

New methodology for farmers' experiments

G.K Upawansa

Over the past few years ECO in Sri Lanka has developed a methodology for *in-situ* conservation of traditional practices in paddy production. Traditionally, farmers discuss their experiments during the different ceremonial activities in the agricultural cycle. Acknowledging this indigenous communication system has made it remarkably easy for ECO to promote experimentation and innovations within the communities involved.



Photo: COMIPAS

In the Sri Lankan traditional value system the most important objective of development is not material gain; rather, it aims at prosperity, leisure, and a well-functioning infrastructure. Prosperity is defined in terms of food security (*"the granary is full and the farm is productive"*), food availability (*"we have our daily rice meal and betel leaves"*), and quality of food (*"milk and honey is what we like"*). Leisure is associated with the time available for religious ceremonies, to make pilgrimages, to interact with relatives and neighbours, and to develop arts and crafts. Infrastructure refers to irrigation systems, roads, temples, and also electricity and schools.

ECO and paddy

ECO is a development NGO that started working in 1980 with organic farming. Our main objective is the promotion of eco-friendly and sustainable forms of agriculture. Over time great energy has been dedicated to organic farming, with crop-

livestock-energy integration, in which vegetables, trees, fruits, animals and bio-gas are the major elements.

We realised from the beginning that traditional knowledge is an important asset for our work, as many, though not all, traditional practices are eco-friendly. Many practices that have been able to survive the test of time, and by nature have the tendency to be sustainable. ECO's working method is to document, test, improve and popularise indigenous knowledge and practices. The results are now showing as many organizations and farmers are enthusiastically involved in these activities and appreciate the outcomes.

In spite of the fact that paddy is the most common crop in Sri Lanka, ECO did not pursue more organic forms of paddy production expecting many difficulties to arise. Only after 20 years did we realise that it is possible to start working on organic paddy production. In fact, we found that it was the easiest crop to work on because of the wealth of indigenous

knowledge and practices related to this crop. For example, we have been able to find 22 traditional ways of controlling the 'paddy bug', and possibly many more exist in our country alone!

Old and new insights

Conventional agriculture, with monocrops and chemical control of pests and weeds, is detrimental in the tropical regions, because of the rainfall patterns and the high temperatures. We are convinced of developing systems that better suit these climatic conditions based on the principles of nature that try to conserve or bring back biodiversity.

The long tradition of irrigation - large-scale irrigation systems existed in this country more than 2000 years ago - has led to monocultures in paddy cultivation. Insects, birds, rodents, as well as large animals and micro-organisms, invade the one-sided system and cause damage to the crop. In such systems, pests and diseases can be considered a natural reaction of

A number of elements form the basis of the traditional practice to control caterpillars in paddy:

- The notion of "connectedness" between living organisms has led to the rule not to kill, which prevents the use of pesticides that destroy some living organism.
- The belief that asking for help from the spiritual world, by means of offerings, mantras and yantras, will provide answers to the request and lead to favourable conditions.
- Observation of bird life in natural environments, which show that some birds live on insects and that these insects are attracted by light in the evening.

Combining these insights has led to the following practice: in places where a caterpillar attack is observed, a stick is placed in the field, with a disk of a banana stem stuck on top of it. In the evening, 30 minutes before sunset, the following items are placed on this disk: 5 varieties of roasted grains and pulses and 5 varieties of fruits, while incense and a wick drenched in coconut oil lamp are burned. Then prayers are said to the Gods.

By the following morning, substantial amounts of the caterpillars have been eaten by the birds. Having been attracted by the light and incense the climb to the top of the stick. When the disk of the banana stem is laden with caterpillars it topples and the seeds and fruits fall on the ground, attracting birds that then find the caterpillars. In the excitement created, more birds are attracted and in this way a natural control mechanism is established.

protects the roots and reduces weed growth. Because of the high temperatures, the mulch is easily decomposed. When it rains, the nutrients of the mulch reach the ground water. The natural plants that grow on the bunds harbour a variety of insects and birds, which act as the natural enemies of paddy pests. (ILEIA Newsletter, December 1999)

'Evil eye'

In promoting this *nava-kekulama* system in rural communities, the processes used in conventional extension are not suitable. The common framework in conventional extension is: creating awareness of a problem; rousing interest for a new method; providing information and giving a demonstration; carrying out small-scale tests with interested farmers; and finally the adoption of the innovation.

Experience has taught that in Sri Lanka, efforts to introduce innovations

that build on indigenous knowledge cannot use demonstrations as an essential part of the extension methodology. This is due to the common notion of 'evil eye' and 'evil mouth' in folk stories. People who own demonstration plots do not want others to come and see, because they feel that the comments of the observers could have a negative effect on their crops and families.

Therefore, ECO had to address the issue of which communication system to use in spreading innovative practices in these rural societies. Analysis of the situation in the past as well as in the present provided an answer: communication about and testing of innovations takes place during village meetings and during ceremonies associated to the agricultural cycle. This indigenous form of communication is now an important methodological basis for ECO to enhance in-situ IK conservation.

Indigenous communication

With modern agriculture taking over, the practice of ceremonies in the cropping season has diminished over the past decades in Sri Lanka. ECO has found, however, that it was relatively easy to bring back these practices in the rural communities. During discussions with the communities, ECO staff suggested to re-implement these traditional ceremonies, as part of the extension work on organic cropping practices. The community members reacted positively, and immediately started to select dates for the events.

In the traditional societies at least three stages during the cropping season are used to carry out special ceremonies. The first is undertaken before commencing work in the field, the second when the paddy is in full growth and vulnerable to pests, and the third ceremony takes place after the harvest. The village astrologers determine the auspicious times of these ceremonies. It was found that the discussions between farmers about specific agricultural practices during these ceremonial gatherings led to decisions at an individual level to engage in field experiments.

Based on these insights we consider the village-based ceremonies as the most appropriate way to draw attention to possible innovations based on IK practices and to stimulate the villagers to experiment with them. Field staff of ECO works together with the spiritual leaders and participates in the rituals. ECO also supplies some financial support for the ceremonial activities.

Three ceremonies

During the one-day ceremony at the start of the cropping season, the community makes an offering to the Buddhist temple, and to the local and regional gods. During this occasion the people share their plans about the work to be undertaken in agriculture. A case in point was the use of rice straw as a mulch in the paddy field: some

nature, which tends to restore the biodiversity.

Traditional Sri Lankan agriculture has developed solutions to these attacks, while still respecting the universal law of compassion and inner connection. Especially the rule '*thou shalt not kill*' has been an important incentive in developing eco-friendly methods of pest control that combine insights in the natural processes with astrology and spiritual practices. The traditional method for controlling the paddy swarming caterpillar (see box) is a good example.

A mix of indigenous knowledge and new insights gives way to new practices. A good example is the *Nava-kekulama*, an adaptation of the traditional paddy cultivation system, which includes minimum tillage and direct seeding. The adaptation is based on the use of rice straw as a mulch, and no weeding of the bunds. The mulch reduces the evaporation of water,



Photo: COMPAS

Village based rituals can be an opportunity to discuss farming experiments

people used thick layers, others thin ones; some covered the whole field while others left the channels open; some used an auspicious day and others used any day available. These individual variations led to a comparison of experiences. In subsequent village rituals these different experiences were compared and assessed.

The second village ritual takes place when the rice is full grown and vulnerable to pest attacks. A *pooja*, or offering, is carried out in the field. For example, in the south of Sri Lanka a bowl of rice, of which the participants of the ritual have eaten some, is thrown over the field. This attracts predatory animals of paddy insects such as birds. This meeting also allows an exchange of observations about the differences in crop performance, as well as the incidence of pests and diseases, and to discuss the need for and effects of specific spiritual practices to counteract them.

The third ceremony takes place after the harvest. In some villages there are certain taboos associated with harvest and it is common that no grain from the new crop is eaten unless this 'thanksgiving' ritual has taken place. All villagers are expected to take part in the ritual and everybody makes a contribution either in kind or cash. Even those who for good reasons cannot be present are taken into account during the ceremony, and are presented with some of the food that was ceremonially eaten by the community. This ceremony lasts between 6 - 12 hours, and it is obvious that during this time the process of reciprocal learning takes place.

Traditional spiritual practices

Different forms of spiritual practices can be distinguished in traditional agriculture in Sri Lanka. A very common spiritual practice is the *mantra*, the repetitive proclamation of specific texts. The tone used in the proclamation is quite important, as it is supposed to create certain vibrations



Photo: COMPAS

Yantras (symbolic drawings) are documented in local publications



Photo: COMPAS

Crop protection includes herbs as well as spiritual practices

that bring about a desired effect. Another common practice is the *yantra*, a symbolic drawing or symbol, which has been given special powers by a sacred person. Mantras and yantras are often used together.

Pirith is a spiritual ceremony during which Buddhist stanzas, used by the Lord Buddha, are chanted. *Kem* is a specific technique, such as the use of a concoction of herbs combined with a meditative action in the field, to create a certain effect on a crop. These kems are often carried out at auspicious times and combined with the use of mantras, yantras, or piriths.

These rituals are often combined with *astrological practices* that are performed by traditional spiritual leaders, such as Buddhist monks. These astrological practices are based on age-old knowledge about the qualities of certain auspicious times, and their recommended use for specific actions. For example, an astrologer will determine the start of sowing, as certain times are considered better for sowing root crops, others for grain crops. Auspicious times can also determine the incidence of pests.

Moral principles

Further probing into village-based experimentation indicates that the purpose is not limited to the rational interpretation of cause-effects in the biological and physical world. The aims of the experiments are not in the first place to maximise material gain through domination or manipulation of natural processes. The use of offerings, astrology and meditation techniques, in combination with an interpretation of the natural phenomena, indicates that these experiments are tied up with a comprehensive set of moral principles and inner knowledge.

The mantras and pirith used can only

be effective if they are proclaimed by somebody who lives a pious life, and does not violate the basic rules of Buddhism: no lying, no stealing, no killing of living creatures, no sexual abuse nor use of intoxicants. The lifestyle of these spiritual leaders can be characterised by the term 'universal kindness'. Universal kindness implies compassion and an inner connection with all living organisms. Therefore, the village based agricultural experiments includes various social, ecological and spiritual aspects.

Testing traditional practices

How does ECO avoid romanticising traditional practices, and how does it distinguish between effective knowledge and superstition? We believe that genuine practices should stand up to testing and their effectiveness should be explained by a theory. In the traditional way of testing, the community, based on people's own criteria, interprets the results of specific technique or experiment. The outcome of this process leads to decisions on a personal level to reject, adopt or further modify the technique. By encouraging the community to experiment with traditional and improved practices, ECO stimulates the verification and learning process in the communities.

At the same time, however, outsiders such as the staff of ECO and university researchers, are developing more qualitative and quantitative methods for measuring, monitoring and comparing traditional practices. With the support of ETC-Lanka, a method has been designed to compare the results of farmers' practices and relate them to their 'degree of indigeneness' of these farmers. (see Handawela, Compas Magazine No 4. P.44).

Also in cooperation with universities in

Sri Lanka, field tests have been carried out, in which conventional research methods are combined with the traditional ones. For example, the University of Peradeniya has studied the impact of ecological farming on the population of predators of paddy pests. Yet, a theory to explain the possible effects of the astrological and spiritual practices in traditional Sri Lankan agriculture is hard to find in the dominant scientific institutions. Therefore a dialogue with traditional spiritual leaders has been initiated to learn from their interpretation of the life processes. Buddhist as well as shamanistic leaders are consulted and their knowledge is taken as complementary to that of the scientists. It is hoped that on the basis of this experience publications can be made for *Compas* and the scientific media. Eventually the curriculum of the Peradeniya University will incorporate the lessons learned from these experiences.



Photo: G. K. Upawansa

Local food items are the ingredients for meals during festivals

All aspects included

ECO has experienced that the selection of IK practices to be experimented with on community level is not easy. The IK practice needs to have several important properties: it must be advantageous in relation to conventional practices, in terms of income, environment, or taste, for example. Moreover, the practice must be simple, the changes it brings about must be visible, and the practice must be socially acceptable.

Over the years we have experienced that, once the mechanisms have been established, it is much easier to work on the basis of indigenous communication systems, than to adhere to conventional methodologies. Working with IK practices,

in this sense, requires more than only promoting effective traditional practices such as mulching, minimal tillage and no weeding on bunds to improve paddy production. It implies a combination of these practices with traditional communication systems, such as the various ceremonies related to agriculture. Other important aspects of the traditional belief systems, such as auspicious timing of the agricultural practices, and spiritual practices like mantra, yantra, pirith and kem, all need to find their place in this methodology.

The results are encouraging. Many organisations and farmers are now enthusi-

astically involved in the experiments with organic paddy production. The results of a comparative study between conventional farming and this kind of organic farming has greatly surprised the researchers involved. Yield-wise the results are comparable. Other aspects show the greater advantage of the latter, especially the economic and ecological sustainability and the improved soil fertility. But the most striking accomplishment of introducing IK innovation in paddy production has been the production of sufficient quantities of tasty food, that is of good quality and free of poisonous pesticide residues.



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Elders and youth take part in village rituals

ECO

Hyneford
 Dekinda, NAWALAPITIYA
 Sri Lanka
 tel +94 8 223012 / 226082
 fax +94 8 232517
 e-mail: pasasa@sltnet.lk