GLOBAL COMMUNITY AND PLANT GENETIC RESOURCES

The fact that Plant Genetic Resources (PGR) are the very raw materials for crop improvement is generally understood by agriculturists as well as biologists in both developed and developing countries. They are also aware that recently human civilization has undergone rapid change which causes great impacts on the PGR existence. Ways and means to conserve PGR for crop improvement have been sought to ensure their continuous availability. Unfortunately, however, to policy makers in many Vavilovian centers whose commitment for PGR conservation is a determinant factor to its implementation, the importance of such resources is too abstract and hard to grasp.

As early as 1936 Harlan and Martini noted that crop germplasm in Vavilovian Centers were vulnerable to loss due to technological and economic change. But not until late 1960 the global efforts to collecting and then conserving genetic resources began in a more concerted way. At the same time the Green Revolution started its way to introducing High Yielding Varieties of major crops (rice, corn, and wheat) to developing worlds. With the introduction of the Green Revolution many local varieties of these crops were replaced. A group of concerned scientists assisted FAO to take an initiative for a global movement to conserve them (Frankel and Bennet, 1970). In 1983 FAO established an intergovernmental forum, i.e., the Commission on Plant Genetic Resources which is now becomes The Commission on Genetic Resources for Food and Agriculture. This is a permanent body which monitors the implementation of the International Undertaking, a non-binding agreement on PGR among a number of FAO members.

To further promote the conservation of PGR at global level, an International Board for Plant Genetic Resources (IBPGR) was established under the auspices of the Consultative Group of International Agricultural Research (CGIAR) in 1974.

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Together with FAO, IBPGR laid down the strategy for global genetic resources collection and conservation. Samples of seeds and vegetative materials were collected and preserved in gene banks of various agricultural research institutes. Seeds with recalcitrancy and vegetatively propagated species were maintained as living collections or stored in tissue culture laboratories. Later IBPGR was transformed into the present International Plant Genetic Resources Institute (IPGRI), a full fledge autonomous institute dealing with genetic resources, their conservation and use.

To facilitate taking stock of the present and current situation on the status of PGR, FAO prepared its first report on the State of the World's Plant Genetic Resources in 1996. This report was based on a compilation of more than 150 country reports. By identifying gaps and inefficiencies in conservation efforts, the Global Plan of Action (GPA) for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture was developed. The GPA will provide guidance and at the same time monitor its implementation. Within this plan activities to support on-farm management and improvement of PGR for food and agriculture is listed under the in situ conservation and development (FAO, 1996). At national level the country commitment to carry on the plan might be well understood by the department of agriculture which in fact is the in country partner of FAO, but at community level wherein a number of actors deal directly with farmers, there is poor understanding of what PGR are, let alone in situ on farm conservation.

The Convention on Biological Diversity was signed in 1992 and came into force in 1993. Biological diversity embraces a larger scope than PGR. In fact PGR is only a small part of biological diversity (CBD, 1994). Unlike the FAO International Undertaking which is legally non binding, the CBD is legally binding, hence countries are more serious in implementing the convention compared to the FAO-IU. Moreover, the Conference of the Parties which is the highest governing body for the CBD, has decided that the Global Environment Facility (GEF) as its temporary financial mechanism allowing the agreed activities on biological diversity to be carried out. With this development FAO-IU was revised in 1993 to harmonize it with the CBD.

Issues like pollution, depletion of ozone layer, land degradation, or water scarcity are easily understood by the public at large than the loss of biological diversity. Though seven years has passed since the CBD came into force and four years since the FAO-Global Plan of Action was launched, the importance of biological diversity including PGR, for sustainable development has not been in mainstreamed into many sectors in the government which are responsible for implementing development activities. In such a condition it becomes obvious that there is a need to identify key issues within the program of work of the CBD and FAO-GPA which can be used as eyes opener to those who should play an active role in national development.
Like biological diversity, agrobiodiversity means different thing to different people. Agrobiodiversity refers primarily to genetic variability in cultivated plants and domesticated animals together with their progenitors and closely related wild species growing and evolving under natural conditions. Plants and animals harvested from the wild are also included in this term (Thrupp, 1997). To provide parties of the CBD with a standard term on agrobiodiversity, the Subsidiary body of Scientific, Technical and Technological Advice (SBSSTA) of the CBD in its fifth meeting (2000) stated that the scope of agricultural biological diversity as "all components of biological diversity of relevance to food and agriculture, and all components of biological diversity that constitute the agro-ecosystem: the variety and variability of animals, plants and microorganisms, at the genetic, species and ecosystem levels, which are necessary to sustain key function of the agro-ecosystem, its structure and processes". It should be noted that within this scope farmers are identified as managers of the agricultural biological diversity. The man made ecosystems which are intended for agriculture purposes are thence named agro-ecosystems. The relationship between agrobiodiversity, PGR management in agro-ecosystems, and the complexity of the issues in the context of socio-economy are discussed with the emphasis on Asia Region. Not only Asia represents several Vavilovian Centers, but Asia is also rich in agro-ecosystems, agrobiodiversity, and population.

**GENETIC DIVERSITY IN AGROECOSYSTEMS**

From the evidence gathered it is believed that man began practicing agriculture approximately 10,000 years ago in several locations of the globe. Through trials and errors food crops were identified, selected, cultivated, tested, maintained, and improved. The process of domestication continues even today. In agriculture consideration was not only given to the selection of plants but also to the physical environment in which they grow. Water availability and soil fertility were the determinant factors for cultivating annuals, biennials, perennials or combination of all. Humans modified various ecosystems into many types of agro-ecosystems where some of them contained not only plants but also animals.

Harwood (1979) described four stages of small farm development, i.e., primitive hunting-gathering, subsistence level farming, early consumer, and primary mechanization. The change from hunter-gatherer stage to subsistence level farming allowed a larger number of population that could live in a given area. Many species of plants were grown together in a given area to satisfy the very basic human needs, i.e., food security. In addition to food crops, medicinal plants and others were added. Subsistence farming is non-commercial in nature and at present such farming systems are still common, for example in many parts of Indonesia. Each farming community managed their farms with knowledge that they acquired from their family. There was a special relationship between a specific community with crops that they grow in a
particular space. The species selected for food, for medicines and for spiritual purposes varied from one place to the other. The combination of cultural preference and the condition of physical environment induced the formation of land races of crops which were unique in each agro-ecosystem.

If farming alone allowed the increase of yield in plants, the advancement of local knowledge and techniques in farming promoted the increase further. At this stage farmers had adequate food and were able to sell their surplus. Market influenced farmers to produce more of the small number of domesticated species resulting in the reduction of the varieties of plants grown. Meanwhile the new technology for farming was introduced which pushed the productivity level of certain crops still higher. Then came the era of the Green Revolution which is characterized by uniformity and efficiency. Such a technology was suitable to be adopted in arable land where water and soil fertility are secured. Small farming systems which occupied marginal land and less favorable environment with many traditional crops were hardly affected by this new technology.

This new technology is not without negative impacts. In Asia, for example, the most populated countries, i.e., China, India, and Indonesia welcomed the Green Revolution technology and enjoyed the results of it. However, based on the analysis of the production performance over the past two decades it was revealed that there was early indications of unsustainability (ADB, 1999). The growth of yield per unit area of rice demonstrates a declining trend. Such a trend of course should send an alarming signal to policy makers to find new ways to keep the production on tract.

One of the options to securing food production at national level is expanding the agriculture intensification to less favorable environments. It should be noted, however, that such areas are usually associated with small farming systems, many crops and in general farmers lack of resources. Moreover, the existing technology mainly deal with single crop farming and requires high inputs. Difficult as they are for agriculture expansion, the ADB (2000) recommended that less favorable environments be the target areas for agriculture productivity improvement. Should that recommendation be implemented in Asia, the traditional agro-ecosystems and the PGR they contained will go with it.

MEETING THE NEEDS OF NATIONAL DEVELOPMENT

After World War II Many countries that are rich in biological diversity use this resource for national development. Agriculture in a broadest sense -including forestry and fishery- becomes the sudden backbone of their economy. Unfortunately, however, the mean to utilizing biodiversity is mainly by way of direct exploitation. Timbers and other forest products are harvested from natural forests. The same holds true in the field of fishery. Though sustainable management in both forestry and
fishery is accepted as a good guidance but such a concept is hardly followed in practice due to, among others, lack of appropriate technology for large scale operation. On the contrary, food crops have been in cultivation in these countries for centuries and technology has progressed accordingly.

When the new technology for food production which is famous as the Green Revolution was introduced to improve yield of crops, every government was eager to welcome it. The yield of the major food crops per hectare of land was indeed doubled or even tripled. At national level the miracle of Green Revolution was praised due to the fact that without with many countries could not avoid the import of the needed food. At community level, however, the Green Revolution seemed to benefit only the resourceful farmers. The poverty level in some countries before and after the Green Revolution was compared and the result showed that there was no difference. It means that the Green revolution did not reduce poverty level in farm community. The challenge to the governments then is to find ways and means as to how to eradicate poverty and at the same time provide quality of life to farmers who seemed to be unaffected by the Green Revolution.

During Rio Summit meeting (1992) countries expressed their commitment to aim at sustainable national development. It means that every government will do its utmost to provide adequately the needs of their citizen not only who live today but for tomorrow generations as well. In other words the environment in which we live today should be kept in such a way to enable the coming generations to provide their needs as we enjoy now. Adequate food is the basic element of national development. The commitment of the international community to ensure food and nutrition security to every child, woman and man on our planet was stated in the Bellagio Declaration (1989) on Overcoming Hunger in the 1990s. World Food Summit (1996) reaffirmed the need to achieve the goal of Food for All, because today (10 years after Bellagio) more than 800 millions people still suffer from hunger and malnutrition. Many believe that this suffering is not caused by inadequacy of food, but rather is the distribution. On the other hand, there is an increasing concern about the earth’s capacity to produce enough food for the growing population (Brown, 1997) despite the fact that science has tremendously improved world food production over the past three decades.

Globalization of economy has affected the life of almost every one on earth. Farm community is no exception. Traditional farm community whose life depend very much on agriculture is facing pressures to produce more to enable them to buy various things that are offered in the markets. Unfortunately, however, many cannot rely solely on their farm products to keep pace with such increasing needs. They are compelled to work outside the farm to gather additional income. Those who live nearby cities are tempted to abandon farm's life. Cities provide them with opportunity to earn money easily. Suddenly most farm community is no longer in
isolation. Radio is commonly owned while they are familiar now with television show. Both radio and television bring information on modern agriculture as well. New crops are introduced so that new varieties of crops, such as melon, tomato, cabbage, chili pepper, eggplant, bitter gourd invade traditional farming systems. These varieties are highly valued and the price in the market is attractive. Naturally farmers plant what the market want though new batch of seeds have to be purchased at the beginning of planting season. In this way, traditional varieties of many crops, including those classified as minor crops, are push out from the farming systems leading to their erosion. Unfortunately, however, not every country is prepared to take action to collect and conserve these endangered local crops and their variation in ex situ way.

At global level various gene banks of the international agricultural research institutes and many national gene banks keep the samples of crops that are endangered of being lost for ex situ conservation. According to the latest estimate 40 % of the samples are cereals, 15 % are food legumes and 10 % are represented each by vegetables, roots and tubers, fruit and forages. Not all farmer traditional varieties, of course, are represented in these collections. Moreover, ex situ conservation alone is not sufficient to keeping all the PGR that are needed for crop improvement. Therefore, one possible way to conserving farmer traditional varieties is through in situ on-farm, an option that is gaining more attention nowadays (Brush, 1999). Such a conservation method is done in farmers field and farmers are the actors who manage the system within which PGR are just one of the components.

With regard to in situ on farm conservation Brush (1999) listed five reasons for promoting it, which among others, are that agro-ecosystems will continue to generate new genetic resources, and provide natural laboratories for agricultural research. Brown (1999) in his attempt to strengthen the scientific basis of in situ on farm conservation offers several advantages of in situ on farm to farmers as well as to management issues including the policy of environment. Worede et al (1999) showed that in Ethiopia in situ on farm is one of the effective strategies for poor resource farmers to cultivate marginal land with low input agriculture and yet a stable system. To support this farmer-based approach of conservation more extensive research on genetic, ecological, and social dynamic of landraces is needed.

To ensure the sustainability of landraces on farm, Qualset et al (1997) are of the opinion that the agricultural system as a whole need to be conserved. The question is then how the attitude of farmers who maintain the system expected not to change with time. While the idea proposed is acceptable, however, from practical point of view it unlikely workable. Farmers, like other communities, are socially dynamic and responsive to change. Therefore, according to Pistorius and van Wijk (2000) in situ on farm conservation should not only be perceived from the possible maintenance of traditional crops only but more importantly should be tightened with
rural development programs. Thus, tangible benefits should be tagged along with such a conservation effort, if farmers are expected to cooperate.

It will be interesting to learn from the Ethiopian experience whether or not the attitude of farming community to conserve landraces will change should poverty is alleviated. In Indonesia, the diversity of crops on individual field is generally linked closely with subsistence agriculture and poverty (Sudjarwo, 2000). When the government workers advised such farmers to plant valuable crops for potential market, farmers did not want to listen. However, when buyers pursue them to plant certain crops, which sometimes are new species to them, farmers complied readily with the request. The buyers provide them with security of cash in advance and farmers need not worry of whether or not market is there, an assurance which government officials cannot give. Thus on farm conservation is vulnerable toward economic incentives and social change. It becomes apparent that incentives to farmers to maintain crop diversity on their farms for national or global needs are indeed necessary.

There is no doubt that in situ on farm conservation provides a new way to countries lacking of gene banks to maintaining their genetic resources and to global community to complementing the ex situ conservation in gene banks. Attractive as it sounds, in developing countries conservation of genetic resources is often considered a long term exercise, whereas politicians would like to see the results of activities for national development while they are still in their office term (Salim, 2000). Moreover, the site specificity of subsistence agriculture makes it less attractive to national policy makers as well as scientists in general to put efforts on this issue since the impacts are felt only locally.

It is obvious that in situ on farm conservation in countries with many types of agro-ecosystems, especially those in developing countries, needs government support. The political commitment of governments to enhance food security at household level has been expressed at global level (FAO Summit Meeting, 1996). Such a commitment needs to be integrated in the national development plan and translated into the works of various sectors in the government. Further, in order to reach the household level, a strategy differs from that planned at national level seems to be necessary. After all, various agro-ecosystems in a country are the building blocks of the national agricultural system. The specificity of agro-ecosystems and the genetic resources they contain play an important role for local food self assurance which in turn will contribute to national food security. The role of farmers as managers at agro-ecosystem level should be recognized.

MANAGING PGR TO DIVERSIFY AGRO-ECOSYSTEMS
In dealing with the management of biodiversity CBD stresses the importance of ecosystem approach (UNEP-UNITED NATIONS, 1998). Within the CBD agricultural biodiversity covers a broad range of elements including a wide range of ecosystems services. SBSTTA of the CBD in its decision V/10 (UNEP/CBD/CPP/5/3, 2000) elaborates the ecosystem approach concept. With the approach it is expected that the direct as well as the indirect values of biological diversity such as that of ecosystem functioning are counted.

The concept of ecosystem approach considers human dimensions as an integral part of biodiversity management. In his note on agrobiodiversity the Executive Secretary of the CBD described the application of ecosystem approach for managing agrobiodiversity using rice as example. In nowadays farming, however, rice is mostly cultivated in a mono-culture system while in traditional agriculture practice rice is multiple-cropped with other species. In addition to rice based agro-ecosystems there are several other systems which are based on corn, cassava, or other species.

According to World Resource Institute (2000) agro-ecosystems cover more than one-quarter of the global land area. However, almost three-quarters of the land has poor soil fertility. In addition to it, about one-half occupy steep terrain. To make the matter worse, about 40 percent of agricultural land has been strongly degraded. When human population within various agro-ecosystems existing in the world is calculated and the magnitude between regions is compared it is shown that Asia’s agro-ecosystems are the most populated. Without serious attempts to improve such degraded land more and more agro-ecosystems can no longer be cultivated. Population is Asia is growing steadily and agriculture is the only sector that can absorb a large amount of labors. Thus improving degraded land for agriculture will solve in part the problem of job opportunity.

A traditional agro-ecosystem is conceptualized as a web of social relationship between a specific group of people with plants and animals which they show in a particular space. It is a major repository of PGR. When ecosystem approach (SBSTTA 5) is applied for a management of an agro-ecosystem and the PGR they contain, principle 2 of such an approach is appropriate here, i.e., management should be decentralized to the lowest appropriate level. Farmers are the key player at this level. Their desire to response to change should be taken into account when designing the in situ on farm conservation. Moreover, the sustainability of efforts are in the hands of the young generation of farmers. Many of them are no longer interested in farming which is indeed a hard working job and in term of cash is not attractive. It is, therefore, necessary to complement efforts to doing in situ on farm conservation with other economic activities so that farmers and their young generations have options to choose what is best for their life.
In Indonesia, for example, the political will of the government to provide enough food at household level has promoted national interest in dealing with agro-ecosystems and local crop diversity (Badan Urusan Ketahanan Pangan, 2000). At the moment the country is heavily dependent on rice as staple food and thus compelling Indonesia to import more than 3.5 million tons (Biro Pusat Statistik, 1997) annually since 1993 while in 1984 Indonesia had achieved the self sufficiency in rice production. Another worry is that noodle and bread are now widely accepted as food in between meals. In this way wheat which is not grown in Indonesia has to be imported in large amount as well, which is close to 4 million ton/year. Both rice and wheat imports are heavily subsidized by the government. Therefore, the department of agriculture determines to alter this unhealthy situation in the years to come. Different agro-ecosystems with their different crops offer a range of alternatives to developing food security not only at local level but also at national level.

The future of various agro-ecosystems and diversity of PGR is dependent on human culture in particular farmers whose livelihood is inseparable from their crops. As culture advances the human dimensions as part of the agro-ecosystems change as well. The link between farmers, agro-ecosystems, and PGR as discussed earlier is indeed very complex. Thus the deployment of PGR in the system is not a simple matter which can be solved easily by the formal institution (government) or informal arrangement (NGOs). Like all living systems agro-ecosystems perform a hierarchy of systems (Conway, 1985) from the lowest level (plant, animal, microbes) to farms and village level. Each lower level of hierarchy becomes a component of the next higher one. In order to function well each agro-ecosystem should perform four properties, i.e., productivity, stability, sustainability, and equitability.

As manager of an agro-ecosystem farmers should be concerned with not only crops of their interest but the totality of the system including the associated biodiversity and the abiotic components (Almekinders and Struik, 2000). Scientists are in position to assist farmers in making an agro-ecosystem perform its four properties mentioned above. Moreover, it should be kept in mind that the social and economic aspects which will enhance the livelihood of farmers cannot be separated from the technical aspects of agro-ecosystems.

THE CHALLENGE TO SCIENTIFIC COMMUNITY

For more than two decades scientific research on various aspects of in situ and ex situ conservation of PGR has been conducted all over the world. Yet further research is needed in several areas of PGR conservation, especially for non major crops. In developing countries of the tropics, where modern improved varieties have not been adopted, the diversity of crops are still managed by farmers in their farming systems. Considering the enormous amount of diversity both in term of farming systems as well as PGR cultivated wherein, in situ on farm conservation as a new
development in crops conservation, gains a growing interest from scientific community. The challenge remains to be: how well scientific information can be translated by policy makers so that they can be integrated into policy actions which in turn will enable many actors (scientists, conservationists, seed suppliers, and government officials) work together. The following areas are some of the entry points:

**PGR for food Security**: Food security is one of the top priority problem which many developing countries are still struggling to achieve. It is shown earlier that local PGR contribute to fulfilling food and nutritional requirements at household level. To enhance the role of PGR in local food security research to develop improved local varieties which are adapted to less favorable environment (LFE), on the right combination of crops cultivated, on the level of soil fertility, on the role of soil microbiology, and on the availability of water need to be promoted in certain agro-ecosystems. Improved local PGR and their cultivation will assist farmers to obtain better yield from their lands and in this way help to secure their need for food secured. At the same time the diversity of local crops can be maintained.

**Increasing value addition of PGR for income generation**: Food alone is not sufficient for nowadays life. Technology to enhance the added values of crops needs to be developed to increase the monetary gains. Cassava, for example, is produced abundantly by many developing countries for food. The price is cheap if sold as food crops. But flour extracted from cassava, known as tapioca, has good price in the market. By processing it further into other products higher price can be obtained. Many crops cultivated in traditional farming systems have not been developed into marketable products. Often many species planted in an agro-ecosystems are valued as medicinal or ornamental plants. Research and development in these crops will promote the values further. However, market to generate income need to be created for new products developed from such crops. Creating a market for new product is not easy, but once it is done, job opportunity for younger farmers opens. Agribusiness development seems to be the answer for boosting the market of local crops.

**Balancing diversity for environment quality**: Like other components in an ecosystem, agrobiodiversity has role to play, i.e., as a valuable ingredient for an ecosystem functioning (Thrupp, 1998). The more diverse an agro-ecosystem with crop species the more stable the system is. However, change in environment is inevitable and no one can predict what will happens. To face the risk of such an unpredictability, diversity from biological, cultural, and economic standpoints is the strategy (di Castri, 1998). Diversity of crops, for example, will provide protection to soil from erosion by keeping water from running off. In this way nutrient cycling is not disrupted. Moreover, crop diversity prevents a fast spread of harmful insects and diseases. In many less favorable areas, however, there is problem of getting
firewood for cooking. Such a demand if can be fulfilled locally will be safe protected areas (Fowler and Jiggins, 2000) as well as maintaining local environment quality. Scientific research may offer technical solutions to these problems.

**Traditional Farming System:** There is a need to understand the dynamics and applications of traditional farming systems with a view to understand their prudence in natural management, beside learning about their integrated approaches to appropriate their time, resources and energy. There is a need to understand the disappearance of such traditional farming systems. For example, the policies of government to encourage high yielding varieties, market forces, and introduction of new crops may cause the disappearance of traditional farming systems. Understanding reasons for these may help develop mitigative strategies. It is interesting to note that the number of land less farmers tends to increase with time. Keeping traditional farming systems alive and at the same time putting agribusiness in place these landless farmers will have opportunity to remain working in agricultural sector.

**Scientific information for policy formulation:** In many developing countries, policy in agriculture promotes rapid change which lead to the decrease of agro-ecosystem types. Monoculture planting dominates the existing agro-ecosystems because of its efficiency. Uniformity in crop varieties signifies the new agricultural with its high inputs. Credits are provided so that farmers can be readily adopt the system. Such technology is appropriate for certain agroecology, leaving the less favorable areas almost remain as before with their diverse crops intact. However, agriculture expansion a way to producing more major crops will sooner expand to these areas. To diversify agricultural practices that suitable for agroecological and socioeconomic conditions, new policies need to be formulated. Scientific information provide sound basis for options to develop policies.

**WAYS FORWARD**

Agrobiodiversity offers a powerful defense against the fatigue of green revolution and impending food shortages. Intensification of efforts to conserve the agrobiodiversity by way of *in situ* on farm can help us to decrease the burden on environment as well as to ensure the future availability of PGR for plant improvement. Such efforts must include:

1. **Farmers empowerment:** In many region of the world farmers who live in marginal lands and have limited resources are still practicing traditional agriculture despite the promotion of more efficient technology. They have rational to keep on planting or abandoning their crop diversity. If farmers are expected not to abandon their crop diversity and land races for *in situ* on farm conservation, farmers need to be empowered to enlarge their food basket with
local grains, tuber crops, fruits, and vegetables. Moreover, the capacity of farmers to generate income from their crops needs to be developed and this is a matter of urgency.

2. **Mobilization of scientists**: Considering the large number of farmers who need to be empowered, scientific criteria for selecting places and areas to be included for *in situ* on farm conservation program should be a priority. Improved local crops, embetterment of agricultural practices, as well as increasing value addition of local agricultural products, and social implications are the immediate agenda for scientists to dealing with *in situ* on farm conservation.

3. **Government commitment**: Without government commitment to deal with farmers who have limited resources, *in situ* on farm program will merely be a scientific exercise. Therefore as suggested by Pistorius and van Wijk (2000), to be beneficial to farmers, efforts on *in situ* on farm conservation should be integrated into rural development program. Politically all governments which are members of FAO expressed such a commitment in 1996. What is needed now is the political action to materialize the commitment.

4. **Non Governmental Organization (NGO) involvement**: Unlike in the formal system of governance NGOs system of operation is flexible and less bureaucratic. Moreover, members of NGOs are usually young, energetic, full of dedication and idealistic. Donors trust them to work at the grass root level with community. Therefore, the role of NGOs in *in situ* on farm should be recognized and be included in overall efforts.

5. **Private sector participation**: By nature private sector is a profit making body. Unless they see the dividend of their efforts, they are reluctant to act. Poor farmers are not their business targets. However, there is a possibility that they will join efforts on *in situ* on farm conservation if invited. They have to be convinced that they have a significant role to play in humanity. At present private sector is still not in the group yet.

6. **Global community attention**: Indeed local plant genetic resources are valuable not only to farmers who owned them but possibly also for long term global conservation strategies. At the moment not all local crops diversity which are existing in various areas of the globe is represented in gene banks. Therefore, if *in situ* on farm conservation is considered as a complement to the existing *in situ* and *ex situ* conservation, ways and means to making it work should be attempted. The global community is in position to assist those countries which are identified as center for crops to conserving the local PGR on farm. There is no simple way to doing it, because it involves not only the PGR themselves but also farmers and their culture.
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