第17屆 國際學生高峰會

The 17th International Students Summit (ISS) on Food, Agriculture, and Environment in the New Century

International Students Summit
TOKYO UNIVERSITY OF AGRICULTURE
2017 TAICHUNG

STUDENTS TAKING ACTION TO ADDRESS INEQUALITY THROUGH GREATER ACCESS TO RESOURCES AND KNOWLEDGE IN ORDER TO PROMOTE SUSTAINABLE AGRICULTURE

2017.09.25 - 26

Time 09:00 - 17:00

Place 國立中興大學
圖書館7樓國際會議廳
NCHU library 7F International Conference Hall

參與大學 Participant Universities

The University of Western Australia(Australia) / University of São Paulo(Brazil)/ Universidade Federal Rural da Amazônia(Brazil)
Royal University of Agriculture(Cambodia) / The University of British Columbia(Canada) / Djibouti University(Djibouti)
University of Applied Science Weihenstephan - Triesdorf(Germany) / University of Reading(UK) / Bogor Agricultural University(Indonesia)
University of Muhammadiyah Malang(Indonesia) / Tokyo University of Agriculture(Japan) / Kyungpook National University(Korea)
Kangwon National University(Korea) / Universiti Putra Malaysia(Malaysia) / Universidad Autónoma Chapingo(Mexico)
Mongolian University of Life Sciences(Mongolia) / Wageningen University(Netherland) / China Agricultural University(P.R.China)
Shanghai Jiao Tong University(P.R.China) / National Agrarian University La Molina(Peru) / University of the Philippines Los Baños(Philippines)
University of Peradeniya(Sri Lanka) / National Chung Hsing University(Taiwan) / Sokoine University of Agriculture(Tanzania)
Kasetsart University(Thailand) / Thammasart University(Thailand) / Chulalongkorn University(Thailand) / Michigan State University(U.S.A)
Cornell University(U.S.A) / National University of Life and Environmental Sciences of Ukraine(Ukraine) / Iowa State University(U.S.A)
Vietnam National University of Agriculture(Vietnam)

主辦單位：

贊助：

更多資訊請上 For more information：

CONTENTS

The Seventeenth International Students Summit (ISS) on Food, Agriculture and Environment in the New Century

Students Taking Action to Address Inequality Through Greater Access to Resources and Knowledge in Order to Promote Sustainable Agriculture

September 25 – 26, 2017

Statement

The world is now facing a crisis of sustainability, and we see it as tremendously important to draw together the wisdom and vitality of youth, the torchbearers of the future of mankind. There are especially wide ranging missions for agricultural students, as agricultural science plays a key role in the solution of fundamental problems in food production and safety, environmental conservation, energy, and human health. The system of food production and consumption is without doubt closely related to the condition of the natural environment, the stage of economic development, and food culture in each country, and their patterns and problems reflect regional characteristics. It is thus important to understand how agriculture and food systems should be organized and maintained in each society.

In 2001, Tokyo University of Agriculture (Tokyo NODAI) organized the "International Students Summit (ISS) on Food, Agriculture and Environment in the New Century" to provide students from our global partner universities with an opportunity to gather and exchange views and ideas on global food, agricultural and environmental issues, and also to discuss their own roles in sustainable development. Since then, ISS has been held every year at Tokyo NODAI. The participating students adopted Action Plan in 2002 and agreed to establish the International Students Forum (ISF) in 2003. The 12th ISS for the first time was held overseas at Michigan State University, USA, which is the first partner university of Tokyo NODAI. The 14th ISS in 2014 was sponsored jointly by Kasetsart University (KU) and Tokyo NODAI, at Kamphaeng Saen Campus, KU, in Thailand.

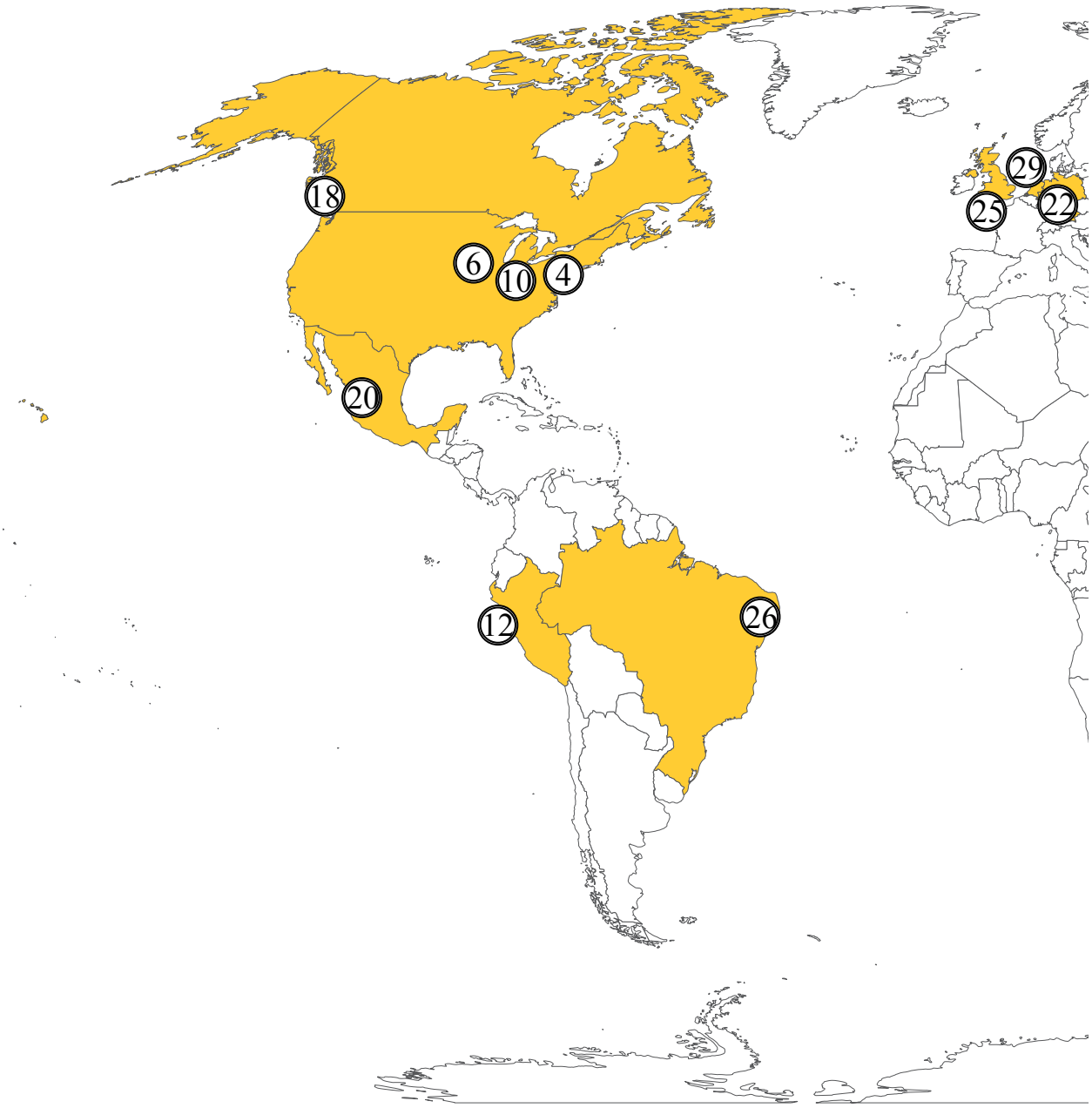
This year, the 17th ISS will be held on September 25-26, 2017 in cooperation with one of our great partner universities, National Chung Hsing University at Taichung City, Taiwan. In 2016, Tokyo NODAI has signed a cooperation agreement with Thammasat University at Thailand and Kangwon National University at Korea. The new partner universities will contribute to the further development of ISS as the unique opportunity to connect agricultural students in the world. The theme for this summit is "***Students Taking Action to Address Inequality Through Greater Access to Resources and Knowledge in Order to Promote Sustainable Agriculture***", which was adopted at the 16th ISS. We hope the participating students to focus on their activities undertaken by each university in their presentations and discussions. The framework of student activity as to the rationale, methods, implications (economic, social and cultural), and constraints should be clarified in order to foster their contributions to the solution of global problems for the sustainability of this world.

Only one oral presentation will be accommodated for each participating university in the following sessions.

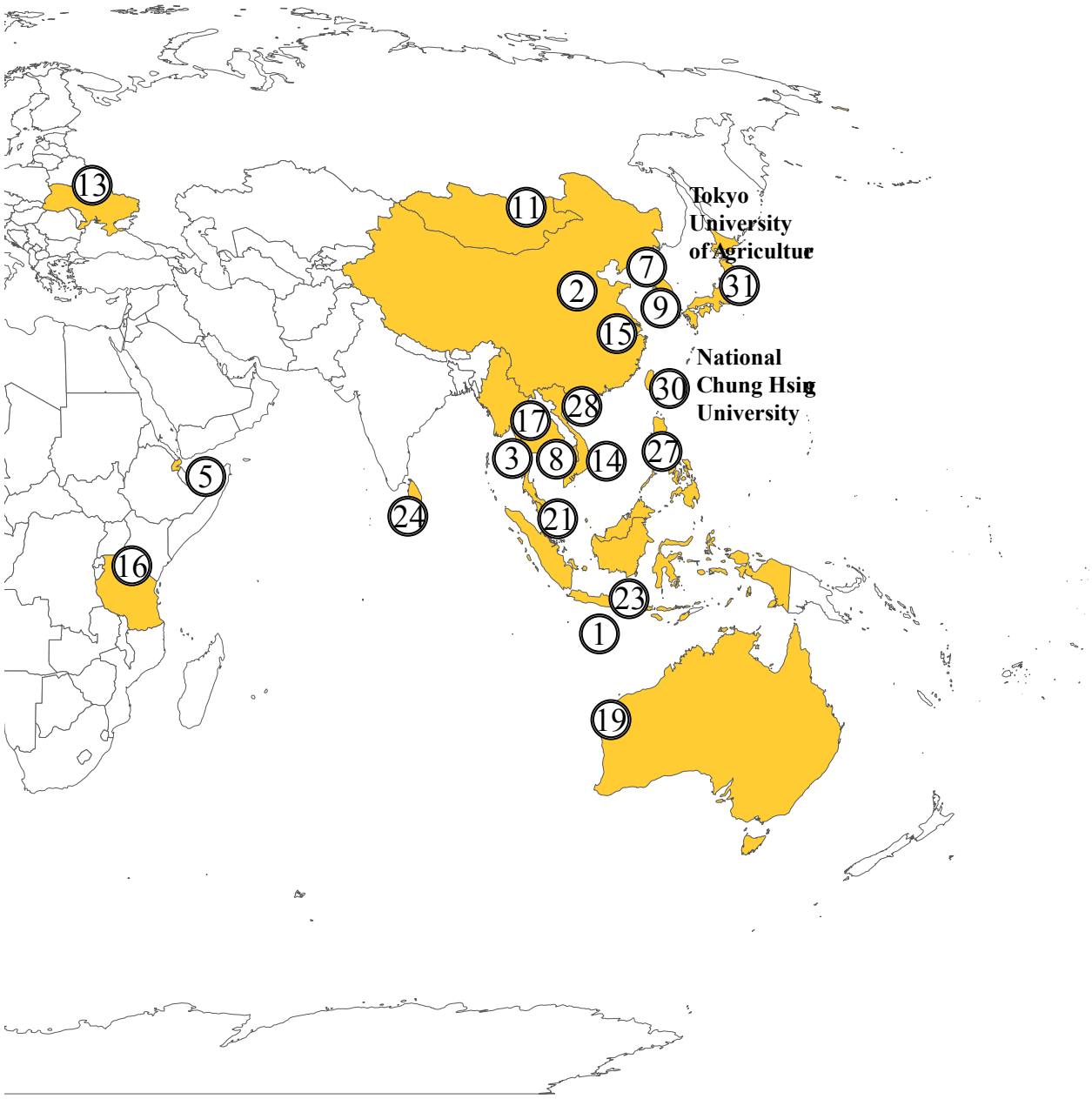
Opening Session: Opening ceremony and keynote speeches
Session 1: Universities with Students' Actions in the field of food
Session 2: Universities with Students' Actions in the field of environment
Session 3: Universities with Students' Actions in the field of agriculture
Session 4: Universities with Students' Actions in the field of education
Closing Session: Discussion and adoption of joint communique

Organizing Committee & Students Committee,
International Students Forum,
Tokyo University of Agriculture
National Chung Hsing University

The 17th International Students Summit World Map



1. Bogor Agricultural University
2. China Agricultural University
3. Chulalongkorn University
4. Cornell University
5. Djibouti University
6. Iowa State University
7. Kangwon National University
8. Kasetsart University
9. Kyungpook National University
10. Michigan State University
11. Mongolian University of Life Sciences
12. National Agrarian University La Molina
13. National University of Life and Environmental Sciences of Ukraine
14. Royal University of Agriculture
15. Shanghai Jiao Tong University
16. Sokoine University of Agriculture
17. Thammasart University



18 **The University of British Columbia**

19 **The University of Western Australia**

20 **Universidad Autónoma Chapingo**

21 **Universiti Putra Malaysia**

22 **University of Applied Science Weihenstephan - Triesdorf**

23 **University of Muhammadiyah Malang**

24 **University of Peradeniya**

25 **University of Reading**

26 **University of São Paulo**

27 **University of the Philippines Los Baños**

28 **Vietnam National University of Agriculture**

29 **Wageningen University**

30 **National Chung Hsing University**

31 **Tokyo University of Agriculture**

17th International Students Summit

■ September 25 (Monday)

09:00 Opening Ceremony

Special Keynote Speech

09:30 **Kizuna, the bonds for solving problems by various approaches**
Professor Keiko T. NATSUAKI. Vice President of Tokyo University of Agriculture, Japan

10:00 **From Science to Action: Fighting against plant virus by cross protection or transgenic resistance**
Chair Professor Shyi-Dong Yeh. National Chung Hsing University

Session 1 Students' Actions in the Field of Education
Session 1-1
Chairpersons: Huai-Shiuan Huang, Ping-Hunh Yen, and Ryuichiro Murakami

10:30 **Fun Walking Enviropedia: Environmental Encyclopedia Mobile Application with Augmented Reality Technology for Children**
Bogor Agricultural University: Mr. Muhammad Murtadha Ramadhan and Mr. Eric Faustine

10:45 **Sustainable management in rural village**
National Chung Hsing University: Mr. Ching-Hsiang Lin and Ms. Yu-Ti Jiang

11:00 **Provision of agricultural knowledge to smallholder farmers in Morogoro Municipality through participatory approaches by students of Sokoine University of Agriculture**
Sokoine University of Agriculture: Ms. Selemani Mwajabu

11:15 **Sustainable agriculture: programmes, policy and promotion**
University of Reading: Mr. Kyle Marlow-Spalding

11:30 **Educational innovations and their influence on the students in the National University of Life and Sciences of Ukraine**
National University of Life and Environmental Sciences of Ukraine: Mr. Mykhailo Marshalok

11:45 **Discussion**

12:00 **Break**

Session 1-2
Chairpersons: Ming-Chin Tang, Meng-Tien Chang, and Yukino Ota

13:00 **Reaching Out to Local Farmers**
Kasetsart University: Ms. Sasiprara Keeranon

13:15 **Discovering Students' Passions through Taking Action in Interdisciplinary Experiences in Agriculture and Natural Resources**
Michigan State University: Ms. Samantha Jo Ludlam and Ms. Kera Margaret Howell

13:30 **Aging Farmers: A challenge to Philippine food and agriculture sector**
University of the Philippines Los Baños: Ms. Nitchelle Rose P. Sangalang

13:45 **The role of university extension to promote sustainable agriculture**
University of São Paulo: Mr. Gillyade Correia Menino and Mr. Heitor Hideki Shimada

14:00 **Discussion**

14:15 **Break**

Session 1-3
Chairpersons: Ching-Wen Liao, Yu-Shan Liu, and Rehema Karata Mussa

14:20 **Creating Sustainable Global Systems through Iowa State University's Global Resource Systems Students**
Iowa State University: Ms. Karyl Clarete

14:35 **A study on the activating plan of rural experience activities for sustainable agriculture**
Kyungpook National University : Ms. Ha Ram Ok and Mr. Tae In Kang

14:50 **Improving Productive Potential of Farmers through Awareness in Order to Promote Sustainable Agriculture in Sri Lanka**
University of Peradeniya: Ms. Chamodha Dinithi Atukorala and Ms. Hasara Nuwangi Kaludewa
15:05 **Communities of Practice and Agricultural Sustainability: The Role of Students**
The University of Western Australia: Mr. Joshua Clune
15:20 **Discussion**
15:35 **Break**

Session 2 Students' Actions in the Field of Food Security
Session 2-1
Chairpersons: Pei-Yu Huang, Mami Takashima, and Minami Yamasaki
15:40 **Feeding Students, Feeding the Future: How a Grocery Store and Symposium Tackle Food Insecurity**
Cornell University: Ms. Francine Grace Barchett
15:55 **Students' role in promoting potato becoming a staple food**
Shanghai Jiao Tong University: Ms. Wu Jing
16:10 **Students taking action to address inequality through greater access to resources and knowledge in order to promote sustainable agriculture**
Wageningen University: Mr. Kees Stijne
16:25 **China Agricultural University's contribution in solving inequality problem and promoting sustainable agricultural development**
China Agricultural University: Ms. Fu Yutong
16:40 **Discussion**

Poster Session
16:55 Poster presentation

■ September 26 (Tuesday)

Session 2-2
Chairpersons: Tian-Jyu Lee and Rodrigo Torres
09:00 **Increasing rice demand by introducing function of the rice for Japanese Agriculture**
Tokyo University of Agriculture: Ms. Megumi Oikawa
09:15 **Sustainable Agriculture, Creation of Family Orchards as an Alternative to Generate Food Security in Mexican Communities**
Universidad Autónoma Chapingo: Mr. Rubén Zárate Reyes
09:30 **The Agronomy Garden: Inviting the Campus Community to the UBC Food System**
The University of British Columbia: Mr. Julian Villafuerte Diaz
09:45 **Discussion**
10:00 **Break**

Session 3 Students' Actions in the Field of Agriculture
Session 3-1
Chairpersons: Jin-Chi Hu and Edson Morales
10:05 **Biofertilizers: an alternative for sustainable agriculture in the Amazon region**
Universidade Federal Rural da Amazônia: Mr. Elson Junior Souza da Silva and Ms. Jéssy Anni Vilhena Senado
10:20 **Waste cycling in campus: using black soldier fly to recycle food waste**
National Chung Hsing University: Ms. Hsuan Lu and Ms. Kuan Tzu Tseng
10:35 **Thai Agriculture**
Thammasart University: Ms. Rantiya lad-ak (Bangkok)
10:50 **Discussion**
11:05 **Break**

Session 3-2
Chairpersons: Dai-Cian You, Yi-Ning Chiu, and Issa Aburahaman Kachenje

11:10 **Improved value chains for smallholders conserving biodiversity: working with Peruvian chili peppers**
National Agrarian University La Molina: Ms. Claudia Alejandra Arrascue Vargas

11:25 **Outreach Program: Adoption of Malaysia Good Agriculture Practice (MyGAP) among small-scale farmers toward better food quality**
Universiti Putra Malaysia: Mr. Kamarulridhzuan bin Razali

11:40 **Agriculture in Djibouti and how to improve it**
Djibouti University: Ms. Asma Ali Adan

11:55 **Discussion**

12:10 **Break**

Session 4 Students' Actions in the Field of Environment
Session 4-1
Chairpersons: Effendi Andoko, Entzu Liu, Miyuki Itou

13:00 **Sustainable Agriculture in Nan province, Thailand : Participatory approach**
Chulalongkorn University: Ms. Nutwara Chansakul

13:15 **„OptiKuh" - scientific based program to optimize sustainable dairy husbandry production in Germany**
University of Applied Science Weihenstephan - Triesdorf: Mr. Bugra Yilmazel and Mrs. Celina Philipps

13:30 **Study on Economic Threshold of Armyworm (Spodoptera exigua) on Chinese Kale (Brassica oleracea var.alboglabra) In Net-house, Cambodia**
Royal University of Agriculture: Ms. Um Sokheang

13:45 **Effect of Water Hardness of starting water on the Production and its Antimicrobial Efficacy of Slightly Acidic Electrolyzed Water**
Kangwon National University: Ms. Hyun Ji Kim

14:00 **Discussion**

14:15 **Break**

Session 4-2
Chairpersons: Mónica Chávez, Mayu Suzuki, Kazuko Fushimi

14:20 **Students taking to action to address inequality through greater access to resources and knowledge in order to promote sustainable agriculture**
Mongolian University of Life Sciences: Ms. Uyanga Erdenechuluun

14:35 **Green Technology in Tofu Production**
University of Muhammadiyah Malang: Ms. QQ Wima Akalentera

14:50 **Guiding households to compost organic waste in cartons using biotics to make organic fertilizer**
Vietnam National University of Agriculture: Ms. Tong Thi Hang and Ms. Tran Thi Mai Phuong

15:05 **Discussion**

15:20 **Break**

Session 5 General Discussion
Chairpersons: to be announced

15:30 **General discussion and suggestion of the theme of 18th ISS**

16:30 **Closing Ceremony**

Keynote Speech 1

Kizuna, the bonds for solving problems by various approaches

Professor Keiko T. NATSUAKI

Vice President of Tokyo University of Agriculture, Japan

Research of Dr. K. T. Natsuaki has been involved in plant pathology, in particular, in diagnostic study of plant viruses in tropical and sub-tropical regions. Her research covers molecular analysis, development of detection technology and protection of invasive viruses. She is the awardee of the Award of Japan Society of Phytopathology for her contribution on “Research on diseases of tropical crops” in 2013.

Assistant Professor, Tokyo University of Agriculture	1983-1988
Associate Professor, Tokyo University of Agriculture	1988-1995
Lecturer, Tokyo University of Agriculture	1995-2000
Professor, Tokyo University of Agriculture	2000-present
Director of Food and Agriculture Museum, Tokyo University of Agriculture	2006-2010
Director of the Student Service Center, Tokyo University of Agriculture	2011
Dean, Graduate School of Agriculture, Tokyo University of Agriculture	2012-2016
Vice President, Tokyo University of Agriculture	2014-present

Kizuna, the bonds for solving problems by various approaches

Professor Keiko T. NATSUAKI
Vice President of Tokyo University of Agriculture, Japan

International Students Summit:
Students Taking Action to Address Inequality
Through Greater Access to Resources and Knowledge
in Order to Promote Sustainable Agriculture
National Chung Hsing University
25-26 September 2017

KIZUNA means bonds and the word was most featured at the time of Japan's revival activities in the Great East Japan Earthquake, 2011. At any time, however, the bonds empower people.

In the fields of sciences, our research activities are now done by small or big groups of researchers but not by a single genius. The result of human genome project in 2004 was published with the long list of co-authors found in a supplement while many classical discoveries have been achieved by each one of independent scientists.

In the field of plant pathology, we work people in different fields of natural and social sciences, together with regional governments, private sectors, and also farmers. Kizuna with diversified people will lead us closer to solutions for our challenges.

In Africa, our work on a serious rice disease by Rice yellow mottle virus (RYMV) supported by Japan International Cooperation Agency (JICA) was conducted with people in different countries and disciplines including entomology, weed science, crop science and breeding technology. Such collaboration trained us to be more creative to combat RYMV.

More recently, the first report of cassava mosaic diseases in Cambodia caused by Sri Lankan cassava mosaic virus (SLCMV), in Southeast Asian countries in 2016 was followed by its occurrence in Vietnam in 2017. Scientists have started the immediate collaboration to stop the invasion of SLCMV to greater Mekong delta regions in a project (Development and dissemination of sustainable production system based on invasive pest management of cassava in Vietnam, Cambodia and Thailand; JICA-JST SATREPS).

In this project, though it is still in a trial-run stage, we invite specialists in internet-based communication technology (AGRIBUDDY) for image diagnostics by photos taken by farmers' mobile phones. "Ask rice plants about rice, ask farmers about agriculture" is an impressive quote by Dr. Tokiyoshi Yokoi, the first president of Tokyo University of Agriculture. Now we can ask famers about what they see via mobile phone while he is in Cambodia and she is in Tokyo. The bonds between scientists and farmers in different counties would soon be realized.

Presenting the unique role of Kizuna in our society, all of students who join ISS today are expected to highlight the significance of Kizuna, the bonds, with friends from different countries/regions and specialties now and in future in your life.

Keynote Speech 2

My Mission for Control of Papaya Virus, from Research to Application

Professor Shyi-Dong Yeh

Chair Professor, Department of Plant Pathology, National Chung Hsing University, Taichung, Taiwan

Research Interests: Plant Virology, Plant Genetic Engineering, Plant Pathology
1. Development of marker-free transgenic crops conferring broad-spectrum resistance against different tospoviruses through artificial microRNA approach
2. Epidemiological investigation on virus distribution and dynamic of viruliferus vectors of open-filed melon in Taiwan
3. Development and application of plant potyviral vectors for plant protection
4. Transgenic approach and chloroplast engineering for plant protection and molecular breeding - (sub-project 1) Development of marker-free transgenic plants with multiple resistance to tospoviruses, potyviruses, and geminiviruses via gene silencing
5. Transgenic approach and chloroplast engineering for plant protection and molecular breeding - (main project) Transgenic approach and chloroplast engineering for plant protection and molecular farming
6. Expression and functional analyses of the genes of watermelon silver mottle tospovirus using the engineered zucchini yellow mosaic potyvirus vector
7. Generation of transgenic plants with broad-spectrum resistance to different tospoviruses
8. Development of monitoring techniques for plant pests
9. Integrated investigation on improvement of virus resistance, long-term preservation, molecular detection, and field evaluation of transgenic papaya lines
10. Development and application of transgenic papaya conferring double-resistance to two viruses
11. Development and application of turnip mosaic virus as a viral vector for cruciferous species

My Mission for Control of Papaya Virus, from Research to Application

Professor Shyi-Dong Yeh
Chair Professor, Department of Plant Pathology,
National Chung Hsing University, Taichung, Taiwan

International Students Summit:
Students Taking Action to Address Inequality
Through Greater Access to Resources and Knowledge
in Order to Promote Sustainable Agriculture
National Chung Hsing University
25-26 September 2017

Aphid-borne papaya ringspot virus (PRSV) is a major limiting factor for production of papaya worldwide and it completely wiped out papaya production in Taiwan during 1970s. Resistant papaya varieties cannot be developed due to lack of natural resistance gene. A cross protection strategy, using a mild strain HA 5-1 derived from Hawaii strain HA by nitrous acid induction, to protect papaya against severe PRSV infection was developed while I was studied at Cornell University in early 1980s. The mild strain HA 5-1 was introduced and used in Taiwan for control of PRSV by cross protection during 1984-1993. However, strain-specific protection renders this control measure drawn back in Taiwan and difficult to be applied in different geographic regions. In the recent decade, we have identified several essential motifs of HC-Pro gene responsible for the pathogenicity of PRSV. Modulation of these motifs by site-directed mutagenesis at infectious cDNA clone, effective mild strains from a particular local severe PRSV strain have been generated, which provide compete protection against the local virus strain. By this approach, effective protective strains against Taiwan or Thailand PRSV strains have been obtained, with a great potential to be applied in Taiwan or Thailand.

Underlying the mechanism of post-transcriptional gene silencing (PTGS), coat protein (CP)-transgenic papaya for control of PRSV in Hawaii represents the first successful application of genetically modified fruit crop. Accordingly, we have also generated CP-transgenic papaya lines with broad-spectrum resistance to different geographic strains of PRSV. However, during field tests, an unrelated potyvirus, papaya leaf-distortion mosaic virus (PLDMV), was recorded. Transgenic papaya lines carrying a chimeric untranslatable-CP construct to confer double resistance to both PRSV and PLDMV were generated. Unexpectedly, during repeated field tests of the transgenic lines, more virulent strains of PRSV able to overcome the single-virus or double-virus resistance were noticed. Analysis by virus recombination indicated that a recombinant virus containing the silencing suppressor HC-Pro from a more virulent strain 519 can break down the transgenic resistance in a transgene-homology independent manner. Consequently, we further generated new transgenic papaya lines carrying an untranslatable HC-Pro construct of the supper PRSV strain 5-19 to disarm the viral weapon for suppressing PTGS. Our results indicate that silencing suppressor-transgenic papaya lines can solve the problem resulting from homology-independent resistance breakdown. Currently, hybrid papaya varieties with the chimeric-CP resistance and HC-Pro transgenic resistance have been generated. They confer broad-spectrum resistance to different geographic PRSV strains and PLDMV and have a great potential for global application.

SESSION 1-1

Mr. Muhammad Murtadha Ramadhan and Mr. Eric Faustine
Bogor Agricultural University
Fun Walking Enviropedia: Environmental Encyclopedia Mobile Application with Augmented Reality Technology for Children

Mr. Ching-Hsiang Lin and Ms. Yu-Ti Jiang
National Chung Hsing University
Sustainable management in rural village

Ms. Selemani Mwajabu
Sokoine University of Agriculture
Provision of agricultural knowledge to smallholder farmers in Morogoro Municipality through participatory approaches by students of Sokoine University of Agriculture

Mr. Kyle Marlow-Spalding
University of Reading
Sustainable agriculture: programmes, policy and promotion

Mr. Mykhailo Marshalok
National University of Life and Environmental Sciences of Ukraine
Educational innovations and their influence on the students in the National University of Life and Sciences of Ukraine

Fun Walking Enviropedia : Environmental Encyclopedia Mobile Application with Augmented Reality Technology for Children

Muhammad Murtadha Ramadhan, Eric Faustine
Bogor Agricultural University

Environmental awareness is a key for human to survive and thrive. However, Indonesian society still has a relatively low level of awareness towards environment, i.e. 57 percent according to the report issued by Indonesia Ministry of Environment in 2013. In response to menacing conditions above, Indonesian government has been attempting to increase community's participation and awareness to environment, one of attempts is educating children about environment at schools through Adiwiyata program which is addressed to primary and secondary school students. Nevertheless, environmental education in Adiwiyata program is still adopting traditional way which is teacher-centered and dominantly conducted in classroom. This method still cannot adequately reach the expected goals, thus there is a high need to assist community member to have access for informal or independent learning which can attract students more as well as increasing their motivation in learning process. In this paper, author proposes an alternative platform to assist environmental education by combining independent learning concept and mobile application with Augmented Reality (AR) technology, namely Fun Walking Enviropedia. To apply this technology, AR must be supported by smartphone and internet as primary tools. The apps uses specially designed cards with QR code as object markers that are recognized by the application in a smartphone camera. The users can download card markers through the web to play Fun Walking Enviropedia apps. The model of Fun Walking Enviropedia is developed by covering four main features – Herbarium, Green Action, Versus Challenge, and Achievement. Herbarium allows children to enrich their insight about plants and its related components such as name, origins, growing place, benefits, and importance then collect them into their virtual collection. Subsequently, Green Action feature informs them about several kinds of action to preserve surrounding environment. They are able to test their environmental knowledge with their friends through Versus Challenge feature. For their accomplishment, they can get awards in the form of extra and experience points.Fun senses and children-focused personalization design in this apps make it comparable with other games or fun apps. Moreover, teachers and parents can also benefit from this apps to stimulate their students or children to be more aware of their environment. It is expected that by using this application, children as young Adiwiyata generation will have more knowledge and awareness about environment then conduct greener life and conserve their environment.

Keyword: environmental encyclopedia, augmented reality, children

Sustainable management in rural village

Ching-Hsiang Lin and Yu-Ti Jiang
National Chung-Hsing University

Nowadays, aging population and brawn drain problems have led to gradual downfall, declining productivity, and crisis on sustainable development in rural area of Taiwan. Due to the above reasons, our team entered in a village, Chung-Ping, Miao Li, through the assistance of Soil and Water Conservation Bureau in summer, 2016. The main crop in Chung-Ping is taro. After a field survey, we discovered poor managements of the field sanity, such as waste disposal and the direct use of immature remains, was the major obstacle for this commodity. We also found the problems of improper managements of fertilizer, overuse of pesticides and wastes of secondary taro. In order to solve these problems, we proposed several ways to discuss with the local people for dealing with the problem. These include:

1.Promotion on appropriate concept in agriculture including soil examination, management of field sanity and fertilizer.

2.The reuse of secondary taro to create additional values.

3.Reduce in the use of pesticides and promotion of toxin-free agriculture

Through the improvement of taro growth, we believe an eco-friendly environment can be achieved, reviving the agricultural economy in Chung-Ping and eventually achieve the concept of sustainable management.

Provision of agricultural knowledge to smallholder farmers in Morogoro Municipality through participatory approaches by students of Sokoine University of Agriculture

Mwajabu Selemani
Sokoine University of Agriculture

The United Republic of Tanzania has a total population of 52.3 million people, and is growing at about 3.0% p.a. Of this total, about 2.9% of total population inhabit the islands of Zanzibar. As of 2012, about 70% of the population resided in rural areas. The Tanzanian economy is dependent on agriculture where the agricultural sector contributes 24.5% of Growth Domestic Product (GDP) and provides employment to three quarters of all Tanzanian workers, while fulfilling 95% of the country's food needs. About 80 per cent of production comes from subsistence farmers relying on hand hoe and rain fed agriculture. To date, agricultural production gains have been based on expansion of the area cultivated rather than yield increases, and this expansion process has been the driver of deforestation and land degradation. Accordingly, low agricultural productivity has been hampered by inadequate access to productive resources such as land, modern technologies and inputs, reliable markets, financial services, appropriate farming knowledge and high vulnerability to weather shocks including climate change.

The Government in collaboration with its Development Partners has initiated a number of programmes that aim at enhancing smallholder farmers' access to resources and knowledge. .SUA as a public institution is one of the organizations that strive to complement the efforts made by Government through various actions including those taken by its students.

The thrust of this paper is to demonstrate actions that have been taken by SUA students, through their organization called Tanzania Agricultural University Students Association (TAUSA) in an attempt to create awareness and impart knowledge to smallholder farmers within Morogoro Municipality in order to address issues revolving around the challenges of access to resources and appropriate farmers' knowledge with the intent of promoting sustainable agriculture. In order to address these challenges TAUSA has come up with a strategic framework for implementing its activities underpinned by a participatory approach known as" Workshops for participatory research design (WPRD)" that involve discussing together with farmers to identify critical farming issues revolving around crop husbandry, soil management and marketing as well as coming up with sound solutions for redressing the situation.

Sustainable agriculture: programmes, policy and promotion

Kyle Arran John Marlow-Spalding
University of Reading

If the notion of sustainability is to be comprehensively considered, then agriculture must be at the forefront of thought. The rationale for this emanates from the fact that sustainability is multifaceted and agriculture in essence bares significance to each and every facet. As agriculture is therefore so integral to sustainability, it is evident that in deliberations where agriculture is absent, sustainability can scarcely be considered as promoted. It is therefore that discourse on sustainable agriculture becomes imperative.

This report serves to provide an insight into how sustainability is promoted through: agricultural, food and environmental programmes and respective policies both within the University of Reading and the wider Reading community. It draws a particular focus on students and the value that their participation brings, along with how to mobilise greater numbers of the student-body to become more actively engaged.

The programmes mentioned herein, supplement the overarching commitments the university has made to become ever increasingly sustainable. The catering services 'sustainable food policy' has been implemented with the express intention of providing students and staff with quality, nutritional and sustainable food, in the attempts to promote health and well-being and minimise negative environmental consequences. Students form part of the annual committee who strive for annual improvements in the sustainable provision of food on campus and aims to inspire students to adopt more healthy lifestyles through the communication of this policy to other students.

Along with this, the 'Food-For-All' programme has been recently adopted in Reading. It is a scheme coordinated by community members, university staff and students. It operates by establishing contracts with supermarkets to collect their discarded food, cooking vegan lunches and then distributing them free of charge to the community, students and the homeless. The model serves to combat food wastage and social inequality. Student participation takes place through lunch preparation, distribution and consumption, motivated by the gratis and healthy lunch and having a simple role in minimising food wastage. The expansion of this programme will come from challenging supermarkets to revise their policies on discarded food and to allow for individuals to distribute it for altruistic reasons.

This report concludes by stating that these programmes are effective in promoting the agricultural, food and environmental sustainability of the university. The programmes have the capability to become scaled and internationally implemented to effect and will contribute positively to creating a global shift towards attaining greater universal sustainability.

Educational innovations and their influence on the students in the National University of Life and Sciences of Ukraine

Mykhailo Marshalok
The National University of Life and Sciences of Ukraine

Agriculture is one of the main sphere of Ukraine's economy with 11,7% in the structure of GDP and 46% in the structure of export in 2016. Approximately 30% of the economically active population of the country are engaged in the agriculture. But intensive development of agriculture is accompanied by a wide range of socio-economic and environmental problems, which in turn are caused by the low responsibility, awareness about the problems, and 1ow standards of living in rural territories.

The National University of Life and Sciences is a leading agrarian educational institution in Ukraine. The university not only pays attention to the graduation of the highly-skilled specialists, whose aim is the achievement of the highest results, but also to the training of people who can solve the problems that had appeared in the development of Ukrainian agricultural production. In order to motivate students to be to be creative and social active several activities were considered.

For instance, administration of the university with student organisation has developed the rating of students` activity in 2014. The system was based on the rating of university staff that was introduced in 2002. The rating of students takes into account social, sport and science activity of the students. Settlement in the dormitory, selection of the candidates for the different educational programs and scholarship programs are carried out in accordance to the rating system. Also, in the National university of Life and Sciences of Ukraine students are provided with opportunity to attend science groups and clubs). Within them each student have a possibility to cooperate with teachers, Ph. D., professors and other students to prepare for the conferences and competitions to conduct researches in the field he or she is interested in.

The implementation of this programs cause the increase of students` activity and, as a result, the growth of students` self-consciousness and responsibility about the future of agriculture of Ukraine.

SESSION 1-2

Ms. Sasiprara Keeranon
Kasetsart University
Reaching Out to Local Farmers

Ms. Samantha Jo Ludlam and Ms. Kera Margaret Howell
Michigan State University
Discovering Students' Passions through Taking Action in Interdisciplinary Experiences in Agriculture and Natural Resources

Ms. Nitchelle Rose P. Sangalang
University of the Philippines Los Baños
Aging Farmers: A challenge to Philippine food and agriculture sector

Mr. Gillyade Correia Menino and Mr. Heitor Hideki Shimada
University of São Paulo
The role of university extension to promote sustainable agriculture

Reaching Out to Local Farmers

Sasiprapa Keeranon
Kasetsart University

Nowadays, an agriculture sector in Thailand is facing a big problem about natural disaster which continuously affects our nation's food security and Thai people lives through the decreasing yield of crops. The objective of this paper is promoting understanding to locals about climate change, long-lasting agriculture and adaptation to current agricultural sector situation. Due to lack of knowledge and sticking with traditional way of cultivation, Thai farmers tend to do farming with the practices of over pesticide, over fertilizers and mono-cropping without realizing what will come afterwards. Wrong practices in agricultural field results in increasing of greenhouse gas, soil fertility degradation, economical loss and health risk. The effect of climate change can be seen through flooding or drought. The irrigated area in Thailand is about 30% and the rest is rain fed area. Since rainfall is the main water resource for agriculture in Thailand, It has direct impact for Thailand agriculture. Also with improper cultivation practices, soil quality can be degraded which will affect to land degradation, aridity, loss of arable land and pollution. In most developing countries, Agricultural knowledge access among farmers is a challenge for many years. Since limited access to agricultural knowledge is one of the factors limiting agricultural productivity. The collaboration among government, private and local sector is needed to enhance access to agricultural knowledge in rural areas. The motivation for private sector to invest and involve in provision of agricultural knowledge in rural areas can be made through setting up policies and strategies by government in regards of partnership. The agricultural related activities extension in rural areas of private sector can make more people have greater access to agricultural knowledge. In order to promote sustainable agriculture, partnership with rural community is one helpful action since it helps reaching out process through better knowledge and information distribution. The knowledge given to farmers should be usable in their lands with the focus on helping them acquires new knowledge and skills which are related to farm productivity increasing and farmer's quality of life improving. By introducing his majesty king Bhumibol Adulyadej project such as the New Theory which based on self-reliance and Sufficiency Economy Philosophy. With successful learning, farmers can overcome poverty, health risk and environmental problem through sustainable agriculture.

Discovering Students' Passions through Taking Action in Interdisciplinary Experiences in Agriculture and Natural Resources

Kera Howell and Samantha Ludlam
Michigan State University

As the world population continues to grow, there is an increased demand for agricultural products for consumption, along with the natural resources and environment used to produce those goods. A goal for the College of Agriculture and Natural Resources (CANR) at Michigan State University is to help students gain knowledge about agriculture and the environment through hands on experiences. By offering an interdisciplinary learning environment, such as the Residential Initiative for the Study of the Environment (RISE), undergraduates develop a cohort of peers that support activities initiated by students within the program. One way students create change through RISE is the mentorship program, where incoming freshmen receive a sophomore RISE mentor. This program was created to provide the freshmen RISE students with a mentor that can be used as a resource to ease their transition from high school to college. As a mentor, students can help their mentees find clubs that fit their environmental interests and promote positive change and personal growth. The mentor program is a driving force in assisting students to feel included by creating a community within RISE, where all students are accepted for their ideas and beliefs. Through CANR undergraduate research scholarships, students in the Community Sustainability Department (CSUS) are able to develop research projects based on their interests. Lastly, student life organizations throughout Michigan State University engage students in spaces where discovery is promoted, relationships are built, and ideas are challenged that advance career and personal goals. One such organization is the Agriculture, Food and Natural Resource Education (AFNRE) Club. It is a student driven club that provides opportunities to develop leadership skills and resources applicable in the current endeavors and future careers of students. In cooperation with CANR faculty and members of the local and international community, students gain a sense of inclusiveness within this club that help in their success academically and socially. Students from all walks of life are encouraged to participate in club activities, many of which also provide awareness to the ever-changing agriculture industry and education systems. One of the most popular activities facilitated by this club is a student exchange program with other universities throughout the Midwestern United States. These experiences have brought students from different backgrounds together and allowed them to share knowledge and opinions in a supportive and open academic environment. In the end, students who take action at Michigan State University help make a difference and understand the importance of advocating for their passions and create sustainable changes for agriculture and the world.

Aging Farmers: A challenge to Philippine food and agriculture sector

Nitchelle Rose P. Sangalang
University of the Philippines Los Baños

Sustainability is defined in different ways but it primarily stems on the concept of being able to meet the needs of the present without compromising the ability of the future generations to meet their own needs. In simplest definition it is basically "the ability to sustain." In a quickly changing world with a rapidly increasing population, consequently an increasing need and demand for food and other basic goods, it has become questionable if anything can be sustained. In agriculture, sustainability emphasizes on three main objectives: economically viable, socially responsible, and ecologically sound. In the Philippines, despite being a developing country which boasts of large tracts of fertile lands, establishing sustainable agriculture and food security is a continuing challenge not only because of the weather disturbances the country faces every year that can be destructive to its agricultural products but other factors as well. One of these is the aging of the Filipino farmers. There have been reports saying that the average age of Filipino farmers at present is 57, which means they are almost at retirement age, and will soon join the ranks of senior citizens. This means that many of the new generations of young farmers not going to the agriculture sector anymore. For many farmers and their children, the way out of poverty is out of farming and into other means of livelihood, like working in the industrial sector because of the unequal job opportunities and income.

With the growing urbanization in many parts of the country, the Philippines is gradually shifting from a mainly agricultural into an industrial economy.

However, we cannot abandon agriculture because food production is vital to our survival as a country. The aging of Filipino farmers may lead to food insecurity in the long run. It is then important to see what the government, together with the academe, student and youth organizations, and the business sectors can do to make agriculture a more appealing option for the young farmers.

The role of university extension to promote sustainable agriculture

Gillyade Correia Menino & Heitor Hideki Shimada
University of São Paulo

Agribusiness has an important role in the Brazilian economy. More than 23% of its GDP is generated in this sector and about 34% of the country´s area (282,589,000 ha) is used to grow crops and/or pasture. It is a large country with different soils and climate which affect the type of crops and the best technology in each region. In the last fifty years, many technological improvements – developed domestically or imported from other countries – contributed to improve yields, expand area and reduce costs, transforming Brazil into a worldwide powerhouse in terms agricultural production and international trade. Unfortunately, some farmers did not have access to this knowledge and could not benefit from the improvements and were left in poverty. It is estimated that only 27% of small agricultural establishments has technical assistance. The use of outdated technology will result in low yields and income, as consequence, this will cause poverty and environmental damage due to a non-sustainable agriculture. To short this technology gap, the extension service can promote an integration between the farmers and the university to share knowledge and update them about new technologies and alternative management. At University of São Paulo, many groups of students and professors interact with those farmers, resulting in an action where both learn. One of those groups is the "São Pedro´s Extension Group" – GESP. GESP supports small farmers in the region of São Pedro, São Paulo State, Brazil, using knowledge from the university to help farmers improve their production and lives. Their activities involve wide range of technical issues, from irrigation to milk production and processing. They are also concerned with farmers´ empowerment, with weekly meetings to stimulate interactions to facilitate exchange of know-how that help find innovations toward sustainable production, autonomy and improve their technology. There are many difficulties remaining. Some farmers are not able to understand the students and their ideas and they do not adopt the recommendation, even if it would improve their income. The lack of resources to support this kind of initiative is another problem. At the university, the students have access to many possibilities and initiatives to start promoting sustainable agriculture at local level that can be expanded to solve global problems.

SESSION 1-3

Ms. Karyl Clarete
Iowa State University
Creating Sustainable Global Systems through Iowa State University's Global Resource Systems Students

Ms. Ha Ram Ok and Mr. Tae In Kang
Kyungpook National University
A study on the activating plan of rural experience activities for sustainable agriculture

Ms. Chamodha Dinithi Atukorala and Ms. Hasara Nuwangi Kaludewa
University of Peradeniya
Improving Productive Potential of Farmers through Awareness in Order to Promote Sustainable Agriculture in Sri Lanka

Mr. Joshua Clune
The University of Western Australia
Communities of Practice and Agricultural Sustainability: The Role of Students

Creating Sustainable Global Systems through Iowa State University's Global Resource Systems Students

Karyl Clarete

Iowa State University

The interdisciplinary Global Resource Systems (GRS) major at Iowa State University (ISU) consists of 125 unique students with diverse ambitions and technical and cultural interests. The common passion among students is a determination to solve the world's most pressing challenges, including hunger, health, climate change, and gender equality. This commonality unites students to learn, collaborate, and take action to tackle these challenges and promote global equality through resources and knowledge designed to empower communities.

Universities can provide in-depth learning opportunities for students to develop skills to be future leaders by leveraging global development projects. ISU, and specifically GRS, provides students with service learning courses and interdisciplinary clubs that broaden participants' perspectives and provide real-world opportunities to work with global communities and partners to address food, agricultural, and environmental challenges.

GRS students are engaged in development projects, including two examples in Africa. The ISU-Uganda Program involves university students as service-learners in an ongoing agricultural development project to alleviate nutritional food insecurity in rural Uganda. ISU and Makerere University students work collaboratively with rural Ugandans to improve access to and education about human nutrition, sustainable agriculture, and water resources. Through this decade-long, community-centered partnership, over 200 U.S. and Ugandan students have worked as a binational team to improve education and livelihoods of rural youth in food and agriculture. A second example, Engineers Without Borders (EWB)- ISU, addresses water quantity challenges through their partnership with Ullo, a rural Ghanaian community. EWB-ISU members are designing a water supply system to alleviate hardships in Ullo during the dry season when boreholes breakdown under stress to provide water. Without sufficient water, agricultural activities cease, creating shortages in food supplies and economic opportunities, affecting the community's livelihoods. Collaborating with the community, EWB-ISU aims to provide families with a sustainable, year-round water supply.

GRS students participate in development activities because of the positive impacts of their work on communities and their own learning and personal growth. U.S. students form relationships with global community members and create unique connections with other countries' cultures and traditions. Sustaining programs are made possible through the support of the university. ISU students, faculty and staff promote, maintain, and improve the programs so future generations of students can continue taking action towards achieving global equality through sustained resources and shared knowledge. GRS captivates and develops the way students view the world, allowing them opportunities to learn about development and create sustainable, global resource systems.

A study on the activating plan of rural experience activities for sustainable agriculture

Haram Ok and Tae-In Kang

KyungPook National University

Agricultural productivity was increased due to the use of excessive pesticides, chemical fertilizers and an advance in science (Lee and Jung, 2001). The use of excessive pesticides, however, has devastated the soil, destroyed the ecosystem. People have questioned the stability of agricultural products (Nam, 2011). As a result, there has been a need for sustainable agriculture to protect the environmental resources and agricultural competition (Sung at el, 2004)

In this trend, a club 'Hopesoil' was made by college students in Daegu which is one of the administrative districts in the South Korea. It is the first campus agriculture club in Daegu. Now it is beyond simple clubs that cultivate a small garden. It currently gives a chance to learn and experience agriculture to citizens in the name of Hopesoil Farmers School. It provides diverse experiences of agriculture such as organic farming education, water farming education through rice farming, and eating organic foods and so on. The ultimate goal of all activities is to create a sustainable society where nature is healthy and people are also healthy, so I think it is also meaningful to activate rural experience activities for sustainable agriculture

The study consists of 5 chapters. In the first chapter, it introduces the purpose and method. The purpose of this study is to explore ways to expand and develop the rural experience activities based on a survey of 50 college students from 44 different majors and universities in South Korea. In second chapter, it investigates the preceding researches to sustainable agriculture. In third chapter, it introduces subject, composition and contents of questionnaire of the research. In fourth chapter it analyzes results. First, we need to increase interests of rural activities to college students. A 55 percent of the students answered that they could do rural activities in their department, but 0 percent said they actually participated in rural activities. Forty-four percent of the students did not even have the opportunity to engage in rural activities through their departments. Second, we need to promote rural experience activities which students can participate personally with family or friends. About 36 percent students responded that they have heard about any promotions about rural experience activities which can do rural activities personally, not as a group at school. In fifth chapter it reveals research summary and limitations.

Improving Productive Potential of Farmers through Awareness in Order to Promote Sustainable Agriculture in Sri Lanka

C.D. Atukorala and H.N. Kaludewa
University of Peradeniya

In the contemporary Sri Lankan context although sustainable agriculture has become a pivotal concern of administrative, organizational and academic strata, a diminishing trend in adopting sustainability is observed in the farmer community. In the traditional setting of Sri Lanka, sustainability was existent in the farming methods and practices. But now due to various influential factors this setting has changed drastically creating a gap between knowledge levels and access to resources. We planned our project selecting women and school children from farmer community as we believe they can be the change agents of their community. Our objective was to create an impact on the whole farmer family by empowering women, simultaneously to ensure the sustainable existence of the impact the school children were made into future leaders.

As an initiative to our project the ISF (International Student Forum)-Sri Lanka conducted a survey with a questionnaire consisting of questions related to knowledge, health, access to resources and attitudes towards agriculture. This was conducted using hundred farm families in the Mahailuppallama area. A sub campus of the University of Peradeniya is also situated there, where mainstream agriculture is practiced. During the study, we witnessed that ninety percent of the farmers in the farmer community lack knowledge about sustainability and access to related resources. They were lacking motivation and their preparedness in making agriculture sustainable through generations was at an unsatisfactory level.

Using our findings as the baseline, an awareness programme was conducted by the members of ISF-Sri Lanka under the guidance of the academic staff of the university. The programme focused on improving health, educating and motivating the farming community. The demonstrations were delivered comprehensively through interactive sessions. As a follow up, we then revisited the farmer families and organizations and assessed the progress. More than twenty five percent of the emergent leaders from the younger generation and women proved to be successful in making the expected change.

In summary, the project consisted of a survey for identification of issues, an awareness programme to address them and a follow up to measure the impact. This was done with an emphasis on improving the overall productive performance of the farmer.

Communities of Practice and Agricultural Sustainability: The Role of Students

Joshua Clune
The University of Western Australia

Students play an important role in the development of sustainable and productive agricultural practices world-wide. The University of Western Australia (UWA), provides many examples whereby students can partake in the research and trials that aim to lessen the challenges faced by farmers in Western Australia (WA). These include environmental, social and agronomic issues that risk decreasing the sustainable production in the region. Environmental issues include dryland salinity, crop disease, declining soil quality, decreasing rainfall due to climate change, as well as the production of green-house gases from livestock. Farmers in the region are also faced with economic and social inequalities in many forms including individual farm type and situation, communication between farm communities, and failure in the implementation of sustainable best practice. Students can assist farmers to overcome the various challenges they face by undertaking research projects in partnership with Communities of Practice (CoP's). Communities of Practice include over 40 'Grower Groups' throughout WA, which are community-driven organisations run by farmers, each with a common set of goals often regarding the productivity and sustainability of their land. Grower Groups aim to achieve the goals through the sharing of the latest technologies and scientific research provided by a range of member interactions. For Example, a student research project is currently investigating the effectiveness and monetary value of Grower Groups in Western Australia. The project aims to recognise how research findings are shared with farmers including the economic and social benefits to farmers and how the farmers perceive the value of Grower Groups. This will be determined by surveying farmers via a series of questionnaires. By its conclusion, the project will allow students and farmers to gain a better understanding of the value of Grower Groups and how they can be improved. Communities of Practice can act as an effective tool in sharing students' knowledge with farmers. However, there are limitations to farmers, including unequal representation for some farms and lack of communication between Grower Groups. Student collaboration plays a vital role in the development of highly connected agricultural CoP's which are essential in combatting agricultural inequality and developing sustainable farming practices for future generations.

SESSION 2-1

Ms. Francine Grace Barchett
Cornell University
Feeding Students, Feeding the Future: How a Grocery Store and Symposium Tackle Food Insecurity

Ms. Wu Jing
Shanghai Jiao Tong University
Students' role in promoting potato becoming a staple food

Mr. Kees Stijne
Wageningen University
Students taking action to address inequality through greater access to resources and knowledge in order to promote sustainable agriculture

Ms. Fu Yutong
China Agricultural University
China Agricultural University's contribution in solving inequality problem and promoting sustainable agricultural development

Feeding Students, Feeding the Future: How a Grocery Store and Symposium Tackle Food Insecurity

Francine Barchett
Cornell University

The United States' economy has expanded significantly since the turn of the century, and its growth has brought an unprecedented demand for a university education. Although more people are attending college than ever before, the country's wealth inequality is among the highest in the world, helping account for a 20 percent student food insecurity rate, rampant campus food deserts, and a lack of healthy, affordable, and available food for college students who need it most. Simultaneously, the United States experiences a shortage of agricultural students, who are necessary for addressing the country's future food insecurity.

Throughout this analysis, Cornell University is examined, from its high tuition costs to its disproportionately affluent student body to the reality of food insecurity among its low-income students. I study the present effects of food insecurity on academic potential and the consequences of agricultural unemployment on future food security before revealing Cornell's potential to improve the status quo. In particular, I investigate two university initiatives that address both present and future food security: Anabel's Grocery, an on-campus student-run mini supermarket, and the World Food Prize New York Youth Institute, an annual food security symposium.

Recalling Anabel's Grocery's history and its founders' barriers, this report depicts how the on-campus grocery store works to make fresh and healthy food affordable and accessible for Cornell's entire student body. To shed light on long-term food insecurity solutions, I later expose the need of recruiting more youth to agricultural fields by evaluating the World Food Prize New York Youth Institute. Considering its one-of-a-kind initiatives to introduce high school students to agricultural research, link them to leading Cornell researchers and experts, and prepare them for global food security conferences and domestic and international internships, I draw on its impact on hundreds of New Yorkers. In portraying the strengths and weaknesses of both initiatives, I make recommendations on how Cornell and other universities can address the twin needs of present and future food security.

Students' role in promoting potato becoming a staple food

Wu Jing
Shanghai Jiao Tong University

As a huge agricultural country, the consumption of grain in China is considerable. Generally, we consider rice,wheat and corn the three most common staple food in China. However, here comes the question whether these main grains could satisfy public's increasingly multiple requirements. Thus, the Ministry of Agriculture (MOA) said China will further boost potato production to make the tuber one of the nation's staple foods. In terms of water and land usage, the potato industry will not interfere with growth of China's top three staple grains. As students who major in Food Science & Engineering, many of us take part in this great work. With Professors' tutoring, some students work on making potato noodles, potato buns and many other various products, substituting rice or wheat flour with potato granules. To know more about the food industry, students are willing to do related research. The project is supported by the country，and the school encourages students to join in the program, adding to students' willingness. Comparing to industrial production, the lab research is relatively in small scale, which means the cost of try and failure is much less. Not only does this project help students grow up, but also it lays a solid foundation for future industrial production.

Many problems exist as well. For instance, the physical and chemical properties of potatoes are quite different from that of other grains, which means it is impossible to simply copy what we do to rice, wheat or other grains to potatoes without any changes. The difficulties lie in finding out the way to make potatoes into primary products. Furthermore, gaps exist between lab research and industrial production. From lab to factory, we still have a long way to go. Even though, we students still take our responsibility to go further on this exploring way.

Key words: potato, staple food, students

Students taking action to address inequality through greater access to resources and knowledge in order to promote sustainable agriculture

Kees Stijne
Wageningen University

Aquaculture is the farming of fish on both land and water; it is the fastest growing food-producing sector in the world. Half of the fish consumed has been grown in aquaculture systems, and has reduced the strain we have put upon oceans. With the world population being estimated at 9.7 billion in 2050 (UN DESA, 2015) more food will have to be produced. The problem with aquaculture in its current state is that many farms do not produce fish sustainably.

Large quantities of water usage, the amount of antibiotics used and escapees are some of the largest challenges faced by fish farms. Another major issue is that farmed fish is often fed wild fish, threatening overfishing of these wild fish species for the supply of fish food. Because most farmed fish are carnivorous, they are fed either whole fish or pellets made from fish. Species such as mackerel, herring and whiting are threatened from the pressure to create food for other farmed species (NOOA, 2012).

To tackle unsustainable fish farming practices the Aquaculture Stewardship Council (ASC) has created a certification by which consumers can see if their fish has been produced in a sustainable way. The ASC sets up guidelines for sustainable fish farming per species and farms can request to be audited. The ASC supplies third-party accredited certifiers to see if the farm really does produce sustainable fish products (ASC, 2009).

Not only does the ASC monitor environmental sustainability but also focuses on social and economical sustainability. Many large-scale Western retailers such as IKEA now only sell ASC certified fish products in their restaurants (IKEA, 2015), but in Asia where most fish is consumed this is not yet the case. Raising awareness in Asian countries could help consumers actively buy ASC certified fish products.

It is essential for students to understand that sustainability is not only an ecological issue, but also a social and economic goal. Students today will be the decision makers of tomorrow, so it is important for the development of the aquaculture industry to see sustainability as a long-term vision. Sustainability is often only a short-term hindrance. It will be the role of students to promote the message of sustainability in all areas of agriculture.

Bibliography:

Aquaculture, O. O. (2012, January 12). Feeds for Aquaculture. Retrieved April 15, 2017, from http://www.nmfs.noaa.gov/aquaculture/faqs/faq_feeds.html

E-Vision, T. N. (n.d.). Retrieved April 15, 2017, from http://www.asc-aqua.org/index.cfm?lng=1

UN . (2015). World Population Prospects. Retrieved April 15, 2017, from https://esa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf

Zalm, garnalen en haring van IKEA 100% duurzaam geproduceerd - IKEA. (2015, September 22). Retrieved April 15, 2017, from http://www.ikea.com/nl/nl/about_ikea/newsitem/vis_gecertificeerd

China Agricultural University's contribution in solving inequality problem and promoting sustainable agricultural development

Yutong Fu
China Agricultural University

With the rapid development of social economy, the contradiction between human consumption demand and the carrying capacity of resources and environment is becoming more and more severe, which triggers environmental pollution, food security crisis in the context of the existence of a series of inequality such as resource allocation and development.

Taking the responsibility of "solve problems the people confront in their livelihood", faculties and students in the China Agricultural University promote the sustainable development of agriculture through using science and technology to promote the increase in food production and guiding people to get rid of food profligacy by educating them. Professor Zhang Fusuo and his graduate student Cao Guoxin have established the National Union of Science and Technology Backyard and created the "scientific and technological innovation - social services - personnel training" trinity new model by insisting the principle of "integration of innovation, open win-win". They applied new achievements of development to the source of agricultural production to solve the inequality problem of science and technology resources and then to promote the "high quality and high level" agricultural development; Initially supported by the German EED Foundation, hosted by Professor Ye Jingzhong from the Humanities and Development College of China Agricultural University, and carried out by students of our university, the rural development project - nested market , which links farmers and residents together directly in order to reduce the middle terms' control of "food Empire", are developing in China to make more profit for farmers and more benefit for consumers. We reduced the inequality due to the monopoly of large and medium enterprises during sales process; China Agricultural University Student Union initiated the "empty-plate action" to the national college students in January 2013. Thrift became a common practice in China quickly. To the second half of 2014, especially in canteens of schools, enterprises and institutions, the amount of waste of 92 percent of canteen food was below 10%. Compared with the amount of food waste of 20% to 30% before the implementation of the "empty-plate Action", this phenomenon has improved significantly. It reduced waste and promoted the development of sustainable agriculture in the final link of food consumption. The study of faculties and students of China Agricultural University in all links of food production and circulation will put forward new ideas for the elimination of social inequalities and promoting sustainable agricultural development.

SESSION 2-2

Ms. Megumi Oikawa
Tokyo University of Agriculture
Increasing rice demand by introducing function of the rice for Japanese Agriculture

Mr. Rubén Zárate Reyes
Universidad Autónoma Chapingo
Sustainable Agriculture, Creation of Family Orchards as an Alternative to Generate Food Security in Mexican Communities

Mr. Julian Villafuerte Diaz
The University of British Columbia
The Agronomy Garden: Inviting the Campus Community to the UBC Food System

Increasing rice demand by promoting the benefits of rice for Japanese Agriculture

Megumi Oikawa
Tokyo University of Agriculture

Japan is currently facing a decline in its agriculture. There are two reasons for that. First, the decrease and aging of the farmer population. Second, the imbalance between demand and supply about grain caused by changes in food preference of the Japanese. The number of farmers who produce rice still accounts a large part of the total population of farmers. Due to Japan's lands being suitable for growing rice, Japanese have been eating rice as staple food since ancient times. However, now the Japanese population is consuming much more wheat, due to its easiness to prepare and versatility. Additionally, other grains besides wheat, like soybean or corn, are being imported to be used as feed for raising crop and livestock. Thus, the amount of rice consumption and production decreased around 40% when compared to before the World War II.

Promoting the benefits of the rice to Japanese or people from other countries will be helpful for the food and agriculture field in the world. Second, the introduction of these new functions of rice in the International Students Summit may allow the exchange of ideas and how these problems may be solved. This is especially of great importance in accordance with this year's theme, which can be connected with 'food preference' that constantly changes in Japan and how agriculture in other countries may adapt to such changes.

In response to this challenge, we have set as a goal in the "Student Taking Action" (STA) project, to increase rice demand; and the objective being adapting to new trends in eating habits while helping connecting producers (farmers side) and consumers (consumer side). In this project, we did a research through questionnaires surveys in order to understand the needs involved in the consumption of rice. Based on the results, we proceeded to making new food varieties with rice, and joining exchanges with elementary school students to encourage food education.

Due to the recent establishment of this activity, difficulties were lack of information and restrictions as a student. On the other hand, I could get help from International Student Form, ISF which I belong to. From recent observation, our ISF participants are motivated by the opportunity in looking at and learning agriculture from different perspectives, both locally and internationally or communicating with foreign students. Their advices and support ware quite helpful.

Though affiliating with the International Student Forum (ISF) and promoting our activities in on-campus events (such as the "Tokyo NODAI Harvest Festival"), there is hope to further expand and sustain this program in few months to come.

Sustainable Agriculture, Creation of Family Orchards as an Alternative to Generate Food Security in Mexican Communities.

Rubén Zárate Reyes

Chapingo Autonomus University

For us to consider agriculture as a sustainable production system, we must take into account economic, social and environmental variables that allow it to maintain itself without affecting available resources; In terms of food security, in the present paper I will mention access to food products, the availability of food for the people and the biological utilization and recycling of these proucts. In order to contribute to the solution of problems in food production, food security, conservation of the environment, energy and human health, the objectives of this research were: a) to describe the technique of the production system of family orchards in rural communities in Mexico to understand their functioning and to analyze their productive efficiency, as a viable alternative and greater access to healthy products; b) to determine the impact of the implementation of family orchards in terms of improving the food security of small farmers in rural communities in Mexico; c) to identify the challenges, as regards to equality in access to available resources, that families face when implementing family orchard in rural communities in Mexico. The method consisted in studying and identifying the system and the production process within the family orchards in the rural communities of Mexico. The method consisted in studying and identifying the system and the production process within family orchards in rural communities in Mexico, as well as interpreting the economic impact, food security, and access to available resources entailed by the implementation of orchards within Mexican family farms. It was concluded that fully developed family orchards represent a complete production system, since it is a direct, economic and sustainable means to self-supply Mexican families for rural communities with healthy food throughout the year, being this a key system as a form of organization within rural communities and more specifically within families, generating equality in access to quality food and making the most of the available resources found in rural areas, thereby achieving food sovereignty and sustainable development. Finally it is necessary to take into account climate change, since the climatological variables are increasingly unpredictable and we must be prepared to turn these climate changes to our advantage.

Keywords: sustainable agriculture, food security, family orchards production system, rural Mexican communities, agricultural production process, food sovereignty, sustainability.

The Agronomy Garden: Inviting the Campus Community to the UBC Food System

Julian Villafuerte-Diaz
The University of British Columbia

Born out of a movement to install a temporary community garden on Main Mall, a kilometre-long esplanade and central landscape element of UBC, the Agronomy Garden project is in its nascent stages of place and community-making at UBC around food. The campus food system at UBC is vibrant and diverse, yet engagement is limited to a specific cohort of students, faculty, and staff, and its spaces and associated communities are hidden and separated by distance. The Strategic Plan of the University of British Columbia, which mandates that the campus be treated as a "living laboratory" to test innovations in community, offers the unique opportunity to not only animate the spaces of the UBC Food System but to test model spaces and organisations that can break the barriers to engagement with the food system, generate internal cohesion, and expansions in participation and accessibility. The purpose of the Agronomy Garden is to serve as such a model project for enhancing the campus food system and community. As a garden employing a collaborative framework for care and responsibility among student organisations involved, it is also an experimental site for community building around food in the campus setting. The objectives of the garden are firstly to provide internal cohesion and identity to the existing network of campus food system actors, secondly to generate visibility and awareness for this unique social ecosystem, and thirdly to serve as a gateway to engagement in food at UBC for all who occupy the campus.

This paper will firstly detail the investigative process on my part of interviewing actors within the campus food system to understand what the barriers, challenges, motivations, and opportunities existed within this social network. Secondly, it will explore the collaborative process of generating a vision and plan for surmounting the barriers and fulfilling the objectives of the project. Thirdly, the project will be connected to the literature on food systems, community, and food justice in order to speculate what the social and environmental implications for this project may be from both theoretical and locally practical perspectives.

SESSION 3-1

Mr. Elson Junior Souza da Silva and Ms. Jéssy Anni Vilhena Senado
Universidade Federal Rural da Amazônia
Biofertilizers: an alternative for sustainable agriculture in the Amazon region

Ms. Hsuan Lu and Ms. Kuan Tzu Tseng
National Chung Hsing University
Waste cycling in campus: using black soldier fly to recycle food waste

Ms. Rantiya lad-ak (Bangkok)
Thammasart University
Thai Agriculture

Biofertilizers: an alternative for sustainable agriculture in the Amazon region

Elson Junior Souza da Silva; Jéssy Anni Vilhena Senado; Dênmora Gomes de Araujo; Gisele Barata da Silva; Telma Fátima Vieira Batista

Federal Rural University of Amazon

Agricultural production plays an strategic role in Amazon, since it has economic and food-growing importance, but also represents a great highlight in the cultural and social scenarios, specially when it comes to employment opportunities in the production process of agricultural species for human consumption. However, such theme still faces some challenges regarding the development of alternative methods capable of achieving sustainable productions, with quality and quantity, and yet with no harm to the natural resources. The use of chemicals in agriculture and the lack of information about other kinds of products causes the utilization of alternatives to be necessary. Contextually, the application of the *Trichoderma* fungus has become significant as a biological agent in agricultural species, presenting considerable answers to the development and protection of vegetables, and has also guaranteed the environmental preservation and food safety. Although it is a promising resource, it is still underpublicized and underused by local producers, and that is one of the limiting factors to a more sustainable production. Such issues considered, this study intends to guide small agricultural producers about the usage of *Trichoderma* fungi, emphasizing the agricultural species cultivation. Initially this university extension program had already taken place in four communities – two in the urban area and two in the rural area of Belém, state of Pará, Brazil – promoting workshops about the usage of the *Trichoderma* and other alternative biofertilizers. Each community was interviewed in an attempt to identify the main difficulties regarding a sustainable agricultural production. As a result, 75% of the communities still used chemicals in their fertilizing and plague control processes and did not use biological-origin products due to the lack of information on where to obtain them and how to use such items; only 25% had alternatives of biological defensives and merely 5% had any knowledge about the usage of biofertilizers like *Trichoderma*. Such findings evidence it is necessary to continue the extension program actions, focusing on their improvement and expansion, since they benefit society, economy and the environment of the Amazon region.

Waste cycling in campus: using black soldier fly to recycle food waste

Hsuan Lu, Kuan Tzu Tseng, Wen Yang Chuang and Tzu Ying Lin
National Chung Hsing University

In the world, 1.3 billion tons of food was not used properly every year. In Taiwan, approximately 2.75 million tons of food is wasted annually. As a student from entomology department, I have learned that we could use insects, for example black soldier fly (*Hermetia illucens)*, to decompose the organic waste materials. The insects can break down the organic substrates and return nutrients to the environment. Black soldier fly has been found to be a very good candidate for converting organic waste materials. Apart from this, black soldier fly could be utilized as valuable animal feed and plant growth was increased when the digested fertilizer was added to a clay soil. We used waste from student cafeteria to feed black soldier fly, hope to reach the following two goals. First, we used black soldier fly as one of the feedstuffs, to find out the effect of maggot meal added to experiment chicken diet for daily weight gain performance. Second, we expected that the food waste decomposed by black soldier fly can provide as free fertilizer for campus farm. We collected waste from Student cafeteria in daily. The six-days-old black soldier fly larvae were fed by waste until they become pre-pupa. Generally, first instar larvae takes 16-20 days to develop into pre-pupa. We collected pre-pupa and dried them in a 60℃ oven for two days. The dry pre-pupa was grinded into insect powder and fed to four-weeks-old Red-Feather Taiwan Country Chicken (the chicken diet contained 90.73% commercial chicken feed, 7.14% dry insect powder and 2.13% bran) for four weeks and the daily gain was weighted. The waste decomposed by black soldier fly was collected. We added them into peat soil as a fertilizer. Plug system seedling test was used for planting cabbage seedling. Germination rate and the development performance were tested. The effect of black soldier fly being meal for the chicken average daily gain, the result had no significance different between control group and treatment group. It means that we can replace a portion of chicken feed with black soldier fly pre-pupa and get same benefit of chicken weight. Plug system seedling test indicated that waste decomposed by black soldier fly could increase the germination rate but did not promote the growth performance of cabbage. In initially, the waste recycling in campus program is running in National Chung Hsing university, which help to solve the waste problem and produce chicken feed and fertilizer for campus using.

Thai Agriculture

Rantiya Iad-ak
Thammasat University

Thailand has a very abundant nature: forest, river, mountain, and varieties of agriculture products. They are enough for consuming both in our country and for exporting. Although Thailand is a local agriculture country, it is not a popular occupation. It is on original or primitive way. It looks like the way to decrease the cost of production. But in fact, Thai farmers can not encounter with high cost of living and lower prices of productions. The small farmers can not fight with a huge investor.

According to his Thai farming problem we have and honor great king to support, develop and solve Thai agriculture to be a great land of farming. King Bhumibol devotes oneself all his life to be a leader of nowadays Thai farmers adapted the way of living and prepare their life to the changing world with immunity.

SESSION 3-2

Ms. Claudia Alejandra Arrascue Vargas
National Agrarian University La Molina
Improved value chains for smallholders conserving biodiversity: working with Peruvian chili peppers

Mr. Kamarulridhzuan bin Razali
Universiti Putra Malaysia
Outreach Program: Adoption of Malaysia Good Agriculture Practice (MyGAP) among small-scale farmers toward better food quality

Ms. Asma Ali Adan
Djibouti University
Agriculture in Djibouti and how to improve it

Improved value chains for smallholders conserving biodiversity: working with Peruvian chili peppers

Claudia Arrascue
La Molina National Agrarian University

The Western coast of South America, particularly the slopes of the Andes mountain range, is one of the regions with the highest biodiversity on Earth. This region was home to ancient civilizations and center of origin and domestication of important commercial crops, for example a few in the Solanaceae: potato, tomato and chilli peppers. Today, 90% of Peru´s farms have less than 10 hectares and it is these smallholders that contribute with more than 50% of the food consumed in the country. Peru´s economy has been growing in the last decades and this has contributed with a strong reduction in poverty, which is 3 times higher in rural than in urban areas. The conservation of agricultural diversity is done mainly by smallholders through on farm activities, and this requires support and conducive policies that provide incentives for rural families to keep practicing agriculture and to keep conserving biodiversity.

UNALM students are actively engaged in the Capsicum Project, that aims at improving our knowledge about the diversity of chilli peppers and supporting improved value chains, given the fact that Peru holds the world´s largest diversity of cultivated chilli peppers but only a few of them reach major national markets. Starting with a germplasm collection, research is being conducted with students from the Faculty of Agronomy and the Faculty of Food Technology, ranging from botanical and molecular characterization, to methods of organic production and development of processing techniques. It also involves working with smallholders through on farm trials, field days and other outreach activities, including establishing connections with processing companies. It is expected that improved value chains will provide incentives for the conservation of Capsicum genetic resources and greater commercial opportunities for smallholders.

Outreach Program: Adoption of Malaysia Good Agriculture Practice (MyGAP) among small-scale farmers toward better food quality

Kamarulridhzuan Bin Razali
Universiti Putra Malaysia

Conventional farming is traditional method in order to produce, to increase and to sustain food production which heavily dependent on the use of chemical fertilizers for supplying plants with nutrients and pesticides to combat pests and diseases. Many problems relating to this method have arisen, including pesticide residues on fresh produce, food contamination by chemicals in dairy and seafood products and uncontrolled use of additives in processed foods. Although GAP has been introduced to Malaysian farmers since Third National Agricultural Policy (NAP3), not many farmers adopt and practice GAP. In 2013, The Minister of Agriculture and Agro-based Industry has launched Malaysia Good Agricultural Practice (MyGAP) - a rebranding exercise of GAP for holistic organic certification for agricultural, aquaculture and livestock sector which emphasizes the environment, economy and social aspects to ensure products are organic and safe for consumption. Changing in life style and concerned about food they eat, Malaysian are demanding for quality and safe food to eat. Apart from helping to protect the environment, MyGAP also promotes the country's exports as it follows the international GAP certification scheme. Even though the scheme would benefit the farmers and the environment, as indicated earlier, its adoption rate remains low among Malaysian farmers due to reasons such as; land tenure, complicated certification processes, foreign workers' recruitment, poor marketing strategy, lack of training and extension services as well as governmental support. University Putra Malaysia (UPM), a leading agricultural university in research and development, has seen this as a good opportunity to increase awareness and to promote on safe and quality food and the benefits of MyGAP among local farmers in Malaysia. On December 2016, an outreach program that aims to nurture, promote and advise farmers to practice sustainable agriculture while implementing MyGAP has been successfully done in Segamat Kecil, Johor with collaboration between RISDA and UPM through an extension subject from the Faculty of Agriculture. In order to achieve its objective, various sustainable agricultural methods have been shown to the local farmers and focusing on production of organic plant booster, kitchen waste management and introduction to aquaponic system. At the end of this program, we believe that we could nurture local farmers to practice organic farming as the alternative to conventional farming, thus reducing the dependency on chemicals in their farm through MyGAP adoption in farm management. Hopefully this program not only create awareness about MyGAP but to encourage the farmers to apply for MyGAP certification and widen their market. Thus more organic, safe and quality food can be produced and consumed by the public.

Key word: MyGAP, environment, sustainable, extension, awareness, safe, quality

Agriculture in Djibouti and how to improve it

Asma Ali Adan
Djibouti University

The research focuses the area of agriculture and food production in Djibouti, in particular, evaluating and exploring those projects with students' involvement. Inequalities in access to resources and lack of technical agricultural knowledge lead to unequal exploitation of the agricultural sector in the world. The agriculture is getting harder to be developed in the Republic of Djibouti. What solutions could we propose to improve the agricultural sector of the Republic of Djibouti as students?

To explore the issue further and encircle investigate the source of this marginalization; we interviewed project leaders in Djibouti and also consulted with farmers to learn more about the difficulties they face in their respective activities.

The research which has been done shows that agriculture is extremely weak and entirely dependent on neighboring countries, especially Ethiopia and Somalia.
Production covers about 10% of national requirements for fruit and vegetables. So, the remaining 90 per cent is imported from neighboring countries (source: Directorate of Agriculture and Forestry). The results of the research indicate that low yields in agricultural production are affected by a large number of geographic and environmental factors; a high temperature of up to 40° C, a near absence of fresh water sources (Kornbluth, 2009), infiltration of seawater, lack of experience and technical equipment of the rural population and soil quality that makes agriculture very difficult to work in (Government Policy Reflection Seminar, available at http://www.presidence.dj/mem.html).

These challenges are discussed by both students and academics at the university in order to find solutions for a sustainable agriculture. Several projects have been realized or while other are in progress. Especially a project aimed at providing knowledge in the agricultural and fisheries sector to the rural population, mostly pastoral, is currently undertaken by the students of the university. Another project attempt to solve the water insufficiency by filtering the wastewater and use it for irrigation in the agriculture sector.

This research will provide solutions to promote sustainable agriculture in the Republic of Djibouti and address the role of students in this promotion and recommend that students must be more involved and encouraged to extend and sustain in projects in the country.

SESSION 4-1

Ms. Nutwara Chansakul
Chulalongkorn University
Sustainable Agriculture in Nan province, Thailand : Participatory approach

Mr. Bugra Yilmazel and Mrs. Celina Philipps
University of Applied Science Weihenstephan - Triesdorf
„OptiKuh“ - scientific based program to optimize sustainable dairy husbandry production in Germany

Ms. Um Sokheang
Royal University of Agriculture
Study on Economic Threshold of Armyworm (Spodoptera exigua) on Chinese Kale (Brassica oleracea var.alboglabra) In Net-house, Cambodia

Ms. Hyun Ji Kim
Kangwon National University
Effect of Water Hardness of starting water on the Production and its Antimicrobial Efficacy of Slightly Acidic Electrolyzed Water

Sustainable Agriculture in Nan province, Thailand: Participatory approach

Nutwara Chansakul, Tawatchai Tipoud, Thinnawat Sritadjanta,
Youdying Pronchiyasit, Chaiyakorn Khamngoen, Jutiporn Kaewhom,
Chuchai Tahor, Kiattisak Duangmal and Winai Kaewlamun
Chulalongkorn University

Thailand's agricultural sector and farmers have been facing so many problems concerning unsustainable agricultural practices such as environmental deterioration, farmers' debts, lower farm productivity and career instability that lead to migration and abandon of farmland.These problems have contributed to various economic and social inequalities among Thai people since most farmers are living in rural area. From these problems, a group of students from School of Agricultural Resources, Chulalongkorn University (CUSAR) were interested to work with the community and apply a Royal Philosophy of Sufficiency Economy (PSE) developed by the Late King Bhumibhol Adulyadej of Thailand. This is a philosophy based on the fundamental principle of Thai culture and a method of development built on moderation and social immunity that require knowledge and virtue as guidelines in living.This project was conducted in Baan Muang Lhuang community in Nan province with an aim to promote sustainable agriculture in Thai farmers.The total number of 144 farmers have been screen and interviewed in order to understand the actual problems in the community as well as to collect the household data and information. After the interview, 4 farmers, who are interested in integrated farming and wish to change themselves were selected to participate in this project. The selected farmers were to take a field visit to another community that has successfully adopted the PSE to their farms and ways of living. This activity helps to build inspiration for the four selected farmers to change their way of farming and subsistence farming. We helped guiding the farmers of how to manage their land, design their own integrated farming, improve their farming practice and household accounting skill. Also, we worked in coordination with government's department to provide inputs and resources such as animal breed. Every activity conducted in this project, we have focused on the participation of farmers because they are owner, caretaker and harvester. When the community project finished, the farmers seem to be more open to the new knowledge and support from government. They are now able to design and implement their integrated farming by using a principle they learned from the PSE and build a group to developing them together. However, an important lesson that we have learned from this project was that we need to understand the a true sustainable development should start from the mind of people.

„OptiKuh“ - scientific based program to optimize sustainable dairy husbandry production in Germany

Bugra Yilmazel and Celina Philipps
University of Applied Science Weihenstephan Triesdorf

During the last years the reputation of agriculture has changed. Society doesn't consider agriculture only as the basis of our nutrition anymore but additionally as a climate change supporter. Students of the University of Applied Science Weihenstephan-Triesdorf facing this problem and trying to find ways for a solution with our currently practiced agriculture.

One of the major CO2 producer is dairy husbandry. Therefore students were taking care, about possibilities to improve the situation. A high number of agricultural science students are the former managers of their existing family farms. As a manager the demand is to be able to conduct farming efficiently in terms of economic and environmental issues. Managing dairy business goes along with a lot of aspects that need to be taken into account.

To answer these questions a computer based model is developed. It is called "OptiKuh" which stands for "optimal cow husbandry". To fulfill the task the research is divided into single modules such as animal nutrition, methane emissions and breeding methods. The project is supported by 15 project partners from universities, research institutes and from dairy industry. It started in September 2014 and ends in December 2017.

In Triesdorf students take care for the question of feed intensity.

To measure the feed intake weighing through are used. The dairy herd at Triesdorf, breed Simmenthaler, is divided into two different groups for the research. In each group are approximately 30 cows. Cows of both groups receive a ration with 6.5 MJ NEL/kg dry matter in the roughage food component, while the amount of ECM is differentiated. One group gets 150 g/ kg ECM and the other one 250 g/ kg ECM concentrates.

The performance is measured by the daily milk production per cow, blood tests, urine tests, rumen-pH, weight survey and body condition score.

The target is to survey if the value of the reduced amount of food stuff is higher or equal to the value of the reduced milk production. Additional to this optimization other important issues concerning dairy health, environmental issues and fertility indicators are researched and assessed. First trends show that there is a correlation between milk production and feed intake of concentrates.

Finally the "OptiKuh" research project tries to improve the sustainability, efficiency and profitability of dairy husbandry by working together with other universities and institutes.

Study on Economic Threshold of Armyworm (*Spodoptera exigua*) on Chinese Kale (*Brassica oleracea* var.*alboglabra)* In Net-house, Cambodia

S. Um, K. Khun, S. Mao, and N. Theavy
Royal University of Agriculture

An insecticide is a substance used to kill insects. It includes ovicides and larvicides, used against eggs and larvae, respectively. Insecticides are claimed to increase crop productivity in the 20th century. However, almost all insecticides have negative impact on agro-ecosystem, human's health and accumulate the toxic along the food chain. The mode of action describes how the pesticides kill or inactivates a pest. It provides another way of classifying insecticides. Early in spring, larvae resume feeding at night, usually on grasses and small grains. First generation adults appear in May or June depending upon climatic condition. Armyworm's adults lay from 2000-2600 eggs, at night on the lower leaves surface of the host, but deposit in many tight clusters of several hundred eggs covered with a protective layer of abdominal brittles. Up to 12 generations per year. Armyworm is the major insect pest which attack to Brassicaceae plants and other crops worldwide. One armyworm per Chinese kale can reduce the potential yield. The experiment is in net-house which was carried out during the dry season from January, 2017 to June, 2017 at Royal University of Agriculture, Cambodia. The trial was conducted on a land size of 92.80 meter squares. Experiment was designed in a Randomize Complete Block Design which has five treatments with ten replicates.

The size of each plot was 1m x 1m with 12 plants per plot and 0.5 m separate each plot. The five treatments were: Treatment 1st (T_0): Control, Treatment 2nd (T_1): 0.5 of Armyworm /plant, Treatment 3th (T_2): 1 of Armyworm /plant, Treatment 4th (T_3): 1.5 of Armyworm /plant and Treatment 5th (T_4): 2 of Armyworm /plant. Two types of sampling were collected: Armyworm sampling (Count) and crop sampling (randomize 6 plants per plot). The result shown that in the four treatments of armyworm inoculation was completely damaged except control treatment. The reason of this is that the temperature and food suitable for them to grow. That's why leaf damage area of different amounts of armyworm treatment no different in harvest time. In conclusion, armyworm's just 0.5/plant can affect the yield and yield component of Chinese kale, thus farmer should start their control application.

Effect of Water Hardness of starting water on the Production and its Antimicrobial Efficacy of Slightly Acidic Electrolyzed Water

Hyunji Kim

Kangwon National University

Recent studies have highlighted that slightly acidic electrolyzed water (SAEW) is a potential substitute to replacement for traditional chlorine treatment. SAEW with a pH value of 5.0–6.5 is a as a potent sanitizer, which is produced by mixing hydrochloric acid (HCl) along with tap water through an electrolytic cell without membrane. The use of HCl with low less water hardness water may result in low chlorine concentration, thus, it is necessary to optimize the production process by combining HCl with halite salts (e.g. sodium chloride (NaCl) or potassium chloride (KCl). Only few reports have been published that the characteristics of electrolyzed water and its bactericidal activity may differ due to the water hardness of the starting water (Pangloli and Hung, 2013; Forghani et al., 2015). When the water source has high levels of water hardness, it has the strong probability to contain efficient minerals (chemical elements), such as sodium (Na^{+}), magnesium (Mg^{+2}), calcium (Ca^{+2}), and potassium (K^{+}). The following minerals lead to a higher pH and result in proper SAEW despite of the strict pH (5.0-6.5), necessary for SAEW (Forghani et al, 2015).

The objective of this proposed study was to compare the levels of hardness and physicochemical properties (e.g. pH, ACC, ORP) of EW produced from different starting water (tap water and underground water), and further to investigate the antimicrobial efficacy in vitro on the effect of different for the available chlorine concentrations (ACC) (20, 40, 60 ppm) with , different dipping times (1, 3, 5, 10 min), and different pH (5.0 – 6.5) in towards inactivation of four vegetative and one spore producing foodborne pathogens inactivating foodborne pathogens: *Escherichia coli O157:H7*, *Staphylococcus aureus*, *Sallmonella spp.*, *Bacillus cereus* vegetative cells, and *Bacillus cereus* spores. Moreover, approaches for the optimization of SAEW production process to obtain high ACC value was examined by inserting different types of electrolytes.

The results indicated that different kinds of water have different water hardness. The hardness of TW having water hardness of 29 ppm, which has more potential to produce better SAEW than UGW of 12 ppm. Likewise Low low water hardness can be have reinforced achieved by adding the combination of hydrochloric acid with salts (e.g. NaCl, KCl). Also, electrolyte flow rate is another crucial factor affecting the SAEW properties. The optimization optimized of SAEW production system was mostly found at 4 – 6 % HCl with 1.0 – 3.0 M NaCl or KCl at with electrolyte flow rate of 1.00 – 2.00 mL/min, especially the notable SAEW (pH 5.66) with 67 ppm was manufactured using the following condition with using tap water at: the combination of 4 % HCl with 3.0 M KCl at with electrolyte flow rate of 2.00 mL/min. Regardless of Based on the SAEW concentrations (20, 40, 50 ppm), *E. coli, S. aureus, Salmonella spp.,* and *B. cereus* vegetative cells were completely*can be applied for inactivation* inactivated in vitro within 1 min of dipping time but. *B. cereus* spores were highly resistant to SAEW of even at high ACC (60 ppm) and still remained approximately there in no change in initial log value (6.24 log CFU/mL) remained same even after 10 min. Based on the results The longer the treatment (dipping time) is, the more the bacterial reductions occur. Simultaneously the effect of different pH towards inactivation of foodborne pathogens was increased in the following sequence: pH 5.5 > pH 6.0 > pH 6.5 > pH 5.0. The new results provide the foundation further hence it helps in development of further advances of commercial application of SAEW producing process in the food industry.

SESSION 4-2

Ms. Uyanga Erdenechuluun
Mongolian University of Life Sciences
Students taking to action to address inequality through greater access to resources and knowledge in order to promote sustainable agriculture

Ms. QQ Wima Akalentera
University of Muhammadiyah Malang
Green Technology in Tofu Production

Ms. Tong Thi Hang and Ms. Tran Thi Mai Phuong
Vietnam National University of Agriculture
Guiding households to compost organic waste in cartons using biotics to make organic fertilizer

Students taking to action to address inequality through greater access to resources and knowledge in order to promote sustainable agriculture

Uyanga Erdenechuluun
Mongolian University of Life

Nowadays, every countries of the world trying their bests to touch the peak of development. For the peak of that development, for saving time and economy they are usually concentrating on development of technologies. Especially, technologies of gadgets, industries and mining.

Unfortunately, those technology developments are destroying our mother nature gradually. Human are creating factitous and have genetic changed nature for our environment, instead of this destroyed pure nature. People are changing friuts, vegetables and plants genetics for grow it faster than before and for economic benefits. However, those genetically changed fruits, vegetables, plants and meat products are showing bad effects on our body. Those non-organic products are casue of aome cancers and sicks.

I think that mining technologies are heading those technology developments. They developed till it's peak and mining very quick earth minirals before calculate it's waste for our nature, surroundings, animal and human, too. Whether, after those minings we did reclamination very well for that nature, we cannot complete again its natural equality and ground water resourse. Water and air are the most important things for all animals and plants. Whether mining will not change that much air quality, it destroys ground water resource. If there is no water, no animal will live there. Therefore, it become the reason of some species of animal, plants are destroying, and land's are getting dry and like desert.

Human lost their mind for money. Now we are blind and cannot see to the future. Why are we getting crazy for additional usage and use more things than the other use. For human happy life, we just need pure air, pure water, pure meal, warm home and electricity. That is it. We can take those pure producst from our mother nature, and get heat and electricity from the sun, water and wind. We developed technologies enough to use the sun, water and wind energy for our electricity and heat.

However, if we develop our agriculture like we developed those technologies. Peolpe can get rich wich they want and it has not any bad effects for our mother nature. Agriculture is limitless resource. We need to develop technologies for agriculture more and more.

For my mother country, Mongolia has rich resource of mining and agriculture. However, government supports mining more than agriculture. Result of that, Mongolia had just destroyed nature and, dryed lands and rivers. From the beggining, Mongolians was herding livestocks. Livestocks were the base of Mongolian economic. Mongolians believed that mining would encourage Mongolian economy more than agriculture. Result of that, we left with just destroyed nature, dryed land and lake, and no land to herd our livestocks. So, with fault of Mongolian mining, Mongolian agriculture faced to fault too. Therefore, Mongolia is big example of unsustainable agriculture.

In my future, I am planning to work against make this kind of mistake in my country and other countries too. I am very glad for participating this international student's summit for sustainable agriculture. I hope that we students who are participating this summit are leader students of their country and precent about their own countries sustainable agriculture very well to other countries students. I think that summit's purpose is share our mind and knowledge about sustainable agriculture development to each other and, meet international students and cowork for this sustainable agriculture development in future.

Green Technology in Tofu Production

Qq Wima Akalentera

University of Muhammadiyah Malang

The aims of this paper is to promote sustainable agriculture in food and farm industry by reducing tofu waste and turn it into animal feed, compost, and biogas. Tofu is one of the most popular food in the world especially in Indonesia. In 2014, there are more than 84.000 business unit of tofu industries in Indonesia. Tofu is made from soybean. It is made by coagulating soy milk into curds and pressing it into a solid white block. Tofu is an excellent sources of protein and other micronutrients. In the tofu making process will produced 2 types of waste such as solid and liquid waste. The tofu waste will cause some serious pollution such as water, air, and soil pollution. In order to reduce pollution that come from tofu waste and to promote sustainable agriculture in food and farm industry the writer has observed, did mini project in "Kube" home based tofu production in Temas, Kota Batu. East Java, Indonesia and synthesize some research. Animal feed which made from solid waste contains organic substances such as protein, carbohydrate, fat, and ash will increase the animal's weight. Beside that, cow manure is also an excellent compost because cow manure contains three main plant nutrients such as nitrogen, phosphorus, and potassium. There are roughly 11% nitrogen, 4% phosphorus, and 10% potassium in fresh cow manure, by using cow manure as compost in soybean corps will boost their growth and it will also helps to keep the soil moist during the growing season . Whereas, the tofu liquid waste as a water pollution might be processed into biogas which has potential to be an alternative fuel even the waste could not directly use as a biogas because contains high nitrogen. This will exemplify the way to reduce, reuse, or recycle the tofu waste into environmentally friendly product for many other factories. Moreover, this will eventually be useful for the future research specifically on the treatment of the tofu waste.

Keyword: tofu, sustainable agriculture, environmentally friendly product

Guiding households to compost organic waste in cartons using biotics to make organic fertilizer

Vu Anh Phuong – Tong Thi Hang

Vietnam National University of Agriculture

Nowadays, Vietnam has faced great challenges in organic waste management. These environmental issues include not only the collection, transfer, and final disposal of waste, but also a lack of public awareness of the organic waste system, the introduction of environmentally unfriendly materials, and changing consumer consumption patterns. To be specific, Vietnam is producing more than 15 million tons of waste each year and this volume is expected to grow rapidly over the next decade, according to Mr. Tran Hong Ha, the Minister of Natural Resources and Environment.

Increasing waste generation due to rising population and waste generation rate is becoming a challenge for not only the Government but also students to take action for better organic waste management. Understanding that situation, a group of students named True Action Club from the Vietnam National University of Agriculture launched a project named **"Guiding households to compost organic waste in cartons by using biotics to make organic fertilizer"**. This project aims at training households in making organic fertilizer from organic waste in cartons by using biotics and gradually replacing chemical fertilizer with environment-friendly organic one, which contributes to enhance Vietnam households' awareness of environmental problems. Initially, the project was conducted in Vietnam National University of Agriculture (VNUA) from January to March 2015.

This paper aims at (i) presenting the method of making organic fertilizer using organic waste, (ii) the six main steps to make organic fertilizer from organic waste, (iii) its impacts both inside and outside Vietnam, and (iv) the orientations of the project's development and sustainability in the future.

The data and information in this paper are provided by the students directly involved in the project and the people benefited from the project. Accordingly, the shortcomings have been identified and a strategic action plan for the short and long term is suggested.

POSTER SESSION

Eugennie Chai
Universiti Putra Malaysia
Student Taking Action in Promoting Dairy Industry in Malaysia

Winnie Kwan
University of British Columbia
Project Food Recovery: The Implementation of an On-Campus Food Recovery Program at the University of British Columbia

Yen Ting Chen and Ying Chi Chen
Tokyo University of Agriculture
Address the jelly ear cultivation without environmental load - A case of jelly ear cultivation in Chiayi County, Taiwan -

Chia Cheng Chu
Tokyo University of Agriculture
Development of SSR marker for identification of high quality Yam variety

Po Hsuan Lin
Tokyo University of Agriculture
Applications of fruit-isolated yeasts for their postharvest biocontrol abilities against gray mold disease of strawberry

Student Taking Action in Promoting Dairy Industry in Malaysia

Eugennie Chai
Universiti Putra Malaysia

The Malaysian dairy farming has been around since 100 years ago and the industry is mostly run by family owned farm which is passed from generation to generation as a small scale farm. However, today one can see a few big and modern dairy farms in Malaysia producing quality fresh milk and other value added product. Nevertheless, increasing in demand for dairy products in Malaysia has driven the government to take initiative in making changes to improve the dairy industry in order to ensure enough supply of fresh milk for domestic consumption. The current self-sufficiency rate for milk in Malaysia is about 5% (LME). Therefore, the government through the Eleventh Malaysia Plan, 2016 - 2020 are focusing on increasing fresh milk production by boosting productivity of domestic dairy fresh milk through large-scale commercial farming and value-added activities and processing. Although the fresh milk production in Malaysia has increased from 67 million liters in 2010 to 76.04 million liters in 2016, it is not sufficient enough to cater for the LME demand of milk. Thus, almost 95% of milk and milk products LME have to be imported to fulfill domestic demand especially from Australia and New Zealand . (Malaysian-German Chamber of Commerce and Industry, 2015). The demand for dairy products continues to increase due to the rising awareness of the nutritional benefits of milk and dairy products. Thus with this awareness, students from Animal Science Club (AnSci), Faculty of Agriculture, Universiti Putra Malaysia organized a Dairy Day, a campaign aim to promote the dairy industry especially the awareness of drinking milk to school children's, universities students and local community. The students have worked closely with Farm Fresh Malaysia Sdn. Bhd., a local modern dairy farm company to help in promoting the benefit of drinking fresh milk from domestic resources rather than the reconstituted fresh milk that are normally being imported. Exchange and sharing knowledge among small scale dairy farmers, students, lecturers and community being carried out in order to promote the development of local dairy industry. The campaign not only to increase awareness of the health and nutritional benefits of drinking milk fresh milk but also the availability of fresh milk available from local dairy farm. Once the consumers are aware the availability of local fresh milk, this will create demand for local fresh milk and thus this campaign will also enhance the development of smallholder's dairy farm in the country.

Keywords: Dairy industry, fresh milk, Malaysia, campaign, Animal Science students

Project Food Recovery: The Implementation of an On-Campus Food Recovery Program at the University of British Columbia

Winnie Kwan
University of British Columbia

Annually, one third of the food grown globally is wasted. At the same time, 39% of Canadian post secondary students are food insecure compared to the national average of 8.3% of Canadians. In a world facing increasing population growth, environmental degradation, and diminishing resources, avoidance of food waste stands out as an achievable measure towards balancing immediate human needs with long-term sustainability. As such, food recovery programs, initiatives that divert edible food from being thrown away through the repurposing or donation of that food, are being increasingly implemented in post-secondary campuses for their ability to reduce the amount of waste being produced, and help alleviate food insecurity amongst students.

The purpose of this project was to work with the largest food provider at the University of British Columbia (UBC) Vancouver campus, UBC Food Services (UBC FS) to implement UBC's first campus food recovery program. The primary objectives were to identify and quantify the types and amounts of recoverable food available at UBC FS outlets, identify ideal times and locations for pickup and storage of recovered food, and to establish a partnership between the on campus food bank, AMS Food Bank, and UBC FS which would result in regular donations of recovered food from UBC FS to AMS Food Bank.

Weekly waste logs detailing food sent to compost were collected from 18 UBC FS outlets and analyzed. Approximately 2100 servings of recoverable food were composted over the course of the week. Half of these servings were freezable (hot-served prepared foods, baked goods), while the other half was not and so could only be included in a donation program if they were collected and distributed before spoiling. Interviews with the managers of these same outlets and the UBC FS Executive Chef identified building off existing UBC FS delivery routes on Mondays and/or Fridays as the preferred pickup times and Totem Dining Hall as the preferred storage and pickup hub. Consultations with the UBC FS Executive Chef also identified that a waiver absolving UBC FS of any liabilities related to the food they donate to the AMS Food Bank needed to be signed in order for donations to happen. A waiver was prepared and signed by both parties, and AMS Food Bank now receives regular food donations from UBC FS.

It is hoped that this research will help inform the development of campus food recovery mobile applications, and provide a model for expanding recovery efforts to include other UBC FS and non-UBC FS outlets.

Address the jelly ear cultivation without environmental load
- A case of jelly ear cultivation in Chiayi County, Taiwan -

Yen Ting Chen and Ying Chi Chen
Tokyo University of Agriculture

These years, there are many problem of food security around the world. For example, reuse for cooking of the second-time oil, and change the expiration date illegally of food products, which make people pay attention to these issues. Customer take care that the agriculture product with or without using pesticides, or the agriculture product are organic or not. Certification which permit for producer is being important for customer to be trusted.

"Food security is the most important thing for Taiwan agricultural development, if the production is untrusted there will be no safe food products. The certification accepted by Japan GAP Foundation is able to ensure the right for customer and improve the level of agriculture production." County magistrates of Chiayi, Taiwan Said.

Breading Jelly ear

The production of jelly ear in Chiayi county is the largest amount of Taiwan, since temperature and humidity in zhougpu township is favored for cultivation. It is able to culture jelly ear every season because the controllable facilities of farmland. It is free to use pesticide for insects and pest since the farmland facilities are strict restrict from outside and its water and air are filtrated. The large amounts of market share of jelly ear are imported from China mainland, although there are still many jelly ear products are produced from farmland of Taiwan, since the price is much cheaper than the one produced from Taiwan.

Products of pesticide-less jelly ear

Fresh jelly ear is common to be seen in supermarket. it is able to make sure that the freshness and quality, if the breading jelly ear, which is large and thick, is harvested with sawdust and is packaged immediately.

Juice of jelly ear, which is produced from the high quality first harvested jelly ear and without using water, is full of collagen.

These days, people who eat outside will face many problem of gastrointestinal motility, jelly ear is good to improve it, which is considered to be an alternative for some medicines.

Powder of jelly ear is the easiest and effective way to be absorbed for human. Used Sawdust substrate becomes compost by fermentation with plant residues and fowl droppings for 1.5 -2 months. Field surveys conducted at the field using this fertilizer showed that soil hardness of the farmland using organic fertilizers was much softer than the one using chemical fertilizers. The result of biological survey by special machine showed that there were more microorganism in the field using organic fertilizers. And now effects of organic fertilizer (include sawdust substrate beds as one of the materials) application on growth, yield and quality of tomato and green soybean are being investigated in Setagaya, Tokyo.

Development of SSR marker for identification of high quality Yam variety

Chia Cheng Chu
Tokyo University of Agriculture

There are many issues caused by climate change recently, for instance, global warming, regional weather instability and unequal distribution of precipitation, which make a great impact on agriculture.

Yam, the crop distributed worldwide is one of staple foods. There are many species and varieties both in Japan and Taiwan. However, there are still unknown for their resistance of climate change and improvements for cultivation, and there are some yam varieties that cannot differentiate by their leaves appearances. In this regard, it is easy and efficient to identify superior yam by using SSR region of DNA sequences, and also able to select resistant variety to climate change. Recently, there is a few SSR markers that is able to use for yam identification, so we need to design SSR markers first, and by using these selected markers for identification of yam with desire genotype of resistance.

Applications of fruit-isolated yeasts for their postharvest biocontrol abilities against gray mold disease of strawberry

Po Hsuan Lin
Tokyo University of Agriculture

Biological control with microbial antagonists has emerged as a promising alternative to synthetic pesticides with a low environmental impact. Yeast strains belonging to the genus *Candida, Pichia, Rhodotorula* etc. isolated from different fruit sources, were tested as biological control agents (BCAs) against the post-harvest pathogenic mold *botrytis cinerea*. Tested strains demonstrated antifungal activity at different levels depending on species, *Candida parapsilosis* strain 0432 and *C. sake* strain 1300 caused 58% inhibition on mycelium growth of *B. cinerea in vitro.* The production of volatile organic compounds (VOCs) performed an inhibitory effect will be conducted by a dual culture method. The antagonistic mechanism such as producing lytic enzymes, antibiotics, and competition for nutrients will be studied. Our study will evaluate and optimize antagonistic yeasts as BCAs and the application will provide another way for promoting sustainable agriculture.

MATERIALS

Tokyo Declaration

International Students Summit Action Plan

Establishment of the International Students Forum

Establishing Global Network for Environment, Food and Agriculture

Mission Statement of International Students Forum (ISF)

Organizing Committees

Sponcors

TOKYO DECLARATION

International Students Summit on Food, Agriculture and Environment
Date: November 19 – 20, 2001
Venue: Tokyo University of Agriculture, Tokyo, Japan

In commemoration of 110th Anniversary of the Founding of Tokyo University of Agriculture, an International Students Summit on Food, Agriculture and Environment in the New Century is held. Students from twelve countries and area in the world participated and discussed about present conditions and future issues on food, agriculture and environment. With this opportunity, we air our opinions and views raised in this Summit documented in this Tokyo Declaration, which we propose to the world.

1. Agriculture carries an important role of producing food for mankind to live. With the remarkable population increase since the 1950s, food production has been greatly increased through the Green Revolution, but negative effects to the environment and health occurred due to the intensive use of chemical fertilizers and agricultural pesticides. For now and the coming years, global food production increase and poverty alleviation are vital and agriculture plays an important role. "Therefore, we aim at sustainable development in the New Century through the recognition of the value of agriculture as a life industry, and the respect of the unique ecosystem and wisdom of each region. Through the collaboration between traditional agriculture knowledge and wisdom, and modern science and technology, we endeavor to develop environment-friendly technologies and production systems. Eventually, we hope to develop and promote a new form of organic agriculture which will meet social, economic and environmental requirements."

2. Based on science and technology development, various new technologies are being developed and spread in the agricultural field. Among them, biotechnology, especially Genetically Modified Organisms (GMO) is considered the mainstream technology. Consumers also have strong concerns regarding GM crops and foods. "Therefore, we recognize the potentials of biotechnology including GMO based on judgment with right knowledge. At the same time, we, as agricultural students, need to study and research more about the safety of biotechnology especially GMO in relation to human health and environment, and we have a role of disseminating result-related information to consumers."

3. In each region, history gave birth to food culture and molded people. By definition, food should be consistently safe from production to consumption. "Therefore, we create a new system wherein we can continuously be supplied and be able to consume safe foods. Each actor in the system, based on the social infrastructure provided and improved by the government, should consider the importance of safety issues such as pesticide residues at the production level, and post harvest and food additive usage problems at the processing and distribution levels. At the same time, we, as consumers, must think better of healthy regional food culture and are urged to cooperate and understand the added costs for commodities that are produced in a safe and environmentally friendly way."

4. Nowadays, although trade liberalization is progressing under the WTO system, all countries and areas do not have access to fair food distribution because economic infrastructure and social infrastructure gaps still exist. "Therefore, we promote Regional Self-sufficiency mainly for staple foods by making use of the unique ecosystems and regional individuality from the local point of view. Then, in the global point of view, food self-sufficiency in the whole of Asia can be achieved if food self-sufficiency is promoted in each area."

5. In the years to come, we, the students have a huge role to play. More international cooperation is encouraged through human resource exchange and sharing knowledge to overcome barriers such as academic disciplines and geographic borders. "Therefore, we, as the core group consisting of students from thirteen (13) countries and areas, aim to create an International Students Network. Also, we share a new and same value, wherein we need to create a new social system where an environmentally benefiting and safe food production, distribution, processing and consumption exist."

In realization of this *Tokyo Declaration*, we take an oath to make an *International Students Summit Action Plan* for each country and area.

November 20, 2001
Tokyo

International Students Summit Action Plan

In line with the Tokyo Declaration adopted during the 1st International Students Summit organized by the Tokyo University of Agriculture held last November 19-20, 2001, the action plan has been drawn up in this 2nd International Students Summit. As part of the future generation, we students commit ourselves to the following actions.

General Actions

- ✧ We shall study issues of food, agriculture and environment in holistic manners. We shall serve as a bridge between producers, consumers and professionals for the betterment of the society.
- ✧ We shall not limit ourselves to studying; we shall raise our own awareness and put our ideas into practice.
- ✧ We shall reconsider and emphasize the cultural aspect of agriculture.
- ✧ We shall appreciate and conserve our respective traditional technologies and institutions.

Specific Actions

Environmental Conservation

- ✧ We shall study and make public the roles and values of agriculture and environment, by participating in farm training and the like in rural areas.
- ✧ We shall conduct various campaigns and promotions of the present condition and prospects of agriculture and agricultural communities; and deepen consumers' understanding and interest on agriculture and environment.
- ✧ We shall vigorously promote environmentally friendly agriculture such as organic agriculture for establishing the system of stable supply of safe food.

Biotechnology

- ✧ We shall encourage unbiased research and undertaking. We shall publicize scientific information and research results about biotechnology.
- ✧ We shall vigilantly investigate food biotechnology such as GMO and inform the public about the results.

Food Safety

- ✧ We shall review our respective dietary life, conduct surveys and research on food from farm to table, and update the public about recent findings.
- ✧ We shall encourage strict labeling of food. We shall charge appropriate social responsibilities to any company found to have committed food safety violation.

Food Security

- ✧ We shall reduce food wastes. We shall avoid over consumption to conserve resources and promote health.
- ✧ We shall consume what is needed rather than what is demanded, on the basis of energy-saving local production and local consumption framework.
- ✧ We shall promote home production of food using any available space.

Students Network

- ✧ We shall establish the "International Students Forum," on food, agriculture and environment.
- ✧ As a body, we shall actively lobby and take actions on relevant issues, and represent youth in national and international conferences.

The above action plan shall serve as the basis for the country or area level action plans to be made by students of the respective participating university. Thus, we urge the participating universities to make their respective action plan as soon as possible.

November 17, 2002
Tokyo, Japan

Establishing International Students Forum (ISF)

Agricultural science plays a vital role in solving the fundamental problems of human beings in relation to food, environment, human health, and natural resources and energy. Because food production anconsumption systems are closely related to the condition of the natural environment, the stage of economic development and food culture in each country and area, their patterns and problems reflect regional characteristics, requiring a multiple region-oriented approach.

Tokyo University of Agriculture organized the International Students Summit on Food, Agriculture and Environment in the New Century in 2001 and adopted the "Tokyo Declaration".

In line with the action plan adopted at the 2nd International Students Summit in 2002, we hereby agree to organize the International Students Forum (ISF), a students' network for the betterment of food, agriculture, and environment problems.

1. Objective

International Students Forum (ISF) promotes information exchange and discussion among the students of agricultural and other related sciences, in order to solve the problems common to human beings, such as environmental conservation, development of harmonious food production and establishment of food safety.

2. Organization

・ISF consists of Committees of International Students Forum set up in the participating universities.
・Members of the respective ISF Committees play an active part while in school and resign from ISF automatically at their graduation.
・Each ISF Committee decides the matters on the management respectively in each country and area.

3. Role

・ISF Members constantly make effort toward solutions of the problems common to human beings such as world environmental conservation, promotion of sustainable food production and establishment of food safety.
・ISF Members exchange information and opinions via the Internet. (Internet International Conference)
・Representatives of ISF committees in the respective universities get together on a regular basis and hold an international conference to present the results of research and study. (International Students Summit, ISS)

4. Activities

・ISF Members play an active role as students for solutions of food, agriculture and environment problems.
・ISF Members work in accordance with the common theme agreed upon at the International Students Summit for the whole year.
・ISF Members are expected to present the results of the previous year's activity and decide on the common theme for the following year.

5. Participating Universities

○Universidade de São Paulo, Brazil
○China Agricultural University, China
○Tokyo University of Agriculture, Japan
○University Autonoma Chapingo, Mexico
○Wageningen University, Holland
○University of the Philippines Los Baños, Philippines
○Kasetsart University, Thailand
○Hanoi Agricultural University, Vietnam
○The University of British Columbia, Canada
○Bogor Agricultural University, Indonesia
○Kyungpook National University, Korea
○Mongolian State University of Agriculture, Mongolia
○The State Agriculture University of La Molina, Peru
○National Chung-Hsing University, Taiwan
○Michigan State University, USA

6. Secretariat

Secretariat of International Students Forum is set up at NODAI Center for International Programs, Tokyo University of Agriculture to take care of related administrative matters.

November 17, 2002
Tokyo, Japan

Establishing Global Network for Environment, Food and Agriculture (Global NEFA)

Since 2001, the International Students Summit (ISS) has been the venue for student discussions on relevant global issues on food, agriculture and environment. Due to the call for a students' network as documented in the adopted "Tokyo Declaration" and "Action Plan", the International Students Forum (ISF) was established in 2002. In total, there have been more than 400 student-participants from around the world. Most of us have already graduated and are now part of the working society. Using the knowledge and experience we gained in the ISS, we are now playing an active role in different fields in various countries. However, there have been limited opportunities to meet and exchange information among ourselves. Therefore, we have established the "Global Network for Environment, Food and Agriculture (Global NEFA)" as an alumni association of ISS/ISF.

Objective

Based on the adopted "Tokyo Declaration" and "Action Plan", the organization aims to contribute to the sustainable development of the international society.

Membership

Membership is initially open to all past ISF members or ISS participants who agree to the objectives of the organization. Other interested persons can join the organization through a recommendation of members.

Activities

- Manage the website and mailing list
- Provide information related to employment and graduate study opportunities for students
- Organize study meetings, symposiums, and similar activities
- Promote information exchange
- Hold annual general meeting

November 25, 2005
Tokyo, Japan

Mission Statement of International Students Forum (ISF)

ISF is an international network of students which encourages cooperation, discussion and research to aid in the sustainable development of food, agriculture and environment into the future. ISF allows students to use their knowledge and expertise in their field of study to promote collective action, which will result in the unity of our global food system and our environment.

We have recognized that in order to implement the objectives of the ISF within our respective countries and area, we must consider the following plans of action:

1. The ISF joint communiqué and mission statement must be translated into the language of the participants' countries of origin.
2. A clear explanation of the objectives and mission of ISF must be placed online.
3. A pamphlet including the objectives and mission statement of ISF should be circulated to the members of ISF, in the language of the participant's countries of origin.
4. A newsletter should be delivered regularly to past and present ISS participants. This newsletter would include updates from alumni and the ISF.

We have recognized that in order to improve the current structure of the ISS, the following ideas must be implemented:

1. Establish the ISF in each partner university.
2. Support of the ISS student presenters must be maintained, both through the partner universities and ISF-Japan.
3. Create new partnerships with universities, in order to represent population distribution around the world.
4. Promote ISS earlier in the school year, in order to generate a new participant base.

Through the implementation of these suggestions, we believe that the promotion of the sustainability of food, agriculture and environment will be improved.

November 30, 2007
International Students Summit
Tokyo University of Agriculture, Japan

The 17th International Students Summit on Food, Agriculture, and Environment in the New Century

Organizing Committees

National Chung Hsing University

President/Dr. Fuh-Sheng Shieu
Dr. Chang-Hsien Yang
Dr. Hui-Chih Hung
Dr. Mu-Min Chen
Dr. Wu-Chung Su
Dr. Chien Yu Lin
Dr. Su-Chin Chen
Dr. Bi-Chyn Han
Dr. Maw-Rong Lee
Dr. Gou-Jen Wang
Dr. Chuan-Mu Chen
Dr. Chi-Chung Chou
Dr. Yung-Kuan Chan
Dr. Frank Liang
Dr. Fuh-Jyh Jan
Dr. Huey-Ling Lin
Dr. I-Chun Pan
Dr. Yeng-Ming Chen
Dr. Shu-Jen Tuan
Dr. Kuo-I Chang
Dr. Yi-Chun Chen
Dr. Tzy-Ling Chen
Dr. P J Chang
Dr. Ming Yi Chou
Dr. J H Yen
Dr. Shaw-Yhi Hwang
Ms. M C Chen
Ms. Shu-Yuan Chang
Ms. S W Chang
Ms. K M Lin
Mr. L M Ken
Ms. Hsuan Lu
Mr. Chuan-Yen Hsiao
Ms. Min-Ting Chen

Tokyo University of Agriculture

President/Dr. Katsumi TAKANO
Dr. Kojiro Suzuki
Dr. Shigeru Hirano
Dr. Takashi Hirano
Dr. Schu Kawashima
Dr. Satoru Watanabe
Dr. Kenji Yokota
Dr. Shunichi Nakayama
Dr. Ken Iwatsuki
Dr. Kazuo Hattori
Dr. Masaaki Takyu
Dr. Takahiko Nakamura
Dr. Yoichi Kunii
Dr. Atsushi Sanada
Dr. Masaya Kikuchi
Dr. Katsumori Hatanaka
Dr. Kenta Wada
Dr. Mari Kobayashi
Dr. Akihito Endo
Dr. Kan-ichiro Matsumura
Dr. Jin Kakiuchi
Dr. Teruaki Irie
Dr. Hiroto Homma
Dr. Satoshi Suzuki
Dr. Yoichi Sakata
Dr. Takeshi Sasaki
Mr. Shinichi Iwai
Mr. Yuji Hosoya

Sponsors

We would like to express our gratitude for the support from the following institutions in realizing the 17th International Students Summit.

Ministry of Science and Technology, Taiwan, ROC
Ministry of Economic Affairs, Taiwan, ROC