If an alien landed on earth today, odds are, that the first human that alien would encounter would be a rice farmer.

Almost one third of the world’s population consists of Asian farming households, and the most commonly raised crop is rice. Across the region, hundreds of millions of families make at least part of their living by tilling the soil. Among the developing countries in the region, the proportion of the population engaged in agriculture is estimated to range between 42% in Indonesia to 96% in Nepal. Most of the households that are involved in agriculture own or have access to small parcels of land. Learning how to grow rice on a small parcel of land, therefore, may be one of the most relevant educational activities on the planet.

And indeed, growing rice has been quite a learning process here in our small, bridge-side rice field at Green School. Students have been involved in planting and harvesting this field every year since the Green School opened, but both students and farmers lacked the skills and knowledge of how to grow rice. Resultantly, our padi was plagued by a host of pests (with names like Brown Plant Hopper and White Stem Borer), which literally decimated our yield. Until last year only a single farmer of the 14 Green School gardeners knew how to grow rice.
That lack of understanding about how to grow rice, is more common than you would think for the world’s most common profession. Fewer and fewer youth inherit these valuable skills. A recent survey by Green Camp in Sibang revealed that not a single junior high school student aspired to be a farmer when they grew up. The most common answer, rather, was public servant/government worker.

And although it seems that rice farming is in good hands in Bali (this year Bali was awarded World Heritage status from UNESCO for its 1000 year old irrigated rice system) there are still major challenges. For one thing, government regulation on the sale of rice has artificially held the price low, to the impoverishment of farmers. Yet the foremost challenge was brought about by a program of rice intensification from the 1970’s known as the Green Revolution, an “engineering” approach to smallholder agriculture.

The main assumption of the approach was that small-scale farmer productivity could be raised if they had better access to certain inputs and used them according to a set of prescribed instructions – FAO, 2001

Indeed, farmers with access to good irrigation, rice varieties, and inorganic nitrogen fertilizer showed a temporary increase in yield. The long-term costs of the program, however, were high. Farmers lost not only rice varieties (of the 7000 rice varieties in Indonesia, only five (5) were promoted by the government, who forced their use upon farm groups between the 1970’s-1990’s) but also the skills to manage pests, water, and produce organic fertilizer. Indonesia’s rice farmers became reliant on external inputs, and lost bargaining power both with providers of inputs and rice markets. Farmland became infertile over time, as soils suffered from lack of organic matter, and an impoverished soil ecology. It is no wonder the youth of Sibang, or Indonesia in general don’t want to farm. Most farmer parents wish “better” for their children as well.

Farmer Emancipation
In the late 1970’s and early 1980’s, a program called Farmer Field School (FFS) was developed, initially by the International Rice Research Institute (IRRI) of the Philippines and later by the FAO (United Nations – Food and Agriculture Organization). The basic premise of Farmer Field Schools was that, if engaged in hands-on learning with appropriate training methods, farmers could:

- Master the ecological principles needed to implement Integrated Pest Management (IPM) in their fields;
- Become experts in IPM;
- Apply what they have learned to develop new initiatives and gain greater control over local conditions.

The FFS approach is based upon four principles;

- Grow a healthy crop
- Conserve natural enemies
- Conduct regular field observations
- Farmers become experts in their own fields

For references on farmer field school see; www.communityipm.org or http://www.agriculturesnetwork.org

Green School Farmers and teachers learning the principles of Integrated Pest Management with a local government agriculture extensionist from Abiansemal.
The first principle means that FFS participants will need understand plant biology and apply that knowledge to their farming practices. This should help alumni to increase their yields as well as grow plants that can withstand disease and pest infestations.

The second principle implies that FFS alumni will reduce their use of insecticides. To do this field school participants will need to understand insect population dynamics and rice field ecology.

The third principle asserts that Integrated Pest Management (IPM) requires of farmers the ability to regularly observe, analyze, and take informed decisions based on the conditions of their agroecosystems.

The fourth principle states that because of site specific conditions, local farmers are better positioned to be taking the decisions relevant to their fields than agriculture specialists from distant areas. Hence, FFS alumni should be able to apply IPM in their fields and also be able to help others do so.

Over the past two decades, following the principles of farmer field school, rice farmers across the region indeed have regained control over their farming futures. Not only has farmer field school been a global success, but it is working for us here at the Green School as well.

Clockwise from above: A prayer for Dewi Sri - the goddess of rice, planting side by side with a rice farmer and his ingenious bamboo frame to space the rice appropriately, showing off heritage rice seedlings, following a thousand year old tradition of hand planting rice in irrigated fields.
Rice Farmer Field School comes to Green School

In 2011, the rice fields at Green School were plagued by at least 7 types of insect pests. What the pests did not destroy was eaten by birds and our harvests were low. After the 2012 harvest, the Green School contacted the head of the Bali Department of Agriculture’s Agency for Food Crops and Horticulture (BPTPH). This agency put us in touch with a pair of local agriculture extension agents (PPL) from Sibang Gede and Abiansemal who had experience facilitating rice farmer field school.

In the “spring” of 2012, for 100,000 rupiah a week, an extensionist visited the Green School for 16 weekly lessons attended by 14 Green School gardeners as well as Pak Matt and Pak Noan from Green Studies.

Using a local heritage variety of Balinese rice, the group went about the task of growing a healthy rice crop. The basic practice they used is known as SRI – or Sustainable Rice Intensification¹ (coincidentally, the Balinese goddess of rice is known as Dewi Sri) The group started by rearing a local heritage variety of Balinese rice, and then planting a single rice plant per hole. Modern day rice farmers plant 2-3 seedlings per hole, as a means of insurance in case a seedling dies, however this causes competition between surviving plants and drastically reduces yield.

¹ For more information about the impact of SRI - go online to Agricultures Magazine, who just did a whole issue on Systematic Rice Intensification (SRI)  http://www.agriculturesnetwork.org/magazines/global/sri
The group went on to learn how to make and apply organic fertilizer (solid and liquid), identify and hand-pick pests, and even employ an innovative technique to conserve natural enemies of pests. In this technique, a bamboo post is planted in the rice field, and a hole carved out at the top like the mouth of a flute. The hole is lined with the sticky resin of a nearby tree. Egg masses and larvae, the adults of which are pests of rice, are placed in the hole, where some become hosts for parasitic wasp. The young wasps hatch and increase their population (feeding on more larvae) while the larvae either die or are unable to escape the bamboo as they stick to the sap on the hole (unlike the wasps, they can’t fly).

As field school lessons went on, Matt and Noan took notes on the curriculum used by the trainer, so that the following year, students could jump into the rice fields monthly, learning the same lessons as the farmers. Now, 14 farmers all have the basic skills to grow rice. The Green School gardeners, led by venerable Bapak Subyanto prepare the rice fields for the kids to plant, and manage the fields in sync with the curriculum developed by Matt and Noan. This way, the kids can drop into the rice field every month during the four month cycle for a hands-on lesson.

This past March, the younger grades harvested their rice, after being led in a Balinese ritual for the occasion. After harvest, the kids milled rice both the traditional way (by pounding) and also during a visit to a mechanized rice mill. The resultant rice was cooked inside a piece of young bamboo (a Torajan tradition called Pa’Piong), bringing a close to the annual cycle.

The rice was threshed and hulled both by hand, with stone mortar and pestle (above left) and at a threshing facility in Sibang (where they couldn’t quite sort out how to leave the inner hull on - to make brown rice. Below, Grade 5 making the age old practice of winnowing the rice look simple.
This off-season, we are breaking the rice fields by planting leguminous crops, including wing-bean, which we have not yet trialled as a cover crop.

And the learning continues. There are many challenges faced in growing a small rice isolated rice patch. For one, the birds (fearless of our scarecrows) easily zero in on the only rice field around. But we are learning lessons each year, and increasing the likelihood that if an alien lands at the Green School, they too, will most likely first encounter a rice farmer.

Top to Bottom;

Mixing rice, veggies and coconut milk to in a piece of young bamboo;

The bamboo is placed directly onto the fire for 2 hours, a traditional style of cooking from Tana Toraja, Sulawesi known as Pa’Piong;

Enak Sekali, now that’s Al Dente!