

**[USA]**

## **Food Safety in the USA: International Cooperation to Food Safety**

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The action of monitoring food to ensure that it will not cause foodborne illness is known as food safety. Food safety is a very serious topic within America and throughout the world. There are laws and systems that have been established to help ensure that the food is safe for human consumption. These regulations were put in place to protect institutions, businesses and families from foodborne illnesses. A foodborne illness is any illness caused by the consumption of food. These guidelines are mostly used in restaurants or food producing establishments, but also can be used in domestic settings. Every year the United States finds about 76 million illnesses resulting in over 35 million dollars in medical costs as well as cost of lost productivity. Food contamination causes huge impact on social and economic activity throughout the United States as well as globally.

Some Common questions are; where are these illnesses coming from? How are they found in America? What has been done to inform the consumers on exactly what they are buying? Are there international food safety guidelines? Who creates these food safety regulations? Exactly how safe is it to transport food between countries and **contents**. All of these questions will be answered thoroughly in my paper.

My paper will be separated in five sections which includes; history and general information, Foodborne illnesses, government regulation, global impact and my personal opinion. In the history and general information section I will explain exactly what food safety is and why it is important. I will also provide information on past studies in the area of food safety. The next section will be foodborne illnesses. In this section I will list and explain how various pathogenic agents infect food and cause outbreaks in America. I will explore where the illnesses originate from and how they infect the consumer. I will also go through case studies and provide statistics about illnesses in the USA. In the government regulation section I will provide information about food safety regulations from government agencies and various health organizations and explain the differences and similarities between international regulations. Next I will explain what type of impact food safety can have on the United States of America and the world. My final section will be my personal opinion about Food safety in America. I will share my thoughts about what needs to be done to prevent foodborne illnesses along with what I think is being handled correctly. I will also share my views on government resolutions as well as global food safety issues involving the United States of America.

**[Peru]**

## **International Cooperation: A Key Factor to Strengthen Food Security in Rural Communities of the Andes**

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Thousands of years before the first Europeans arrived in the Andes in the Sixteenth Century, people had a highly balanced and diversified diet based on more than 185 species of tubers, roots, grains, legumes, vegetables, nuts, and fruits. At least 20 out of these species have been roots and tubers whose main features, among others, have been to produce higher yields of calories than cereals per area of cultivation. Andean potatoes (*Solanum* spp.), oca (*Oxalis tuberosa*), ulluco (*Ullucus tuberosus*), and mashua (*Tropaeolum tuberosum*) are the preferred ingredients in the cuisine of many rural families of the ecoregion. In some rural communities the consumption of Andean tubers during the harvesting season can account for up to 90% of the diet. According to farmers of the communities of Picol, Matinga, Qqueccayoq, Poques, Chumpe, and Sayllafaya, Cusco, Peru, the main constraints for potato, oca, ulluco, and mashua cultivation are weevil, which burrow into the tuber complex. Also, scarcity of quality tuber seed, low yield, cultivation in remote areas, and market isolation were pointed out to be serious constraints. So, in order to strengthen food security in these communities, indigenous knowledge and modern scientific research were blended for integrated weevil management. These included rooting out volunteer plants, plowing after harvest, rotating potatoes, oca, ulluco, mashua and cereals, planting weevil free sprouts, putting ash at the base of the plant to prevent weevil infestation, using the parasitic fungus *Beauveria brogniartii* at the first mounding, early harvest, using sheets at harvest and in stores to prevent larvae from pupating, using chickens as predators, and using plants as pest repellents at the first mounding and in stores. This strategy has dramatically reduced tuber damage from 90-98% to less than 25%. It was also beneficial for poor farmers to improve their traditional strategy of storing Andean tubers called *taq'ues*. Losses have been reduced from 16-18% in the traditional *taq'ues* to less than 2% in the improved ones. Also, biodiversity of oca, ulluco and mashua were restored in Picol, Matinga, and Qqueccayoq from 2-3 cultivars grown by few families to 2-27 cultivars grown by all families. It was also elucidated that weevil infesting potatoes, oca and ulluco belong to different species. Genetic diversity studies and glucosinolate determination were also important to dynamize *in situ* and *ex situ conservation*, and to value mashua respectively. Thus, food security was successfully achieved in the six communities.

Finally, international cooperation was extremely important to integrate research in the "laboratories of evolution" (farmers' field), with laboratories of a developing country (Cusco University, Peru), and modern laboratories in a developed country (University of California-Davis). This strategy optimized results on determining the genetic diversity of Andean tubers, elucidating the taxonomy of weevils, and successful determination of glucosinolates for further pharmaceutical studies in the not too distant future.

**[Thailand]**

## **Agricultural Biotechnology for Achieving Food Security in Thailand: Thai Jasmine Rice**

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Small farmers are facing many problems and constraints as global warming has great effects on crops and weather conditions around the world. These farmers suffer from food insecurity and poor nutrition which are caused by low productivity and low income. From the research, we found about 70% of the poor are dependent directly or indirectly on agriculture for their food insecurity and livelihood. A master plan for Thailand's agricultural development aims at research and development to raise production and cut costs by using biotechnology, bringing product quality and processing up to international requirements.

In Thailand, agricultural biotechnology has been included in the key areas of research funded by the government and others to bring enormous benefits and to maintain the competitiveness of Thailand's existing agricultural exports such as rice, sugarcane, cassava, sweet potato, wheat, millet, along with livestock. Thailand is the world's largest exporter of rice - more than 7 million tons in 2006. So the number of researchers interested in destructive diseases of rice, especially in high-quality rice cultivars such as the aromatic Jasmine rice, increases dramatically each year. Agricultural Biotechnology plays the most important role to breed submergence tolerance, identify the resistance genes conferring complete and partial resistance to blast disease in aromatic Jasmine rice, as well as to identify content for labeling of exported rice because consumers want to know about the contents and the procedure of their food. The role will allow sustainable production of aromatic Jasmine rice on lowland area which means more quality produce and higher income for poor farmers.

Even though agricultural biotechnology is not a silver bullet for achieving food security, it may be a powerful tool to fight against poverty and has the potential to help enhance agricultural productivity in many countries. Agricultural biotechnology will not be successful in solving the problems of food insecurity without international cooperation which uses science and technology to adapt and exchange new knowledge in order to achieve food security and to guarantee high quality of life worldwide.

**[Ukraine]**

**International Cooperation to Food Safety (based on Ukrainian  
Laboratory of Quality and Safety of Agricultural Products)**

**Victoria OSTAPENKO**

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Food safety and quality have become increasingly important in international trade over the last few years. Ukraine has also become an active participant in international trade. Exports of agricultural products for 2006 constituted 38 368 009.9 ths USD, and imports 45038626.1 ths USD. Compared to 2005, exports increased by 12.1%, and imports by 24.6%. In this situation, food control system is important for our development.

Ukraine and particularly the National Agricultural University of Ukraine (NAUU) actively participate in international cooperation with regard to food safety. NAUU contains the Ukrainian Laboratory of Quality and Safety of Agricultural Products, which provides for international cooperation in food quality and safety.

Food commodities come to 15.5% in the general structure of commodity trade, of which 24.4% are of foreign origin. Moreover the quantity of food traded on the Ukrainian market increased by 30.5%, while the quantity of imported food increased by 3% during 2006. Therefore, it is becoming important to promote food safety.

Technical cooperation program with FAO and Ukrainian laboratory of quality and safety of AIC products NAUU are carrying out the following projects in order to strengthen the Ukrainian laboratory in its oversight of the quality and safety of AIC products.

Project P-169 is concerned with the "Management of Agro Chemical Residues and Destruction of Obsolete Pesticides in Pilot Regions of Ukraine (Cherkassy and Lviv Regions)". The main partner in this project is the United States Environmental Protection Agency (EPA USA).

The project with the World Bank is the "Agricultural Competitiveness and Food Safety Project". The main objective is to increase the efficiency and effectiveness of Ukraine national food control system and to ensure the safety and quality of agri-food products.

The project InJoy&Train is conducted within the framework of FP6/FP7 "Food, Agriculture and Fisheries, and Biotechnology" with EU-Kazakhstan-Russia-Ukraine-Armenia-Belarus.

There is a project of technical support with the Government of Japan, directed to the development of the Ukrainian Laboratory of Quality and Safety of Agricultural Products.

Students studying in the masters' programmes at NAUU participate in the project TEMPUS-TASIC «Food Safety: From Field to Fork». Participants of the Project are Ghent University (Belgium), Humboldt University of Berlin (Germany).

**Recommendations**

1. International organizations should fully encourage and support the establishment of international cooperation in food safety. Cooperation should be developed in the areas of education, academic research, development of staff performance, and information exchange related to food safety and food control.
2. Strong international network related to food control systems should be established.

**[Germany]**

## **Detection of Irradiation Treatments of Food - an International Task for Food Security**

**Susanne OFFNER**

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Food safety for consumers' welfare is a paramount task for societies. Every country has its own law of food safety and allows different treatment of foods. The worldwide trade in fresh horticultural produce, durables and ornamentals is continuously growing. As food products are sold more and more all over the world, it is necessary to detect treatments, e.g. the irradiation treatments of food. The need to detect radiation treatment by analysing the food itself is desirable to check the compliance with existing regulations such as the enforcement of labelling and control of prohibition. Furthermore, it is important to enhance consumer confidence in the correct application of radiation processing and to enable consumers to choose between irradiated or un-irradiated food products by themselves.

Some larger collaborative studies on an international scale have already taken place, e.g. thermoluminescence of insoluble minerals isolated from herbs and spices or ESR measurement of bones from chicken, pork, beef, frog legs and fish. Besides there are gas chromatographic analyses of hydrocarbons and alkylcyclobutanones derived from the lipid fraction of chicken and the microbiological DEFT/APC procedure for spices.

The results show that these methods could be implemented in international standard protocols and therefore become important for the food industry all over the world. e.g. the Food and Environmental Protection Section, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture initiated international research projects.

This paper gives an overview of the role of irradiated treatments of food and international cooperation to improve the detection.

**[Malaysia]**

## **Harmonization of Food Safety Regulation in Improving International Food Trade**

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The world food situation is generally more positive now than it was a decade ago. Food production worldwide has increased at about 2.6% per year, slightly higher than the growth of the world's population. The perspective of feeding the world has also changed considerably and food safety has become a global issue as more food is prepared and consumed away from homes and imported from abroad. Consumers want food that is good tasting, healthy and safe for their families. Food Safety is the basic requirement for most people.

The Malaysian food industry consists of about 5,645 manufacturers and 171,710 food services such as restaurants and other food premises. The ability of Malaysian agriculture food producers, processors and exporters to make further inroads into the global market, especially in the West, depends on the ability to comply with the international standards of food safety and quality. Malaysian producers and processors must comply with the higher safety standards, such as CODEX standard on Sanitary and Phytosanitary (SPS), Hazard Analysis and Critical Control Points (HACCP) and EurepGAP. Besides that, Malaysia also has been implementing programs such as Malaysian Farm Accreditation Scheme (MFAS) for vegetable production, Malaysian Aquaculture Farm Accreditation Scheme (MAFAS) for aquaculture production, and the Good Animal Husbandry Practices (GAHP) for animal production.

The expansion in global food trade has brought out differences in the food safety control systems (both private and public) and regulatory approaches adopted by various countries. These differences can influence international disputes that could impede food trade. In such circumstances, and in order to facilitate trade while protecting public health, every country must work together to ensure the effectiveness of sanitary measures between exporting and importing countries. Thus, the harmonization of international food safety regulations must be enforced in an effort to keep abreast with the development of food safety and consumers' increasing demand for safe food worldwide.

**[USA]**

## **Sustainable Agriculture: The Role of Extension and Community Outreach Programs**

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Sustainable agriculture is a broad term used to define the efforts of agricultural producers and researchers to produce food indefinitely, while reducing or eliminating negative environmental impacts. The general objectives of sustainability include building soil structure and fertility, protecting water quality on- and off-farm, managing pests ecologically, and maximizing biodiversity on the farm through a variety of methods. Furthermore, sustainable agriculture practices emphasize the importance of local markets and policies that support sustainability; promote locally and regionally self-sufficient food systems, which supply the majority of their region's food without reducing the availability or diversity of products available; and support thriving rural communities and farm families. Although sustainable agriculture in the United States has just begun to develop, it is inextricably tied to larger foreign policy issues, such as globalization and the global economy, declining oil reserves, and domestic food security.

Historically, youth and community extension education programs have played an integral role in the assimilation of new agricultural methods and technologies. As sustainable agriculture practices continue to develop in the United States, education and community outreach become increasingly vital. My paper will explore programs geared towards specific age groups and life stages, such as youth, university students, and families, and the impact these programs have on public acceptance and implementation of sustainable agriculture practices.

My paper will be divided into four sections: historical background; current education programs; social and cultural impacts of sustainability; and international outreach efforts. The historical background section will include a brief history of the sustainable agriculture "trend", an overview of popular sustainability practices, and an explanation of the structure of agricultural extension and other education systems. The second section will outline current education efforts, based on age group or stage of life. These include: public education (K-12), through classroom gardens, organic/natural foods served in cafeterias, and visits to local farms; 4-H and FFA programs, through curriculum, student projects and award programs, and opportunities for further exploration; university level education, through campus organic farms, classes and professional certification, and "Green Weeks" and other campus-wide sustainability efforts; and community efforts, through Community Supported Agriculture (CSAs), mobile exhibits and local outreach activities, and community gardens. The third section will explore the evidence for positive social and cultural impacts through interaction and involvement with local agriculture, based upon anthropological research, as a result of extension and community education. The final section will determine the responsibility of the United States in international sustainability efforts. This includes a comparison of U.S. extension education to other regional systems, the inclusion of sustainable practices in U.S. international efforts to reduce hunger and increase agricultural development, and further opportunities to increase cooperation towards global agricultural sustainability.

**[Philippines]**

## **International Cooperation: Fueling Philippine Agricultural Research Development and Extension**

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In the Philippines, programs that promote sustainable agricultural practices have been heavily supported by the Department of Agriculture and local Non-Government Organizations. These programs include research initiatives particularly on agricultural biotechnology, funding of local sustainable agricultural projects, and training workshops and seminars for local farmers, among others. These programs are deemed to provide potential solutions to the pressing problems of increasing population, food security and environmental degradation.

The Agriculture and Fisheries Modernization Act (AFMA) of 1997 was enacted into law to further improve the status of the agricultural sector of the Philippines. The act specifically aims to modernize the agriculture and fisheries sector in order to enhance profitability, sustainability and competitiveness. A number of improvements in agriculture have come about since AFMA was enacted. However, there are still problems that beset the program and hinder the full realization of its goals.

AFMA prescribes the importance of research development initiatives and the extension of the R&D results to local farmers. However, financial distress has always come in the way of agricultural R&D and extension. The actual budget for these activities had always fallen short of what was appropriated in the AFMA and had oftentimes been realigned for other government activities. Thus, the contribution of international cooperation becomes crucial especially in terms of technical and financial assistance.

The major agencies involved in international cooperation with the Philippines are the FAO-UNDP, SEARCA-SEAMEO, ADB, Japan International Cooperation Agency (JICA) and the Consultative Group on International Agricultural Research (CGIAR) which includes IRRI, ILRI, World Fish, among others. These agencies engage in collaborative efforts that generally focus on sustainable agriculture, food security, poverty alleviation and environmental protection.

The fruits of international cooperation in the Philippines have been most evident in the transfer of more appropriate and efficient technology, new varieties, species and breeds of cereals, high value crops and livestock, and capacity-building among farmers, government personnel, the academe, researchers, and other stakeholders.

However, with the emergence of new challenges such as climate change, global warming, population growth, famine, avian influenza and human diseases, the role of sustainable agriculture will become even more crucial. Therefore, international cooperation is expected to continue to play a major role in facing and overcoming these challenges of sustainable agriculture for the future generations.

**[Vietnam]**

## **Some Achievements of Biological Control in Protecting Plants from Pests and Diseases in the World and Vietnam**

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Moving into the 21<sup>st</sup> century, there is no doubt that the quality of life among people in Vietnam is increasing at a rapid rate. To continue this process, safe agricultural products and a clean environment are required for our daily lives. However, the only way to achieve these goals is to maintain a sustainable biological balance in nature. With this in mind, biological controls utilized by several developed countries and responsible for protecting a large number of plants from pests and diseases were studied and analyzed. These methods are considered the most successful and effective, and the safest ways in which to protect plants. With regard to the situation in Vietnam, through increased funding and international cooperation, the agricultural sector of Vietnam continues to make progress at a rapid pace. Further, applying biological controls in plant protection has led to some significant achievements in recent years. This report is focused on three main issues. Firstly, it discusses the current state and the development trend of biological controls in the world. Secondly, it provides a general overview of the utilization of biological controls in Vietnam. Finally, it examines a number of outstanding successes of biological controls in plant protection in Vietnam, accomplished with the cooperation of foreign companies and foundations.

***Key words:*** biological controls, plant protection, international cooperation

**[Canada]**

## **Feast of Fields**

**— Meeting the Challenge of Connecting Consumers to Their Food System—**

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We have found ourselves in an age of confusion. The role we play in our food system is minimal. There is little connection between us and our food. According to the Leopold Center for Sustainable Agriculture at Iowa State University, our food is travelling between 1,500 to 3,000 miles before it reaches our plates (2001). With such a startling statistic many have found refuge in the organic movement to help solve some of the current problems of our modern food system. However, the organic movement only provides a partial answer to the problem. We can now purchase organically farmed products from across the globe leaving the issue of food mileage unanswered.

Where problems lie one can usually find individuals in search of solutions. The Feast of Fields has entered its 13<sup>th</sup> year of showcasing local and sustainably farmed food and drink to British Columbians. This annual event is the largest fundraiser for Farm Folk/City Folk (FFCF), “a non-profit organization founded in 1993 dedicated to creating a local, sustainable food system while educating the community (FFCF, 2007).” Feast of Fields allows participants to sample the food and beverage of local producers that are members of the Green Table Network. The Network, a program supported by FFCF, allows restaurants to establish relationships with local food producers, distributors and partners (2007). The commitment of the restaurant, producer, distributor and partners is made through the reduction of waste, recycling, efficient use of energy, conservation of water, reduction of pollutants and increased knowledge of eco-friendly practices (2007).

This year one of three venues for the Feast took place at the Centre for Sustainable Food Systems at the UBC Farm. One of the participating restaurants was Bishop’s restaurant. Owner John Bishop has raised his business on the principles of serving fine local food in the form of West Coast cuisine. He buys produce from a farmer, and good friend, who lives just outside of Vancouver and features them on his seasonal menus.

Another guest at the Feast was the 100 Mile Diet Society. In 2005 Alisa Smith and James MacKinnon decided to eat only food produced within a 100 mile radius of their Vancouver home. This ambitious task was performed over a one year period and has influenced many Canadians to take to the land and eat with the seasons.

Much can be learned from the 13 year history of the Feast. Possibilities of international cooperation are endless as this event can be mimicked in many different communities world wide. Although many are disconnected from their food the Feast can serve as a prototype for building much needed producer/consumer relationships.

By decreasing food miles and increasing the conservational practices of producers and consumers this form of sustainable agriculture has taken a step beyond the well-known organic movement. Events and programs such as Feast of Fields and the Green Table Network have sprung up throughout the city of Vancouver to meet the need to inform the community of their eating practices. In food-conscious circles around Vancouver you can now hear the mantra “*local is the new organic.*”

**[Japan·Atsugi Campus]**

## **Our Suggestions for Eradication of Hunger**

**NAKAMORI Tsuyoshi**

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Nowadays, every country has a close and complex relationship with many other countries, as global trade and international investigation are growing widely. Goods and services produced all over the world increased from 6,000 billion dollars in 1950 to 43,000 billion dollars in 2000. In other words, the global economy has increased 7 fold and living standards have improved more than ever before. On the other hand, many problems have surfaced, such as exhaustion of resources, increasing population, environmental pollution, disappearance of life diversity and expansion of the gap between the rich and the poor. These are due to modern human activities. So we can say that the distortion of today's economic system becomes clear. In this paper, we would like to focus on the problem of hunger, whose roots we consider to be deeply involved in the social and economical system.

The World Food Summit held in 1996 set its goal to decrease the 840,000,000 poor people by half by 2015, but the number only decreased by 25,000,000. However, the cause of hunger is not due to the lack of food in the world, or because of drought or bad crops. In fact, food is oversupplied. Though poor countries have still been suffering from hunger, those countries export food to other countries. Certainly, natural phenomena are a big influence on agriculture, but bigger problems are caused by human factors. Natural phenomena are only the last way to drive out the poor.

Now, should developing countries increase food assistance from advanced countries to the poor? NO! I don't agree with such a way. Especially, food assistance accompanies economic and political tricks of advanced countries. The discrepancy between wealthy and poor farmers is widening. The "Green Revolution", which was expected to eradicate hunger, seems to have produced wider discrepancy within the same country. In the areas where measures against inequality have not been taken, the 'Green Revolution' has made the situation worse. Developing countries rather need social change, equal distribution of land, and economic revolution than agricultural techniques. On the other hand, if developing countries depend on assistance supplied by advanced countries, they cannot avoid economic and political effects. There is no alternative, that is to say, for people in power in the developing countries, the choice is either independence or dependency. It is not true that people in the third world fall behind and idle. They are squeezed by developed countries. Also from the standpoint of developed countries, the present economic system, which damages the environment, should be revolutionized. We must understand the genuine cause of the hunger, and in addition, we try to state what we students can do together to eradicate hunger.

**[Germany]**

## **European Cooperation Plant Genetic Resources**

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The most important task of agricultural production is the supply of man with food. Production has to fulfil this task not only for a certain time but for the long run. Since the world population is rising higher and higher, the development of increased and sustainable agricultural production is gaining a key role for our future. Only if agriculture can increase its efficiency, will it be possible to feed the additional population on our earth. The Malthus thesis (1798, *The Principle of Population*), that agriculture will lose this race is not yet decided.

The problem hereby is to achieve a sustainable increase without destroying the natural basics for production. Some people exploit natural resources to earn more money in a short time but they use methods to raise production which destroy the natural basics of agricultural use for following generations. Such individual benefits are in sharp contrast to the benefits of the society. Environmental problems are occurring; pesticides which can't be degraded by the soil, are washed into the groundwater and so consumed by people; the loss of fertile soil by water and wind erosion due to inappropriate cultivation manners. These are well known examples. Also the loss of genetic resources is raising a serious problem. It is important for the development of efficiency of agriculture that genetic resources are available. To secure the long term availability of plant genetic resources for food and agriculture a European cooperation program was founded in the year 1980 (ECP/GR). It functions as the platform for European Cooperation in the field of plant genetic resources.

Meanwhile more than 20 states participate as members in the ECP/GR. ECP/GR is coordinated by the International Institute for Plant Genetic Resources (IPGRI), which was renamed in 2006 as Bioversity International, is located in Rome together with the secretary. The steering committee is composed of the national coordinators and the network is financed by the member states. Germany supports it annually by 50,000 €.

The objectives of ECP/GR are:

- to secure the long term conservation in situ and ex situ of plant genetic resources for food and agriculture (PGREL) in Europe
- to promote the use of PGREL
- to strengthen the alliance between single national programs
- to improve the collaboration between all involved actors
- to facilitate the planning of common activities (e.g. projects)
- to support concepts of sharing of responsibilities for PGREL in Europe
- Public Relations
- Cooperation with other regional and global initiatives for plant genetic resources

**[France]**

## **The Importance of International Cooperation in Agriculture**

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International cooperation in agriculture is notably implemented through 2 ways: bilateral relations and multilateral ones.

Multilateral relations concern developing countries and some important world organizations such as the World Bank, the Regional Development Banks and the Food and Agriculture Organization (FAO), of the United Nations. Bilateral relations concern developing countries and developed countries in a one-to-one relationship.

Such relations have been providing both agricultural knowledge, practice and money (more than US\$ 10 billions per year since 1996) to developing countries, giving them the opportunity to increase their agricultural productivity and sustainability but also their social and economic development; not only to their agricultural sector but also to their entire people. Indeed agriculture is still the main employer in developing countries (more than 50% of the labour force). Therefore an improvement on the financial, environmental or social level of the agricultural sector will benefit the entire country's population.

Concerning the FAO, aside from providing money to developing countries, this organization brings knowledge to people who need it, and provides a meeting point for developed and developing countries.

At the bilateral level of international cooperation France has decided since the year 2000 to develop and encourage a new form of help: co-development. Instead of providing money directly to some countries' organizations (governmental or not) hoping it will serve agricultural purpose, France finances specific projects to improve agriculture through numerous non-governmental organizations.

This help is managed through the Public Agency for Development (ADP) which is under the control of the Foreign Affairs Ministry of France. The amount allocated to the ADP is of 0.5% of the Gross National Income of France and is planned to reach 0.7% in 2012, around €8.1 billions, the main part of which is allocated to Africa due to the special relationship between France and Africa. A significant part of this amount is used for agricultural purposes.

Inter Aide is one of the non-governmental organizations created in 1980. Since then they have been working with 7 different developing countries around the world, including Madagascar. Between 2001 and 2005 it helped the area of Manakara in Madagascar with both its irrigation system and its agricultural development to make it more sustainable and to increase the social awareness of farmers toward their environment.

In this paper we will therefore talk about one multilateral relationship in international cooperation, using the FAO as an example. Then we will discuss France as the example of a bilateral relationship. Finally we will talk about a case study from the non-governmental organization Inter Aide that will allow us to show and emphasize the importance of international cooperation to reach both more sustainable agriculture and social improvements for the agricultural populations of developing countries.

**[Korea]**

## **International Agricultural Cooperation with ASEAN +3**

**KOH Ingon**

Kyungpook National University

Over the past fifty years, Korea has developed continuously through industrialization. As a result we have made stunning development. On the other hand, agricultural industry is faced with difficulties. Amid all the difficulties, we have to recognize the importance of staples such as rice. This concern comes from food security. In the present global age, international cooperation is needed as a way of dealing with this kind of problem.

Compared to Korea, East Asian countries such as China and Thailand can afford to export rice and many countries try to have enough rice stock to maintain their food security. However, enormous imbalances have been created between rice reserve and trade.

Accordingly, this paper examines the possibility of international cooperation in terms of rice from the example of ASEAN + 3. The member countries are the world's most prominent rice producers, consumers, traders, and stock holders. Experience shows however, that the region has little influence in the global rice market, as is demonstrated by significant annual fluctuation of rice prices and quantity. Therefore closer cooperation among ASEAN + 3 nations needs to be discussed. The objective is to maintain the region's food security, reduce price and income variation, and more efficiently manage food stocks. Accordingly this paper focuses on analysis of this situation and on discussion of the objectives of such cooperation.

**【Japan・Okhotsk Campus】**

## **Necessity of International Cooperation against the Global Warming**

**SUGAWARA Sho**

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In recent years, we have various environmental problems; especially we should improve the global warming immediately. In fact, we have been trying to reduce green house gases such as carbon dioxide, methane gas in order to improve the situation. Kyoto Protocol is one example, but it couldn't put the breaks on the increase of the green house gases, which have continued to increase. I think that we should learn the problems, reform our consciousness and need international cooperation in order to improve global warming. So I'd like to discuss the influence of global warming and the necessity for international cooperation in the case of Hokkaido.

The sea ice comes to the coast of Hokkaido through the sea of Okhotsk every winter, and causes the circulation between the surface and the bottom of the sea. This makes fisheries in the sea of Okhotsk abundant. It also has the important role to hold the frigid zone of the earth. The polar coldness of the sea ice and tropical heat create the circulation of the ocean and the atmosphere. And the sea ice reflects sun-light and covers the sea to hold steam that is one of the greenhouse gases. However, in recent years, sea ice has been decreasing because the temperature is rising due to global warming. One report shows that if air temperature rises, sea ice may not occur in the future. This will influence fisheries and the bio-ecosystem on a large scale. This is not limited only to Japan but the whole Okhotsk area and countries which import marine products from Japan. We need to control greenhouse gases to stop these problems.

Global warming has become worse because of economic development, especially of advanced nations, but that influence extends to the whole earth. Because of the rising seas there is also the problem of submergence even of countries which produce little of such gases. It is necessary to establish international cooperation immediately, especially by countries which produce large quantities of exhaust gases.

Thus, I consider that we should cooperate together to improve global warming. Initially, is important to learn it and reform our consciousness.

**[China]**

## **To Create a Harmonious Environment for Human Being**

**YANG Lei**

China Agricultural University

This article, which consists of 4 parts, discusses international cooperation in environmental conservation.

As happened in all industrialized nations, China's high speed industrialization process is bringing serious environmental problems. The first part of this article gives a brief introduction to the process of producing pollution and the present conditions of environmental problems in China. Actually, since 1950s, the environmental problems in China have gradually become so serious that they have become one of the biggest obstacles to our economic and social development. Nowadays, the Chinese government is attaching great importance to environmental protection, and has listed it as a fundamental national policy.

Certainly, environmental problems are by no means for a single country, but for the whole human community, especially for those nations who share borders. From the Stockholm Declaration in 1972 to Kyoto Protocol in 2005, the international community has not given up trying to cooperate in global environmental problems. The second part of the article analyzes the importance of international cooperation in this field and elaborates how the environment management of China has been promoted.

Admittedly, there is a long way to go for human beings to diminish the environmental problems on the earth, and moreover, much more needs to be done in some aspects. For instance, during the past 10 years, the world's area of forest has been reduced by 94 million hectares. At the same time, more than 800 species have died out and the number of endangered species has increased by 1100. Although there are many reasons accounting for this setback, the problem with international cooperation itself can't be neglected. International cooperation is meant for the balance of benefits among nations. In other words, it is a choice, or even a compromise, that nations have to make. In addition, the negative effects brought by damage to the ecosystem usually follow a rather slow process, so that human beings will not be aware until it has become very serious. Therefore, many countries relate environment conservation not only to ethics, but also to the interests of their own country, which has impeded international cooperation in this field. Part three discusses the insufficiency of the present international cooperation among nations and how to improve the situation.

A brief discussion on what students could do in environment reservation is set out in the final part of the article.

**【Taiwan】**

**Enemies of the World**  
**—Reduce Environmental Problems to Promote Sustainable Development—**

**Ying-Chu LIAO**

National Chung-Hsing University

On the global scale, environmental problems such as pollution, food deficiency and depletion of renewable resources (*ie.* forests and fresh water) pose significant ecological threats to the environment. These problems have exceeded nature's ability to repair itself, thereby exploiting the benefits of future generations. The ensuing environmental crisis has alerted environmentalists, scholars, and the general public, and put the whole world on notice. Thus, the best policy is to educate the general public to aware of these environmental problems and develop efficient solutions collectively.

From the mid 20<sup>th</sup> century onward, rapid technical development has brought prosperity and enhanced living standards for human beings in most societies. However, at the same time this so-called advanced lifestyle has brought “enemies” such as the greenhouse effect, acid rain, air pollution, water pollution, drinking water scarcity, food deficiency and the energy crisis to our world.

Acid rain is particularly damaging to lakes, streams, and forests and wildlife that depend upon it. Water scarcity problems and phosphorus reserves influence the whole ecosystem, too. Food shortages and extreme wealth gaps have brought more than forty countries around the world into crisis. The energy crisis is also a thorny problem.

In order to promote sustainable development, numerous organizations have been founded to tackle these tough issues. International organizations such as the World Health Organization (WHO) and Greenpeace, also endeavor to protect the environment. In response to a United Nations (UN) mandate, the National Council for Sustainable Development (NCSA) in Taiwan has taken great strides in setting up an effective means for evaluating the sustainability of the island's national development.

I believe that, based on the “think globally, act locally” principle, governments should enact laws related to environmental protection and undertake necessary protective measures. International cooperation on information exchange about related technical issues can also contribute significantly. If every country takes environmental protection seriously, the defeat of environmental enemies can be expected in the future.

**[Malaysia]**

## **Malaysia's Response Strategies on Climate Change: The Case of the Oil Palm Industry**

**Azliza Binti ARIS**  
Universiti Putra Malaysia

Malaysia joined the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and submitted the Initial National Communication (INC) in 2000. With the Second National Communications (NC2) submitted to UNFCCC in 2006, Malaysia showed continuous commitment in the national negotiations on climate change. The NC2 covered all sectors that would be vulnerable to climate change and the approach consisted of a self-assessment of the national greenhouse gases (GHG) inventories that would include measures undertaken to adapt to and to mitigate climate change.

In updating the GHG inventory for the base year 2000, the 1996 Intergovernmental Panel on Climate Change (IPCC) guidelines were used, and the 1994 inventory was also recalculated using the 1996 guidelines. Oil palm plantation activities in terms of mitigation of climate change assessed five sectors, which include energy, agriculture, waste, land-use and land-use change and forestry, including the use of clean development mechanism (CDM), developed by Kyoto Protocol. The oil palm industry contributes positively to reducing GHG emissions in Malaysia by reutilization of the milling co-product for other purposes like biofuel and fertilizer. Thus, the role and contribution of the oil palm industry in the reduction of national GHG emissions would be enhanced.

In accordance with the principle of common but differentiated responsibilities, most developed countries of the UNFCCC list must establish measures in order to reduce GHG emissions targets. Despite the fact that developing countries are not required to limit global emission, Malaysia, as stated earlier, has decided to find ways to reduce its GHG emissions. Efforts are in place through two approaches, firstly, to reduce such emissions and secondly, to increase removal through sequestration as the country wants to contribute to the ultimate objective of the UNFCCC.

**【Japan, Setagaya Campus】**

## **Japan's International Cooperation toward Conserving the Habitats of Migratory Birds**

**Masahiko KONDO**

Tokyo University of Agriculture

A decade has passed since Isahaya Bay, the largest mud flat in Japan, was closed to the sea. While this reclamation created large-scale farmland, the environment of the mud flat and much marine life, including mudskippers and crabs, were destroyed. Eighty percent of the mud flat of Tokyo Bay has disappeared due to exploitation through reclamation and water pollution caused by drainage. In Japan, tidal flats, including Isahaya Bay and Tokyo Bay, have been reclaimed and rapidly exploited for urban renewal following economic growth. Actually, the area of tidal flats dropped from 80,000ha in 1945 to 50,000ha in 1994, a decrease of 40%. Reclamation of the remaining mud flats and environs is still continuing.

Various kinds of wild birds live on such tideland. Of the approximately 700 kinds of wild birds found in Japan, 92 kinds are now endangered. Some wild birds found in Japan are migratory birds that visit Japan as they migrate between Siberia and Australia, where they spend the winter and breed. Tidelands in Japan function as halfway points for migratory birds. If these migratory birds could not use halfway points in Japan, they would not be able to get enough rest during their migration and they would die. As loss of tideland in any country may trouble migratory birds in the same way, the wellbeing of migratory birds is considered to be an environmental index of much of the Earth.

As migratory birds move around the world, the problems concerning them can never be solved by the efforts of just one country or area. Therefore, international cooperation is essential. The Ramsar Convention is an example of international cooperation. This convention was concluded for the purpose of promoting conservation of wetlands that are internationally important as waterfowl habitats, and the animals and plants living there. This convention also aims to promote the proper use of wetlands. By May 2007, 154 countries had ratified this convention, covering as many as 1671 wetlands. In Japan, 33 wetlands are registered. This convention has conserved wetlands where wild birds live.

Many activities have been completed only domestically, however, and there has been insufficient information shared among countries and a lack of concrete preservation projects. Moreover, although international relationships exist, activities seem to end in taking only a little step.

This time, we'll research the effects and problems concerning the cases of conservation activities, which are mentioned above, in both Japan and foreign countries. Furthermore, we'll consider what forms of cooperation can be advanced among regions or countries.

**[Netherlands]**

## **Water Scarcity in the Nile River Basin, the Nile Basin Initiative and the Perspective of the Implementation of Water Markets**

**Rianne van DUINEN**  
Wageningen University

In the countries that share the Nile River Basin, water is a very scarce recourse. For most of these countries the Nile River is the only water resource that is available for domestic, agriculture and industry use. When countries share a river upstream countries have the first option to withdraw and use the water what can influence the water quality and quantity of downstream countries and the overall efficiency of water use (Barret, 1994). Downstream countries often face problems like severe water shortages, pollution and erosion; this can lead to a very strong competition or even to conflicts over water between countries (Bjorkland et al, 2000).

President Anwar Sadat from Egypt declared in 1979 when he signed the peace treaty with Israel that ‘the only matter that could take Egypt again to war is water’ (Starr, 1991). In recent literature there is disagreement on the causality between water and the investment in arms in the Nile basin, one party claims that water scarcity can intensify the international cooperation while the other party states that there is a relation between water scarcity and the investment in arms. One thing that is agreed upon is that something needs to be done in order to improve the current situation. Besides this the paper discusses two potential solutions to the problems arising around the water scarcity in the River Nile Basin.

First of all it discusses and evaluates the implementation of the Nile Basin initiative that was formed in 1999 by the Council of Ministers of Water Affairs of the Nile Basin Countries. The Nile Basin Initiative is an agreement designed to move forward to a cooperative process to realize tangible benefits and build trust and confidence among the riparian countries.

Further it evaluates the potential solution of implementing international water markets; the research to international water markets is still in a very early stage. The general idea behind water markets is based on the comparative advantage theory. Water is divided in water rights, so each country has a certain amount of these water rights. The riparian countries are able to trade so that they can arrive at a more efficient allocation of water. The definition of property rights, economics, politics, monitoring and the design of the water rights play an important role in international water markets (Dinar and Wolff, 1994)

**[Peru]**

## **Global Cooperation for a Precious Resource: Water Management in Peru**

**Rosi QUIÑONES FLORES**

Carol Lizeth Ponce de León Bedoya    Lisset Cassandra Bellido Barboza  
Carlos Irvin Arbizu Berrocal        Jorge Luis Quispe Velasquez

Universidad Nacional Agraria La Molina

Water scarcity is one of the most pressing issues facing humanity today. The provision of sufficient water is necessary for environmental balance, human health, food safety, and energy generation. This precious resource is considered the key to achieve poverty reduction, as laid out in the Millennium development goals.

However, water quality and availability are highly variable around the world. Almost one fifth of the planet's population still lacks access to safe drinking water and 40 percent lack access to basic sanitation.

The Americas represents two times more water than the other continents together; In Perú as in many parts of the world the problem is not resources, but management. Perú is home to 128 000ha of Tropical forest, 70 percent of the earth's tropical glaciers (water reservoirs), and subtropical deserts along the coast of the Pacific Ocean. Peru's peculiar geography in relation to the hydrological cycle creates unique ecosystems. However scientist's studies show that it will be the world's third country most affected by water scarcity in the coming years.

Due to geography and the process of urbanization, 70 percent of Perú's population lives along the coast, where big cities are located. Sanitation and water supply needs improving, rivers which end at the coast have been contaminated, and there are floods in the rainy season and droughts in the dry season.

Government policies and strategies to solve water conflicts have not been working well; lack of information and conflicts over water exists between users, communities and provinces all around the country.

In order to deal with these problems, the Program GSAAC- project was created. This project focuses on social integrated management of water and surroundings in basins. It aims to improve the community's quality of life by integrating all users of a basin, communities, government institutions, and private sector, to work in coordination for better management in a basin. The project has worked on almost 80 different cases since the year 2004, and its second period will begin this year.

It is an example of cooperation between international and national institutions, public and private sector, to guard a precious resource that concerns all of us.

**[Mexico]**

## **Global Warming, Agricultural Policies to Control Gas Emissions and International Cooperation**

**Roxana CORTES-CABRERA and Adrián GONZALEZ-ESTRADA**

Universidad Autónoma Chapingo

Agriculture was responsible for 14% of global greenhouse gas (GHG) emissions in 2001, produced by fertilizers (38%), livestock (31%), wetland rice cultivation (11%), manure management methods, including the handling, storage and treatment of livestock (7%), burning of savannah and agricultural residues, and open burning from forest clearing (13%). Agriculture is a producer of CO<sub>2</sub> emissions via soil and biomass management practices that disturb the natural carbon sinks. Developing countries account for the majority of agricultural emissions. Emissions increased 10% between 1990 and 2000 and those are expected to rise almost 30% in the period to 2020.

Researchers across the world had proposed many interesting technological strategies to reduce agricultural gas emissions and global warming. Among those proposals are: a) to use forests as carbon receptors, b) irrigation controls to produce rice, c) to use machinery and fertilizers more efficiently, d) to capture methane (biogas), e) to stop burning crop residues, f) to reduce upstream transport emissions and g) to use by-products from agriculture. To propose that technology by itself is sufficient to solve the problem is a naive belief, because the technological solutions are proposed without consideration of the economic, social and political constraints.

Another naive approach is to believe that markets and economic growth by themselves, spontaneously, without interventions of any kind, will suffice to solve the problem of gas emissions and global warming. An illustration of the previous approach is the so called “Environmental Kuznets curve”. This argument is not very convincing, because it will take poor countries a very long period of time to become rich, and because some rich countries, the main polluters, may want to improve their own environment, but are unwilling to pay for the full cost of gas emissions control. One example is the US refusal to collaborate with Kyoto’s Protocol.

The economic analysis suggests that drastic action is not called for yet. However, it is urgent that effective measures to control gas emissions be established. Any control policy implemented by each country on its own, is necessarily inefficient and hence, insufficient, to solve the global warming problem because of the “free-rider’s problem”. Since global warming and the set of control measures are global, there exists an incentive for individual countries to be better-off without paying for the cost of controlling global warming. This represents a market failure and hence an opportunity for international cooperation. Thus any control policy implemented by any country on its own, will be necessarily inefficient and hence, insufficient, to solve the global warming problem.

An effective, efficient and equitable response to climate change will require universal and deeper international cooperation to define globally efficient prices of rights to pollute and markets for those rights and for environmental services.

It is also required that all countries, especially the developed ones, must invest in science and technology to develop new technologies to reduce and control emissions and to help developing countries to avoid the dilemmas posed by growth and to control gas emissions.

**[Japan • Setagaya Campus]**

## **Lifestyle of Conserving Man-made Landscape Can Save the Earth**

**UEDA Saori, SAITO Chiharu**

Junior College of Tokyo University of Agriculture

Japan's countryside consists of beautiful agricultural scenery, harvest forest and terraced rice paddies woven together. It is an existence based on the farming way of life and agricultural traditions that make use of their surrounding nature. The farming community of Samegawa Village in Fukushima Prefecture is an example of that countryside. Since 2000, they have performed “Preserve the Beauty of our Countryside” activity. It has been created to address the environmental problems that have arisen through loss of good management. These management issues are due to many factors, for example, the insufficient labor pool brought on by the aging population and the depopulation of rural areas. This year, we took part in their activity and through doing so, have realized many things. Using our experiences at the activity, we have considered how one can attain environmental conservation through one's area's traditional way of life.

In Samegawa Village, if you look at their mountains, charcoal kilns and rice paddy work and traditions, you can see an established cycle of energy, recycling, environment, and foodstuffs. In each and every area of production, there is evident the adaptation to Samegawa Village's natural environment, and still more, to the scale of human activity there. That is a conclusion you can also come to yourself through this questionnaire about the number of livestock and management of animal husbandry farms. For example, if it is the case that there are greater than ten animals, there is a tend toward importing animal feed and manufactured goods. However, if there are less than ten, from the repairs needed for rearing animals in the mountains to the use of leaves, straw and leftovers of rice plants, there is a natural circular system to their working traditions. From this small scale view, we can see the good and complex relationship between farming and our countryside.

That is one example, but more than just a way of working with an area's topography, climate, and culture, they have created a deep relationship between people and nature, one that is both symbiotic and sustainable. Like this complex small-scale style of agricultural management in Samegawa Village, throughout the world there should be within each area a method of management that fits well with the local environment. This is, of course, related to environmental conservation, as a style of management that takes in mind the needs of the environment, naturally not one that revolves around human caprice. Furthermore, through our studying of local management style, we assert that environmental preservation is tied not only to our running sweat, but also to the international cooperation we make towards environmental preservation through those activities. In addition, we hope to convey that it is more important than ever that the number of people who can participate in such activities increase in the future.

**[Indonesia]**

## **The Role of International Cooperation in Promoting Renewable Energy for Developing Eco-Village**

**Putri Kinanty SIREGAR**

Bogor Agricultural University

In response to the world's main development challenges, the United Nation has declared the Millennium Development Goals (MDGs) containing eight goals to be achieved by 2015. The goals are to eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability and develop a global partnership for development. The use of renewable energy is considered to be compatible with the MDGs.

Applying renewable energy becomes a priority as a consequence, in order to reduce the dependency on fossil energy and its global impact on the environment. Some international cooperation on the subject of using renewable energy has been shown to be successful and has the prospect to be developed widely. It should be therefore, an interesting subject to explore more deeply.

This paper will review a case study of international cooperation implemented in Kreung Kala Village, Aceh Province, Indonesia. The village was damaged due to Tsunami and earthquake. One of the critical needs to recover the village is electricity. Through international cooperation this problem was overcome by developing electrical power supply based on renewable energy. A micro hydro generating 40 Kilowatt electrical power was installed in the village by IBEKA and Nurani Dunia Foundations financed by PT Coca Cola. Furthermore, to ensure environmental sustainability, which may have a positive impact on prosperity, health and education, the development of an eco-village is considered to be important. According to Abdullah, 2007, an eco-village is a village which is autonomic and able to manage energy, environment and economy based on local resources. International cooperation plays an important role in the success of the program.

**[Brazil]**

## **The Contribution of the International Cooperation by NGOs for the Conservation of Brazilian Biomes**

**Marcos Vinícius Bohrer Monteiro SIQUEIRA**

Universidade de São Paulo

Developing countries have a direct and legitimate interest, considering that their population corresponds to more than 75% of all humanity. This sentence is taken from the definition of the new paradigm of global development, which is based on knowledge and innovation. However, developing countries have the disadvantages of traditional political economic and technological asymmetries that characterize their position in the world and differentiate them from the main centers of the International system. In the past, the agreements of scientific and technological cooperation between nations were scarcely more than good intentions, cooperation and interchange of researchers – this last one no doubt being a useful tool, but with limited range. Many of the instruments set out in the International plan found difficulties leaving the paper and becoming executed. However, in the ecological context, the Non Governmental Organizations (NGOs) have presented practical examples, especially in Brazil, that deserve attention, making International Cooperation (IC) a strong contributor in this sector.

This paper aims to characterize three important Brazilian biomes and to illustrate how the NGOs use the IC for conservation in these areas. The decision to exclude the main Brazilian biome, the Amazon, was made because although it is the most internationally recognized biome, others with equal importance are little known or have been forgotten. The Pantanal, the Cerrado and the Atlantic Rainforest lack a higher characterization and ecological aid in IC, and in the last decade the NGOs have become an important tool for the implementation of programs, projects and research developed for nature conservation and sustainable experiences between the autochthon communities and the biomes in which they live. Many NGOs, together with the Public Agencies, promote the sustainable development of these biomes, coordinating human and technological resources, through the relationship of university and scientific institutions, by creating and financing programs and research studies, projects and activities related to combating hunger and related areas such as feeding, nutrition and food security.

All the efforts of the IC have the goal of meeting the great challenge of this century, to reverse the effects of global warming. IC has the central goals of recovering and preserving the fauna and flora of these biomes and promoting more sustainable production alternatives, among others. It seems pertinent that the biggest challenge is to promote the independence of Brazil as a developing country, so that this country might have greater mobility and not become so dependent on so-called developed countries of the IC. The necessity to solve definitively, in this decade, typical Brazilian problems, is very clear. Many of the problems are “traditional”, as for example: the lack and instability of resources for conservation; negligence of the specific necessities of research with regard to the biomes, mainly the so-called Hotspots; and the lack of updated legislation with more severe penalties. The globalization that comes linked with fast and complex information, constructed by more “democratic” and communicative governments, must add an IC less bureaucratic and more efficient, and from it search solutions for sustainability in the quadrants of agriculture, environment and food in favor of the developing countries.

**[Taiwan]**

## **The Biotechnology Effect – A Support in World Agriculture and Halt in Global Warming**

**Tai-I Chen**

National Chung-Hsing University

Taiwan's agriculture has always been the core of its economy, offering inexpensive food, raw materials and a market for industrial products. High production in the agricultural industry has brought benefits to the island's economic development, hence agriculture has not only provided Taiwan with food products, but it has also helped to expand Taiwan's international food trade.

Unfortunately, the long-term use of chemical fertilizers and pesticides in traditional agriculture worldwide has led to severe soil and water contamination. The abusive use of pesticides is one of the causes of adverse environmental effects, interfering with the regular ecosystem.

This change in ecology may in turn, be one of the risk factors of global warming as plant growth becomes limited, hence reducing their carbon dioxide consumption, similar to *The Butterfly Effect*.

The rapid rise in temperature due to global warming is inevitably affecting the growth of agricultural crops as well as disrupting the natural food chain and affecting human life. In order to provide solutions to these problems, many countries are presently undergoing swift developments in food biotechnology, including the commercial application of genetically modified (GM) crops.

There are ecological and economic benefits in GM crop developments. Taiwan, among many other countries, is recently partly transforming traditional agriculture into an agricultural biotechnology industry based on its rich material resources and global competition analysis.

Transgenic crops are a possible source of novel future food for the world; they may also have great potential in improving our present environmental crisis. Taiwan, with its steady improvement in agricultural biotechnology, is hoping to partner internationally with other countries in order to improve and become an important research, production, and service country in the subtropical biotechnology industry.

**[Canada]**

## **Economics, Environment and Society: The Role of International Cooperation in Environmental Conservation**

**Sanja Marija BRKANOVIC**  
The University of British Columbia

Environmental degradation can be attributed to years of steep population growth accompanied by the societal move to a consumer culture, particularly among western countries. Currently we face a wide array of environmental challenges, such as weak fish populations, soil erosion, and climate change. These complex environmental issues were not created by one nation alone; therefore, environmental health must be addressed by all countries of the world. In Canada free trade facilitates an import-intensive food system creating a disconnect between individuals, food production and the environmental impact of agriculture. Lack of food system awareness is the main barrier preventing a more active global effort to alleviate the ecological impact of present day agribusiness. Understanding of the link between consumption and environmental degradation can be improved through integrated courses and educational community events.

People of different educational and cultural backgrounds will naturally have a different measure of a society's success. From an economist's perspective free trade facilitates a slow, but significant, rise in living standard and use of clean energy within developing nations. Therefore, consumption and the global marketplace are viewed positively. In comparison, an agriculture student might measure a society's success as agricultural quality and equity of yield within the local community, not across the borders. A biologist might have a different measure yet. All of the aforementioned perspectives are correct in their own scope and are supported by experts in their respective fields. However, as of yet, none have been successful, on their own, in solving the problem of environmental degradation. It is, therefore, important to integrate the educational system so that every student will be able to think critically about all perspectives of a given topic. Only at that point will it be possible to begin the slow move towards improving the environmental state of the planet.

My paper will discuss a few local examples where antiquated food system organization, city structure, and social values have facilitated environmental degradation on a local scale, and will then extend this to reflect some of the major global environmental issues. The local examples discussed will be case studies including the implications of the decrease in marine populations within Canada, and the effects of current trade policies on Canadian agriculture. This will be followed by an overview of some successful initiatives that have taken place locally, and a discussion of how these initiatives could be applied on a global scale. Next will be a consideration of the role of agriculture in the intrinsic connection between major global issues such as health, environment and economy. Last will be a discussion on how an integrated educational system, one where curricula is not confined to rigid disciplines, will enable future generations to develop a holistic view of all global issues.

**[Mongolia]**

## **Global Warming Influence in Mongolia**

**BATZUL Ganbat**

Mongolian State University of Agriculture

For all historical periods of mankind, the climate has been regularly changing. Nowadays, conservation of environment has most important. Scientists have determined that the process of climate change has been continuing rapidly and outside the laws of nature for the last few decades. It has been influencing the outbreak and expansion across borders of infectious diseases occurring only in tropical countries, changes of seasonal precipitations, extinction of plant and animal species unable to adapt to the change, excessive dryness, decrease of agriculture harvests due to excessive heat and changes in precipitation, death of people due to over heating and increased frequencies of sea hurricanes and tornadoes. There are too many negative influences. We can say that one of the causes originates in the industrial revolution and the development of science and technology. Industries and technologies are producing too much Freon gases in the air.

Actually, an international agreement on climate change was made among countries of the world about global climate warming. However, this led to confrontation between developed and developing countries. Thus, production of Freon gases is still continuing. Global warming and damage to the environment can be called the biggest problem. Firstly, we should get together to save our world. Every country should take responsibility, and then we can work together to manage the problem. In other words, if we could connect like a family, then we will be able to manage it. Therefore International Cooperation is the biggest problem of our humanity.

Some of the things we should do include the following:

- Afforestation and planting
- Remove the open burning of wastes and establish waste recycling factory, in both developed and developing countries, including Mongolia, India and African countries
- Control to industrial countries to keep the balance of Freon gases.
- Create projects to renew the soil (char by gas of CO<sub>2</sub>).
- The final idea is suggested by my American teacher, Dr. Frogner. To know more about this project, please contact him. His e-mail address is [kjfrog@hawaii.rr.com](mailto:kjfrog@hawaii.rr.com)

After all: Whatever country we come,  
Whatever color our skin is,  
We all have one thing in common,  
We are all people of the world.