

# Re-acknowledging the Importance of Agricultural Biodiversity through COP10 and How to Gain Back Its Loss

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## **What Is Agricultural Biodiversity**

Before identifying what agricultural biodiversity is, there is a need to acknowledge what biodiversity is in general. According to the Convention on Biological Diversity (CBD), biodiversity is defined as: “The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.” Biodiversity is often best illustrated by considering the wide variety of plant, animal, and microorganism species that exist across the earth.

Our group would like to have a specific focus on agricultural biodiversity because it is vital for sustainable food production, which we all human beings have to depend upon in daily life to go on living. Agricultural biodiversity is often described by the variety and variability of animals, plants, and microorganisms used directly or indirectly for food and agriculture. It comprises the diversity of genetic resources (varieties, breeds, etc.) and species used for food, fodder, fiber, fuel, and pharmaceuticals. It also includes the diversity of non-harvested species that support production (e.g. soil microorganisms, predators, pollinators, and so on) and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest, and aquatic), as well as the diversity of the agro-ecosystems themselves.

## **Why Is Agricultural Biodiversity Important**

Agricultural biodiversity plays important roles in providing humans with food and raw materials for goods such as cotton for clothing, wood for shelter and fuel, plants and roots for medicines, and materials for bio-fuels. Agricultural biodiversity is highly valued because it helps satisfy basic human needs for food and livelihood security. In addition, CBD claims that genetic biodiversity of agricultural biodiversity enables species to adapt to the change of

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environmental conditions, as well as to improve their resistance to particular diseases, pests, and parasites. This is particularly important regarding climate change. The use of agricultural biodiversity is certainly vital for sustainable agriculture that can adapt to different environmental conditions without needs of too many fertilizers, pesticides, fossil fuels, etc.

## **What Are the Issues**

While agriculture plays significant roles in conservation and sustainable use of biodiversity, it is also a major driver of biodiversity loss. The rate of biodiversity loss on earth has been quicker than ever before, and the sustainability of agriculture and ecosystems services has been put in serious dangers. Modern agricultural has made it possible to increase food production with the quick increase rate of population growth, while it has huge responsibilities for considerable damage to biodiversity through land-use conservation, chemical use, etc. The biggest challenge for agriculture is to ensure food security for all by increasing food production while adopting sustainable consumption of resources to ensure the preservation of biodiversity.

## **What We Have Learned at COP10**

### ***Through the Ministry of Environment***

We have learned how Agriculture biodiversity is related with other biodiversity at the exhibition of Ministry of Environment. The problem is that the population of Japanese crested Ibis (*Nipponia nippon*) that live around the paddy fields and inside the forests have become extinct nowadays. The starting point of this problem is due to agricultural management practices and excessive use of natural resources. The first one is excessive application of chemical fertilizers and pesticides that leads to environmental pollution and the organisms such as insects, frogs, snail, earthworm, fish and snake around the paddy fields were damaged. The second one is the conversion of forest land to agricultural lands so deforestation is happened and forest

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diversity is destroyed. Deforestation is also related with climate change and it in turn affects on Agricultural production. Finally, it resulted in difficulties for Ibis (*Nipponia nippon*) to survive due to lack of food and shelter and then their population have become extinct. Moreover, the presence of Ibis also has some positive impacts on environment. They eat the agricultural harmful insects and it is one way of biological control of insects. And then their excrement turns into the soil as organic matter. Therefore, it is very clear that agricultural biodiversity is related with other biodiversity and necessary to maintain through sustainable agriculture which gives maximum productivity and minimum environmental loads.

### ***Through the Site Event at Nagakute***

The method that we learned at Nagakute is the production of coffee. Coffee can be grown under the shades. So it is grown between the rows of forest trees. By practicing this method, it can protect the deforestation. People do not need to cut and clean the forest land. Moreover it can save the labor and production cost. Therefore, it can be said as one way of biodiversity conservation.

### ***Through the Working Group Meeting and Interview on How to approach 2020 target***

For this part, we attended the meeting of working group II and interview with one NGO staff. At the meeting, each country reported about the status of biodiversity in their country, discussed about why the 2010 target had been failed and how to approach 2020 target.

According to their discussion and interview with NGO, lack of financial and technical support to improve human resource, and weak performance of access and benefit sharing are the causes of failure to the 2010 target. To achieve 2020 target, they supposed that;

- (1) to make strategic plan scientifically sound and flexible
- (2) to transfer technology to the developing countries

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(3) to set the policy related with biodiversity conservation in each individual countries

(4) to participate global, national and local authorities in biodiversity conservation. Moreover, to recognize children to adult the blessing of the biodiversity is also important.

***Through the Research Project from Agriculture, Ministry of Forestry, and Fisheries (MAFF)***

We found it very interesting what MAFF has been doing in their research project on paddy fields to ensure biodiversity conservation over the last a couple years. The background of the project is that sustainable use and preservation of biodiversity is required because rural areas are large parts in Japan. While agriculture gives positive possibilities on biodiversity conservation through irrigated paddies, etc., it also has negative impacts on the preservation of biodiversity due to improper use of pesticides and fertilizers. The research project has aimed at selection of functional biodiversity indicators such as natural enemies and development of the assessment methods, through April 2008 to March 2013, for five years. We have found that this research project is quite huge in that the research budget is approximately 2,250,000 US dollars, and fifty five labs are on board for this research project. Paddy fields are often taken advantage of by its richness in biodiversity for the preservation of biodiversity because they hold more than 5,600 species in them. The interesting and important fact is that no indicators, based on a scientific basis that can quantitatively grasp the effect for the biodiversity conservation, have not been developed before. Therefore, MAFF has taken actions, for the first time, to develop such indicators that are needed to ensure stable provision of safe agricultural, forestry, and fishery products in all parts of this country. MAFF has been acting on their research project through two main levels: field level and landscape level. With field level project, they are capable of acknowledging the actual impact of environmental friendly and organic farming systems against

conventional farming systems. With landscape level project, they are also capable of obtaining the result in each type of landscapes where biodiversity varies. They have established candidate indicators that are not only nationwide-common and regional-common but also easy-to-understand indicators. That way, it has been easier for farmers in local community basis to join and help with their research project to ensure the quantitative amount of natural enemies. With this project, the followings may be expected to be found out:

- I. How much effect may environmental friendly farming systems have compared with conventional farming methods
- II. Based upon the results from above I. how much amount of beneficial insects may be found compared with when conventional methods were in use

The whole point of this research project is that it allows to farmers themselves join this research project and check abundance of indicators in their fields to adjust their farming accordingly in the whole country basis. As the indicators are natural enemies that should be beneficial and control insect pests, farmers can leave pest control to the natural enemies, when indicators are found abundant. This may help obtain actual scientific numbers to show as a proof in conducting environmental friendly farming and new potential techniques in the future. In that way, this, our group thinks, is an innovative idea and we would like to share with everyone in the seminar as a presentation.

Finally, we would like to conclude that from COP10 conference, we got valuable experience and knowledge to become environmental leaders in future.

## References

“*About Agricultural Biodiversity.*” Convention on Biological Diversity. Retrieved from <http://www.cbd.int/> on October 21, 2010

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