

**REPORT ON VISIT TO INDONESIA TO REVIEW SRI PROGRESS,
JANUARY 11-18, 2008 – Norman Uphoff, CIIFAD**

SUMMARY

This visit was made at the invitation of **Mr. Shuichi Sato**, leader for the Nippon Koei consultant team working with the **Directorate-General of Water Resources** in Indonesia's Department of Public Works (PU) in implementing the **Decentralized Irrigation System Improvement Project** (DISIMP) in Eastern Indonesia. DISIMP hosted the visit and arranged a very good, full schedule, with one day each on the respective islands of Lombok, Bali and Sumatra, and four days on the country's central island of Java – one day each in Jakarta, Bogor, Nagrak and Depok.

The visit included presentations on SRI to faculty and students at the **Universitas Andalas** at Padang in West Sumatra and at the **Bogor Agricultural University** (IPB); to technical staff of Public Works Department; to a diverse audience at the Nagrak training center of the **Aliksa Organik SRI Foundation**; and to colleagues in the government's **Department of Agriculture** (Deptan). Some observations that summarize what I saw, heard and learned during the visit are:

1. **Results with SRI methods continue to be impressive**, as seen from the various reports I received during the visit. The organizational support for SRI evaluation and dissemination is greatly improving, but the main force behind the spread of SRI is empirical. DISIMP's report on nine seasons of evaluation (2002-2006), with 12,133 on-farm comparison trials on 9,429 ha, showed an average yield increase of 3.3 t/ha with less seed, less water and lower cost (Sato and Uphoff, 2007). This core of evidence is being added to by other evaluations.
2. **Indonesia got an early start with SRI**, having confirming trial results already in 1999-2000. With further confirmation, SRI methods were incorporated into the government's Integrated Crop Management (ICM) strategy for rice in 2002. However, for various reasons, the acceptance of SRI did not accelerate much after that. Now, as seen from this report, there is a diversified institutional support base ready to give leadership in diffusing knowledge about SRI, promoting systematic evaluations, developing training materials and strategies, and working closely with Indonesian farmers. The pace of SRI utilization thus appears ready to pick up with many actors now assisting the process.
3. The biggest change since my visit here in September 2005 is in **the official position of the Government of Indonesia**. Its president, Dr. S.B. Yudhoyono, has explicitly and personally endorsed SRI, and particularly its 'organic' version, because of its beneficial environmental impacts *over and above* the contribution that SRI can make to national rice self-sufficiency. The government department responsible for irrigation (PU) has taken a strong position in favor of SRI uptake, and the Department of Agriculture through its Directorate for Land and Water Management is giving explicit and strategic support by training trainers. Hopefully the Food Crops Directorate will follow suit. Provincial and district governments also are getting involved in SRI promotion, which is important given the current decentralized structure.
4. **The NGO sector is gaining strength for SRI promotion**, having carried SRI forward by itself in recent years, now working in closer cooperation with the government and the private sector. The creation of a new NGO, **Aliksa Organic SRI Consultants**, provides capacity and expertise for disseminating organic versions of SRI, with strong backing from the private

sector and good links to government agencies. The **Field Foundation** which disseminates and supports integrated pest management (IPM) in Indonesia is continuing its efforts to further SRI through farmer field school (FFS) methods. Other NGOs, usually smaller, are also making SRI as part of their regular programs.

5. During this visit it became clear that **universities have become much more involved with SRI evaluation and dissemination** and are likely to play more active and effective roles in the future. The most noted institutions backing SRI are the Universitas Andalas in West Sumatra, thanks to leadership from its Rector who has done SRI evaluations personally, and Bogor Agricultural University (IPB). The latter has taken the lead to establish and operate an **Indonesian Association for SRI (Ina-SRI)**. Other universities such as Universitas Bengkulu are also getting involved with SRI knowledge generation and extension activities.
6. The biggest surprise on this visit was to see how much **support for SRI is coming from the private sector**. I knew about the leadership that the Japanese consulting firm Nippon Koei Co. Ltd. is giving through the efforts of its DISIMP technical assistance team leader, Shuichi Sato. I also knew something about the fact (but not the scope) of support from MEDCO, a large private-sector foundation that is helping finance Aliksa's training programs, and is also taking its own initiatives on behalf of SRI. I was not aware of the assistance from a major tobacco company that donated land for an SRI research center in Lombok and is supporting demonstrations in East Java; or from the Microsoft Foundation which will donate some computers and internet linkages for Aliksa's centers in Nagrak and Depok.
7. **The spreading commitment to SRI from farmers, individually and in associations** should give stability and momentum to the overall effort. The well-known indigenous water user associations (*subaks*) in Bali are starting to spread SRI there. Aliksa is assembling and supporting a cadre of highly capable and very dedicated farmers who want to share SRI benefits as widely and quickly as possible within the farming community.
8. What struck me most impressively when reflecting on the visit was the extent to which there is not just a **community of practice** springing up around SRI in Indonesia and undergirding it, but really a concomitant **community of purpose**. The diversity of partners in the emerging SRI 'coalition' is remarkable. As remarkable is the solidarity among these diverse persons: retired officials (I met one former governor and two former ministers), senior university administrators, relatively young successful businessmen who want to use some of their resources for fulfilling social goals, expatriates, religious leaders, researchers, journalists, and all kinds of farmers -- young and old, large-scale and small-scale, educated and uneducated. It was exciting to be welcomed into the midst of this happily heterogeneous mix of persons and personalities. The egalitarianism that is expected to be an expression of the Islamic faith (as well as other religions) was evident in all of the sessions that I attended. There was much less of the pomp and circumstance, the exaggerated deference and rankling hierarchy that I have been accustomed to finding in Indonesia.

In part this may reflect the democratization of Indonesian society in a post-Suharto era. But there seems also to be a democratizing resonance within SRI. When people realize the boons that its principles and practices can confer, and see how some of the tensions and exclusions created by resource-scarcity could now be reduced by mobilizing certain processes and potentials within the natural realm, this may have a benign effect on people's outlooks.

This is not something that goes ‘against science,’ but something that should encourage scientists to join in a collaborative venture with persons quite unlike themselves in education and roles, who are united in a desire to reduce poverty and hunger and to make the environment more robust. President SBY seems to have appreciated some of these potentials in the remarks that he made on SRI last July (<http://www.srividio.zoomshare.com/>). A more detailed account of what I saw, heard and learned during the week-long visit follows.

Visit to SRI Research Center at Puyung, near Mataram in Lombok (Saturday, January 12)

When I arrived Friday evening at Denpasar airport on the island of Bali, I was met by **Shuichi Sato**, leader for the consultant team implementing DISIMP, the Decentralized Irrigation System Improvement Project, in Eastern Indonesia. Already at the luggage carousel I had met **Victor Lee**, who arrived about the same time from Singapore. Victor -- who has lived in both Indonesia and Singapore and currently resides in Australia -- has been doing video and other work on behalf of SRI since 2004.

Victor’s involvement with SRI started in West Timor, filming and producing a training video on SRI for **ADRA**, an international NGO. That video has gotten wide use, e.g., having Bangla and Korean soundtracks dubbed for it for use in Bangladesh and North Korea. DISIMP has engaged Victor to do video documentation and publicity for SRI, and Victor was planning to document discussions and observations during my visit to Indonesia. A video on the week will be posted on Victor’s website eventually (<http://www.srividio.zoomshare.com/>)

Saturday morning, Sato-san, Victor and I flew to Mataram on the island of Lombok after being joined at the Denpasar airport in Bali by a number of SRI colleagues. **Prof. Dr. Eiji Yamaji**, founder and chair of the Japan Association for SRI (J-SRI), had flown in from Tokyo University the night before. **Dr. Georg Deichert**, GTZ agricultural advisor in East Timor, now known as **Timor Leste**, was there. He began working with SRI in 2001 while a GTZ advisor in Cambodia. With him were three colleagues from newly-independent Timor Leste where Georg is currently working as an advisor: **Marcos da Cruz**, State Secretary for the Ministry of Agriculture; **Martinho Soares**, Director of Irrigation; and **José Barros**, GTZ program assistant, came to travel with us to observe ‘SRI in action.’

Georg was hopeful that his Timor Leste colleagues would find SRI suitable for their country’s needs when they saw it in the field. Also joining us were two staff members with DISIMP’s Region 2, **Harry Clark** and **Riady Zulwarman** (Bali and Lombok are in DISIMP’s Region 1). Harry was the person who persuaded Sato-san to evaluate SRI methods first in 2002, when a copy of one of the first papers on SRI first reached this Japanese government-funded project.

Also flying to Lombok with us was **Ir. Budiharto P.S.**, usually called just Budi, DISIMP team leader for the provinces of Bali, West Nusa Tenggara and East Nusa Tenggara. Sato described Budi as the operational leader for SRI work under DISIMP. Budi told me during the flight about two areas where SRI use has scaled up quickly in Eastern Indonesia. Both are on the island of Sulawesi and have large blocks of rice land under SRI practice.

At Kelara Karalloe in South Sulawesi, rainfall is erratic and irrigation is essential. Thus, SRI is attractive to farmers because its intermittent irrigation can save water. Once rice plant roots are well-established with SRI management, they have been able to sustain up to a 2-week hiatus in water deliveries and still give higher yield than usual. Already in the previous wet season, there were 2,427 ha of SRI in this irrigation scheme.

The other location, Karaopa in Central Sulawesi, is quite isolated, 12 hours' drive from any center of population. The farmers there are mostly transmigrants from Java who decided with only a little encouragement that they would adopt SRI in a big way. Last season, they had 1,587 ha of SRI cultivation in their scheme.

Budi also told me that SRI is beginning to spread quickly on the island of Bali because of support from the indigenous water-user associations there known as *subaks*. (He had arranged for me to visit one the next day.) DISIMP first deployed a Facilitation Team for SRI on Bali under its Region 1 office in July 2006. *Subak* members in one sub-watershed who have taken up SRI, and who now see its water-saving possibilities, have been willing to renegotiate agreements with the local government to modify some of their traditional water rights, which will make more water available for non-agricultural purposes.

After landing at Mataram on Lombok island, we drove in three vehicles to the **SRI Research Station** established by DISIMP at Puyung, 24 km southeast of the city, in 2006. I learned that this facility had been set up on land given over to the project by **PT Sadha Arif Nusa**, an affiliate of one of the biggest tobacco companies in Indonesia, **PT Sampoerna**. That company had previously obtained a certain area of land from the government on long-term lease. Through serendipitous contacts with Budi, local executives took an interest in SRI in 2005, and the next year, they agreed to lease several hectares of land to DISIMP for the research station free of charge. This is another example of private-sector support for SRI development, Nippon Koei's support under Sato-san's leadership being the prime example of private-sector involvement.

Budi told me that the company has an entrepreneurship training center in East Java, at its factory complex in Sukorejo village, Kabupaten Pasuruan, with which DISIMP started cooperating in January 2008. SRI field demo trials have been established both at the center and in a neighboring village. We speculated on why a tobacco company would get involved with rice production. Apparently for some combination of company interest in having 'a greener image' and personal interest that some of its executives have in what SRI can contribute to Indonesia's future. Private sector institutions have more flexibility in resource use than do government agencies. Private decision-makers can choose to use their authority for promotion of public goods if they want to.

The main facility at the research center is a set of 20 plots, each 5 x 5 meters, separated by concrete dividers so that there is no sub-surface seepage of water between the plots when experimental treatments are varied. Trials last year measured very precisely the effects of different water regimes, looking at the effects that different degrees of water saturation, measured at different soil levels, had on yield. Prof. Yamaji said that he will send Cornell soon a thesis done by a University of Tokyo student from these data. There are also time-lapse cameras installed in the facility that can take pictures of each plot at fixed intervals for week after week, recording climate measures as well as crop growth. The whole area was enclosed with a netting

that has little effect on sunlight but keeps insects and birds out. Thus everything is set up for making many very precise measurements.

The current set of trials is evaluating the effects of spacing and crop establishment methods (1 to 4 plants transplanted per hill, and direct seeding). Because several treatments are being assessed, in order to have enough replicated trials, the 20 plots are split to evaluate 40 different treatments concurrently. Sato-san said that their experiments have shown that without irrigation, just with supplemental sprinkling, a yield of 8.16 t/ha can be achieved with SRI methods. Beyond the precisely controlled plots there are a number of open fields with different treatments also being evaluated.

I was pleased to see the kind of scientific work that this research station established by Sato, Budi and Yamaji is making possible, especially when linked with the research capabilities of faculty and students at Tokyo University and other Japanese institutions. Although the conditions are, as in all such facilities, somewhat artificial, there is merit in being able to see and measure, side by side, the differences in plant growth associated with different age of seedling, number of plants per hill, spacing, water applications, soil fertilization, etc. Prof. Yamaji skipped lunch to stay behind at the center and spend more time with the researchers at the station.

The rest of us went for a nice meal at a local restaurant, with the appropriate name ASRI. We then visited a location several miles away where a farmer, **Syamsul Rizal**, is practicing 'organic SRI' on 6 hectares. He learned these methods from **Aliksa Organik SRI Consultants**, an NGO established last year by Sato and a like-minded Indonesian agronomist, **Alik Sutaryat**. Pak Alik and Sato-san were assisted in setting up Aliksa as a foundation to promote rice production not dependent on agrochemicals by two altruistic young businessmen, whom I would meet later in the week at Aliksa's training center at Nagrak in West Java. Aliksa's formation has substantially increased the organizational capacity in Indonesia for disseminating SRI practices.

Syamsul's SRI field was impressively planted and maintained. Quite by coincidence, as we were admiring the field he happened to drive up in an old pickup truck, full of tightly bundled older seedlings. They were being transported to a field that he was going to cultivate with conventional methods. He said that he didn't have enough labor and confidence yet to use SRI methods for all of his rice production.

The seedlings in the back of Syamsul's truck were 30 days old, 3 times as old as recommended for SRI. They had already been out of their nursery bed for several hours, so their roots were desiccated and stiff. The seedlings' leaves had been cut back drastically to shorten their length and reduce their volume (and, according to Syamsul, to make them less liable to being blown over by the wind). Those of us standing around the truck shook our heads in dismay over this 'plant abuse.'

Syamsul said that although he isn't ready yet to commit himself to all-SRI production, he is very impressed with the growth of his SRI crop so far. With conventional planting, spacing of hills is 15-20 cm instead of 25 cm, and 4 plants are used per hill instead of just one. This requires *eight times more seedlings* that with SRI. He said that he can see now how much less work is involved

for establishing an SRI crop. Standard cultivation requires raising, transporting and planting both more seedlings and much larger ones.

I asked Syamsul about his **milling outturn** -- the kilograms of polished, edible rice that are produced by milling one bushel of unmilled paddy rice. He figured that with SRI, the rate is about 67% compared to 50-55% for conventionally-grown rice. This means there is a 22-34% **net increase** in rice produced *over and above* the higher paddy yield that SRI methods can give.

On our drive back to Mataram, we passed a large area of rice paddies where seedlings were being transplanted in the traditional way. 30-day-old seedlings were being shoved in bunches of half a dozen plants into 6 inches of standing water. The fields were 'littered' with large bunches of bound-up seedlings being soaked in the water to rehydrate their roots, even though this could not remedy the trauma that had been done to the roots already. Georg commented with amusement when the women transplanters waved to us with big smiles: "They look so happy, and yet they don't know that the things they are doing are completely wrong."

Later in the afternoon we reached the resort area of Senggigi north of Mataram, where that evening the DISIMP staff put on a big party for the group of visitors at a local hotel. While dinner was being served, local musicians performed for us, including the singing of three SRI songs composed by Ibu Rita, Budi's wife. (*Ibu* is the honorific term used when addressing women, just as *Pak* or *Bapak* is used for men.) These songs had been performed at the SRI Harvest Festival at Cianjur last July, where President. S.B. Yudhoyono spoke and strongly endorsed SRI. I was thus familiar with the songs from the DVD that Victor had produced and posted on the web (see first item on <http://www.srividio.zoomshare.com/>).

Victor's translation of the songs' Indonesian words is included as an annex to this trip report. Although the words sound somewhat overblown in English, they are evocative and expressive when sung in Bahasa with their strongly melodic tunes. The evening ended with some karaoke entertainment and plenty of 'team-building' across the multiple teams. DISIMP is quite evidently a well-organized operation, and the dramatic improvements that SRI methods are achieving have given its project staff, as well as farmers, something to be excited about. This has led in turn to strong support for SRI from the Department of Public Works (PU) and donor agency (JBIC).

Meeting with Penarungan Subak (Water User Association) in Bali (Sunday, January 13)

The next morning we drove to Mataram's airport and flew back to Denpasar for a visit to **Penarungan**, a village 23 km north of Denpasar where a major Indonesian foundation, **MEDCO**, is funding efforts by Aliksa Consultants to introduce the production of organic SRI in Bali. Upon reaching the community, we were greeted by local officials, school girls who draped garlands of flowers around our necks, and a large traditional ensemble playing Balinese music on cymbals, drums, etc. There were 26 hectares of organic SRI plots within view, 8 ha on one side of the road and 18 ha on the other. **Matt Zimmerman**, a Cornell alumnus now living in Bali who previously conducted SRI training in Indonesia while working for the NGO World Education, was also there to greet and join us.

The SRI crop growth looked good, but I nevertheless asked if we could inspect some plant roots, as this is always a good 'extension' technique for SRI. One of the plants pulled up had 35 tillers

at 42 days after transplanting, validating the value of good root growth. **David Lambert**, an Australian entomologist now residing in Bali who had also joined us, pointed out to everyone the profuse earthworm castings on the soil surfaces around the SRI plants, above their roots. These were evidence of prodigious amounts of biological activity in the soil under SRI management.

After observing a number of fields, we reached the assembly hall of the *subak*, the indigenous water user association for the area. We were welcomed at the entrance by the village headman (*Kepala Desa*), who happened to be a woman, and by the *subak* farmer-officers. In the colorfully decorated facility an ensemble of local musicians played Balinese music to which four young girls danced a traditional welcome dance for our group. While we watched and listened, Marcos de la Cruz, Secretary of State for Agriculture in Timor Leste, whispered to me that he was quite impressed and satisfied with what he had seen and heard these two days. He commented that SRI should be quite advantageous in his country, where most rice farmers are very poor and have small holdings, and where water shortages are frequent. Marcos said that he and his colleagues will get SRI trials and demonstrations started when they return to Timor Leste after this trip.

Sato-san gave a talk describing how DISIMP had gotten started with SRI in various parts of Eastern Indonesia. He noted that SRI spread to Bali because Balinese farmers had come to Lombok, at their own expense, to observe SRI. He suggested that given the *subaks*' capabilities for cooperative action Balinese farmers should be able to spread SRI rather rapidly here, capitalizing on its water-saving potential better than can other, less-organized farmers. If, through their *subaks*, all farmers will adopt the new methods at the same time, they can make aggregate reductions in water issues that free up large quantities of water for other uses. (If only individual farmers save some water, these amounts may be used or reused by other farmers so that overall system consumption is not much affected.) Sato characterized SRI as "a key innovation that can make farmers happy while it is good for the environment."

The next thing on the program was a comedy routine with two villagers dressed up in colorful costumes, wearing the stylized face masks of traditional entertainers. But these characters were not only trying to elicit laughs and squeals from the audience; they were also presenting messages about SRI and about using compost. This reminded me of a similar routine I had seen in Bangladesh in 2002, at a national SRI workshop held at the agricultural university at Mymensingh, where a similar traditional village art form with comic skits was used by farmers to project SRI messages (<http://ciifad.cornell.edu/sri/countries/bangladesh/bangtr902.html>).

Given the sprinkling of English words in the dialogue, I could tell that the performer playing the older man was raging about the effects of climate change, drought, poor harvests, and high costs of production, while the younger man proposed using SRI methods to counter these problems. At some point the older character exited the stage and returned in a different costume, made up as an elderly sage, who endorsed organic agricultural practices to make local production more sustainable. The presentation lasted about half an hour, with villagers (and guests) paying close attention.

When I was asked to speak, I focused on the importance of 'growing roots,' saying that these are needed to grow productive plants. I also commented on the potentials of *subak* organizations to make most efficient use of water and to utilize SRI opportunities. **Dr. Kartini** from the Bali

Organic Association, who had arrived late, raised some questions about weed control, noting that the designs of most available weeders are not very suitable for soils here in Bali. She reported on her five seasons of evaluating the effects of alternative fertilization. High-yielding varieties (HYVs), she said, gave lower yield when grown with organic methods, perhaps because plant breeders had developed them to be particularly responsive to high amounts of fertilizer.

I responded that our SRI experience has showed inorganic (chemical) fertilizer enhancing yield for both HYVs and traditional varieties when used with other SRI practices. But the best results have usually come from organic fertilization. Indigenous varieties are not likely to give higher yields than HYVs; but because their market price is usually higher, they can be more profitable for farmers when used with SRI practices than is growing HYVs. I cited also some data from Nepal which showed that the use of soil-aerating weeders can add to 1-2 t/ha to farmers' paddy yield, other things being equal. So the added work of weed control with SRI can be well repaid.

After the program closed with remarks by the village headman (headwoman), box lunches were passed out to everyone. This community appeared to have considerable 'social capital,' being evidently well organized, proud, and with strong commitments to common interest. How successful its farmers will be with organic SRI cannot be known until harvest time, but their prospects appear good. From Penarungen, it was an hour's drive back to Denpasar. Later that afternoon, Victor, Budi, Sato and I flew westward to Jakarta on the island of Java, while our Timor Leste colleagues headed off in the opposite direction, and Yama-san returned to Japan.

During this visit to Eastern Indonesia, I was not able to visit the large island of Sulawesi which is a major part of DISIMP's Region 2. However, **Riady Zulwarman** had brought me a detailed report on SRI dissemination in that area. SRI was first evaluated in South Sulawesi Province in the 2002-03 dry season, on 0.2 ha each in the Awo and Salomekko irrigation schemes. Yield gains with SRI methods were 64.4% and 138.6%, respectively. This got project staff quite interested in the innovation. Four years later, the SRI area in South Sulawesi is 1,394 hectares, with 2,143 farmers, and the average yield increase is 61.5%.

In Central Sulawesi, there were 1,702 farmers using SRI methods on 1,635 hectares in 2007. Average yield increase was 79.4% (standard methods: 3.95 t/ha; SRI: 7.08 t/ha). SRI has only been used in Southeastern Sulawesi for only three seasons, but this past season, 539 farmers used the new methods on 450 hectares. SRI has given 66.1% higher yields there previously. DISIMP keeps detailed records on every farmer using SRI. As noted above, between 2003 and 2007, 12,133 comparison trials were evaluated by DISIMP staff. Average yield increase was 3.3 t/ha (78%) -- with 40% less water, 50% less fertilizer, and 20% lower costs of production.

The problems facing SRI dissemination in Region 2 listed in Riady's report were: (1) in some irrigation schemes, farmers who do direct seeding are reluctant to switch to transplanting; (2) related to this, in some places, there is lack of labor for transplanting; (3) there is lack of understanding of SRI in some related agencies (this refers, I think, mostly to the Department of Agriculture); (4) farmer worries about water management for irrigation. Riady said that all of these problems are being addressed. He is glad to know that in some other countries, farmers are adapting SRI concepts to direct seeding. Sulawesi farmers can and should try this too, he said.

Lecture on SRI for the Department of Public Works in Jakarta (Monday, January 14)

Monday morning was left open for catching up on e-mail and reports. In the afternoon, Budi, Victor and I went to the Atlet Century Park Hotel in South Jakarta where Sato-san met us and where the **Department of Public Works (PU)** had organized a public seminar on SRI. The head of PU's **Directorate-General for Water Resources**, Mohammad Hasan, had planned to make the opening speech himself, but had to cancel these plans. He sent his apologies through a Senior Advisor to PU, **Dr. Hafied Gany**, who chaired the meeting. Gany reviewed the many pressures on the rice sector -- population, economic, climatic and others -- that make SRI attractive to PU, which has national responsibility for getting the maximum productive use from Indonesia's available water resources.

Gany noted that the first presentation on SRI that was made outside of Madagascar was made in Indonesia (by myself in 1997), and that the first results from SRI methods outside Madagascar were achieved at the Sukamandi rice research station in 1999-2000. (Actually, the first SRI results were reported from Nanjing Agricultural University in China a few months earlier, but no need to argue over a small difference.) In 2001, Indonesia's national IPM program started the first SRI trials in West Java -- at Ciamis, the trials being managed by Pak Alik. That initiative has expanded since, so that 'organic SRI' methods were used on 1,500 hectares this past year.

The first SRI evaluations in Eastern Indonesia began in 2002 with a few small trials under DISIMP. (These results were noted above from Riady's report.) Now in DISIMP-assisted irrigation schemes there are over 5,000 hectares of 'basic SRI,' i.e., some chemical fertilizer is still used, but applications of fertilizer are reduced, usually by 50%. 'Organic SRI' is being introduced at the same time in a number of districts, with support from the Department of Agriculture's Directorate of Land and Water Management. Concluding his introduction, Gany said: "We will expand SRI steadily to the whole of Indonesia. It's our future."

My powerpoint presentation reviewed SRI experience and learning from around the world. The first question asked was whether SRI methods can be adapted for *rainfed* rather than irrigated rice production. The answer was yes, and I discussed how changes in the way that rainwater is managed can promote the growth of root systems, and how nurseries can be managed differently to ensure that when the rains arrive, there are appropriately young seedlings ready to transplant. Methods for rainfed SRI have been developed by a number of SRI collaborators, particularly in eastern India which has unpredictable monsoons. Yields there have averaged about 7 t/ha.

The next question concerned age of seedlings: whether 14-day seedlings would be acceptable for SRI because 10-day seedlings "feel not so nice," i.e., seem small and fragile. I explained that once farmers get accustomed to young seedlings, they are usually happy with plants only 8 to 12 days old. As a rule, however, any plants less than 15 days old will give better results than seedlings older than this. I was asked whether SRI methods can work with saline water and soil conditions, and I referred to a report from Punjab state in India indicating that salinity has adverse effects on SRI plants similar to those for conventionally-grown plants. Where soil is low-lying and swampy, we do not expect much benefit from SRI practices, I made clear.

Effendi Pasandaran commented that mostly I had been talking about individual farmers' decisions and adoption for SRI. Couldn't SRI be more effective if joint decisions are made at

community level to synchronize and adopt SRI methods for larger areas, rather than just on individual farms? I agreed. Especially if water savings are going to be realized with SRI, there needs to be larger-scale adoption by farmers as groups. I also agreed that in disseminating SRI, group approaches like those for farmer field schools (FFSs) are likely to give better results than purely individual approaches.

Ujjwal Pradhan from the Jakarta office of the Ford Foundation asked about the versatility of SRI. At what elevations can the methods be used, and does it work with any and all varieties? I noted that in Nepal, SRI methods have been used successfully as high as 2300 meters and nearly at sea level in the terai (plains). Practically all varieties – improved and local, high-yielding and traditional – have responded positively to SRI management so far, although some respond better than others. We suggest that SRI methods be tried with any and all varieties to assess empirically which give the most benefit from having wider spacing, aerated soil, etc.

Gany noted that land tenure could have some effect on the uptake of SRI. In Indonesia and especially on Java, the size of landholdings is very small, even 0.3-0.35 ha for a household of five persons. I observed that such circumstances are in some ways the best or most appropriate for SRI, because such households need to get maximum production from their small land area.

If farmers are not landowners, however, and are only renting or sharecropping, Gany responded, they might be hesitant to invest any effort in building up the fertility of land that they do not own. In the case of SRI, however, I noted, sharecroppers can benefit already in the first season from any efforts they make to enhance soil organic matter. This is different from most organic production systems that must go through a ‘transition period’ of several years after they begin cutting their chemical fertilizer use. With SRI, farmers having a short time horizon can also gain, although farmers with secure tenure rights can benefit the most from SRI, by building up their soil’s fertility over time with its methods.

The main issue which could not be fully or satisfactorily resolved is how farmers can have access to enough biomass for fully organic fertilization of SRI crops. Farmers with small holdings can probably mobilize enough biomass from their rice straw and from common-property/wasteland areas. But larger farmers may have difficulty mobilizing enough biomass for their bigger fields. As a matter of general strategy, it is important to find ways to increase biomass availability. This should be possible because Indonesia as a tropical country has ample temperature and rainfall to grow more vegetation of many kinds to supply organic matter to the soil.

Someone suggested that more effort could be put into making vermicompost, which landless or nearly-landless households can manage to enhance their incomes. Discussion continued after a coffee break, until 4:30, having started at 1:30. Interest in SRI had remained evidently high among the 60-plus participants. Support for SRI from irrigation sector leadership has been a major factor in SRI’s gaining momentum in recent years in Indonesia.

Organic SRI Workshop at Andalas University in Sumatra (Tuesday, January 15)

Early Tuesday morning, Victor, Budi and I flew from Jakarta to Padang on the northern island of Sumatra. There we were met by a staff member and driver from the **Medco Foundation**, which was supporting an Organic SRI Workshop being held that day at **Universitas Andalas**, the

regional university popularly known as *Unand*. It was almost an hour's drive to the campus, where we were welcomed by the Rector, **Dr. Musliar Kasim**. Although he and I had not met before, I knew him from a picture that he had sent me in 2005 -- of himself holding up a huge SRI plant to show me that Unand was joining the SRI effort.

The Minister of Agriculture, Dr. Anton Apriyanto, had planned to attend this workshop, I was told, but he had to cancel his appearance because of Cabinet business. The Minister for National Food Security, **Dr. Ir. Tjuk Eko Hari Besuki**, was there to express government support for this initiative. We met briefly in the Rector's office beforehand. Before entering the meeting hall, Dr. Musliar introduced me to "the first SRI PhD in Indonesia," **Dr. Nalwida Rozen**, who was standing in front of a poster outside the hall that summarized her research findings. Musliar said that at Andalas University, already four PhD theses have been done on different aspects of SRI, and six Master's theses. Ten students are currently doing thesis research on SRI, he added, and I met a number of them during the day.

The workshop opened with a ceremonial signing of an agreement between Medco Foundation and Andalas University for support of a program of research and training on organic SRI. Representing the Foundation was its director, **Arifin Panigoro**, reported by Forbes Magazine to be one of the most successful businessmen in Indonesia. Arifin stayed for the whole workshop and was an active participant, taking an obvious personal interest in SRI.

The session began with a welcome from the Assistant Governor for West Sumatra province, who made a long, substantive presentation on SRI. His and other speeches were in Bahasa Indonesia, so I understood only a little of them, but I caught references in English to "Fr. de Laulanie," "soil biology" and "organic matter."

The keynote address by the Minister for National Food Security was one that I wish I could have had more translation of. My powerpoint presentation following his keynote was, of course, in English. My slides were worded as simply as possible, and there were many pictures provided to make the ideas very visual, so I think it was reasonably well understood.

In his presentation, Arifin Panigoro described SRI results as "very convincing." He expressed concern that while land and water per capita are diminishing in Indonesia, the demand for rice continues to grow. "Indonesians may be shorter than Pak Norman, but they eat more rice than he does," he said jocularly. He said that previously he had met only people in West Java who could tell him about SRI -- farmers, researchers, NGO people. "But now I am meeting also with university lecturers here in West Sumatra, who are verifying the same good results. This makes me more confident in SRI." After his talk, he whispered to me that he would like to have a copy of my powerpoint presentation "to use all over Indonesia." Arifin is certainly a good strategic ally to have in the SRI coalition in this country.

Dr. Musliar's powerpoint presentation was illustrated with many pictures and tables which were quite understandable. He showed that with SRI methods, farmers have been able to raise yields from 1-3 tons per hectare to 6.5-8.8 tons. One table reported that in one area where yields have been 2 tons on average, now with SRI average yields of 7.6 tons have been achieved. This is similar to what we saw when first working with SRI methods in Madagascar.

One town in West Sumatra has already expanded SRI use to 400 hectares, Musliar reported, introducing that town's mayor, who was attending the session. Musliar's talk included material on aerenchyma, microorganisms, aerobic and anaerobic respiration, and other topics that I hoped were of interest to the 150 students attending the session if not necessarily to all of the more than 200 persons attending.

Prof. Helmi spoke as a fourth member of the panel, about socio-economic implications of SRI. He and I have known each other since the 1980s when we were both involved in participatory irrigation management. Helmi told me afterwards that he had shared with Musliar a paper on SRI that he had received from me at an irrigation management conference which we both attended in Bangkok in April 2002; this was the same paper that got to Sato-san and triggered Nippon Koei interest in SRI in Eastern Indonesia. Helmi thus deserves some credit for getting work on SRI started in Sumatra. He reported the recent figures that SRI is being used on 230,000 hectares in two provinces of China, and 420,000 hectares in Tamil Nadu state of India, so he has been monitoring the CIIFAD SRI website.

In the question period, one Andalas faculty member highlighted the relevance of SRI to poor farmers, enumerating stressing its 'pro-poor' implications. One woman asked about how to produce organic matter in large quantities, noting that this is presently difficult. This led to a discussion of how biomass can be grown in non-*sawah* (non-paddy) areas, and of the need to develop better tools and implements for collective, transporting and processing it.

Someone from the Department of Agriculture wanted to know the difference between SRI and the Integrated Crop Management (ICM) methods that are being promoted by his department. He also wanted to know what has been the response of IRRI scientists to SRI. I commented that the Department's Agency for Agricultural Research and Development decided already in 2002 to combine SRI with integrated pest management (IPM) and use of the leaf color chart (LCC) for optimizing nitrogen fertilizer applications, all under the rubric of 'ICM.' So SRI and ICM are compatible and complementary.

While I acknowledged that some IRRI scientists have been negative toward SRI in the past, I underscored that IRRI and Cornell scientists are now cooperating to plan and carry out a mutually-agreed scientific evaluation of SRI. Up to now, the main difference may be in focus; SRI stresses changes in the management of plants, soil, water and nutrients to promote root growth and soil biota, improving the performance of any genotype; while IRRI's strategy has focused on making improvements in genotypes which, together with more or better-applied external inputs, can enhance crop results.

Dr. Musliar gave the floor to the mayor of Sawah Lunto, **Ir. Amran Nur**, whose community has become the most 'activist' for SRI, already reaching 400 hectares (1,000 acres). He said that SRI has been easy to implement. One innovation has been to loan farmers money to purchase the recommended rotating weeders, and then for farmers to repay this money into a revolving fund, to keep the purchases increasing. Farmers have organized themselves quite effectively, he said.

Next, a former chairman of HKTI, the Indonesian Farmers Union, **Siswono Yudohusodo**, was invited to speak. Arifin whispered to me that Siswono is a very respected person, a former candidate for Vice-President of Indonesia. Siswono spoke movingly about “the damage to our soil” that can be seen from the overuse of chemical fertilizers. Even if SRI gives only 1 ton more output per hectare, he said, its other beneficial impacts make it worthwhile to spread. He closed his remarks, otherwise in Bahasa, with an assertion in English: “SRI is a matter of time.”

Then **Ir. Mahyeldi Ansharullah**, an agriculturalist who is vice-chairman of the provincial assembly (DPRD), spoke briefly. Although the seminar was an hour and a half beyond the time scheduled for lunch (noon), I had not seen anybody leave. After Mahyeldi finished his remarks about the importance of using appropriate methods for dissemination of SRI to farmers, the program was adjourned for lunch.

After lunch, there was a panel on organic SRI methods, chaired by **Alik Sutaryat**. In the afternoon session, a faculty member in agronomy, **Dr. Irawati Chaniago**, helped me with translations so that I could follow the proceedings better than in the morning. Alik defined ‘organic SRI’ as *basic SRI methods + integrated pest management (IPM) + soil ecological management + sharing among farmers’ groups*, i.e., farmer-field-school style interaction.

Alik showed a picture of a clump of conventionally-transplanted rice with 17 seedlings crammed together. Farmers conventionally use seedlings 30-40 days old, instead of 8-15 days old, and they continuously flood their fields. This is made worse by shoving seedlings several centimeters into the soil, instead of just 1 cm, which creates very unfavorable conditions for growth. When pests and diseases affect these weakened plants and then pesticides are used, the soil conditions and plant health are made even worse, Alik said. If soil ecological principles are understood and followed, on the other hand, there will be less pest and disease attacks, he concluded.

Next, Unand faculty member **Erigas Ekaputra** spoke about irrigation issues related to SRI. He emphasized the need to reduce water use, given the growing water shortages in Indonesia. He noted that with reduced water applications, a farmer using SRI methods in Garut in Western Java had achieved a yield of 14 t/ha. He saw SRI bringing “a new revolution for irrigation.” Intermittent irrigation can reduce water issues to 0.2 liters/sec/ha, from 0.8 liters, he said. Small-scale experiments have been successful, but there is now the challenge to make this large scale.

Marsilan, a farmer wearing a wool cap and wire rim glasses, talked next about how he started with SRI methods in 2005, relying on compost made from biomass in his own area. He gleefully reported that he had gotten a yield of 7.2 t/ha the first time, and has become a model organic farmer in his area. He said he found the mechanical weeder to be a big help, but he had also come up with the same idea as Govinda Dhakal in Nepal: driving nails into a wooden crosspiece on a long handle, like a push-broom. This can be used to uproot weeds and aerate the soil at the same time. He concluded by saying “One should be brave enough, and other people will follow.”

Next, **Djoni**, an officer from the Provincial Department of Agriculture (PDA), who later gave me a web page URL as well as an e-mail address, spoke on the spread of organic SRI in West Sumatra. He presented a well-done powerpoint and handed out some impressive publications in Bahasa. One booklet, “Steps and Road Toward Sustainable Agriculture for Farmer Welfare in

West Sumatera,” reported that in 2007, the West Sumatra PDA had conducted 795 farmer field schools on SRI, and 800 training sessions on SRI for advanced farmers.

In 2006, Djoni reported, there were 382 hectares of organic SRI, and in 2007 -- 1,172 hectares. The Department is now aiming for 25,000 hectares of organic SRI in 2008, and then for 100,000 hectares by 2010. The number of demo-plots in West Sumatra went from 1 in 2006, to 11 demo-plots the next year, and there will be 2,080 this year, he said. (A huge rate of increase.) He projected a very concrete strategy of extension and full confidence that it can be successful. His presentation concluded with a song, “Let’s Do SRI,” sung by women farmers, which went through all the components of the system in successive verses.

In the discussion, one official said that he had practiced SRI himself, and found the first 2-3 weeks to be the most difficult, when it looks as though the crop will be ‘a big failure.’ But after this, he said, there is no problem. “What is the bitter pill?” he asked rhetorically. Weeding, and also water management. These take more work, at least initially, and found them to be a challenge. Erigas responded that most irrigation systems in Indonesia were designed in the colonial era, planned just for security of water delivery, and are not well-laid out for SRI, which aims at efficiency in water use. Alik added that the time needed to train farmers in SRI methods is being progressively reduced as experience is gained. It is now possible to prepare farmers to practice SRI successfully within two weeks’ time, with just 6 sessions.

The next-to-last speaker was **Aep Saepidin**, a SRI farmer from West Java, who started by saying simply that his goal is to live a healthy life, and to keep learning and improving all of the time. “Money is not my main goal in life,” he said, “but rather making and maintaining a good farm that can be left to the next generation. We have to be good to nature, and nature will be good to us.” (At the tea break, Aep had given me a button left over from the Bali environmental summit saying: ‘Better care for the earth, Better care for the environment, Stop emissions.’)

Aep said with a smile that he is known in his home area as “Mr. Shallow” because he has for so many years been advocating the shallow transplanting of rice, even before he learned about SRI. He started experimenting with SRI concepts in 2003 and said proudly that people from 12 different countries have now visited his farm in Java to see his results. “This has stimulated a lot of study and inquiry on my part,” he said. The chairman, in thanking Aep, noted that with SRI, farmers can now afford to go on the haj, making reference to Aep’s having recently made the pilgrimage to Mecca, much admired in Indonesia.

The workshop concluded with a presentation by **Dr. Sumardi**, a student of Dr. Musliar’s, who is now on the faculty at the University of Bengkulu (UNIB) in South Sumatra. He discussed strategies for SRI dissemination in his area, noting that SRI trials started at UNIB in 2005, and after studies involving farmers a program was launched in 2007. They have gotten yields of 5.35 t/ha compared to 4.06 t/ha with regular methods. When using most SRI methods: young seedlings, 25x25 cm spacing, 1 plant per hill, and alternate wetting and drying, the yield has reached even 6.76 t/ha, he said.

Researchers at UNIB have tried direct-seeding, and Sumardi showed pictures of a prototype seeder for direct-seeding, to save labor time from transplanting. If this gives results comparable

to direct seeding by hand, they will start promoting this alternative. This was one more evidence that SRI should be regarded as ‘a work in progress,’ the theme on which I began my talk on SRI, saying that SRI is ‘not yet finished’ and ‘not final.’ Because we had to catch a 6:35 flight back to Jakarta, and it was a long drive back to Padang airport, we had to leave at 5 o’clock before the workshop concluded. It was already an hour and a half beyond schedule, but almost all of the participants were still there and paying attention. This was as meaningful as any data reported.

Lecture at Bogor Agricultural University (IPB) in West Java (Wednesday, January 16)

At 10 o’clock, Sato-san picked up Victor and me at the hotel in Jakarta to drive to Bogor, an hour’s drive to the south where many agricultural research and training institutions are located. We were joined on the trip by several farmers associated with Aliksa. At IPB, we were met by **Dr. Iswandi Anas**, head of the Soil Biotechnology Laboratory in the Department of Soil Science and Land Resources, who has come forward to head up a new SRI network for Indonesia: *the Indonesian Association for System of Rice Intensification (Ina-SRI)*, inspired by the example of the Japan Association for System of Rice Intensification (J-SRI). He is assisted in managing this network by **Dr. Budi Indra Setiawan**, also an engineering faculty member at IPB. Iswandi told me that he had learned about SRI from a lecture that Sato-san gave on this subject the preceding year at Ibaraki University in Japan, when Iswandi was a visiting fellow there.

We were taken to the office of the Dean of the Faculty of Agriculture, **Dr. Didy Sopandie**, where we met also the Vice-Dean, **Dr. Aris Munandar**. Both expressed their support for the SRI initiative that Dr. Iswandi and Dr. Budi are launching. The head of the Laboratory for Soil and Water Engineering, **Ir. Dedi Kusnadi Kalsim**, also joined us. Obviously there is much more interest in SRI at IPB than when I gave a previous seminar on SRI there five years earlier.

After lunch, we went to the assembly hall, which was filling up. Chairs had been set up for 200 attendees, but a larger-than-expected turnout delayed the seminar’s start while more chairs were brought in. Dr. Didy opened the seminar and asked Sato-san to introduce me. My presentation was similar to that made the day before at Universitas Andalas. It was followed by presentations first by Sato-san on SRI experience in Eastern Indonesia, and then by Pak Alik on organic SRI practices, focusing on West Java.

There were many questions and comments so that the carefully arranged schedule was soon overextended. **Dr. Sugiyanta** from the Department of Agronomy and Horticulture made a powerpoint presentation on the potential use of paddy straw for SRI implementation. His results showed that if NPK application was reduced by 50% but paddy straw was incorporated back into the soil, the yield would be slightly, but not significantly lower. If NPK were cut by 75% and the straw was added back, the yield would be definitely lower than with 100% NPK, and the same was true for use of straw-only. However, because no economic analysis had been done, it was possible that the 50% NPK reduction plus straw amendments could be more profitable than the more costly 100% NPK application.

The results of 50% NPK plus straw were close to those for 100% use of NPK in most trials, and in all of the second-season trials (climatic conditions in Java usually permit three crops a year) 50% NPK + straw was **ahead** of 100% NPK. This cast doubt upon the economic advantages of chemical fertilizer under local conditions. Below is a summary table from the powerpoint. ‘SRI

practice' was use of 10-day seedlings, planted singly, with double rows (15 x 30 x 10 cm spacing), and water control. The conclusion was that systematic use of paddy straw could probably have real benefits for farmers, and it is certainly preferable to the current common practice of burning rice straw, which anyway has negative environmental effects on air quality.

Treatment	No. of Productive Tillers		Yield per plot (kg)	
	Conventional	SRI	Conventional	SRI
100% NPK dose	16.9 ^a	32.4 ^a	3.14	4.8 ^a
50% NPK + straw	16.2 ^a	30.2 ^{ab}	2.99	4.6 ^a
25% NPK + straw	15.1 ^{ab}	27.8 ^{ab}	2.92	4.4 ^{ab}
Straw only	14.6 ^b	25.3 ^b	2.62	3.7 ^b

Although the program went beyond its schedule, almost everyone stayed for the concluding session, at which Dr. Iswandi formally announced the creation of *Ina-SRI*. It was made clear that this would be open to anyone interested in SRI, and that IPB would be providing secretariat support to get the effort started. The network will be an all-Indonesia forum, not an IPB network. (Note: Since its launching, Ina-SRI has had a very active existence in cyberspace, with dozens of communications, queries, and comments. There is an impressive energy apparent in Indonesia that should help this country to 'catch up' with the progress with SRI made already in China and India.)

After the seminar, **Melani Abdulkadir-Sunito** from the **Samdhana Institute**, an Asian center for social and environmental renewal, came up to say hello. I had heard about this NGO during my visit to Bali in September 2005. As it happened, I had left there a copy of a book by the French agricultural scientist, Francis Chaboussou, *A New Agricultural Revolution*, which presented his theory called 'trophobiosis.' The NGO VECO planned to photocopy it and give it back to me. But it didn't work out for me to get the book back before I left Bali. So I thought that the book was 'lost.'

However, Melani showed me her photocopied copy of this book, produced with a proper cover (and all of my underlinings). She said that it has been reproduced and circulated among many sustainable agriculture groups in Indonesia. Since the book was published with Gaia Foundation subsidization to obtain widest possible circulation, there should be no IPR issues to worry about. Seeing how this book was reaching readers whom normal book markets might never reach shows how much modern technologies are changing and democratizing channels of communication. Chaboussou's book, which provides a basis for theoretical/empirical explanation of why SRI rice plants are more resistant to pest and disease damage, is recommended for anyone interested in SRI and its scientific underpinnings.

Visit to Aliksa Organic SRI Training Center at Nagrak (Thursday, January 17)

Thursday morning, Victor and I left the hotel at 7:30 with **Miyatty Jannah**, SRI farmer leader and one of Aliksa Consultants' cadre, all of whom are prepared to do training and advising of farmers for practicing organic SRI. She gave us a very professional business card, with both home and cell phones listed. She lives in the village of Crawuk, located in Widodaren subdistrict (*kecamatan*) of Ngawi district (*kabupaten*) in East Java. Her command of English was impressive, the more so because it was self-taught. Miyatty has received only three years of

formal schooling. Victor commented that she learned English from watching television shows as a young woman while babysitting in homes that had TVs. He noted that the show 'McGyver' had been one of her favorite TV programs, which could explain why, when she responded to a question, she often said "Yep" instead of "Yes."

The two-and-a-half hour drive to Nagrak, south of Sukabumi which is south of Bogor which is south of Jakarta, went fast with our conversation. Miyatty cultivates three hectares of SRI rice, one personally and two with hired labor. She cannot do more herself, she said, because she spends a lot of time now in Aliksa activities. Her yields have gone from 5 t/ha before to 7 t/ha now, a 40% increase. She is happy with this because her costs have been reduced at the same time. She gets a premium price for her SRI paddy, 300 rupiahs/kg, simply because of its quality, which adds another 15% increase to her income from paddy. She said that she doesn't have to tell the merchant that the rice is SRI; he can see the difference and pays her more for it without any haggling.

When she first heard about SRI, four years ago, she contacted Pak Alik and invited him to come to her village and train its farmers in the new methods. He brought Sutarmin from PU and also a third person. (Sutarmin began training farmers in SRI methods at the PU training center in Bandung; see my trip report from September 2005.) Miyatty personally covered the costs of their stay in her village for four days, training 35 farmers in the methods. Only 10 of these would try out the methods, however; and they encountered a lot of resistance at first, even abuse, she said. "The whole village was against us at first. You are stupid, they said when they saw the transplanted SRI plots. You will get nothing."

There was "really a strain," Miyatty recollected, "it was really, really hard. People were talking bad things about SRI." She had to convene many meetings among the ten SRI farmers, to discuss among themselves and to keep them all continuing. "One husband and wife were not talking with each other. They almost divorce. Even government people were coming and asking about this SRI. I explained what I understood, but they didn't believe me and didn't support us. But I continued. There were so many problems. Pak Alik came once again, and only 20 of the original 35 farmers were willing to meet with him."

"But when harvesting was done, people came and said, 'Wow. How did that happen from such small seedlings?' All the people were surprised. With less water and less money, we had 40-50% more paddy. People from other villages came and asked us how we did this. So I went to other villages. But always there is the same problem: at first there are lots of tensions and problems, But the problems go away once they see the results." It is always gratifying to hear this account of the first introduction of SRI among 'disbelievers,' although by now it is quite familiar.

Miyatty added something that was consistent with other reports I had heard on the social impact of SRI, however, she was more detailed. (Victor confirmed this, saying he has plans to do a video on this subject in her village.) "Now, after harvest the SRI farmers come together, and each household brings one kg of rice and some vegetables and a little money, and they all cook a big feast and eat together." This sounded like an Indonesian version of the American Thanksgiving holiday. "There is so much solidarity among SRI farmers," she added.

We discussed how SRI is spreading in her area, mostly farmer-to-farmer. She is the most active proponent in her area, but other farmers are also helping now. The government efforts so far have not been a big factor. The Department of Agriculture allocated 1 million rupiahs (\$100) for a one-hectare demo plot, but the farmer who provided the land and did all of the work was paid only 150,000 rupiahs. Farmers want to know where the rest of the money went, a familiar question.

“The government SRI and my SRI are different things. The government is not successful, because for the officials, SRI is only a project.” Now officials are starting to take a more positive view of SRI, she said, “not like when I started four years ago. There is a very warm heart for SRI in my area.” All of this was reported matter-of-factly, not boasting, as that would be out of keeping with local culture.

It turned out that Miyatty met Sato-san in 1996 when he was working in Sumbawa as a technical advisor. She had impressed a Japanese colleague of his with her English and her ‘activist’ approach, so he asked Sato-san to try to find some employment for her. She began working in the project office, further improving her English and learning clerical skills. Her acquaintance with Sato-san made her more willing to give SRI some credence when she heard about it.

“There is a feeling among farmers that some government people are afraid of SRI, because it is too good,” she said. “They fear it will reduce their power, because it makes farmers less dependent on them. And there is no way for them to make money from SRI, like they can when they are handling seeds, fertilizer, etc.”

People come to her now to buy her SRI paddy. While the regular retail price is 5,000 rupiahs per kilo, she can get 10,000 rupiahs (\$1) for organic SRI. However, only better-off people can afford to pay this price, and at present she has no stock left to sell. So she needs to expand further her production.

We discussed the ‘System of Intensification and Diversification’ (SID) that is being promoted by our NGO partner CEDAC in Cambodia, where smallholding farmers with as little as half a hectare take half of their paddy land out of rice production, and build a fish pond on this land that is redeployed to alternative production -- growing fruits, vegetables, legumes, etc. I will send her the manual that CEDAC has prepared on this with details of five farmers’ experience (manual available at: <http://ciifad.cornell.edu/sri/countries/cambodia/cambSidMPREng.pdf>).

Miyatty said that this could work well for her since she has now a pump for accessing groundwater and can control her water use. At the SRI Harvest Festival in Cianjur last July, she was one of five farmers who received an award from President Yudhoyono with the promise of a mechanical shredder for making compost more easily. But this has not been delivered to her yet.

Miyatty discussed how Aliksa regards SRI as having ethical, even religious dimensions. It relates to ‘virtuous’ activity, having respect for the environment and bringing opportunities to the poor. Even some imams have preached about SRI in the mosque, she said. It is consistent with the Muslim way of life, which advises people to share, and also to rely on reason rather than passion.

After two and a half hours, we reached **Nagrak**, where the **Aliksa SRI Organic Training Center** is located. We were met by **Jatika**, a co-founder of Aliksa who has contributed the land for the center here and also for a center in Depok, on the southern edge of Jakarta (which I visited the next day). Jatika has been successful enough in real estate development and transport business that he can support a social and environmental initiative like Aliksa. Another co-founder of Aliksa, **Iqbaly Noor**, was also there to greet us. He has been successful in information technology (IT) and is now spending some of his time and money to promote the opportunities that SRI can bring to farmers and the environment.

The Nagrak center is beautifully laid out and well-built, designed by Jatika and Alik together, with demonstration areas, rice plots, meeting pavilions, and office space. I was introduced first to **G. P. Solihin**, who I was told is both a former Governor of the very important Province of West Java and a ‘pioneer SRI farmer.’ (Later I saw a picture in the demonstration building of an Aliksa cadre holding up a huge SRI plant, as big as any I have seen, grown on Solihin’s farm near here.) Although he is 82 years old, he is an active promoter of environmental causes, and now especially of SRI.

Ibu Triny Ruskandar, a researcher at the Institute for Rice Research at Sukamandi under the Agency for Agricultural Research and Development, introduced herself as a colleague of Dr. Anischan Gani, who could not attend because he was in Aceh that week. Gani is the government researcher who took an initial lead in evaluating SRI and in introducing it into AARD’s Integrated Crop Management (ICM) system (see paper presented at Sanya conference in 2002: http://ciifad.cornell.edu/sri/proc1/sri_14.pdf). Triny contributed data to Pak Anischan’s papers, she said, and she is pleased that SRI is now gaining acceptance from the government side. Anischan was at one point barred from using the Rice Institute’s internet connection to communicate with me at Cornell, but that has now changed. Triny has become personally involved with the training activities of Aliksa.

Akhyar Ibrihim, an Aliksa SRI farmer-organizer in Aceh who speaks good English served as my interpreter for the visit. He said that golden apple snails are a big pest for SRI in his area, feasting on young seedlings when they are transplanted. I told him about a Filipino farmer who converts snails from ‘enemies’ into ‘allies’ simply by modifying his water management practices. Instead of having no standing water on the field during the first 20 days after transplanting, he keeps a shallow layer of water on his SRI plot, with just a few short periods of intermittent draining to give some aeration to the soil. The mostly-flooded soil conditions keep snail eggs in the soil from hatching, since this occurs only when the soil is dry.

Then at 20 days after transplanting, when the young seedlings, only 8 to 12 days old when transplanted, are more mature, he drains the field and the soil is henceforth kept moist though not continuously flooded. The snails which hatch at this stage of rice plant growth prefer to feast on any young weeds as they emerge because these are tender and succulent. The snails do not attack the rice plants which are now older and tougher, not easy to eat. This timing induces snails to become ‘weeders.’ Akhyar said that they will try this.

After tea and a snack, we convened in the assembly pavilion, an open-air facility with an elevated stage for speakers and slide projection. All around were huge rice plants in black plastic

pots, showing how large single SRI plants can become. Solihin was the opening speaker, being a kind of patron for the center. He expressed support for SRI and for the initiatives that Aliksa is taking to bring SRI to farmers, especially in its organic version, because of the high current costs of chemical-based production. In this area, where before farmers got 4 t/ha yield on average, with SRI they are getting 6 to 8 ton yields, he said.

Solihin asked rhetorically, “Can Indonesia feed Indonesians? Indeed, all of Asia?” He answered that with SRI, certainly Indonesians can feed themselves, rather than import rice as is the current situation. “If everybody will practice SRI, nobody will be hungry. For us in Indonesia today, feeding the people is a big problem. The government has to give priority to this as it has a responsibility to the next generation.”

Solihin added that with SRI, grain quality goes up, and the price that farmers receive goes up, while infestation with pests and diseases comes down, and chemical adulteration of the rice comes down. Over time, consumers should be able to pay a lower price for rice that is of better quality, and farmers will still make more income. West Java, he said, should make faster progress with SRI than other provinces because its farmers are very responsible. Especially if the price offered for paddy is higher -- which it can legitimately be, given the higher milling outturn, and the probable nutritional advantages -- “then the people will follow.”

Solihin affirmed that he wants to promote the export of rice once national needs are met, “but we should export rice that is without chemical residues as this should have a better international demand.” He said that just yesterday he had spoken with the Government’s purchasing agency, BULOG, which has now agreed to begin buying organic SRI paddy from farmers for export to Singapore. It was willing to pay 7000 rupiahs per kilo, which is more than triple the usual price received for paddy. Already, SRI farmers are often getting a premium price for their paddy, but this offered price is more than triple. To the farmers in attendance, this was welcome news.

There has been a government ban on all rice exports since Indonesia became rice-deficit again, to avoid the political embarrassment of exporting rice when it is in short supply in the markets (and prices go up). However, the President has agreed to grant an exception for organic SRI rice, hoping to begin building up a steady overseas demand that will be more remunerative for rice farmers, an important constituency, in years to come.

West Java farmers are ready to export 2,000 tons of organic SRI rice right away, Solihin reported, and from July, they can ensure 5,000 tons. There are several lucrative markets waiting to be tapped. In Singapore, the price for organic rice will be 23 cents per kilo, and in Indonesia it is 25 cents. But in Brunei, it could be 30 cents. Singapore is a lucrative market to break into, “but everything must be free from chemical residues.”

All Indonesian farmers should buy into SRI, Solihin said. He has calculated that if all will switch to SRI methods, they can export 72 million tons of paddy. “I am not dreaming. This is a real possibility,” he said in English. After some explanation of SRI methods in Bahasa Indonesia, he compared the results, saying that SRI will give at least 30% more production. “So going from the biggest rice importer to the biggest rice exporter is a real possibility... The main thing is compost. Compost is the guarantee of success for all of agricultural activity. It is good for the paddy field,

there are fewer insects, farmers can get a better price for their product, and it does not degrade the environment.”

Next, the Deputy Administrator for the district, the *Wakil Bupati*, **H. Soekirman**, expressed support from the regional government for development of SRI. Then the head of the Department of Agriculture’s Directorate for Land and Water Management, **Ir. Suhartanto**, spoke. He said that he was very happy to be meeting together with so many farmers. “There is no doubt about SRI any more, about its practice, although before there were many doubts. Of course there are some problems, but we have to look to how to solve these problems.” (He may have remembered the distinction I drew the day before in the IPB seminar which he attended: between ‘can-do’ and ‘can’t-do’ agronomists, which is like the difference between ‘can-do’ and ‘can’t-do’ lawyers.) This year, he said, there is one irrigation scheme where its entire 1,500 hectares are being cultivated with SRI methods.

Suhartanto expressed hopes for SRI export possibilities, to Singapore, Malaysia and Brunei, to get more income for Indonesian farmers. “We will have to support machines for chopping up compost,” he said, to get wider uptake of organic production methods. The Department of Agriculture is launching a factory to produce these. “The spirit of the soil is in compost,” he suggested. There is a plan in his Directorate for rehabilitating 30,000 hectares of grassland that will be improved with compost for organic production. He added that the President will soon visit a location in North Kalimantan where there are 1,000 hectares of organic SRI. Clearly his Directorate, and hopefully soon the whole Department, is taking seriously the opportunities that are being opened up by SRI.

Then Alik served as moderator for a series of farmer reports. He called attention to the huge SRI plants standing all around the meeting area in black plastic containers, all with 50 tillers or more, brought in from farmers’ fields that morning. He said that today, “Farmers will speak first, and then we will hear from the professor [me] afterwards.” A number of farmers from different parts of Java had been meeting at the center for two days to assess their experience, and some had been selected to report now to the whole group.

First to speak was an elderly farmer, **Mada**, whose farm in Depok I was set to visit the next day. Mada said that he has nine children with one wife and has been farming all his life. For many years there was “no change” in his life but since he started working with Aliksa Foundation, “I have been getting an education,” even though he said he had very little schooling previously. “It feels so good to learn about SRI. I even started crying during my SRI training when I reflected on how little I had learned previously in my life. From my first Aliksa course and ever since then, I have been learning so much. I go to the field often now, and observe, and talk with other farmers about what I see.”

Mada said that before he had very little net income from his rice production, because of the high cost of inputs. “Also, I didn’t think about all the things that I was killing by using chemical fertilizer – worms, insects, fish. It made me start crying when I thought about this too.” He spoke positively about Aliksa’s hands-on training methods. “I remembered very little from any previous training, but I remember everything from the training that I got from Aliksa. Before it was just a lot of theory,” meaning abstraction. “With Aliksa, we get practical instruction.”

When he came home from the first training program, however, his wife didn't agree with the new methods. She asked, "Why use only one seedling? From ancient times, we never heard before about using just one seedling." But he tried the new methods on 1,000 m² (0.1 hectare) to start out, even though his wife believed it would not succeed. He collected as much waste (organic) material as he could from his neighbors to make compost for the field. Government officials came when he transplanted 10-day-old seedlings, with just two small leaves, at 25x25 cm spacing. "They wanted to take a picture of the field to show to their boss." There was a lot of skepticism in the whole community, especially over his alternate wetting and drying, because the soil cracked after two days of drying. He said that his soil was not very good anyway.

Still, by harvest time, the field was very impressive, with as many as 73 tillers on one plant. His yield was over 10 tons per hectare, "so now everybody in the area is interested." This season's crop is not mature yet, but Mada said they are hopeful that some plants will reach 100 tillers. "Unfortunately, all of the knowledge from here [the Aliksa training center] does not get to enough farmers yet. We will start spreading the lessons." Many farmers are coming to his field see and to learn, he said. Before he got at most 4 tons per hectare; now he gets more than double that. "And my wife now wants to plant the whole *sawah* (paddy field) with SRI methods."

A second farmer, **Ahmad Rahim** from Bogor, talked about Aliksa's training program, how it was organized and how they want to develop an SRI curriculum to be taught in the high schools. "This should be successful because students all want to follow their teachers to get good marks." He spoke more as an Aliksa cadre than as a farmer, discussing the importance of gaining cooperation among all farmers in an irrigation system so that they could coordinate and reduce water deliveries. He also talked about organizing local seminars of all stakeholders to get wide understanding and cooperation, using newspapers, radio programs, cell phones, etc.

Third to speak was **Aep**, an SRI farmer from Tasikmalaya, an area in West Java south of Ciamis, who had spoken at Universitas Andalas the day before. In September, 2005, I had visited the area where Aep lives and met some of the farmer-field-school graduates who had learned about SRI (see pages 3-9 of trip report: <http://ciifad.cornell.edu/sri/countries/indonesia/indotrep905.pdf>).

Aep had a long stringy beard hung down from his chin, looking a bit like long fibrous SRI rice roots, someone observed. Alik said that Aep had pledged that he would not cut his beard until the price that farmers receive for their paddy reaches 5,000 rupiahs per kilo. "Now with the new export opportunity just announced, he can justify shaving off his beard, if he wants to." Aep reported to the group on the positive results from his SRI practices, emphasizing the merits of shallow planting, since as he explained on Tuesday, his nickname has become 'Mr. Shallow.'

A fourth farmer **Abdul Muni** said he had started with SRI in in 2005, on 2,000 m², having learned the methods from Alik. SRI is now very popular in his village, he said. Other people used to plant as many as 10-12 seedlings in a hill, but now they understand why they should plant only one. He faced a lot of problems with his family at first and got 'blamed' by his friends the first time he used the new methods. The village head (*Kepala Desa*) was very concerned. But now after his success, the head of the subdistrict (*Camat*) is supporting his efforts. The yield he

got the first time was not so good, 700 kg, or 3.5 t/ha; but he did not follow all of the practices. Subsequently, when he practices SRI better, he got 1,310 kg (6.8 t/ha), a very good yield.

Water efficiency was the thing that Abdul stressed most while listing also the advantages of SRI. “I can reduce my water by 20 to 45%.” In his area, 5,870 people have already been trained on SRI by PU, and also with support from the Department of Agriculture (referring to the Directorate of Land and Water Resources’ support for Aliksa’s activity). This training has been extended to 14 provinces. “Everyone is happy, except some people in government.” This remark was not clarified, but seemed to refer to some officials’ unhappiness about reducing the demand for purchased agri-inputs, since this could affect their (unofficial) income.

The fifth farmer speaking was **Jahidin** from Sukabumi, not far from Nagrak. He said that there are six persons in his family, and only he has followed SRI so far. He talked on the importance of cooperative marketing, so farmers can get the best return from their production. He wanted to see cooperation from the *desa* (village) up to the national level. In Sukabumi, he said, marketing is difficult. Farmers don’t know where to sell. In Depok, by contrast, near to Jakarta, marketing is easy. “So we need a national system,” Jahidin concluded, something that Aliksa can work on.

A sixth farmer from Panut near Ciamis talked about his experience and the effects of different soils, in terms of their texture and structure, on plant growth. He said the farmers are used to planting more than 5 seedlings per hill, so it has been difficult to change their behavior, to get them to plant just one, even though it is demonstrably better. There is a problem also that some farmers can’t make enough compost, so they are still putting small amounts of fertilizer on their field. (This is only a problem if one is trying to practice only organic production.)

“The government should promote SRI with understandable reasons,” he said, adding that organic rice is better for the health. “Farmers are already accepting SRI, and the President is launching SRI. What about you?” he asked, looking at the officials present, including the deputy administrator for the district in which Nagrak is located, seated in the front row. “What are you doing? What about Deptan? What is it doing? What about PU?” This questioning created some awkwardness, which was diminished by adjourning for a group photo and a tour of the training center’s facilities.

In the demonstration pavilion, there was picture of someone holding a huge SRI plant, as big as any I have seen, from Solihin’s farm. No wonder he is such a solid supporter of SRI. The most interesting thing demonstrated there was a motorized shredder of biomass, built by local high school students from recycled metal with a reconditioned diesel engine. It cost only \$600, about one-third of the usual cost, and impressively chopped up rice straw, leaves, branches and other vegetative material. We were also shown how the pulp of an inedible fruit that has medicinal qualities (bitter maja, or *labukayu*) can be used with rabbit urine and other organic materials such as molasses to collect local microorganisms from the air and to ferment an organic fertilizer which is a potent soil additive.

Someone reported that organic fertilizer can be improved by collecting snails from rice paddies and crushing them, adding them to the mixture. Normally snails are a serious pest for young rice plants, but paying children to collect them from paddy fields and then using the snails to enrich

the organic fertilizer reduces the pest at the same time it contributes to more and better fertilizer. These are some of the innovations between tried out, evaluated, and improved at the Aliksa Center, with a cadre of engaged farmers who are trying to make farming more remunerative and sustainable.

After lunch, I was asked to make a presentation on SRI, using powerpoint to illustrate my points. In the discussion that followed, **Rum Mutiara** from Maporina, the Organic Farming Society of Indonesia, made a strong argument for organic agriculture, suggesting that the benefits of SRI derive primarily from “giving up chemical fertilizer and going organic.” I pointed out that our factorial-trial evaluations have not confirmed this. We have found that the single most important factor raising yield is the use of young seedlings, followed by changing water management practices and switching to non-flooded soil; then, wider spacing and conversion to organic fertilization followed in this ranking.

When other SRI practices have been used with chemical fertilizer, they have given very good results. But the highest rice yields have come with all-organic fertilization. Mutiara was not apparently happy with this response, perhaps because he is involved in the production and sale of organic fertilizers. I added that soil science has shown that if organic matter is added to the soil but flooding is continued (i.e., when the soil is hypoxic), there is anaerobic decomposition of organic matter, which is less beneficial than aerobic decomposition. This was acknowledged and seemed to satisfy him.

An official from the Department of Agriculture asked a series of questions, including whether weeding with a mechanical hoe would be detrimental to the soil? Not at all, it aerates the soil and is beneficial. What is the ideal spacing? This varies and depends on soil fertility. Farmers should evaluate different spacings to determine what is optimal for their soil conditions. Can zero-tillage be practiced with SRI? Yes, this may become the predominant practice in the future. Can SRI methods be used under upland (unirrigated) conditions? Yes, provided there is at least some minimum of rain, because plants all need at least some water. I discussed the modifications used by colleagues working with SRI in eastern India where average yield is 7 t/ha. Can SRI practices be used with sugar cane? Yes, this is being done successfully in India. All very good questions.

Mubyarto from the Institute of Technology at Bandung (ITB) raised a question about the name for SRI, whether it might not be better called “System of Process Intensification” since SRI is not about input intensification, the usual meaning of ‘intensification’ in agriculture. I said that SRI is not my property, so I am not at liberty to make a name change. Nobody owns SRI, and anybody can use the basic ideas and adapt them to their needs. Some have suggested that SRI be renamed the ‘System of Rice Innovation,’ because it encompasses a great many changes and is continually evolving, beyond the original insights and proposals of Fr Henri de Laulanié.

Alik commented on the need to continually adapt and adjust SRI methods and ideas, not just taking them as a fixed package. He found that a higher proportion of effective tillers can be induced by drying out the field for 10 days at 47-50 days after transplanting. This puts some stress on the plants. Then if water is added back on the field with addition of microorganisms when the surface soil is cracked, this appears to give maximum tillering and yield. I noted that this is the kind of evolution that Fr. de Laulanié would have strongly approved of.

Unfortunately, the time had moved along quickly, and it was almost 4 o'clock. I was scheduled to have dinner that evening in Jakarta with **Dr. Bayu Krishnamurti**, Deputy Coordinating Minister of the Economic Affairs, former director of the Center for Development Studies at IPB, and still a faculty member at the university (IPB). He hosted a presentation that I gave on SRI at his Center at IPB in January 2003 and was interested to discuss how he could give support within government to SRI applications. I had to ask to be excused for the drive back to Jakarta, and after the usual round of picture-taking, Victor, Miyatty and I left for a hurried and harrowing three-hour drive back to the hotel, arriving just in time for dinner.

Visit to Aliksa SRI Center and Field Experiments in Depok (Friday, January 18)

Next morning after an interesting breakfast,¹ we drove for almost an hour, mostly through urban traffic, to get to the southern edge of Jakarta, to the area known as Depok, where agriculture is interspersed with settlements. A little after 9 we reached the new center that Aliksa is setting up there and were met by Alik, Iqbal, and Jatika. The latter has provided resources for establishing this facility, which is still being finished. They said that I should regard this center as my 'office' whenever I am in Indonesia. I asked whether they had internet connections here, so that I could send them email files, and Iqbal said that just the day before, they discussed this with a representative of the Microsoft Foundation (MSF) after our meeting in Nagrak on Thursday, which he had attended, and MSF has agreed to donate computers and internet connections for both of the Aliksa centers. This will be a substantial boost for SRI efforts in Indonesia coming from the private sector.

After a briefing on the center, we drove to the peri-urban community where Mada, whom I had met the day before, lives and farms. En route Victor told me about recent discussions he had had with an entrepreneur in Bali who is making 80 hectares available for SRI demonstrations and production. This will supply a large tourist restaurant with local varieties of rice, grown with organic SRI methods. Tourist demand for SRI should make its methods more prestigious in local eyes. After following two Aliksa field staff on a motorcycle for 25 minutes, weaving through backroads, we reached Mada's home and walked with him and a dozen neighbors to their fields nearby.

The large plot that we visited still had a sign posted for a government demonstration there last year. The subsequent SRI demonstration was more successful, we were told, achieving a yield of 11.25 t/ha, surprisingly high. The field in front of us had recently been planted with seedlings just 6 days old, all looking strong and vigorous. (Miyatty was not overly impressed, saying that she has planted seedlings as young as 4 days old in her village successfully.) One could see from the color and texture of the soil that it is very fertile, but Mada said this was a recent improvement. It was his applications of organic matter that made it more fertile, he said. He had

¹ Dr. Zaenalo Soedjais, formerly CEO of one of the largest fertilizer companies in Indonesia, is now an active member of Maporina, the Organic Farming Society of Indonesia, and chief executive of PT Greenland Agrotech Industries, a company producing organic fertilizers. On Thursday he called to ask if we could meet before I left Indonesia. Friday breakfast was the only time we could get together. He characterized his post-retirement occupation now as a kind of 'atonement' for his earlier successes in promoting inorganic fertilizer throughout Indonesia, with consequences for its soil systems that he now regrets. He offered to try to arrange some national television programming on SRI, which Victor will follow up on since I may not be returning to Indonesia for some time.

collected as much organic matter as possible from the whole vicinity to make and apply compost to restore the fertility of the soil in this field.

The farmers here had planned for me to transplant some young seedlings in the field, more as a ceremony than as serious transplanting (fortunately). I was able to do this by kneeling on the bund rather than take off my shoes and socks, roll up pantlegs and wade into the paddy field. (Cleaning up afterwards for our meeting at the Department of Agriculture that afternoon would have been difficult.) My technique was adequate but not as swift and deft as that of several farmers who showed me their acquired skill, slipping tiny seedlings into the soil with a quick motion and using their thumbs to cover the roots laid horizontally into the soil just a centimeter deep.

Mada and others explained to me an experiment that they had initiated, with four different fertilizer applications on the same soil and with the same variety: 100% chemical fertilization, 100% organic fertilization, mixed fertilization (50% each), and no soil amendments. Seven-day seedlings had been used with 25x25 cm spacing on all plots. This is a demonstration more than an evaluation, it seemed. The farmers with us expected it would show other farmers what can be achieved with organic fertilization that builds up soil fertility. Whether this expectation will be confirmed it was too early to know.

Mada's wife had prepared a large meal for everyone back at their home, with boiled SRI rice, fish and vegetable curries, and other good food. Since a noon meal was waiting for us back at the Aliksa center, we agreed that this should be considered as 'brunch.' Mada's wife confirmed that she had been initially opposed to her husband's SRI trials, but said she is fully supportive now. The meal was entirely made with local foods, including some starfruit, a major local product.

On the way back to the Aliksa center we stopped at the Depok Starfruit Marketing Cooperative, whose 750 members grow and process starfruit for the local market and for export. After the fruit is graded and packaged, it is sold either fresh, processed into bottled juice, or as a powder to be reconstituted as juice. Since this fruit is considered as a natural remedy for hypertension, the demand for it in Indonesia and abroad is growing, so producers are optimistic about future sales.

Arriving back at the center at mid-day, half an hour was taken for all of the Muslims, i.e., all but Victor and me, to go to Friday prayer at a nearby mosque. When everyone returned, a fine lunch was served. During this, I was introduced to **Ir. Mardy Bagyana**, deputy director of the Department of Agriculture's Land and Water Resource Directorate (LWR), who had joined us.

His Directorate was created in 2005, reconstituted from an earlier Agricultural Infrastructure unit. In keeping with its mandate to improve the sustainability of land and water resources, one of its first initiatives was to begin supporting the training of trainers for organic SRI. That the Food Crops Directorate in the Department had not yet taken much interest in SRI did not prevent Land and Water Resources Directorate from working with Aliksa and with PU on this initiative.

Mardy said that LWR is working with 151 farmer groups practicing organic SRI in 55 *kabupatens* (districts) across 16 provinces. Each group operates between 2 and 4 hectares of organic SRI cultivation in its respective area, maybe 500 hectares in total. Alik estimated that

there are around 10,000 farmers presently using organic SRI methods on about 6,000 hectares (15,000 acres) in West Java..

The afternoon discussion with Aliksa staff and associated farmers, about 30 in all, began with a felicitation to Mada on his 65th birthday. The first farmer to speak, whose name I did not catch, thanked Aliksa and me, saying that before, farmers did not understand what SRI was all about. Now with lessons, support and good management, they are seeing good results. They want still to improve the practices more, and he said that their target is to reach 5,500 ha (apparently in this Depok area). He asked me how much compost farmers should be using with SRI, and I explained that there was no set amount, that this has to be determined according to soil quality, the availability of biomass, how much time farmers have for making and applying compost, etc. In general, we advise using as much compost as possible, but even 2 t/ha can be enough to stimulate soil-improving dynamics.

Trials in Madagascar have found that 2 t/ha of compost is almost as beneficial as 8 t/ha, I told them, so fairly modest amounts may be economically optimal. However, I noted also that the very highest SRI yields have come from very high applications of compost, many times higher. This is only practical for farmers with very small holdings. Farmers are encouraged to do their own experimentation, to decide for themselves what is the most productive amount to apply.

One farmer, known as Eddie, said that in Indonesia, “Our land is dead.” He said that he had used agrochemicals on his land for 32 years previously, but now that he has practiced organic agriculture for five years, he can see much improvement. Another farmer spoke, saying that his SRI results have been much better than he ever got before, at least 8 t/ha. “The land in Indonesia requires a lot of organic material,” he said, with agreeing head-nods all around.

Much interest was expressed in the news that Bulog would soon begin purchasing organic SRI paddy for export at premium prices. Adhyar, who was translating for me, told the group that he is already getting a 10% premium for his SRI paddy in Aceh, just because of its higher quality. Someone else said that in East Java, organic SRI rice is getting a 20% premium, while in and around Bandung, there is a premium of 60%. SRI farmers should be coordinating their marketing to take advantage of the best available prices.

Sutarmin Kasnawi, a training director for PU and now a core member of Aliksa, reported that he had recently done a little investigation on his own in this area, dropping into a shop nearby. It was selling organic SRI rice at 25,000 rupiahs for a 2-kg package, i.e., 12,500 rupiahs/kg, over \$1 per kg. Ordinary rice sells for around 6,000 rupiahs. He added that Depok has the advantage of being strategically located near Jakarta, where there is more purchasing power and consumers appreciate the value of organic food.

It is important for SRI farmers to know how to tap into this demand, Sutarmin said, with very good packaging. For example, consumers are willing to pay a higher price for vacuum-packed SRI rice. Sutarmin added that there was only one package of organic rice left in the store that he had visited. He said that the value of organic SRI is seen especially when cooking it. “It doesn’t spoil even for 3 days after cooking.”

Mardy Bagyana was asked to comment, and he said that in his experience, the keys to success are: (1) confidence-building, to spread confidence in the methods being recommended, and (2) commitment to use the methods as recommended. “Farmers should not sneak out in the middle of the night, when nobody is looking, to apply urea, or to flood their field.”

His department is committed to these methods, Mardy said. “These are not UFO methods,” referring to the put-down of SRI by Thomas Sinclair and Ken Cassman in a commentary in the journal *Field Crops Research* in 2004. (He had asked me at lunch to send him the rebuttal that I and two colleagues had written to skeptics’ published disparagements of SRI, now accepted for publication by *FCR* editors.)

When the time reached 3:00, we needed leave the center to keep an appointment at the Department of Agriculture set for 3:30. While the Department headquarters was not so far away, heavy traffic would make travel slow. So after 10 minutes of picture-taking, Victor, Miyatty and I drove off toward the Deptan headquarters, reaching it just on time.

Meeting at the Department of Agriculture in Depok (Friday, January 18)

At the headquarters of the Agency for Agricultural Research and Development (AARD), we were met by **Dr. Effendi Pasandaran**, one of the longest-standing supporters of SRI in Indonesia. During the 1990s, when Pak Effendi was director of the AARD’s Center for Agro-Socio-Economic Research (CASER) in Bogor and I was director of CIIFAD, he and I together coordinated cooperation between Cornell and Indonesia’s Department of Agriculture on a series of initiatives for sustainable agricultural and rural development.

Once I was satisfied that SRI was ‘for real’ in 1997, Effendi was the first Indonesian with whom I discussed it, and he backed the first SRI evaluation done in 1999-2000 at the AARD’s rice research center at Sukamandi. Ensuing evaluations led AARD to recommend SRI practices as part of its Integrated Crop Management (ICM) strategy in 2002. Pak Effendi, now retired from administrative responsibilities and serving as a senior advisor in the Department of Agriculture, has often helped me set up visits and meetings for SRI since he left his CASER position.

Pak Effendi had arranged a small meeting on SRI that included the former Minister of Agriculture, **Dr. Sjarifuddin Baharsjah**, also a former chairman of IRRI’s Board of Directors. Pak Sjarif first learned about SRI when visiting Cornell in 2000 and he heard more about it on my visits to Indonesia in 2003 and 2005. He expressed interest in SRI, although he has become more actively interested in SRI only lately. In his current role as chairman of the Field Foundation, an NGO that manages the farmer-participatory integrated pest management (IPM) program in Indonesia, he has given some support for SRI expansion already.

With Pak Sjarifuddin was his wife **Dr. Justika Baharsjah**, who was Minister for Social Services in the late 1990s and who as an agricultural economist has been interested in SRI herself, and **Dr. Faisal Kasryno**, former director-general of AARD and one of the country’s most published analysts of the rice sector. There were also a number of Department of Agriculture staff present and several staff from the **Field Foundation** whom I had met during my 2005 visit. There were many questions for me from the group, but the most important part of our conversation was the

interaction with Miyatty, who responded to many questions about SRI from a farmer perspective.²

Miyatty spoke so confidently and knowledgeably that someone suggested she should be referred to as 'Professor,' since it was apparent that she knew so much about SRI, and in some ways more than I did, as a Cornell professor. I concurred in their appreciation, letting the group know that Miyatty has had only three years of formal schooling. This appeared to greatly surprise the others. I expressed the hope that with so much evidence now accumulated on the merits of SRI, the Department of Agriculture as a whole can begin supporting its dissemination, not leaving this just to the Land and Water Management Directorate. The Field Foundation, which is a descendent of the Agriculture Department's national IPM program, converted to NGO status during Pak Sjarifuddin's tenure as Minister, is actively engaged in SRI, having begun working with SRI in 2001. Perhaps the Indonesia Rice Foundation can also play a leadership role and can cooperate with the nascent Ina-SRI network.

This was the last event of a very full week. Victor, Miyatty and I met Sato at a hotel in South Jakarta where he could give me a CD of pictures taken earlier in the week and some materials to bring back to Cornell. Unfortunately, the 2008 SRI calendars that Sato-san had designed on behalf of DISIMP, PU and Nippon Koei were not yet back from the printer, so I could not bring some of them too.

From the hotel, the trip to the airport was not difficult, nor was the trip back to Ithaca. There was a lot to reflect on, however, and a lot to notes to distill into this report. It is intended to enable persons who could not be with me for these seven days to partake of them vicariously, and to help Indonesians see the overall outlines of what is emerging in their own country to transform their rice sector. Hopefully in addition to raising production and incomes, SRI will contribute to a more secure and equitable society while processes that are degrading natural resources are reversed, to make for a healthier, more sustainable environment for human and all life. That is the future which persons joining in the growing SRI 'coalition' have in mind.

² That morning I had learned that Miyatty had herself designed an implement for weeding four rows of SRI plants at the same time, thereby reducing the labor time needed for weeding, apparently similar to such a weeder developed by Gopal Swaminathan in Tamil Nadu, India. Miyatty has also developed a pedal-powered shredder for cutting up straw, weeds, etc. into easily decomposable material for composting. She gave me a picture of this. The device is not as powerful as the design that I have had in mind, but it is already being used by farmers, a real accomplishment. That evening, Miyatty also told me about a pre-school that she has established in her home for village children who cannot afford privately-provided programs. She pays the salaries for the two teachers herself, seeking to improve opportunities for the next generation.

Translations by Victor Lee of Lyrics to SRI Songs Written by Ibu Rita Budiharto

SRI MARCH (*Mars SRI*)

Dewi Sri, the goddess of rice, Symbol of hope for rice farmers.
SRI farms are water-wise, Yielding a much higher harvest.

With SRI, we'll join our hands, Forward we progress and work as friends.
It is water-saving and uses less seeds. Our farmers succeed in paddy fields.

Chorus: Come, join our friendship and brotherhood. SRI brings us much good.
Increasing our harvest and much, much more, We'll live the life we're looking for.

SRI is now the new paradigm. SRI proves economic every time.
SRI, the hope of farmers here and there, Bringing much success to people everywhere.
(Repeat chorus)

SRI METHODOLOGY (*Pola Tanam*)

SRI is being taught and the farmers agree.
We'll have higher yields with this methodology.

Bringing health back to our soil, it restores fertility.
Saving water, saving soil – it's good economy.

Come, dear farmers, join us in this SRI unity,
For a better farming way, surely we can see.

Let's convince folks everywhere, this is how rice ought to be.
We'll advance, Indonesia. Let's plant it faithfully.

INDONESIA, OUR BEAUTIFUL COUNTRY (*Hymne SRI*)

Indonesia, our beautiful country, Blessed with good climate and land with rich bounty.
Let's take care of them for our posterity, As we preserve our soil fertility.

Dewi Sri, symbol of hope for rice farmers. SRI is the new methodology.
Let's plant the SRI way in larger numbers, And we'll sustain the success of our country.

O, farmers, here's to thee, Ye heroes for eternity.
Develop SRI, For our dear land's prosperity.

As we sustain the good of our country, A sacred trust for our posterity.
Let's farm our land with great responsibility, And we'll sustain it for eternity.