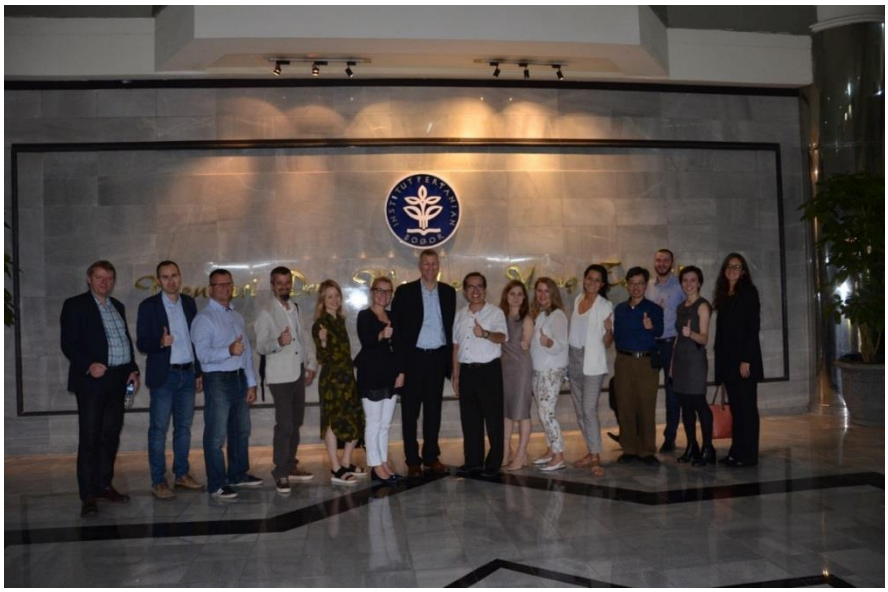
REPORT ON SPECIAL COURSE OF OIL PALM PRODUCTION

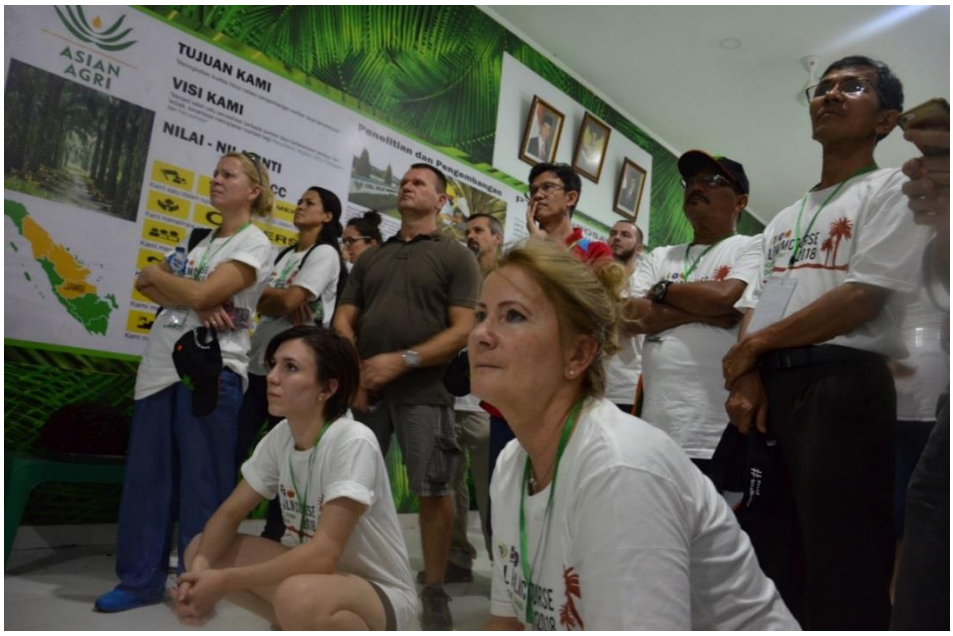
How our University (Szent Istvan University), Institute (Institute of Genetics, Microbiology and Biotechnology) could help to improve the sustainability and productivity of palm oil industry in Indonesia

Currently, Indonesia is the largest producer of palm oil in the world and one of the world's largest producer of oil-palm. Moreover, Indonesia takes seriously the negative campaign against the material, and considers it as a threat that harms the palm oil industry. As a result a special course was offered for us (Dr. Katalin Posta and Dr. Attila Percze) conveyed by the Embassy of the Republic of Indonesia in Hungary, a program designed and organized jointly by The Ministry of Foreign Affairs of Indonesia, Bogor Agricultural University, and Jambi University. Altogether there were 15 participants from 10 different countries mostly from Europe and 1 from Australia. The profession of the participants was sufficiently broad and diverse (from academic and business areas, publicist, press assistant, and so on).

By attending this course it was possible to learn the recent concept in palm oil production, and to have practical on-farm experiences to "get the feeling "of working and living in an inter-cultural, multilingual manner, and in a reflective and collaborative environment.
During the workshop we were introduced to the latest policies, facts and structure of palm oil industry, as well as gathering knowledge on research development. We also collected some knowledge about Good Agricultural Practices (GAP) in oil palm plantation, socio-economic aspects in oil palm industry, child labor and gender issues in oil palm farming.

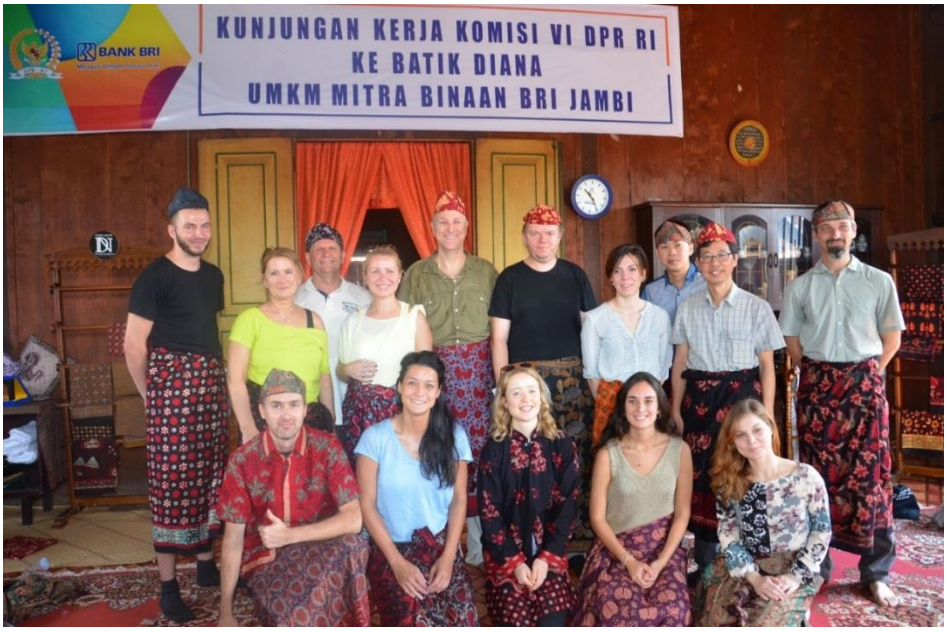


Foreign participants of oil palm course from 11 countries at Bogor University



Visit to Asian Agri Group, listening to the presentation

During our stay we had the opportunity to study various local cultural arts, such as Old Malay culture and anthropological aspects of the Anak Dalam tribe giving unforgettable experiences. Furthermore, we also visited a batik factory to gather social cultural insights.

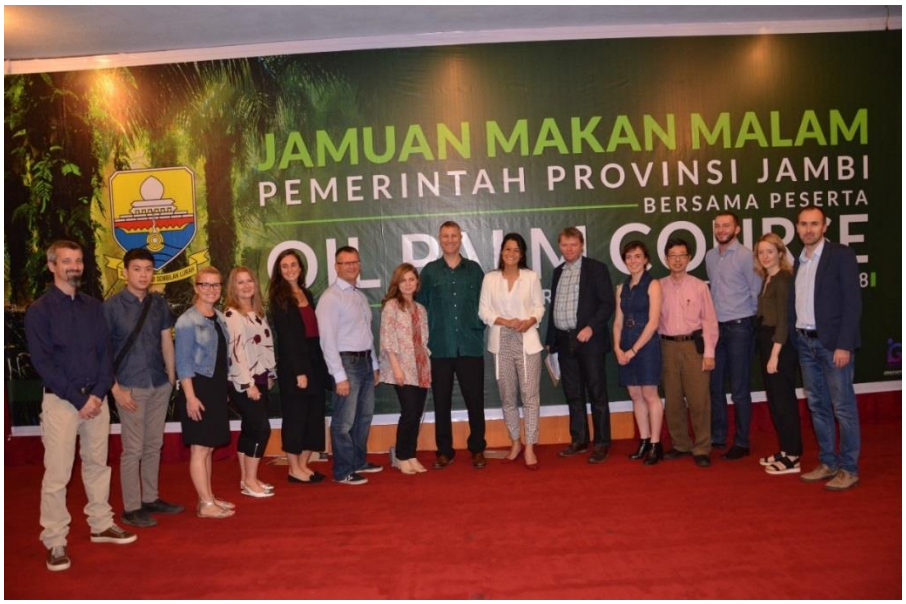


Visiting Batik factory in Jambi

The implementation of Good Agricultural Practice (GAP) is a key component of RSPO certification. Additionally we had the opportunity of visiting different farmers working on oil-palm plantations of different scales.

Visiting one of the palm oil farmers'

After meeting with companies and local leaders, who gave nice introductions to their life, goals and altogether by visiting the local farmers and their family we got an insight to some questions and answers describing the real situation.



Closing ceremony of OP

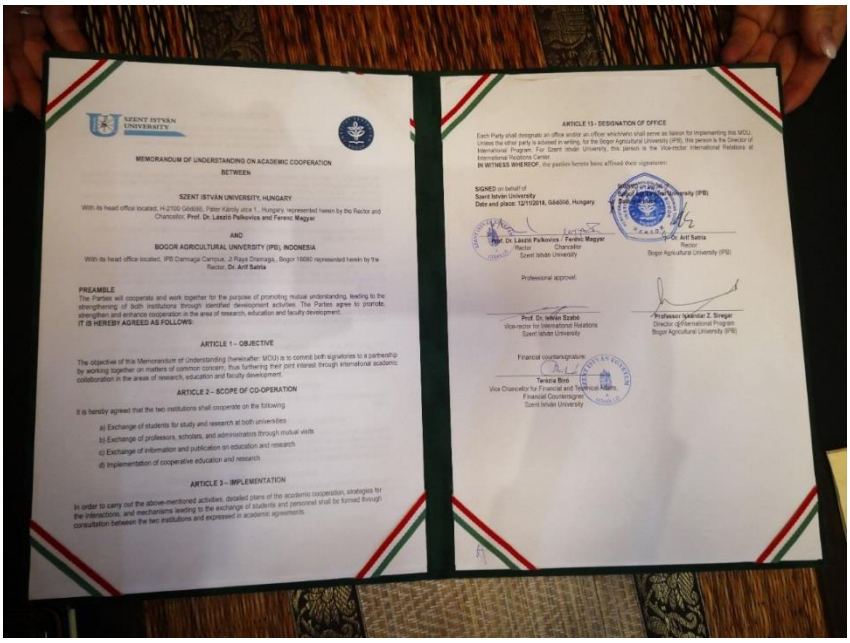
I would like to highlight that it was not only a workshop with meetings, but we also made friends during, moreover we learnt about the culture and city of Bogor and Jambi. All the people in Indonesia were very generous and their hospitality were truly grateful. We are forever grateful for this unique experience. People living on various points of the world gathered in Bogor and Jambi together to work for a common goal. We have returned home with the information we were going to collect there, assimilated them, and helped the information flow. I do hope that this event will motivate and

encourage each participant to publish articles, share information and to generate joint research projects in the field of sustainable oil palm production.
As a scientist, I particularly believe in the power of science that should be able to construct bridges over gaps between ecological and economic views and approaches.

Now let see, how our University and Institute could help to improve the sustainability and productivity of palm oil industry in Indonesia.

Although oil palm is not the part of either the Hungarian agriculture or the curricula of Hungarian agricultural study programs, the significance of Hungary's agriculture, crop production and agricultural results is beyond dispute. I believe that knowledge (education and research) are the most important in that process. These two areas, which could give possibilities on oil-palm production and others.

A, Research
We have learned each elements of oil palm production including plant selection, the difficulties of production, processing as well as waste material management and all its socially sensitive consequences so we are able to give several instructions how do can reach the most optimal level in oil palm production on environmental sustainable way. During our visit we had possibilities to discuss the main topics regarding the planned Joint Research Program between SzIU and Bogor Agricultural Institute (IPB) Indonesia on Palm Oil production. Professor Iskandar Zulkarnaen Siregar, the Director of Research and Innovation of IPB coordinated and managed these aims, and the first step was done by signing a Memorandum of Agreement between SzIU and IPB.


SZENT ISTVÁN UNIVERSITY

MEMORANDUM OF UNDERSTANDING ON ACADEMIC COOPERATION
BETWEEN

SZENT ISTVÁN UNIVERSITY, HUNGARY

AND

BOGOR AGRICULTURAL UNIVERSITY (IPB), INDONESIA

PREAMBLE

IT IS HEREBY AGREED AS FOLLOWS:

ARTICLE 1 – OBJECTIVE

ARTICLE 2 – SCOPE OF CO-OPERATION

ARTICLE 3 – IMPLEMENTATION

ARTICLE 13 - DESIGNATION OF OFFICE

IN WITNESS WHEREOF,

SIGNED on behalf of
Szent István University

Prof. Dr. László Palkovics / Ferenc Mezgar
Rector / Chancellor
Szent István University

Dr. Arif Satria
Rector
Bogor Agricultural University (IPB)

Professional approval:

Prof. Dr. István Szabó
Vice-rector for International Relations
Szent István University

Professor Iskandar Z. Siregar
Director of International Program
Bogor Agricultural University (IPB)

Financial countersignature:

Tamás Bíró
Vice Chancellor for Financial and Technical Affairs
Financial Countersigner
Szent István University

Memorandum of Agreement between SzIU and IPB

I would like to show only one topic in more details close to my research interest, which can be use in oil palm production:

Using plant beneficial arbuscular mycorrhizal fungi and other microorganisms together with plant production technologies, biotechnology, plant protection and biological waste treatments regarding our planned joint research program for sustainable oil palm cultivation.

Scientific background

Arbuscular mycorrhizal fungi (AMF) the key components of sustainable plant–soil ecosystems because they play an essential role in plant nutrient acquisition, in plant diversity and nutrient cycling. This symbiosis offers numerous benefits to host plants including improved plant growth and flowering, enhanced yield, tolerance to biotic and abiotic stresses such as drought, temperature fluctuation, metal toxicity and salinity, pests and diseases etc. Moreover, AMF play a role in the formation of stable soil aggregates, building up a macroporous structure of soil that allows penetration of water and air and prevents erosion. Most of the soil types contain these beneficial microorganisms, however due to climate change and other issues (human activities) re-inoculation of soil is required.

Recently some researches confirmed that mycorrhizae could alter the secondary metabolites of their target plants increasing their antioxidants and/ or nutrient values (beneficial lipids, protein etc.) Besides beneficial effects of AMF in plant production, could help in new plantation increasing the percentages establishment of the seedlings thereby reducing the losses in the nursery.

There are relatively few published reports on the interaction of AMF and oil palms but it is known that the limited development of their root system is well infected with AMF, suggesting that they benefit greatly from the symbiosis.

On the bases of above mentioned issues the application of AMF is one of the options that can benefit both agronomic plant health and ecosystems. AMF have the potential to increase conventional agricultural productivity and are crucial for the sustainable functioning of agricultural ecosystems.

AMF and sustainability in oil palm production

In order to use AMF efficiently in oil palm production, a clear research goal is to isolate AMF from local soils that have the combined characteristics of growth and nutritional effects on oil palm, effects on post-transplant survival and efficient growth in the culture conditions for inoculum production.

Mycorrhizal inoculation can be used at two different stages of palm production: (i) during plantation (ii) in existing oil palm cultivation. Using mycorrhizal inoculation in the field, on the bases of increased nutrient uptake and enhanced tolerance to biotic stresses less fertilizer and less pesticide use are required.

It is possible that certain varieties of oil palm would be much more responsive to AMF inoculation than, others. So screening the different oil palm varieties would be useful.

New technology, for example, the interplanting of different mycorrhizal dependences plants (Pueraria or others) between rows of oil palm will stimulate natural populations of AM fungi in the soil around the outplanted oil palm and improve efficiency of N-use in following crop.

Mycorrhizal inoculation combine with other beneficial microorganism could be in a sustainable way to reduce the impact of oil palm cultivation on ecosystems whilst highest yield and productivity to farmers.

Together with the memorandum we would like to propose that we conduct a short planning workshop with main objectives: i) to formulate the best research strategy including necessary field visit (not a research) and ii) to find the counterparts of similar discipline including other networks under. Through the workshop we could identify the gaps of the current

knowledge, for example on the use of biofertilizer (i.e. mycorrhiza) for productivity of smallholders, and jointly create the solid concept note.

B, Education
The Stipendium Hungaricum Scholarship Program is based on bilateral educational cooperation agreements signed between the Ministries responsible for education in the sending countries/territories and Hungary or between institutions. It was launched in 2013 by the Hungarian Government and managed by Tempus Public Foundation (TPF) and Indonesia is involved in that Program.
There are 12 different programs at three levels (BSc, MSc, PhD courses) at our Faculty, which offer one way to improve your knowledge and skills to manage the problems of oil palm production, in general.
Visit our web page for more information:

http://sziu.hu/stipendium-hungaricum-scholarship-programme

Thank you so much to read this report.

Terima Kasih.