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SIBAT: Training farmers to regain traditional seeds

1. GENERAL INFORMATION

1.1 Title of practice or experience

SIBAT Training farmers to regain traditional seeds

1.2 Category of practice/experience and brief description

As implemented by the Philippine-based Sibol ng Agham at Teknolohiya or SIBAT (Wellspring of Science and Technology), community seedbanking has begun to help farmers in at least five regions in the Philippines regain access and control over what SIBAT calls the “heart and soul” of farm production – seeds. SIBAT, a non-government organization formed in 1984, has since been advocating for sustainable agriculture and farmers’ control over their land and other resources.

The main goal of community seedbanking is to restore the traditional, indigenous or endemic seeds a community has been cultivating for generations. The reason is that traditional seeds require no chemical inputs, now blamed for the degeneration of farmlands in many parts of the world. One basic requirement of this effort is training farmers to determine the source and characteristics of their seeds. Determining the source enables farmers to find out for themselves the environment from which the seed was derived (i.e., upland, lowland, including climatic conditions). Characteristics include yield, resistance or vulnerability to pests, crop duration, and, in grains such as rice and corn, color, aroma, texture and taste.

Oriented on the science and art of determining the characteristics of each variety, these farmers can now program their cropping pattern. They know what type of seed is pest-resistant or which seed variety can withstand drought. With this knowledge, trained farmers know what varieties to plant during particular seasons of the year.

Seeds that SIBAT’s farmer-beneficiaries now have under their control

include grains such as rice, corn, peanuts and legumes. They also have seeds of vegetables such as squash, eggplant, and ampalaya or bitter melon, tomato and yams, among other endemic crops.

1.3 Name of person or institution responsible for the practice or experience

Sibol ng Agham at Teknolohiya (SIBAT)

1.4 Name and position of key or relevant persons or officials involved

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1.5 Details of institution

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1.6 Name of person and/or institution conducting the research

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1.7 Details of research person/institution

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2. THE PROBLEM OR SITUATION BEING ADDRESSED BY THE PRACTICE/INNOVATIVE EXPERIENCE

Before SIBAT's community seedbanking program was introduced, the farmer-beneficiaries were facing a situation common among Green Revolution-influenced farms in the Philippines. Their seeds were of the commercial "high-yielding variety" (HYV). But there was a problem: for these HYV seeds to yield more, they needed more chemical inputs. This meant higher costs of

production, which drove many farmers neck-deep in debt to banks and users.

The Green Revolution was so devastating that many Filipino farmers also lost their widely diverse endemic seeds, which were replaced by a single for a few hybrid, if not genetically-engineered, seed varieties. In no time, Filipino farmers, who raised rice, corn and other grains, lost their original seeds. They had found out too late that, unlike traditional seeds, “modern” hybrid seeds could not be replanted and were vulnerable to pests and diseases.

Many poor farmers could not always afford to buy certified seeds. As a result, they would get seeds from whatever sources that would provide them at less cost or for free. This proved to be a major problem because farmers could not determine the qualities and characteristics of these cheaper seeds. They could not, for example, determine whether the seeds were low-yielding or high-yielding, pest-resistant or not.

These farmers had lost control over the key to sustainable farm production – their seeds. This situation was made worse by globalization trends in agriculture. These farmers had become helpless in a situation where they could get their seeds only from agrochemical companies. These companies, in turn, distributed seeds which could grow and give the desired yield only if saturated with chemical inputs. Thus, the country faced, and continues to face, a rural scenario where indigenous seeds are vanishing, and a global scenario where not only hybrid HYV, but in the near future also genetically-engineered, seeds are invading the country.

According to SIBAT, the seeds farmers use determine their farming technology. Because they have lost their indigenous seeds, Filipino farmers have become integrated into a global conventional farming system which demands that seeds must be “modern” and, therefore, that technology must also be “modern.” But this system, according to SIBAT, is simply high-input farming. The farmers, as SIBAT said, have lost control over their seeds. Losing control means not having a say in the choice of varieties to plant. The control now rests with the big firms that prepare seeds and manufacture farm supplies.

Also because of poverty and calamities such as floods and droughts, many farmers would end up milling and eating their stored certified seeds.

3. DESCRIPTION OF THE PRACTICE INNOVATIVE EXPERIENCE AND ITS MAIN FEATURES

SIBAT recognizes that old habits die hard. After decades of being hooked into the Green Revolution’s HYVs and chemical farming, farmers would not readily accept an alternative to what they have been used to. In fact, farmers

would not only be reluctant; they would even feel suspicious about the advocacy of new alternatives. In introducing community seedbanking, the first step, therefore, is education.

Through community fora, meetings and consultations, members of a farming community are encouraged to identify their farm-related woes. In these fora and meetings, farmers would always raise issues such as the high cost of production, pests, diminishing yield, usury and the like. Through these fora, the Green Revolution's many problems are discussed. Through cost analysis, for example, farmers can readily see that using traditional or indigenous seeds is far cheaper than using HYVs, which require high inputs. And there is an added bonus: indigenous seeds are friendlier to the soil. They can also be planted and replanted without degenerating.

But fora and consultations are not enough to convince some doubting farmers. A more effective formula is "show rather than tell." SIBAT trainers would pick out farmer-cooperators from among more open-minded community members who could offer parcels of their land as demonstration farms. Indigenous seeds such as traditional rice varieties are planted in these demonstration or demo farms.

The success stories of these demo farms can spread fast via word of mouth. Once the news has spread, trainers can move on to the next step – organizing the community association or cooperative to initiate and manage the community seedbank. A community seedbank requires two things: a seed storage warehouse and what SIBAT calls a "farm back-up", a communal farm where traditional seeds are continuously maintained, propagated and improved through simple cross-breeding.

The seed storage warehouse is where the community can store whatever traditional seed community members can retrieve from within or outside their area.

Depending on its needs, the community can decide on the size of its seed storage warehouse. But whether big or small, a seed storage warehouse must be conducive for preserving seeds. It must be well ventilated and not damp. In cool mountain regions, a fireplace within the warehouse, where a bonfire can be lit from time to time, can help repel seed pests such as beetles. In the warehouse, grain seeds such as corn and peanuts can be air-dried. Other dried seeds such as legumes can be preserved in closely sealed bottles or jars. Mothballs are added with the sealed containers to help repulse seed pests. In mountain regions where there are pine trees, the pine's pitch can also be used in place of mothballs. Still in other areas, dried tobacco leaves are used. **All** these seed preservatives are far safer than chemical substances.

One basic requirement of the seed warehouse is a "seed directory." The directory contains proper labels (local, common and scientific names) and

basic information about each seed variety's characteristics such as yield, maturity span, and other qualities such as palatability, color, texture, aroma and pest resistance. Information about the seed's place of origin – i.e., upland, highland, wetland, and other information like the climatic condition of the source environment – should also be cited in the directory. The directory can contain as much information as the community may deem necessary, including items such as the best time of the year to plant a given variety.

To continually replenish the stock of stored seeds at the warehouse, each individual farmer is encouraged to set aside a portion of his harvest for seeds.

SIBAT has encouraged farmers to segregate a cooperative-managed “farm back-up”, a farm cultivated with the purpose of propagating traditional seed varieties. At this farm, farmers can also experiment with simple cross-breeding and natural selection (segregating seeds with better qualities such as bigger grains, better pest resistance and the like).

In the process of establishing the community seedbank, vanishing Filipino cultural values such as *bayanihan* are rekindled. *Bayanihan* is the practice whereby community members help each other plant or harvest rice, move or repair a house, or contribute any form of help during the burial and wake of a neighbor.

SIBAT has noted that positive Filipino values such as *bayanihan* have disappeared after three decades of Green Revolution in the country. This is the case at least in commercial rice- and corn-producing areas where farming is semi-mechanized (*e.g.*, where tractors are used). Although planting is still done manually, owners of commercial farms would rather pay wages than resort to the *bayanihan* or cooperative practice.

For SIBAT, resurrecting the Filipino tradition of cooperativism is a must in community seedbanking. The reason: it is only through the community's collective effort that this endeavor can be sustained.

4. DESCRIPTION OF THE INSTITUTION RESPONSIBLE AND ITS ORGANIZATIONAL ASPECTS

Formed in 1984, SIBAT is a national network of Philippine non-government and people's organizations involved in “appropriate technology”, mostly small-scale and simple technology which helps rural communities ease labor-intensive work and yet is highly productive. Because it is small-scale, appropriate technology is also friendlier to the environment and is easily accessible to more small rural farmers.

SIBAT has four main programs:

- (a) Technical Consultancy Program,
- (b) Science and Technology Resource Information System,

(c) Sustainable Agriculture, and

(d) Renewable Energy

Under its Technical Consultancy Program or TCP, SIBAT offers technical assistance to communities which seek to put up, for example, environment-friendly energy generation facilities such as micro-hydro-powered electricity, solar power and biogas. Through its TCP, SIBAT can also train communities and people's organizations in the conduct of participatory research and feasibility studies.

The Science and Technology Resource Information System or STRIS program takes care of SIBAT's library and databank management, documentation, computer use and publications.

SIBAT's Sustainable Agriculture (SA) program helps communities and people's organizations promote food self-sufficiency via sustainable farming methods and approaches. SIBAT's community seedbanking program falls under this.

An executive director and a staff of 14, most of whom have specialized expertise, implement SIBAT's programs and services. It has a Board of Directors as its policy-making body. Representatives from provincial networks nationwide sit on the Board.

5. PROBLEMS OR OBSTACLES ENCOUNTERED AND HOW THEY WERE OVERCOME

A common problem SIBAT encountered among its target beneficiaries was their reluctance to accept the alternative practice of community seedbanking, if not their suspicion or sheer skepticism over the real motive behind the innovation. (Note: On how SIBAT dealt with this problem, please refer to section 3 on Description of the Practice/Innovative Experience and its Main Features.)

In dealing with such problems, SIBAT has observed time-tested community organizing principles. Although it has a general guideline on how to go about helping communities establish their seedbanks, SIBAT actually follows no fixed blueprint. The approach varies from one community to the other. But an old community organizing principle stands out: always start from where the people are. This requires an understanding of how the community got into its current situation (i.e., how its traditional positive values gave way to what the Green Revolution espouses).

"Starting from where the people are" also requires knowing what positive cultural values and remaining resources are available. These can be the take-off point of the alternative option (in this case, community seedbanking) being presented.

SIBAT has also applied another time-tested principle: outside groups such as itself only help facilitate the introduction into the community of new innovations or alternatives. But it is the community members who should take on the initiative. Initiative and the drive for change rest solely on the community.

SIBAT has likewise realized that the impact of three decades of the Green Revolution cannot be turned upside down overnight. Thus, even armed with the community organizing principles and even with all things considered, the best way to influence is to teach new options by doing.

6. EFFECTS OF THE PRACTICE/INNOVATIVE EXPERIENCE

SIBAT now has five regional clusters in the Philippines practicing community seedbanking. These are Bicol in southern Luzon, Mindoro (also part of Luzon), Panay in central Philippines, Palawan island, and North-Western Mindanao. SIBAT also has since been working closely with other NGOs in the Cordilleras of northern Philippines.

Trained farmers in these regional clusters have begun to appreciate the need to inventory and regain their lost indigenous seeds. Through their *in situ* (practice of genebanking) seed storage and seedbank houses, trained farmers have slowly retrieved the traditional seeds they and their ancestors used to plant. They now also have what SIBAT calls a “seed directory” in which each seed is properly labeled and identified. The directory includes the characteristics of each seed (i.e., yield, palatability, color, texture, aroma and the like).

The farmers have also regained the art and science of natural selection, even simple cross-breeding. Natural selection is the process of choosing seeds from better crops. But SIBAT has also taught the technique of crossing two traditional varieties with good qualities. For instance, a high-yielding rice variety can be crossed with a drought-resistant variety. But this involves only the crossing of pollens, and not the sophistication of genetic engineers who tinker with crops’ DNA or genetic make-up.

That these trained farmers can choose, cross-breed, propagate and store their seeds constitutes, according to SIBAT, the seed of “technological empowerment.” They are empowered because they can now decide on how to program their farming. They are also empowered to evolve their crops in a more sustainable way – more sustainable because these seeds can be replanted again and again with the farmers fully in control. The agrochemical firms no longer dictate to the farmers.

After some cost analysis, the farmers themselves also found that planting their own seeds is more productive and sustainable than cultivating HYVs. The average yield for high-yielding rice varieties is about 90 to 100 cavans of unhusked rice. (A cavan is a Filipino grain measurement, which is approxi-

mately equivalent to 50 kilograms.) SIBAT-trained farmers have found that traditional rice varieties can also produce the same average yield of 80 cavans. In terms of yield, therefore, traditional rice varieties can be on par with high-yielding varieties.

But the farmer who uses traditional seed varieties incurs a lower cost of production. High-yielding rice varieties, for example, require two to three bags of chemical fertilizer per hectare for each planting season at an average of P600 (US\$14.29) to P800 (US\$19) per bag. Including pesticides, high-yielding rice variety farms require an average expense of P6,000 (US\$143) to P10,000 (US\$238) per hectare.

Locally propagated seeds or those which farmers produce through their seedbanks, on the other hand, do not need chemical fertilizer. If ever farmers do apply fertilizer, they resort to chicken dung and other organic matter such as decayed weeds, or techniques such as green manuring. Green manuring is the technique of planting legumes such as mung beans in a field and plowing the field when the beans are about a foot tall. Compared to chemical fertilizers, chicken dung is a cheaper and sustainable alternative. A sack of chicken dung costs only P30 (almost US\$1). Chicken dung and decayed weeds are not only cheaper; they also balance the soil's pH.

A one-hectare farm cultivated with traditional rice varieties needs only three to six bags of chicken dung per cropping season, with no pesticides required. With a required expenditure of only **US\$3-6**, simple economics shows that the traditional rice varieties are the better alternative. A newly converted organic farm of 1 ha may need about 30-50 sacks of dried chicken dung at the start of the conversion process and zero to minimal application of chicken manure when yields and soil fertility have stabilized.

7. SUITABILITY AND POSSIBILITY FOR UPSCALING

SIBAT envisions that trained farmers from its five major regional clusters in the Philippines will eventually spread to other neighboring villages and provinces the information and experiences they have gained on community seedbanking. Although this may take time, SIBAT is confident that the "success stories" of those who went into community seedbanking will spread via word of mouth. SIBAT has also organized educational forums and community discussions in areas receptive to community seedbanking.

Aside from community seedbanking, one venture where SIBAT is also now making innovative breakthroughs is its Special Program on Renewable Energy under its TCP desk. Because of the demand for alternative earth-friendly and small energy sources such as micro-hydro power, SIBAT established in August 1997 its Micro-Hydro Service Center in Baguio City in northern Phil-

ippines some 250 kilometers north of Manila.

The Center helps design for communities micro-hydro power plants which generate a maximum 30 kilowatts of electricity. One project it helped design late last year in a village in Kalinga Province on the northern tip of Luzon island shall be managed by three village communities of some 312 households. The project aims, among others, to free village folk, particularly women and children, from tedious manual work such as pounding rice, once the communities can set up a rice mill.

8. SIGNIFICANCE FOR (AND IMPACT ON) POLICY-MAKING

The official agricultural establishment has yet to appreciate the benefits of community seedbanking. The government's agriculture department continues to focus on chemical-based farming.

But community seedbanking advocates such as SIBAT and its networks can lobby legislators to help institutionalize community seedbanking as one approach to sustainable farming and food security.

9. POSSIBILITY AND SCOPE OF TRANSFERRING TO OTHER COMMUNITIES OR COUNTRIES

Other communities or countries which have lost their traditional crop varieties and crop diversity to the Green Revolution can explore the advantage of community seedbanking. Community seedbanking is a village's or country's first step toward regaining control over the very heart and soul of farm production – seeds.

The experiences of SIBAT are useful as a case study of how a community-based NGO has been able to train farmers to appreciate and to implement community seedbanking projects as a means to recover crop diversity.

REFERENCES

1. Interview with Teng de la Cruz, Sustainable Agriculture Desk Coordinator, SIBAT, Quezon City.
2. Interview with Christine Abellon, SIBAT Microhydro Service Center Coordinator, Baguio.