

International Forum for Promotion and Development of Minor Cereals (1997)

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PROJECT COORDINATION CELL
ALL INDIA COORDINATED SMALL MILLETS IMPROVEMENT PROJECT
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
University of Agricultural Sciences, GKVK Campus, Bangalore - 560 065, India.

Dr. A. SEETHARAM
Project Coordinator (Small Millets)

Ref. No. PC (SM) /

Dr. M. KIMATA
Visiting Professor

Date :

June 3, 1997

Dear Sir,

In Asia and several countries around the world, many kinds of small millets (Minor cereals) are grown. They are finger millet (*Eleusine coracana*), italian millet (*Setaria italica*), kodo millet (*Paspalum scrobiculatum*), proso millet (*Panicum miliaceum*), little millet (*Panicum sumatranse*), barnyard millet (*Echinochloa frumentacea/E.colusa*), grain-amaranth (*Amaranthus sp.*) and buck wheat (*Fagopyron spp.*). There are other minor cereals like teff (*Eragrostis tef*) and fonio (*Digitaria spp.*) which are important in Africa.

Research on these crops is in progress in many countries but it is scattered and localized. As a result, there is difficulty in finding access to the valuable research information available elsewhere. The scientists working on these crops are handicapped for want of a common forum for discussion of issues of mutual interest. The two International Workshops held in 1986 in India and 1991 in Zimbabwe (Africa) has helped in documenting the available information at global level on some of the above cereals. But, this has not helped much in filling the vacuum. Recognizing the importance of these minor cereal crops in food security at the farm/regional level and its role in World Agriculture it is thought appropriate to launch an International Forum for Promotion and Development of Minor Cereals. The proposed forum will cover 10 crop species - finger millet, italian millet, proso millet, little millet, kodo millet, Japanese/Indian barnyard millet, grain-amaranth, buck wheat, teff and fonio.

The forum intends to provide:

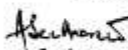
- 1) A common platform for scientists working to discuss issues related to conservation, improvement and promotion of these crops.
- 2) To bring out International Journal to serve as promotional media for exchange and dissemination of information.
- 3) To support organizing International/Regional Seminars and Workshops on these crops and assist to identify areas of research and development for the common benefit.

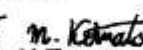
Through this letter we are enlisting your support for launching of such a forum/society by end of the December 1997 and your willingness to serve as one of the founder members. We would be grateful if you could kindly circulate this letter among the interested scientists/colleagues in your country and help us to know their response. We look forward for your suggestions in this regard.

Thanking you,

With regards,

Yours sincerely,


A. Seetharam


M. Kimata

Kindly send your suggestions to:

- 1) Dr. M. Kimata, Professor of Ethnobotany and Environmental Studies, Tokyo Gakugei University, Koganei, Tokyo 184, Japan.
- 2) Dr. A. Seetharam, Project Coordinator (Small Millets), University of Agricultural Sciences, GKVK, Bangalore-560 065 (India).

Conservation and revival of indigenous varieties~Case studies on the millet and vegetables in Japan~

Mikio KIMATA

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Summary

The biodiversity has become more abundantly through the biological evolution on the earth since about 3.5 billions, but this long history was a process full of ups and downs. The whole biodiversity on the earth has been attacked by the catastrophes five times. Today the sixth severe catastrophe is the most important environmental issue for us, because it is clearly led by humankind and their modern civilization, but not by the natural process. The biodiversity consists of very complex relationships. Table 1 shows each biodiversity of the following levels, community, species, individuals and gene at the agro-ecosystem.

Recently, a concept of biocultural diversity is proposed, because the biodiversity, which had involved with cultural evolution, has been promoted by the history related organism with humankind on farmland since the beginning of agriculture (10,000 BP). This concept involves various traditional cultural matters from plant diversity (e.g. genetic variation) to techniques on the use, cultivation, processing, cooking, agricultural functions and table manner, as a basic agriculture complex, “from seed to stomach” (Nakao 1966), including all organism (wild and domesticated plants) related with humankind.

The conservation of plant biodiversity contains not only biological issues from ecosystem to gene, but also cultural issues. Moreover, we must conserve the written and visual information of biocultural diversity, while we do conserve the traditional knowledge of proud villagers who have lived at a farmland and rural community for the fundamentals of environmental learning. Everybody needs to learn the indigenous traditional knowledge of biocultural diversity. The rice paddy cultivation is so-called Japanese fundamentals, but the farmers had used wild plants and cultivated millet, wheat, barley etc. at upland fields in mountain villages.

We have practiced a project “Plants and People Museum” at the Ecomuseum Japan Village for learning conservation of biocultural diversity, in Kosyge-mura, Yamanashi prefecture, where is located very important forests for the drinking water reservation of Tokyo Metropolis. This project may propose a model for rural development with the conservation of biocultural diversity. We promote the conservation and revival of indigenous varieties of millet and vegetables with villagers. This concept is supported theoretically by our research on the traditional knowledge system of distinguished farmers in Japan and Eurasia. They have vividly told us their excellent experiences and indigenous knowledge.

The importance of conserving plant seeds for the sake of bio-cultural diversity

Summary

Plant seeds, including those seeds and propagules of domesticated plants, belong to all living creatures and have been nurtured both by nature and our ancestors through the ages. Therefore seeds should not be considered the property of any individual, company or nation. When seeds are kept *in situ* in ecosystems and natural habitats, sustainable and creative evolution is assured and a rich biodiversity can be maintained. CBD is using the expression 'genetic resources', which emphasizes their aspects of economic resources or commodity, and is reducing living creatures into mere materials. But plants are not just resource materials. The background of this idea of genetic resources contains the assumption that they can produce goods and services. The expression itself only serves to accelerate the idea of plants' use as resources and the alienation of plants from people's everyday lives. Thus, in CBD a concrete statement of "all propagules including seeds" should be added to the definition of 'genetic resources'.

In Japan, we have an abundance of wonderful landraces such as daikon (Japanese radish), kabu (turnip), nasu (eggplant), uri (gourd) and various leafy vegetables used for pickles. Thus, we could say Japan is a secondary center for a large variety of vegetables. It is therefore imperative, as we look towards the future, to conserve the traditional knowledge of these cultivars that are suitable to the local environments, as well as to conserve the local living culture and biodiversity and to pass it on to the next generation in order to promote a sustainable peaceful society. Further, people should be guaranteed to have limitless and free access to all seeds, because for farmers, home gardeners and all the citizens who grow vegetables for themselves, to cultivate and obtain seeds on their own (to sow, grow, harvest seeds themselves and continue this cycle in their own fields and gardens) constitutes the foundation of their basic livelihood.

All citizens in the world should be well aware of the fact that CBD has an enormous impact on environmental ethics, bioethics, our next generations and developing countries or regions, and therefore should work together in order to create networks locally and globally to promote local citizens' seed banks for conserving not only the future of seeds but also that of mankind. Taking into consideration the lack of awareness of the urgent need to conserve those traditional domesticated species and seeds that are essential to the livelihood of people, the conservation of bio-cultural diversity of all living things should be incorporated into environmental education, agricultural and food education, peace education and others. The knowledge and skills about the

traditional domesticated species and seeds should be learned, handed down and more widely disseminated.

The Working Group of People and Seeds for the Future is a people's network that cares about the conservation of seeds and is made up of organic farmers, natural farmers, small farmers, family farmers, home-gardeners, subsistent farmers, seed savers, environmental NGOs, NPOs and CSOs, as well as researchers in the fields of biodiversity and international development. This group is here at the COP 10 Conferences on Biodiversity in Nagoya to give recommendations about "the freedom of seeds and their future" for both people in Japan and guests from other nations.

Introduction

Seeds symbolize the mystery of life and are fundamental to all lives on earth. They are nature's ultimate gift, woven into people's very existence. However, at present, the future of seeds and the diversity of species have never been as irreparably threatened as it is now. During the 20th Century, 90% of the genetic diversity of cultivated plants was lost. The diversity of genetic material is decreasing on a global scale, most notably in cultivated species.

Soil, water, and genetic resources constitute the foundation upon which agriculture and world food securities are based. Of these, the least understood and most undervalued are plant genetic resources. They are also the resources most dependent upon our care and safeguarding. And they are perhaps the most threatened. (FAO report on the state of the world's plant genetic resources for food and agriculture. 1996)

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The importance of plant seeds

The diversity covered by CBD contains three kinds of variability: intra-specific level and inter-specific level as well as that of ecosystem. For us, the closest demonstration of biodiversity in our daily lives occurs as a result of mutations (varietals) of domesticated plants and livestock,

but yet the importance of these variations is regrettably unrecognized. In fact, it is far more important that the conservation of bio-cultural diversity should be discussed from the viewpoint of farmers and of their direct use value, who are cultivating these traditional varieties and who understand biodiversity at the level of seeds, than with the global viewpoint of the use and benefit sharing of these genetic resources.

Plants should not be considered as mere resources, but rather they are organisms that have continued to evolve over time within ecosystems, naturally mutating and accumulating diversity in communities, species, populations, as well as at the gene level. Furthermore, domesticated plants, while remaining closely related to the wild species, have incorporated characteristics derived both naturally and artificially from agriculturalists, and have been adapting to the local environment over a long period of time to create and sustain a rich bio-cultural diversity. But the biodiversity of domesticated plants, along with the cultural diversity of agriculture and food, is now being forced to decrease due to the rapid expansion of productivity-oriented farming. Since plant seeds including those seeds and propagules of domesticated plants connect all living matters that have been nurtured both by nature and our ancestors through the ages, they should not be considered the property of any individual, company or nation. It is not until plant seeds are conserved in their natural settings and agricultural fields that creative and sustainable evolution of plant seeds can be guaranteed and rich biodiversity can be maintained. Thus it is most necessary to take immediate and appropriate steps to conserve seeds which have been combining biodiversity and cultural diversity.

Recommendations for the future of people and seeds

- 1) The United Nations should include a concrete statement of “all propagules including seeds” in the definition of CBD, because CBD inadequately reduces all living creatures into mere materials, and without giving any concrete substance, exclusively employs the term ‘genetic resources’, which emphasizes only their economic importance of use value as processed goods. Further, in view of the equal importance of all plants, CBD should not designate only limited specific useful plants as genetic resources to be conserved.
- 2) It is imperative that every government should regard conserving and supplying seeds as an important strategy for food security flexible to the global market, in order to cope with anticipated increase in natural disasters and potential food shortage owing to the global environmental degradation and the strain of the rapid rise in population. Although CBD only refers to the conservation of main domesticated species from the global viewpoint and food security at the nation level, it should also identify and acknowledge many other species of useful wild plants adapted to the local environment, as well as many domesticated plants including landraces which have been associated with local people’s lives. In addition, CBD

should take measures to conserve them while ensuring the local people's initiative and right to use those plants.

- 3) Every government and every farming-related organization should conserve seeds of domesticated plants mainly in the farm fields where natural and artificial selection has occurred in the continuous *in-situ* cultivation with a recognition that seed banks of *ex-situ* conservation are a mere backup. At the same time, however, they should be well aware of the deprivation of local farms owing to the advance of expanding capitals for producing and marketing grain and cash crops, and therefore should adopt effective means for conserving both seeds and farmlands.

Seeds play an important role not just in ensuring food security at the nation level but also in guaranteeing the food sovereignty at the regional, community and individual household levels. However, in every country, whether developed or developing, with the expansion of global framework such as international alliances of the rights for biodiversity and for new seed products, protective legislation is being advanced for intellectual property right and for seed laws to regulate the use of selected varieties, both of which infringe people's food sovereignty. This legislation is thus impeding continuation of harvesting people's own seeds of traditional varieties which have been adapting in their particular lands, and is threatening the livelihood of farmers and indigenous people. Every government and every farming-related organization should respect long-established local knowledge and farming culture, and should ensure local people the sustainable use of useful wild plants and landraces.

- 4) The Japanese government, in cooperation with agricultural and community organizations and citizens' groups, should ensure that farmers and those citizens who grow vegetables in their gardens can obtain free and future access to their own seeds, because their obtainment of seeds for themselves forms the basis of their livelihood. Furthermore, concerning species of domesticated plants, we recommend that the Japanese government should ratify the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR), which accounts for the role of farmers far more clearly who have carefully been maintaining cultural and biodiversity, than CBD does.

The Japanese government should also set out a new fair framework for protecting the rights of breeders of new improved cultivars and for ensuring fair seed supply, and enact legislation and set up institution to oblige seed companies to show the details of breeding methods of their seed products such as irradiation and male sterility.

- 5) Citizens worldwide, taking into consideration the impacts of CBD on the issues of environmental ethics, bioethics, our next generations and developing countries or regions, should cooperate and establish local and international networks to create local citizen's seed banks for the future of people and seeds. Further, they are strongly advised to acquire knowledge and skills in conserving bio-cultural diversity, and to make every effort to let the conservation of bio-cultural diversity widely known as an urgent issue of lifelong education, environmental education, peace education, food and agricultural education, in view of the fact that they are lacking in the very awareness regarding great urgency of the conservation of seeds and traditional varieties of useful domesticated plants.

The Global Situation

From a global perspective, the staple grains and cereals such as wheat, rice and corn as well as potatoes, barley, soybeans and millet, etc. have moved to monoculture production, or large-scale commercial production of improved varieties or cultivars. Although Green Revolution might have been a success in improving the yield of the world's staple grains, it can't be considered a complete success in the long term or from the viewpoint of biomass production including plants' stems and leaves for farming with livestock. In fact, the introduction of modern farming technology without any deliberation of cultural background, such as traditional land ownership system, widened the gap between rich and poor, broke up rural communities, and deteriorated their sustainability. The introduction of improved varieties or cultivars by means of modern farming technology not only brought about a genetic erosion and drove away the original cultivars in areas where there was once a rich diversity, but also caused multi-sided problems such as monopoly of seeds and genetic resources gathered by certain developed countries and companies, patent of new cultivars, and genetically modified crops. On the other hand, low-input sustainable agriculture, such as traditional self-sustaining farming, small-family farms, organic farming and natural farming, should be re-evaluated as these kinds of farming are indispensable for maintaining sustainable society and passing on the whole traditional knowledge to the future generations and thus should be reevaluated as such. Seeds are indispensable for rural and human development in developing countries. There are many international organizations, NGOs and citizens' groups that are reevaluating the importance of these traditional systems. More and better network formation is expected to play a more active role in preventing international framework which emphasizes economic value of genetic resources from deteriorating people's lives.

The Situation of Japan

Japan is a long, narrow country that runs 3000km from north to south, riddled with volcanoes and rapid rivers and has a wide variety of climates from semi-frigid to semi-tropical. Mountains

cover 64% of the land and the majority of the forested areas were artificially created after World War II. The governmental plan was to increase the forested areas but only concentrated on certain species, such as sugi (Japanese cedar), hinoki (Japanese cypress), akamatsu (Japanese red pine) and karamatsu (larch), etc., creating a forestry monoculture. Despite this governmental plan, there has been a failure to activate mountain villages by supporting the forestry industry and to maintain land conservation by mountain and river control, and there have been increasing marginal villages where it is difficult for the villagers to maintain their daily lives because of depopulation and aging.

Even in the plains of Japan, the amount of farming areas has remarkably declined, while metropolitan and industrial areas have increased. Rice farming monoculture with only a few selected rice cultivars by advanced farming technology has ironically resulted in vulnerability of biodiversity in a rice paddy, which otherwise would itself have been a rich and outstanding farming ecosystem. While this advanced farming technology established a paddy rice growing system that is dependent upon inputs such as chemical fertilizers and agricultural chemicals, reduction of the acreage under cultivation is being promoted for the purpose of adjusting overproduction. Although Japan's food self-sufficiency is low and thus the nation is highly dependent on food imports, oddly enough, there is a significant amount of food waste in the municipal areas. The number of full-time farmers and the area of farming land are decreasing, and yet the area of abandoned farms is on the rise.

Before modern farming techniques were introduced, farmers all over Japan had cultivated many local unique cultivars that were adapted to their unique environment. However, with structure reform of rice paddy and vegetable farms advanced and with only a limited number of improved varieties or cultivars growing, Japan's farming ecosystem is losing the biodiversity of every species. Originally, Japan did not have a large variety of domesticated species specific to Japan such as wasabi and fuki. Yet vegetables like daikon (Japanese radish), kabu (turnip), nasu (eggplant), uri gourd), and various leafy vegetables for pickles have been abundant. Hence, Japan can be considered a secondary center for a diverse number of vegetables. The Edo period brought about a time of gardening culture, when a variety of horticultural species were altered and developed such as sakura (cherry tree), tsubaki (camellia), satsuki (azalea), asagao (morning glory), and so on. There are quite a few traditional varieties with remarkable mutation from the point of view of genetics and ethno-botany, which has enabled Japanese to enjoy their seasonal lives.

In spite of enormous efforts of hard-working farmers and local nursery shops that make much of seeds of traditional varieties, the amount of detailed data is not enough to evaluate how much targets for the future of people and seeds are achieved, and administration policies are not effective enough to attain those goals. Biodiversity of local traditional varieties and local

farming ecosystem has been deteriorated by productivity-oriented, rice-centered production policy, increasing globalization of food market, governmental encouragement of limited number of varieties of limited number of crops. This is true not only for rice, but also for all the other various crops such as potatoes, beans and other vegetables. This deterioration in biodiversity has declined a long standing common practice among small-scale self-subsistent farmers, and has almost closed the possibility of future expansion of locally specific biodiversity. Local seeds and nursery shops, hard-working farmers, and home gardeners, who have been nurturing and conserving seeds, are, as it were, a kind of “endangered species”. Diversity of domesticated cultivars is maintained only by means of sustainable relationship between people and plants. We will forever have lost the traditional knowledge from our ancestors along with the diversity of domesticated cultivars that have evolved with mankind if we miss this opportunity of COP 10 Conference on Biodiversity in Nagoya.

CBD Citizen’s Net: Working Group of People and Seeds for the Future
Registration and inquiries to: cbdseeds@yahoo.co.jp