

# THE ORGANIC & NON-GMO REPORT

Information to ensure a safe, healthy and sustainable food supply

Volume 10, Issue 7 July/August 2010

## NON-GMO FOOD PRODUCTION

### Non-GMO rice growing method takes root worldwide

While highly publicized attempts to genetically engineer rice are promising to "feed the world" tomorrow, a grassroots revolution in non-GMO rice production is sweeping rice fields worldwide, creating positive impacts today.

Rice is a staple food for half the world's population. In China the word for rice is the same as the word for food. The number of rice varieties grown by farmers worldwide may be as many as 40,000, according to some estimates.

But experts warn that rice yields have to increase more than 50% by 2050 to feed a growing world population.

Moreover, rice farming is increasingly unsustainable; it is the largest consumer of global freshwater resources and one of the largest consumers of fossil-fuel based fertilizers. Flooded rice paddies also emit a significant amount of methane, a greenhouse gas that contributes to global warming.

Many "experts" say genetic engineering is the answer to increase nutrition and yields and such attempts are now underway. "Golden rice" genetically engineered to produce higher levels of vitamin A has been touted as one solution, but has never been grown commercially. China plans to introduce insect-resistant GM rice by 2012. The Bill and Melinda Gates Foundation provided \$11 million to the International Rice Research Institute (IRRI) to develop GM rice that increases yields.

#### **SRI: Grassroots revolution**

Yet while these highly publicized GM rice projects promise to "feed the world," a grassroots revolution is sweeping rice fields worldwide, creating positive changes. The revolution is called the System of Rice Intensification (SRI), an innovative, sustainable method for growing rice that increases yields and uses less water, inputs, and seeds.

SRI was developed in Madagascar in the 1980s by Father

Henri de Laulanie', an agronomist and Jesuit priest, along with local colleagues and farmers. Father Laulanie' and his colleagues aimed to help small-holder farmers grow more rice at less cost with limited resources.



**Indian farmer plants rice using SRI**

Conventional rice production involves continuously flooding fields to reduce weeds, planting many seedlings close together, and using unsustainable chemical fertilizers and pesticides.

With SRI, 1-2 seedlings at 8 to 12 days old are planted per hill and into soils that are not flooded. Seedlings are spaced apart farther in a grid to give roots more room to grow and to facilitate weeding. Soils are alternately dried and wetted. Organic matter is used for fertilizer and integrated pest management methods are encouraged.

According to Olivia Vent, SRI liaison at Lotus Foods, which sells SRI rice products, less water keeps soil more aerobic, which enhances root growth. "The roots are healthier because they get more oxygen," she says.

Planting fewer seedlings also produces stronger roots. "Roots are put in carefully and can spread out immediately. The roots are larger and go deeper in the ground anchoring plants to withstand wind and storms," Vent says.

#### **"A way out of poverty"**

Stronger roots produce healthier plants which increase yields by 50-100% and more. SRI cuts water usage by 25-50%. With many fewer seedlings transplanted, SRI dramatically reduces the number of seeds, about 11-15 pounds per hectare, compared to 110-

165 pounds per hectare for conventional rice production.

Farmers can use their own locally adapted seed varieties and are not dependent on multi-national companies for patented or hybrid seeds. "This methodology works best with indigenous rice varieties," says

Caryl Levine, co-owner of Lotus Foods. "Farmers don't want to grow GMOs or hybrids because they are costly and farmers can't save seeds for the following season. And they prefer the taste and nutritional value of their local varieties."

Methane gas emissions are also reduced because fields are not flooded.

"Farmers can cut production costs, reduce pesticides, save on labor, and use fewer toxic chemicals," Vent says.

Those benefits have attracted farmers worldwide. SRI practices have been adopted by an estimated 2 million farmers in 40 countries throughout Africa, Asia, Latin America, and the Middle East in a variety of climates and geographic conditions.

OutlookBusiness, a leading Indian business magazine, selected SRI as one of its "25 Ideas That Will Change Our World."

"SRI represents an opportunity for more food, more money, better health, and more options—in short, for a way out of poverty," Levine says.

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## “Money going to fish and not fishing poles”

Non-governmental organizations such as Oxfam, Africare, and Worldwide Fund for Nature have been instrumental in the adoption of SRI, says Levine. “NGOs are working with the farmers and have been important in building relationships with other organizations.”

One of those organizations is the Cornell International Institute for Food, Agriculture and Development, which has an SRI Group that facilitates research, global market development and information sharing and maintains a global SRI website.

More recently, the World Bank has taken a proactive role in promoting SRI, Vent says.

The governments of China, India, Cambodia, Indonesia, and Vietnam also support the adoption of SRI.

Surprisingly, rice research groups such as IRRI have been skeptical and even hostile about SRI. “You would think that scientists would want to understand how it works, but probably because SRI came out of a non-research environment there has been resistance,” Vent says.

IRRI is focused on breeding

new rice varieties, such as the Gates Foundation-funded genetically modified C4 rice project, and not on rice growing methods, a critical difference, says Levine. “The research money is going to fish and not fishing poles.”

Some rice scientists say there is a lack of research demonstrating the benefits of SRI though published literature documenting its value is increasing.

A major study on SRI is now underway with funding from the Gates Foundation. Participants include IRRI, Cornell, and Wageningen University, a leading Dutch agricultural institution.

“The aim is to try to better understand SRI and why it has moved so quickly,” Vent says.

While the study is going on, farmers continue joining the SRI grassroots revolution.

“This could be a tipping point to change how rice is grown around the world,” Levine says. “We have a methodology on the shelf that farmers can use to feed themselves. It’s simple, and they have all resources they need. They just need to be trained.”

For more information about SRI rice methods, visit <http://ciifad.cornell.edu/sri/>.

## Lotus Foods brings SRI Rice to US market

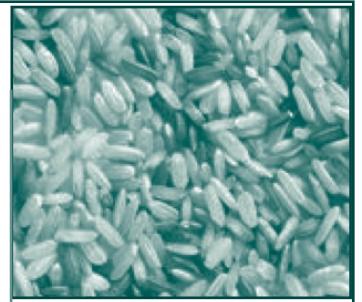
In 2005, Lotus Foods co-founder Caryl Levine learned about the System of Rice Intensification from the Cornell International Institute for Food, Agriculture and Development (CIIFAD).

“CIIFAD saw that many farmers using SRI methods were transitioning from not having enough rice to eat to rice surpluses,” Levine says. “We were the only company selling heirloom rice from small family farms around the world, and I thought—let’s find some global markets for their rice.”

California-based Lotus Foods has imported traditional Asian rice products since 1995 with a focus on sustainably produced, organic, and fair trade. Lotus sells 12 rice products, five of which are certified organic.

Non-GMO Project verified Finding markets for SRI rice provides a win-win for farmers,

consumers, and the environment. Farmers earn more



## Volcano Rice is an SRI variety from West Java

money to improve their lives and adopt environmentally sound agricultural practices and consumers receive healthy food.

In 2009, Lotus Foods began selling three SRI rice varieties: Madagascar Pink Rice, Organic Mekong Flower Rice from Cambodia, and a Volcano Rice from West Java.

Lotus aims to market more SRI-grown traditional rices though Levine says the logistics of getting rice to the market are challenging because farmers lack the infrastructure and experience to process rice for export.

Lotus Foods recently joined the Non-GMO Project and plans to have all of its rice products verified non-GMO, including the SRI products.