Increasing the availability of traditional seeds in Sri Lanka

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Photo: Julia Wright / Samantha Green

Experimenting with composts to promote ecological practices in rice production.

The highly varied climate, topography and soils of Sri Lanka make it one of the most biodiverse regions of the world. In terms of cultivated resources, the country holds a rich treasure of agrobiodiversity, with 2800 different types of rice and more than 1000 distinct cultivars. In the early 1970s, the excitement surrounding High Yielding Varieties (HYVs) so captivated the island's farmers and others concerned with agriculture, that few foresaw the resulting displacement of indigenous genetic resources, nor their extinction. Traditional rice varieties under cultivation dwindled to about 5 percent of total paddy acreage.

After the collapse of a political uprising in 1979, a few of those involved in the protest decided to try their hand at farming in the arid zone of the north west of the country. One of their objectives was to grow indigenous varieties according to indigenous practices, as opposed to buying into the hybrids and technologies of the Green Revolution that were growing around them. To their dismay, however, they found that indigenous varieties had all but vanished. They realised that these varieties, together with the accompanying knowledge about farming, food preservation or preparation, had been lost to HYVs and synthetic inputs. These young farmers combed far and wide in their search for indigenous seeds. Sometimes the amount uncovered did not even fill a match box, in which event the seeds were tested out in flower pots.

Steadily, seed stocks increased, as did the gathering of ancestral farming knowledge and art of food preparation, and more people joined the group. Initially only a few farmers agreed to experiment with indigenous varieties. Some did so in a small portion of their fields. Gradually, more and more people became interested, and the results achieved by one farmer were an impetus to his or her neighbour to become involved. The increased workload necessitated some form of organised body. So in 1986 the Movement for the Protection of Indigenous Seeds (MPIS) was born.

Soon after, the first "seed camp" was held – a meeting of MPIS and veteran farmers, where each farmer brought with him or her a sample of seeds. Held from time to time and at different locations, these "camps" were explosions of indigenous knowledge, as lively discussions were held where each farmer recounted the memories of how their ancestors worked, ate and lived. This served as a great inspiration for the farmers present, while MPIS documented this knowledge. At the first "camp", for example, the traditional paddy varieties like 'Rath Swandel', 'Heeneti', or 'Ma Vee' were collected.

Eventually, the growing paddy stock and organisational expansion required a permanent research settlement, and in 1995 a rice research farm was established in the village of Eppawala, in the north-central province of Anuradhapura. The inauguration of this site marked a turning point, as MPIS started running comparative tests of indigenous rice varieties and HYVs. These tests showed that the biological yield vigour of the former surpassed that of the latter, demonstrating that the high yields of HYVs were mainly due to chemical input "boosters", without which they did not perform at all well. These trials also showed that the low yields generally reported for indigenous rice varieties are basically a result of inappropriate cultivation methods, not the seed or the genetic material. By applying proper cultivation methods, such as improving soil fertility with fresh humus and avoiding flooding the field, MPIS succeeded in demonstrating higher yield averages. Trials, research and monitoring also demonstrated the diverse characteristics of rice varieties which in the Green Revolution were grouped simply according to yield. Indigenous varieties differed in taste, nutrition, hue, preservability, medicinal quality, pest, drought and flood resistance, and more.

With time, the ecological transformation of the Eppawala premises became increasingly visible and tangible. Within a decade, it has developed into a healthy oasis with a pool full of

Farmer perspectives

"I cultivated 6 acres of paddy and I used indigenous varieties of paddy, 3 acres of 'Kaluheenati', 1 acre of 'Rathsuwandel' and 2 acres of 'Hondarawalu'. I have been doing this for six consecutive seasons. At the beginning, we were given seeds by the Movement for the Protection of Indigenous Seeds (MPIS). These are not hybrid varieties, but the seeds that were given to us by our forefathers. Our yields are very good. We get a yield of between 80 to 90 bushels. We have been able to sell our paddy at a price as high as Rs. 20 per kilo and all this paddy is being purchased by MPIS. In order to get this kind of yield, it is not necessary for us to buy chemical fertilisers and pesticides, which only makes the companies richer. Earlier, when we were applying expensive chemical inputs, we got yields of up to 100 to 120 bushels on one acre."
H Chandratilake, President of Ranamaura Farmers' Organisation

"Earlier my paddy cultivation died due to insufficient water, but since I started cultivating indigenous seeds, my paddy did not die. The reason is the variety of paddy that I use requires less water. Members of my family work the two acres. I did not need any chemical fertilisers or pesticides. I applied glyricidia, paddy straw and semi-burnt paddy husks, poultry droppings, and similar types of fertiliser. From the moment we picked up the scythe, people started asking for our paddy. People don't know it, but the purchasing of paddy was done by MPIS, who provided us with the seeds. There were less pest problems with 'Kaluheenati' and 'Rathsuwandel'. On my field, there was no problem at all, and I got more than 150 bushels out of my 2 acres. There were fewer losses. Even in our own area, there are many farmers who are finding it very difficult to sell their paddy cultivated with hybrid varieties and these people have begun to ask us how they could get these indigenous seeds."
Lalitha Dissanayake

fish, and wildlife such as birds and other creatures attracted to each other and to the vegetation. Insect pests are minimised by the presence of other creatures such as the dragon fly, and many bee hives help with pollination. MPIS now estimates that more than 4000 paddy farmers have shifted to ecological farming as a result of its efforts. MPIS itself holds 170 rice varieties, of which about 50 are from the Department of Agriculture.

How it works

The aim of MPIS is to breed and propagate local rice varieties and provide seeds and ecological awareness to farmers. It strives to do this by training farmers in ecological farming, building awareness among farmers to shift to ecological farming, assisting ecological paddy farmers to market their produce at fair prices, and developing a more direct rice chain from farmer to consumer and ensure a price fair to both. Among its different actions, possibly the most important is the collection and recording of varieties and associated knowledge (such as their medicinal and other useful properties, growing techniques and provenance), gathered from farmers throughout the country who meet every season to share seeds. Knowledge is stored in hand-written form at MPIS, and made available to farmers through a monthly news sheet. Seeds are stored in 20 kg bags and clay pots. Although the storeroom is cool and well protected, a modest level of pest attack is tolerated. According to the MPIS philosophy, insects select out the weakest seed which is not worth storing. Nevertheless, samples of the more important varieties are also kept in a back-up store in the cooler hill country of Nuriya Elia. MPIS staff grow the newly collected varieties, and the characteristics and performance of the plants are noted. This data assists with varietal classification as well as providing useful practical growing advice.

Each year, between 7 and 10 varieties from the collection are multiplied and made available to farmers. MPIS staff and selected farmer leaders discuss and choose those varieties they feel are most appropriate for that season, in relation to demand, climatic conditions and other factors. A farmer approaching MPIS will receive 2 kg of paddy seed and its accompanying knowledge, free of charge, on the condition that he or she returns the same quantity at the next harvest. A contract is signed, committing the farmer to following specific ecological husbandry practices for that season. MPIS provide training on ecological rice production, based on its paddy plots which demonstrate the evolutionary development of a humus-rich soil.

This agreement provides market opportunities for ecologically-grown rice. On top of the 2 kg rice returned to MPIS by the farmer, he or she may also choose to sell more of the harvest back to the organisation, which purchases this surplus at a favourable price. Because of the agreement made to follow ecological practices, this enables MPIS to mill and sell this "high quality, traditional rice", along with information on its provenance, at a premium price (40 rupees/kg in the Colombo market, compared with 37 rupees/kg for standard rice). There is currently an increasing domestic demand for ecological rice, partly owing to raised consumer awareness on health issues. The post-harvest value-adding and premium price enable MPIS to make a profit which is reinvested in the enterprise (such as a pick-up truck, or facilities for accommodating visitors). To ensure that this traditional rice also reaches non-elite markets, MPIS also makes it available at affordable prices through trade unions, welfare societies and co-operatives, and disseminates free seed to social programmes, schools and religious groups.

Challenges and innovative achievements

After 32 years, the multiplication of seeds, the milling operations and the income generation activities have reached a momentum, and are now self-sustaining. Still, this was not always easy. One challenge encountered was that although both rich and poor farmers apply for and use the seed, the poor farmers have tended to lack confidence, knowledge and resources to fully experiment and take the risk in the first instance. Another challenge has been to encourage farmers to overcome their belief of the marketing claims of large seed companies over supposedly higher yielding, more profitable varieties. The increasing national recognition of MPIS has also proved a challenge, as the organisation is encouraged to further grow and expand larger than what they consider to be its optimum size for self-regulation. Other groups, and possibly the government, may therefore need to step in and develop similar operations to meet the increasing demand for traditional seed as well as for training visits to the centre by farmers groups from around the country.

Four aspects of MPIS highlight its pioneering status as a successful model for increasing the availability of quality seed. First, MPIS has drawn on the interest and demand by farmers for locally adapted seed as a means to introduce and encourage sustainable farming techniques. By encouraging participating farmers to sign an agreement, MPIS can be sure of receiving and benefiting from the market premium of ecologically-produced rice, without having to impose certified organic standards. In this respect, the MPIS model is simialar to a Participatory Guarantee System, whereby stakeholders agree to an informal set of ecological husbandry techniques and follow them on a trust basis. Second, MPIS has successfully carried out its own experiments. Growing specific varieties on humus rich paddy over several years, and saving seeds, it has found that varieties can dramatically increase their genetic yield potential over generations, currently reaching up to 85 bushels/acre. This figure compares favourably with rice varieties promoted by the formal sector which are dependent on costly chemical fertilisers. Third, MPIS is not now the only producer and supplier of indigenous seeds. Through its influence, the traditional farmer practice of sharing seeds within communities has been revived, with farmers now borrowing seed from their neighbour to return after the harvest with a nominal interest, rather than purchasing from dealers. Fourth, MPIS has stubbornly determined to be financially self-reliant, its slow growth being supported through bank loans and repayments rather than donations, the only external donor over the years being HIVOS. In this sense it provides a replicable model for other groups without access to major donor funding, showing that this approach can, with careful planning, pay its own way. ■

"I didn't spend anything other than my own labour. I only made use of dry leaves on the land and some cow dung. Also these seeds require less water compared to the hybrid seeds. We were given indigenous seed paddy by MPIS and we signed an agreement with MPIS that they would buy our paddy at Rs. 20 per kilo. This agreement was signed even before we planted our seeds. Therefore we don't have any difficulty about selling our paddy. We don't need to go behind people and plead with them to buy our paddy. Further, we eat rice that is more nutritious and free of poison, so it is of better quality."
Mallika Seneviratne

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