: 'Welcome to Lintang Organic Valley – SRI Lovely.' The acronym used here, *LOVE*, stands for *Lintang Organic Valley Enchantment*. (A video on Lintang Valley is posted at: <http://pertanianselangor.wordpress.com/page/3/> in the June 8 entries.) Marzuki told us before the presentation that he had come across knowledge of SRI from the NOSC website and began communicating with Jatika. KEDA was willing to fund a visit to NOSC's Nagrak training center in Indonesia by Marzuki and several other farmers and technicians. This was what launched interest in SRI in this fairly remote corner of Malaysia. More information on SRI has been gleaned from the Cornell website (<http://sri.ciifad.cornell.edu>).

Marzuki's presentation gave detailed information on the soil chemical characteristics of the soils that they are working with in this valley. Available phosphorus was shown to be very deficient, only 4-6 parts per million, a level similar to what CIIFAD worked with in the peripheral zone around Ranomafana National Park in Madagascar, where Cornell staff first observed SRI methods.

We became satisfied that SRI deserved wider investigation and application when the Malagasy farmers with whom CIIFAD was working were able by using SRI methods to raise their average paddy yields from 2 tons per hectare to 8 tons! Such a huge increase has been reported also from smallholders in Aceh, Indonesia, after CARITAS introduced SRI methods there as part of its post-tsunami recovery program (<http://www.caritas-europa.org/module/FileLib/RiceaplentyinAceh.pdf>).

It was good to see the farmers' testing of different spacings for SRI application, to determine what would be the optimum distance between hills for their particular soils. One of the SRI plots we saw was quite impressive in terms of number and size of tillers, but an adjoining plot was seriously set back by weeds. Marzuki explained that they had not done timely weeding in the second plot. Now they understand the importance of doing weeding on schedule. Having seen what the methods can achieve when used as recommended, there is farmer support for expanding the area under SRI, he said.

After the field inspection in a light rain (this is, after all, a rain forest area), we were served one of the best home-prepared meals that we could remember, all the more impressive because the group of visitors was about 40. The simple community center served well to host a large group, and the weather created no problem. How remote the area is became more evident when we returned to Sebarang Perak by a different route, somewhat shorter but through tall forest and on roads that were not yet finished. The five hours needed for the return did not seem onerous because of the things that we had seen and learned during the three hours in the village.

Monday, July 4 – Visit to SRI Work in Selangor

After a delicious breakfast at a roadside restaurant near the FELCRA training center, Lucy and Norman traveled with Rohaizat and others south through the state of Perak into the state of Selangor, which surrounds KL and Putrajaya. Selangor has large agricultural areas and is considered one of the country's 'rice bowls,' with almost 10% of the total rice area. It produces a larger share of Malaysia's rice than this because its yields are higher than the national average.

We were met in Selangor by a remarkable husband-wife team who have become champions for SRI in that state at the request of its Chief Minister **Tan Sri Dato Seri** (honorific terms) **Abdul Khalid Ibrahim**. He first heard about SRI in Tasik Malaya, Indonesia, and was persuaded that SRI methods would be good for Selangor farmers. Upon his return, the Chief Minister asked a retired state Director of Agriculture and her husband, also an agricultural specialist, to research about SRI and later to undertake evaluations and trials of the new methods to see if they could be beneficial for the state.

The former assistant general manager of BERNAS (*Padiberas Nasional Berhad*), the national paddy board, **Salehuddin Yahya**, is widely known by his avuncular nickname **Pak Tam**, short for *Pak Hitam*, which means 'Uncle Dark.' After leaving BERNAS, he set up a company called **NS Nature Rice**. His wife, the former state director of agriculture, **Noorazimah Taharim**, affectionately as **Mak Tam**, 'Aunty Dark,' is currently working under the Menteri Besar Incorporated (MBI) which is the parent company for all the Selangor state subsidiaries.

Since 2010, Noorazimah has been writing one of the most informative and motivating blogs on SRI on the internet: <http://pertanianselangor.wordpress.com/>. Unfortunately for most readers, it is in Bahasa Malay, although Lucy who knows Bahasa Indonesia has been reading it for Norman. Even viewing just the pictures tells a powerful story (see <http://pertanianselangor.wordpress.com/page/2/> for a picture of Pak Tam and Mak Tam.) Our visit to Selangor was reported in the blog entries for July 9 and July 10.

We had been in email communication with Noorazimah (Mak Tam) for some months, so when we finally met, there were vigorous hugs. She and Pak Tam showed us a large paddy field of about 3 acres (1.2 hectares) where SRI methods are being used and where now, post-harvest, a large tractor was being used to crush the remaining rice stubble and to mix it into the soil. A solution of MOL (local microorganisms) had been sprayed on the stubble to accelerate its decomposition. This is part of a campaign to stop the burning of rice straw, which has terrible effects on air quality and is a waste of biological resources.

We were next taken to a small shop/laboratory nearby, where farmers in the area are manufacturing and selling a variety of MOL concentrates. Farmers showed us the different steps in their process and told us about the advantages and disadvantages of different MOL products made from different substrates. This combination of mechanical and biological innovations being evaluated and introduced was intended to raise rice productivity in a profitable and environmentally-positive manner.

An unstated purpose was to make rice production a more 'modern' and more gratifying economic activity for farmers. As noted already, in Malaysia there has been quite an exodus out of rice farming, considered backward and unremunerative. These innovations are putting a different face on rice production. The farmers' enthusiasm for their use of microorganisms was particularly impressive, quietly and deftly encouraged by Pak Tam and Mak Tam.

The acceptability of SRI in Malaysia will probably depend heavily upon the extent to which the labor needed for its application can be reduced through mechanization. Many of the laborers in the rice sector are now immigrants, from Indonesia or Bangladesh; and rice farmers are urgently seeking ways to reduce their labor requirements. 'Strip harvesting,' a harvest test to assess the extent of variability in an SRI crop, is shown on Mak Tam's July 12 posting: <http://pertanianselangor.wordpress.com/>, and also in English at <http://sripadimalaysia.blogspot.com/2011/07/harveslt-test-to-verify-presence-of.html> – Pak Tam's first posting on his own blog.

Pak Tam and Mak Tam have worked with agricultural engineers in Selangor's Department of Agriculture to design and manufacture **motorized weeders**, because weed control is a crucial but currently labor-intensive part of SRI management. Already, they are developing weeders that can inter-cultivate 7 rows or even 11 rows at a time. Prototypes can be seen in a video included in the May 14 blog posting at: <http://pertanianselangor.wordpress.com/page/4/>

As seen from Mak Tam's blog, Selangor State is becoming a source of innovation for advancing SRI, ranging from pest control (for golden apple snails that eat young seedlings), to utilizing microorganisms to enhance soil biological processes, to state-of-the-art mechanical engineering. The field visit was followed by a late lunch at a popular local restaurant with a large group of staff and farmers. From there we drove into urban Malaysia, around KL to Putrajaya to get checked in for the conference the next day.

Tuesday, July 5 – Day One of 1st National Conference

The conference opened at the Palm Garden Hotel, a large facility, with Dr. Anizan Isahak welcoming everyone shortly after 9 and outlining the objectives of the meeting. The first-day turnout was over 100, from government agencies, NGOs, universities, private sector, farmer groups, journalists, organic activists, retirees, quite a cross-section. Norman gave an opening keynote on *SRI in Asia: Potentials, Challenges and Returns*, followed by a bi-national presentation on *Ecological Agriculture: An Alternative* by Haji Annuar bin Yahya (FELCRA) and Ahmad Jatika (NOSC).

After a refreshment break, there was a panel of research-based papers. **Dr. Iswandi Anas** from IPB in Indonesia gave a presentation on roles and uses of microorganisms in ecological agriculture, especially SRI. He showed data on how beneficial soil organisms (N-fixing bacteria, P-solubilizing microbes) are more abundant in the root zones (rhizospheres) of rice plants managed with SRI methods, and also on how the emission of methane, a greenhouse gas, is lower. Inorganic fertilizers can to a beneficial extent be replaced by biofertilizers that increase the biological activity in the soil.

Ir. Mohamad Zaki bin Mat from a water resources management firm *Jurutera Perunding Zakie Sdn Bhd* gave a presentation on *Water Saving in Irrigation through SRI Practice: A Theoretical Approach*. This focused on water-balance analysis with conventional rice growing compared with SRI management, concluding that the latter's water requirements are about 30% lower. This was followed by a paper on *Integrated Management of Paddy Pests by the System of Rice Intensification (SRI): A Case Study in Lubok China, Melaka*, by **Dr. Maimon Abdullah** of UKM, co-authored with Dr. Norela Sulaiman and Dr. Anizan. Using five sampling methods (light trap, sweeping net, sticky trap, yellow pan trap, and pitfall trap), these researchers had identified 8 orders, 21 families, and 34 species of insects in sampled paddy fields which were visited eight times, from the transplanting of seedlings through to the ripened crop ready for harvest.

When the various orders and species collected were analyzed, statistical tests (one-way ANOVA) showed no significant differences between the sampling visits. However, when comparing collections in SRI and non-SRI plots, this conclusion was reached: *"Results of this study indicate that the rice intensification system (SRI) has ensured a good balance between the populations of pests, beneficial insects (predators and parasitoids), as well as other insects in the rice field community during the various phases of paddy development, from planting stage until the paddy grains have ripened and are ready for harvest, without any appreciable loss in yield."*

The next two papers given by UKM faculty were presented in Bahasa Malay. The first, by **Dr. Habibah Haji Jamil** and **Dr. Khariah Jusoh**, was on the mineral content of paddy soils, particularly addressing concentrations of heavy metals and with little connection to SRI management. The second considered the nutritional values of SRI rice vs. conventionally-grown rice. This paper by **Dr. Aminah Abdullah**, and co-authored with **Nur Haqim Ismail** and **Dr. Anizan**, focused on physico-chemical properties of rice, the amounts of B vitamins and antioxidants, as well as on sensory qualities. SRI rice grains had higher scores on a number of parameters, like aroma, color and texture, antioxidant activity, and sensory qualities. This is an area where we hope to see much more systematic research in the future.

Dr. Anni Mitin, executive director of the **Southeast Asian Council for Food Security and Fair Trade** (SEACON), who has been giving support at policy level for SRI introduction in Malaysia, gave the last paper, on *The Future of Rice Production: Sustainable Rice Security and Rural Livelihoods in Malaysia?* This addressed the different aspects of rice security: availability (supply), accessibility (acquisition), affordability (prices), and acceptability (safety, cultural/religious acceptance, etc.) Given the embeddedness of rice within Malaysian and other Southeast Asian cultures, policy considerations need to go beyond economics (although important) to consider issues like cultural heritage and biodiversity. A particular concern is that two commercial varieties (MR219 and MR220) are now dominating the rice sector in Malaysia, making it more vulnerable than before to various pest or disease attacks.

After lunch, there was a forum on SRI experience in different parts of Malaysia, chaired by Dr. Anni. There was a report from **Kelantan state** by **Eng. Aep Saipudin bin Sukriadi**, an Indonesian rice farmer

who has been assisting with SRI in that state for several years. **Dr. Asarudin Haji Ashari** talked about his work with SRI in the **state of Pulau Pinang**, where Penang is located, and **Salehuddin Yahya (Pak Tam)** spoke on SRI experience in **Selangor state**. Finally, **Ms. Ratty Hatika Ulin**, a student at UKM who comes from a rice-farming family in **Sabah state**, reported on the work there of the NGO **PACOS Trust**, which is introducing SRI in Sabah. The PACOS acronym stands for *Partners of Community Organizations*.

Aep started by saying that he had relocated to Kelantan state to prove that SRI can produce even better results in Malaysia than in Indonesia. "Come and see for yourself," he encouraged participants. He said that whereas with agrochemical-based rice farming, fish had almost disappeared from the rice paddies in Kelantan, there are now eleven species found where he is working. The first season, SRI rice plants had 60 tillers; and the second season, they had as many as 90. The third season, the highest was 120; and in the fourth season, all had at least 30 tillers, and the highest count was 140. In the most recent season, one SRI plant has reached 160, he said, with 85% of them productive, and with no crop diseases.

So, Aep said, he is very optimistic about SRI prospects in Kelantan. With typical modesty, he concluded by saying: "I am very sorry for not saying so many clever things as everyone else, but I have been working in rice paddy fields for the past 25 years." The numbers that he reported were, of course, much more than 'clever,' and 25 years of experience in growing rice is nothing to apologize for. He added that he is now starting work with SRI ideas for vegetables, and invited everyone to join him in "going for the natural way of agriculture," to benefit farmers and the environment

Dr. Asarudin's background was almost the opposite of Aep's, although he is now in the same 'business,' i.e., promoting SRI and organic agriculture. He worked previously in the construction sector, managing multi-million dollar contracts to build facilities in the Persian Gulf. His special line of work became converting bankrupt universities into viable operations, something that he had done in Cambodia, Malaysia and Saudi Arabia. His orientation was reflected by having received a Cheveningen Scholarship, which according to Wikipedia is a prestigious and highly competitive award given to a small number of international students who have demonstrated leadership potential and commitment to public service.

One of Asarudin's business cards identified him as executive chairman of the Al-Asousi Trading and Constructing Company in Kuwait, but another identified him as managing director of Jasa Tani (M), based in Kuala Lumpur. A few years ago, he told the conference, he decided that after so much high-pressure activity in construction and administration overseas, to come back home to Malaysia to 'relax a bit.' However, this semi-retirement did not last long, as he soon joined the Farmers' Association in his district, and he was then elected to the state-level and federal-level boards of the Association.

He found it strange that of the Association's 2,500 members, only 50 were rice farmers. He had last done rice planting himself in 1956, as a youngster helping his father. When he went to the internet to update himself on rice, he 'discovered SRI.' Then he met and talked with Dr. Anizan and got further interested in SRI. He passed out a sheet comparing SRI with traditional rice cultivation. This showed yields of 6-7 tons/hectare from SRI compared to 3.5 tons in standard fashion. Seed requirements were reduced from 30-40 kg per acre down to 2 kg (5 kg per hectare). The amount of water for producing 1 kg of rice could be reduced from 5,000 liters to 2,000, and there was less cost for chemical fertilizers. The balance was, he said, overwhelmingly positive.

The only negative feature of SRI on Asarudin's list was the greater cost for weeding, and this constraint could possibly be alleviated by powered weeders. He concluded that SRI is much superior to standard methods, and he wondered aloud why the government's rice researchers (at MARDI) are reluctant to

get engaged with SRI. He said that he is planning to promote SRI with the national farmers' association, which has 800,000 members, although a much smaller number of rice farmers. With Malaysia now only 70% self-sufficient in rice production, SRI should be adopted to achieve full self-sufficiency, encouraging its practice on a larger scale with appropriate mechanization.

Pak Tam addressed the issue of mechanization but with attention also to biological dynamics. He showed how mechanical incorporation of straw into the soil could have many benefits. This would be improved by land-leveling using available technology that is practical and not very expensive. In Selangor, they have experimented with mechanical transplanting of seedlings younger than 14 days, at spacings of 18x30 and 22x30 cm, planted shallow and singly, rather than 5-8 seedlings in a clump and planted deep.

Weeding and soil aeration are an essential part of SRI crop management. Pak Tam showed pictures of the 7-row motorized hand weeder that will be developed in Selangor and also of an 11-row, tractor-mounted weeder. So far, he said there is still some use of agrochemicals with SRI in Selangor, but there is movement toward fully organic production in so far as labor constraints and soil fertility permit.

The story that Ratty then told of SRI use in her home state of Sabah was quite contrasting to Asarudin's and Pak Tam's vision of large-scale production with machine use in peninsular Malaysia. Her community on the island of Borneo (Kalimantan) is located in rain forest, an eight-hour walk from the nearest road. Already there were some impressive demonstrations of SRI practices and productivity, eliciting growing interest among villagers. Rice plants have had as many as 80 tillers, and one yield of 9 tons/hectare has been achieved, more than double previous record yields. Ratty's powerpoint included a picture of her aunt holding up an SRI panicle that was the largest that we have ever seen.



After a tea break, the panel continued with presentations on SRI experience in **Kedah state** by **Haji Marzuki Mat Zain** from the **Kedah Economic Development Authority**, by **Noorazimah Taharim** (Mak Tam) with further information on **Selangor state** experience, and by **Dr. Anizan** discussing a range of issues and opportunities for SRI in Malaysia.

Haji Marzuki focused on measures to improve soil fertility and commented that golden apple snails, a common pest in Malaysia, can be made into effective biofertilizer. In the spacing trials done in Lintang Valley, they have had SRI plants with more than 70 tillers, which has stimulated much farmer interest.

Noorazimah described how she was intrigued by SRI grown in the Tasik Malaya area of Indonesia which has been a 'hotbed' for SRI. The farmer cooperative there has 2,300 members growing organic SRI rice. They are now exporting this product to the US through the Indonesian company **Bloom Agro** (www.bloomagro.com), and this is distributed through Lotus Foods (www.lotusfoods.com). During the visit to Tunjong, Kelantan state, she met Aep, who asked her: "Who fertilized the forest?" This got her thinking: "In our agriculture, we are doing something not right." The motto and goal of Tasik Malaya farmers is: 'Health and Wealth,' she said, to be achieved through the restoration of organic agriculture. There are still many things to be learned and changed. Producing and using sufficient organic fertilizer materials is a big challenge. But serious work is getting started on this, she concluded.

Dr. Anizan reviewed the history of SRI efforts in Malaysia, spurred by the 2008 rice price crisis, which showed that the country could not be satisfied and secure with only 70% self-sufficiency. The initial approaches to MARDI to get evaluation research done were not met with any interest. So she made contacts with a number of university colleagues to join in evaluation and basic research, to expand understanding and use of microbes, bioremediation, mycorrhizae, etc., as well as economic analysis.

She has been working on the development of a **frame system** for broadcasting rice seedlings, to save time and labor cost in establishing a SRI crop with precise spacing and no root disturbance. The spread of SRI methods, she said, will help to reduce the rampant use of pesticides in Malaysia which is affecting the health of the environment and of farmers, and maybe consumers. She encouraged researchers and others in the country to come together to make the agricultural sector better serve people's needs.

Noorazimah added that "SRI is not for everybody," but this should not be an argument for ignoring SRI. No innovation should be regarded as a panacea. People should help to get SRI understood, adapted and accepted more widely as this will make for improvements in living standards and the environment. What is needed is mostly "a change in mindset." When the methods are used appropriately, the results are inspiring, she said. One of the SRI fields that she had seen was "more beautiful than any paddy field I have seen in my 33 years of working in agriculture." The discussion went an hour beyond the 5 o'clock scheduled closing for the day, so there was some hurry in catching the buses that took participants to a conference dinner at Wisma Kagumas.

Wednesday, July 6 – Day Two of 1st National Conference

Unlike most conferences that we have participated in, the second day had even more attendance than the first, about 150 persons. The first panel for the morning focused on means for dissemination of SRI knowledge.

The first presentation, by **Ms. Zakirah Othman** from the **Universiti Utara Malaysia (UUM)**, was very innovative and impressive. For her doctoral degree in communication, she is doing a thesis on the role of information and communications technology (ICT) in the dissemination of SRI. Zakirah has developed a **video game** on SRI, with 'virtual reality' graphics, which she showed to conference participants. This game is designed for training farmers, particularly young ones, in the methods and choices for practicing the new system.

The premise of Zakirah's research project is that for rice farming needs to appeal to the next generation if it is going to remain an important economic activity in Malaysia. Young Malays, even in rural areas, are acquainted with and even enamored with video games. While some of the assumptions embedded in the game appeared somewhat too simplified and mechanistic to us, the idea is appealing. The game could be made more realistic and instructive.

For example, once players have mastered the basics of SRI, a more advanced version of the game could include a random number generator which integrates uncertain factors like weather, market price fluctuations, labor availability, etc. into the decision-making process and into the structure of rewards and penalties. Neither farmers nor players will know the magnitudes of these parameters in advance; but they should take account of likely or possible variations in these factors, trying to anticipate them in decision-making since they will affect real-life outcomes.

Then there was a paper on *Building the Capacity of Young Generation through SRI*, by **Ms. Salwati Mohammed Ariffin** from the **Kumpulan Peladangnya Unit Senak** in Kelantan. This shared the concerns of the preceding paper, that rice farming be made attractive to young men and women from rice-growing households, giving them a fulfilling life and helping preserve Malaysian traditions and values. **Haji Rohaizat bin Ahmad** from the FELCRA Training and Consultancy Service then spoke about his organization's initiatives to understand and disseminate SRI. The methodology focuses on addressing and improving knowledge (*Pengetahuan*), skills (*Kemahiran*), and attitudes (*Sikap*). **Eng. Mohammed Yusof Nasir** concluded the panel with a presentation on the biological inputs that his company, **Myagri Eco-Biosciences**, is producing to improve productivity through biological inputs.

After questions and answers and a tea break, a final panel was convened to look ahead at strategies for promoting SRI in Malaysia. Norman was asked to lead off. He expressed appreciation for the speed with which a national network for SRI has come together and for the amount of innovation already evident in Malaysia for mechanization and 're-biologization' in the rice sector. Finding ways to make SRI methods less labor-intensive will be essential for SRI adoption and spread in this country. There should also be research that enlarges our understanding of the factors involved in SRI success, especially soil biology. Means for improving both water control and pest control under Malaysian conditions need to be further developed, by farmers and/or by researchers.

Since Malaysia has a tropical climate, there are abundant supplies of **biomass**, a renewable resource, available, but there need to be better means, with higher productivity of labor, for collecting, processing and applying biomass to the country's soils, not only in rice paddies, for the sake of sustainable agriculture. We are anticipating SRI convergence with **conservation agriculture** principles and practices through the use of raised beds, mulch and crop rotation. This synthesis should be worked on, as well as extending SRI ideas and practices to improving the productivity of **other crops**. This is much still to be done and learned, but Malaysia is making a very rapid ascent into the worldwide SRI community.

Dr. Barjoyai Bardai, director of the Global MBA program of the **Universiti Tun Abdul Razak** in Kuala Lumpur, identified himself as an accountant by profession, but someone very interested in sustainability and sustainable agriculture. He had learned about SRI from the internet, and the more he learned about it, the more interested he became. He had lobbied with state decision-makers in Kedah, Sabah and Selangor to investigate SRI and then had helped arrange visits to the NOSC training center in Nagrak. The good results being achieved in these states are very encouraging. He concluded with comments on SRI having social as well as technical aspects. He said that he would like to see SRI becoming a national movement, with community cooperatives at the base, making reference to 'the Mondragon model' of community self-management in Spain, which has been an inspiration to many people around the world.

Dr. Nordin Mohammad, Deputy Director from the **Department of Agriculture**, said that he was new in this position, but added that he has been introduced to more 'natural' methods of production already. The Department is aware of SRI opportunities, he said, noting that they had been introduced to the

Minister of Agriculture in 2008. Personnel from the Department have attended a meeting in Cambodia where they learned more about SRI, however they thought that it was only suitable for smallholders. From the conference he has been hearing, however, about how SRI can be mechanized for larger-scale use. SRI may still need a lot of workers, and agricultural labor is very short in Malaysia, he reminded everyone. In conclusion, he said: "The Department will appreciate whatever is done for the good of farmers." Organic fertilization, biofertilizers, use of indigenous microorganisms, and *bokashi* composting are all worth examining, he noted. Dealing with pests remains a problem (he mentioned specifically the golden apple snail), and mechanization will be very necessary for SRI adoption because Malaysia is "importing workers." While there was no endorsement of SRI from the Department, these remarks were intended to be encouraging.

Dr. Anni Mitin from **SEACON** spoke 'from a consumer perspective,' emphasizing the interests and preferences as well as needs of consumers. Consumers have a number of rights: to have basic needs met, to have safe food, to be informed about food quality and safety, and they should always have 'the right to choose, the right to be heard, and the right to get redress.' Certification of food as being organic or as meeting 'fair trade' criteria is becoming more important to Malaysian consumers. Also, ways must be found to deal with the growing threats of climate change, and to reduce agriculture's demand (footprint) for water. She cited the example of Lotus Foods in the US importing organically-grown local rices from Indonesia, Cambodia and Madagascar, giving farmers higher prices and consumers guaranteed high-quality rice.

Ir. Wan Mohd. Zamri Wan Ismail of **Air Kelantan Sdn Bhd** then spoke about water issues, and the need to focus on the wastage of water, not just on usage. Water can be seen as a gift from God; but it should also be considered in terms of its economic value, so that investments will be made in supply and also in the regulation of demand. This is essential so that water supplies will have long-term sustainability. He was particularly concerned that in Malaysia, little use is made of **abundant groundwater**, for example, in Kelantan, with its alluvial plain. In conclusion, he said that participants should not be discouraged by the opposition, even if MARDI is not yet on board. "You should go on." This elicited applause. He encouraged everyone to make good use of information technologies (IT). "SRI is about will power," he added. "If everyone in this room becomes more informed and speaks up, the country will follow, politicians will become aware."

In the time for responses from the floor, Dr. Anizan underscored the need for more research on SRI methods, mechanisms and results. There has thus far not been a very favorable environment for getting research supported, but hopefully that will change. **Dr. Shamsudin Jusop**, professor of soil minerology at the **Universiti Putra Malaysia**, raised questions about the adequacy of soil nutrients for SRI practice if there are such high yields and only organic fertilization is used, as this has much less nutrient content than inorganic NPK fertilizer.

Norman responded that organic fertilization is qualitatively different from chemical fertilizer. First, it does not have the micronutrients that are found in organic matter and that are crucial for plants forming the enzymes needed for metabolism. Second, organic fertilizers improve the structure and functioning of soil systems, which chemical fertilizer does not. He cited the maxim: 'Don't feed the plant; feed the soil, and the soil will feed the plant.'

There is much more that needs to be known about the functioning of soil systems, but most current soil science knowledge has been acquired by studying soil samples that have been sterilized or fumigated, to kill all of the living organisms in the soil, thus dealing only with inert organic matter. Dead soil functions

differently from living soil systems. Thus, much of our current soil science knowledge which is based on studying dead soil is not as conclusive as most agronomists believe. Shamsuddin agreed on this.

SRI is not necessarily an 'organic' system. If there are deficiencies in soil nutrients, nothing in SRI says one should not make soil amendments. What SRI experience does show, however, is that it is not necessary – and is not economically advantageous – to try to 'force-feed' plants with ever-larger applications of inorganic nutrients. This has negative environmental consequences, and it often makes pest and disease problems worse. Shamsuddin and Norman agreed to discuss these matters further.

After a few more questions and responses from the panel, the conference took a short break, about an hour behind schedule, to set up for the last event: the formal launching of a **national SRI network**, to be known as **SRI-Mas**. A very attractive logo had been designed for SRI-Mas, and **Dr. Abdul Fattah bin Abdullah**, deputy chairman of the FELCRA Board, whom we had met the previous Saturday and who was the closing session's guest of honor, was requested to unveil the logo with proper pomp and ceremony.



A sign-up form had been circulated to all participants earlier in the morning, inviting all who like to be part of the network to return them filled out. Anizan announced that of the 150 forms handed out, 120 had been returned, a remarkable demonstration of broad interest and support.

Victor Lee had arranged for a former Prime Minister of Malaysia, **Abdullah Ahmad Badawi**, to visit the conference at its conclusion and to have lunch with Norman to discuss about SRI, which was interesting the former PM. Attending the conference itself would have been quite disruptive given the security and other arrangements involved, but a visit to the conference room and a tour of the exhibits after the meeting adjourned went reasonably smoothly, with lots of bows, handshakes and pictures.

While participants gathered in a hotel restaurant for the concluding lunch, Norman and Victor had lunch with former PM Badawi and **Tan Say Jim**, CEO of the IRIS Corporation with which Victor is working and which is also interested in promoting SRI. They discussed how agroecological alternatives can be used more productively, and in more environmentally-friendly ways, than current input-dependent versions of agriculture.

Conference Follow-Up: That afternoon, there was a working meeting of the key SRI stakeholders, where plans were elaborated for follow-up of the conference. **Dr. Haji Wan Mohtar Wan Yusoff**, a faculty member at UKM who had played a key role in the conference chaired the meeting and was subsequently confirmed as chairman of the new SRI-Mas network. **Haji Annuar bin Yahya** of the FELCRA Training and Consultancy Service was chosen as vice-chairman, and **Dr. Anizan**, who gave leadership for the conference was confirmed as secretary for SRI-Mas.

The first agreement was that the first conference had been so successful that they should begin planning for a **second national SRI conference** next year. Dr. Rosenani and Dr. Shamsuddin from UPM were asked and agreed on behalf of their university to host the conference, probably in September 2012.

There was agreement that SRI-Mas should be an inclusive organization, with a definite but flexible structure to get work done in an efficient way. There was agreement to start planning a series of **topical workshops**, starting with one on **water management**, co-organized by Integrated Water Resource Management Group (IWRM (UKM)). Pak Tam and Mak Tam agreed to initiate a workshop on **mechanization** in Selangor to be co-organised by the Department of Agriculture Selangor, as it has taken a lead in such innovation. Annuar and Rohaizat agreed that FELCRA could organize a workshop on **SRI training** on behalf of and for the network. Other topics and organizers will be agreed on in the future.

To get more roundtable discussions on SRI with policy-makers and relevant stakeholders, including researchers, farmers and consumers, it was agreed that **Anni Mitin** of SEACON would take the lead in organizing this on behalf of SRI-Mas. She has the most experience in such initiatives and has been very active with the SRI group already. There will be need to develop a set of concept papers, policy papers, leaflets, booklets, etc. to support efforts at various levels.

The overall strategy agreed on was the same as emerged from the first international SRI conference, held in Sanya, China, in 2002, at which Malaysia was not represented because there was no SRI activity at that time: combine the efforts of academics and researchers with those of practitioners, including government agencies, NGOs and farmers themselves. This was a 'walk on both legs' strategy suggested by meeting in China, to borrow an expression of Chairman Mao.

The FELCRA Training Center involvement ensures a strong foundation for **training**, which is fundamental for SRI dissemination. The expansion and operation of a **network** for communication is also essential. There were plans to get a **list-serve** operating, perhaps as a Yahoo group, with the intention of following this with a **website**. Mak Tam already had a **blog** operating which is effective and appreciated. She will continue to make information from any and all SRI activities available through this medium.

Norman suggested that some attention be given to identifying effective practitioners in different parts of the country who can serve as **local resource persons**, something that has been effectively done by the *SRI-Pilipinas* network. He also suggested that various organizations facilitate **farmer-to-farmer cross-visits** as these have been some of the most cost-effective means for SRI dissemination, and have mobilized some excellent farmer leadership to support the work of government agencies and NGOs.

Pak Iswandi and Pak Jatika, who were participating in the meeting as observers, said that SRI-Mas can count on continuing cooperation and support from neighboring Indonesia, from Ina-SRI and NOSC. The meeting adjourned about 5 o'clock with much optimism and good will.

Evening Event: That evening, Lucy and Norman went with Victor Lee to a 'surprise birthday party' given for the former Prime Minister of Malaysia, **Dr. Mahathir bin Mohamad**, by IRIS Corporation. This was a really big affair, with several hundred guests. At our table there were five finalists (one of them the winner) of the state of Sabah's competition for the Miss Earth beauty pageant. The overall contest emphasizes environmental awareness, and this year, the Sabah event focused on SRI with all of the contestants needing to learning about things like phyllochrons, plant spacing, soil aeration, local

microorganisms, etc., taught by Victor. They were called on to present a special surprise birthday present to the former Prime Minister.

The musical entertainment was high-decibel, so conversation was not easy. Victor arranged for Norman to meet and talk briefly with the Deputy Minister of Agriculture, **Chua Tee Young**, and then he and IRIS CEO, Tan Say Jim, arranged for Norman to have five minutes with former Prime Minister Dr. Mahathir at his front table. It was not clear how much was communicated about SRI because of the loud rock music filling the ballroom. But there was indication that the SRI message was getting through to top-level political figures in the country.

Thursday, July 7 -- Concluding Meetings

The next day, we went mid-morning to the FELCRA Training and Consultancy Service's office in Kuala Lumpur, where we met again Annuar, Rohaizat and other staff. At noon, Norman went with Annuar, Rohaizat and Anizan for lunch with the CEO of FELCRA, **Dr. Juzilman Basir**, at a Thai restaurant. This was an opportunity to inform him about the formation of SRI-Mas and to express appreciation for the support that FELCRA has given to getting SRI started in Malaysia. Norman discussed with him some of the SRI experience in other countries, from which Malaysia can learn to accelerate its efforts.

Then, an afternoon meeting was scheduled at 4:00 at the Ministry of Agriculture in Putrajaya with the Undersecretary of Agriculture for Paddy and Rice Industry, **Datin Naimah Binti Ramli**. Unfortunately, other duties kept her from getting back to her office until 5:30. However, she then spent an hour and a half with our group, learning more about SRI experience in Malaysia and elsewhere, understood within the larger context of agroecological rice production. She expressed positive views about SRI, confirmed by her meeting with us and her staff until 7 o'clock. Datin Naimah welcomed continuing interaction with SRI-Mas. Her support should make rice scientists in Malaysia more open to looking at the evidence available in the country and elsewhere, not relying on negative assessments of SRI that have been published in some of the literature.

Friday, July 8 – Field Trip to Kelantan State

Early morning, Anizan picked up Lucy and Norman at the Palm Garden Hotel and drove us to the airport from which local flights, including to Indonesia, departed. Norman took a direct flight to Bandung, Indonesia. Lucy and Anizan flew to Kota Bharu, capital of the state of Kelantan, for an intensive day's visit. After arriving in Kota Bharu, they traveled by road to nearby **Tunjong**, where they visited paddy fields which have now completed five seasons under SRI management. They were met there by **Salwati Mohd. Ariffin**, who had given a presentation at the conference on Thursday entitled *Building the Capacity of the Young Generation through SRI*, and by **Pak Aep**, an Indonesian who was invited by state officials several years ago to introduce SRI in Kelantan. For a number of years previously, he had been involved in promoting SRI in Tasik Malaya, West Java, Indonesia.

As referred to elsewhere in this report, and as reported on Noorazimah's *Weblog Padi Selangor* blog, the Kelantan SRI experience has shown really significant yield increases. Yield in the fourth season on some fields reached 9 tons/ha, with one of the hills (plants) reported as reaching 160 tillers. A traditional variety *Hijrah* was planted for four seasons (two seasons per year), with seedlings 7 to 12 days-old spaced at 30 x 30 cm. Every fifth row is left unplanted to encourage the edge effect and to discourage pests. The yields increased from 3 t/ha in the first season, to 5 t/ha the second season, and finally 9 t/ha in the fourth season. (The third season was destroyed by flooding, followed by rats and birds). The golden apple snails, although numerous, did not cause excessive damage because the fields were not

flooded, so the snails did not emerge. When they did, they were collected and used as a medium for producing MOL. Ducks were also let into the fields used to reduce snail damage after the first month.

As is the current trend in Malaysia, farmers are generally unwilling to transplant by hand themselves, and using expatriate labor (primarily from Bangladesh, Thailand and Indonesia) is expensive. Although the four seasons of SRI in Kelantan were all transplanted manually by the project staff with some assistance from Thai laborers, the project is experimenting now with a transplanting machine that has been modified several times to use plastic trays imported from China.

While this technological change has not yet been perfected, the transplanting equipment still needs further adaptation for SRI use. Trials are ongoing. Farmers in Kelantan have also been working with a number of available mechanical weeders, some of which were built locally and some imported. As with the transplanter, they continue to experiment with weeder adaptations for SRI spacing and feel that they are close to getting the right design. There was consensus among all of our SRI colleagues that for SRI to 'take off' in Malaysia, a considerable degree of labor-saving mechanization will be required, given shortages and high cost of agricultural labor.

What most impressed us overall from this visit was the energy and imagination that we saw among SRI colleagues to make appropriate adaptations of SRI concepts and methods for their local conditions, an orientation 'in sync' with the philosophy as well as agronomy of SRI. In the U.S., we often say jokingly that there are two kinds of lawyers: *can't-do* and *can-do*. The implication of this classification is that if you are ever in difficulty, always try to find the latter, to advise you how to deal with your situation within the limits of the law, but with some creativity and imagination.

In introducing in various countries around the world, we have encountered *can't-do* and *can-do* agronomists. The first kind of agronomist (*can't-do*) tell us and farmers why SRI 'can't succeed,' focusing on whatever constraints that they think will block or slow SRI utilization. They regard SRI as a fixed technology, rather than as a set of insights, ideas and principles that get materialized in specific practices. The conceptual basis for SRI is not the same thing as the practices themselves. The *can-do* approach is a problem-solving one, making adaptations and trying out new ways for applying the principles that SRI has validated.

An example of a *can-do* agronomist is **Asif Sharif** in Punjab, Pakistan, who has linked SRI principles with conservation (no-till) agriculture, and with SRI on permanent raised beds and furrow irrigation. This has made SRI operations highly mechanized, reducing labor requirements by 70%, at the same time water requirements are reduced by 70%, with a paddy yield about three times the national average (see his article in the journal *Paddy and Water Environment*, 9:1, 2011, and/or 'google' the words *Asif Sharif SRI* to find extensive information about his innovations on the internet).

Whereas in a number of countries we have found certain persons spending their time and effort in trying to disprove or discount SRI, before it has been seriously evaluated with an innovative rather than mechanistic frame of mind, in Malaysia we are seeing a lot of problem-solving behavior, and also a lot of cross-sectoral cooperation, which has been key to SRI success in other countries. These are qualities that should prove beneficial for Malaysian development more generally, beyond SRI. We hope that the innovative use of SRI opportunities will contribute to overall success in meeting the Malaysians' economic, social, nutritional and other needs.

SRI progress in Malaysia can be followed at <http://pertanianselangor.wordpress.com/> on the blog that Noorazimah maintains. Even if this blog is in Bahasa Malay which not many outside the country can read, the pictures tell much of the story of SRI in Malaysia for anyone who does not read this language.