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Education of rural development for agriculture and animal agriculture in Asia and Pacific

J. Takahashi

Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan 080-8555, junichi@obihiro.ac.jp

Obihiro University of Agriculture and Veterinary Medicine has been specified for joint centre (Associated Centre) of APEID in July 1979. Obihiro Asia and Pacific Seminar on Education for Rural Development (OASERD) has been held with Japanese National Commission for UNESCO as a co-sponsor every year. The objective of OASERD is to invite the experts engaged in the education and researches of the rural development in Asia and the Pacific Ocean nations, to make comparative studies of the rural development together with the Japanese experts, and to contribute to the improvements of the education of the rural development of Asia Pacific region and international cooperation. The seventh stage business (2002-2006) started in 2002. The main theme of the seventh stage business is "Prevention of global warming and education of agricultural and animal agricultural technologies, and rural development". Though only experts of the scientific field of main theme had attended the seminar since 1979, the OASERD was opened to the general public as a symposium since 2002. It includes the education for the general public to be interested in global warming and agriculture. Not only scientist, engineer and policy maker but also the general public attended the OASERD during these two years.

Keywords: APEID, OASERD, global warming, agriculture, animal agriculture

1. OVERVIEW OF OASERD

Obihiro University of Agriculture and Veterinary Medicine has been specified for Associated Center of APEID in July, 1979. Since 1979, we have held Obihiro Asia and Pacific Seminar on Education for Rural Development (OASERD) with Japanese National Commission for UNESCO as a co-sponsor every year. The objective of OASERD which has under taken as part of APEID is to strive for rural development in the Asian-Pacific region and the improvement of education on agriculture and animal agriculture by having a chance to discuss with professionals in each country and Japan, and to contribute the promotion of international cooperation.

Up to now, the first three years had been assumed to be the first stage, and a main theme has been decided every five years, and we had executed since the second stage to the sixth stage. The seventh stage started last year. For new five years activities in the 7th project, we will strive to improve the level of rural development education in the Asian-Pacific region by steering international seminars under the theme of “Prevention of Global Warming, Education on Agriculture and Animal Agriculture and Rural Development” as a project for the 21st century.

The 21st century is an era in which actions to repair the life of Earth which has been damaged by human activities thus far should be taken as a common challenge to the international community. Recognizing that agricultural and forestry activities to increase food production to accommodate a population increase cause a burden upon the global environment is thought to have important implications in promoting rural development in the future. Since the realization in the 1970s of the Gaia Hypotheses that the earth is an organic system as complicated as any other life form, awareness of the destruction of the global environment is growing with the rapid spread of...
accumulated human activities. Numerous cases of destruction and pollution have been cited, such as global warming, ozone depletion, deforestation, marine contamination, air pollution, acid rain, desertification, water contamination, soil erosion, pollution due to animal waste and depletion of groundwater.

Despite enhanced awareness, the global environment keeps deteriorating, instead of improving. Global warming due to an increase of greenhouse gases, including carbon dioxide and methane, is attributable to the activities of agriculture and animal agriculture to no small extent, such as farmland development, deforestation, paddy field development and cattle’s rumen fermentation. On the other hand, causal relationships have been established in which increased summer temperatures have lowered animal production and agricultural products is subject to the fluctuation of precipitation.

Prevention of global warming cannot be dealt with by a country or a local region. It is a global-scale proposition that the entire world has to deal with. It is also a challenge deeply related to the development of rural areas, agriculture and animal agriculture.

2. THE OASERD PROGRAM IN 7TH PROJECT OF APEID

The theme every fiscal year is as follows:

2.1. 2001 “Agricultural education for Forest Conservation and sustainable agriculture”

With population increasing on a global scale, an increase in food production is an urgent task. Therefore, development of cultivated land is under way, centering on developing countries. Deforestation designed to expand arable land, however, not only destroys the natural environment, but also lowers the carbon dioxide absorption effect of forests. Under these circumstances, consistency between the conservation of forest resources and farmland development in the Asian-Pacific region have been discussed.

2.2. 2002 “Agricultural education for prevention of range rehabilitation and prevention of desertification”

Recently, the desertification which progresses in all parts of the world greatly attributes to the factors related to human activities such as the over-pasturing and over-cultivation in the irrigation agriculture and excessive intake of the fuel materials and causes serious social and economical problems in the developing country. Especially, the expansion of desertification in the Central and South Asia causes the climate change by degradation of vegetation and a huge amount of dust generation. A number of country case studies on the desertification have been reported and discussed about methods of monitoring desertification and range rehabilitation.

2.3. 2004 “Agricultural Education regarding the Technologies on Animal Waste Management”

Livestock excreta have long been used in agricultural production as useful organic fertilizer, especially in Asian countries. In recent years, however, inconsistency has occurred between arable land and livestock excreta. That is, inflow into river systems and vaporization into the air of livestock excreta have become problematic pollutants. To prevent this, proper treatment of livestock excreta is necessary so that they will be broken down in arable land, contributing to the maintenance of arable land environment, the reduction of chemical fertilizer use and prevention of global warming. Comparative study from the viewpoint of rural development will be performed on livestock excreta treatment technologies that have been used in the Asian-Pacific region.

2.4. 2005 “Agricultural Education for Sustainable Animal Agriculture toward Resources Recycling System”

Challenges facing agriculture and animal production of the Asian-Pacific region are improvement of productivity and their development as environmentally friendly, sustainable industries, taking the circulation of carbon, nitrogen and other materials into account. To address these challenges, it is necessary to establish consistent “agriculture and animal production oriented
toward resource recycle system for low input sustainable agriculture,” such as processing agricultural byproducts into feed and defining of its application, as well as processing excreta into fertilizer which reduces in the fields. To this end, wide-ranging discussions will be conducted by experts of various related fields.

2.5. 2006 “Agricultural Education for Control and utilization of Greenhouse Gases attributed to Agriculture and Animal Agriculture”

Greenhouse gases stemming from agriculture and animal production include carbon dioxide discharged from internal combustion engines, which are used for farming; methane from paddy fields and exhalation of livestock; and carbon dioxide, methane and nitrous oxide generated from animal waste and farm product residues. Sustainable development of agriculture and dairy farming is impossible without controlling, effectively utilizing and processing these gases detrimental to environment. Development and extension of education in relevant agricultural technologies and rural development will be pursued by experts from the Asian-Pacific region through in-depth interdisciplinary discussions.

3. THE SYMPOSIUM IN 2002 OASERD PROJECT

The OASERD was opened to the general public as a symposium since 2002. It includes the education for the general public to be interested in global warming and agriculture. Not only scientist, engineer and policy maker but also the general public including farmers attended the OASERD during these two years.

The title of the symposium was “Global perspective in forest conservation and sustainable agriculture”. This symposium brought together a number of country case studies and researchers from different disciplines. From discussion it was clear that the participants, despite these differences, were able to identify a number of common themes relating to deforestation and rural development across the Asia Pacific region.

3.1. Measuring forest loss

There is continuing concern about deforestation, both in tropical regions where rates of loss are high, and in other areas where fragmentation of remnant forests continues. 146,000 km²/year for the period 1990 to 2000 (FAO2001). Estimates of the rates of deforestation can be compiled from national statistics, monitored through satellite remote sensing, or at a local scale, mapped using sequential aerial photography.

3.2. Reasons for forest loss

Conversion of forest to other land uses has been the basis for rural economic development for thousands of years. Forest conversion has largely ceased in temperate regions but continues in the tropics with significant areas of forest being lost in South East Asia in the last 10 years. Conversion to cropping and grazing remain the major causes of deforestation, but this can be mediated in some cases by the access provided by timber harvesting.

3.3. Impact of forest loss

In most of Asia and Pacific forest clearance gas resulted in large areas with sever soil erosion and reduced soil fertility. This has also resulted in degradation of streams though sand and silt deposition. Forest conservation impacts on hydrological and biogeochemical cycles.

3.4. Measures for reducing loss in forest cover

The causes of forest loss are complex and involve a range of economic, social and political factors. Measures for reducing deforestation will need to take into account this complex mix of causal factors. Measures can include ‘hard’ options such as government bans on land clearing through legislation. Softer options involve community consultation and education, providing alternative land use options, and working with communities to develop appropriate land use plans.
3.5. Measures for reforestation

It is generally desirable to maintain as much intact vegetation as possible. In areas where native vegetation has been cleared, there are three broad options for restoring trees: 1. Large-scale commercial plantation development, 2. Large or small-scale planting primarily for habitat restoration, nature conservation or amenity values, and 3. Agroforestry or ‘farm forestry’.

3.6. Integrating forest conservation and sustainable agriculture

If deforestation is to reversed and reforestation promoted, there are several issues that will need to be faced: 1. Institutional Issues, 2. Educational Issues, and Cultural issues.

4. THE SYMPOSIUM IN 2003 OASERD PROJECT

The title of the symposium was “Global perspective in range rehabilitation and prevention of desertification”. In the meeting it has been summarized that there are many complex reasons for the desertification. The desertification which progresses in all parts of the world greatly attributes to the factors related to human activities such as the over-pasturing and over-cultivation in the irrigation agriculture and excessive intake of the fuel materials and causes serious social and economical problems in the developing country. Especially, the expansion of desertification in the Central and South Asia causes the climate change by degradation of vegetation and a huge amount of dust generation. Many anthropogenic factors related to human activities contribute to fragmentation of rangelands in Asia and Pacific. However, many opportunities are available to reduce deforestation and desertification, and to start reforestation and range rehabilitation.

5. IMPLICATION

Through the programs of international cooperation and sharing of ideas and scientific results of the 2002 and 2003 OASERD projects in 7th APEID, we can better understand the possible contributions of these symposiums to educational innovations for development of agriculture and animal agriculture in Asia and Pacific.