

14th INTERNATIONAL SYMPOSIUM ON BUCKWHEAT

“DIVERSIFYING FOOD SYSTEMS FOR HEALTH AND NUTRITIONAL SECURITY”

TECHNICAL PROGRAM

REGISTRATION OF PARTICIPANTS: 17:00 hours onward

2-Sep-19

GENERAL ASSEMBLY OF INTERNATIONAL BUCKWHEAT RESEARCH ASSOCIATION: 18:30 hours onwards

INAGURATION: 10:00- 11:00 hours

Plenary session: 11:30 –13:45 hours

Buckwheat for Food and Nutritional Security

Chairperson: Prof. Ivan krefit; Co-Chair: Prof. S. R. Rao

Plenary lecture1: Prof. O. Ohnishi

The diffusion of cultivated buckwheat from the original birthplace (San Jian region of east Tibet) to the Himalayan hill region of India and Nepal

Plenary lecture 2: Prof. Taiji Adachi

Further Progress for Buckwheat Renaissance: Tradition and prospect for breakthrough of future cultivation

Plenary lecture 3: Prof. Kadambot Siddique

Future Smart Food: Rediscovering hidden treasures of neglected and underutilized crop for zero hunger in Asia

3-Sep-19

LUNCH: 13:45-14:30 hours

Technical session I: 14:30-16:55 hours

Germplasm resources, Evolutionary and Developmental Biology

Chairperson: Prof. T. Adachi; Co-Chair: Prof. Suman Kumaria

Key note lecture: Prof. Clayton G. Campbell

Buckwheat Breeding. Past, Present and Future

Invited lecture1: Prof. R. N. Gohil

Variability in the buckwheats of North Western Himalaya – some observations

Invited lecture 2: Prof. Yu Tang

Fagopyrum Mill in China

Invited lecture 3: Dr. Dipak Santra

Buckwheat Production and Breeding in USA

Oral presentations: 16:55-17:00 hours

OPTSI.1. Buckwheat as a staple crop described in 'Chosunwangjosilog' (Royal

- record of Yi-dynasty) in Korea, Yong Sup Lim and **MyoengHeon Lee**
- OPTSI.2.** Genetic Diversity Analysis on Morphological Traits of Tartary Buckwheat Varieties from Major Production Regions of China, **Pu Yang**
- OPTSI.3.** Analysis of phenotypic variation in *Fagopyrum esculentum* Moench and *Fagopyrum sagittatum* Gilib from Kashmir Himalaya, **Dar, F.A.**, Tahir, I., Rehman, R.U
- OPTSI.4.** Production and Breeding status for Buckwheat in North Western Himalayas. **R.K. Chahota**, Nisha Thakur, AnupKatoch and J.C.Rana
- OPTSI.5.** Morphological and physiological performance, and nutritional value of three *Fagopyrum* spp. grown in cold areas of trans-Himalayas, **Tenzen Notup*** and K.S. Rao

Tea/ Coffee: 17:00-17:15 hours

Special Lecture : 17:15-18:00 hours

Chariman: Prof. Sun-He Woo; Co-Chair: Prof. Mateja Germ

Special lecture 1: Dr. Kuldeep Singh

Managing Genetic Resources of Buckwheat in India

Technical session II: 09:00-12:25 hours

Genetics, Breeding and Molecular Biology

Chairperson: Prof. Clayton G. Campbell; Co-Chair: Prof. S. R. Joshi

Key note lecture: Prof. Melliang Zhou

Genome resequencing of 480 tartary buckwheat accessions identifies genomic regions associated with yield and flavonoid metabolism

Invited lecture 1: Dr. Nóra Mendler-Drienyovszki

Advanced breeding programs for buckwheat based on interspecific hybridization

Invited lecture 2: Dr. T. R. Sharma

Status of genomic resources available for buckwheat breeding

Invited lecture 3: Grażyna Podolska

Production, Research and Breeding of buckwheat in Poland

Oral presentations

OPTSII.1. Studies on the cytology of buckwheat interspecific hybrids, **Qing-Fu Chen**, Li-Juan Yang

OPTSII.2. De novo transcriptome assembly and identification of genes related to seed size in common buckwheat (*Fagopyrum esculentum* M.), **Xiaomei Fang**, Yuanli Zhang, Yuke Zhang, Kehui Huang, Wenjuan Yang, Xiaoyu Li, Zhiyong Zhang, Kanghong Wu, XinXu, RenwuRuan, Xiaohui Yuan, Zhengsheng Zhang, Zelin Yi.

OPTSII.3. Induced mutagenesis for improvement of economically important traits in buckwheat of Kashmir Himalayas, **Aijaz A. Wani**, Inayatullah Tahir, Javaid Ahmad, Sabbi Jan

- OPTSII.4.** The inheritance analysis of main agronomic traits about the hybrids from the self -fertile buckwheat, **Yanheng Jia.**, Ya Fang. Hou., Pengke. Wang.,Liming.Yang., Jinfeng Gao., BailiFeng., Xiaoli Gao., Pu Yang
- OPTSII.5.** Study on the distant hybridization and embryo rescue technical system of buckwheat, Mofan Song, Pengke Wang, Yanheng Jia, Liming Yang, Jinfeng Gao, Baili Feng, Xiaoli Gao, **Pu Yang**
- OPTSII.6.** Functional characterization of the 5' UTR of the endosperm-specific legumin-type seed storage protein gene of common buckwheat (*Fagopyrum esculentum Moench*). **Lashaihun Dohtdong** and N. K. Chrungoo
- OPTSII.7.** Genetic characterization of buckwheat accessions through genome-wide allele-frequency fingerprints, **Michelle Maria Nay**, Stephen L. Byrne, Eduardo Alejandro Pérez, Achim Walter, Bruno Studer

Tea/ Coffee 12:25-12:45 hours

Technical session III: 12:45-14:05hours

Bioactive molecules, Biofortification and Metabolite Engineering

Chairperson: Dr.Nora N. Mendlerné-Drienyovszki; Co-Chair; Prof. Don Syiem

Key note lecture: Prof. Ivan Kreft,

Rutin and quercetin in buckwheat - genetics, evolution, plant protection, food science and nutrition

Invited lecture1: Prof. Sun He Woo,

Advanced Plant Proteomics and Metabolomics Technologies and its Application

Invited lecture 2: Prof. Mateja Germ,

Biofortification of buckwheat with mineral elements

LUNCH: 14:05-14_45hours

Technical session III (Continued): 14:45 -15:35 hours

- OPTSIII.1.** Characterization of lipids obtained from *F. tataricum* depending on fragmentation degree, **Dziedzic K.**, Mildner-Szkudlarz S., Kurek Sz., Walkowiak J
- OPTSIII.2.** Analysis of Flavonoid Metabolites in Buckwheat Leaves Using UPLC-ESI-MS/MS, ***Jing Li**, Pu Yang, Qinghua Yang, Xiangwei Gong, Hongchi Ma, Ke Dang, Guanghua Chen, Xiaoli Gao & Baili Feng
- OPTSIII.3.** Validation of 13S globulin detection method in common buckwheat, ***Katsube-Tanaka**, T., Khan, N., Yamamoto, Y. & Suzuki, S.
- OPTSIII.4.** Rutin content in buckwheat (*Fagopyrum esculentum Moench*, *F. tataricum*(L.) Gaertn. and *F. cymosum Meissn.*) growth in the Far East of Russia. **Klykov A.G.**, Chaikina E.L., Anisimov M. M.
- OPTSIII.5.** Comparative study on regulation of flavanoid biosynthesis and accumulation at different developmental stages of buckwheat (*F. esculentum Moench* and *F. tataricum Gaerrtn*). **Akib Ali ***, Upasna Chetty & N.K. Chrungoo

Special Session for Young Scientists*: 15:35-16:35 hours**Chairperson: Prof. Jawahar Lal Karihaloo; Co-Chair: Prof. M. S. Dkhar****OPSS1.** Characterizing the Native Diversity of Buckwheat to Strengthen Climate Resilience and Nutritional Security in Kumaun and Gharwal Himalayas, **Dinesh C Joshi***, Lakshmi Kant and A Pattanayak**OPSS2.** The hidden dynamics of anthocyanin and carotenoid biosynthetic pathways in grain crops: An insight from buckwheat and rice. **Upasna Chetty*** and Nikhil Chrunoo**OPSS3.** Effect of Ecological Environment on Yield and Quality of Tartary Buckwheat, **Md. Shakhawat Hossain***, Jing Li, Chengjin Zhang, Izhar Muhammad, Ferdinand Uzizerimana, Baili Feng**POSTER PRESENTATIONS: 16:35 -17:00 hours****Tea/ Coffee: 17:00-17:15 hours****Special Lectures: 17:15-18:00 hours****Chairperson: Prof. Manoj Dhar , Co-Chair: Dr. Aijaz Ahmad Wani****Special Lecture 2: Dr. Manoj Prasad**Engineering abiotic stress tolerance in plants: A study on SisHSP27 of foxtail millet (*Setaria italica* L.)**Technical session IV:9:00-12:05 hours****Physiology and cultivation practices****Chairperson: Prof. R. N. Gohil Co-Chair: Dr. Rashmi Yadav****Key note lecture: Prof. S. H. Woo**

Breeding strategy and advancement in overcoming breeding barriers in Buckwheat

Invited lecture1: Prof. Manoj Dhar

Understanding the Key Constraints in the domestication and commercial success of Buckwheat

Invited lecture 2: Prof. A. N. Fesenko

A Century of buckwheat breeding and production in Russia: A review

Invited lecture 3: Prof. M. S. Sheshasayee

Finger millet as an excellent alternate source for nutrient security - Unravelling through genomics and phenotypic characterization

Oral Presentation**OPTSIV.1.** Effects of herbicides on weed control and growth and development of buckwheat in buckwheat field, Xiaona Wang, Pengke Wang, Yanheng Jia, Liming Yang, Jinfeng Gao, Baili Feng, Xiaoli Gao, Pu Yang**OPTSIV.2.** Effect of liquid SiO₂ on plant growth, yield and rutin content of Tartary and common buckwheat, **Cheol Ho Park**, Azad Obyedul Kalam, Byoung Jae Park, Mateja Germ and Ivan Kreft

- OPTSIV.3.** Auxin response factors (ARFs) gene family in tartary buckwheat: Identification, evolution, and its phylogenetic comparison with Arabidopsis and rice, Dong-AoHuo, **Qing-Fu Chen***
- OPTSIV.4.** Physiological Response of Buckwheat (*Fagopyrum esculentum* L.) for stressful environments under hill ecosystems of Eastern Himalaya. **Krishnappa Rangappa***, Dipjyoti Rajkhowa, UdaySanker Saikia, Prabha Moirangthem, Anjan Kumar Sarma, NishantAnandrao Deshmukh, Kamal Prasad Mohapatra and Narendra Prakash
- OPTSIV.5.** The response of buckwheat to environmental factors, ***Golob, A.**, Gaberščik, A., Vogel Mikuš, K., Kreft, I. & Germ, M
- OPTSIV.6.** Study on the Occurrence Regularity and Physiological Mechanism of Buckwheat Falling Granules, **Yali Miao**, Pengke Wang, YanhenJia, Liming Yang, Jinfeng Gao, Baili Feng, XiaoliGao, Pu Yang
- OPTSIV.7.** Morpho-Physiological efficiency of Buckwheat (*Fagopyrum* sp.) for enhanced stress tolerance at mid-altitudes of Meghalaya. **S. Hajong***, Krishnappa R, Harish G D, Prabha M, Premaradhya N, U S Saikia and S P Ahlawat
- OPTSIV.8.** The effect of ecological and agricultural conditions on the production of tartary buckwheat (*Fagopyrum tataricum* (L.) Gaertn.) in Poland. ***Kwiatkowski, J.**, Tworkowski, J. & Szczukowski, S

**VISIT TO BUCKWHEAT FIELD AT NBPGR SHILLONG STATION:
12:05-14:30 hours**

**WORKSHOP ON BUCKWHEAT BREEDING TECHNOLOGIES:
12:05-14:30 hours**

LUNCH: 14:30-15:15 hours

Special Session for Young Scientists*: 15:15-16:15 hours

Chairperson: Prof. R. N. Sharan, Co Chair:

- OPSS.4.** ECOBREED – European project enhancing the buckwheat breeding, **Janovska Dagmar**, in Kumaun and Gharwal Himalayas, Dinesh C Joshi*, Lakshmi Kant and A Pattanayak
- OPSS.5.** Jasmonate-responsive bHLH transcription factor FtBQS1 regulates cytochrome P450 enzyme gene CYP81E1 for quercetin biosynthesis in tartary buckwheat, **Kaixuan Zhang***, Ming He#, Yuqi He, Meiliang Zhou
- OPSS.6.** Crops Pollinators And People: Modelling The Limits On The Past And Present Distribution Of Buckwheat. ***Krzyzanska, M.**, Crema, E.R., Hunt, H.V. & Jones, M.K.

POSTER PRESENTATIONS: 16:15 -16:45 hours continued

Tea/ Coffee: 16:45-17:00 hours

Special Lectures: 17:00-17:45 hours

**Chairperson: Prof. Kadambot Siddique; Co-chair: Prof. Uma Shankar
Dr. J. L. Karihaloo**

Special Lecture 3: Mainstreaming neglected and underutilized species into Indian

BRAIN STORMING MEETING: 9:30-13:30 hours

Chairman: Prof. Kadambot Siddique

Speakers:

Prof. Ivan Kreft, Slovenia
Prof. T. Adachi, Japan
Dr. Dagmar Janovska, Czech Republic
Prof. Clayton Campbell, Canada
Prof. Meiliang Zhou, China
Dr. Nora N. Mendlerné-Drienyovszki, Hungary
Dr. Krzysztof Dziedzic, Poland
Prof. Sun He Woo, Korea
Dr. T. R. Sharma, India
Dr. J. C. Rana, India
Prof. R. N. Gohil, India
Prof. Manoj Dhar, India
Prof. N. K. Chrungoo, India

LUNCH: 13:10-14:00 hours

Technical session V: 14:00-16:15 hours

Processing Technology, Buckwheat As A Functional Food And Buckwheat In Human Health

Chairperson: Prof. Ramesh Sharma; Co-Chair: Prof. H. Kayang

Key note lecture: **Prof. Gunilla Wieslander,**
Buckwheat in Human Health

Invited lecture1: **Bidyut Kumar Sarma,**
Gene technology for the improvement of grain legumes

Oral Presentation

- OPTSV.1.** Effects of fermentation on the rheological properties of composite dough with dehulled buckwheat grain and quality of the mantou. Huaxing SUN, **Kaori FUJITA**, *Guangzhong Luan
- OPTSV.2.** Commercialization of Japanese soba noodle by a new dough-making machine without dry milling. **Masato Hagiwara** and Naoto Inoue
- OPTSV.3.** Comparison of kernels and hulls fragments after milling of whole grain of three buckwheat species, *Fagopyrum esculentum* Moench, *F. tataricum* Gaertn and *F. hybridum*. **E.V. Klimova**, O.V. Rezunova, I.N. Fesenko
- OPTSV.4.** Effect of roasting on Antioxidant Activities of Buckwheat Grains. ***Qian Ma**, Yue Zhao, Jing Li, Mengdi Huang, Pu Yang & Baili Feng

- OPTSV.5.** Healthy Benefit of Tartary Buckwheat Intake on Type 2 Diabetes Mellitus Patients and Its Effective Bioactive Compounds. **Ju Qiu***, Zaigui Li, Weijing Wu.
- OPTSV.6.** Anti-obesity metabolic effects of the high fat-germinated buckwheat diet for the growing normal male rats. **Myung-Heon Lee*** and Jung-Sun Lee
- OPTSV.7.** The antitumor and antimutagenic effects of rutin in mice bearing ascites Dalton's lymphoma. **Rajesh Prasad*** and Surya Bali Prasad
- OPTSV.8.** Replacement of fat in Gluten free Buckwheat biscuits with Natural Fibres. ***Shalini Rudra**, Rakesh Bhardwaj, Vidyaram Sagar, Gyanendra Singh
- OPTSV.9.** Variations in Accumulation of Lignin and Cellulose and Metabolic Changes in Seed Hull Provide Insight into Dehulling Characteristic of Tartary Buckwheat Seeds. Chao Song, ***Yan Wan**, Dabing Xiang & ***Gang Zhao**
- OPTSV.10** Rhizosphere soil microbial community by 16s rRNA analysis prompts the mycotoxin production in Tartary buckwheat. Yichen Hu , Lianxin Peng , Yan Wan , Dabing Xiang , **Gang Zhao.***
- OPTSV.11** Innovative processing of Tartary buckwheat hull as an effective adsorbent for removing lead from aqueous solutions, Li Zhiqiang, Wang Chenglong, **Zhu Xuemei**, Shao Jirong
- OPTSV.12** Research on key techniques and demonstration in the Buckwheat whole industry chain, **Gang Zhao**, Dabing Xiang & Yan Wan

Tea/ Coffee: 16:15-16:30 hours

Special Lecture: 16:30-17:00

Chairperson: Prof. Chai Yan; Co Chair: Dr. Dagmar Janovska

Special lecture 4: **Prof. Cheol Ho Park,**
A plan of sharing buckwheat culture based on literature and music

DISCUSSION ON THE VENUE FOR 15TH INTERNATIONAL SYMPOSIUM ON BUCKWHEAT: 17:00-18:00hours

Valedictory Session & Closing ceremony: 18:00-19:00hours