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The collections of traditional varieties: a decade of activity of the «Genetic Resources Centre *Scarascia Mugnozza*» **

Very distinguished members on the podium, fellow participants.

I first of all would like to thank the Italian Senate, the Italian Academy of Sciences, FAO and Prof. Scarascia Mugnozza for asking me to join this very important meeting today. This is one of the first scientific meetings in honour of the International Year of Rice, many aspects of which you may have already heard of.

I want to speak briefly on the significance of the Scarascia Mugnozza Community Gene Bank and Community Genetic Resource Centre at Chennai in India, and also show you a short film on the Centre. This Centre was especially established to give meaning and content to the concept of farmers' rights, and that is the reason why it is called a Community Gene Bank. The aim is to establish how to recognize and reward the contribution of the primary conservers. Everybody knows, and I have myself explained, the significance of conservation in preventing habitat destruction and invasion of alien species. Those are very important factors in destruction of biodiversity, particularly agrobiodiversity. We now know the significance of agrobiodiversity, and this is the reason why the conservation moment has gained so much importance, generating the global Convention on Biological Diversity and the International Treaty, which have been exhaustively illustrated by previous speakers. The Convention on Biological Diversity for the first time gave legal credit to the concept of farmers' rights, or the primary conservers' rights, by pointing out the importance of prior informed consent and benefit sharing with the primary conservers. Rice, more than any other food crop, is going to be extremely

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important with climate change, because it grows over a wide range of altitudes, longitudes and latitudes, showing enormous diversity in terms of adaptation. This is the reason why there is a Gene Bank at Los Baños, with a collection of over a hundred thousand varieties of rice.

The international community has taken a number of important steps, and the Scarascia Mugnozza Genetic Resource Centre, in the frame of the Swaminathan Research Foundation at Chennai, has, similarly to the Convention on Biological Diversity, three purposes, one of which is the conservation of genetic resources, particularly local community agrobiodiversity. Another one is the sustainable use and equitable sharing of benefits. I am explaining the importance of the Scarascia Mugnozza Centre because, for the first time, scientifically greater thought has been given to the one unrecognised, unrewarded component of conservation, the *in-situ* conservation. But community gene conservation, which is extremely important in terms of intra-specific diversity, has not received that degree of scientific attention until the time FAO, particularly Dr. Esquinas Alcazar, started promoting the concept of farmers' rights. Community conservation is important for land races, for traditional varieties: it takes two on-farm conservations, *in-situ* on-farm and *ex-situ* on-farm. They are like sacred groves: even the Old Testament talks about sacred groves. Governments have been largely concerned with *in-situ* conservation, *ex-situ* conservation, protected areas, national parks, biosphere reserves, gene banks, botanical gardens, zoological gardens, DNA libraries, tissue culture and so on. However, both community *in-situ* on-farm and *ex-situ* on-farm require much more scientific attention, particularly in the case of rice.

This is why the farmers' rights and the Scarascia Mugnozza Centre became important, the community gene management and the community gene conservation being the basic concepts.

Also in my view, botanical gardens in the past have been extremely important as methods of collections, conservation and transfer of technology. One example is the Kew Botanical Garden. Sir Henry Wickham brought seeds of *Hevea brasiliensis* from Brazil and planted them in Kew. From there, the species was sent to Sri Lanka and there it has given rise to a multi-billion dollar rubber industry in South Asia.

Forest management of the biosphere in India had a decline in forest area which has been stopped in the last 20-25 years. There is a marginal increase, largely because people now are involved in the management of the forests. Women, in particular, play a very important role in conservation. This project called "Joint Forest Management" is carried out by the Community and the Forest Department.

There are also non-wood forest products sharing with the local community. UNESCO has developed the concept and intent of a Biosphere Reserve. Francesco Di Castri played a key role in this respect. About ten years ago in Seville, Spain, a new vision of Biosphere Reserve for the 21st century was presented. Rather than forming islands in a world increasingly affected by severe human impacts, biosphere reserves can become theatres for reconciling people and nature. They can

bring the knowledge of the past to the needs of the future. This is also the goal of the Scarascia Mugnozza Community Genetic Resource Centre. I myself was involved, from 1989 onwards, in setting up one of the largest forestry centres: the Iwokrama Rain Forest Centre in Guyana. The President of Guyana gave one million acres (400,000 hectares) of prime rain forest to demonstrate the concept of sustainable management. It is a beautiful area: half of it has been set up as a wilderness reserve and half for demonstration of sustainable management. I was asked to take on the responsibility.

We have used the same concept in one of our very important marine biodiversity reserves, marine national parks. What we have done is based on the Seville concept of biosphere reserves for the 21st century. We have created a trust: in other words, the people of the area (Government, Academy and Media) all hold this area in trust for future generations. I think we would like to see more and more of this trustee concept promoted in the conservation of genetic resources.

Anyway, it must be underlined that without livelihood security of the poor, the ecological security of the region cannot be preserved. In other words, the livelihood security of the people and the ecological security of the area must become two sides of the same coin. Otherwise, conservation will be a lost cause particularly in countries with severe anthropogenic pressure.

The other feature of the Scarascia Mugnozza Centre is the Integrated Gene Management to promote new methods of participatory plant breeding. The Centre is, in fact, a pre-breeding centre, a genetic enhancement centre, with great novel genetic combinations for use by grass root plant breeders. For a sustainable agriculture varietal diversity, i.e. genetic heterogeneity, is required, not homogeneity. In fact, genetic homogeneity invites problems, because it increases vulnerability with regard to diseases. This is one of the criticisms with the large multi-national companies: they may like to promote one variety in a large area, and that is inviting disaster. So we must be participatory, we must have locations for specific selections, we must have varietal diversity based on the many demands of the farmer's communities.

It is important to have a land-and-forest saving agriculture, but we now know that it has more and more varietal diversity. It was forty years ago, exactly in 1964, that the Chinese rice varieties, especially those including dwarfing genes, started making an impact in Asia; later on, varieties like IR8, IR66, etc., came into cultivation. This new kind of plant type is very different, at root system, height, and yield. That is why they spread like wildfire. Looking at the pedigrees of new varieties of rice, it is evident that a variety today may have a hundred parents, with a very large number of landraces. For example, the pedigree of rice IR66 includes 73 parental lines, 20 of which being land races.

As was already mentioned, we have genes for almost any purpose. Gandhi said: "nature provides for everyone's need, but not for everyone's greed". That's what happened also with medicinal plants: people just collect them, they don't domesticate them.

I am glad to inform you that one of the events in the frame of the International Year of Rice will be a meeting in March in our Centre, in Chennai. In this occasion, large trials of new rice lines in which genes from mangroves, for salt water tolerance, have been transferred, will be shown. When I took my PhD in Genetics, 50 years ago, I never thought it possible at all that we could take a gene from a mangrove!

Nevertheless, the poverty of the primary conservers as compared to the prosperity of those who use that knowledge and material is unbelievable and unworthy. This is what one is trying to break by giving recognition and reward to farmers' rights. Therefore, equitable sharing of benefits deserves the consideration of three important points: the Individual Benefits, the Code of Conduct, and the Community Benefits (table 1). The paradigm shift in integrated gene management which we are trying to bring about is shown in table 2. At the Community Gene Bank we have developed a Code of Conduct by which all this can be done.

Before I conclude, I want to mention that in this International Year of Rice we must ensure that "Trade Related Intellectual Property Rights-TRIPs" incorporate the provisions of conventional biological diversity in terms of recognition and

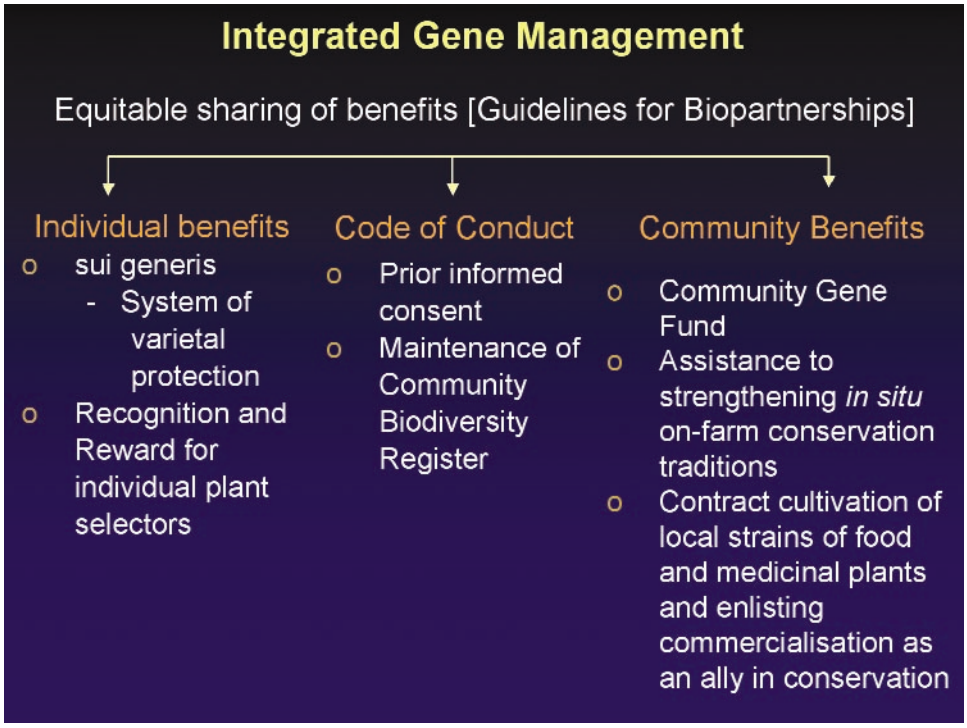

Table 1.

Table 2.

reward. "World Intellectual Property Organization-WIPO" has already produced a very good book, as a result of a global consultation on the need to recognize and reward indigenous knowledge. I am hoping personally that one day, not very far away, the "Union pour la protection des obtentions végétales-UPOV" will evolve into Union for the Breeders' and Farmers' Rights. Because breeders and farmers are allies in the movement for food security, and not one against the other, we should not show breeders' rights and farmers' rights as something opposite. So, in India for the first time we have an Act which is called "Protection of Plant Varieties and Farmers' Rights Act". As far as I know, it is the only one in the world which gives concurrent recognition and reward to both breeders and farmers, and this is why we want to make UPOV ultimately into a Union.

Finally, the Scarascia Mugnozza Genetic Resource Centre has launched in India this year a large movement called "Genome Clubs". The aim is that in the schools students should now know about genomics. The genome club is a method: we have started with rice genome.

I thank you for your attention.