Faculty of Agriculture

Assoc. Prof. Dr. Chalermpol Phumichai



Faculty: Agriculture

Department: Agronomy

Campus: Bangkhen

Field of expertise: Molecular, Plant Breeding, Marker Assisted Selection (MAS)

Interested field of study: Applying techniques in conventional plant breeding and DNA markers technology to improve crops and effective incorporation of valuable traits and cassava mosaic disease.

Educational profile: Ph.D. (Biological Resource and Utilization), Kobe University, Japan

E-mail: agrcpp@ku.ac.th, chalermpol.ph@ku.th

Publications

No.	Document titles	Authors	Years
1	Genome-wide association mapping and genomic prediction of yield-related traits and starch pasting properties in cassava	Chalermpol Phumichai, Pornsak Aiemnaka, Piyaporn Nathaisong, Sirikan Hunsawattanakul, Phasakorn Fungfoo, Chareinsuk Rojanaridpiched, Vichan Vichukit, Pasajee Kongsil, Piya Kittipadakul, Wannasiri Wannarat, Julapark Chunwongse, Pumipat Tongyoo, Chookiat Kijkhunasatian, Sunee Chotineeranat, Kuakoon Piyachomkwan, Marnin D. Wolfe, Jean-Luc Jannink & Mark E. Sorrells	2022
2	Genetic variability of eggplant germplasm evaluated under open field and glasshouse cropping conditions	Mat Sulaiman, N.N.; Rafii, M.Y.; Duangjit, J.; Ramlee, S.I.; Phumichai, C.; Oladosu, Y.; Datta, D.R.; Musa, I.	2020
3	Molecular Characterization of a Spontaneous Waxy Starch Mutation in Cassava	Pornsak Aiemnaka, Arunee Wongkaew, Jumnong Chanthaworn, Sathakupt Ken Nagashima, Supawadee Boonma, Jetsada Authapun, Sujin Jenweerawat, Pasajee Kongsila, Piya Kittipadakul, Sutkhet Nakasathien, Tanee Sreewongchai, Wannasiri Wannarat, Vichan Vichukit, Luís Augusto Becerra L Ópez-Lavalle, Hernán Ceballos, Chareinsuk Rojanaridpiched, Chalermpol Phumichai	2012

Research Highlights



- Breeding for Resistance Varieties and Utilization of Disease Control Approaches to Control Cassava Mosaic Disease
- Approaches to Control Cassava Mosaic Disease Oil Palm Technology Development for Commercial Bio-diesel Industry in Newly Planted Area Project
- Development of Commercial Field Corn Hybrids by Integrating Field Corn Research Activities of Public Institutes

Assist. Prof. Dr. Chama Inson



Faculty: Agriculture
Department: Entomology
Campus: Bangkhen
Field of expertise: Pollinators in agriculture, biology, ecology, biodiversity and taxonomy
Interested field of study: Biology, ecology, biodiversity and taxonomy of insect pollinators and edible insects
Educational profile: Ph.D. (Entomology) Kasetsart University
E-mail: fagrcmp@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Factors affecting histamine levels in edible crickets: Implications for post-harvest management and farmed cricket production	Chumjai, C., N. Tongtavee, C. Inson, and C. Sinthuvanish.	2023
2	Integrated Marketing Communication Exposure, Attitude, Decision-Making Process and Purchasing Behavior: A case Study of Cricket Food Products in Thailand.	Patchimnan, M., C. Inson, and B. Phankaew	2022
3	How to turn collectors of edible insects into mini-livestock farmers: Multidimensional sustainability challenges to a thriving industry	Nischalke S., I. Wagler , C. Tanga, D. Allan, C. Phankaew, C. Ratompoarison, A. Razafindrakotomamonjy, and E. Kusia	2020

Research Highlights

The edible cricket carries out Research and Development activities (R&D) at the Cricket Lab KU located at the Cricket Laboratory in the Department of Entomology, Faculty of Agriculture, Kasetsart University, Bangkok, Thailand. This laboratory is aimed at applied research, method development, and adaptation with mass-rearing techniques, biology, breeding, genetics, automatic cricket-rearing boxes, management of the vertical farm in urban, and standard development of cricket-rearing for export. The Laboratory also provides training and services including the supply of biological materials, guidance on the development and use of the equipment, and expert support for farmers, private sectors, and Field Projects.



Assist. Prof. Dr. Shermarl Wongchaochant



Faculty: Agriculture
Department: Horticulture
Campus: Bangkhen
Field of expertise: Ornamental plant breeding and production
Interested field of study: Molecular Biology Techniques, Plant Breeding, Plant Tissue Culture, Cultivation Techniques
Educational profile: Ph.D. (Plant Biotechnology) Osaka Prefecture University, Japan
E-mail: agrsmw@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Micropropagation and in vitro short-term storage of Globba sherwoodiana W.J. Kress & V. Gowda	Chumjai, C., N. Tongtavee, C. Inson, and C. Sinthuvanish.	2020
2	Monitoring of active constituents of turmeric (Curcuma longa L.) rhizome stored under supplemented white LED-light with different light intensities	Wangchuk K., Chulaka P., Wongchaochant S., Chintakovid W., Pumprasert J. and Manochai B.	2019
3	Self and Crossability of Six Thailand Native Dancing Lady Gingers (Globba spp.)	Muktawapai K. and S. Wongchaochant	2019

Research Highlights



Tropical area is the one famous source of ornamental plant diversity. We keep working on ornamental plant breeding researches to support worldwide market demand.

Assist. Prof. Dr. Damrongvudhi Onwimol



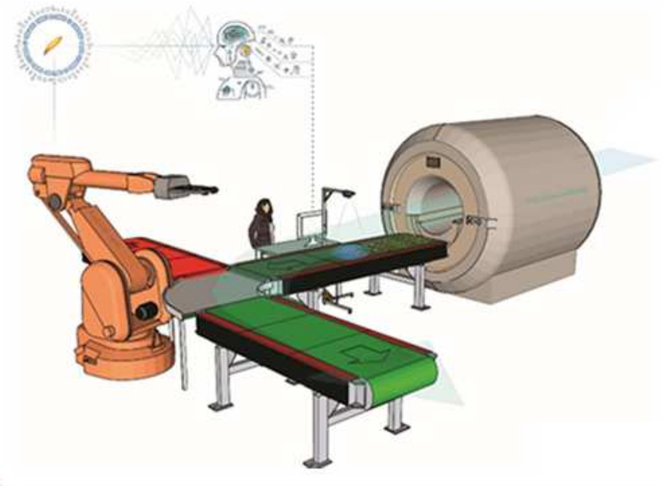
Faculty: Agriculture
Department: Agronomy
Campus: Bangkhen
Field of expertise: Seed technology of field crops
Interested field of study: Seed science and Technology
Educational profile: Ph.D. (Agricultural Biotechnology) Kasetsart University
E-mail: damrongvudhi.o@ku.th

Publications

No.	Document titles	Authors	Years
1	SVRICE: An Automated Rice Seed Vigor Classification System via Radicle Emergence Testing Using Image-Processing, Curve-Fitting, and Clustering Methods	Yimpin A., Sermwuthisarn P., Phimcharoen W., Chaisan T., Onwimol D.	2022
2	Responses of Rice Seed Quality to Large-Scale Atmospheric Nonthermal Plasmas	Rongsangchaicharean T., Srisonphan S., Onwimol D.	2022
3	Effect of Dielectric Barrier Discharge Plasma on Rice (Oryza Sativa L.) Seed Hydration and Hygroscopicity	Rongsangchaicharean T., Ruangwong K., Onwimol D., Tephiruk N., Suwannarat S., Srisonphan S.	2022

Research Highlights

My research focuses on the application of cold plasma and artificial intelligence to perceptive agronomic seed production systems. Intelligent agronomic seed production systems have the potential to significantly boost both the quality of excellent seeds and crop yield. Human health is impacted in some way by the quality of seeds and their products; however, evaluating seed quality parameters is a labor-intensive procedure that necessitates a staff of superbly skilled workers. In order to ensure that farmers and the agro-industry receive high-quality seed, the producer must develop technologies for detecting seed quality that are rapid, simple, as well as accurate. For the purpose of these goals, deep learning for the classification of hyperspectral images is being developed both in the laboratory an in our seed processing facility. Cold plasma technology for seed treatment is safe to the environment, chemical-free, and nondestructive. A number of seed crops have found success with atmospheric nonthermal plasma (ANTP) before sowing the seeds, as an alternative to more common chemical treatments. ANTP has been shown in many studies to gently change the surface of a seed at the micron-scale level by rendering the seed coat rougher or functionalization. This makes the surface more hydrophilic, accelerates in water absorption, promotes seed germination, and eliminates some endospores or fungi. Unfortunately, only a limited number of ANTP structures are viable for large-scale applications requiring the treatment of over 100 g of seeds per operation. This is particularly challenging in agriculture. The ANTP is being scaled up in our seed laboratory to qualify for application with agronomic seeds, such as those for rice and maize. Furthermore, this approach could potentially be integrated with large-scale translation and in-package processing, thereby expanding the range of application possibilities.



Assist. Prof. Dr. Timtong Darunsontaya

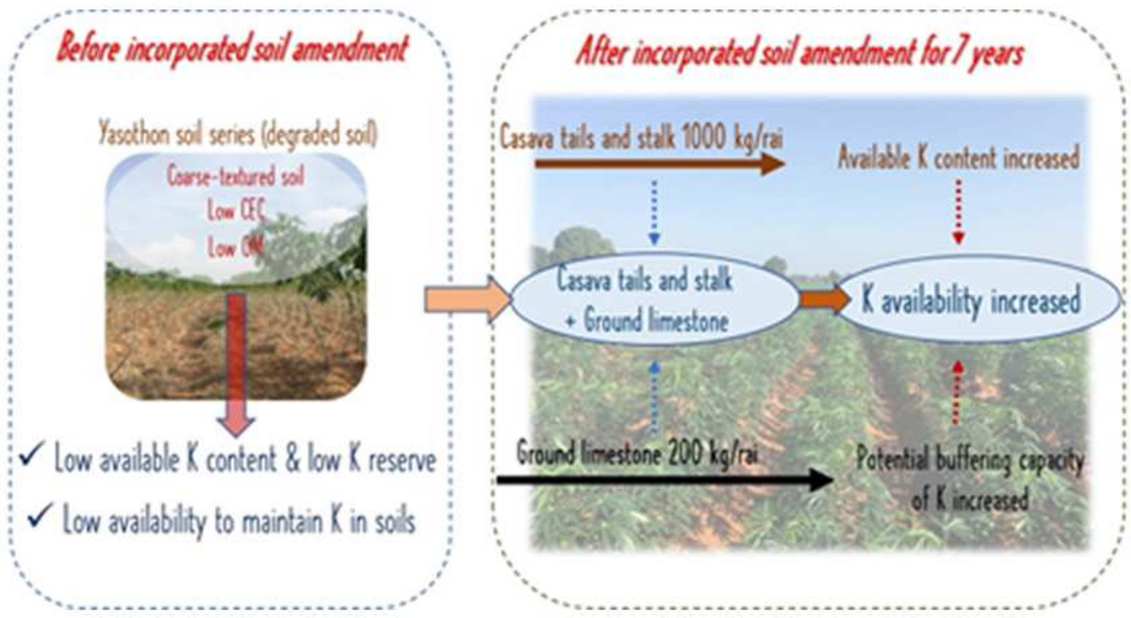


Faculty: Agriculture
Department: Soil Science
Campus: Bangkhen
Field of expertise: Clay and soil minerals
Interested field of study: Soils potassium
Educational profile: Ph.D. (Soil Science) Kasetsart University
E-mail: fagrttd@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Distribution of Organic Carbon Fractions in Soil Aggregates and Their Contribution to Soil Aggregate Formation of Paddy Soils	Pinida Kunmala, Wittaya Jindaluang & Timtong Darunsontaya	2023
2	Effect of Rice Straw on Potassium Availability in Illite Containing Soils of Central Plain, Thailand	Timtong Darunsontaya and Wittaya Jindaluang	2021
3	A Study on the Quantity/Intensity Relationships of Potassium of Sugarcane Growing Soils, Eastern Thailand	Pitchakorn Suttanukool, Timtong Darunsontaya, and Wittaya Jindaluang	2019

Research Highlights



My research focuses on unraveling the dynamics of potassium (K) in diverse Thai soils, encompassing upland soils for sugarcane cultivation, lowland soils for rice cultivation, and the unique category of acid sulfate soils. The study investigates the various forms of potassium in soils, each present distinct availability for plant utilization. Findings illuminate the immediate availability of certain potassium forms to plants and the gradual release from reserve sources, crucial for precise fertilizer management. My research also explores the assessment of potassium availability in soils using the quantity/intensity (Q/I concept), providing insights into the ease of plant uptake. Additionally, the study examines the role of organic matter in influencing potassium's utility in soils, employing various soil amendments and plant residues. Results highlight the varying potassium quantities and availability across soil types, emphasizing the need for tailored soil management strategies to optimize potassium utilization and guide soil improvement practices.

Assoc. Prof. Dr. Tanee Sreewongchai



Faculty: Agriculture
Department: Agronomy
Campus: Bangkhen
Field of expertise: Plant breeding, Biotechnology,
Interested field of study: Agri big data, Drone for agriculture,
Cannabis breeding and production
Educational profile: Ph.D. (Genetic Engineering) Kasetsart University
E-mail: agrtns@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Yield and nutritional properties of improved red pericarp Thai rice varieties	Yamsaray, M., Sreewongchai, T., Phumichai, C., Chalermchaiwat, P.	2023
2	Evaluation of the agronomic and genotypic diversity of Thailand local rice (Oryza sativa L.) varieties under lowland conditions	Narumol P., Phormmard W., Aesomnuk W., Sreewongchai T., Arikit S., Malumpong C.	2023
3	Comparative proteomic analysis of chromosome segment substitution lines of Thai jasmine rice KDML105 under short-term salinity stress	Nguyen, V.Q., Sreewongchai, T., Siangliw, M., Roytrakul, S., Yokthongwattana, C.	2022

Research Highlights



In rice breeding, our primary focus is enhancing productivity through conventional breeding methods and biotechnological approaches. This includes gene discovery, mutation induction for genetic variation, marker-assisted selection (MAS), and thorough field trials. We develop both purebred and hybrid rice varieties, emphasizing high yields and environmental tolerance. Smart farming is integral to our agricultural management, employing digital technologies for precise monitoring and production enhancement. Precision farming yields economic and environmental benefits by efficiently managing crop growth, reducing labor, water, fertilizer, herbicide, and pesticide usage. Our approach spans open fields and greenhouses, incorporating technologies like drone-based pesticide spraying, automated weather forecasting, automatic fertilizer blending, and vertical farming. Mechanization in large-scale field management reduces labor and integrates scouting drones for efficient field exploration and crop health assessment, aligning with low-carbon agriculture practices for sustainability. In marijuana/hemp cultivation for medical purposes, we focus on three chemotypes (I, II, III) with varying medical efficacies. Cultivation occurs in controlled indoor environments with control of CO2 levels, nutrients, temperature, light, and humidity, adhering to Good Agricultural and Collection Practices (GACP). This ensures the production of high-quality flowering buds with medicinal properties.

Assist. Prof. Dr. Prakai Rajchanuwong



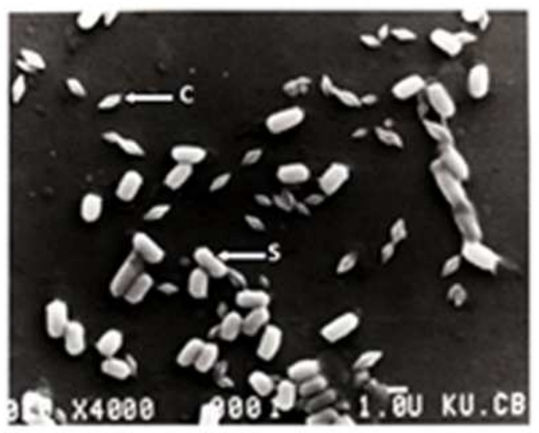
Faculty: Agriculture
Department: Entomology
Campus: Bangkhen
Field of expertise: Insect Pathology, Microbial Control, Biological Control, Economic Insect
Interested field of study: -
Educational profile: Ph.D. (Entomology) Kasetsart University
E-mail: fagrpkt@ku.ac.th

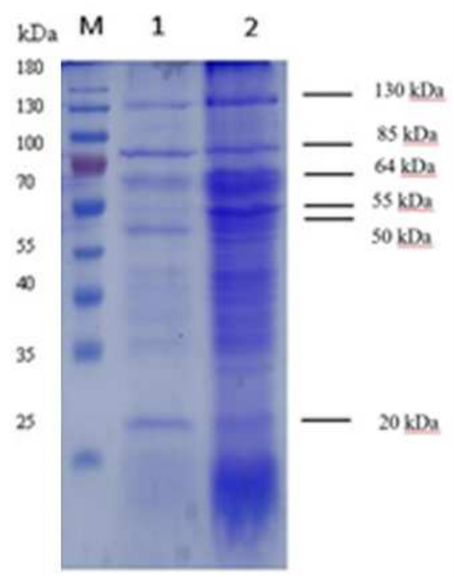
Publications

No.	Document titles	Authors	Years
1	Sugarcane screening model for sugarcane varieties resistant to white leaf disease.	Donnua,S., N. Thaveechai, P. Ratchanuwong, U. Lertsuchatavanich and T. Pattamuk.	2023
2	Molecular identification of entomopathogenic nematodes of the Genus Heterorhabditis in Thailand and pathogenicity to larvae of the greater wax moth, Galleria mellonella L. (Lepidoptera: Pyralidae).	Onwong, R., N. Khwanket, A. Rattanawannee, P. Rajchanuwong and A. Noosidum	2021
3	Characterization and toxicity of Bacillus thuringiensis serovar chanpaisis (H46): A serovar from Thailand	Rajchanuwong, P., J. Chanpaisaeng and S. Kaewsompong	2019

Research Highlights

A new strain of *Bacillus thuringiensis serovar chanpaisis* was isolated from soil samples in Thailand. This strain produced bipyramidal crystal proteins consisting of major bands at about 130 kDa, 85kDa, 64kDa, 50kDa, and 20 kDa. A PCR analysis of the cry genes revealed that only *cry*32 genes could be detected and localized on chromosomal DNA and plasmid DNA of the organism. The bioassay showed that *B. thuringiensis serovar chanpaisis* had no larvicidal activity against any species of the Lepidoptera or Coleoptera but exhibited mortality level against *Aedes aegypti* and *Culex quinquefasciatus* with LC_{50} values of 1.48×10^{4} spores mL^{-1} and 1.00×10^{4} spores mL^{-1} , respectively.





Assist. Prof. Dr. Pariyanuj Chulaka



Faculty: Agriculture
Department: Horticulture
Campus: Bangkhen
Field of expertise: Physiology of vegetable and seed production
Interested field of study: Vegetable crop requirements for high efficiency production under global warming condition
Educational profile: Ph.D. (Science for Diverse Food Resources) Chiba University, Japan
E-mail: agrpnc@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Response of 'hua-ruea' chili pepper (Capsicum annuum L.) to salicylic acid under heat stress	Sudchai Locharoen and Pariyanuj Chulaka	2021
2	Carbon dioxide (CO2) enrichment in greenhouse enhanced growth and productivity of tomato (Solanum lycopersicum L.) during winter	S. Boondum, P. Chulaka, P. Kaewsorn, T. Nukaya, M. Takagaki, W. Yamori	2019
3	Smart hydroponic lettuce farm using Internet of Things	T. Changmai, S. Gertphol and P. Chulaka.	2018

Research Highlights

Extreme temperature change would have a substantial negative socio- economic impact, especially in the agricultural sector. Increasing temperatures are likely to decrease the quantity of desirable crops, whilst fostering the growth of weeds and pests. Vegetable crops are crucial for human nutrition as they provide essential nutrients and are a fundamental constituent of the daily diet. Nonetheless, these crops are exceedingly sensitive to climate change, particularly to increasing temperatures, which can directly impact their yield.







Assoc. Prof. Dr. Pitipong Thobunluepop



Faculty: Agriculture

Department: Agronomy

Campus: Bangkhen

Field of expertise: Crop Production and Physiology, Seed Physiology, Postharvest Physiology of Field Crop, Quality of Plant Products

Interested field of study: Crop Physiology, Functional Yield of Field Crops and Utilization, Postharvest Physiology of Field Crops

Educational profile: D. Sci. Agra. (Agricultural Science), The Georg - August Universität Göttingen, Germany

E-mail: fagrppt@ku.ac.th

Publications

No.	Document titles	Authors	Years
1	Comparison of Grain Processing Techniques on Saponin Content and Nutritional Value of Quinoa (Chenopodium quinoa Cv. Yellow Pang-da) Grain	Tumpaung, R., P. Thobunluepop, P. Kongsil, D. Onwimol, S. Lertmongkol, E. Sarobol, W. Chitbanchong and E. Pawelzik	2021
2	Management of Early Harvesting Time and Drying Temperature on Maize (Zea mays L.) Seeds Storability and Seeds Vigorr	Trakunpaisan, N., Thobunluepop, P., Nakasathien, S.	2021
3	Management of Source-Sink Balance for Maintaining Seed Vigor and Storability of Maize	Kaewchuai, S., P. Thobunluepop, S. Nakasathien, S. Lertmongkol, D. Onwimol, W. Chitbanchong and M. Bredemeier	2021

Research Highlights



According to the limitation of agricultural areas and decrease drastically due to soil fertility or salinity. With the effects of climate change, the risk of crop failure due to extreme weather events such as heat, flooding and droughts increases but also due to its high consumption of agricultural resources such as over rate of fertilizer and various herbicides. The idea is to increase the area under agricultural cultivation and the market supply of quantity and quality of agricultural products are required. The protein-rich, good oils quality, low carb, or nutrients – rich, specific functional plant products and to open up a new agricultural market potential. For these purposes, farmer field experiment together with scientific laboratory research on genetic diversity, morphology, physiology and physio – chemical, and phytochemical of various crop varieties diversity, crop production systems, seeds, crop physiology, crop ecology, postharvest physiology, and quality of plant products are developing. Through the existing network of research collaboration nationally and internationally levels, farmers, has an excellent basis to establish a consistent regional value chain and their acceptance by the public. It is expected that the developed research outputs will show a significantly improved on food safety and security. The research projects are starts at this point and tries to close this gap.