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◀ Previous Document 2 of 2.

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SECTION: COMMODITIES & AGRICULTURE; Pg. 44

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HEADLINE: COMMODITIES & AGRICULTURE: **Madagascar rice trials** lead to agricultural revolution: New methods break with centuries of tradition, writes John Madeley:

BYLINE: By JOHN MADELEY

BODY:

When small farmers in Madagascar employed a new way of growing rice in the late 1980s, the results were so startling that agricultural scientists could hardly believe they were possible.

Yields of about two tonnes per hectare had shot up to about 8-10 tonnes per hectare, without chemical fertilisers, pesticides or expensive seed varieties, and by breaking some of the conventional "rules" of rice management.

For years the new technique, known as the System of Rice Intensification (SRI), was virtually ignored.

The system was developed in Madagascar by an agronomist priest, Henri de Laudani, working with a small farmers group, Association Tefy Saina.

Last week a representative of the group, Sebastin Rafaralahy, presented its work to a conference in London, "Reducing Poverty through Sustainable Agriculture", organised by the University of Essex together with the Department for International Development.

Traditionally, rice is transplanted into fields at about eight weeks, said Mr Rafaralahy, when the plant is strong and likely to survive, and three or more seedlings are planted in clumps in the hope that one will fully mature.

But with SRI, seedlings are transplanted at about six days and planted individually, enabling farmers to use less seed.

For thousands of years lowland rice has been grown under flooded conditions to ensure water supply and reduce weed problems. But while rice can survive in water, it is not an aquatic plant, Mr Rafaralahy pointed out.

Farmers in Madagascar noted that root growth was far greater if the plant was not kept continually submerged in water - "the plants receive more oxygen and nutrients from the atmosphere and derive greater benefit from the warmth of the sun", he said.

Using the SRI system the soil is only kept continually wet during the reproductive stage when the plant is producing grains. During the rest of the growth cycle the fields are irrigated in the evening and dry during the day.

Using their own seed, some 20,000 farmers have now adopted the method in Madagascar, and the yields have proved sustainable.

After being evaluated by Cornell University in the US, the system has spread to other countries, including major rice growers such as Bangladesh, China and Indonesia. In China yields of 9-10.5 tonnes per hectare were achieved in the first year of the system, compared with the national average of 6 tonnes per hectare.

This initiative in Madagascar was one of a number presented to the conference, all of which are included in a database of sustainable agriculture projects built up by professor Jules Pretty of the University of Essex.

He told the conference that the database now contains information on 208 initiatives from 52 countries, which indicates that at least 9m farmers have adopted sustainable agriculture methods on 29m hectares of land - some 3 per cent of land under crops in Africa, Asia and Latin America.

Sustainable agriculture makes the best use of "nature's goods and services to help with pest control, soil regeneration and nutrient cycling", said professor Pretty; "and better use of the knowledge and skills of farmers, so improving their self-reliance".

Modern agriculture, he believes, is "very successful in terms of food production but causes a lot of damage to the environment and has tended to damage the natural processes". The evidence, he said, shows that switching to sustainable agriculture "can lead to substantial increases in per hectare food production".

For non-irrigated crops, yields typically increase by 50-100 per cent "though considerably greater in a few cases. For 146,000 farmers cultivating roots - potato, sweet potato and cassava - average food production increased by 150 per cent". For irrigated crops, the gains were much smaller, 5-10 per cent, "through starting from a higher absolute yield base".

With policy and institutional support, the benefits of sustainable agriculture could spread to much larger numbers of people, believes professor Pretty, but he cautions that "even the substantial increase reported here might not be enough".

"We cannot yet say that a transition to sustainable agriculture will result in enough food to meet the needs of developing countries, but there is scope for considerable confidence," he said.

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 [Previous](#) Document 2 of 2.



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