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In Honor of Bamboo Pioneers

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Living creatures all around the world depend on bamboo for their survival. This includes *Homo sapiens*. We all know that for centuries, human cultures have cultivated and utilized bamboo for their daily needs and through innovation improved their livelihoods and economies.

On the village level, farmers and craftsmen developed techniques which were passed down from generation to generation. In more modern times, man has looked to science for solutions and progress. Through committed research, we have discovered new approaches of how bamboo as a managed resource can lead to the betterment of mankind.

Dedication, determination and collaboration are required to advance any scientific endeavor. There exists individuals whose lifelong commitment to bamboo science deserve our attention and honored recognition. Today, as part of the inauguration of the 8th World Bamboo Congress, we honor 4 of these great Bamboo Pioneers:

Ueda Koichiro

Krit Samapuddhi

Floyd Alonzo McClure

Walter Liese

Ueda Koichiro 1899 - 1991 (Japan)

Koichiro Ueda was a well-known Japanese scholar recognized throughout the world as one of the leading authorities on bamboo. One of his most esteemed awards was the Order of the Sacred Treasure from the Emperor of Japan. He was professor at Kyoto Industrial College and president of the Japan Bamboo Industries Association.

Of his many published works, these two books are outstanding:
Studies on the Physiology of Bamboo, Kyoto University Press, 1960.
Bamboo, by Robert Austin and Koichiro Ueda, photos by Dana Levy, Weatherhill Inc, 1970.

A highlight in his bamboo life was a special bamboo conference at the XVII International Union of Forest Research Organizations Congress in Kyoto (1981), with 33 reports and the Inauguration of his designed Rakusai Bamboo Park, a living monument garden using bamboo as a replacement for the deforestation around Kyoto due to industrialization.



Photo of Professor Ueda taken by Walter Liese, 1979.

Krit Samapuddhi 1911 - 1991 (Thailand)

Krit Samapuddhi was the former deputy director general of Thailand's Royal Forest Department, and former managing director of Thailand's Forest Industry Organization. He was instrumental in developing the forest village system.

The forest village system, developed by Thailand's Forest Industry Organization, offers hill tribesmen and others who practice slash and-burn agriculture considerable inducements to settle down. One of its principal aims was to keep a steady labor force on hand for the long-term needs of forestry, while at the same time providing rural families with an income and other benefits from the kind of farming they choose to practice.

He published many books, including: *The Forests of Thailand and Forestry Programs* (1957), *A preliminary study in the structure and some properties of some Thai bamboos* (1959), *Forestry Development in Thailand* (1966), and *Grouping of Thai Hardwoods* (1972).

Biography of Krit Samapuddhi :

- B.F.S. School of Forestry, Burma (Govt. Scholarship)
- Dip. For., Commonwealth Institute of Forestry, Oxford (Colombo Plan Fellowship)
- Cert., Timber Grading, Malaysia (FAO, Fellowship)
- Member I.A.W.A., International Association of Wood Anatomists (Switzerland)
- Former Lecturer, Phrae Forestry School
- Former Deputy Director General, Royal Forest Department
- Former Director, Forest Industry Organization
- Former Sawn Wood Audit Committee, Ministry of Industry
- Former Alumnus President, St. Gabriel's College Association
- Honorary Committee, Wildlife Fund of Thailand
- Honorary Consultant, Thai Timber Merchants for Exporting Association
- Honorary Consultant, Thai Plywood and Veneer Association



Krit Samapuddhi. Royal Forest Department, Thailand, archives.

Floyd Alonzo McClure - 1897-1970 (U.S.A.)

Floyd Alonzo McClure was one of the world's leading authorities on the bamboo plant. Born in Shelby County, Ohio, McClure went to China as a teacher in 1919 after completing his undergraduate work at Ohio State University. He stayed in China for 24 years, working most of the time as professor of economic botany at Lingnan University in Canton. When the Japanese invaded China, McClure returned to the United States and became a consultant on bamboo for the United States Department of Agriculture. In the 1940s, he was appointed honorary research associate for the National Museum of Natural History, a position he held until his death in 1970.

Floyd McClure was instrumental in the introduction of Tonkin bamboo to the world. During his tenure as an instructor and professor at Lingnan University in Guangdong, China from 1919-1941, he assigned the scientific name of *Arundinaria amabilis*. Upon a visit to China in 1925, McClure was the first to scientifically describe the plant and recognized that it was a distinct and previously unreported species. At the time, this bamboo had already been in use for building fly rods and was known by a variety of different common names. The name was

amended to *Arundinaria amabilis* McClure in the doctor's honor and translated, means 'The Lovely Bamboo.'

He is best known in the United States for his book, *Bamboos: A Fresh Perspective*, by Harvard University in 1966. McClure was a contributor to the USDA Agriculture Handbook on bamboos in 1961. *The Bamboos* is the classic treatise on bamboo in U.S. literature, with sections on the vegetative phase, the reproductive phase, elite bamboo species, and propagation methods, as well as interesting historical notes, photos, and illustrations.

Frederick G. Meyer, a colleague of McClure's at the USDA, wrote this tribute : " The many friends of Floyd Alonzo McClure were saddened by his death of April 15, 1970, short a few months of his seventy-third birthday. Those who knew him personally lost a true friend, and the world lost a teacher and pre-eminent authority on bamboos, the tree grasses. A former Chinese student likened McClure's life to the villager, who, after gazing for years at the Great Stone Face on the mountain, became himself the person with wisdom, strength, honesty and solidarity like that of the mountain, the person the whole village had been searching for. Bamboo was McClure's Great Stone Face, and teacher of truth in the green plant world.In fact, he died in his garden, digging a bamboo plant for a young friend. "

Walter Liese - 1926- (Germany)

If ever Germany was to have an ambassador at large for forestry, and for bamboo in particular, Prof. Walter Liese would eminently qualify for the post. His international assignments have carried him far and wide - from the lowlands of Bangladesh to the high mountains of Chile; from the humid forests of Indonesia and Vietnam to the arid zones of Nigeria and Tanzania; from the near shores of Portugal to the far shores of the Philippines. In his career as a wood biologist and forestry expert, which spans nearly five decades, Prof. Liese has stretched his faculties to their limits to become an institution in himself.

Walter Liese was born in Berlin on 31 January 1926, when the Weimar Republic was eight years old and appeared stable and prosperous. His childhood and adolescent years were spent in Eberswalde, a small town south of Berlin where his father was Professor of Forest Botany. By the time he was seven years old, the Weimar Republic had collapsed and Adolf Hitler was in control of Germany. Like all other able-bodied German youth, Walter Liese was also drafted into war service at the age of 18.

At the end of the military service, Walter Liese pursued his studies. He chose forestry as his main subject, probably influenced by his childhood images of lush forests near Eberswalde. He studied forestry from 1946 to 1950, first in Freiburg in the Black Forest and then in Hann.Münden at the Forest Faculty, University of Göttingen. In 1951 he graduated and began his career with a one-year study on root physiology at the Forest Research Institute in Düsseldorf.

The year 1951 added another dimension in the history of botanical studies in Germany. Although palms and bamboos were botanically known through their earlier descriptions by Linné, all palms were classified as bamboos. Their structural characteristics came to be examined only much later, through the efforts of scientists like Hugo von Mohl (1845), Schwendener (1874), de Bary (1877), Strasburger (1891), Haberlandt (1924), and Solereder and Meyer (1928). Then, for some inexplicable reason, the anatomies of bamboos and palms were much neglected. It was only in 1951 that interest in these areas was revived in earnest. As destiny would have it, the seeds for this revival were sown through a chance meeting under favorable circumstances.

In April 1951, Walter Liese had started working as a research scientist at the Forest Research Institute in Lintorf, near Düsseldorf. Dr Franz Erich Eidmann, then Head of the Institute, kindled Liese's interest in bamboo. The discussion centered on the suitability of culms as pit props in coal mines. Liese, motivated by Dr Eidmann's enthusiasm, carried out a series of experiments on the properties of bamboo for its use in mines.

Liese also had contacts with Prof. Bodo von Borries of the Institute of Higher Microscopy in Düsseldorf, who was part of the team that developed the electron microscope. The apparatus was still a novelty then and awaiting newer applications. Liese made good use of the transmission electron microscope to study the structure of bamboo, the "new" material, and produced in 1951 the first electron micrographs on the fine structural details of the cell walls of bamboo fibers. This was followed in 1953, while working at the Institute of Forest Botany, University of Freiburg, by another series on structures in the cell walls in bamboo. These achievements brought both the researcher and the research subject into the limelight. Liese's six-year sojourn (1953-59) at the University of Freiburg, where he had once been a student of forestry, launched his outstanding career as a wood biologist and bamboo scientist. The study of anatomical structure using advanced microscopy and other techniques, which began there as a curiosity that developed out of a chance opportunity, became a life-time passion.

The latter half of the 1950s marked the beginning of Walter Liese's presence in the international arena. Before joining the University of Freiburg, he had spent one year working in the wood preservation industry in Mannheim. This experience in wood preservation came of use in 1957, when Liese was contracted by the United Nations Food and Agriculture Organization (FAO) to India to study and propose an impregnation method to preserve bamboo from deterioration, and in 1958 to work on wood preservation in Indonesia. In 1958, barely eight years after his graduation, Liese was already a visiting scientist to the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Melbourne, Australia. In 1962, while working at the Institute of Forest Botany, University of Munich, he was serving as a visiting scientist at the prestigious Harvard University in the United States. Later, when his fame as a top-order forestry expert spread, many other universities - Berkeley University of the United

States, Canterbury University of New Zealand, Nanjing Forestry University of China, Universidad Austral of Chile and National University of Taiwan-China – followed suit. Although his primary vocation as a wood biologist and forest botanist prompted Liese to move to Hamburg in 1963, taking up the position of Professor of Wood Science at Hamburg University, bamboo remained a source of fascination for him. His enthusiasm on the subject attracted several young scientists, and some of them became his research partners. During the Freiburg years, Prof. Liese carried out seminal work on the histometry of the cell elements in various bamboos, with special emphasis on tissue composition. The Munich years also saw several studies being carried out on bamboo, not only on anatomy but also on the permeation properties of bamboo culms.

Prof. Liese's research on bamboo anatomy peaked during the Hamburg years (1963-91) though he still continues to work as Professor emeritus. The first stimulus came from his association with Dr Dietger Grosser, who had the aptitude and patience to search for even the most minute details in anatomical studies. Together they presented an impressive array of histological studies on bamboo – the characterization of the four basic vascular bundle structures, and their relation to taxonomical classification; variability of fibre lengths in bamboos; distribution of vascular bundles and the cell types in bamboo culms etc. Prof. Liese's joint work with Prof. Narayan Parameswaran added a competitive depth to bamboo research. Their initial research covered the fine structure of cell walls, especially of fibres and parenchyma cells. This was followed by studies on the occurrence of warty structures in certain bamboo species, fine structure of protoxylem elements, and ultrastructural aspects of bamboo cells, culms etc. Much of this research remains to date the most important contribution to the subject. In between and after these fruitful joint research associations, Prof. Liese has made several forays on his own and published research papers of excellence.

Although enamored by the lure of bamboo, Prof. Walter Liese never allowed that to affect his other academic interests – wood biology, wood pathology and wood protection. He has delivered lectures in over 50 countries on these subjects, and has carried out research on a number of related areas such as: wood and bark anatomies; fine structure of wood; wood quality; wound reactions in trees and monocotyledons; micromorphology of wood degradation; physiology and enzymology of wood fungi; and promotion of wood utilization in developing countries. A prolific writer, Prof. Liese has to his credit well over 400 scientific papers (70 of which are on bamboo and 20 on palms, mainly co-authored by Gudrun Weiner). He has also guided 70 diploma students and 35 doctoral students.

Apart from teaching at the Hamburg University, Prof. Liese also served as the Director of the Institute for Wood Biology and Wood Protection, and from time to time as the Executive Director of the Federal Research Centre for Forestry and Forest Products. During the Hamburg years, and after his official retirement in 1991, he lent his expertise to several international and national entities, including: the FAO Advisory Committee on Forestry Education (1966-90); the International Union of Forest Research Organizations (IUFRO – as President during 1977-1981 and in various other capacities from 1968 to 1995); the FAO/IUFRO Committee on Bibliography and Terminology (1964-73); the International Academy of Wood Science (as Fellow in 1966 and as Vice President during 1969-72); EUROSILVA, the European Research Cooperation on Tree Physiology (as Chairman of the Joint Steering Committee during 1988-93 and as Vice Chairman in 1994); Deutsche Gesellschaft für Holzforschung (as Chairman for Wood Protection during 1972-76); the Research Advisory Board of the Forest Research Institute, Malaysia (1989-90); etc.

Prof. Liese was instrumental in getting the International Development Research Centre (IDRC) of Canada interested in bamboo, and played an important part in the creation of the International Network for Bamboo and Rattan (INBAR). He is often referred to as the "grandfather of INBAR".

During his IUFRO presidency Prof. Liese strongly advocated and spearheaded the involvement of developing countries in the organization, and helped focus IUFRO's activities more on issues of tropical forestry. He was instrumental in initiating the call for action on tropical forestry, which later developed into the IUFRO Special Programme for Developing Countries. It was also during his presidency that IUFRO turned truly international.

International recognition of Prof. Liese's expertise in his chosen fields was never found wanting. He was accorded honorary memberships of the Philippine Forest Research Society, Finland Society of Forestry, International Association of Wood Anatomists, Indian Academy of Wood Science, Society of American Foresters, l'Académie d'Agriculture of France, IUFRO, Chinese Bamboo Association, Academia Italiana di Science Forestate, German Society for Wood Research, Polish Academy of Science and the European Bamboo Society, amongst others. In appreciation of his academic brilliance, Prof. Liese was awarded five honorary doctorates, including ones from the University of Sopron, Hungary; University of Zvolen, Czech Republic; University of Istanbul, Turkey; University of Poznan and University of Ljubljana, Slovenia. He also received numerous medals of merit for his achievements in forestry. Prof. Liese is very highly regarded in Asian countries, especially China and India, not only for his research contributions but also for helping Asian scientists.

Although he retired from official engagements in 1991, Prof. Liese continues to contribute to the world of forestry with his profound knowledge and extensive experience. Since then, 10 years have passed with about 60 additional bamboo papers and a book "*Bamboo Preservation Compendium*" with S. Kumar as INBAR/CIBART Techn. Rep. 22, 231 pp., many bamboo lectures and bamboo consultancies in Ethiopia, Costa Rica, Colombia, China, Thailand, Northeast India, among other activities

The World Bamboo Organization is extremely fortunate to have Prof. Liese as a member of its Honorary Council. When he heard of the proposed 8th World Bamboo Congress in Thailand, he heartily sent emails of support and offered to help. He worked as Chairman of the WBC Paper Review Panel, and will be present to make an oral presentation entitled, *Bamboo as CO2-Sink—Fact or Fiction?*, as well as Chair the Session entitled: In Partnership for a Better World. We all can say <thank you> with genuine sentiment to a man whose work has led to a better understanding of bamboo. Fortunately, Walter Liese is here with us today; alive and well and a true bamboo pioneer.



Walter Liese with *Guadua*

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