

B ackground

The "Hevea Research Platform in Partnership" (HRPP) was initiated by the researchers of the Rubber Research Project under the Thai-French Research Framework sponsored by Commission on Higher Education, and the Government of the French Republic through the French Embassy to Thailand, and Thailand International Cooperation Agency. This platform aims at strengthening the excellence in the rubber commodity chain as well as academic networks and regional cooperation through the sharing of body of knowledge and technology transfer in this particular area. On May 26th, 2008, the "Memorandum of Understanding Creating the Hevea Research Platform in Partnership (HRPP) in Thailand" was officially signed by the four core partners (Kasetsart University (KU), Prince of Songkla University (PSU), Department of Agriculture of Ministry of Agriculture and Cooperatives (DOA) and CIRAD). Owing to the needs for further development in this field of research to achieve acceleration of regional and international development, many universities and research institutions (5 from Thailand and 6 from France) became our Associate Members such as Mahidol University, Khon Khaen University, Ubon Rachathani University, Mae Jo University and BIOTEC for Thai side, and Montpellier SupAgro, INRA, IRD, University of Montpellier II, University Blaise Pascal of Clermont-Ferrand and University du Maine of Le Mans for French side.

HRPP is an knowledge exchange platform where the members can share their vision, co-build new joint-research projects and co-produce high level scientific outcomes. Annual seminars and workshops support this dynamic. At present, activities under this platform have been implemented by the HRPP members under supervision of a Steering Committee and a Scientific Committee.

HRPP ORGANIZATION CHART

PRESIDENCE

The HRPP President ; The HRPP Coordinator

STEERING COMMITTEE

4 representatives from each of the Core Members
Chaired by HRPP President

SCIENTIFIC COMMITTEE

15 representatives from each of the members (core and associate)

RESEARCHERS

Each member (core and associate) assigns appropriate scientific human and financial resources to be involved in at least one research project mentioned in HRPP Scientific Project.

EXTERNAL EVALUATION PANEL



<http://hrpp.ku.ac.th>



HRPP

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Hevea

Research Platform in Partnership in Thailand

Core Members



Associate Members



Supported by



A gronomy, Physiology and Environment



Productivity of rubber tree and latex physiology
To elucidate the process in latex biosynthesis by developing physiological modelling of the latex cells functioning. The latest techniques in molecular physiology and biochemistry are used to characterize mechanisms involved in starch and free sugars synthesis linked to yield, in latex cells. Experiments of innovative tapping systems tailored to clonal physiological characteristics, environmental conditions as well as socio-economic contexts are carried out, aiming at improvement of rubber production and/or tapping productivity.

Carbon sequestration and water use by rubber ecosystems Rubber plantations are forest-like ecosystems that can contribute to the mitigation of greenhouse gas emissions through carbon sequestration. Rubberflux, a complete flux measurement site has been set up in Chachoengsao Rubber Research Center (CRRC, DOA) in 2007 to provide an accurate figure of carbon sequestration by rubber plantation. Impact of water availability on the carbon balance is also under study at this site to address the issue of the effect of climate change on rubber plantations.

2010 figures
Researchers: 34 ; On-going projects: 6 ; On-going PhD: 4

B iotechnologies and Rubber Planting Material Improvement

Genome mapping Based on QTL mapping, it aims at developing Markers-Assisted Selection (MAS). A family was mapped with SSR (microsatellite) and AFLP markers, and phenotyped at field level. Two major QTLs showed important effects on growth, latex production and rubber quality.



Functional genomics Based on transcriptomics, it aims at identifying the major expressed genes involved in latex production and in adaptation to the environment. Candidate genes are studied in order to assess the importance of their effects in selection.

Plant micropropagation It aims at creating new varietal types such as clones from somatic embryogenesis, rejuvenated budded clones, or clonal rootstocks. Characterization of genes promoting somatic embryogenesis in *Hevea brasiliensis* is on-going.

2010 figures
Researchers: 16 ; On-going projects: 2 ; On-going PhD: 2

T echnology and Rubber Quality



Non-consistency of natural rubber: effect of non-isoprene The non isoprene components are often incriminated in the non-consistency of natural rubber quality. On-going works focus mainly on lipids which are the most important non-isoprene in natural rubber.

Characterization of post harvest maturation of natural rubber The maturation of cup coagula of latex and its consequences on TSR rubber quality are still not well characterized. On-going projects intend to address this issue through a multidisciplinary approach involving microbiology, enzymology, rubber technology but also sociology to assess all the factors which may act on quality before the first processing.

Advanced technology in NR processing to address environmental issues Environmental issues such as waste water quality, energy consumption and odor are addressed by this group of researchers.

2010 figures
Researchers: 24 ; On-going projects: 6 ; On-going PhD: 2

S ocio-Economics



Socio-economic analysis of the tapping systems in different zones in Thailand The aim is to provide an accurate view and understanding of the underlying socio-economic logic that goes along the different existing tapping systems observed in the field and to evaluate their economic performances.

Socio-economic feasibility of innovation on tapping systems in Thailand Very intensive tapping systems are generally implemented by Thai rubber farmers resulting in low rubber farm productivity. Alternative tapping systems do exist. The aim is to analyze the feasibility of these alternative tapping systems considering the socio-economic situation of the farms and to identify the conditions of their adoption.

Evolution of the rubber farming systems in Thailand The aim is to provide a better understanding of the socio-economic dynamics that are currently at work and may influence or drive future evolutions of rubber farming systems. Research will focus on five issues: 1) changes in resource management as a consequence of climatic variation, price fluctuation, land use change and labour allocation; 2) rubber growing in non optimal biophysical conditions (lowland area); 3) effect of latex and sheet production on farm livelihood; 4) comparison of the economic performance of rubber and oil palm farming systems and 5) socio-economic modelling of rubber fruit tree farming system in highlands.

2010 figures
Researchers: 6 ; On-going projects: 6 ; On-going PhD: 1

N ew International Master Curriculum in Natural Rubber Production, Technology and Management (under development)

Strengthening human capacities in natural rubber research and development is part of the overall objective of the HRPP. During the workshop on Higher Education and Capacity Building held during the 1st Annual Seminar of HRPP (January 2009) it has been acted there was a need from the rubber sector for a complete HRD system with integrated knowledge in the whole value chain (from upstream to downstream).

Training Aims This Master is set up to develop and modernize the natural rubber production sector in sustainable and social-responsible ways by producing advanced level technical human resources in response to a demand from the rubber supply chain in Thailand and SE Asia. The curriculum aims at giving a multi-disciplinary scientific and technical knowledge enabling the graduates to contribute in the fast-changing industry and markets worldwide.

Career Prospects Plantation sector : agronomist (knowledge of breeding, farming system), plantation manager ; Rubber industry sector : technical production manager, sales manager, supply manager consultant, co-operative manager ; Bank sector : officer, analyst ; Research and development sector : scientist, trainer/educator, rubber development officer/supervisor, technical consultant/advisor for professional or inter-professional organizations.

N ew website: <http://hrpp.ku.ac.th>

