

**The 47th Annual Meeting
of Society for Economic Botany**

Folk Botanical Wisdom: Towards Global Markets

Hosted by:

*Khon Kaen University
Chiang Mai University
Queen Sirikit Botanical Garden*

Imperial Mae Ping Hotel, Chiang Mai, Thailand

June 5-June 9, 2006



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The Society for



ECONOMIC BOTANY, INC.

DEDICATED TO THE PAST, PRESENT AND FUTURE USES OF PLANTS BY PEOPLE

May 31, 2006

Dear Colleagues:

Welcome to the Society's 47th annual meeting. This year we will be convening in Chiang Mai, Thailand and this represents something new as it will be the first SEB annual meeting in Asia. We are doing this to "internationalize" our organization and reach out to economic botanists across the globe. The meeting is being hosted graciously by Khon Kaen University, Chiang Mai University, the Queen Sirikit Botanic Garden. Our Thai friends have really undertaken extraordinary efforts to insure our comfort and enjoyment. The setting is in the foothills of the Himalayas and events feature a variety of unusual field trips, workshops and scientific presentations, not to mention the opportunity to meet economic botany colleagues from all over the world.

I would like to extend special thanks to Dr. Doel Soejarto who likewise arranged for exciting speakers with active programs in Southeast Asia to tell us about new developments in plant-based drug discovery efforts across the region. Also, exuberant thanks go to our local organizers, Drs. Chayan Picheansoonthon, Saisamorn Lumyong and Weerachai Nanakorn with assistance from Dr. Will McClatchey. All of the organizers worked diligently to assemble an outstanding program that includes symposia and papers contributed by scientists from many countries.

In short, the organizers have put forth a remarkable effort and, on behalf of the Society, I convey deepest thanks. I look forward to meeting all of you at what promises to be a memorable gathering.

With warm regards,

David L. Lentz, SEB President
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SEB is a 501 c(3) non-profit organization registered in the state of NY.

The Society for Economic Botany (SEB) was established in 1959 to foster and encourage scientific research, education, and related activities on the past, present, and future uses of plants, and the relationship between plants and people, and to make the results of such research available to the scientific community and the general public through meetings and publications.

**An International Conference on Economic Botany
in Chiang Mai, Thailand
entitled:**

Folk Botanical Wisdom: Towards Global Markets

Hosted by:

Khon Kaen University, Chiang Mai University and Queen Sirikit Botanical Garden
Imperial Mae Ping Hotel, Chiang Mai, Thailand
June 5-June 9, 2006

The science of Economic Botany as the study of human interactions with plants has grown rapidly in recent years. Much of the growth has been due to recognition of the abilities of the discipline to address pressing questions of sustainable natural resource management, development of new environment friendly products for economic growth, and conservation of traditional cultural practices and wisdom about environments. Most of the recent developments in scientific research in Economic Botany have taken place in South America and Africa. However, Asia is considered to be the site of the greatest future growth with development of scholars, educational and development programs, and promotion of model international projects that advance both practical and theoretical aspects of human interactions with plants. This international conference has been developed as a pivotal transition point in the transference of knowledge and experience from international scholars to the rapidly expanding cadre of Asian scientists, students, and organizations focused upon sustainable development of natural resources for global markets through application of the wisdom of centuries of Asian cultural experiences with plants and plant environments.

Introduction

The largest international scientific society of ethnobotanists is the *Society for Economic Botany* (SEB) (www.econbot.org). The SEB currently has members in 64 countries who are concerned with basic botanical, phytochemical and ethnological studies of human interactions with plants. This includes plants known to be useful and those which may have potential uses for development. This includes all kinds of cultures from those living traditional lifestyles to those using space-age technologies. It is recognized that the field of economic botany includes all or parts of many established disciplines such as: agronomy, anthropology, archaeology, chemistry, economics, ethnobotany, ethnology, forestry, genetic resources, geography, geology, horticulture, medicine, microbiology, nutrition, pharmacognosy, and pharmacology, in addition to the established botanical disciplines.

The SEB is celebrating the 60th year of its well known journal, *Economic Botany* which was launched in June 1946. As the proposed meeting is to be held at the time of the 60th anniversary of the coronation of **His Majesty King Bhumibol Adulyadej**, the SEB proposes to honor the king as a leader in the advancement of science, human health, welfare, conservation, and many related areas of shared values and interests with ethnobotanists.

The SEB has held annual international scientific conferences for the last 43 years. Previously these have been held in various locations in North America, Oceania and Europe. In order to reach out to the growing numbers of ethnobotanists in Asia, the SEB elected to find an appropriate venue for a meeting in Asia and to incorporate Asian meetings into a regular rotating schedule of locations. Thailand is one of the most rapidly developing and culturally diverse nations in Asia. Thailand is favorably considered by people from around the world as a safe, economical, and friendly location for meetings. As a hub of expected future research and development in Asia, Thailand has been selected as the best site to hold the annual meetings of the SEB. This decision has furthermore been positively reinforced as a wise choice by SEB members from Japan, China, Australia, Singapore, Vietnam, and India. The SEB membership is therefore ready to visit Thailand and share in the development of Economic Botany in the Southeast Asia region.

Objectives

Although it is expected that many individual and group objectives will be addressed by conference participants, the following are the major objectives that the conference organizers are specifically

using to develop the program.

1. Share most recent updated knowledge about human interactions with plants, emphasizing the roles of traditional knowledge in development of products for global markets.
2. Develop networks of trans-disciplinary researchers working on Economic Botany projects in Thailand, SE Asia, and Internationally.
3. Provide a forum for graduate students to become aware of the educational and research opportunities in Economic Botany.
4. Promote improvement of research quality and applicability to real world problems and needs of communities.

Methods

The framework of a traditional scientific conference will be used to meet the objectives. This will include opportunities for individual and group interactions and for participation by researchers of all levels (non-professional enthusiasts to students to professional senior scholars).

1. Symposia and contributed papers will be the primary means of sharing the most recent updated knowledge about human interactions with plants. Symposium speakers have been asked to present new information and to do so with a forward looking perspective on how their results can be meaningful for both science and the general public. Scholars and students not participating in symposia are encouraged to submit abstracts for presentations and posters about their latest research that has yet to be published or presented elsewhere. These presentations will be grouped into related topics for presentation in contributed paper sessions.

2. Several different methods will be employed to develop networks of trans-disciplinary researchers working on Economic Botany projects. These will include interactive "workshops", "field trips", "conference pairings", and "discussion tables"

Workshops on a variety of research development projects are being organized (as presented below under symposia and workshops). These will be interactive sessions with a chair leading the session and opportunities for participants to meet each other, discuss their ideas, and develop future collaborations.

Field trips will be offered that allow researchers with similar interests to learn about some Thai projects and traditional practices. Participants on field trips will be encouraged to meet each other and discuss their research interests, potential for collaborations, and ideas about the future of Economic Botany studies.

Conference pairings will be arranged wherein Thai participants will be paired at the beginning of the meetings with foreign scholars having similar interests. The purpose of this will be to foster collaborations and discussions and to create acceptable opportunities for participants from Thailand and abroad to ask questions about each other's countries, interests in Economic Botany, and the topics under discussion in the meetings.

Discussion tables will be held during breakfast and lunch breaks each day. These will be formed by requesting topic discussion ideas from the participants during the opening meeting and then making signs for each that will be placed above tables during breakfast and lunch. Individuals interested in topics may sit at the table for a meal and feel confident that others at the table are interested in discussing the same topic. Since many participants will be interested in more than one topic, the process will be repeated for each meal allowing each participant to hold conversations about many different topics with many different participants.

3. An open forum for graduate students to become aware of the educational and research opportunities in Economic Botany will be sponsored by the SEB on the first evening of the conference. Faculty members from institutions offering degrees and other training in Economic Botany will be invited to attend to share with students about their program opportunities. Since



students will be able to see who the various faculty members are, they will then have the rest of the conference to speak with any or all of them about the programs that are of interest to them.

4. Improvement of research quality and applicability to real world problems and needs of communities will be addressed through:

- a. individual observation of the kinds of research being conducted across the range of research presented with the SEB providing awards for the best contributed presentations and posters at the concluding banquet. The SEB will award US\$500 for the best oral presentation and US\$250 for the best poster presentation.
- b. group participation in three workshops on *Museum and Herbarium Collections Development and Management*, *Curriculum Development and Ethnobotany Certification*, and *Field Methods and Development of Economic Botany Theory*. Participants in each of these would learn about the current cutting-edge of Economic Botany research and discuss as a group how to improve the quality and applicability of their research.

Expected outcomes

1. Updated knowledge that is shared within the conference will be distributed in several different ways.

Formal abstracts of the presentations in the meetings will be published in a conference program/proceedings that will be distributed to all participants and made available for free in electronic format on-line. The outcome will therefore be a written documentation of the knowledge that was shared.

The SEB journal editor, Dr. Daniel Moerman, will be present in the meetings and will meet with presenters of superior research presentations to discuss publication of their research in the journal, *Economic Botany*. Announcements will be made within the symposia and Dr. Moerman will be identified as he makes an invitation to all participants to contribute their papers for consideration. The outcome of this will be publications of research presented in the meetings.

The editors of *Ethnobotany Research and Applications* which is published by a consortium of SEB members will be present and provide similar invitations for authors. *Ethnobotany Research and Applications* has also agreed to sponsor a specific Thailand issue of the journal that will feature the latest ethnobotanical research from Thailand. Special issues on Vietnam, China, Japan, and Malaysia will also be announced at the conference. Since this journal is on-line at www.ethnobotanyjournal.org and is open access (free) it is the most widely read Economic Botany journal in the world today. The outcome of this will be publication of research presented in the conference AND an offer to publish research in the future that was not presented in the conference.

2. The SEB annual meetings have strong histories of generating collaborations and facilitating new research trajectories. An outcome of this conference will be new research and training collaborations between Thai participants, SE Asian participants, and International collaborative networks centered on Thailand and Thai scholars. Research and Development Grant Proposals for new projects are expected to be generated from these collaborations.

3. Students participating in the meetings will have ample opportunity to explore the range of topics in Economic Botany research and to develop relationships with faculty members who could become their research advisors or collaborators. Students will become aware of the strengths and benefits of an education in Economic Botany and of the range of programs that are available around the world. The expected outcome of this will be improved matching of students to faculty appropriate for their interests. Likewise, faculty members will be able to interact with students, selecting those with whom they want to work.

4. As researchers learn about the range of research and see the kinds of research that receive awards within the conference, it will help to promote improved research quality. Even more important will be researchers observing the range of applications of research results that will encourage them to use their research in ways that benefit their own and other communities. The expected outcome is better research that is more pertinent addressing real needs and is more useful for policy makers.

Meeting Sponsors

Renaissance Herbs

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Thank you, Doug Douglas Buck, Chief Operating Officer, Renaissance Herbs, Inc., 9588 Topanga Canyon Blvd. Chatsworth, CA 91311 douglas.buck@renaissanceherbs.com:
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**Center for Research on Plurality in the Mekong Region
(Khon Kaen University)**

Program

Folk Botanical Wisdom: Towards Global Markets

The 47th Annual Meeting of the Society for Economic Botany

Hosted by:

Khon Kaen University, Chiang Mai University and Queen Sirikit Botanical Garden

Imperial Mae Ping Hotel, Chiang Mai, Thailand

June 5-June 9, 2006

Sunday, 4 June

9:00 - 12:00	Pre-meeting Chiang Mai city tour 1 (optional, departing from Imperial Mae Ping Hotel)
13:00 - 16:00	Pre-meeting Chiang Mai city tour 2 (optional, departing from Imperial Mae Ping Hotel)
16:00 - 19:00	*Registration (Imperial Mae Ping Hotel)
19:00 - 20:30	Thai Dinner Buffet, Wine/Cheese Reception, Cash Bar (Imperial Mae Ping Hotel)

*Registration includes admission to all presentations and costs of continental breakfast, breaks, lunches on Monday-Thursday and the Thursday evening banquet. Evening meals on Monday-Thursday are not included. Registration does not include lodging, travel, field trips, or other costs outside of the conference.

Monday, 5 June

7:00 -	Registration
8:30 - 8:45	Opening Ceremony
8:45 - 12:30	Symposium1: Folk Botanical Wisdom Towards Global Markets Sponsor: Nawapol Industry, Co.Ltd. Symposium Chair: Kim Bridges
8:45 - 9:15	Opening Address. Weerachai Nanakorn
9.15 - 10:00	Diversity, management, utilization, and conservation of local rice germplasm. Benjavan Rerkasem
10.00 - 10:15	Morning Break
10.15 - 11:00	Wild Mushrooms and their economic potential. Saisamorn Lumyong
11.00 - 11:45	Production and conservation of native Thai orchid <i>Dendrobium scabrilingue</i> Lindl. Luckana Phetpradap
11.45 - 12:30	Thai Longan. Pittaya Sruamsiri
12:30 - 13:30	Lunch Break Poster Session open viewing
13:30 - 14:45	Contributed Paper Session 1: Foods and Fibers Moderated by: Michael Thomas
13:30 - 14:45	Agave fibers species used in Charro (Mexican cowboy) ropes in Western Mexico. Ana G. Valenzuela-Zapata, Irma Lopez-Muraira, Jose Antonio Cortez Rodolfo Vazquez-Garcia
13:45 - 14:00	Forest foods: Wild plant consumption in northwestern Ecuador. Maria Fadiman
14:00 - 14:15	A vegetation analysis of Chinatown markets and mainstream supermarkets in a culturally diverse urban environment. My Lien T. Nguyen, Katherine Doherty, Julia Wieting
14:15 - 14:30	The saliency of 'vegetable'. Gail E. Wagner
14:30 - 14:45	Alternative seed suppliers of local vegetable varieties in modern agriculture of Nagano, Japan. Kazuhiro Nemoto, Yoshiaki Nishikawa
14:45 - 15:00	Afternoon Break
15:00 - 17:00	Contributed Paper Session 2: Teaching and Tools Moderated by: Saisamorn Lumyong
15:00 - 15:15	Ethnobotanical research and teaching: A case in Bulgaria. Hugo J. de Boer, Anneleen Kool, Lars Bjork
15:15 - 15:30	Could we trust traditional ecological knowledge to establish a sampling strategy? Study of taro's diversity [<i>Colocasia esculenta</i> (L.) Schott] at a village and an archipelago's scale in Vanuatu. Sophie Caillon, Jose Quero-Garcia, Jean-Paul Lescure
15:30 - 15:45	Population dynamics of domesticated plant: An integrative multidisciplinary approach for sorghum diversity study in Northern Cameroon. Adeline Barnaud, Monique Deu, Eric Garine, Jacques Chantereau, Doyle McKey, H.I. Joly
15:45 - 16:00	Let's go shopping!: a research oriented, market survey ethnobotanical undergraduate curriculum. My Lien T. Nguyen, Julia Wieting, Katherine Doherty
16:00 - 16:15	10 bad excuses for not georeferencing. K. W. Bridges, Y. Han Lau
16:15 - 16:30	Website: Plants & people. Margaret Delfeld

16:30 - 16:45

The weeds of Mexico website, an inclusive tool. **Heike Vibrans**

16:45 - 17:00

The assessment of ethnobotanical knowledge systems by social network analysis. **Christian R. Vogl, Christian Bertsch, Leopold Feichtinger, Brigitte Vogl-Lukasser**

17:30 -

Workshop 1: *Student Network*

Workshop 2: *Ethnobotanical Film Making*

Other workshop-dinner meetings (open participation and sites determined by participants)

Tuesday, 6 June

8:00 - 12:00	Symposium 2: Historical Perspectives on the Gain and Loss of Plant Genetic Resources in Monsoon Asia Sponsored by: Sato Project, Research Institute for Humanity in Nature, Kyoto, Japan
8:00 - 8:10	Introduction. Yoichiro Sato
8:10 - 8:30	Common Wild Rice: <i>in situ</i> conservation and genetics. Benjavan Rerkasem
8:30 - 8:50	<i>Citrus</i> in the Batanes Islands, Northern Philippines. Domingo Madulid
8:50 - 9:10	Archaeobotany and Ethnobotany with Reference to Harappan Sites in Haryana, North India. Mukund Kajale
9:10 - 9:30	Root and Tuber Crops in Vietnam. Vu Linh Chi
9:30 - 10:00	Questions, comments and discussion. Songkhran Chitrakon Posters <i>Pandanus tectorius</i> ('adan') in southern Japan. Peter J. Matthews
10:00 - 10:15	Morning Break Poster Session open viewing
10:15 - 12:00	Contributed Paper Session 3: Traditional Knowledge and Conservation Moderated by: Chayan Picheansoonthon
10:15 - 10:30	Cultural impacts of biological invasions: An ethnobiological perspective. Jeanine M. Pfeiffer, Robert A. Voeks
10:30 - 10:45	Traditional botanical knowledge and use of Anza (<i>Boscia senegalensis</i>) in Boumba, Niger. Jocelyn Muller
10:45 - 11:00	Forest use, scale, and conservation with Panama's Wounaan. Julie Velasquez Runk
11:00 - 11:15	How farmers select and manage yam (<i>Dioscorea</i> spp.) diversity in Wolayita, Southern Ethiopia. Muluneh Tamiru, Heiko C. Becker, Brigitte L. Maass
11:15 - 11:30	Studying of Juniper (<i>Juniperus excelsa</i>) degradation in Ararat Piedmont North West of Iran. Mehrdad Akbarzadeh, Saiid Amini, Sasan B Kafaki
11:30 - 12:00	Tibetan land use and change near Mt. Khawa Karpo, Eastern Himalayas. Jan Salick, Yang Yong Ping, Anthony Amend
12:00 - 13:00	Lunch Break (served on site) Poster Session open viewing
13:00 - 15:00	Contributed Paper Session 4: Plant Evolution and Selection Moderated by: Will McClatchey
13:00 - 13:15	Population genetics and sustainable harvest of <i>Tricholoma matsutake</i> mushrooms using traditional ecological knowledge and microsatellite DNA markers. Anthony Amend
13:15 - 13:30	Fragrant Evolution: Phylogeny and Ethnobotany of Sandalwoods. Danica T. Harbaugh, Bruce G. Baldwin, Thomas J. Carlson
13:30 - 13:45	Human induced dwarfing of Himalayan snow lotus, <i>Saussurea laniceps</i> (Asteraceae). Wayne Law, Jan Salick
13:45 - 14:00	Climbing weeds in the <i>Agave tequilana</i> Weber crop in Jalisco, Mexico. Irma G. Lopez-Muraira, Ruben Iruegas-Buentello, Ana G. Valenzuela-Zapata, Adriana E. Flores-Su rez
14:00 - 14:15	Origins, variation and domestication of vanilla: the case of <i>Vanilla tahitensis</i> J.W. Moore. Pesach Lubinsky, Kim Seung-Chul
14:15 - 14:30	Status of the populations of teosinte (<i>Zea mays</i> ssp. <i>parviglumis</i>) in the northern Rio Balsas depression, Mexico. Juana Mondrag n-Pichardo, Heike Vibrans
14:30 - 14:45	Domestication in white sapote, <i>Casimiroa</i> spp. (Rutaceae). Patricia Vera-Caletti, Heike Vibrans

- 14:45 - 15:00 Infra-specific folk taxonomy in sorghum [*Sorghum bicolor* (L.) Moench] in centre of diversity, Ethiopia: Rhetoric or reality. **Firew Mekbib**
- 15:00 - 15:15 Afternoon Break
- 15:15 - 17:15 **Contributed Paper Session 5: Traditional Knowledge and Conservation**
Moderated by: **Arika Virapongse**
- 15:15 - 15:30 Ethnobotanical gardens: Perpetuating or destroying indigenous cultures. **Kawika Winter**
- 15:30 - 15:45 From endemic plants to economic decorating plants. **Piya Chalermglin, Patcharin Kengkarj**
- 15:45 - 16:00 OTOP, a national development strategy for prospecting and internationalization of traditional products: cases from the northeast of Thailand. **S. S. Dhillion, K. Stubberud, L. Ampornpan**
- 16:00 - 16:15 A preliminary survey of economically important plants of North Sikkim. **Ajeya Jha, Sangeeta Jha, Sangeeta Jha, Vandana Suhag, Amlan Das**
- 16:15 - 16:30 Japanese flamboyant image about *Castanea* stands in satoyama and real situation. **Junko Kitagawa, Takeshi Nakagawa, Yoshinori Yasuda**
- 16:30 - 16:45 Socio-economic impact of hybrid seeds for a local vegetable variety on rural community: Case of Seinaji-Akane turnip (*Brassica napus* L.) in Nagano, Japan. **Yoshiaki Nishikawa, Kazuhiro Nemoto**
- 16:45 - 17:00 A microloan program for improving household economy in a Muong community, Vietnam. **Bui Minh Vu, Le Thi Xuan, Charlotte Gyllenhaal, Djaja D. Soejarto**
- 17:00 - 17:15 Promoting the conservation and sustainable use of breadfruit in the tropics. **Diane Ragone**
- 17:30 - **Workshop 3: Field Methods and Development of Economic Botany Theory**
- Workshop 4: Ethnobotany Curricula with a Sense of Place: International Models and Perspectives**
- Other workshop-dinner meetings (open participation and sites determined by participants)
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Wednesday, 7 June

8:30 - 12:05	Symposium 3: Medicinal Plant Research in South & Southeast Asia: Past, Present & Future Sponsors: Bristol Myers Squibb; University of Illinois, Chicago; Society for Economic Botany Symposium Chair: Doel Soejarto
8:30 - 8:45	Introduction. Doel Soejarto & David Lentz
8:45 - 9:10	Medicinal plants of Vietnam: Past, present and future. Tran Cong Khanh
9:10 - 9:35	Studies on medicinal plants of Laos. Bounhong Southavong
9:35 - 10:00	Developing Indonesian vegetables and medicinal plants for economically valuable products. Leonardus B. Kardono
10:00 - 10:15	Morning break Poster Session open viewing
10:15 - 10:40	Symposium Chair: Charlotte Gyllenhaal Medicinal plants for drug development in Thailand. Nuntavan Bunyapraphatsara
10:40 - 11:05	Studying herbal medicine - An Hong Kong experience. Chun Tao Che
11:05 - 11:30	Search for bioactive compounds from plants of Vietnam and Laos: A paradigm for an international cooperation. Doel Soejarto
11:30 - 11:55	General Discussion
11:55 - 12:05	Summary and conclusions. Charlotte Gyllenhaal & Doel Soejarto
12:05 - 13:15	Lunch Break Poster Session open viewing
13:15 - 17:00	Contributed Paper Session 6: Ethnobotany and Ethnomedicine Moderated by: Rick Stepp and Robert Voeks
13:15 - 13:30	Anti-quorum sensing activity of six South Florida medicinal plants and their ability to inhibit <i>Pseudomonas aeruginosa</i> pathogenicity. Allison Adonizio, Kok-Fai Kong, Kalai Mathee
13:30 - 13:45	A pilot study: Traditional Chinese medicine for the treatment of "Xiao ke" (Diabetes mellitus, Type 2). Wenjian Wang, Sarah K. Khan, Chunyan He
13:45 - 14:00	<i>Ilex vomitoria</i> : An overlooked North American caffeine source. Matthew J Palumbo, Francis E Putz, Stephen T Talcott
14:00 - 14:15	An ethnobotanical survey of medicinal plants for the treatment of skin disease in southern Italy. Cassandra L. Quave, Andrea Pieroni, Bradley C. Bennett
14:15 - 14:30	Status of medicinal plants in Nepal, value addition and market development efforts of BDS-MaPS project. Pradip Maharjan
14:30 - 14:45	Commonly Used Medicinal Plants of India, Thailand & Viet Nam. J. C. Kurian, Susan C. Scharffenberg
14:45 - 15:00	Medicinal plants from Thailand for <i>Helicobacter pylori</i> infections. Gail B. Mahady, Sutatip Bhamarapavati, Christine Slover, Larry Danziger
15:00 - 15:15	Afternoon Break
15:15 - 15:30	Cross-cultural ethnomedicine between the Malink of Mali and Ash ninka of Peru. Nat Bletter
15:30 - 15:45	The Lives of a Chinese Medicinal Moss: Variation and Standardization. Eric S.J. Harris
15:45 - 16:00	Forest pharmacy and enterprise development in the Fijian setting. Litiana Kuridrani

- 16:00 - 16:15 Medical ethnobotany of the Q'eqchi Maya: Perceptions and botanical treatments related to women's health. **Joanna L. Michel, Gail Mahady, Armando Caceres, Djaja D. Soejarto**
- 16:15 - 16:30 Afro-Cuban religion, Magical-Medical Plant Use and Conservation: Local Perceptions of Environmental Change. **Erica Moret**
- 16:30 - 16:45 Thai wild fruits and their economic potential. **Chusri Trisonthi**
- 16:45 - 17:00 Open time slot
- 17:30 - **Workshop 5: Curriculum Development and Ethnobotany Certification**
- Workshop 6: Collections for Ethno- and Economic Botany: Museum and Herbarium Collections Development and Management**
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Thursday, 8 June

8:30 - 12:00	Symposium 4: Learning from Farmer's Crop and Landrace Diversity Conservation Strategies Hosts: Stef de Hann, Maria Scurrah & Eve Emshwiller Sponsors: International Potato Center, Peru; Consultative Group in International Agricultural Research, Peru; The Field Museum, USA
8:30 - 8:50	What can we learn from farmers' crop diversity management strategies to improve conservation measures? – Introduction to the workshop theme. Eve Emshwiller
8:50 - 9:10	Gene rich but poor farmers: a revision of links between farmer driven and R&D oriented on-farm conservation strategies of crop genetic resources. Stef de Haan, Merideth Bonierbale
9:10 - 9:30	Gene flow: theory and practice in Andean potato farms in Peru. Maria Scurrah, Susana Chumbiauca, Alberto Salas, Carolina Celis, Richard Visser, Raul Canto, Jesus Arcos
9:30 - 9:50	Drawing on knowledge of local farmers in planning conservation of crop landraces: the case of yams (<i>Dioscorea</i> spp.) in Wolayita zone, Southern Ethiopia. Muluneh Tamiru, Heiko C. Becker, Brigitte L. Maass
9:50 - 10:05	Morning Break
10:05 - 10:25	<i>In situ</i> conservation of breadfruit in the Pacific Islands: Case studies in Samoa and Kiribati. Diane Ragone
10:25 - 10:50	Farmers' knowledge, management and use of local rice germplasm. Benjavan Rerkasem, Sansanee Jamjod, Kanok Rerkasem
10:50 - 12:00	Discussion
12:00 - 13:00	Lunch Break
13:00 - 14:30	Contributed Paper Session 7: Palaeobotany Moderated by: Tanit Padumanenda and Protan Luecha
13:00 - 13:15	Paleoethnobotanical studies at the Mahtab Bagh: Taj Mahal pleasure garden. David L. Lentz
13:15 - 13:30	Archaeological evidence for the tradition of psychoactive plant use in the New World. Mark D. Merlin
13:30 - 13:45	Ritual use of non-psychoactive <i>Cannabis</i> in eastern, Asia. Robert C. Clarke, Mark D. Merlin
13:45 - 14:00	Did Maori grow potatoes (<i>Solanum tuberosum</i>) prior to their introduction to New Zealand by Europeans in the late 18th century. Graham F. Harris, Mike K. Burtenshaw
14:00 - 14:15	Experimental archaeology gardens rediscovering cultivation techniques for ancient Maori cultivars of sweet potato, <i>Ipomoea batatas</i> (L.) La., in New Zealand. Mike Burtenshaw, Graham Harris
14:15 - 14:30	Open time slot
14:30 - 14:45	Afternoon Break
14:45 - 16:00	Open Discussion: The Future of the Society for Economic Botany
16:00 - 17:00	Annual Society for Economic Botany Business meeting
17:30 - 19:00	Pre-Banquet Social with Snacks and Cash Bar
19:00 - 21:00	Closing Awards Banquet. Speakers: Drs. Memory Elvin-Lewis and Walter Lewis, 2006 Co-distinguished Economic Botanists

Friday, 9 June

- 8:00 - 16:00 Field Trip A: **Home Industry and Craft Production**: Tour of silk and cotton weaving, plant fiber craft production, wood carving and fresh plant markets.
- 8:00 - 16:00 Field Trip B: **Royal Projects**: Tour of Thai royal projects on economic plants
- 8:00 - 16:00 Field Trip C: **Botanical Garden and Hike**: Tour of Queen Sirikit Botanical Garden followed by a guided hike through Doi Pui-Suthep National Park.
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Evening Workshops

Optional evening workshops will be held at small restaurants or other meeting places near the conference hotel. Meals and other costs are not included but are also optional. Locations will be announced at the conference site following solicitation of interest. This will allow workshop planners to select a site that is of an appropriate size. Workshops are very loosely organized and most represent continuations of discussions that have been held at SEB meetings over a series of years.

Workshop 1: ***Student Network***
Date: Monday evening, June 5th
Chairs: Hugo de Boer and Arika Virapongse
Sponsor: Society for Economic Botany
Description: Student members of the SEB hold a networking mixer each year in order to meet each other and to become acquainted with a variety of educational programs and faculty advisors. Faculty members who are part of training programs are encouraged to join the mixer to meet and talk with students.

Workshop 2: ***Ethnobotanical Film Making***
Date: Monday evening, June 5th
Chair: David Strauch
Sponsor: University of Hawaii
Description: Digital film making is an increasingly important tool in fieldwork, particularly useful in linking cultural information to identifiable plants. This workshop is geared towards increasing the quality of material recorded by giving participants greater control over the medium. We will cover technical aspects (e.g. camera settings, gear, audio), compositional aspects (framing, lighting, focus), and some of the ways that thinking about presenting the material can help in recording it. There will be some time for questions and discussion throughout the workshop. Experienced filmmakers are encouraged to attend, and participants are welcome to bring their own camera equipment.

Workshop 3: ***Field Methods and Development of Economic Botany Theory***
Date: Tuesday evening, June 6th
Chair: Kim Bridges
Sponsor: Society for Economic Botany
Description: Theory-driven research is tightly linked to development of testable hypotheses and appropriate methods for testing the hypotheses. This workshop involves discussions of field methods and the emergence of theories about human interactions with plants.

Workshop 4: ***Ethnobotany Curricula with a Sense of Place: International Models and Perspectives***
Date: Tuesday evening, June 6th
Chairs: Pat Harrison and Pauline Chinn
Sponsor: Botanical Research Institute of Texas
Description: Integration of traditional environmental knowledge into modern classroom curriculum is happening at a growing pace around the globe. This workshop is part of a growing network of trans-disciplinary educators, researchers, and community members seeking to instill the values, wisdom, and ingenuity of traditional observations, science and practices into the education of children. It is expected that the activities of the network will stretch across many years, cultures, and disciplines.

The format will be presentations of programs with science curricula incorporating place-based ethnobotany followed up with a round table discussion for sharing and planning further development of K-12 outreach for schools.

Workshop 5: *Curriculum Development and Ethnobotany Certification*

Date: Wednesday evening, June 7th
Chairs: International: Will McClatchey and Brad Bennett
Sponsor: Society for Economic Botany
Description: Ongoing development of ethnobotany courses, curricula and field training programs will be discussed as they are developing at various institutions. Proposals will be reviewed for establishing SEB certification of programs or individuals.

Workshop 6: *Collections for Ethno- and Economic Botany: Museum and Herbarium Collections Development and Management*

Date: Wednesday evening, June 7th
Chair: Jan Salick
Sponsor: Society for Economic Botany
Description: CEEB is a network of researchers who have been developing standards and protocols for the development of collections of artifacts, plant specimens and related materials. Participants discuss successes, problems, and funding sources for addressing management issues.

Poster Presentations

1. Study on destruction factors of ecosystem using satellite data in Ilghineh chay basin of Arasbaran region, Iran. **Maghsoud Akbarzadeh**
 2. Chemotaxonomy study of some annual species of *Astragalus* based on flavonoids. **Maryam Arefi, Vahideh Nazeri, Mansour Mirtajaddini**
 3. Numerical taxonomy of some annual species of *Astragalus* from Iran. **Maryam Arefi, Vahideh Nazeri, Mansour Mirtajaddini**
 4. The relationship between religious uses of plants and forest preservation among the Tai Dam in NW Laos, PDR. **Kristine Callis, Faith Inmen**
 5. Ethnobotany, Biodiversity and Malaria in Nakai-Nam Theun NBCA, Laos: Three PhD projects in a Sida-SAREC funded collaboration between the National University of Laos and Uppsala University, Sweden. **Vichith Lamxay, Chanda Vongsombath, Hugo J. de Boer**
 6. Validation of the ethnomedical use of Costa Rican plants for the treatment of menopause. **Brian Doyle, Tracie Locklear, Gail B. Mahady, Alice Perez**
 7. Dormancy breaking and germination methods of madder (*Rubia tinctorum*) seeds. **Roozbeh Farhoudi, Maryam Makizadeha**
 8. Antimicrobial efficacy of *Curcuma aromatica* L. extract and *Morus alba* L. extract against *Propionibacterium acnes*, *Staphylococcus epidermidis* and *Staphylococcus aureus*. **Rattanasiri Giwanon, Saowaluck Rungsri, Ubon Rerk-am, Sinn Tangstirapakdee, Thanayut Srisom, Taweesak Suntornanasart**
 9. Essential oil constituents from two uncommon *Zingiber* rhizomes. **Siripen Jarikasem, Joseph J. Brophy, Uol Rerk-am, Winai Supattanakul**
 10. A Study on traditional medical knowledge of the Phu Thai ethnic group in northeastern Thailand. **Wasupol Kayormdock, Chayan Picheansoonthon, Songkoon Chantachon, Vichai Chokevivat**
 11. Conservation and development on sustainable uses of rare and endangered native fragrant flower species. **Patcharin Kengkarj, Piya Chalermglin**
 12. Neuromuscular improvement *Curcuma longa* L. tablets in MPTP-induced mice. **Amonrat Khayungarnnawee, Wipaporn Phatvet, Tuanta Sematong, Pongsathorn Limsiriwong, Arkachai Tantrawong, Prapaipat Klungsupya, Taweesak Suntornanasat**
 13. Leaf cuticular waxes in sesame (*Sesamum indicum* L.) and soybean [*Glycine max* (L.) Merr.]. **Kwan-Su Kim, Si-Hyung Park, Hui Kim**
 14. Ethnobotany and morphological diversity of *Kalopanax septemlobus*. **Hui Kim, Ho Sang Kang**
 15. Polar constituents from teas seeds. **Siripen Jarikasem, Tanwarat Kajsongkarm, Pongsatorn Limsiriwong, Taweesak Suntornanasat**
 16. Evaluation of the ethnomedical use of *Justicia pectoralis* for the treatment of dysmenorrhea. **Tracie Locklear, Brian Doyle, Gail B. Mahady, Alice Perez**
 17. *Citrus* in the Batanes Islands, Northern Philippines. **Domingo A. Madulid**
 18. *Cycas micronesica* reproductive organ development in Guam. **Thomas E. Marler, Nirmala Dongol**
 19. Study of wisdom of traditional healer employing sanding medicine in northeast Thailand. **Surote Paengma, Chayan Picheansoonthon, Prathan Luecha, Vichai Chokevivat**
 20. *Morinda citrifolia* L. noni has cholesterol lowering potential. **Afa Kehaati Palu, Brett Justin West, Jarakae Jensen, Bing-Nan Zhou**
 21. Immunostimulant activity and toxicity study of dried powder of *Scaphium scaphigerum* (G. Don) Guib. & Planch in rats. **Wipaporn Phatvej, Amonrat Khayungarnnawee, Tuanta Sematong, Chantara Phoonsiri, Siripen Jarikasem, Taweesak Suntornanasat**
 22. Blowing Traditional Healer (Mor Paw): Traditional Healers in Northeastern Thailand. **Boonmee Phokham, Chayan Picheansoonthon, Prathan Luecha, Vichai Chokevivat**
 23. Mapping community's perception on the value of ecosystem services: The case study of Manicoba community (Bahia, Brazil) and the production of passion fruit (*Passiflora edulis*, Passifloraceae). **A.M.R. Almeida, J.C. Piovesan, B.F. Viana, C.N. El-Hani**
 24. The evaluation of seed dormancy and germination of two species of Iranian medicinal plants. **Abdollah Ghasemi Pirbalouti, Ahmad Reza Golparvar**
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25. Evaluation of leishmanicidal effect of *Calotropis gigantea* extract by in vitro leishmanicidal assay using promastigotes of *L. major*. **Mohammad Ramezani, Mahmoud Reza Jaafari, Azam Fallah**
 26. Antioxidant and antityrosinase activity evaluation of the ethanolic extracts, obtained from five *Curcuma* spp. **Ubon Rerk-am, Thanid Chitphet, Sawai Nakakaew, Pongsatorn Limsiriwong, Sirinan Thubthimthed, Buppachat Potduang, Taweesak Suntornanasat**
 27. Methods for breaking of seed dormancy in *Echinacea angustifolia* D.C. and *Echinacea purpurea*. **Ali Reza Safahani, Rozbeh Farhoudi**
 28. Phylogenetic relationships in subgenus *Ceratotropis* species (genus *Vigna*, Fabaceae) inferred by trnT-F sequences. **Hirofumi Yamaguchi, Ye Tun Tun**
 29. Agave plants diversity used in Mexican geographical indications spirits: Mezcal and Tequila. **Ana G. Valenzuela-Zapata, Larson Jorge**
 30. Lightning, hail and thunderstorms in Austrian farming communities: Blessing *Salix* sp. and *Buxus sempervirens*! **Anja Christanell, Hemma Burger-Scheidlin, Brigitte Vogl-Lukasser, Christian R. Vogl**
 31. Local knowledge of alpine organic farmers families in Eastern Tyrol, (Austria) on hand made wooden agricultural tools. **Leopold Feichtinger, Christian R. Vogl, Brigitte Vogl-Lukasser**
 32. Effect of Temperature on the inhibition of *Ralstonia* spp. On maize seedling. **Jirasak Kongkiattikajorn, Sirichia Tepa**
 33. Ethnomedicine of the Kui. **Arika Virapongsea, Chayan Picheansoonthon, Julraht Konsil**
 34. Assessing ecological impacts of *Colophospermum mopane* (Fabaceae) seed harvesting in Namibia. **Laura Weiss, Tamara Ticktin**
 35. Traditional medicinal plant in a contemporary agroforestry system: noni in the understory (Hawaii). **Tamara Wong**
 36. *Capsicum frutescens* L. used by aborigines of Taiwan. **Sota Yamamoto, Li-Ying Lin, Eiji Nawata**
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Abstracts*

*All abstracts are arranged in alphabetical order of the last name of the presenting authors.

Anti-quorum sensing activity of six South Florida medicinal plants and their ability to inhibit *Pseudomonas aeruginosa* pathogenicity. (Oral Presentation)

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Introduction

Plants have evolved numerous chemical strategies for deterring pathogen attack, including the production of bactericidal compounds. However there are other mechanisms by which plants control bacterial infection. The inhibition of quorum sensing (QS), or bacterial cell-to-cell communication, is known to attenuate bacterial pathogenicity, and reduce infection in both plant and animal hosts. This is achieved without killing the bacteria, thus reducing the chance to evolve resistance. *Pseudomonas aeruginosa* is an opportunistic pathogen responsible for a variety of severe and occasionally lethal infections in cystic fibrosis patients and immunocompromised individuals. Expression of toxic virulence factors and its ability to form biofilms enables this organism to create intractable infections where established. Both of these phenomena are under QS control and a novel target for natural products.

Objectives

In our previous research, 50 South Florida medicinal plants were screened for anti-QS activity using bacterial biomonitor strains (Adonizio *et al* 2006). Of these, six plants showed QS inhibition. We take this work a step further by exploring the effect of these plants on virulence factors and biofilm formation in *Pseudomonas aeruginosa*.

Methods

Crude aqueous extracts of six plants: *Conocarpus erectus* (Combretaceae), *Chamaecybe hypericifolia* (Euphorbiaceae), *Callistemon viminalis* (Myrtaceae), *Bucida burceras* (Combretaceae), *Tetrazygia bicolor* (Melastomataceae), and *Quercus virginiana* (Fagaceae) were tested for their ability to inhibit biofilm growth, and virulence factors LasA elastase, LasB protease, and pyoverdine in *P. aeruginosa*.

Results

Extracts of these plants cause differential inhibition of QS-controlled factors without a significant decrease in cell density; suggesting quorum quenching rather than bactericidal effect. The most efficient inhibition was seen with *C. erectus*, *P. nervosa*, and *C. viminalis*.

Conclusion

This work substantiates our previous assertion that QS-interruption serves as a mode of action and use-validation for these plants. Since quorum sensing mediates the pathogenicity of many organisms, the therapeutic potential of these plants may be far-reaching.

Keywords: antipathogenic, quorum quenching plants

Reference

1. Adonizio, A. L., K. Downum, B. C. Bennett, and K. Mathee. 2006. Anti-quorum sensing activity of medicinal plants in southern Florida. *Journal of Ethnopharmacology*. In Press; Corrected Proof, Available online 6 January 2006.

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Study on destruction factors of ecosystem using satellite data in Ilghineh chay basin of Arasbaran region, Iran (Poster)

Maghsoud [Akbarzadeh](#)

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Introduction

Arasbaran has one of the unique ecosystems in Middle East. This ecosystem has special fauna and flora included 13 basins with area about 540,000 ha. At present, ecosystem structure in this region involved many of plant and wild life. Forest ecosystem structure is coppice and a little area is coppice with standard.

Objectives

Destruction factors of ecosystem, in Arasbaran , as a result of disappeared of plants and ecosystem, this paper aim to , study destruction factors of biocenose life in Arasbaran with case study in Ilghineh chay basin.

Methods

Ilghineh chay is the biggest basin in Arasbaran with area about 58000, ha.. Destruction of ecosystem and ecosystem management method is two main subjects in this region. 20 points selected of satellite data in basin which had lost land cover and high risk destruction had studied. Using etm +, landsat 7 at two time period. NDVI and land cover map had made by processing and analyzing of data. Finally with overlay of field study and the satellite data, Used for making destruction map of ecosystem.

Results

The results revealed maximum rate of destruction of ecosystem in points 1, 5, 12, and 8. Medium rate of that have seen in points 2, 3,6,11 and 17.

Points 4,8, ,9,10,13,14,15,16,18,19,and 20, had low rate of ecosystem destruction.

Results were as below;

- 1- None appropriate true ecosystem management.
- 2- Changing land use in the lands (at slope under 45%)
- 3- Population growth in the region.
- 4- Irregular grazing
- 5- Clear cutting by people.
- 6- High rate of immigration
- 7- None training and extensions programs.

Conclusion

In this paper, ecosystem management plan is also given for the basin.

Keywords: Satellite data, Ilghineh Chay,Ecosystem management, plant life,wild life

Selected References

1. M.Makhdum, 2001, Fundamental of land use planning,and ecosystem management Tehran university press.
2. M. Najafi Disfani, 1998, Computer Processing of Remotely Sensed Images Samt Press.
3. R. S. Smith, 1982, the use of land classification in resource assessment and rural planning. Ter. Ecology .Nat. Environ. Res .Council .Cambridge.

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Studying of Juniper (*Juniperus excelsa*) degradation in Ararat Piedmont North West of Iran.
(Oral Presentation)

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Introduction

Juniperus excelsa is one of few native needle leaf species of Iran, and most regions of country are introducer of its natural place. These plant species are so resistant that we can rarely find trees which they are dried. This kind of tree has 25 m height in best ecological condition in Iran but we can see different height of this.

Objectives

To study climate change in this region and stand degradation of *Juniperus excelsa*

Methods

Northwest Iran has 3 major sites of *Juniperus excelsa*. We studied these sites with random sampling method and for 3 years. We given climatologically data, and maps of sites, later with filed works and studying about economical & sociological condition, we found reduced (in quality and quantity) in first and end of studying period.

Results

None of training for people whom living near these sites and no effective management in Natural resources the region and later reduce of precipitation, cause to much stand degradation.

Conclusion

This study suggests that two improvements: natural Improving method and Improving *J. excelsa* stands by Reforestation

Keywords: Azerbaijan- Natural stands- Forest plants

Selected References

1. Ali Ahmad Kruri,S, (2001),Studying ecology and Juniperus growplace environment in Iran. publication of Forest and Range Research organizations .
2. Bayat Maku,Aram, (1999),Greek Rangelands ,Mako, Publication of Jahad e sazanegji
3. Jazirei,Mohamad, Zagros Forest Stands Silviculture, (1999), Publication of Tehran University Press.
4. Mohajer,Reza, Silviculture in Iran,(2005), Publication of Tehran University Press.

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Mapping community's perception on the value of ecosystem services: The case study of Manioba community (Bahia, Brazil) and the production of passion fruit (*Passiflora edulis*, Passifloraceae). (Poster)

A. M. R. Almeida, J. C. B. Piovesan, B. F. C. Viana, C. N. D. El-Hani

Instituto de Biologia, Universidade Federal da Bahia (UFBA), Brazil

Introduction

The São Francisco Valley is the main region of passion fruit (*Passiflora edulis*, Passifloraceae) production in Brazil. Manioba community - one of the most important producing communities of the area - is basically formed by small agriculture properties. Preliminary studies indicate that the Manioba plantations are suffering from pollinator population decline. This decline determines the need for the use of manual pollination techniques which increases production costs.

Objectives

This work is aimed at mapping Manioba community perception of the value of ecosystem services related to passion fruit production.

Methods

Fourteen producers were selected, according to prior established criteria. Data was collected using a semi-structured interview, previously tested. Data analysis was based on eight categories about the value of ecosystem services related to passion fruit production. Data was analysed both quantitatively and qualitatively.

Results

The analysed data shows a very intricate knowledge about environmental factors that influence passion fruit production. Community knowledge on the value of ecosystem services is uniform specially concerning pollination services and its relations to other local intertwining factors. However, data shows that community perception of production costs is poor and limited basically by a non-systematic evaluation of passion fruit production through the years. It suggests that local community management of passion fruit production is probably non-efficient and simple protocols for production management could increase passion fruit production in the area.

Conclusion

This work is part of a larger project in which the main goal is the increase in passion fruit production without a subsequent increase in environmental impact and in production costs. We believe that this goal could be achieved through the sustainable management of passion fruit pollinator in the area. Based on the information obtained in this work we are now planning discussions and workshops as means of producing a community based protocol for the management of the passion fruit pollinator in Manioba community.

Keywords: Ecosystem management, production costs, Ethnoecology

Selected References

1. Moller, H. et. al. 2004. Combining Science and Traditional Ecological Knowledge: Monitoring Populations for Co-Management. *Ecology and Society* 9(3):2. <http://www.ecologyandsociety.org/vol9/iss3/art2>.
- Olsson, P. et. al. 2004. Social-Ecological Transformation for Ecosystem Management: the Development of Adaptive Co-management of a Wetland Landscape in Southern Sweden. *Ecology and Society* 9(4):2. <http://www.ecologyandsociety.org/vol9/iss4/art2>.
- Ramakrishnan, P.S. 2001. Increasing Population and declining biological resources in the context of global change and globalization. *J. of Biosci.* 26(4)suppl. 465-479.

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Population genetics and sustainable harvest of *Tricholoma matsutake* mushrooms using traditional ecological knowledge and microsatellite DNA markers. (Oral Presentation)

Anthony [Amend](#)

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Introduction

Tricholoma matsutake has been consumed as a luxury edible mushroom for centuries. Recent declines in Japanese Matsutake have led to imports of this and other closely related taxa from throughout the northern hemisphere. In Shangri-la County, northwest Yunnan province, China, *T. matsutake* has quickly become the foremost non-timber forest product, comprising up to 60% of the county's income.

Objectives

This study examines the population structure and reproductive biology of *T. matsutake* and the perceived notion that over-harvest of young mushrooms diminishes spore rain.

Methods

Mycorrhizas and environmental data were collected from fifteen rhizospheres in each of three replicated (N=9) *Pinus densata*-dominated forest plots of distinct age brackets (old growth, ~50yo, and ~20yo). Rhizosphere size, genetic diversity, and spatial autocorrelation tests within populations are used to characterize reproductive strategy. Geo-referenced mushrooms from surrounding populations will be extensively sampled and characterized by allele frequency to enable estimates of population structure and gene flow. Finally, *T. matsutake* spore rain will be compared among forest ages and various local conservation strategies using a Real Time PCR analysis of airborne basidiospores.

Results

Ongoing laboratory work has resulted in successful amplification of several moderately polymorphic microsatellite DNA loci from silica-dried mycorrhizas.

Conclusion

This study provides an objective evaluation of extant conservation strategies. *Tricholoma matsutake* may be used as a model system to examine the interaction between international NTFP markets, local knowledge and population genetics.

Keywords: NTFP, ectomycorrhiza, Eastern Himalayas

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Chemotaxonomy study of some annual species of Astragalus based on flavonoids (Poster)

Maryam Arefi, Vahideh Nazeri, Mansour Mirtajaddini

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Introduction

Genus *Astragalus*, one of the largest genera of vascular plants, belongs to family Fabaceae and distributed throughout the world(1). Two important infrageneric classification of annual species of *Astragalus* by Bunge (1868) and Podlech (1999,1991) are controversial from the view point of species relationships and their position within sections(3).

Objectives

The aim of this research is detail study of chemical characters of annual species and comparing the obtained results with present classifications.

Methods

Flavonoids of some annual species of *Astragalus* were analyzed by two dimensional paper chromatography(2). Totally, 108 flavonoid compounds extracted from 20 species, sub species and varieties. Species similarity was investigated by UPGA method and Statistica software.

Results

The results show that: 1- Isolation of section *Bucerates* from other species is distinctive. 2- Section *Sesamei*, is considered as a heterogeneous section. 3- Similarity of flavonoids of *Ophiocarpus* Podlech with other species of genus *Astragalus* is confirmed.

Conclusion

This study almost confirms the Podlech's (1999) classification.

Keywords: Chemotaxonomy, Flavonoid, Annual *Astragalus*

Selected References

1. Kazempour Osaloo S., Maassoumi, A. A. and Muralcami, N. 2003. Molecular systematics of the genus *Astragalus* L. (Fabaceae): Phylogenetic analyses of nuclear gene *ndhf* sequences. *Plant Systematic and Evolution*. 242:1-32.
2. Markham, K. R. 1982. *Techniques of flavonoid identification*. Academic Press. 113 p.
3. Podlech, D. 1991. The systematics of the annual species of the genus *Astragalus* L. (Leguminosae). *Flora et Vegetatio Mundi*. IX: 1-8.

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Numerical taxonomy of some annual species of *Astragalus* from Iran. (Poster)

Maryam Arefi, Vahideh Nazeri, Mansour Mirtajaddini

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Introduction

Astragalus, the largest genus of flowering plants, contains upwards 2500 species and 245 sections. Distributed mainly in cool arid and semiarid continental regions of the Northern Hemisphere and South America (1). Large number of species, species diversity and similarity of species have been blurring the species delimitation. The infrageneric classification of the more than 2500 species has continuously revised by Bunge (1868,1869), Podlech (1991,1999) and Kasempour et al (2003).(2)

Objectives

The purposes of this study are to use numerical taxonomy to better understanding the phenetic relationships between species within sections, and also the comparison of our results with traditional infrageneric classification.

Methods

A total of 57 morphological characters were measured on 82 specimen belong to 20 taxa of annual Astragali, comprising 21 quantitative and 36 qualitative characters. Cluster analysis was performed by UPGA method using STATISTICA software and results were illustrated in a dendrogram.

Results

1. Combination of *Ophiocarpus* Podlech in genus *Astragalus* is confirmed
2. Isolation of section *Bucerates* from other species is distinctive.
3. Section *Sesamei*, is considered as a heterogeneous section.
4. Reconstruction of section *Oxyglotis* is suggested.

Conclusion

The results obtained from this study support Bunge's (1968) infrageneric classification of annual species of *Astragalus*.

Keywords: Numerical taxonomy, Annual astragalus, *Astragalus*

Selected References

1. Kazempour Osaloo S., Maassoumi, A. A. and Muralcami, N. 2003. Molecular systematics of the genus *Astragalus* L. (Fabaceae): Phylogenetic analyses of nuclear gene *ndhf* sequences. *Plant Systematic and Evolution*. 242:1-32.
2. Podlech, D. 1991. The systematics of the annual species of the genus *Astragalus* L. (Leguminosae). *Flora et Vegetatio Mundi*. IX: 1-8.

Presenting Author: Maryam Arefi, m_arefi82@yahoo.com

Population dynamics of domesticated plant: an integrative multidisciplinary approach for sorghum diversity study in Northern Cameroon. (Oral Presentation)

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⁴ CIRAD, UPR 8 Agrobiodiversité des Plantes de Savanes, TA 70/01 Avenue Agropolis 34398 Montpellier Cedex 5, France

Introduction

Crop diversity results from the evolutionary process of domestication, which in traditional agricultural systems is still ongoing. Social organisation and cultural traits of farmers, environmental factors, and intrinsic traits of plants interact to shape crop genetic diversity. Agronomists and geneticists emphasize adaptation to environment and gene flow as variables generating and maintaining crop diversity; anthropologists underline the importance of folk biology and traditional management practices in explaining crop diversity.

Objective

Attempts to study all of these factors, and their interactions, are rare. We are engaged in a multidisciplinary study of diversity in sorghum landraces in a village of Duupa farmer in Northern Cameroon.

Methods

Sorghum is an important element of the social organisation. It is the principal component of the diet, and drinking of sorghum beer accompanies all collective work. When one farmer's harvest is collectively threshed, each participant can freely take seed for his own sowing, leading to seed flow between fields. Seeds are sown as a mixture of landraces in a field (12 landraces per field on average), giving the potential for extensive pollen flow. Ninety named taxa are distinguished by Duupa farmers; morphological traits allowed the identification of forty-six landraces among these taxa. Interviews, free listing exercises and observations were conducted to assess folk knowledge. Phenotypic diversity was studied in a complete random block design. Fourteen microsatellites markers were used to analyse the pattern of genetic diversity.

Results

Folk taxonomy is consistent with landrace morphology, suggesting morphologically different landraces. The 21 landraces analyzed by microsatellites are structured in four major genetic clusters, which are linked to history of domestication, variation in the reproductive system, and farmers' practices. Based on these results, we discuss the role played by farmers in maintaining the characteristics of many landraces.

Conclusion

Understanding the dynamics of landrace diversity aids in deciphering evolutionary forces under domestication and has application in the conservation of genetic resources and their use in breeding programs.

Selected References

None

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Cross-cultural ethnomedicine between the Malinke of Mali and Ash ninka of Peru. (Oral Presentation)

Nat [Bletter](#)

City University of New York Graduate Center, Biology Dept., 250 Bedford Park Blvd. West, Bronx, NY 10468 and New York Botanical Garden, Bronx, NY, USA

Introduction

The Yuru Ash ninka of the Peruvian Amazon rainforest inhabit a very different landscape than the Malinke of Kita in the savannahs of Western Mali, yet they face many similar diseases that they both treat with their respective floras, using quite similar genera.

Objectives

To find the taxonomic similarities in the medicinal plants of the Ash ninka and Malinke used for malaria, leishmaniasis, chagas, African sleeping sickness, asthma, diabetes, eczema, and uterine fibroids using quantitative methods with the least amount of field and lab time necessary.

Methods

Eight Ash ninka and fifteen Malinke healers were given structured interviews both describing symptoms and naming diseases to determine the medicinal plants they used, then these plants were collected as vouchers and in bulk for analysis in laboratory bioassays against the diseases. Species-informant curve calculations were used in the field to determine when species saturation was approaching.

Results

Of the 90 collections (60 species, 75 genera, 39 families) of Ash ninka plants and 80 collections (76 species, 68 genera, 41 families) of Malinke plants collected, there was a surprising overlap with 51% of families, 15% of the genera, and 3% of the species of Malinke medicinal plants also used as medicinal plants by the Ash ninka. On-the-fly species-informant curves showed that species saturation was approaching with the Malinke, but not with the Ash ninka, despite that every healer and head-of-household had been interviewed.

Conclusion

The overlap of medicinal plant taxa between the completely different habitats of the Peruvian rainforest and the Malian savannah is surprisingly large and shows the power of using quantitative taxonomic techniques to find common cross-cultural medicinal plants. Using species-informant curves calculated in the field saved unproductive time in the field.

Keywords: Quantitative ethnobotany, malaria, leishmaniasis, chagas, African sleeping sickness, asthma, diabetes, eczema, uterine fibroids, parasitic diseases, auto-immune diseases, women's reproductive health.

Selected References

None

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10 Bad Excuses for Not Georeferencing. (Oral Presentation)

K. W. Bridges, Y. Han Lau

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Introduction

Historical information is particularly valuable when it permits comparisons with current data. Our practice of precisely designating locations with names has had little alternative until now. Global Position Systems (GPS) provide sufficiently-accurate, digital locations for most ethnobotanical studies, however perceptions of GPS technology have generally discouraged its use. As a result, ethnobotanical records (locations of study, collection and photography sites) are often recorded with insufficient precision to maximize their future use. We discuss an alternative way to use a GPS receiver that has been made possible by recent technology developments. This new data recording methodology is likely to be more acceptable to ethnobotanists than previous ways GPS receivers have been used.

Objectives

Test whether a GPS receiver can be used to track daily activities. If a detailed track log can be obtained, determine if it is possible to link the track log to important locations using time information.

Methods

Compare track log reliability using three GPS receivers (Garmin etrex legend, GPS 76 and GPSmap 60CSx) in simulated extreme field conditions, including under a dense canopy in a canyon, inside a vehicle, and with a GPS receiver stored in a pack. Test georeferencing by automatically linking a track log to a set of photographs.

Results

The newer GPS receiver technology (e.g., Sirfill GPS engine) had the strongest signal strength, was the only unit able to build a continuous track log under all conditions, and produced a sufficiently complete and accurate set of time-based locations for use in most ethnobotanical field studies.

Conclusion

GPS receiver technology has matured sufficiently that track logs can be used for location references under typical ethnobotanical field conditions. This should simplify the process of georeferencing many types of data, including locations of study sites, plant vouchers and photographs.

Selected References

None

Keywords: GPS, field sites, photographs, plant vouchers

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Experimental archaeology gardens rediscovering cultivation techniques for ancient Maori cultivars of sweet potato, *Ipomoea batatas* (L.) Lam. In New Zealand. (Oral Presentation)

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Introduction

Experimental gardens using pre-European Maori gardening techniques and pre-European cultivars of sweet potato have rediscovered much about pre-European cultivars and traditional cultivation techniques

Objectives

To obtain data on yield for effort, soil nutrient depletion, cultivation practices, and cultivar performance associated with traditional pre-European Maori agriculture.

Methods

Two experimental archaeology gardens established adjacent to traditional garden sites on either of Cook Strait, New Zealand have been cultivated for over 5 years using traditional pre-European Maori gardening techniques and pre-European cultivars of sweet potato.

Results

Data on yield for effort from the gardens shows that good yields of sweet potato can be obtained growing traditional sweet potato cultivars using pre-European gardening techniques with a relatively low labour input and continuous viable production from the same soil for over five years is possible despite relatively low soil nutrient availability.

Conclusion

Results have challenged production figures and the rotation periods of early shifting agriculture given by some archaeologists writing about pre-European Maori agriculture. A benchmark has been established for yield for effort required for Pre-European sweet potato production. Many further questions about sweet potato production have been raised

Keywords: kumara, experimental gardens, pre-European Maori agriculture production

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Could we trust traditional ecological knowledge to establish a sampling strategy? Study of taro's diversity (*Colocasia esculenta* (L.) Schott) at a village and an archipelago's scale in Vanuatu. (Oral Presentation)

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Introduction

Since cultural diversity has been officially integrated into the concept of Biodiversity, traditional ecological knowledge (TEK) is more and more exposed as show windows.

Objectives

The objective of this paper is to question the value of these TEK when biologists establish their sampling strategy to inventory morphological and genetic diversity in an insular context.

Methods

Such a question appeals a multidisciplinary and a comparative approach. We have used tools and concepts from anthropology (interviews), agronomic sciences (31 morpho-agronomic standardized descriptors) and genetics (AFLP with 8 primer pairs). Results collected in the village of Vetuboso from Vanua Lava's island (north Vanuatu) were confronted to those of 3 other islands (Banks group) where languages are inter-understandable.

Results

In Vanuatu, taro's diversity is characterised by a narrow base and the absence of any geographical structure. It could mean that few clones were introduced by first migrants and that farmers unflaggingly exchange them between islands. 1. But where does this incredible morphological's diversity come from? Farmers take care of a clonal / sexual mixed system. For example in Vetuboso, from the 96 cultivars, 15% correspond to "changing taros" or "mutant taros". They could be identified by their names (the mother-plant name added with a determinant indicating the modification), or by their genetic fingerprints (high similarity between mutant couples). TEK translate the structure of morphological and genetic diversity in the village.

2. How travel people, plants, names and history of origin? On Gaua, Ureparapara and Mota, we inventoried local names, morphotypes and their correspondence with those from Vetuboso thanks to the same knowledgeable farmer. All occurrences could be found. When cultivars are popular, farmers always appropriate them saying they come from their island. Identity and history of origin of introduced cultivars has to be cautiously taken.

Conclusion

When biologists want to establish a sampling strategy, they could not always trust TEK. As specialists from the local, farmers are the best informants of their plants. Knowledge is unfortunately often limited to the island boundary.

Key-words: AFLP, agrobiodiversity, Banks group, inter-island exchange, morphotype, mutations genotype, named type, Vanua Lava, vegetative propagation,

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The Relationship Between Religious Uses of Plants and Forest Preservation Among the Tai Dam in NW Laos, PDR. (Poster)

Kristine Callis, Faith Inmen
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Introduction

The Tai Dam are an animist ethnic group living in the Namtha province of Laos, PDR. Their sacred cemetery forests have been preserved since plants can only be harvested for funeral ceremonies. These virtually untouched forests now represent the last remaining mature forest patches in the Namtha valley.

Objectives

This study's objective was to investigate the relationship between plant use in Tai Dam funeral ceremonies and forest preservation. Understanding these relationships may lead to improved forest preservation models that incorporate traditional cultural practices and encourage community involvement in environmental protection and reforestation. Although the forests are protected by the cultural practices of the Tai Dam, it is not clear how much the villagers participate in active management within these forests. Additionally conservation efforts are underway to conserve a wildlife corridor along the Namtha River and determining best management practices will be important for the projects success.

Methods

The objectives were achieved through a combination of key informant interviews, field interviews and plant specimen collection and identification.

Results

While most villagers are unaware of active forest management or the need for conservation, it was found that the head of the village is the principal forest manager , and therefore keeps careful track of tree species populations. The village head will only allow trees, which are abundant to be cut for funerals. In addition, it was found that five tree species are important in Tai Dam funerals, although not all of them are found in the cemetery forests.

Conclusion

The village head is the principal forest manager in Tai Dam funeral forests, he makes sure the diversity of tree species is conserved and the forest remains intact for future generations. His influence and knowledge could be used to make an integrated management plan to connect cemetery forests into a continuous wildlife corridor along the Namtha River. Unlike previously suggested by local conservation groups in Nam Tha, using the indigenous knowledge from the village head may prove more beneficial to conservation than using villagers alone. Along with the new highway that runs through the region, connecting Thailand to China, the proposed conservation area will hopefully bring increased tourism to the area.

Keywords: Conservation, Funeral Forest

Selected References

None

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From endemic plants to economic decorating plants. (Oral Presentation)

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Introduction

More than 200 species of endemic plants in Thailand are growing in limited habitat of Limestone Mountain, hill tropical rain forest and peat swamp area. The number of species and also number of plants within species decreased day by day.

Objectives

To propagate endemic plants and develop for economic decorating plants in Thailand.

Methods

Evaluated decorating values of endemic plants, top twenty species were selected. Study on appropriated propagation technique and transferred technology to the farmers then evaluated incomes and number of plant per household.

Results

Twenty endemic species were propagated for decoration i.e. *Magnolia sirindhorniae*, *Mitrephora sirikitiae* and *Mitrephora wangii*. The incomes of two successful farmer families were more than 10,000 baht/month and produced more than 100 seedling/month.

Conclusion

The number of species and number of plant within species decreased day by day. Without any conservation, they must be extinct in the near future. Development for decorating plants is very useful to the farmers.

Keywords: endemic plant, sustainable uses

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Presenting Author: Piya chalermglin, piya@tistr.or.th

Lightning, hail and thunderstorms in Austrian farming communities: Blessing *Salix* sp. and *Buxus sempervirens* (Poster)

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Introduction

Local customs related to catholic beliefs are an integral part of peoples lives in rural areas of Austria. One of these customs is the blessing of the so called palm fronds (bundles of *Salix* sp. and *Buxus sempervirens*) on the catholic holiday Palm Sunday. This study focuses on the ritual use of palm fronds to hold off heavy thunderstorms and hail; and to ensure good yields through fertile soils.

Objectives

To present 1) the preparing and blessing of palm fronds; 2) the most frequent uses of palm fronds in farmer households; 3) selected ritual use of palm fronds 4) the actual cultural meanings of this ritual use for farmers of different generations in Austria.

Methods

In Tyrol, Styria and Vorarlberg (all Austria) different aspects of local knowledge including knowledge about use of plant species have been studied with semistructured and structured interviews, and with participant and non participant observation in several research projects between 1996 and 2006.

Results

Bunches of *Salix* sp., *Buxus sempervirens* (and other herbs; not presented here) are blessed on Palm Sunday in many parts of Austria. To keep away approaching thunderstorms and hail, branches of palm fronds are burned either in the stove or in a bowl. The smoke of the blessed branches is said to protect farmers and farm animals as well as houses, stables and land from danger through and damage caused by lightning, thunderstorms and hail. The storage of palm fronds in the roof timbering as well as eating of *Salix* sp. was furthermore believed to prevent from damages through lightning but it is not practiced any more. The blessed bunches are also carried around fields, and digged into the soils as a sacrifice and to ensure high soil fertility and good yields

Conclusion

The study shows that the blessing of palm fronds is still a lively part of rural village life in the many areas of Austria, but the spiritual beliefs in the protective function of keeping thunderstorms away and the related frequent use of *Salix* sp. and *Buxus sempervirens* is diminishing.

Keywords: Ethnometeorology, ethnoclimatology, ethnobotany

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Presenting Author: Christian R. Vogl, christian.vogl@boku.ac.at

Ritual use of non-psychoactive Cannabis in eastern Asia. (Oral Presentation)

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Introduction

Cannabis has a long history of use in life cycle, divination, healing, protection, and other rituals across eastern Asia. Most commonly, Cannabis serves as a physical representation of the intangible connections between those taking part in the ritual and the afterlife or spirit world.

Although there may be an ancient link between the psychoactive potential of Cannabis and its ritual use in eastern Asia, historical and present-day Cannabis rituals utilize non-psychoactive plant parts and products; e.g., whole plants, stalks, seeds, roots and fibers as well as cordage and fabric.

This stands in sharp contrast to traditional South Asian ritual Cannabis use – which characteristically involves consumption of the psychoactive female flowers and resins – and only rarely utilizes other plant parts.

Objectives

Selected examples of ritual Cannabis use by the Hmong, Han Chinese, Korean and Japanese cultures will be compared and critically evaluated.

Methods

None

Results

None

Conclusion

None

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Ethnobotanical research and teaching: A Case in Bulgaria. (Oral Presentation)

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Introduction

Bulgarian people in rural areas have a tradition of using herbal medicine as household remedies, due partly to the scarcity of pharmaceuticals during the Soviet era. As part of a fieldwork exercise in the ethnobotany course taught at Uppsala University students carried out ethnobotanical research in different areas in Bulgaria to study and describe these traditions.

Objectives

To study: Plants used to treat fevers and cold; plants used to treat wounds and for pain-relief; plants grown in home gardens; plants used for magical purposes; and awareness of endangerment of medicinally used plants.

Methods

Our group of 16 students was divided in groups of two-three students. Each group had written a project proposal focusing on one of the study objectives, and carried out this research with the help of a Bulgarian translator, who was knowledgeable about the local flora. Three field sites had been selected to spread the students throughout the country and to prevent informant fatigue. Interviews were semi-structured and if necessary, walks were made with the informants to point out plants and collect herbarium vouchers.

Results

The students as a whole managed to collect an enormous amount of data in a very short time, and some groups carried out as many as 18 interviews during the 8-day field period. Results were analyzed per group and presented during a one-day seminar at Ruse University, Bulgaria.

Conclusion

Bulgarian villagers, mainly elderly people, rely to a great extent on the use of medicinal plants to treat common and non-threatening chronic diseases. These plants are often grown in home gardens, and less so collected in the wild. Knowledge is often based on books, and less so on maternal or paternal transmission. The people living in Roussenski Lom national park experience that most medicinally used wild plants have stayed equal or increased in abundance over the last decennium. Carrying out ethnobotanical field research can be effective and efficiently done as part of a course training ethnobotany students.

Keywords: Student participation, Endangered plants, Ethnobotany teaching

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Gene Rich but Poor Farmers: a revision of links between farmer driven and R&D oriented on-farm conservation strategies of crop genetic resources. (Oral Presentation)

Stef de Haan^{1,2} and Merideth Bonierbale¹

Gene Rich but Poor Farmers: a revision of links between farmer driven and R&D oriented on-farm conservation strategies of crop genetic resources. (Oral Presentation)

Stef de Haan^{1,2} and Merideth Bonierbale¹

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Introduction

On-farm conservation can either be farmer or externally driven. The first relates to rural household's demand and management of diversity, while the later are potential interventions, either for research or development purposes, which aim to understand or reinforce *in-situ* conservation. The objectives of these types of conservation do not necessarily coincide and while the conceptual scientific and development basis for on-farm conservation is evolving, a gap between gene rich but poor farmer's needs and external interests persists.

Objectives

To explore farmer driven and R&D oriented on-farm conservation strategies and the links between them

Methods

Findings and experiences from in-situ conservation projects and multifaceted research with potato in the Peruvian Andes are used. These have drawn from a range of methods: market chain approaches, surveys, life history interviews, nutrition studies, ethnobotany, morphological and molecular characterization, seed system research, GIS, and others.

Results

Multiple potential links between farmer driven and externally proposed on-farm conservation strategies exists. The uses of research results, the strengths and weaknesses of interventions, and farmer's perceptions are context specific and therefore options should be kept open and their potential impact pathways explored.

Conclusions

There is a challenge to strengthen bridges between scientific research, development interventions and farmer's needs to sustain on-farm conservation. Complementarities and their use for pro-poor impact have yet to be fully realized.

Keywords: *in-situ* conservation, Andean region

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Website: Plants & People. (Oral Presentation)

Margaret [Delfeld](#)

Introduction

I am developing a website on plants and their uses in all parts of the world. This is an example of what can be done, and is not intended as any sort of last word. Using the site, you can access the files by botanical name, common name, or subject. If you want, say, *Oryza*, you will get only the files under that botanical name; other files that refer to *Oryza* in the text will not come up. In other words, it's not Google. Every common name, and each summary in the text, has its own citation, and every generic file has its own bibliography. I eliminated most of the repetition when several sources gave the same information. But when sources disagreed I made sure to put them all in. Organizing the standard subjects took a great deal of my time, in order to save you that same amount of time. At the moment only a few families are entered, with several hundred genera. I expect that I will have all my information in the website by about 2150.

Objectives

None

Methods

None

Results

None

Conclusion

None

Keywords: None

Selected References

None

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OTOP, a national development strategy for prospecting and internationalization of traditional products: cases from the northeast of Thailand. (Oral Presentation)

S. S. [Dhillion](#)¹, K. Stubberud¹, L. Ampornpan²

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² Department of Biology, Faculty of Science, Srinakarinwirot University, Bangkok, Thailand

Introduction

Traditional knowledge and use of biodiversity, such as collection of non-timber forest products, has considerable potential to improve rural economies and contribute to conservation in developing countries. This case study from Thailand concerns a national development strategy, called OTO, which focuses on product development based on local tradition and biodiversity.

Objectives

To determine the main aims of the OTO programme and evaluate the results of implementation in two OTO case species, krachai dam, *Kaempheria parviflora* and sathon, *Millettia utilis*.

Methods

The origin, use and local OTO production for both species are documented. The fieldwork was done in Na Haeo sub-district, Northeast of Thailand. Methodology consisted of semi-structured interviews, along with a transect study and market investigations were done.

Results

The OTO programme started 2001 with the intention to create employment and strengthen rural economies. One aim is to develop standardized, continuous and consistent high quality products to be sold at international markets. The national income from sale of OTO products has increased rapidly in short time. Krachai dam is a medicinal herb of Chinese origin cultivated in fields and home gardens, but not found in the wild in Na Haeo. In Bung village three krachai dam OTO beverages are produced: tea, wine and liquor. Three other products derived from the herb are also made. In total 88 people are employed in krachai dam OTO production. Sathon is a tree, and the leaves are used for making a flavouring sauce for cooking. The sathon sauce is the only OTO product made from the sathon tree. The local management appears to be sustainable due to the semi-domestication of sathon. Only krachai dam OTO products are sold at central markets. For both species the sale does not bring high income.

Conclusion

The OTO programme has considerable potential for beneficiaries, both economical and developmental as well as contributing to conservation. Cultivation of popular NTFP species releases the pressure on the wild populations, especially multipurpose species. Still improvements are needed to meet the quality requirements for large scale production and international markets. The involvement of local communities in protection and sustainable use is important to improve management plans and contribute to stabilizing the forest resource.

Keywords: traditional knowledge, biodiversity

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2. CDD 2001. One Tambon One Product, OTO Policy: policy and community enterprise. Community Development Department, Ministry of Interior, Bangkok, Thailand.
3. CDD 2003. OTO Champion products. Committee of OTO project, Office of Loei province (In Thai).

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Validation of the ethnomedical use of Costa Rican plants for the treatment of menopause.
(Poster)

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Introduction

The outcomes of the women's health initiative demonstrated that hormone replacement therapy has many adverse effects in menopausal women, thus the development of new alternative treatments for menopause has become a high priority. In Central America, many women never use HRT, but instead use natural (alternative) therapies for the treatment of menopausal symptoms.

Objectives

To collect, identify, extract and bioassay medicinal plants from Costa Rica used to treat menopausal symptoms.

Methods

A list of plants commonly used to treat the symptoms of menopause in Costa Rica was compiled by searching the NAPRALERT database. The search yielded 12 plants for which there was literature indicating relevant ethnobotanical use and pharmacological data. These plants, along with five other plants that were indicated for the treatment of menopause by Costa Rican herbalists, were subsequently collected and extracted in Costa Rica. The extracts were then tested for activity in estrogen binding assays.

Results

Seven of the 17 plant extracts; *Smilax cordifolia*, *Pimentia dioica*, *Artemisia absinthium*, *Justicia pectoralis*, *Plantago major*, *Tanacetum parthenium*, and *Hibiscus sabdariffa*; have shown significant activity in preliminary estrogen binding assays. Of the seven active extracts, *S. cordifolia* and *P. dioica* were most active, showing 85% and 80% binding to ER- β , respectively, at 50 mcg/ml.

Conclusion

Of the 17 plants used in Costa Rica to treat the symptoms of menopause, extracts of seven plants were found to bind to the estrogen receptor. Since hormone replacement therapy reduces the symptoms of menopause by increasing estrogen concentrations, our data supports the use of these medicinal plants to treat menopausal symptoms.

Keywords: estrogenic, NAPRALERT

Selected References

None

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What can we learn from farmers' crop diversity management strategies to improve conservation measures? – Introduction to the workshop theme. (Oral Presentation)

Eve Emshwiller^{1,2}

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This presentation will introduce the theme of the workshop by briefly reviewing examples of studies of traditional management of crop genetic diversity and established strategies to promote *in-situ* conservation. In the hopes of generating discussion, questions will be raised about whether our methods of research are telling us what we need to know to protect crop diversity, whether existing conservation strategies have been effective, and how their effectiveness can be assessed. I will include some observations from ongoing research on the diversity of the Andean tuber crop “oca,” *Oxalis tuberosa*, as illustrations of some of the factors that are affecting farmers' maintenance of diversity and of the challenges of making the results of research into effective tools for conservation.

Although “traditional” crop management has never been static, current rapid cultural and economic changes, in combination with other factors, are accelerating changes in farmers' livelihoods and in how (or whether) they cultivate diverse crops. *In-situ* conservation is touted as allowing continued evolution of crop diversity, but few studies have assessed evolutionary factors in traditional management of crops. How can *in-situ* conservation allow for continued dynamic change and evolution, yet prevent loss of diversity due to the livelihood shifts in rural populations? Is geneflow among crop populations introducing new diversity, or are introductions of novel crops and cultivars swamping out existing diversity? As farmers move from subsistence to market-driven farming, or from agriculture to livestock raising, what is the role of *in-situ* conservation? What existing programs have moved beyond study and theoretical discussion of complementary *in-situ* and *ex-situ* conservation, to actual practice, and what have been the results?

We hope that the “audience” will come prepared to join the discussion of these topics in the time following the prepared presentations.

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Forest Foods: Wild plant consumption in northwestern Ecuador. (Oral Presentation)

Maria [Fadiman](#)

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Introduction

Mestizo and Afroecuadorians have migrated to the forested region of northwestern Ecuador. The area in which they live has been delimited as an ecological reserve. Although they practice subsistence agriculture, wild food plants also make up an important part of their diet.

Objectives

To study colonist use and collection of wild forest food plants in a protected land area in northwestern Ecuador.

Methods

32 families were interviewed about their wild food plant consumption, collection, hierarchy of importance. Data also collection also focused on gender, age differences, and sustainability. Semi-formal and formal interviews were conducted, as well as participant observation.

Results

Wild plants comprise an important part of the diet, most collecting is opportunistic, there is a distinct hierarchy of plant importance, most collecting occurs in secondary forest, men were most knowledgeable, and sustainability varies depending on the plant part consumed.

Conclusion

Distinct trends emerge in terms of which plants people collect, what kind of plant and plant parts locals prefer, the type of forest from which most colonists collect, and which members of the community demonstrated the most wild food plant knowledge. Wild plants play a key role in the diet of these colonists.

Keywords: Food, wild plants, sustainability

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Presenting Author: Maria Fadiman, mfadiman@fau.edu

Dormancy breaking and germination methods of madder (*Rubia tinctorum*) seeds (Poster)Roosbeh Farhoudi¹ Maryam Makizadeha²¹ Dep of Agronomy, Islamic Azad University, Shoushtar branch, Shoushtar, Iran² Medicinal Plant Institute, Tehran, Iran**Introduction**

Madder (*Rubia tinctorum*) is a foregoes plant from Rubiaceae family that historically refer to Ghafghaz and Near East. This plant traditionally cultivated in center and west region of Iran. Cultivation of madder is prevailed in center regions of Iran like Yazd province for dyeing industry and extracting the drug components, therefore now days industrial color use instead of madder extracted color(1). The main parts of madder that used for mentioned works are roots and rhizomes, which contain Alizarine, rubestic acid and pourpourines. The red color of madder caused by the Alizarin component. Drug by products of madder used to diuretic, laxative and to parry the kindness stones.

Objectives

The dormancy of planed seeds is a problem to cultivating this plant, so for augmenting, it used rhizomes that it can be as troubles like transfer of pests and diseases among fields and also collecting the rhizomes for cultivating in the following year.

Methods

This research was carried out in agricultural college of Islamic Azad University of Shoushtar, in may 2004 for determining the suitable methods to breaking of madder seed dormancy. The treats were:

1. control
2. scarification of seed coat with sand paper
3. scarification of seed coat with sulfuric acid 90% for 10,15 and 20 minutes
4. scarification of seed coat with hot water 70 °C and 90 °C for 5 and 10 minutes.
5. Over lighting
6. Ghibberlic acid(GA3) using 500 ppm for seeds

These treats arranged with completely randomized design with four replication

Results

Seed germinating treated with sulfuric acid 90% for 10,15 and 20 minutes were 81%,89% and 82% respectively , that there was significant different among them and control treatment. Allocating the seeds in hot water 70 °C and 90 °C for 5 and 10 minutes caused the significant germinating of madder seeds in the compare of control treatment. Hot water 90 °C in 5 and 10 minutes caused germinating 78% and 75% respectively and hot water 70 °C in 5 and 10 minutes caused germinating 23% and 74% respectively. Among these treatments, only damping with hot water 70 °C had low effect on germinating, that was because of low ability to penetrate in to seed coat, although it increased germinating in compare of control.

Conclusion

There is misconception about seed dormancy that the dormancy of seed rest until its germinating, but it is exactly inaction not seed dormancy. Seed dormancy defined as a situation that regardless the environment that is suitable for germinating, but the seeds don't germinate. It seems that the pressure caused by water water absorbing, and embryo growth was not enough strong to split the seed coat. The scarification treatments turned the seed coat thin or splitting the seed coat and finally decreased the mechanical resistance for embryo coming out. Successfully germinating of madder seeds treated with seed coat scarification confirmed that mechanical resistance of coat has negative effect on embryo excite. By using the suitable treatments can break the madder seed dormancy, and it is the perspective the economical production of this valuable plant to industrial and medical purpose.

Keywords: dormancy breaking, sulphuric acid ,hot water

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Local knowledge of Alpine organic farmers families in Eastern Tyrol, (Austria) on hand made wooden agricultural tools (Poster)

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Introduction

Until the 1960ties Alpine farming has been manpower-intensive and was mostly based on regionally available resources, including for the construction of agricultural tools. Economic and social changes since the 1960ties lead to less manpower depended, mechanised ways of land use. Did self made wooden tools and the related knowledge survive?

Objectives

- 1.) Identification of the self-made wooden tools of the study area used in agriculture.
- 2.) Identification of the knowledge related to the resources (plant species and others) used for these tools.
- 3.) Identification of local experts in construction and use of self made wooden agricultural tools.

Methods

During field research between July and September 2003, 16 organic farms of the Alpine village Preaten, and at these farms 64 family members were approached with free lists and semi-structured interviews. In addition measurements of characteristic parameters and documentary photography were used to describe the tools found.

Results

118 tools were listed by 64 interview partners. The rake is the only tool within the cultural consensus (Weller and Romney 1988). *Larix decidua*, *Picea abies*, *Fraxinus excelsior*, *Corylus avellana*, *Acer pseudoplatanus*, *Salix* sp., *Fagus sylvatica*, *Betula pendula*, *Pinus cembra* are the most frequently used species used to construct tools. Combinations with materials like metal and plastics can be found frequently. 67 tools showed a very low frequency of occurrence.

Conclusion

A loss of knowledge within the local material culture about the construction and the use of traditional tools has taken place. Many traditional tools and their purposes were not known by local people any more. The degree of knowledge on tools is more available on farms of big families (3 generations still living and working at the farm) with a high diversity of managed ecosystems, crops grown and products processed at the farm.

Keywords: Material Culture, Alps, Rake, Sichel

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Antimicrobial efficacy of *Curcuma aromatica* L. extract and *Morus alba* L. extract against *Propionibacterium acnes*, *Staphylococcus epidermidis* and *Staphylococcus aureus* (Poster)

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Introduction

The quest for medications and cosmetic measures to combat acne continues to be major research and development initiative in the pharmaceutical and personal care industries. Mainstream medicine is increasingly receptive to the use of antimicrobial and other drugs derived from plants.

Objectives

1) To conduct comparative testing of antimicrobial activities of 2 plants; *C. aromatica* L. extract (I) and 50 % *M. alba* L. extract (II) against 3 bacteria: (1) *P. acnes* (2) *S. epidermidis*, commonly detected in acne lesions and (3) *S. aureus* a pathogenic bacteria common causes skin infections. 2) To determine the minimal inhibitory concentrations (MICs) of the selected one. 3) To determine the anti-tyrosinase activity and antioxidative activity which are used for skin whitening and anti-aging respectively.

Methods

The antimicrobial activities of *C. aromatica* L. extract (I) and 50 % *M. alba* L. extract (II) against 3 bacteria: (1) *P. acnes* (2) *S. epidermidis* and (3) *S. aureus* were evaluated by disc method. Each was determined the minimal inhibitory concentrations (MICs) by agar dilution method. The antioxidative activity was assessed by using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay. The antityrosinase activity was determined by the dopachrome method using L-DOPA as the substrate. These studies are based on spectrophotometry analysis.

Results

The (I) exhibited more active against the 3 bacteria than (II). The MICs of the (I) against (5 strains) of *P. acnes* were 5 mg/ml and against both staphylococcus species showed similar level of sensitivities with MICs ranging from 5 to 10 mg/ml. It revealed that the (I) possessed anti-tyrosinase activity ($IC_{50} = 410.82$ ppm) and antioxidants ($EC_{50} = 21.60$ ppm).

Conclusion

The results indicate that *C. aromatica* L. extract provides enhanced antimicrobial action against 3 bacteria (*P. acnes*, *S. epidermidis* and *S. aureus*). It showed efficacious tyrosinase inhibition, an enzyme that participates in melanogenesis, thereby interfering melanin formation which induced lightening of the skin tone. It also exhibited potential antioxidative activity that showed potent anti-aging activity. The extract would potentially benefit in the management of acne as well as in reducing post-acne scarring, pigmentation and blemishes. However advanced studies of its phytochemical compound identification, anti-inflammatory activity and toxicological studies should be conducted.

Keywords: *P. acnes*, *S. epidermidis*, *S. aureus*, *C. aromatica* L., *M. alba* L., antimicrobial

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Fragrant Evolution: Phylogeny and Ethnobotany of Sandalwoods. (Oral Presentation)

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Introduction

Sandalwood, commonly known for its aromatic oil, is arguably one of the world's most culturally, economically, and scientifically valuable plants. The sandalwoods comprise the genus *Santalum* (Santalaceae), which includes approximately 15 extant species, 14 varieties, and 1 extinct species, ranging from India, Australia, Indonesia, the South Pacific, and the Bonin and Hawaiian islands.

Objectives

The main objective of this research is to reconstruct the phylogeny of *Santalum* in order to examine hypotheses concerning the evolutionary history of these plants. In addition to elucidating the relationships between sandalwood taxa, the phylogeny allows us to examine evolutionary patterns in the chemical components of the aromatic oil and traditional uses of the oil.

Methods

A phylogeny of the sandalwood genus was reconstructed using a combination of nuclear and chloroplast markers. By mapping the chemical components of each species on the phylogeny, we can examine trends in chemical composition through time and how evolutionary changes in chemical composition correlate with trends in medicinal and other ethnobotanical uses.

Results

There are not clear evolutionary trends in all major chemical components of sandalwood oil. For example, the most commercially valuable and aromatic species, *S. album* and *S. spicatum*, which contain the highest percentage of alpha- and beta-santalol, are not most closely related. However, the chemical composition of the oil does correlate with many traditional uses.

Conclusion

The sandalwood phylogeny elucidates the patterns of relatedness of *Santalum* taxa and historical dispersal patterns throughout the Pacific. Though there are not clear evolutionary trends in all of the major aromatic oil components, there are correlations between oil composition and traditional uses of the oil.

Keywords: *Santalum*, Pacific, biogeography, essential oil, chemistry, traditional uses

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The Lives of a Chinese Medicinal Moss: Variation and Standardization. (Oral Presentation)

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Introduction

HuiXinCao (*Rhodobryum giganteum*) is a medicinal moss used in Yunnan province, China for minor heart problems. This moss grows throughout Yunnan and is used by many of the ethnic minority groups in different areas of the province. HuiXinCao has been studied for its pharmaceutical properties in hospitals in Yunnan and elsewhere in China. Additionally, the medicinal uses of HuiXinCao have been documented in popular books on herbal medicine. These books were published in the 1970s as part of China's directive to enhance the medical system in rural China, and are now widely used throughout Yunnan.

Objectives

Since HuiXinCao is used in the context of various environments and different medical traditions of ethnic minority groups, we might expect variation in knowledge about this moss. We might also expect some homogenization in knowledge as a result of the widely available herbal books that describe the uses of HuiXinCao. These two opposing features make HuiXinCao a useful example for exploring the interplay between factors that increase variation in ethnobotanical knowledge and factors that encourage its homogenization.

Methods

I conducted ethnobotanical interviews in various parts of Yunnan to study the use and knowledge of HuiXinCao across its range. I recorded uses and names of HuiXinCao, as well as information about the place, experiences, and occupation of the people who prescribe HuiXinCao. This information was compared with documented uses and names in herbal books. I quantified variation of herbal use by comparing the components of different herbal prescriptions that included HuiXinCao.

Results

Herbal prescription components that included HuiXinCao do not correlate with ethnic group affiliation. However, there is some influence from geographic location, because some herbs are only available in certain areas of Yunnan (eg. high-alpine plants in NW Yunnan). Herbal prescription components do correlate with occupation (eg. farmer, herb seller, herb doctor). Although there was variation, some of the most commonly used herbal prescriptions are those documented in herbal books.

Conclusion

In this paper I discuss how the opposing forces of cultural variation and homogenization work to shape the current landscape of the use and knowledge of the medicinal moss HuiXinCao in Yunnan.

Keywords: ethnobotany, China, bryophytes, HuiXinCao, Rhodobryum

Selected References

None

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Did Maori grow potatoes (*Solanum tuberosum*) prior to their introduction to New Zealand by Europeans in the late 18th century. (Oral Presentation)

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Introduction

It is generally accepted that potatoes (*Solanum tuberosum*) were first introduced to New Zealand in the late 18th century by early European explorers. The indigenous Maori were quick to recognise the advantages that these new introductions had over their traditional food crops including the kumara. (sweet potato *Ipomoea batatas*.) This paper examines reports that Maori were in possession of potatoes before the arrival of Europeans and presents evidence that this was unlikely.

Objectives

To describe traditional Maori food crops.

To examine historical and recent reports that Maori possessed *Solanum* potatoes prior to the arrival of Europeans in New Zealand.

Methods

Maori people were interviewed and their opinions on a "pre-European potato were recorded.

The economic impact of the introduction of *Solanum* potatoes on Maori society was examined.

"Traditional" Maori potatoes were collected and described.

Results

16 cultivars of "Maori potatoes" were collected, described and grown.

Stories relating to these potatoes were recorded.

Evidence for and against the presence of a "pre-European" potato was collected and analysed.

Conclusion

It was concluded that it was unlikely that Maori possessed a *Solanum* potato prior to their introduction by Europeans in the late 18th century. Precluding factors include the profound and immediate effect that potatoes introduced from Europe in the late 18th century had on Maori society, there is no scientific evidence to indicate the presence of pre-European potatoes, no evidence of the presence of potatoes was recorded by early European explorers, there are no traditional proverbs, songs or stories that refer to potatoes and potatoes were unlikely to have been grown in tropical East Polynesia from where Maori migrated to Aotearoa/New Zealand some 800 years B.P.

What is more likely is that Maori developed a range of unique potato cultivars that they selected and developed from variants of potatoes introduced by Europeans.

Keywords: Maori potatoes, riwai, taewa

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Essential oil constituents from two uncommon *Zingiber* rhizomes. (Poster)

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Introduction

The genus *Zingiber* has been regarded as the significant plant species due to their medicinal and nutritive properties. In Thailand, these plant species are abundant and biodiverse. As part of our work on isolation and analysis of chemical constituents of essential oils of promising Thai aromatic plants for the establishment of essential oil database to support further pharmaceutical development, we have now studied the essential oil composition of two uncommon *Zingiber* species i.e. *Z. junceum* Gagnep. and *Z. niveum* Mood & Theilade.

Objective

To analyze the rhizome oil constituents from two uncommon *Zingiber* species i.e. *Z. junceum* and *Z. niveum* in order to obtain the chemical profile to support further pharmaceutical development.

Methods

The oils were obtained by hydrodistillation of the fresh rhizomes for 5 h in a Clevenger-type apparatus. Capillary GC-FID and GC-MS were employed for the oil analysis. Identification of the oil components was accomplished by comparison of their GC retention indices as well as their mass spectra with corresponding data of authentic compounds or published spectra (Heller and Milne, 1978, 1980, 1983; Adams, 2001).

Results

The essential oil yield was 0.20 % and 0.22 % for *Z. junceum* and *Z. niveum* respectively.

Three main constituents i.e. methyl eugenol (54.73%), α -pinene (10.49%) and *E*-methyl isoeugenol (8.68 %) were found in *Z. junceum* oil. For oil of *Z. niveum*, elemicin (31.70%), camphene (18.30%), α -pinene (13.59%) and borneol (12.68%) were dominant.

Conclusion

The hydrodistilled rhizome oils of two uncommon *Zingiber* species, *Z. junceum* and *Z. niveum* were analyzed by capillary GC-FID and GC-MS. The oil composition was very different between the two species. The major volatile components from *Z. junceum* were methyl eugenol (54.73%), α -pinene (10.49%) and *E*-methyl isoeugenol (8.68 %) whereas elemicin (31.70%), camphene (18.30%), α -pinene (13.59%) and borneol (12.68%) were found in the essential oil of *Z. niveum*.

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Keywords: *Zingiber junceum* Gagnep, *Zingiber niveum* Mood & Theilade

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Polar constituents from tea seeds (Poster)

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Introduction

Tea plants (*Camellia sinensis* L., Theaceae) are one of the important economic crops in the northern part of Thailand. At present, farmers can only benefit from tea leaves so tea seeds are regarded as agricultural waste products. Traditionally, tea seed cakes which contain saponins have been used as hair and nail cleansing remedies for curing and/or prevention of fungal infections due to their antimicrobial and natural detergent like effects (Laohapaiboon, 1981). In order to make use of tea seed saponins for increasing income to the farmers, we have carried out the research project entitled "Research and development of hair and skin cleansing cosmeceuticals from tea seeds". This work described the phytochemical studies of tea seed polar fraction in order to find the suitable chemical marker for a quantitative analysis of the active extract as well as its cosmeceutical products for the quality assurance.

Objective

To extract, purify and characterize the polar components from tea seeds collected from the northern part of Thailand.

Methods

Tea seed kernel powders were defatted with n-hexane in Soxhlet apparatus and then extracted with 95 % ethanol. Repeated chromatographic separation of the ethanolic extract over Diaion HP-20, Sephadex LH-20 and RP-18 semiprep. HPLC were performed to obtain the pure components. Spectroscopic techniques (¹H- and ¹³C-NMR, LC-MS) were employed for the structural elucidation of the components.

Results

Five components belonging to the 3 different groups of plant secondary metabolites; 1 alkaloid (caffeine), 3 flavonoid disaccharides (5,7,4'-trihydroxyflavanone-7-disaccharides) and saponin (mixture of theasaponins) were isolated from polar fraction of tea seeds.

Conclusion

Tea seeds (*Camellia sinensis*, Theaceae) collected from the northern part of Thailand were investigated for their polar constituents using repeated column chromatographic separation techniques over Diaion HP-20, Sephadex LH-20 and RP-18 semiprep HPLC, respectively. Five components were isolated and characterized by spectroscopic means (¹H- and ¹³C-NMR, LC-MS). These include caffeine, three naringenin disaccharides and theasaponin mixture, respectively.

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Keywords: *Camellia sinensis*, saponin, caffeine, naringenin disaccharides

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A preliminary Survey of Economically Important Plants of North Sikkim. (Oral Presentation)

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Introduction

The state of Sikkim in India is administratively divided into four districts namely East Sikkim, West Sikkim, North Sikkim and South Sikkim. Of these North Sikkim is the biggest district occupying almost 60% of the entire state, and is least populated also. Sikkim itself has remained an exotic land till recently with very little information about its fauna and flora. Further, whatever has been known about it is mainly on the South, East and the west district. The north district has remained an enigma a proverbial Shangri-La. Most of it is uninhabited with no roads or civil structures. It has a tough terrain. Since it is a militarily sensitive zone, there are several restrictions for the visitors. Very little information exists about its floral wealth.

Objectives

To identify the economically important plants of north Sikkim.

Methods

The study is based on primary as well as secondary data. For Primary data a survey of North Sikkim was conducted in 2004 to study its flora. The plants were identified with the help of Botanical Survey of India, Sikkim Office.

Results

Economically important plants identified were medicinal plants (56), Edible Plants (10), and Aromatic Plants (6).

Conclusion

North Sikkim is one of the least explored areas of India. It is a storehouse of biological wealth. More extensive surveys need to be conducted to get a full picture. Future areas of research may include strategy to transform these economical plants for socio-economic upliftment of local people.

Keywords: Medicinal plants, Edible Plants and Aromatic Plants

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Developing Indonesian vegetables and medicinal plants for economically valuable products
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Introduction

Various vegetables and medicinal plants have been developed for potential economically valuable products in our laboratory. Starting from α -glucosidase inhibitory evaluation, several anti-hyperglycemic drinks have been developed. These functional drinks were developed from Indonesian vegetables, namely, *salam* (*Eugenia polyanta*), *ruku-ruku* (*Ocinum sanctum*), *lamtoro* (*Leucaena glauca*), *paria* (*Momordica charantia*). Virgin coconut oil is famous in Indonesia preventive functional food to prevent various diseases.

Objectives

To use the α -glucosidase inhibitory data to control the dose compared to commercial available hypoglycemic drug acarbose. The effective dose and toxic dose were judged on published values. Several anti-hyperglycemic phytopharmaceuticals will also be developed from Indonesian medicinal plants.

Methods

The quality of the extracts was controlled based on chromatographic and GC-MS data. The formula selection was done through limited panel test data. Various techniques to produce virgin coconut oil were tested to established the optimum production techniques for industrial scale.

Results

Starting from α -glucosidase inhibitory screening data from many Indonesia medicinal plants, the anti-hyperglycemic evaluation through glucose tolerance test to rats of the ethanol-soluble extracts of *Mahkotadewa* (*Phaleria macrocarpa*) fruit carpel, *jambalang* (*Eugenia polyanta*) leaves, *sukun* (*Artocarpus altilis*) leaves were conducted. These data were used to judge daily traditional application and to develop potential phytopharmaceuticals. Several techniques to produce virgin coconut oil have been developed in Indonesia. Virgin coconut oil 5 tons per month has been successfully produced in our laboratory, using a new fermentation technique.

Conclusion

Our research institute continuously conducted research for developing functional food and drink for economically valuable products.

Keywords: functional food and drink, α -glucosidase inhibitor, virgin coconut oil.

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A study on traditional medical knowledge of the Phu Thai ethnic group in northeast Thailand (Poster)

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Introduction

Phuthai is considered to be one of many Thai-Laos ethnic groups in Asia. They were originally from the district of 12 juthai, but migrated to live in the northeastern part of Thailand during 2387-2421 (The Buddhist Era). Prominently, most of Phuthai people have been in the areas of Kalasin, Sakornnakorn, Nakornpanum, Mukdahan, Aumnajalearn, Yasothon, Roi-et, Ubonratchathani, Udonthani, and Nongkhai provinces ever since. The Phuthai people always have their own distinctive culture, and beliefs. They also preferring more on using the native knowledge in order to look after their health's regardless of western medicine being available everywhere.

Objectives

To study a thinking theory of Phuthai ethnic group on the issue of ethno medicine (Especially on herb medicine) and treatment that being used by Phuthai's folk healer in order to cure sickness.

Methods

This is a qualitative type of study that took place in 2548-2549. In order to understand the Phuthai ethnic group thinking theory on the issue of ethnomedicine; the research team has gathered the information through twenty folk healers such as herb healer, yao healer, traditional blowing healer, sanding healer and predict healer. They were studied to know the remedy procedure of ethnomedicine that used native's herb to cure sickness.

Results

The folk healer would use herb to cure a sickness according from the symptom of that sickness. All of the herb medicines were made by boiling, soaking, smoking, baking, and employing sanding medicine. The patterns of health's care and cure disease were originated, which depended upon the practice method of native culture, and nature treatment. We actually are able to say that the way Phuthai people look after their health's has touched their own minds, bodies, spirits, and souls.

Conclusion

We have also realized that the Phuthai people only used the ethnomedicine to cure the diseases, and maintain their health before the entrance of western medicine.

Keyword : Ethnomedicine, Phuthai Ethnic Group, Local Wisdom

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Conservation and development on sustainable uses of rare and endangered native fragrant flower species. (Poster)

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Introduction

Rare and endangered native fragrant flower species will be extinct in the near future because of ecological changed, diseases, pest and disturbed by human. The study on problem and solving need for conservation technique. Development on sustainable uses will be appropriated for farmer and germplasm conservation.

Objectives

To conserve and develop rare and endangered native fragrant flower species for sustainable uses.

Methods

Terminal grafting of rare and endangered native fragrant flowers species on the big stock within the same genus then side grafting. Transfer this technology to the farmers, demonstrate and promote for growing as economic crops.

Results

More than twenty species of rare and endangered native fragrant flowers species were propagated and sold as decorating plants. Incomes of same farmer family and community increased from these activities.

Conclusion

Propagation and selling on rare and endangered native fragrant flower species is the appropriated technology to the farmers for higher income and also very good for sustainable conservation.

Keywords: conservation, rare and endangered plants

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1. Piya Chalermglin. 2006. Rare and endangered native fragrant flower species in Thailand. 215 p. (in printing)

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Ethnobotany of medicinal plants of Morgah and Kotha Kalan areas of Potohar region of Pakistan. (Oral Presentation)

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Introduction

Potohar is a famous historical region situated in the north of Punjab province of Pakistan. It has rich diversity of medicinal plants which are widely being used from centuries. Morgah and Kotha Kalan were the two main areas in which ethnobotanical study regarding medicinal plants was conducted from April to June 2005.

Objectives

The main objectives were to collect data regarding utilization of medicinal plants by local people of that area, to observe the preference of local people for medicinal plants over allopathic, or homeopathic medicines, role of women in preserving indigenous knowledge and to observe the conservation status of commonly utilized medicinal plants of the area.

Methods

Primary as well as secondary data was collected through surveys, questionnaires, interviews, observations and field visits. Random sampling was done, sample consisted of 70 people who were mostly the Hakims (specialists prescribing medicinal plants for different disease cure) and the housewives as they were found to be more aware of the usage of medicinal plants. Herbarium specimens were also prepared containing ethnobotanical labels.

Results

The area studied was semi urbanized, cemented as well as mud houses were there, mostly people were uneducated (not having formal degrees and diplomas). It was found that upper class of the area relied more on allopathic medicines while the middle and lower class of people in the studied area had strong belief on herbal treatments, especially the housewives were growing few medicinal plants especially for stomach and throat ailments in their homes.

Conclusion

About 68 plant species belonging to 39 families were found to be in utilization by local people of that area.

Keywords: None

Selected References

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Studies on medicinal plants of Vietnam (Oral Presentation)

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Introduction

Vietnam has a very rich and diverse biodiversity, including 3,850 medicinal plants. Vietnam has also a long history of traditional medicine, which plays an important role for the health care of its people, especially in the mountainous areas. Based on these resources, the new drugs could be discovered.

Objectives

An overview on the medicinal plants of Vietnam, especially ethno-medicinal plants and medical indigenous knowledge, from the past to the present, and their potential value for the discovery of new medicines.

Methods

Summarize the scientific surveys in Vietnam.

Results

See details in the full paper.

Keywords: Traditional medicine, ethno-medicinal plants, indigenous knowledge, new drugs.

Selected references:

1. Tran Cong Khanh (2003) – Medicinal plant resources in Vietnam and the traditional knowledge. Proceedings of the 3rd Indochina Conference on Pharmaceutical Sciences, pp. 59-61. May 20-23, 2003, Bangkok, Thailand.

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Effect of Temperature on the Inhibition of *Ralstonia* spp. on Maize Seedling (Poster)

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Introduction

Soil temperature extremes stress effects the competitive ability of microbial growth and are important in the mechanism of weakening of microorganisms in heat treated soil. Freeman and Katan (1988) reported that sublethal heating of conidia and chlamydospores of *Fusarium oxysporum* caused reduction in populations and loss of viability.

Objectives

To test the efficacy of short exposures to high temperatures and a range of time periods in reducing the viability of *Ralstonia* in soils and the effect on maize sowing under laboratory conditions.

Methods

One milliliter containing 1×10^9 cfu of *R. solanacearum* strains were mixed thoroughly with each gram of soil. Four sets of flasks were used in this experiment. The first set where the sterile distilled water was mixed with sterile soil. The second and third sets where the soil were mixed with bacterial suspension of *R. solanacearum* strain and incubated at 45 °C and 60 °C, respectively, before sowing. The fourth set where the soil was mixed with bacterial suspension of *R. solanacearum* before sowing. Two weeks after sowing, seedlings of each sets were determined the weight and germination.

Results

Mixing the bacterial suspension of *R. solanacearum* strains with the soil and incubated at 45 °C or 60 °C for 2 d and 2 h, respectively, inhibited the infection on maize germination by 100%. Highly significant reduction in fresh and dry weight was obtained when 2 weeks old maize seedlings which the seeds were sown and grew in the soil mixed with *R. solanacearum*, treatment Control + *R. solanacearum*, relative to control seedlings, treatment Control. On the other hand, pretreatment of soil with incubation at 45 °C for 2 d or 60 °C for 2 h reduced the deleterious effect of *R. solanacearum* on maize seedlings. In the untreated control soil, the total bacterial population was $2.4-7 \times 10^8$ cfu/g. The populations of *R. solanacearum* were strongly reduced in the treated soil by incubation at 45 °C and 60 °C for 0-48 h and 0-120 min, respectively.

Conclusion

A constant temperature of 45 °C for 2 day or a minimum temperature of 60°C for 2 h was applied in soil, after which maize seedlings were grown. The incidence of maize drop was very low in the heated plots, but a 55-85 % loss of maize to the disease was observed in the control plots (no heat treatment). The populations of native *Ralstonia* spp. were reduced from $2.4-7 \times 10^8$ colony forming units (cfu) g⁻¹ to 0-115 cfu g⁻¹. This study presents the report on the efficiency of high temperature treatment on soil against maize bacterial wilt pathogens.

Keywords: maize, germination, bacterial wilt

Selected References

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Neuromuscular improvement *Curcuma longa* L. tablets in MPTP-induced mice. (Poster)

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Introduction

Scientific evidences claim that free radicals and reactive oxygen species have been link to aging process and neurogenerative diseases. *Curcuma longa* L. has been shown antioxidant activity.

Objectives

The experiment was performed to prove the neuromuscular function improvement by the antioxidant activity of *Curcuma longa* L. tablets.

Methods

The neuroprotective evaluation was conducted by practicing mice to stay on the rotating cylinder or rotarod (at 20 rpm) for 5 days. Then they were treated with combination of *C. longa* tablets and a dopaminergic neurotoxin MPTP (N-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) and the neuroprotective produced and evaluated.

Results

The treatment was performed for 21 days and it shown that the mice received 100 mg/kg p.o. (172.0 ± 4.90 sec) and 1000 mg/kg p.o. (141.93 ± 13.49 sec) *C. longa* tablets after MPTP injection, motor deficits were significantly improved while compared to saline-treated mice (77.73 ± 20.77 sec) and placebo-treated mice (81.13 ± 27.29 sec).

Conclusion

The result provides experimental evidence, showing that *C. longa* tablet was able to significantly protection the muscular oxidative stress, caused by neurotoxin, by increase in motor performance test, which could be attributed to its antioxidant activity.

Keywords: antioxidant activity, *Curcuma longa* L. tablets

Selected References

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Ethnobotany and morphological diversity of *Kalopanax septemlobus* (Poster)

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Introduction

Castor Aralia, *Kalopanax septemlobus* (Thunb.) Koidz. (Araliaceae), is belong to monospecies genus, native to Japan, Korea, China and Eastern coastal Russia. *K. septemlobus*, a deciduous hardwood species distributed in Northeast Asian regions, shows high economical values such as a good quality timber and edible and medicinal uses of roots, barks and young leaves. However, the population of *Kalopanax* drastically decreased in Korea. Increasing market demand has resulted in the rapid depletion and destruction of their natural habitats due to illegal harvesting.

Objectives

To analyze the phenetic relationships among the different morphological entities of *Kalopanax septemlobus* from throughout eastern Asia. Particular attention has been given to determining if the morphological variation among the previously distinguished taxa warrants recognition at the rank of species.

Methods

Twenty morphological characters selected for analyses included those most frequently utilized in keys and diagnoses. Morphological variation was assessed using univariate statistics (mean, maximum, minimum) and multivariate analysis (PCA).

Results

As expected, a lack of phenetic coherence was evident in multivariate analysis and *a priori* infraspecific taxa were virtually inseparable in a PCA projection. The analysis of frequency distribution of hair density demonstrated that this variable showed normal distribution

Conclusion

The results indicated that *Kalopanax septemlobus* should be recognized as one polymorphic species. Previously recognized infraspecific taxa were not supported to warrant the designation of any taxonomic rank. The observed pattern of variation may be environmentally induced and suggests that the species may exhibit environmental plasticity.

Keywords: Castor aralia, phenetics, infraspecific taxa

Selected references

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2. Lee, T.B. 1980. Illustrated Flora of Korea. Hyangmun Co., Seoul (in Korean).

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Leaf cuticular waxes in sesame (*Sesamum indicum* L.) and soybean (*Glycine max* (L.) Merr.)
(Poster)

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Introduction

Leaf cuticular waxes cover essentially all aerial plant surfaces and form an important interface between a plant and its environment. These cuticular waxes play an important role in plant resistance to a variety of biotic and abiotic stresses such as those caused by fungal pathogens, phytophagous insects, freezing temperatures, including drought (Jenks and Ashworth 1999).

Objectives

This study was performed to evaluate leaf cuticular wax constituents of sesame and soybean cultivars and their seasonal changes.

Methods

Wax of leaves was extracted by dipping them uncut with chloroform and extracts contained waxes from both abaxial and adaxial leaf surfaces. Wax constituents from the extract were analyzed using gas chromatography (GC).

Results

Leaf cuticular waxes were dominated by alkanes in most cultivars of both plants. The major alkane constituents were C29, C31, C33 and C35 homologues in sesame and C27, C29, C31 homologues in soybean. In addition, waxes on sesame leaves composed of aldehydes dominated by the C30, C32 and C34 homologues, and those on soybean leaves consisted of triterpenoids (lupeol, lupenone, amyryns) with minor amounts of aldehydes and fatty acids. Wax amounts increased during growth development in both plants. Both plants showed that amounts and proportions of wax classes in both plants varied depending on cultivars. We also observed that amount and composition of wax constituents were changed according to leaf position and plant part in sesame.

Conclusion

Cuticular waxes on sesame and soybean leaves composed of alkanes and other constituents and showed their changes depending on cultivars and growth period. What ecological function the induction of alkanes and total waxes by environmental factors has on sesame and soybean requires further study.

Keywords: No words used in Title

Selected References

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Japanese flamboyant image about *Castanea* stands in satoyama and real situation. (Oral Presentation)

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Introduction

Castanea crenata (chestnuts) trees have been an important food source and their timbers have been used for constructions in Japan from the ancient time. There is a belief that many large *Castanea* stands had existed in satoyama (secondary forest created by human for a certain purposes) throughout Japan from the old time, but that almost all stands disappeared during the economic development in Japan especially for railway construction. Otaru, in Hokkaido is one of the places of it and a *Castanea* stand has been conserved recently.

Objectives

To reveal the time of the establishment of *Castanea* stand in Otaru region and the situation of *Castanea* stands in Japan during the railway construction.

Methods

Pollen analyses on the section samples from Temiya Park and recovered core near Oshorodoba Jomon site in Otaru were conducted. In addition to it, recent historical and statistical data were used to observe the change of the area of *Castanea* stands in Japan.

Results

The total area of *Castanea* stands was 71,000 ha which was much less than 1% of the secondary forest area in 1909. 84,526 ha would have been deforested after 50 years just for the railways. The total area decreased to ca 3500 ha by 1947 and recovered to ca 45,000 by 1980. Pollen analysis revealed the development of the present *Castanea* stand in Otaru region and indicated that *Castanea crenata* came to Otaru region during the Early Jomon Period (7000-4500BP).

Conclusion

It is partially true that *Castanea* stands disappeared due to the railway construction, but many large *Castanea* stands had not existed throughout Japan. The *Castanea* trees in Otaru were first introduced during Jomon Period, but large *Castanea* stand had not existed. There was little possibility that large *Castanea* stands existed in Otaru region from Jomon period to the early 20th Century and the present *Castanea* stand has been formed after the middle of the 20th Century. The real situation was not consistent to the common belief in Japan. Thus it is necessary to reexamine the existence of recent *Castanea* stands in Japan.

Keywords: railway construction, Otaru, pollen analysis

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Effect of Temperature and Time on Survival of *Ralstonia solanacearum* in soil (Poster)

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Introduction

Bacterial wilt, caused by *Ralstonia solanacearum*, is responsible for severe losses to many important crops, mainly Solanaceous plants and bananas, in tropical and subtropical regions. This microorganism is the causal agent of potato brown rot and bacterial wilt in many crops and it is responsible for losses of up to 75% of the potato crop in several countries.

Objective

To test the efficacy of either continuous, 2-h cycle or short exposures to a variety of high temperatures and a range of time periods in reducing the viability of *Ralstonia* in wet or dry soils

Methods

Ralstonia solanacearum was prepared for inoculum in soil. In the study of 2-h temperature cycle, it had been found that it took at least 2 h for soil to attain the high temperatures of the incubators. The experimental units consisting of *Ralstonia* in soil were, therefore, incubated for 5 h which included 3 h for the gradual rise in soil temperature from ambient to that of the incubator plus 2 h at the requisite experimental temperature. After exposure to high temperatures (in the range 30 to 60 °C) the units were transferred to 30 °C for 19 h where the decline in temperature to ambient temperature took at least 6 h. In the study of short temperature exposure, to determine the minimum time required to inactivate *Ralstonia*, the units consisting of *Ralstonia* in soil were exposed to temperatures in the range of 45 to 60 °C for 15, 30, 60, 120, 180 or 240 min.

Results

The viability of *Ralstonia solanacearum* was tested in both wet and dry soil under simulated elevated temperatures in either constant, cyclic or short temperature regimes. In wet soil viability was reduced to zero by a constant temperature of 45 °C for 2 day or a minimum temperature of 60 °C for 2 h. Viability of *Ralstonia* were destroyed by either a 4-day constant temperature of 40 °C or a 2-h temperature cycle for 2 days at 50 °C or 3 days at 45 °C. Below 40 °C, *Ralstonia* were not affected. In dry soil at 55 °C, a 2 h constant temperature or 45 °C for 2 days 2-h temperature cycle eliminated *Ralstonia* viability.

Conclusion

Data on time and temperature relationships on loss in viability of *Ralstonia* in soil could thus be used to predict efficacy of soil solarization.

Selected references

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Keywords: *Ralstonia*, soil, bacterial wilt

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Commonly Used Medicinal Plants of India, Thailand & Vietnam. (Oral Presentation)

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Introduction

Nature has bestowed India, Thailand & Viet Nam with an abundance of medicinal plants. A comparative study of the ethnomedicinal plants in these three countries have presented a very enlightening picture. For centuries housewives and traditional healers in these three countries have been able to help the sick and suffering in both the rural and urban areas with the use of herbal medicine. In all three countries that lie in the tropics, medicinal plants constitute a basic component in the traditional system of medicine and pharmacy. They are both a source of medicaments for the country's own requirements and a valuable export commodity. Of late scientists working in the fields of Ethnobotany, Medical Anthropology, Ethnomedicine, Pharmaceutical Botany, Economic Botany and allied fields are working hard to understand the scientific and sometimes not so scientific methods used by the traditional healers and are trying to classify and codify the system that has survived for centuries. This presentation brings to light interesting similarities and differences in the way medicinal plants are used by people in the three countries. It also outlines some of the endangered species in the three countries and presents the greater scope for globalization of medicinal plants.

Objectives

To present a comparative study of some medicinal plants being used in India, Thailand and Vietnam.

Methods

Field work carried out among the traditional healers, scientific personnel, and the use of scientific journals and books.

Results

Several medicinal plants that are used by the traditional healers in India are put to similar use in Thailand and Vietnam. However, there are some common medicinal plants in India that are used for different ailments in Thailand and Vietnam. Thus, there is a greater scope for further research in this field.

Conclusion

The scope for research in the dynamic field of ethnomedicine is unbelievable.

Keywords: Ethnomedicine, Traditional Healers, Endangered species.

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Forest Pharmacy and Enterprise development in the Fijian setting. (Oral Presentation)

Litiana [Kuridrani](#)

Traditional Women Association of Natural Medicinal Therapy - "WAINIMATE"

Introduction

Wainimate recognizes that traditional medicine, health and healing is the first line of health care in rural and remote Fiji and calls for a wide consultation from community leaders, healers and all relevant stakeholders to support the initiative to develop a NTMP.

The World Health Organisation Alma Atta declaration in 1979 declared this support by placing simple treatments as one of the 9 elements for implementation. This commitment widely endorsed that traditional medicine and all components of traditional health therapies such as traditional birth attendants, bone setters, herbalists, acupuncture, massagers and others should be seen as complimentary to modern medicine and not as the common understanding to be the alternative therapy. The bio-prospecting article of Fiji's Sustainable Development Bill and the Biological Diversity Article (8j) calls for the recognition of indigenous knowledge and equitable sharing of benefits arising from the utilisation of such knowledge.

Wainimate as the traditional healers organization is committed to how healers and owners of the traditional knowledge in Fiji especially issues revolving around the following: registrations, intellectual cultural property rights (ICPR), compensations, safety and efficacy in the preparations. While we treasure the sentiments that revolve around this, Wainimate is also looking at how forest pharmacies could generate eco- development opportunities (enterprise development) for healers and local communities around Fiji.

This paper will discuss issues of plants and their medicinal uses, forest pharmacies, indigenous knowledge, traditional skills and eco- enterprise development prospects for Fiji

Objectives

To describe the indigenous plants and their uses; To define how the reserved forest pharmacy could generate eco-development opportunities; To discuss traditional knowledge, indigenous skills and enterprise development at the local level.

Methods

Ethnobotany experience - tagging the plants and their medicinal uses with the assistance of healers, elders and the Department of Forestry. Social and Resource mapping.

Results

Reserved forest with natural and historical sites that are used for tourism purposes today. Documenting community economics and identifying products that holds capital value and can be further developed for commercial purposes.

Conclusion

There is greater need for scientists to collaborate and document plants and their many uses, especially medicinal use. It is also important to uphold the cultural and property rights issues. Healers especially in the Pacific should be encouraged to document their knowledge about plants and pass on the information to their generations. We should also be talking about compensations to reciprocate both the knowledge and the gift of healing. Healers and rural communities should be encouraged to develop eco-non timber products for income generation activities and sustainable development.

Keywords: traditional knowledge, natural resources, conservation, preservation, enterprise development

Selected References

None

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Ethnobotany, biodiversity and malaria in Nakai-Nam Theun NBCA, Laos: Three Ph.D. projects in a Sida-SAREC funded collaboration between the National University of Laos and Uppsala University, Sweden. (Poster)

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Introduction

Starting January 2006 the Department of Biology, National University of Laos and the Department of Systematic Botany have started a collaboration funded to Sida-SAREC to train three Ph.D. students at Uppsala University. The projects evolve around ethnobotany, biodiversity studies, and malaria prevention in the inaccessible Nakai-Nam Theun National Biodiversity Conservation Area in the Annamite mountains bordering on Vietnam. The Nakai-Nam Theun NBCA was chosen for fieldwork, because the 2001 review of the Laos protected area system pointed out that the Nakai-Nam Theun National Biodiversity Conservation Area has the highest need for development, harbors the richest biodiversity, and would be the most effective area for improvement.

Objectives

The objectives are to study: 1a) The taxonomy of Amomum (Zingiberaceae) for the Flora of Cambodia, Laos, and Vietnam; 1b) The feasibility of micropropagation of Amomum to create a cash-crop alternative to wild crafting; 2a) The biodiversity of ethnobotanically used plants in the area; 2b) The spread of ethnobotanical knowledge between ethnic groups and mountain valleys; 3a) The incidence of malaria, and the traditional knowledge about natural mosquito repellents; 3b) The effectiveness of impregnating mosquito nets with natural or chemical repellants.

Methods

Study objectives 1a and 2a require extensive collection of herbarium vouchers. Objective 1b will be studied using micropropagation techniques through Khon Kaen University, Thailand. Objectives 2a and 3a will be studied using semi-structured interviews and forest walks. 3a will be done with the help of doctors from the Faculty of Medicine, NUOL, and 2b and 3b will be analyzed using various statistical methods.

Results

During the first three months of this project a preliminary study of the genus Amomum has been finished, and a few hundred herbarium vouchers have been collected in the NBCA, of which at least one is a new species to science.

Conclusion

This collaboration will hopefully initiate a lasting and ongoing tradition of ethnobotanical research in Laos. It will result in a better understanding of the value of plants in the livelihoods of the peoples in the Nakai-Nam Theun NBCA, and will hopefully improve their situation through knowledge on efficacy of traditionally used plants, introduction of clonal Amomum varieties, and introducing mosquito nets and a sustainable impregnation system based on naturally available plants. In addition it will result in the training of three Ph.Ds., a number of scientific publications, and probably a lot more.

Keywords: Ethnic minorities, South East Asia, Medical Entomology, Biodiversity Studies

Selected References

None

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Thai wild mushroom and Their Economic Potential (Oral Presentation)

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Introduction

Wild mushroom are traditionally used by many Asian communities for food and medicine. It has some effect for growth of forest tree that know as ectomycorrhizal. Most of them cannot culture to fruit like cultivated non-mycorrhizal mushroom. So the price is very high in season.

Objectives

The nutritive of sporocarps of popular edible wild mushroom from northern Thailand was determine. Optimal growth conditions (*in vitro*) of two potent economic were investigate.

Methods

Twelve popular wild mushroom were selected and chemical analysis. Hed Har (*Phaeogyroporus portentosus*) and Hed Phor (*Astraeus hygrometricus*) were evaluate for optimal condition for growth ie. : cultivation media, temperature, pH, salinity, solid substrte and frutification condition *in vitro*.

Results

Young *Astraeus* was high in ash content.but lowest fat. *P. portentosus* had a highest protein (24.2%) content. Mineral nutrient concentrations varies with fungal species. Mature *Astreus* has the highest concentration of Ca and Mg. The other micronutrient concentration across alml fungi were in order Fe>Zn>Mn>.Cu>B.>Se. Cu in sporocarp was higher than vegetable. Sugar composition : varied with fungal taxa. Frutification of Hed Har was sussess *in vitro* but Hed Phor was fail to fruit *in vitro*.

Conclusion

Hed Har and Hed Phor have high potential for development to industrial if frutification condition can be improved.

Keywords: wild mushroom, ectomycorrhizal fungi

Selected references

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Human induced dwarfing of Himalayan snow lotus, *Saussurea laniceps* (Asteraceae) . (Oral Presentation)

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Introduction

Anthropogenic activities, such as harvesting of wild plants, may lead to evolutionary change in natural populations. Harvesting select individuals in natural plant populations can bring about unforeseen impacts that may negatively affect fitness.

Objectives

To investigate if human harvesting has selected for smaller sized plants in the rare Tibetan Snow Lotus, *Saussurea laniceps*.

Methods

To test for the role of human selection on harvested plants, we paired herbarium studies with field sampling and paired congeneric plant species that have experienced different levels of unconscious human selection.

Results

Saussurea laniceps showed a significant decline in size over time (Fig. 2a, $r^2 = 0.4361$, $p < 0.001$) whereas *S. medusa* showed no significant change in size. Furthermore, we compared the size of flowering plants that grew in heavily harvested areas to those that were protected in Tibetan sacred areas where very little harvesting took place. We found that *S. laniceps* in the heavily harvested area were on average 9 cm smaller than plants found in low harvested areas ($Z = 4.91$, $p < 0.0001$).

Conclusion

With unconscious human selection, when a species possesses a certain trait that is valued by people (e.g., large size), individuals with that trait will be preferentially harvested, and this selection will leave individuals that possess less desirable traits (e.g. small plants).

Keywords: Harvesting, Threatened Plants, Herbarium

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Paleoethnobotanical studies at the Mahtab Bagh: Taj Mahal pleasure garden.

(Oral Presentation)

David L. [Lentz](#)

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Introduction

Located across the river from the Taj Mahal, the Mahtab Bagh (or Moonlight Garden) was a pleasure garden built by Shah Jahan in the 1600's. From this vantage point, the emperor could relax and enjoy the vista of his great work in a setting of fountains and airy pavilions. For centuries the moonlight garden has been shrouded in mystery and misconception until the recent excavation to reveal its purpose, architecture and botanical past.

Objectives

The objective of this study was to reveal the structure of the historic Mahtab Bagh garden and provide an assessment of the plants grown within.

Methods

Modern plants were collected from all portions of the existing garden and adjacent landscape. Excavations at the site were conducted in cooperation with the Archaeological Survey of India. Pollen samples, flotation samples and macroremains were collected from all undisturbed contexts. Extracted plant materials were examined in U.S. laboratories using light and electron microscopy.

Results

Over 150 plant specimens were identified from the modern garden environs and the surrounding area. Paleoethnobotanical remains from six garden species, viz., jujube (*Zizyphus jujuba* Lam.), cypress (*Cupressus sempervirens* L.), red cedar (*Toona ciliata* M.J. Roem), chirunji (*Buchanania latifolia* Roxb.), champa (*Michelia* sp.) and coxcomb (*Celosia cristata* L.) were recovered from Mughal era archaeological deposits.

Conclusion

The archaeobotanical data, although they represent a small portion of plants originally grown at the garden, suggest a number of intriguing aspects of the of the floral arrangement at Mehtab Bagh, and, at the same time, tell us something about the aesthetic preferences of the garden designers. Of the six garden plants identified at Mehtab Bagh, only one, cypress, was a Mughal introduction; the other five have a long history of use in India and connections with Indian folklore. Notwithstanding the sample size, it appears that the plantings at the Mehtab Bagh during Mughal times bear more of an Rajput imprint than a Mughal one.

Keywords: Mughal, Rajput, Moonlight Garden, archaeological botany, India

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Ethnopharmacology of plants used in therapy in Champasak Province, Laos

(Oral Presentation)

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Introduction

An ethnopharmacological field study was undertaken in Champasak Province, Laos as a component of the International Collaborative Biodiversity Group project between the University of Illinois at Chicago and the Traditional Medicine Research Center of Vientiane, Laos.

Objectives

To investigate the medicinal plants used in Champasak Province to determine if any overlap exists with uses recorded in the literature, and whether or not they possess activity in an anti-malarial bioassay.

Methods

Semi-structured interviews were conducted with several healers within the province of Champasak, from which medicinal plants were collected in the form of plant samples documented by voucher herbarium specimens, for purposes of extraction and biological evaluation. Literature review and small-scale extractions and anti-malarial bioassay were performed.

Results

Fifty plants used medicinally were collected in Champasak Province. These plants were represented by 34 different families and 47 genera. Seven species showed notable activity against *Plasmodium falciparum*-infected erythrocytes at extract concentrations of 10 µg/ml, two of which *Gongronema napalense* (Wall.) Decne. (Asclepiadaceae) and *Aporusa* aff. *tetrapleura* Hance. (Euphorbiaceae) also had low enough cytotoxicity measurements to warrant further research of their active chemical constituents.

Conclusion

Results of interviews and literature review indicate that the use of medicinal plants still represent an important asset to the health care in communities in Laos, specifically, Champasak Province. Bioassay results also show that there is a scientific rationale for the use of some of the plants in Champasak Province, and potential exists for the discovery of new therapeutic agents.

Keywords: Semi-structured interviews; bioassay, Laos

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Evaluation of the ethnomedical use of *Justicia pectoralis* for the treatment of dysmenorrhea.
(Poster)

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Introduction

For millions of women worldwide, who experience excessive pain during menstruation, the culprit is dysmenorrhea. While in industrialized nations, dysmenorrhea is treated by NSAIDs, in developing countries many women use specific plant-based medicines for treatment. In Central America, *Justicia pectoralis* is used to treat pain and inflammation associated with the menstrual cycle. Here we investigate the ethnomedical uses of *J. pectoralis* for the treatment of dysmenorrhea.

Objectives

To evaluate biological activities of *J. pectoralis* which support its use as a medicinal plant to treat dysmenorrhea.

Methods

One kg of plant material was collected and identified in Costa Rica. The plant material was extracted extensively with methanol and the dried extract was partitioned with petroleum ether, ethyl acetate, and de-ionized water. Fractions were tested for COX 2 inhibition in the pulse ultrafiltration (PUF) and the ELISA assays. Estrogen and progesterone receptor binding were tested by radio-labeled ligand binding assays.

Results

At 10 ug/mL, the crude extract proved active in the COX 2 assay, suppressing prostaglandin production by 79%. The crude extract also bound to the estrogen receptors alpha and beta with 59% and 71% inhibition, respectively. The crude extract was 72% active in the progesterone receptor-binding assay. Additionally, the ethyl acetate fraction of *J. pectoralis*, expressed 98% COX-2 inhibitory activity and was 70% active in the estrogen receptor binding assay.

Conclusion

The biological activities of *J. pectoralis* support its ethnomedical use for the treatment of pain and inflammation associated with dysmenorrhea.

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Presenting author: Tracie Locklear,

Climbing weeds in the *Agave tequilana* Weber crop in Jalisco, Mexico. (Oral Presentation)

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Introduction

Some of the main problems associated with the climbing weeds that attack the *Agave tequilana* Weber plant are competition for water, nutrients, and sunlight; as well as damage to the spine of the fruits and reduced growth in the central leaves of the plant. Furthermore, these plants are difficult to control through herbicides

Objectives

We identify the climbing weeds associated with the cultivation of *Agave tequilana* in Tequila region, in Jalisco state, western Mexico.

Methods

Specimen of climbing habit weeds were collected during 2005 in *Agave tequilana* plantations in Amatitlán and Tequila (1260 m; 20°42'55" lat N and 103°37'49" long W) Jalisco, Mexico. *Agave tequilana* plantations are cultivated in dryland non-irrigated with annual rainfall average of 800 mm.

Results

Twenty one species of climbing weeds were found in four experimental sites; seven Asclepiadaceae, six Convolvulaceae, three Cucurbitaceae, three Fabaceae, one Malphigiaceae and one Sapindaceae. *Sechiopsis triquetra* and *Quamoclit cholulensis* are the most important because of their abundance.

Conclusion

Climbing weeds have adapted and become an obstacle to the cultivation of *A. tequilana*. They are important in the plantations and the chemical controls not adequate. *Echinopepon milleflorus* and *E. jaliscanus* are the main species that are impeding crop management because their spiny fruits.

Keywords: Weeds, agave, management, Mexico.

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Origins, variation and domestication of vanilla: the case of *Vanilla tahitensis* J.W. Moore.
(Oral Presentation)

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Introduction

Vanilla Swartz [Orchidaceae] is a pan-tropical genus of more than 100 species of hemi-epiphytic and saprophytic herbs. While the source of over 95% of natural vanilla is the cured fruit of *Vanilla planifolia* G. Jacks. in Andrews, a rare, Mexico/Central America endemic, an important niche market also exists for *Vanilla tahitensis* J.W. Moore, coveted for its thicker, more oil-rich fruits and distinct flavor notes. Having never been found in the wild, *V. tahitensis* is overall most similar morphologically to neotropical *Vanilla*, and is unique in at least one respect: it is the only polyploid reported in the genus. On the basis of morphological characteristics, it has been hypothesized to be a recent hybrid between *V. planifolia* and either *Vanilla pompona* Schiede or *Vanilla odorata* Presl., two occasionally sympatric species. In order to test the hybrid origin(s) of *V. tahitensis*, sequence data from the ITS region of nrDNA and psbA-trnH non-coding region of cpDNA were generated to discern patterns of paternity, kinship, additivity, and overall phylogenetic signal. Non-congruence of the ITS and psbA-trnH topologies suggests genetic contributions from different species, with *V. planifolia* acting as the maternal donor. The mixed ploidy levels observed in *V. tahitensis*, and historical geography of vanilla domestication will be discussed.

Objectives

Determine evolutionary origin(s) of *Vanilla tahitensis* J.W. Moore. Specifically, test putative hybrid origin hypotheses, as well as determine whether mixed ploidy levels observed in *V. tahitensis* are best explained as part of an allo- or auto-polyploidization process.

Methods

Use of a combination of DNA sequence markers from nrDNA (ITS region) and cpDNA (psbA-trnH) to generate relationships between 15 neotropical taxa and *V. tahitensis*. Data analysis performed with PAUP to perform Neighbor Joining, Maximum Parsimony, and Maximum Likelihood analyses.

Results

V. tahitensis is most closely related to *V. planifolia* in cpDNA across all analyses. The ITS phylogeny shows a closer relationship of *V. tahitensis* to *V. odorata*. *V. odorata* and *V. planifolia* are quite divergent in both trees. Additivity of *V. tahitensis* between *V. odorata* and *V. planifolia* in ITS tree is low.

Conclusion

V. tahitensis is of hybrid origin. The overall lack of additivity observed in the sequence data, though, does not support F1 hybrid status. Preliminary results of an AFLP survey looking at genome-wide patterns of additivity will be presented.

Keywords: hybridization, polyploidy, spices, neotropics

Selected References

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Citrus in the Batanes Islands, Northern Philippines

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The Batanes Islands are a group of volcanic islands that rose from the ocean in the Late Miocene to Pleistocene. The group is relatively young compared to mainland Luzon and therefore received plants from neighboring regions only after flowering plants first evolved. Many plants must have been carried to the Batanes Islands by sea currents, wind, and birds.

This island group shares numerous indigenous species with the Babuyan Islands (North of Luzon), the Lanyu and Luta Islands of Taiwan, and the Ryukyu Islands of Japan. With a flora of about 671 flowering plants, 16% are endemic to the Batanes.

The Batanes group is a distinct biogeographical region within the Philippines, and is recognised as an 'Important Plant Area' due to its rich plant diversity, the high endemism, and the high level of threats to plant resources. Despite their small total area (about 210 sq. km.), the islands are particularly rich in plants belonging to the Rutaceae, the family of Citrus. Within the Batanes alone there are seven genera and 16 species of Rutaceae, while more than 25 genera and about 84 species are found in the Philippines as a whole.

Of particular interest is the genus *Citrus*. Many species or varieties are rare and apparently confined to the Batanes. Five species of Citrus are found in the Batanes, and nine are present in the entire country. An outstanding native citrus fruit called '*dukban*' is a delicacy among the Ivatan people and is commonly cultivated in backyards and fields. The oblong fruit has a thick white rind which is eaten raw or pickled, and the juicy flesh is very sour. The tree is apparently a cross between *C. maxima* and *C. medica* (according to the late Benjamin Stone), and is here given the name *Citrus* x '*Dukban*'. This plant is restricted in distribution to the Batanes Island, despite the close proximity of Northern Luzon.

Two other apparent hybrids are found in the islands. No formal botanical names have been given to these native *Citrus* until now. No information is currently available regarding the parentage and other vital biological attributes of these unrecorded hybrids.

Without doubt, *Citrus* species in the Batanes are a rich genetic resource that should be properly managed and protected not only by the people of the Batanes, but also by all people concerned with the islands and the plant group. At present, *Citrus* species are threatened mainly by habitat destruction and the conversion of land to agriculture or pasture. No conscious and concerted efforts are being made for their conservation and sustainable utilization. A strategy and action plan for managing and protecting *Citrus* in the Batanes is highly recommended.

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Medicinal plants from Thailand for *Helicobacter pylori* infections. (Oral Presentation)

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Introduction

For thousands of years medicinal plants have played a significant role in the treatment of a wide range of medical conditions, including infectious diseases (Mahady et al 2006). In Thailand, traditional plant-based medicines have always been used to treat gastrointestinal ailments, including gastritis, peptic ulcer disease (PUF) and diarrhea (Bhamarapravati et al 2003). Since the discovery of *Helicobacter pylori* (HP) as the etiological agent of PUD, we have assessed many plant extracts as potential treatments for HP infections, including over 25 species from Thailand used in Traditional Thai Medicine (TTM) for the treatment of gastrointestinal ailments.

Objectives

In vitro and in vivo testing of medicinal plant species from Thailand used traditionally for gastrointestinal ailments to determine their efficacy against *Helicobacter pylori*.

Methods

International Memorandum of Agreement were established between UIC and Mahidol University in Thailand. Medicinal plants were collected, identified and extracted. Susceptibility testing were performed in 15 HP strains using the agar dilution procedure guidelines of the Clinical and Laboratory Standards Institute (CLSI) (NCCLS 2003, CLSI/NCCLS 2005). *in vivo* studies included evaluating dose-response and treatment periods on bacterial load, as well as acute and chronic inflammation in HP-infected Mongolian gerbils.

Results

Extracts of ginger, turmeric, and *Boesenbergia rotunda* reduced HP-induced gastric lesions, as assessed both macroscopically and microscopically in *Mongolian gerbils*. The treatments reduced acute and/or chronic inflammation in a prevention model of HP-induced gastritis. With the exception of ginger, there was no significant difference in bacterial load.

Conclusions

Extracts from plants used in Traditional Thai medicine inhibited the growth of HP in vitro, reduced acute and chronic inflammatory parameters when administered to HP-infected Mongolian gerbils. These data support the use of these medicinal plants for the symptomatic treatment of HP infections and further support their chemopreventative activities.

Key Words: peptic ulcer disease, *Mongolian gerbil*, chemoprevention

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Status of medicinal plants in Nepal: Value addition and market development efforts of BDS-MaPS project. (Oral Presentation)

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Introduction

The phytodiversity in Nepal, the Central Himalayan region, is very interesting to study, as it is the result of influence of diverse geography, altitude and climate. Breadth of the country varies in between 144 and 240 km in north to south cross section. The length of the country is about 885 km from east to west. It covers an area of about 147, 181 sq. km. The rugged topography ranges between 55m (south-east corner) and 8850m (Everest). It comprises of Tropical (up to 1000m), Subtropical (from 1000 to 2000m), Temperate (between 2000 and 3000m), Sub-alpine (3000-4000m), Alpine (4000-5000m) and Nival zone (above 5000m). Studies show that Nepal is positioned to offer the diversity of 6 phytogeographical provinces, 10 bioclimatic zones, 35 forest types and 75 vegetation types. It comprises of about 6000 species with 300 endemic species of flowering plants within 216 families and 1534 genera. Nearly 750 medicinal and 50 plants of timber value have been recorded.

Objectives

This natural flora has been contributing significantly to the health and cash income of the people of Nepal for decades. These plants are found in the sub-tropical temperate and alpine regions of the country and belongs to the category of Non-Timber Forest Products (NTFPs).NTFP corresponds to the substance of plants including herbs, grooming grass, bamboo, rattan and sabai grass due to their historic economic and social values (Kanel and Shrestha). Nepal is a corridor of NTFP resources and possesses a huge economic potential for its future development. In an average US \$ 20-40 per annum/per hh is the earning from NTFPs :MAPs trade in estimated in Nepal.

Methods

Primary value addition at collector's level is initiating with the assistance from government agencies like Department of Plant Resources (DPR), HPPCL, Community Forestry Program and NGOs. A new approach of strengthening all the players in value chain for sustainable utilization and equitable commercialization of NTFPs: MAPS has been initiated by BDS-MaPS Project and now in the full fledge in seven selected districts in Mid-west to West Nepal . Specially, BDS-MaPS project is working with its nine development interventions focused on market driven approach and strengthen the actors of the value chain including the government agencies, INGOs and private industries as well. Significant achievements are visible in 9000 families and western and mid west dev region. It could be replicated in other arts of the country.

Results

Income generation at local level amounting US \$ 90 per household per annum after the intervention of the BDS-MaPS project in seven districts of Nepal.

Conclusion

Market driven approach and strengthening the all players in the forward and backward value chain has been proved as appropriate approach in equitable commercialization and sustainable income generation and utilization of the natural resources of Non-Timber Forest Products (NTFPs) in Nepal.

Keywords: No words used in Title NTFPs, BDS-MaPS, CFUGs,MFSC,

Selected References

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2. HPPCL annual report
3. BDS-MaPS Project Inception Report

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***Cycas micronesica* reproductive organ development in Guam** (Poster)

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Introduction

Cycas micronesica is the only native gymnosperm in the Mariana Islands. Seed tissue was an important part of the diet of the Chamoru people during and prior to WWII. We are continuing to study the issues related to exposure to various toxic metabolites that resulted from reliance on this plant for food. Issues related to plant ontogeny, phenology, and organ development have not been studied to date.

Objectives

To determine the rates of organ development for *C. micronesica* male cones, female sporophylls, and seeds in natural habitats in Guam.

Methods

We surveyed forest habitats during major synchronized reproductive events, and marked individual plants as new organs emerged from stem cataphylls. We visited these plants on 2-7 day intervals to determine male cone and female sporophyll size development. Seed size was measured on monthly intervals.

Results

Female sporophyll extension exhibited a linear growth phase that lasted about 30 days, followed by a rapid decline in extension rate until no more growth occurred thereafter. Ovules were 10-11 mm in diameter as sporophylls emerged, and did increase in diameter until week 7-8. Thereafter, a linear phase of growth occurred until week 25-35, depending on the plant. A lengthy flat phase lasting up to 48 weeks followed with no change in seed diameter. After seeds changed from bronze to a mature brown phenotype, seed diameter declined 3% to 6%. The increase in male cone diameter exhibited a smooth exponential curve with a linear phase during the first 30 days, followed by a slowing of growth rate until a flat phase was reached about day 40. The increase in male cone height was dissimilar to all other measured variables. A first phase was linear for about 30 days, then extension rate declined for 10-15 days, and 10-15 days followed with no increase in height. Cones were about 50% of ultimate height at this stage. Height of the cones doubled during the week following day 60, then pollen shed occurred.

Conclusion

Phenology and stage of organ development may strongly influence many aspects of plant physiology. Our clarification of the characteristics of reproductive organ development is crucial for a greater understanding of this historically important plant species.

Keywords: cycads

Selected References

None

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Ethnobotany of chile piquin (*Capsicum annum* var. *aviculare*) of the Sierra Gorda of Queretaro, Mexico. (Poster)

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Introduction

The chili piquin (*Capsicum annum* var. *aviculare* (Dierb.) D'Arcy & Eschb.) is the ancestor and wild relative of the domesticated forms of the species. The wild populations are a valuable germplasm source for plant breeders. In order for in situ conservation to be successful, we must take into account the traditional uses and exploitation.

Objectives

We aimed to document the uses, traditional collection, geographic distribution and population structure of the chile piquin in the Sierra Gorda of Queretaro, an area known for commerce with this taxon. Also, the economic contribution of this plant to the local gatherers and salespeople was studied.

Methods

Collectors and market salespeople were interviewed systematically. The structure of wild populations of chili piquin were documented with transects.

Results

We found 5 use categories for this plant: food, medicine, ornament, animal fodder and ceremonial. There were 6 subtypes of medicinal use, 4 ways to use it as food and 2 ceremonial subtypes. Although all of the 72 collectors had another main activity (farmer 28%, day laborer 38%, craftsman 24%, migrant worker 10%), wild chili piquin was the main source of income during the harvest season for 18%, and 24% considered it important for their income. The plant populations are small and located in patches along streams and roads. The plants usually grow in the shade of other vegetation, and are fomented, but not cultivated, by people in grasslands and around maize fields. The populations are decreasing according to the gatherers.

Conclusion

Chile piquin the Sierra Gorda is felt to be part of the regions cultural identity, a natural resource important for the local economy, and it is much appreciated for its flavor. Good management could improve commercialization in other markets and the incomes of the collectors, and help to preserve the germplasm in situ.

Keywords: traditional uses, wild resources, harvesting.

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***Pandanus tectorius* ('adan') in southern Japan** (Oral Presentation)

Peter J. Matthews

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Introduction

Pandanus tectorius Sol. ex Parkinson (syn. *P. odoratissimus*) is a highly variable species that is abundant in many coastal regions bordering the Indian and Pacific Oceans. The common Japanese vernacular name for this plant is 'adan', which appears to be related to 'pandan', a name shared by many Austronesian languages in Asia and the Pacific. Austronesian languages have had influence in Japanese linguistic history, as sources for borrowed words, or as unrecorded languages that were spoken long ago in the archipelago, or in both ways. Botanical and ethnographic records of *P. tectorius* in Japan are introduced and discussed in relation to early and later Austronesian movements in the vicinity of southern China, northern Philippines and southern Japan.

Objectives

These are to (1) introduce the biogeography of *P. tectorius* in southern Japan and monsoonal Asia, and (2) consider the historical context of Pandanus-related artefacts stored at the National Museum of Ethnology, Japan

Methods

Limited field observations are integrated with a brief survey of related literature and museum artefacts.

Results

Although the plant is common and widely used throughout island or coastal regions in monsoonal Asia, local information on the history and use of *P. tectorius* is scarce. This is also the case in southern Japan. Ethnographic collectors in the past have often not recorded the plant origins of artefacts made using Pandanus. In the absence of archaeological data, it is difficult to reconstruct the historical roles of *P. tectorius* in the distant past.

Conclusion

Circumstances suggest that *P. tectorius* could have been important in southern Japan in the past, as a source of fibres and leaves for making rope, mats, boats and sails. It is not known to what extent human dispersal of the plant is responsible for its present distribution in Japan, if at all. Among early Austronesian speakers and their neighbours, the basic techniques of rope and mat making might have been shared by boat and sail makers throughout the region of southern China to Taiwan, southern Japan, and the northern Philippines.

Keywords: monsoon, Asia, Austronesian, rope, mats, boats, sails

Selected References

1. None

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Specific folk taxonomy in sorghum (*Sorghum bicolor* (L.) Moench) in centre of Diversity, Ethiopia: Rhetoric or reality. (Oral Presentation)

Firew [Mekbib](#)

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Introduction

Sorghum is one of the major staple food crops for the poorest and most food insecure people of the world. Ethiopia is the centre of origin and diversity for sorghum; the crop has been cultivated for many thousand years and hence indigenous knowledge based sorghum classification and naming has a long tradition. Farmers maintain a number of varieties on farm for many biological, socio-economic, ecological and cultural reasons. Comprehensive information is lacking on how they name and classify.

Objectives

1. To characterise folk taxonomy: classification, naming, criteria, 2. To identify the folk species, subspecies and varieties in the region, 3. To assess the consistency in folk taxonomy and compare it with formal taxonomy, 4. To suggest final implications of folk taxonomy.

Methods

In order to assess farmers' classification, naming and grouping for millennia, various research methods were employed. These were focused group with 360 farmers, on farm monitoring and participation with 120 farmers, key informant interview with 60 farmers and development agents and semi-structured interview with 250 farmers. Besides, diversity fair was done with over 1200 farmers. Assessment of folk taxonomy consistency was assessed by 30 farmers' evaluation of 44 folk species.

Results and Discussion

Farmers have been growing sorghum for at least 500 years (10 generations). Sorghum is called *B(M)ishinga* in the region. The crop is intimately associated with socio-economic, cultural and biological life of the farmers. Farmers used 25 morphological, 60 biotic and abiotic and 12 use related traits in the sorghum folk taxonomy. Farmers classified their gene-pool by hierarchical classifications into parts which represented distinguishable groups of accessions. Folk taxonomy tree was generated in the highland, intermediate and lowland sorghum ecological regions. Over 78 folk species have been identified. The folk species were named after morphological, use related and breeding methodology used. Relative distribution of folk species over the region, folk taxonomy consistency, and comparison of folk and formal taxonomy are described. Limitation of folk taxonomy is discussed. Finally, new folk taxonomy descriptors have been identified and suggested to be used as formal taxonomy descriptors.

Conclusion:

New descriptors of folk taxonomy identified must be scaled up to formal taxonomy. In view of strengths and weaknesses of folk and formal taxonomy, integrated folk-formal taxonomy is imperative for management and utilization of on farm genetic resources.

Key Words: folk taxonomy consistency; folk genera; folk species; folk varieties; folk descriptors; sorghum (*Sorghum bicolor* L (Moench); Ethiopia.

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Archaeological Evidence for the Tradition of Psychoactive Plant Use in the New World. (Oral Presentation)

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Introduction

Many scholars and scientists have proposed an early relationship between humans and psychoactive plants within a highly ritualized, ceremonial context. A survey of the archaeological record of psychoactive drug plant use in the Old World supported this hypothesis.

Objectives

This paper reviews the New World archaeological record for micro and macro fossil evidence for associations between humans and psychoactive drug plant species. It assesses the validity of this putative early relationship between humans and psychoactive plants within the Western Hemisphere.

Methods

A comprehensive review of the literature is used to evaluate the taxonomic identification of fossil remains, as well as the ancient symbolic and artistic representations of these species, in archaeological contexts.

Results

The data indicates a very broad geographical range of ancient use through a deep time frame, which long has and, in many situations, still does occur within diverse ecological environments. Several of the most important or well-known mind-altering drug plants in the New World have documented records of very ancient use. Examples of these species include and *Lophophora williamsii* (peyote), *Trichocereus pachanoi* (San Pedro), *Nicotiana* spp. (tobacco) and *Erythroxylum coca* (coca). The widespread distribution and antiquity of use of these and many other psychoactive drug plants is indicative of their relative importance throughout the development of human society.

Conclusion

This archaeological survey supports the assumption that early and even more recent use of mind-altering plants has been a widespread ethnobotanical phenomenon in the New World; and that it may have stimulated initial human religious experiences and other important cultural traditions in a wide variety of ecological environments.

Keywords: Fossils, artifacts, entheogens, stimulants, ritual, ceremonial use

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Medical Ethnobotany of the Q'eqchi Maya: Perceptions and botanical treatments related to women's health. (Oral Presentation)

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Introduction

The Q'eqchi are the third largest Maya population in Guatemala and currently occupy the largest geographic area of any other ethnolinguistic group in the country. Like most Maya communities, the Q'eqchi of the eastern lowlands maintain a rich tradition of Maya medical beliefs and practices that include the use of the native flora to treat a variety of illnesses, including women's health.

Objectives

To document Q'eqchi perceptions and botanical treatments related to issues of pregnancy, menstruation, and menopause and to test extracts of these plants in biological assays relevant to women's health.

Methods

Participant observation, semi-structured interviews, plant walks, and focus groups were used to interview 50 Q'eqchi individuals, including 5 male healers, 5 female midwives, and 8 postmenopausal women. Voucher specimens and screening-sized samples were collected and dried in a solar-electric herb dryer.

Results

A total of 48 medicinal plants used to treat women's health conditions were documented followed by the evaluation of 19 species in bioassays relevant to women's health. Results of field interviews indicate that Q'eqchi cultural perceptions affect women's health experiences, while laboratory results provide scientific support for the traditional uses of herbs for women's health in Guatemala. Piperaceae is a plant family of prominent medical value among the Q'eqchi with laboratory results suggesting that it merits further research for the treatment of the psychological and physiological changes associated with menstruation and menopause.

Conclusion

Considering the rich historical and contemporary tradition of Maya medicine in Guatemala, multi-disciplinary initiatives, including contributions from the fields of anthropology, botany, biology, chemistry, and pharmacology make significant contributions towards preserving Maya medical traditions in Guatemala, while supporting safety and efficacy of the herbal remedies for Guatemalan women.

Keywords: Guatemala; Menopause, Herbal medicine

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Afro-Cuban religion, Magical-Medical Plant Use and Conservation: Local Perceptions of Environmental Change. (Oral Presentation)

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Introduction

Afro-Cuban ritual activities have proliferated in post-Soviet urban Cuba, leading to an increased dependence on the rich medicinal and magical pharmacopoeia employed in the hybridised religions that include santería, ifá and palo monte. Preferred plant species relate closely to those employed in recent state-led efforts to combat the healthcare crisis of the 1990s, provoked principally by the US embargo. Environmental implications of this recent rise in ethnobotanical activity are as yet poorly understood, however.

Objectives

1. Explore local perceptions in the change of ritual and medicinal plant availability over the past fifteen years
2. Compare these species with government data on scarce medicinal plant species.
3. Determine potentially scarce species of high ritual value currently excluded from national conservation strategies.

Methods

Methods included semi-structured interviews; free-listing techniques; structured botanical surveys; participant observation, and voucher collections. In-depth local accounts of plant scarcity were generated from four groups of local botanical experts (n=80), including religious and commercial plant sellers and harvesters.

Results

66 species were reported as locally scarce. Details were recorded on type and duration of scarcity; perceived causes for decline; type of harvesting and part of plant used; together with uses of scarce plants. Only a small degree of crossover was observed with the 92 species cited as scarce (and subsequently protected) medicinal plants in government strategies. Over-harvesting (through commercialisation and taboo breakdown) and climatic fluctuations were cited as principal causes of scarcity. A high percentage of plants used in a ritual context are still wild harvested and from non-conservation priority habitats, such as disturbed forests and peri-urban wastelands.

Conclusion

Conservation efforts currently exclude the majority of locally perceived scarce species of value to Afro-Cuban religions. Many of these species are high in ritual value, but do not have state-recognised medicinal properties. These plants may nevertheless be equally if not more important for local peoples and their inclusion into conservation strategies should be encouraged.

Keywords: Cuba, ritual, plant scarcity, commercialisation, secondary forests

Selected References

None

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Traditional Botanical Knowledge and Use of Anza (*Boscia Senegalensis*) in Boumba, Niger.
(Oral Presentation)

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Introduction

The Zarma are descendents of the Songhai Kingdom, currently living in the south west region of Niger and the bordering regions of Niger. They are known for being 'leaf eaters' and local knowledge of wild edible leaves is critical for survival in times of famine.

Objectives

This presentation examines the role of *Boscia Senegalensis* (Anza) to the Zarma community of Boumba and how the use of this plant gives insight into the community's concept of famine and famine coping strategies.

Methods

Participatory fieldwork conducted in Niger during July-September 2005 employed key-informant interviews, participant observation and group interview techniques to explore the use of uncultivated plant resources among the Zarma of Boumba, Niger.

Results

During the interviews with healers, herbalists and farmers the tree *Boscia Senegalensis* (Anza) was commonly listed among the medicinal plants, food plants and famine foods.

Conclusion

It seems that this plant plays both is an important medicinal and nutritional and a good case study into cultural resilience.

Keywords: Zarma, Ethnobotany, famine food,

Selected References

None

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Alternative seed suppliers of local vegetable varieties in modern agriculture of Nagano, Japan. (Oral Presentation)

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Introduction

It has been widely recognized that farmers are the key actors for seed production of local varieties. However, in advanced nations where farmers can easily obtain seeds of modern varieties from the seed merchants, they have lost incentive to harvest their own seeds of local varieties by themselves.

Objectives

To make clear the roll of various actors in the seed supply system of traditional local varieties of vegetables in Nagano Prefecture where many local varieties are still grown within modern agriculture by local farmers.

Methods

Major local vegetable varieties (of about 20) in Nagano were studied to identify who produce and distribute the seeds by field study including interview to farmers and seed producers.

Results

Seeds of local varieties were produced by various actors, such as farmers, local small seed company, seed producers association and so on. Under circumstances where seed production become difficult due to aging of farmers and loss of incentives by farmers, involvement of other stakeholders need to be found in order to continue the production of such vegetables. Local small seed companies have been actively involved in the production and distribution of seeds of local varieties.

Conclusion

Contribution of local small seed companies to the seed supply system for local varieties need to be considered positively in advanced nations such as Japan. They play an important roll in maintenance breeding of local varieties instead of farmers. However, risk of losing the variety due to loss of market should also be recognized in this system.

Keywords: local small seed company, local variety, maintenance breeding, seed supply system, seed production

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Let's go shopping!: a research oriented, market survey ethnobotanical undergraduate curriculum. (Oral Presentation)

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Introduction

Intellectual imperatives in ethnobiology (IIE) include developing educational models that have a strong local focus, teach multidisciplinary skills, and involve students in research experiences. These overlap with the National Science Foundation's (NSF) initiatives for improving excellence in science, technology, engineering and mathematics (STEM) education for all students. Market surveys are an ideal educational model to address both the IIE and NSF educational initiatives, due to: the venues for research oriented ethnobiological education, due to: (1) markets are rich sites of ethnobiological interactions, (2) market surveys may include a range of data types (e.g., botanical, cognitive, zoological, qualitative, quantitative), (3) accessibility (e.g., urban areas, proximity to educational institution, access for students with disabilities).

Objectives

To address both the IIE and NSF educational initiatives with the development of an ethnobotanical curriculum and undergraduate research involvement project grounded in market survey research.

Methods

The research involvement and project was proposed to students in an ethnobotany class. A consensus was reached between instructor and students for the project, including hypotheses to be tested. The research team conducted food markets surveys in the local ethnic and mainstream markets over a period of one month. Student input was solicited to address improvements.

Results

Students gained experience in scientific research, including: observation and forming hypothesis, collection and analysis of data, and dissemination of results. Students practiced ethnobotanical research skills, including: developed and applied informed consent statement, produced herbarium vouchers, interacted with cultural representatives. Survey materials and hypotheses were modified during the research period to maximize our efforts. Students co-authored with instructor two publications resulting from the research involvement. The instructor gained experience with involving students in research and application of the instructor's research to an undergraduate ethnobotanical curriculum.

Conclusion

Ethnobiological imperatives in education and NSF initiatives were addressed by the development of a research oriented, market survey ethnobotanical curriculum developed with the involvement of undergraduate students. This market survey curriculum presents a model for Ethnobiological and STEM education that is adaptable to educational institutions and communities world-wide. Collaboration among users of the model and synthesis of results would provide an international look at the biocomplexity of markets systems.

Keywords: science education, ethnobiology education imperatives, STEM, student research

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A vegetation analysis of Chinatown markets and mainstream supermarkets in a culturally diverse urban environment. (Oral Presentation)

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Introduction

Food markets are rich sites of ethnobotanical information. In culturally diverse areas, food markets provide information regarding an area's (1) food plant richness, (2) cultural groups, and (3) cultural food plant assemblages. Although an area of high cultural diversity, little research has been conducted in the food markets of Honolulu, Hawai'i.

Objectives

(1) To analyze the food plant richness of selected Chinatown markets in comparison to mainstream supermarkets in Honolulu, Hawai'i. (2) To test the use of vegetation analysis to compare association between food plants and similarities between markets to identify speciality markets.

Methods

Surveys and mapping of food plants at three market areas in Chinatown and three mainstream supermarkets were conducted between February and March 2006. Microsoft Excel and the Community Analysis Package programs were used to analyze plant richness of vendors within Chinatown market areas and with the mainstream supermarkets.

Results

The Chinatown market areas included 12 smaller vendors, ranging from two to five vendors per market area. 293 'fresh' food plants were recorded in all markets combined; the average for mainstream supermarkets 143 ± 12 and Chinatown market areas 94 ± 15. Mainstream and Chinatown market areas share in common 7% (21/293) of the entire plant list. Separately, the mainstream supermarkets have 35% (77/221 mainstream total) of food plants in common, compared to about 1% (2/155 Chinatown total) in common among Chinatown vendors. *Allium cepa* L. and *A. sativum* L. were found in all markets. TWINSpan analysis shows similarity groupings of mainstream supermarkets, vendor-identified as 'Filipino' or 'Vietnamese' markets, or speciality fruits.

Conclusion

This study provides updated and empirical data on the food plant richness of culturally diverse, Honolulu, Hawai'i (U.S.). Mainstream supermarkets have a greater assemblage of food plants than Chinatown market areas. Mainstream supermarkets may be viewed as 'generalists' while the Chinatown market areas and vendors may be 'specialists' for an ethnic or cultural group or commodity. A vegetation analysis approach is applicable to market surveys, indicating similar markets and associated plant assemblages.

Keywords:

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**Socio-economic impact of hybrid seeds for a local vegetable variety on rural community:
Case of Seinaiji-Akane turnip (*Brassica napus* L.) in Nagano, Japan. (Oral Presentation)**

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Introduction

Production of local varieties of vegetable has been decreasing in rural Japan due to modernization of agriculture and change of lifestyle. However collaboration between farmers and breeders has been initiated for regeneration of such varieties, partly aiming at revitalization of rural livelihood.

Objectives

To identify the socio-economic impact of the introduction of hybrid seed production for local vegetable varieties which was aimed for uniformity in produces responding to market requirements.

Methods

Among the five cases reported for the utilization of hybrid seeds for revitalization of local varieties in Nagano Prefecture, Japan, Seinaiji-Akane turnip (*Brassica napus* L.) was studied by reviewing the records kept by the producers group, university, village government and interviewing key persons for the development.

Results

In order to sell local variety of turnip produced in Seinaiji Village, an initiative to develop a uniform variety was taken by a group of farmers in collaboration with a breeder and introduction of hybrid seeds was found to be the best practice. After Eight years of development, F1 variety was registered as Seinaiji-Akane. By harvesting hybrid seeds and distributing them to growers, the production of Seinaiji-akane was increased more than 50% responding to the market demands of pickles factories, but traditional OP variety has also been cultivated continuously.

Conclusion

Securing uniformity acceptable to market is one strategy to revitalize the use of local variety and hybrid seeds can be the best option. Collaboration between farmers and formal institutes were found to be important mechanism for such initiative. Continuation of the production of OP variety is also observed and farmers perception of OP variety was further strengthened by introduction of hybrid seeds.

Keywords: collaboration, farmers, perception, formal institutes, market, OP variety

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Multiple uses of Job's tears (*Coix*, Gramineae) in mainland Southeast Asia (Oral Presentation)

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Introduction

The genus *Coix* of family Gramineae, commonly known as Job's tears, includes four species, one sub-species and three varieties of perennial grass plants. This genus is mainly distributed in Southeast Asia and the surrounding areas. This paper focuses on the Itakies species and discusses the common practices and knowledge shared by a people from various ethnic backgrounds in mainland Southeast Asia.

Objectives

This paper aims to provide an overview of Itakies and understand the interaction of the people with the plants in mainland Southeast Asia based on the field observations of the living plants and interviews with the locals regarding its uses in daily domestic life.

Methods

Field research was conducted in Myanmar (Burma), Thailand, Laos, Vietnam and the Yunnan Province of China from 1994 to 2006 to collect information on the taxa, the part(s) of the plant, its different uses, and the manner of human-participation to promote plant growth, and the different ethnic groups of the users.

Results

Domesticated and non-domesticated types of six taxa were recognized in the field observations. On interviewing fifty ethnic groups that belong to the different linguistic categories including Tai, Tibet-Burman, Chinese, Mon-Khmer and Miao-Yao, it became apparent that the plants of the *Coix* species are mainly used for three main purposes, namely, as a staple diet and for preparing snacks, as medicines, and seeds as decorative beads on dresses and bags. The users focus on different parts of the plants for different uses. People who use the *Coix* species collect them by gathering the plants from natural habitats and by cultivating them in their gardens and farmlands.

Conclusion

People from various ethnic backgrounds in mainland Southeast Asia share common knowledge and practice with regard to the *Coix* species. When compared to other regions in the world where only one or two taxa of the species are distributed, the complex interaction between people and plants is peculiar to mainland Southeast Asia.

Keywords: food culture, folk medicine, material culture, multi-ethnic society, geographical distribution

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Study on wisdom of traditional healer employing sanding medicine in northeast Thailand (Poster)

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Introduction

Folk medicine in the Northeast region of Thailand is an experimental medicine. It developed from many factors such as history, geography, and culture to become local knowledge. Herbalists are one group of healer that use many different methods for preparing herbal remedies.

Objectives

To identify the natural materials used by healer employing sanding medicine to treat health conditions and determine the methods used to prepare these remedies.

Methods

In-depth study was conducted among healers to explore their concepts of health care and role as a local health care provider. The two main methods are sanding and boiling. The type of preparation used depend on the health condition and demographics of the patient. Sanding medicine can be easily and quickly prepared and used for both internal and external medicine. Many symptoms were recorded such as fever, gastrointestinal disease, respiratory tract disease, gynecological disease, dermatological disease and veterinary disease.

Results

Sanding medicine requires a culture process and taboos for both the healer and patient. Plants, animal and minerals are used in the formulas. The plant parts include root, heartwood, bark and seed. Animal parts are bone, horn, and shell. Minerals are rock sediments and natural elements. These raw materials are collected from the nearby forests and mountains.

Conclusion

In the part, were many expert herbalists who used sanding medicine in every village but the their wisdom is now in danger of disappearing.

Keywords: Sanding medicine,ethnomedicine

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***Morinda citrifolia* L. Noni has Cholesterol Lowering Potential** (Poster)

fa Kehaati Palu, Brett Justin West, Jaraka Jensen, Bing-Nan Zhou

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Introduction

Morinda citrifolia L. Noni has been used in Tonga, Tahiti, Hawaii and throughout the islands of Polynesians for over 2000 years. It has been purported to have numerous health benefits such as anti-diabetics, anti-gout, anti-hypertension among others. However, the cholesterol lowering potential of Noni has not been fully investigated and mechanisms involved have not been elucidated.

Objectives

To investigate any effects of *Morinda citrifolia* L. Noni on enzymes involved in the biosynthesis of cholesterol in humans.

Methods

HMG-CoA Reductase enzyme from Wistar rat liver was used in the in-vitro bioassays; A 2.5 uM of it was incubated with 1%, 5% and 10% of *Morinda citrifolia* fruit juice concentrate and the commercial Brand TAHITIAN NONI(R)Juice.

Results

In one study, 1%, 5% and 10% concentrations of the commercial Brand TAHITIAN NONI(R)Juice inhibited HMG-CoA reductase enzyme activity by 50%, 81%, and 83%, respectively. In another study, 1%, 5% and 10% concentrations of *Morinda citrifolia* fruit juice concentrate inhibited HMG-CoA reductase enzyme activity by 58%, 94% and 96%, respectively.

Conclusion

Our results show that both the *Morinda citrifolia* fruit juice concentrate and the commercial Brand TAHITIAN NONI(R)Juice inhibit the enzyme HMG-CoA Reductase in a dose dependant fashion. A human clinical trial maybe necessary to investigate the Noni's cholesterol lowering effects in-vivo. Concomitantly, the results presented here warrant further research into other mechanisms that may be involved in the cholesterol lowering effects of Noni.

Keywords: Noni, HMG-CoA Reductase

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***Ilex vomitoria*: An overlooked North American caffeine source.** (Oral Presentation)

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Introduction

Yaupon holly (*Ilex vomitoria*) is a caffeine-producing shrub native to the southeastern United States that Amerindians brewed into a stimulating beverage. Although European colonists adopted the practice of brewing and imbibing tea prepared from yaupon, common consumption of yaupon tea ceased by the nineteenth century for reasons not fully understood. Despite its potential as a source of both caffeine and antioxidants, yaupon is currently only cultivated for use as an ornamental hedge. We investigated the suitability of one yaupon cultivar for commercial production as a caffeine source.

Objectives

To determine whether nitrogen fertilization increases total leaf mass, total caffeine content, and total antioxidant capacity in a cultivar of yaupon.

Methods

Yaupon shrubs comprising 6 separate hedges of the 'Nana' cultivar were sampled. Leaves covering an area of 700 cm² were clipped from the pruned upper surface of 2 shrubs per hedge. One shrub per hedge was then fertilized monthly with 250 mg nitrogen; the other shrub was reserved as an unfertilized control. After 3 months, leaves were clipped from the same area as the original clipping. Leaves from the second harvest were then dried, weighed and analyzed for caffeine and antioxidant capacity by HPLC and the oxygen radical absorbance capacity (ORAC) method.

Results

Fertilized plants only produced 1.2% more leaf tissue than control plants but contained 3.5% higher caffeine concentrations, which resulted in 4.5% higher total caffeine yield in fertilized plants. Although antioxidant capacity on a concentration basis did not differ by treatment, total antioxidant capacity per plant was higher in fertilized plants due to the greater leaf mass of fertilized plants.

Conclusion

Increases in caffeine content and total antioxidant capacity by nitrogen fertilization in yaupon indicate its appropriateness for cultivation as a commercial caffeine source. The yaupon cultivar sampled in this study, however, produced low caffeine concentrations as compared to those detected in studies of wild-type yaupon. Therefore, other yaupon varieties may be better suited for cultivation as a caffeine source.

Keywords: antioxidants, yaupon holly

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Cultural Impacts of Biological Invasions: An Ethnobiological Perspective. (Oral Presentation)

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Introduction

Study of the ecological and economic impacts of invasive (e.g., non-native, alien, exotic, weedy) species has paralleled their progressively pervasive influence on ecosystems worldwide, yet little attention has been paid to their cultural impacts. Unlike biological systems where the ecological impacts of invasive species are primarily negative – and in many situations, apparently irreversible; from an ethnoscientific standpoint, invasive species' impacts on cultural systems appear to span a continuum of both positive and negative effects.

Objectives

Our work represents an interdisciplinary analysis of the cultural, social, spiritual, and ethical consequences of biological invasions among indigenous societies.

Methods

By comparing historical and current data on cross-cultural introductions of non-native plants, we propose a conceptual framework delineating the differential cultural impacts of invasive species. In the case of culturally enriching invasive species, the incorporation of non-native flora and fauna into local cuisines, pharmacopeias, rituals, and other traditional practices has resulted in cultural expansion as new species are adopted and new traditions generated.

Results

In contrast, the appearance of culturally impoverishing species in local environments has led to cultural contraction, i.e., the displacement of culturally important native species and associated traditions.

Conclusion

An understanding of the processes by which non-native biota become culturally enriching or culturally impoverishing can contribute to articulating interdisciplinary programs aimed at simultaneously conserving biological and cultural diversity.

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Keywords: invasive species, biocultural diversity, traditional practices

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Production and conservation of native Thai orchid *Dendrobium scabrilingue* Lindl.

(Oral Presentation)

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Introduction

Dendrobium scabrilingue Lindl. is an important indigenous Thai orchid, particularly in Mae Hong Sorn Province. Continuous extinction of this orchid occurred due to changes in ecosystems and over collecting for commercial purpose. Preliminary studies showed potential on plant production and essence extraction.

Objectives

To determine the proper technology for grower.

Methods

Researchs on propagation, cultural practices, breedings and conservation were initiated and conducted. Training programs were offered to interest growers. Appropriate technology was then transferred to selected grower.

Results

Eight sub projects have been done. They were: surveying on environmental habitat, various propagation and conservation methods experiments, proper cultural practices for seedings growth, mature and flowering plants, breeding programs for new hybrid, two groups of 20 local growers were stimulated and trained to be village leaders for production and conservation.

Conclusion

Success in propagation and growing practices were achieved. More than 30,000 seedlings were distributed to growers. Local grower interest is increasing. Advance on technology transfer are satisfied.

Keywords: *Dendrobium scabrilingue* Lindl., native Thai orchid

Selected References

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Blowing Traditional Healer (Mor Paw) : Traditional Healers in Northeastern Thailand (Poster)

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Introduction

Blowing traditional healers (Mor Paw) are traditional healers that function within communities in northeastern Thailand. The blowing method is one type of traditional therapy that is popularly used in co-ordination with other methods. These healers use blowing methods to treat mostly external symptoms or health conditions and these include, skin, eye, mouth, and throat disease, child disease, and injuries caused by accidents.

Objectives

To identify the natural materials used by blowing traditional healer (Mor Paw) to treat health conditions and determine the methods used to prepare these remedies

Methods

In-depth study was conducted among blowing traditional healers to explore their concepts of health care and role as a local health care provider. The treatment includes incantation and blowing, and can also include chewing and blowing herbs, using herbs topically or for ingestion, tattooing and burning.

Results

Blowing traditional healer believe that some disease (eg. burn, snakebite) are caused by poisons with must be moved by blowing to other parts of body before other treatment can be used. The research found over 70 species of medicinal plants, animal parts, and minerals. These raw materials are collected from the local area, cultivated, or purchased from other areas.

Conclusion

Blowing traditional healers usually receive knowledge on blowing treatments from their parents and other experienced blowing traditional healers. When receive the knowledge new initiates must present ("khai") offerings to their teacher on an auspicious day. New healer are often subject to superstitions, for example, they must "test" their new skills or adhere to specific taboos. Consequently, healers often only learn treatment with taboos that they can accept, and this can lead to loss of knowledge of blowing treatments.

Keywords : Blowing traditional healers, ethnomedicine

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- 2th Thai herbal Exhibition on 31 August 2005 Impact Muangthong Thani, Nonthaburi, Thailand

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Immunostimulant activity and toxicity study of dried powder of *Scaphium scaphigerum* (G. Don) Guib. & Planch in rats. (Poster)

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Introduction

Jelly nut (*Scaphium scaphigerum* (G. Don) Guib & Planch) is a native plant of Thailand. It is worth to introduce for cultivation, because it is good price in local and international market. It possesses biological activities and low toxicity.

Objective

To evaluate immunostimulant activity and toxicity of dried powder of *Scaphium scaphigerum* (G. Don) Guib & Planch in animal model.

Method

The immunostimulant activity of jelly nut was conducted in male rats by evaluating the haemagglutinating antibody (HA) titers as parameter of humoral immunity. Acute toxicity was performed in rats at dose 5,000 mg/kg body weight.

Results

HA increased in the rats, compared with control group. The LD₅₀ (oral) in rats was more than 5,000 mg/kg body weight.

Conclusion

It showed that *Scaphium scaphigerum* (G. Don) Guib & Planch envisaged safe to be used as an immunostimulating agent.

Keywords: Immunostimulant; Haemagglutinating; *Scaphium scaphigerum* ; Native tree of Thailand

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Environment, Production and Conservation: Mani oba Community's perception of nature and the production of passion fruit (*Passiflora edulis*, Passifloraceae) (Poster)

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Introduction

Preliminary studies indicate that the culture is suffering from pollinator population decline. This decline determines the need for manual pollination and consequently higher production costs. Small agriculture properties form most of Mani oba's community. Mani oba's production is responsible for the most part of the passion fruit production in the irrigated São Francisco Valley region. This region is the largest passion fruit (*Passiflora edulis* Sims – Passifloraceae) productive area in Brazil.

Objectives

Our main objective was to identify Mani oba community's perception of environmental aspects of productivity and sustainable management of ecosystems in relation to passion fruit production.

Methods

Fourteen producers were selected, according to prior established criteria. Data was collected using a semi-structured interview, previously tested. Seven categories concerning environmental factors of ecosystem management and nature conservation were considered for analysis. Data was analysed both quantitatively and qualitatively.

Results

The producers demonstrated a very uniform knowledge which did not vary for five of the seven categories considered in analysis. They recognized and explained the close relationship of the pollinator (*Xyllocopa* sp.) with the Caatinga bioma, the specific nesting wood, the injuries caused by other visitors bees, the importance of pesticides use for better production and its deadly effects on the passion fruit pollinator. Only 66% of the producers could explain *on detail* the pollinator behavior on passion fruit flower, and 58% of them demonstrated a clear perception of the Caatinga destruction.

Conclusion

This study will help future works on Mani oba's community for the production of a protocol for pollinator management in the area. This protocol will consider community knowledge of the system and is intended to maximize production gains - and also environmental conservation - in Manicoba's community.

Keywords: pollinator, ecosystem management, productivity

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The Evaluation of Seed Dormancy and Germination of Two Species of Iranian Medicinal Plants (Poster)

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Introduction

Seed germination is an important event in the life of every sexually reproduced higher plant. The seed of many medicinal plant species have dormant; they do not germinate unless specific environmental signals or events occur.

Objectives

- The effect of chemical different treatments on seed dormancy breaking of Danaei thyme (*Thymus daenensis*) and yarrow (*Achillea millefolium*)
- Evaluation of seed germination and growth of Danaei thyme (*Thymus daenensis*) and local yarrow (*Achillea millefolium*)

Methods

This study was conducted completely randomized design (CRD) with three replications in 2004. These treatments were: 1-gibberellic acid (GA3) 100 PPM, 2- gibberellic acid 500 PPM, 3-gibberellic acid 1000 PPM, 4-KNO₃ 0.2%, 5-Thio urea 1 Molar and 5-control (net water). Dark / light regime (dark 16 hr/ light 8 hr) and alternative temperature (15 °C / 20 °C) for seeds of all treatments were applied. Seeds were placed in germinator (growth chamber) with 95% humidity for period of 15 days

Results

The results of analysis of variance showed that the effect of various treatments on Danaei thyme and local yarrow seeds germination percentage were highly significant different ($P < 0.01$).

Conclusion

Treatments of KNO₃ 0.2% and gibberellic acid 500 PPM have the highest and Thio urea 1 Molar the lowest seed germination percentage.

Keywords: Danaei thyme and local yarrow

Selected References

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An ethnobotanical survey of medicinal plants for the treatment of skin disease in southern Italy. (Oral Presentation)

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Introduction

Southern Italy has a rich cultural history that integrates wild and locally cultivated plants in many aspects of daily life. In rural communities, plants are commonly gathered for food and medicine. This tradition of preparing botanical remedies in the household has been studied at length in Arbereshe Albanian communities situated in southern Italy [1,2]. Here, we discuss the results of an ethnobotanical survey of traditional remedies for the treatment of skin disease in autochthonous Italian communities of the Vulture-Alto-Bradano region.

Objectives

To identify medicinal plants used by autochthonous south Italians in the traditional treatment of skin disease.

Methods

We selected one hundred informants at random using stratified random sampling techniques. We obtained prior informed consent before conducting semi-structured interviews regarding the use of medicinal plants on the skin. We collected voucher specimens of all reported species, and nomenclature follows Pignatti's *Flora d'Italia* [3].

Results

We identified more than 20 medicinal plants for the specific treatment of skin ailments such as inflammations, abscesses, burns, rashes, cuts, and bruises. Commonly cited plant species for these conditions included *Allium cepa* L., *A. sativum* L., *Brassica oleracea* L., *Parietaria judaica* L., *Matricaria recutita* L., *Sambucus nigra* L., and *Triticum aestivum* L.

Conclusion

South Italians use a variety of medicinal plants for the treatment of medical conditions related to the skin. Most of these plants are common, widespread temperate species, and include many of the old domesticated foods. Many of these ethnobotanical remedies are incorporated into the local folk-medical construct, which identifies illness as the result of magical or spiritual, rather than natural, imbalances. Ethnobotanical remedies for the skin represent an important aspect of medical care in these communities.

Keywords: Ethnomedicine, Ethnobotany, Folk-illness, Anti-inflammatory

Selected References

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Promoting the conservation and sustainable use of breadfruit in the tropics. (Oral Presentation)

Diane Ragone

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Introduction

The National Tropical Botanical Garden in Hawaii manages the world's largest conservation collection of breadfruit, with more than 120 cultivars from 18 Pacific Island groups, Indonesia, the Philippines, and the Seychelles. This breadfruit genebank represents a global resource in the effort to develop more sustainable agriculture, increase crop diversity, and enhance food security in tropical regions. The Breadfruit Institute was established in 2002 to conserve breadfruit diversity and traditional knowledge and to promote its use for nutrition, income, and environmental protection.

Objectives

Why Breadfruit? The trees require little attention, do well under a wide range of ecological conditions, begin bearing fruit in three to five years and are productive for many decades. This tree of bread? has the potential to play a significant role in alleviating hunger in the tropics by providing nutritious food and trees for agroforestry and homegardens.

Methods

A research program is underway to develop effective and simple methods to propagate breadfruit plants using tissue culture. This international program involves the Breadfruit Institute, the University of Guelph, the University of British Columbia, and the Regional Germplasm Centre in Fiji. The goal is to conserve breadfruit germplasm in tissue culture and mass-produce and distribute plants of selected varieties. The Institute is also working to develop partnerships with international, national, regional, and local organizations to establish a network to distribute breadfruit varieties and provide technical support and information about growing and using breadfruit.

Results

None

Conclusion

This paper will provide an overview of the work of the Breadfruit Institute to develop and implement practical strategies and programs for sustainable conservation and use of breadfruit.

Keywords: *Artocarpus altilis*

Selected References

None

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***In situ* conservation of breadfruit in the Pacific Islands: Case studies in Samoa and Kiribati.**
(Oral Presentation)

Diane Ragone¹

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Cultural changes, an increased preference for western diets, and hurricanes and droughts have greatly impacted the cultivation and use of breadfruit throughout the Pacific Islands. A regional conservation strategy for breadfruit developed in 2002 by the Pacific Agricultural Plant Genetic Resources Network provides a framework for *in situ* and *ex situ* conservation activities to safeguard the rich diversity of landraces in Oceania. Two examples of the link between research -ethnotaxonomic studies on breadfruit names in Samoa by the National Tropical Botanical Garden and plant disease research in Kiribati by the Secretariat of the Pacific Community - and community-based *in situ* conservation of breadfruit will be discussed.

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Evaluation of leishmanicidal effect of *Calotropis gigantea* extract by in vitro leishmanicidal assay using promastigotes of *L. major* (Poster)

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Introduction

Cutaneous leishmaniasis (CL), which caused by the different species of Leishmania, produces a skin ulcer that heals spontaneously in most cases, leaving an unsightly scar. In the traditional medicine, the extracts of different species of *Calotropis gigantea* has been successfully used for the treatment of cutaneous leishmaniasis in folklore medicine in south east of Iran. There has been no scientific proof for this activity and in this study the antileishmanial effect of percolated and soxhlet extract of *Calotropis gigantea* was evaluated on promastigotes of *L. major* in vitro.

Objectives

To evaluate the antileishmanial activity of *Calotropis gigantea* extracts and its fractions.

Methods

Four different concentration of extract either percolated or soxhlet (0.12, 0.25, 0.50 and 1.0 mg/ml), one positive control, one negative control and one solvent (DMSO) control were prepared and were placed in 24 well plates that contained 50,000 parasites/well. Positive control group contained Amphotricin B (0.5 mg/ml) and negative control group contained only culture media. Then they were incubated at 25 °C for 3 days and amount of parasites in each well determined on days 1, 2 and 3 of experiment.

Results

The results showed that the Amphotricin B and both percolated and soxhlet extracts (methanol and DMSO solvent) in concentration of 1 mg/ml killed all of the parasites and EC₅₀ in percolated and soxhlet extracts and DMSO solvent was between concentrations 0.25 mg/ml and 0.5 mg/ml. The control solvent (DMSO) had no significant effect on the *L. major*.

Conclusion

These results indicated that both macerated and soxhlet extracts of *C. gigantea* have favorable leishmanicidal activity.

Keywords: *Calotropis gigantea*, AntiLeishmanial activity, *Leishmania major*, Promastogotes

Selected References

None

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Diversity, Management, Utilization and Conservation of Local Rice Germplasm

(Oral Presentation)

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Rice is staple food to half the world; it provides livelihoods to hundreds of millions who depend on rice farming for a living. Spectacular productivity gains have been made in rice farming since the 1970's, in what now known as the Green Revolution. Unfortunately, the achievement was made at the expense of major genetic losses, when genetically diverse local germplasm was replaced by just a few 'improved' genotypes. Thailand is one of a handful countries in Asia where local rice varieties are still grown to significant extent. This paper presents studies of genetic diversity of the local rice germplasm and its management and use by farmers and local communities in this country¹, and raises issues related to in situ conservation. We have found that local varieties are the only, often quite satisfactory, options available to farmers in areas yet to be reached by modern varieties. The many agroecological niches that can only be filled by local varieties are described by difficult ecological conditions of soil, microclimates and pests as well as social and traditional ones that determine usage and custom. Genetic analysis, including molecular diversity, has found genetic variation among rice that look the same and sharing the same name, and even more variation within individual seedlots. The genetic system is also highly dynamic, under the influence of seed flow, mediated by rapid varietal and seed turnover among farmers, and gene flow especially via hybridization with the ubiquitous wild rice, *Oryza rufipogon*. In addition to the seed turnover, different farmers influence rice genetic diversity by the many different ways in which they manage their seed stock, from the length of time over which a particular seedlot is kept within the family to the seed selection methods applied. Domesticated species like rice are different from wild species, which can be conserved *in situ* by preservation of their habitats. The changes are much more rapid in both (a) the agroecological environment, with perpetual social and economic changes and emergence of new innovations and technology, and (b) the human manipulated genetic system. Sustainable on-farm conservation of local germplasm will require understanding of the nature of the genetic variation, how it changes over time, what impact farmers' management has and what value they derive from it.

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Antioxidant and Antityrosinase Activity Evaluation of the Ethanolic Extracts, Obtained from Five *Curcuma* spp. (Poster)

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Introduction

Antioxidant, antityrosinase activity and total phenolic content of ethanolic extracts obtained from five *Curcuma* spp.; *Curcuma xanthorrhiza* Roxb. (Wan-chak-mot-luk ; CI), *Curcuma zeadoaria* (Berg.) Roscoe. (Kamin-oy ; CII), *Curcuma aromatica* Salisb. (Wan-nang-kam ; CIII), *Curcuma* sp. (Mahaprab ; CIV), *Curcuma* sp. (Kanthamala ; CV) were conducted. The antioxidants are claimed the biological active in protecting the body, the skin collagen and elastic tissue against damaging by reactive oxygen species. Most of the antioxidant potential in herbs is due to the redox properties of phenolic compounds, act as reducing agents, hydrogen donors and singlet oxygen quenchers. Tyrosinase is known to be a key enzyme for melanin biosynthesis in plants and animals. Tyrosinase inhibitors therefore can be clinically useful for the treatment of some dermatological disorders, associate with melanin hyperpigmentation. It envisaged to be used in cosmetics for whitening, depigmentation, anti-aging and anti-wrinkle.

Objectives

To study the antioxidant activity, the antityrosinase activity and the total phenolic content of ethanolic extracts, obtained from five *Curcuma* spp.

Methods

The rhizomes of five *Curcuma* spp. from Kanchanaburi province (Thailand) were dried at 40 °C and extracted with ethanol at room temperature. The antioxidative activity was assessed by using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay [1], compared with BHT and Trolox. The total phenolic content was measured by Folin-Ciocalteu method. The antityrosinase activity was determined by the dopachrome method using L-DOPA as the substrate [2]. These studies are based on spectrophotometry analysis.

Results

The concentration of antioxidants to quench DPPH radical (EC_{50}) of CI = 2.03 ug/ml, CII = 3.12 ug/ml and CV = 5.48 ug/ml were not significantly different from Trolox (EC_{50} = 1.03 ug/ml) and BHT (EC_{50} = 2.33 ug/ml). The total phenolic content of five *Curcuma* spp were ranging from 3.41 g/100 g to 9.06 g/100 g of dry weight. The concentration inhibitory effect (IC_{50}) of CI and CIV significantly showed potent inhibition on dopa oxidase activity of mushroom tyrosinase (antityrosinase activity). The IC_{50} of CI and CIV were 56.54 ug/ml and 67.12 ug/ml respectively. Others exhibited low to moderate inhibition activities.

Conclusion

The results of the present work reveal that, the ethanolic extract of CI possessed the highest antioxidant and antityrosinase activity. Whereas others exhibited low to moderate inhibition activities. Therefore, it would be interesting to do further studies of CI as skin-whitening and anti-wrinkle agents.

Keywords: antioxidant, antityrosinase, *Curcuma* spp.

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Common wild rice: *in situ* conservation and genetics (Oral Presentation)Benjavan [Rerkasem](#)

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Wild rice (*Oryza* spp.) are important because they are closely related to the cultivated rice (*O. sativa*), which feeds half the world's human population. The moderate size genus contains some twenty species, the most common of which is *O. rufipogon*, closest relative of cultivated rice. This paper discusses distribution and genetics of *O. rufipogon*, the common wild rice, and implications that these have on future of the species and *in situ* conservation. Found widely in tropical and subtropical Asia, it is roughly divided by the Tropic of Cancer and the Himalayas into genetically distinct northern and southern sub-populations. The northern sub-population, genetically close to the Japonica group of cultivated rice (*O. sativa* ssp. *Japonica*), is rare. It had disappeared from Taiwan since the 1970's and is now considered endangered on mainland China. The southern sub-population, which is believed to have given rise to Indica rice (*O. sativa* ssp. *Indica*), is still widespread in South and Southeast Asia. Some of it, however, seems to be undergoing major changes. Hybridization between wild and cultivated rice, combined with changes in the way in which rice is cultivated, has led to emergence of weedy rice in the rice fields of Asia, with obvious adverse impact on rice production. Instead of flowering once a year like wild rice and traditional cultivars, the weedy rice has picked up the photoperiod insensitive habit of modern rice cultivars and are now flowering all year round. The impact of the transfer of such and other ecologically important adaptation traits from cultivated rice, from wide-crosses and transgenes, to the wild population on genetic diversity of wild rice and its long term survival should be considered along with habitat losses in any effort in *in situ* conservation.

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Methods for breaking of seed dormancy in *Echinacea angustifolia* D.C. and *Echinacea purpurea* (Poster)

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Introduction

Seeds of plants have ensured the generations survival in natural habitats with improvement of seed dormancy mechanism. Improvement of germination rate and percentage is the most important characteristic for the economical production. *Echinacea angustifolia* and *Echinacea purpurea* are valuable medicinal plants originated from North America, which has been extended there cultivation in Iran with good yield

Objectives

Of course, seeds of these plants have many problems in germination. Because of medicinal value of these plants, these experiment has been conducted in Institute of Medicinal Plants -ACECR -in Iran

Methods

The treatments of this experiment have included: gibberellic acid (250 and 500 ppm), KNo₃ (0.3%), scarification, stratification (in three duration: 4,7 and 10 weeks), light (24h) and combined treatment with GA3 (250ppm)+stratification (4weeks).these treatments arranged in a completely random design at 4 replication .

Results

Results indicated significant differences ($p < 0.01$) and the highest rate of germination is related to combined treatment. It was observed that the percentage of germination was significantly different at all treatments of breaking dormancy. The maximum number of germinated seed was found with in GA3 AND stratification.

Conclusion

According to results, it is suggested that *Echinacea angustifolia* cinerariae seed dormancy is control of endo seed factors.

Keywords: None

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**Search for bioactive compounds from plants of Vietnam and Laos:
A paradigm for an international cooperation** (Oral Presentation)

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Introduction

An international collaborative project was in operation for the period of 1998-2005, with member institutions based in the United States (University of Illinois at Chicago; Purdue University), Vietnam (Institute of Ecology and Biological Resources, Institute of Chemistry, Institute of Biotechnology of the Vietnamese Academy of Science and Technology, Hanoi; Cuc Phuong National Park, Ninh Binh), and Laos (Traditional Medicine Research Center, Ministry of Health, Vientiane), and with an industrial partner based in the United States (Bristol-Myers Squibb, New York).

Objectives

To discover new molecules from plants of Vietnam (Cuc Phuong National Park) and medicinal plants of Laos as potential candidates for pharmaceutical development for therapies against cancer, AIDS, tuberculosis, and malaria.

Methods

Semi-random collection of flowering plants at Cuc Phuong National Park was undertaken; field ethnobotanical interviews were performed among communities and healers throughout Laos and samples documented by voucher herbarium specimens were collected. Samples were extracted using a standardized protocol, the extracts tested against the four stated disease systems. Active species were recollected in a larger quantity for bioassay-guided fractionation and isolation of the active compounds.

Results

During the 7-year period of operation, more than 280 molecules with antimalarial, anti-TB, anti-HIV and anticancer activities have been isolated from plants of Vietnam and medicinal plants of Laos. The project has also contributed significantly to the knowledge of natural products chemistry with 80 new secondary metabolites being reported for the first time from higher plants.

Conclusion

The uniqueness of this project lies in its design, where by drug discovery effort is integrated with conservation and economic development endeavors, while adhering strictly to the principles of the United Nations Convention on Biodiversity. This project serves as a paradigm for future effort in the study of the biodiversity for its potential in contributing to the welfare of man.

Keywords: Bioactive compounds; plants of Vietnam; medicinal plants of Laos; cancer; AIDS; tuberculosis; malaria; international cooperation

Selected references: Soejarto, D.D. et al. (1999) Studies on biodiversity of Vietnam and Laos: The UIC-based ICBG Program. *Pharmaceutical Biology* 37, Supplement, pp.100-113.

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Tibetan Land Use and Change near Mt. Khawa Karpo, eastern Himalayas. (Oral Presentation)

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Introduction

Studies on Tibetan land use have concentrated on yak herding. However, in the eastern Himalayas, agriculture and non-timber products are equally as important. Land use change is multi-faceted and very rapid in Tibet.

Objectives

To quantitatively compare and contrast land use and change in Tibetan villages at high elevations (>3000m) and lower elevations (<2500m), and villages near and distant from roads.

Methods

Field data was gathered by multi-disciplinary, multi-ethnic teams that trekked to six villages. GIS mapping was carried out on 1m² satellite images using GPS units and palm pilots. PRA mapping was incorporated in the GIS and also used to evaluate repeat photography for change in land use over the last century. Ethnobotanical vouchers were collected. Data were compared statistically with non-parametric Mann Whitney and Kruskal Wallis tests.

Results

High villages crop both high and lower fields resulting in larger agricultural areas/household, greater crop diversity/household, and both more traditional crops (barley, buckwheat, turnip) and more new world crops (maize, potatoes). Villages near roads and at lower elevations grew more cash crops (grapes) and more wheat. High villages also had more ready access to non-timber products and pastures. Change was widespread and diverse, but overall Tibetans have maintained their natural resource base and traditional livelihoods, especially in higher villages.

Conclusion

Verticality is evidenced. Traditional ecological knowledge informs many aspects of Tibetan land use. There are trade-offs between higher villages having access to land and other natural resources, and lower villages with roads having access to markets and agricultural and infrastructural inputs. Government policy is a powerful force of change as is global warming.

Keywords: GIS, PRA, TEK, global warming, farming systems, livelihoods. non-timber products

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Drawing on knowledge of local farmers in planning conservation of crop landraces: the case of yams (*Dioscorea* spp.) in Wolayita zone, Southern Ethiopia. (Oral Presentation)

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Introduction

Yam (*Dioscorea* spp.) is among the major tuber crops grown in Ethiopia, an important center of yam cultivation outside the “yam zone” of West Africa. Despite its long history of cultivation and significance in local livelihood, the diversity in yam and associated indigenous knowledge has not been properly investigated. Consequently, issues concerning conservation and improvement of yam are yet to be addressed.

Objectives

Assess the diversity and management of yam landraces, and implications for conservation.

Methods

A farm-level survey covering 299 households was conducted during the 2003/2004 cropping season. The households were selected following a stratified sampling procedure to cover the ecological range of yam. Methods of data collection included field visits, and in-depth individual interviews using structured and semi-structured questionnaires.

Results

Wolayita farmers possess extensive knowledge about the diversity present in yam, which is selected and managed accordingly to meet household demands. Diverse yam landraces are grown with respect to time of maturity, adaptation to environmental conditions, and culinary properties. Overall, 37 named landraces were described throughout the study area and, on average, farmers managed 2.9 landraces per farm. Farmers principally rely on own supply of seed tubers, but local markets and exchanges with neighbors are also among possible sources of planting materials. Yam generally has significant economic and social importance in Wolayita.

Conclusion

The high value that local farmers place on yam is expressed in its continued cultivation despite the lack of support from researchers and policy makers. Nevertheless, factors such as erratic rainfall, declining soil fertility, market demand, and shortage of land and staking materials are affecting the number and type of landraces grown and the extent of production. Ensuring continuity of farmers' maintenance of the available germplasm calls for the need to address the problems facing the yam-based production system. Any conservation and improvement program must take into account the multiple objectives of farmers and the importance of diversity in local agriculture. The attributes that farmers find important in each landrace, the local seed supply system, and the place of yam in the cropping calendar are among the lessons that such preprograms can rely on.

Keywords: landrace diversity, local knowledge, Ethiopia

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How farmers select and manage yam (*Dioscorea* spp.) diversity in Wolayita, Southern Ethiopia. (Oral Presentation)

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Introduction

Yam (*Dioscorea* spp.) is among the major tuber crops cultivated in Ethiopia, an important center of yam cultivation outside the so called 'yam zone' of West and central Africa. Despite a long history of cultivation and its significance in local livelihood, the extent of yam diversity and the associated indigenous knowledge has been hardly studied. Consequently, issues concerning conservation and improvement of yam are yet to be addressed.

Objectives

To investigate yam landrace diversity, and assess how diversity is selected and managed by local farmers in Wolayita, one of the major production areas in Southern Ethiopia.

Methods

A farm-level survey covering 299 households was conducted during the 2003/2004 cropping season. Households were selected using a stratified sampling procedure to cover the ecological range of yam. Data collection methods included field visits and in-depth individual interviews using structured and semi-structured questionnaires.

Results

Wolayita farmers manage diverse yam landraces with respect to time of maturity, adaptation to environmental conditions, and culinary properties. They generally recognize two major categories of yam: hatuma boye ('male' yam) and macha boye ('female' yam) mainly based on maturity time and vigor, but without reference to the reproductive biology of the plant. This classification is largely consistent with our findings based on morphological and DNA markers. Landraces within each category are further identified based on a range of plant and environmental attributes. A total of 37 named landraces were described throughout the study area and, on average, farmers managed 2.9 landraces per farm.

Conclusion

Local farmers possess extensive knowledge about the diversity present in yam, which is selected and managed accordingly to meet household demands. Yam is adapted to dry-season planting, and early harvests fill a seasonal gap in food supply. Although yam is establishing itself as an important cash crop in some localities, there is a general decline in production due to different environmental and production factors. Thus, there is a need for efficient conservation strategies and improvement programs that take into account farmers' knowledge and the importance of diversity in local agriculture.

Keywords: landrace diversity, local knowledge, Wolayita

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Thai Wild Fruits and Their Economic Potentials (Oral Presentation)

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Introduction

During numerous ethnobotanical surveys of various ethnic groups in northern Thailand, many fruit-plant species were found in different villages and study sites. Some fruits look splendid and are very tasty. These wild fruits should be domesticated in the future because many species of economic fruits in Thailand have been domesticated from the wild species.

Objectives

The objective of this work is to identify and record the local (wild?) fruits found during ethnobotanical studies. It is also aimed to suggest some potentially economic species for further development.

Methods

Fruit plants were collected during botanical expeditions in different villages in northern Thailand. Their morphological characters and usages were recorded. The collected fruit plants were then identified to the species level. Some species with economic potentials were selected and suggested for domestication.

Results

Ninety seven species of fruit plants were identified and divided into 2 categories: 21 domesticated and 76 wild species. Thirty two species are delicious and tasty. They are then suggested to be further developed into marketable products.

Conclusion

Some species of fruit plants suggested have been partially domesticated and processed. The others, such as *Rubus* spp., *Myrica esculenta* and *Garcinia pedunculata* are found in highland area. They are the most tasty and should be developed into valuable products.

References

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Presenting author: Chusie Trisonthi

Agave plants diversity used in Mexican Geographical Indications spirits: Mezcal and Tequila
(Poster)

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Introduction

Agave plants are used in beverages, fibres and distilled spirits in Mexico. The most famous product is tequila, but there are many types of agave spirits called mezcal. These species were used as food before conquest because they had a rich sugar storage of inulin. Actually, Denominations of origin policies in Mexico (Geographical Indications) for tequila and mezcal could be helping or damaging this diversity. How can they could be improved the rules of conservation?

Objectives

Analyze the rules of Geographical Indications in Mexico and their effects in crops and wild agave plants diversity for spirits as mezcal and tequila.

Methods

We studied mezcal and tequila laws and their convenience for agave crops and wild populations diversity.

Results

Mexican laws for Tequila and mezcal can be letting out important items about environmental issues, as agave wild and cultivated plantations. Quality laws have been improved by the final product but diversity conservation there is not a line research. The risk is decrease a genetical pool and it is worst in case of clonal crops as Agave tequilana Weber (blue agave).

Conclusion

Geographical Indications as tequila and mezcal spirits could be protecting their species richness including policies about genetical resources management chapter.

Keywords: Ethnodiversity, agave, genetics policies, geographical indications

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2. Valenzuela Z., A.G.; Marchenay, P.; Berard, L. y Foroughbakhch, R. 2004. Conservacione la diversidad de cultivos en las regiones con Indicaciones Geograficas. Comparacione tequila y calvados. Revista Sociedades Rurales, Produccion medio ambiente. Vol. 5, n? 8.

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Agave fibers species used in Charro (mexican cowboy) ropes in Western Mexico. (Oral Presentation)

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Introduction

A. fourcroydes and *A. lechuguilla* have developed as important fiber industries in Mexico. Sisal (*A. sisalana*) fiber is the most well known commodity in the world in the production of thread, rugs and tapestries. However, sogas (agaves ropes) used in Charro (Mexican cowboy) competitions are still made from wild, yet unrecognized, agave species by traditional artisans.

Objectives

We identify the agave species used to make the sogas (agave ropes) used in charro traditions and research methods and traditional knowledge of agave fiber extraction and handicrafts.

Methods

The study area, the Cerro Viejo mountain range (2900 m elevation), is located at 20° 20' LN and 103° 14' LW. This area is comprised of volcanic soils. Agave specimens used in the production of sogas were collected and prepared for identification between 2002 and 2006. Semi-structured interviews were conducted with local artisans, charros and "ixtleros"(agave fibers collectors) in the dry season of 2006 (Feb. to May).

Results

A. inaequidens and *A. hookeri* (Crenatae group, Gentry, 1982) are named "maguey bruto", they are wild and propagated by seeds. Ropes from "maguey bruto" are preferred by Charros because the exceptional quality (flexibility, strenght and color). Jalisco charro ropes have been more demanded, charro competitions also is growing and wild populations of agave are over collected. Other fibers from *A. salmiana* have been imported from central Mexico for charro ropes. Sustainable management of wild agave in Jalisco is needed.

Conclusion

The charro tradition (competitions) helps to conserve traditional knowledge of natural agave fibers, where synthetic fibers, sisal and henequen cannot be used. We recommend the implementation of a sustainable wild agave population management and propagation program in this area.

Keywords: Hard fibers, Agave, traditions, Mexico, Jalisco, charro competition

Selected References

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Forest Use, Scale, and Conservation with Panama's Wounaan. (Oral Presentation)

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Introduction

Over the last thirty years many fields have witnessed a heightened awareness of spatial and temporal scales.

Objectives

Here I use multiple scales to explore Wounaan indigenous peoples' forest use in eastern Panama.

Methods

Based on two and a half years of multi-sited fieldwork, I combine ethnohistory, indigenous cosmology, vegetation plots, remote sensing, and political ecology to examine representations of Wounaan and their forest use.

Results

I find that forest use can be distinguished by plot summary statistics, tree diameters, floristics, and cluster analysis, but such data are obscured in analysis with remotely sensed Landsat satellite imagery.

Conclusion

I illustrate how varying scale changes analytical results and how such results can be used to both construct authority and reinforce power.

Keywords: forest use, remote sensing, Wounaan, Panama

Selected References

1. Martin et al 2004
2. Viera et al 2003
3. Scott 1998

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Domestication in white sapote, *Casimiroa* spp. (Rutaceae) . (Oral Presentation)

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Introduction

Casimiroa (Rutaceae) is a Mesoamerican genus with over 10 species of shrubs and small trees, most with a restricted distribution. Two species, *Casimiroa sapota* and *Casimiroa edulis*, are widely cultivated for their edible fruit; *C. edulis* is domesticated with much variation, and is a minor fruit crop outside of Mexico. Remains have been found in various archaeological sites.

Objectives

The aim was to 1) identify the domestication traits and 2) obtain a hypothesis on the origin of the cultivated species.

Methods

The genus was studied with traditional methods: revision of nearly 1000 herbarium specimens of Mexican and international herbaria, and field collections. Numeric data on morphology were collected systematically for a phenetic analysis. Also, about 50 ethnobotanical interviews contributed data on uses and selection criteria.

Results

The cultivated *Casimiroa sapota* shows little variation and influence of domestication. *Casimiroa edulis*, however, is very variable. The following traits were identified: 1. variation in fruit size and shape; 2. a thinner epicarp; 3. a thicker, sweeter, less bitter mesocarp, and 3) an endocarp with more compact fibers and a smoother surface. Endocarp characteristics are differentiated regionally and can be used for identification in archaeological contexts. The phenetic analysis showed that *Casimiroa edulis* is a hybrid swarm. A form of *C. sapota* restricted to the south of Mexico is one of the parents; another two, previously undescribed and narrowly endemic species from Guerrero and Durango, also contribute.

Conclusions

The domestication of *Casimiroa* follows the pattern of several important domesticated species of Mesoamerica (beans, maize, etc.) with a maximum diversity and ancestors from within the triangle Sierra Madre Occidental - central highlands - Rio Balsas depression.

Keywords: origin, fruit trees, Mesoamerica

Selected references

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The Weeds of Mexico website, an inclusive tool. (Oral Presentation)

Heike Vibrans

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Introduction

Mesoamerica and adjoining regions have a long history of agriculture, and have evolved a large number of species adapted to cultivated fields and other disturbed vegetation types. Many of these species are edible, or otherwise useful. Parts of rural populations in Mexico are very much interested in obtaining additional and reliable information on their plants; however, popular guides are few and are rarely available.

Objectives

For these reasons we decided to include farmers as one of the targets for the website www.malezasdemexico.net. Other intended users are non-taxonomic professionals such as agronomists, government officials and biology teachers.

Methods

The site is online since March 2006 with illustrations, descriptions, other information and pictorial identification help for over 450 species, mainly from the temperate areas of Mexico. Until June, another 250 species - many tropical - will be added. The site is mainly in Spanish, with some bilingual parts (English). Eventually, we hope to include most of the 3000 weedy species reported for Mexico.

Results

In this talk we report on the first workshops with farmers, and solicit suggestions from and collaboration by interested economic botanists.

Conclusion

The site will hopefully be a pioneer in communication between scientists and interested laypeople.

Keywords: interactive flora

Selected References

1. <http://www.malezasdemexico.net>

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Ethnomedicine of the Kui

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Introduction

The Kui (Austro-Asiatic: Mon-Khmer) are the original inhabitants of the southern part of Northeast Thailand. Today, over 300,000 Kui people continue to reside here. A local form of a traditional health care system exists within Kui communities, and some of this knowledge is concentrated among experts of traditional medical knowledge or healers.

Objectives

To identify the natural materials used by Kui healers to treat health conditions and determine the methods used to prepare these remedies.

Methods

Thirty healers were selected and in-depth study was conducted among thirty Kui healers to explore their concepts of health care and role as a local health care provider, the types and range of health conditions that they treated and the methods they used to treat the health conditions. The healers included herbalists, blowing doctors, and spirit healers (spirit mediums and diviners) from Surin, SriSaket and Ubon Ratchathani provinces. Interviews, health conditions logs, free-listing techniques, and plant specimen collection were used to collect data.

Results

Healers treated 91 health conditions of 15 different disease categories. There were 363 species/ types of plants, animals and minerals recorded for use by the healers to treat the health conditions. Materia medica could be used both physically (e.g. topical, consumed) or spiritually (e.g. divination, ceremonies). Healers provide diagnosis, advice and recommendations, remedies, and check-ups for their patients. They may also encourage patients to seek out other healers and modes of treatment, such as hospitals.

Conclusion

Traditional healers retain a broad base of knowledge for treating illness among the Kui communities. As a local health care provider and expert, healers play a strong and important role in the community healthcare system.

Keywords: Kui, ethnomedicine

Selected references

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The assessment of ethnobotanical knowledge systems by Social Network Analysis. (Oral Presentation)

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Introduction

Knowledge about plant species and their uses is usually not (good-given), it is passed on by elders to younger people, shared within different peers, learned in school or other contexts. In recent ethnobotanical research more and more attention has been given to analyze knowledge systems, with a focus on transmission of knowledge between people. Knowledge systems consist of actors and their relations and therefore a close look at both, the actors and their relations, is necessary. Relations between actors can be analyzed using Social Network Analysis (=SNA; Scott 1998; Wassermann/Faust 1994, Burt 1982).

Objectives

To present 1) the theory and main assumptions of SNA; 2) potential research questions and hypotheses in ethnobotany to be studied by SNA; 3) Examples from own research where SNA has been employed.

Methods

Case studies used for the paper are 1) a 24 months (2004 & 2005) field survey done in Eastern Tyrol Austria about local knowledge of farmers about plant species and remedies used in veterinary medicine; 2) a 3 months (2003) field survey in Eastern Tyrol (Austria) about local knowledge on agriculture tools made from wood; 3.) a 6 months (2004) field survey in the Pantanal (Brasil) about local knowledge of farmers about plant species and remedies used in veterinary medicine; In all cases SNA tools have been used for data collection and analysis.

Results

In Eastern Tyrol exchange of knowledge about medicinal plant species used in animal husbandry is mostly shared within families and villages; but almost no exchange takes place between villages of different valleys. The respondents' network does not count with experts on the topic. In the same area experts on wooden self made tools are to be easily identified even from people living further away. The Brazilian survey confronts the knowledge transmission within the peri-urban area of Ceres, Mato Grosso with the transmission in a small community nearby Ceres. It shows significant differences in the two knowledge systems concerning the density of the network and the identification of local experts.

Conclusion

We argue that we can not analyze the local knowledge of a specific person, group or community without taking into account its embeddedness into a surrounding knowledge system. SNA is a great approach to analyze and visualize knowledge systems.

Keywords: relational data, transmission of knowledge,

Selected References

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A microloan program for improving household economy in a Muong community, Vietnam.
(Oral Presentation)

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Introduction

One of the goals of the University of Illinois-based International Cooperative Biodiversity Group Program is the discovery of new molecules from plants of Cuc Phuong National Park (CPNP), Vietnam, as potential candidates for drug development. Since the Muong Community who live in the Cuc Phuong Commune serve as the stewards of the CPNP biodiversity, a form of reciprocity with the community was implemented.

Objectives

To improve the household economy of selected members of the community, in support of the effort of the CPNP to reduce the human pressure on the park's biodiversity.

Methods

A rotating loan of money in the amount of 2.5-3 million Vietnamese Dongs was provided to selected families at the lowest socioeconomic levels. Selection criteria and monitoring were developed, and selection of the recipients was determined by an Economic Development Village Board.

Results

Within a 5-year period, loans were provided to 45 families in the amount of 110,000,000 VND (US\$7,333). The 45 families generated a revenue of 220,100,000 VND (US\$14,673), and each family made profits in the range of 5,000,000 to 23,000,000 VND, depending on the length of time of family participation.

Conclusion

An evaluation meeting with the participation of representatives from People's Committee of Cuc Phuong commune, Farmer Association of Cuc Phuong, HEPR Board of Cuc Phuong, ICBG staff, and CPNP personnel assessed the program as successful in improving the household economy of most impoverished members of the Muong community, while helping reduce the human pressure on the park's biodiversity.

Keywords: Muong; household economy; Vietnam

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The Saliency of 'Vegetable'. (Oral Presentation)

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Introduction

Because 'vegetable' is a term encountered daily in American life, should we assume that most people agree on its definition and membership. Unlike 'fruit' which has a botanical definition, vegetable is defined by function rather than plant part. Fruits, leaves, stems, roots, buds, and other plant parts may be vegetables, depending on how they function as part of a meal.

Objectives

In this paper I examine the cultural saliency of the term vegetable among Americans. I test the hypothesis that people will not agree on the definition of vegetable, nor will they agree on the members of its domain. Conversely, they will display more agreement on the definition of fruit.

Methods

Informed consent was obtained before conducting oral interviews with over 300 people between the ages of 4 and 90. Interviews included open-ended questions, card sorting of pictures, free listing, rank ordering of picture sets, and use of the word 'vegetable' in a sentence. The exact interviews changed over time, so no one interview included all possible measures. Data were entered into the qualitative database management program, ATLAS, as well as into quantitative Excel spreadsheets.

Results

The majority of people agree only that vegetables are plants. Less than half the people interviewed agreed on any other characteristic that could define vegetable. Likewise, there is less than 100% agreement on individual members of the domain of vegetable. Contrary to my hypothesis, peoples' definitions of fruit are not significantly more in agreement.

Conclusion

It is perhaps surprising that a term encountered daily by nearly all Americans has only fuzzy saliency in meaning. People especially are confused about the relationship between fruits (which have a botanical definition) and vegetables (which are defined solely by function but can include fruits). Governmentally sponsored health directives therefore have chosen wisely when they use the phrase 'fruits and vegetables' rather than focusing on the uncertain category of vegetable alone.

Keywords: anthropology, cultural, ethnobotany

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A Pilot Study: Traditional Chinese Medicine for the Treatment of “Xiao ke” (Diabetes mellitus, Type 2) . (Oral Presentation)

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Introduction

Diabetes is a world-wide epidemic with the highest rates in India, China and the USA. Traditional Chinese Medicine possesses a wide array of plant substances and treatment modalities to treat “xiao ke” (Diabetes mellitus).

Objectives

To test whether TCM management therapy for 2 months reduces fasting blood glucose levels in a Shanghai population with Diabetes mellitus, Type 2.

Methods

After IRB approval was obtained, a pilot study to test TCM management therapy among recently diagnosed patients with Diabetes mellitus, Type 2 was implemented. Twenty patients were recruited and TCM plant formulations were administered over a 2 month period. Fasting blood glucose was the primary parameter tested. Secondary parameters were also tested such as glycated Hb, lipid levels, BMI, weight, etc.

Results

Preliminary results demonstrated that TCM Management Therapy reduced FBG levels and glycated Hb levels significantly in this small sample population.

Conclusion

TCM may provide recently diagnosed patients with Diabetes mellitus type 2 with a reduction in FBG and glycated Hb. This pilot study will be the basis to conduct a larger and longer study.

Keywords: Fasting blood glucose, glycated Hb, TCM Management Therapy

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Assessing ecological impacts of *Colophospermum mopane* (Fabaceae) seed harvesting in Namibia (Poster)

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Introduction

Commercialization of the seeds of *Colophospermum mopane* (Kirk ex Benth.) Kirk ex J. Leonard (Fabaceae), a woody legume species endemic to southern Africa, is proposed by non-profit organizations in Namibia to increase income opportunities for rural tribal citizens. The essential oil of these aromatic and resinous seeds can be locally distilled as a high value added product, and may be marketed as a perfume or for other uses that may be indicated by interviews with local people. Although it is assumed that the prolific distribution and fruiting behavior of this polymorphic plant will preclude negative impacts of even large-scale seed removal, intense harvesting could have unforeseen impacts at a variety of ecological scales.

Objectives

Critical questions underlying the proposed commercialization are: What is the annual seed supply of *C. mopane* and what affects this? What is the sustainable harvest limit? What marketable products can be developed? My study will relate population dynamics and anthropogenic management of *C. mopane* to its fruiting behavior, explore factors affecting seed viability, document seed predators and dispersers, assess harvest rates to determine fair prices to pay for seeds, and document traditional ecological knowledge and intellectual property.

Methods

Plots near and far from villages and in the human and livestock excluded Etosha National Park will be characterized according to ecological measurements and degree of coppicing (resprouting induced by human pruning or other damage). This will be related to fruit production and fruit harvest rates by local villagers. Germination experiments, pruning experiments, seed and seedling exclusions, and interviews with villagers will also be conducted. Thermal sensing cameras will document seed predators and potential dispersers.

Results

Preliminary results indicate a wide range of growth form and fruit production in *C. mopane*, many uses for the plant, an average harvest rate of 2 kg/hour, and suggested rodent predation of the seeds.

Conclusion

The information generated from this study will be used in the construction of an ongoing, collaborative adaptive management plan for this resource integral to the lives of rural people and animals in southern Africa.

Keywords: non-timber forest product, adaptive management plan, value-added product

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Ethnobotanical gardens: Beneficial or detrimental to indigenous cultures. (Oral Presentation)

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Introduction

Ethnobotanical gardens can serve many functions—education, conservation, research, and perpetuation of indigenous culture. However, if these functions are not clearly thought out and pursued then an ethnobotanical garden may actually function to the detriment of indigenous cultures. Some examples of ethnobotanical gardens in Hawai'i will be given and their affects on the host culture will be analyzed.

Objectives**Methods****Results****Conclusion****Keywords:****Selected References:**

None

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Traditional medicinal plant in a contemporary agroforestry system: noni in the understory (Hawai'i) (Poster)

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Introduction

Morinda citrifolia (Rubiaceae) or noni, is one of the most important traditionally used medicinal plant in the Pacific Islands (Abbott 1992). Recently, the fruit has gained popularity for general health promotion. It may offer a choice for planters as a cash crop in Hawaii, the Pacific Islands, India and Australia. Agroforestry is an alternative to monocropping, both economically and environmentally. Noni has been planted in traditional agroforestry systems and used for coastal protection throughout the Pacific Islands, however, there are no understory field experiments to date (Elevitch 2000).

Objectives

This ethnoecological experiment aims to determine the viability of noni as an understory cash crop under tropical tree species. The objectives are to identify the ecological and growth requirements of understory noni.

Methods

The field site in Laie, Oahu, has established row plantings of 5 tropical hardwood species of varying tree architecture and canopy closure. Approximately 1000 noni seedlings were planted in November 2005, between tree rows. Mulch and bare ground treatments were established. Growth data continues to be collected, including measurements of root collar diameter and stem length. Light readings (PAR) were taken between rows of differing tree canopy species to characterize the understory light environment. A relationship between survivorship of noni and canopy tree species was explored.

Results

Noni is noted for its wide range of environmental tolerances, varying in moisture and elevation (Nelson 2005). The high survival rate (mean=87.33%) of the noni seedlings in this experiment demonstrates the resilience of the plant. The plants display vigorous growth under a range of light regimes. To date, there is no significant difference in growth (stem length, $P=0.125$) between treatments. There is no significant association between survivorship and canopy tree species ($P=0.151$). However, it is expected that as the trials progress, there will be a correlation between noni growth and differing light regimes.

Conclusion

Morinda citrifolia is a very important traditional medicinal plant that continues to garner interest as a modern nutraceutical. The plant displays vigorous growth under a variety of light regimes and has shown high survival rates. As such, it demonstrates feasibility as an understory crop in a contemporary mixed crop system.

Keywords: *Morinda citrifolia*, Pacific, ethnoecology

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Phylogenetic Relationships in Subgenus *Ceratotropis* Species (Genus *Vigna*, Fabaceae) Inferred by trnT-F Sequences (Poster)

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Introduction

Understanding of phylogenetic relationships in scrop species and their wild relatives could provide the insights into origin and geographic variation and sustainable utilization of plant genetic resources.

Objectives

To investigate the phylogenetic relationships in subgenus *Ceratotropis* species (genus *Vigna*, Fabaceae) using the newly collected samples from South East Asia.

Methods

DNA sequencing analysis was made in three non-coding regions of chloroplast trnT-F genes using 51 accessions, 19 taxa representing 15 wild and cultivated species of subgenus *Ceratotropis* from 9 countries. Phylogenetic analyses were made by both maximum parsimony and Bayesian methods.

Results

The phylogenetic trees obtained by maximum parsimony and bayesian approaches reveal the monophyly of subgenus *Ceratotropis* species (100 % supporting posterior probability and bootstrap values). Subgenus *Ceratotropis* species were grouped into 2 major clades; A and B with 100 % posterior probabilities, respectively. Clade A consists of 8 species; *V. angularis*, *V. nepalensis*, *V. minima*, *V. nakashimae*, *V. riukuensis* (*V. minima* var. *minor*), *V. umbellata*, *V. hirtella*, *V. exilis* which were clustered into 3 subclades (I, II and III). Clade B consists of 7 species (*V. reflexo-pilosa*, *V. trinervia*, *V. aconitifolia*, *V. stipulacea*, *V. trilobata*, *V. radiata*, and *V. mungo*) with 1 subclade IV consisting allotetraploid species, *V. reflexo-pilosa* and *V. trinervia* (100% posterior probability and 96% bootstrap value.)

Conclusion

Only two major groups in subgenus *Ceratotropis* was observed by this analysis. Clade A species are mainly distributed in Asia, and clade B species showed major distribution in Indian subcontinent. Clade A consisted of three groups, *angularis-nepalensis*, *minima*, *umbellata-nakashimae-exilis*. Clade B consisted of six radiating groups including sections *Ceratotropis*, *Aconitifolia* and *Angulares*. No clear lineage differentiation was found in three races of *V. angularis* (azuki bean), and *V. nepalensis*. *V. riukuensis* showed more close similarity with *V. nakashimae* than with *V. minima*. Our data suggested that *V. trinervia* was the maternal genome donor of allotetraploid species, *V. reflexo-pilosa*. Many key characters for taxonomical grouping in this subgenus are positioned as homoplasy in the molecular tree.

Keywords: Monophyly, two major groups, evolution, SE Asia

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***Capsicum frutescens* L. used by aborigines of Taiwan (Poster)**

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Introduction

There are various indigenous people living in Taiwan (Ami, Atayal, Bunun, Kavalan, Paiwan, Puyuma, Rukai, Saisiat, Sao (Thao), Taroko, Tsou and Yami (Dahwu)). It is known that they use *Capsicum frutescens* L., but the details in the local names, the use and the variation of *C. frutescens* in Taiwan aborigines has not been studied.

Objectives

To study the local name, the use and the variation of *Capsicum frutescens* and other condiments of Taiwan aborigines for understanding the dispersal and distribution of *C. frutescens* in Taiwan and also in Southeast and East Asia.

Methods

Interviews to local people (82, Ami: 6, Atayal: 17, Bunun: 20, Paiwan: 9, Puyuma: 3, Rukai: 8, Taroko and Sediq: 9, Northern Tsou: 4 and Southern Tsou: 2, and Yami: 4) and observation on morphological characters of *C. frutescens* were carried out.

Results

In the northern part of Taiwan, the local names of *Capsicum* used by the Atayal, Taroko, Sediq, and Northern Tsou were mainly derived from their names of ginger. In the central part, some Bunun people borrowed the name of san-fu-tiao (*Litsea cubeba* or genus *Lindera*) for the local name of *Capsicum*. In the southern part, the local names used by Ami, Paiwan, Puyuma and Rukai were derived from unknown origin, and especially Ami people, who are well-known to prefer and use *Capsicum*, called chilies in many ways. Yami people already lost their own name for *Capsicum*, and used Japanese name of chilies. Although morphologically and biochemically only one type of *C. frutescens* distributes in the Ryukyu Islands, where lie closely north of Taiwan, several morphologically different types of *C. frutescens* were found in Taiwan.

Conclusion

We clarified that *C. frutescens* in Ryukyu Islands in Japan, with a rare isozyme ShDH-B pattern in Southeast and East Asia, was probably introduced from Indonesia, but it is still unknown whether this specific type distributes in Taiwan, located between Indonesia and the Ryukyu Islands or not. It is necessary to carry out molecular analysis of *C. frutescens* in Taiwan.

Keywords: local name, ginger

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