Farmers as good managers and cautious gamblers

There are two great challenges which face the world today. Firstly, the development of appropriate technologies to compete in the race to save Mother Earth. Secondly, the search for the right strategy to bring about change in peoples' perspective of agricultural production. Angie Ibus shares the experiences of farmers with regenerative agriculture.

Angie Ibus

One emerging answer in the quest for sustainability is regenerative agriculture. It is synonymous to low-input agriculture, sustainable agriculture and alternative agriculture (Crosson 1989) or LEISA. It is a system which attempts to bring back into the farm ecosystem the practice of sound indigenous knowledge combined with simplified scientific findings to produce the desired results without compromising the depletion of the farm resource base, food security and income generation.

In 1990, a survey of the participants to the Farmer Advocates in Regenerative Agriculture (FARA) was conducted by IIRR. It showed that given the prevailing condition of poverty, increasing household income is the primary motivation among the active FARA members for the adaptation of regenerative agriculture technologies in their farms. It was further found that other farmers in the same localities think the same way. The larger ecological benefits, being longer term, do not appear to be their main consideration (IIRR FARA Report 1990).

Increasing cash and soil fertility

Conventional agriculture in the Philippines is highly capital intensive, chemical-based and relies on high-cost inputs. The farm practices associated with conventional agriculture lead to the death of soil structure, death of soil micro-organisms and to eventual soil fertility reduction and losses. There are several techniques which have been tried and found effective in addressing soil fertility degradation and the issue of cost reduction. Some of these are long-term, others show immediate effects.

Rice-fish culture

Rice-fish culture is an example of an indirect approach. It is a dual raising of rice and fish in the same paddy in the same season known to be a traditional practice in Asia, though in those early years the fish grew naturally. The indiscriminate use of chemicals, especially herbicides, has led to the slow loss of such a traditional practice and the loss of native fish species in the paddy.

Raising fish along with rice has been documented to increase rice yield from 20 to 47.5 percent (Fermin 1989). Presence of fish in the paddy enhances aeration which encourages tillering, besides providing excreta to fertilize the soil. Fish in the paddy also reduce weed problems and the insect population, thus, the need for chemical pesticides is eliminated, allowing for maintenance and preservation of the aquatic life. Most importantly, rice-fish culture proves to farmers that there are alternatives to chemicals. It presents a promising technology to be introduced during the transition period.

Mang Jose's rich-fish culture. Note the trench on the sides of the paddy field. Photo: IIRR.

Rice straw utilization. Rice straw is one of the cheapest and most available sources of organic material found on most farms in Asia. In the tropics, 1.5 tons of rice straw contain about 9 kg Nitrogen, 2 kg each of Phosphorus, Magnesium and Sulfur, 25 kg Potassium, 70 kg Silicon and 6 kg Calcium (IIRR LIRP Kit, 1990).

Green leaf manuring. Another direct alternative to improve soil fertility is green leaf manuring (GLM). This has been a common practice in South Asia for centuries. It is known to increase rice yields by up to 2 tons per hectare, as compared to an unfertilized field (IIRR LIRP Kit, 1990). By growing grain legumes, it is possible to substitute at least one-half of the chemical nitrogen used by farmers in the Philippines in their rice crop.

Intercropping grain legumes such as cowpea, mungbean (*Vigna radiata*) and bush beans to name a few, with upland rice shows no reduction in the harvest while maintaining current levels of chemical inputs and providing additional earnings from the legume crops. A field trial, in four villages in Cavite, Philippines with 58 farmer cooperators, showed that with the same level of chemical inputs, rice yield could be increased form 2.1 ton per hectare with mono crop rice using traditional variet-

Bert's farm is a rice-fish-duck system. The housing on the left back side is for pigs and cattle. Photo: IIRR.

ies to 2.75 tons/ha with modern rice varieties. With new rice varieties intercropped with legumes, the yield could increase further to 3.55 tons/ha. As encouragement in areas where intercropping is not commonly practiced, field trials could be coordinated with varietal trials of rice varieties which farmers are interested in trying.

Farmer-to-farmer extension

It has been shown repeatedly that farmers have their own language and can put their experiences in the context similar to other farmers. When this fact is recognized and properly managed, farmers are the most effective channel for spreading the technology. In Sto Domingo, Albay, a soil and water conservation (SWC) project (collaborative project of World Neighbors and IIRR) initially started with five farmers. These farmers, after one year of successful adaptation of the technologies, became farmer leaders who organized groups around the same technologies. As they developed their skills and gained confidence on the technology as a result of the improved farm condition, they were chosen to be farmer instructors. A farmer-instructors' style and point of view are closer to their peers than those of the extension worker. In a span of four years, the cooperators in the SWC project grew from 5 to 150 and a lot more farmers are requesting help from the farmer instructors.

A supplementary scheme being tested by IIRR is for farmers to make a conscious effort to do their own farm analysis, taking off from the indigenous practice of using wall calendars. This is based on the premise that if farm record keeping is institutionalized at the farmer-level, the farmer can analyze and decide for him/herself whether a technology should be pursued or not.

Mang Isko

Mr. Francisco Hayag, Mang Isko to many, started rice-fish culture in an 800 sq. meter rice paddy. He stocked his paddy with tilapia and common carp, (*Oreochromis nilotica* and *Cyprinus carpio*). His first trial was a success in spite of the hesitancy and doubt he initially had about the technology. He increased his rice yield from 8 to 12 sacks, harvested 48.5 kilograms of fish and reduced his production cost by P 52.00 (savings from non-use of weedicide and insecticide). That season, Mang Isko more than doubled his net income from his 800 sq m. paddy simply through the introduction of fish along with rice.

Predictably, the next cropping season witnessed Mang Isko expanding the rice-fish technology to his other paddies to cover an aggregate area of 2,200 sq.m. Farmers are good managers and cautious gamblers. Like businessmen, they base their decision to adapt, expand or discard certain technologies after careful analysis of the socioeconomic benefits brought to them. Today, there are 40 cooperators in freshwater fish culture and the number grows as more farmers are exposed to the achievement of their peers.

Transition in one year?

Another farmer, Lamberto Ignaco, also provides a very good example. In contrast to Mang Isko who choose to work with just one kind of technology and master the whole thing, Bert, as he is fondly called, adapted several technologies in his farm. However, like Mang Isko, he started with one technology at a time and progressed through a step by step inclusion of other technologies. Today, Bert has eight different regenerative technologies – mini-fishpond, rice-fish, market garden, bio-intensive garden, rice production using combinations of bio-fertilizer sources (*Gliricidia sepium* leaves and *azolla*), swine production, duck raising and other livestock.

Bert's experience shows that in a year, integrating several technologies in a farm is possible but the total positive net return will only be realized after two or three years of implementation. This is especially true if heavy emphasis is placed on large animals (cattle and pigs) which require high capital investment for the purchase of stocks and for housing construction. However, by increasing the area devoted to vegetable, there is a promise of increasing income in a short run. High costs of other components, like livestock can thus be offset. Therefore, farmers and programme practitioners should be aware that multi-enterprise integration requires high initial investments and start-up costs, especially if these components are introduced in a short period.

The vegetable and non-vegetable crop components are the most reliable technology components in terms of addressing cash flow needs during periods when investment costs are high. The livestock production however, proves to be a high potential stable source of income but requires longer gestation periods before cash returns are realized, besides being a steady source of manure for crop production (IIRR FLM Report 1990).

Short and long term benefits

The soil fertility problem of most farmers is a big concern. There are already several technologies which are found effective to address soil degradation. It is now a matter of looking at these technologies and identifying those which suit farmers' criteria for acceptance. With this realization, institutions should be able to translate their long-term objective of improving soil fertility into the farmers' short-term objective of increasing farm income. ■

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