

REPORT ACTIVITIES

of Prof. Elke Pawelzik

IN INDONESIA OCTOBER 15–16th, 2009
compiled by: Wahyu Supartono

Prof. Elke Pawelzik (GAFOON Coordinator at Georg-August University of Goettingen) made a scientific trip which was aimed to socialize GAFOON activities to some Indonesian universities and students. She gave speeches, lectures and dialog with faculty's members.

At Gadjah Mada University, Yogyakarta, Prof. Pawelzik was hosted by Faculty of Agricultural Technology. In Medan she was accompanied by Dr. Erika Pardede, Dean of faculty of Agricultural Technology – Nomensen Catholic University and in Banda Aceh she was invited by Dr. Ikhsan from University of Syiah Kuala.



In Yogyakarta Prof. Pawelzik met dean, vice deans and head of departments at faculty of Agricultural Technology – Gadjah Mada University. Results of the discussion, it will be organized such as a plan to organize the summer school on post-harvest technology at Gadjah Mada University, to increase the students exchange program or to send faculty staff to attend the postgraduate program, and to conduct collaborative research in the future.

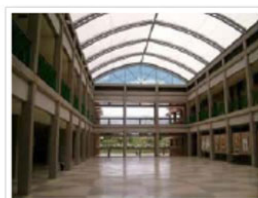
During her stay, she presented two speeches concerning food safety, food security and quality of agricultural products in front of under- and post graduate students. Dr. M. Affan Fajar Fallah and M. Prasetya Kurniawan, M.Sc. accompanied her in conducting her activities. In these two lectures, the students took huge of benefits in hearing the content and also during the discussion after the presentation. They were active and enthusiastic to ask questions that made the atmosphere was very conducive in transferring knowledge and experiences. The students had an opportunity to attend such as "international" lecture in their own faculty. It would encourage them to pursue in achieving more international experiences, which were very useful for the students in the future.

Prof. Pawelzik had also the opportunities to see agro-tourism place where most of snake fruits or Sallaca indica were planted and grown. Tropical fruits and vegetables were interesting theme for the next collaborative researches among GAFOON members especially from the same region. She ended her trip in Indonesia on October 16th, 2009.

INTERNATIONAL WORKSHOP

Modeling Post-Harvest Quality of High Value Crops in East Africa

May 15-22, 2010 Nairobi, Kenya



Objectives

1. The economic success of fruit and vegetable production is highly dependent on quality preservation in the post-harvest phase.
2. Understanding the processes affecting fruit and vegetable quality during storage is essential to predict produce quality.
3. Good prediction models based on scientific knowledge help to make optimal decisions regarding sale, storage and transport.
4. The workshop will create an understanding of the use of simulation modeling to predict the behavior of highly perishable fruits and vegetables.

The workshop will provide:

1. Lectures on post-harvest physiology and post-harvest handling
2. Lectures on modeling techniques and their use to describe plant physiological and plant pathological processes in the post-harvest phase
3. Exercises in modeling
4. Excursions to fruit and vegetable producers and processors
5. Case studies of post-harvest problems. Each participant prepares a post-harvest problem to be solved during the workshop
6. Group discussions on problems, approaches and solutions in post-harvest handling

The workshop is open to alumni of any German university from Africa and Asia who are involved in the subject area of post-harvest handling or processing of fruits and vegetables

Application forms can be found at:

<http://www.gem.uni-hannover.de>

Please return the completed application form to

nairobi.workshop@gem.uni-hannover.de

not later than March 10, 2010 including the following documents:

1. Curriculum vitae
2. A motivation letter, indicating why and in which way your attendance could accelerate progress in your country regarding the workshop subject
3. A sketch (1/2 page) of the case study to be presented (see overleaf)
4. A quotation for the expected travel expenses to/from Nairobi

The workshop is limited to 25 participants. Successful applicants will be informed by email. Conference language will be English. The workshop is funded by the DAAD. Costs for daily subsistence and health insurance will be fully covered. Expenses for travel to/from the conference venue will be refunded to 75% only.



NEWSLETTER
– February 2010

REPORT ON AUTUMN SCHOOL

Post-harvest Technology & Renewable Energy

GOETTINGEN NOVEMBER 1st– 12th, 2009

compiled by: Wahyu Supartono

The Autumn school is designed and conducted in the frame of GAFOON Activities, which is mainly organized by Goerg-August University Goettingen and is supported by Leibniz University of Hannover. This activity is also combined with two days visit to Agritechnica in Hannover.

The autumn school was officially opened by Prof. Wolfgang Luecke and Prof. Elke Pawelzik on November 2nd, 2009. Prof. Luecke serves at moment as Director of department of agricultural engineering and as Vice President of Georg-August-University Goettingen. He explained about the background of the autumn school, university program concerning internationalization program of Goettingen University, and also an overview of Agritechnica. Prof. Pawelzik explained the program details due to the study visits to some German institution and presentations of some experts and participants.

The first day was covered by the activity at department of agricultural engineering. The lecture on application of radio frequency and microwave in post-harvest technology gave deep insight about both equipments to extend shelf life and to maintain the quality of harvested agricultural products. This lecture was conducted by Dr. Dieter van Hoersten. Other technologies were introduced in this session, usage of radio frequency and microwave to control pest in grains; development of electronic nose; usage of RFID for traceability in grain; usage of wood chopper and thermal use of roof top areas. These technologies were demonstrated during the session.

The second day (November 3rd, 2009) was started by the lecture of Prof. Pawelzik, which explained about the problems of food safety and security. These themes were enriched with some on-going projects conducted by the institute of quality plants products. A presentation about tomato: infection by Phytophthora infestans and fruits antioxidants was done by A. Mohammed. After this presentation, the contribution of the participants was begun. Dr. Bakhiet explained about the agricultural residues as industrial energy sources in developing countries; Dr. Ahmed continued with sun drying to improve traditional drying method for onion; Dr. Elsayed contributed about the usage of sun drying for some crops in Sudan and Dr. Pardede presented edible coating for fruits.



The afternoon session was continued with the visit to the bio-energy village Juehnde, where some agricultural product or by-products were used as natural resources for heat and electricity. The energy center is supported by three components, bio-gas station, heat block and wood energy power station, and heat and electricity distribution system. The village becomes the energy self-producer for itself, although it can fulfill about 67% of annual energy need. Three aspects, namely ecology, economic and social welfare are considered in the establishing of this bio-energy village. The visit was continued to Carl-Friedrich Gauss tower, in which the history and background of the Gauss efforts a ancient time was explained.

The third day (November 4th, 2009) was an excursion day to visit the Energie Forschungszentrum Niedersachsen (EFZN) in Goslar and Clausthaler Umwelttechnik Institute (CUTEC). The EFZN has been established since January 2008 and consisted mainly of OFFIS (Institute for Informatics), University of Oldenburg, Leibniz University of Hannover, Technical University Carolo-Wilhelmina in Braunschweig, Technical University Clausthal and Georg-August University of Goettingen. Some german private companies join also into the EFZN.

The approach of EFZN in the energy world is competency and interdisciplinary. Due to the involvement of engineering science and natural science, as well as jurisprudence, social science and economics, the EFZN will probably contribute to the energy research and re-establishment of "the whole". Competent scientists will be working together applying different disciplines to combined projects and ensuring the multidisciplinary discussion accordingly. The multidisciplinary explained in such as a way leads to the process that changes the academic and disciplinary orientation of the science and becomes accordingly the real transdisciplinarity. Some assumptions of the EFZN concerning energy supply in the future are: a) increase of energy efficiency, b) prospective contribution of renewable energies, c) development of energy prices, and d) new ICT-systems for the energy supply.

The Clausthaler Institute for Environmental Technologies (CUTEC) specializes in developing innovative, environmentally oriented systems and processes, made ready for operation and compatible with in-line industrial processes. CUTEC develops practicable, affordable technologies utilizing current findings from basic research. CUTEC also conducts shared resources with Technical University Clausthal and other universities and research centers.

The focus of CUTEC is in the following aspects:

- a. recycling and waste management
- b. mobility management
- c. power and energy supply.

In the recycling and waste management, the intensifying material processing is one of primary interest of CUTEC. Mobility management will be playing decisive roles in processing technologies. The methods of fuel production, to produce for example sun-fuel or hydrogen are funding ways to make fuels compatible for use in low consumptive and high performance motors. The addition of energy management CUTEC conducts some activities in following areas:

- a. Waste and waste water management, soil protection
- b. Combustion, gasification, pyrolysis
- c. Fuel and power trains, emissions reduction.

The fourth day (November 5th, 2009) was conducted by visiting two plants which used agricultural products or wastes as their source of process. The first visit went to the composting plant in Goettingen. This place is designed to produce compost from the city, farmer or families wastes surrounding Goettingen. The process of composting takes in normally 40 days. These processes are conducted in certain trays that are running in batch stage, so that the microorganisms have time to ferment or to digest the bio-sources through anaerobic and aerobic conditions. After the fermentation, the compost will be un-loaded and sorted so that the compost becomes clean and free of

other inorganic materials. The compost is ready to be sold and to be used in the field.

Second location of the field trip was bio-gas plant in Hardeggen, Lower Saxony. This plant is designed to convert the biogas into natural gas. This natural gas is distributed to the household in region through the pipe-line system. At the moment in Germany there are around 40000 biogas plant which every of them produces 20-50 KW. The plant in Hardeggen is supported by the capacity of 60 tons of bio-sources as the input in the fermentation unit which is fed twice per day. This plant is managed by C4-Energie Ag and E-ON Mitte Waerme GmbH.

In the evening the president and vice-presidents of University of Goettingen invited the participants to attend the Reception of International Post-Doc-Scientist. In this semi informal meeting the president and the vice-president explained about the role of university in the future world, such as has function as trans-national university, educate global citizen and research for society. Next challenges for international university are establishing international networking and building inter-cultural competencies.

The fifth day (November 6th, 2009) was started by excursion to KWS Saat AG in Einbeck. This firm belongs to the high rank seed producers in the world, which has market share about 20%. The KWS group sold in 2007/2008 their products of the value about € 599 million. It operates in around 70 countries and has 2,800 employees in the KWS group. It represented in major markets with its own in selection and test sites, multiplication activities and seed processing facilities. During the visit, the KWS representatives presented the support of KWS into bio-energy through developing some crops as energy sources in the future.

At the afternoon the session was held at Institute of Plant Products – University of Goettingen and continued the alumni scientific contributions. Dr. Lianos-Ascencio started with the title of "Advance on GAP protocol components associated to traceability and information management production unit oriented to the international market", then Dr. Supartono contributed about "Implementation of Life Cycle Assessment (ISO 14040) on instant thiul production at PT. Sinar Sukses Sentosa". Dr. Chandra continued with "Biodiesel production from Crude Palm Oil (CPO) using immobilized lipase of *Pseudomonas cepacia*" and Dr. Susilo explained about "Kinetic Model of palm oil trans-esterification to biodiesel with ultrasound". Further Mr. Omokaro gave the presentation of "Fossil fuels versus renewable energy: the Nigerian experience", then Prof. Amarante talked about "Assessment of energy efficiency in industrial freezing equipment by using heat flux sensors", Dr. Gashaw closed this session with his contribution on "Jimma University towards sustainable development post-harvest technology and renewable energy source in Ethiopia".

The sixth day (November 7th, 2009) the participants were invited to see the farmer market in Goettingen. This is an old traditional market, where the farmers from surrounding Goettingen can sell their products direct to consumers at least one time in a week. At moment this market is displayed three times in a week. The farmers or producers are organized by city administration of Goettingen (Ordnungsamt). The farmers and producers are coming from radius 60 km from Goettingen. They have already common customers or buyers, who come regularly and buy in their stands. The communication among sellers, buyers and responsible persons are familiar and informal.

The products in the market vary from honey, fruits, vegetables, fishes, meats, mushroom and some ready to be consumed products, such as juices, soups, or other cheese products. The participants received the further information from the guide from city administration and also from the farmers.



The seventh day (November 8th, 2009) was filled by the presentations of the participants at Institute of Quality of Plant Products. Dr. Ortega started with her title "Metalic silos: a simple technology for small producers in Nicaragua", then Dr. Blume gave her contribution entitled "Post-harvest technology: using microorganisms and plant extracts to control post-harvest diseases and diseases transmitted by seeds". Dr. Suriyong gave contribution of "Limitation of moisture content from radio frequency treatment in seed pathogen elimination", then Dr. Thanapornponnpong explained about "Effect of radio frequency heat treatment on the post-harvest quality of rice" and Prof. Vearasilp closed this session with her contribution on "Using renewal anaergy from radio frequency heat treatment combined with conventional drying in green malt production".

The eighth day (November 9th, 2009) the participants went to Hannover to visit the Institute of Vegetables System Modelling at Leibniz University Hannover. The participants visited almost the important chamber and equipments for conducting researches in this institute. Well-equipped green houses with the plat treatments, growth chamber and other sophisticated laboratory equipments were shown to the participants. The advanced researches on vegetables and fruits were also reported during the visit of this institute. After the visit, Prof. Knoche gave his scientific presentation on "Fruit surface defects: the example of (st)rain cracking in sweet cherry (*Prunus avium*)". Dr. Mibus continued and closed this session with his contribution on "Factors influencing post-harvest life of ornamentals".

The ninth day (November 10th, 2009) all the participants went to the AGRITECHNICA fair and exhibition, which is claimed as the number one and biggest fair and show of agricultural engineering in the world. The participants had opportunities to see all the stands of the exhibitors in Hannover Messe areas, although all stands could not be visited in two days visit but their excellent impression was there. This day the participants were led by Dr. Boeckelmann to see the interesting stands concerning "renewable energy". Some stands such as Komptech, Ala-Talkkari, and Bio-energie were visited and the exhibitors explained about their products and their functions due to the renewable energy. Komptech produces the equipments and vehicles for preparing the raw materials from natural stuffs such as woods for bio-energy. Ala-Talkkari provided the heating system using the wood chips, and Bio-energie presented the model and implementation of biological raw materials for the heat and fuels in Germany. The participants visited also some German universities in the exhibition, which presented their researches on renewable energy.

The tenth day (November 11th, 2009) the participants visited the AGRITECHNICA and had the leader of Dr. Boeckelmann to see the stands presenting the drying technology. Super-tech presented the on-line and integrated measurement of grains in silos. These were automatic and connected to the GSM module and weather station. Getreidetechnik provided the information about the handling of grains and storage system. Then Weisshaar presented the cooling system for grains which were stored on the silos at lower temperature. DAMAS showed the technology for preparing good seeds for agriculture. RIELA convinced the participants about the technology of storage, preparing the raw materials for the heats and fuels, which are proposed as energy sources for the future. This day was ended by the informal farewell dinner in Goettingen and handed over the certificate for all participants by Prof. D. Elke Pawelzik and also supported by Prof. Dr. Wolfgang Luecke.