

SABRAO JOURNAL OF BREEDING AND GENETICS

Volume 57 Number 5 | October 2025



SEAMEO
SEARCA

ISSN: 1029-7073; eISSN: 2224-8978

<http://doi.org/10.54910/sabrao2025.57.5>

EDITOR-IN-CHIEF

Prof. Dr. Naqib Ullah Khan

University of Agriculture, Peshawar, Khyber Pakhtunkhwa, PAKISTAN

DEPUTY EDITOR-IN-CHIEF

Dr. Sanun Jogloy

Khon Kaen University, Khon Kaen, THAILAND

ASSOCIATE EDITORS

Dr. Ramakrishnan M. Nair

World Vegetable Center, Andhra Pradesh, INDIA

Dr. Arbind K. Choudhary

ICAR Research Complex for Eastern Region, Patna, INDIA

Dr. Desta Wirnas

Bogor Agricultural University, Bogor, INDONESIA

Dr. Akshaya K. Biswal

University of Georgia, Tifton, USA

Dr. Samrin Gul

University of Sargodha, Sargodha – Punjab, PAKISTAN

Dr. Himmah Rustiami

Indonesian Institute of Sciences, Bogor, INDONESIA

Prof. Dr. Bambang Sapta Purwoko

Bogor Agricultural University, Bogor, INDONESIA

Prof. Dr. Kwon, Soon-Wook

Pusan National University, Busan, KOREA

Dr. Prakit Somta

Kasetsart University, Nakhon Pathom, THAILAND

Dr. Aris Hairmansis

BRIN, Bogor, West Java, INDONESIA

Dr. Gwen Iris Descalsota-Empleo

University of Southern Mindanao, North Cotabato, PHILIPPINES

Dr. Kamile Ulukapi

Akdeniz University, Konyaaltı-Antalya, TURKEY

Dr. B.P. Mallikarjuna Swamy

International Rice Research Institute (IRRI), Los Baños, Laguna, PHILIPPINES

Prof. Dr. P.I. Prasanthi Perera

Wayamba University of Sri Lanka, Makandura, Gonawila (NWP), SRI LANKA

Prof. Dr. Clara R. Azzam

Department of Cell Research, FCRI, Agricultural Research Center, Giza, EGYPT

Dr. Tonette P. Laude

University of the Philippines Los Banos, Laguna, PHILIPPINES

Dr. Quaid Hussain

Zhejiang A & F University, Hangzhou, CHINA

Dr. A.N. Farhood

University of Kerbala, Kerbala, IRAQ

Prof. Dr. Zahoor Ahmad Soomro

Sindh Agricultural University, Tandojam Sindh, PAKISTAN

Dr. Khundej Suriharn

Khon Kaen University, Khon Kaen, THAILAND

Prof. Dr. Ijaz Rasool Noorka

University of Sargodha, Sargodha, Punjab, PAKISTAN



SEAMEO
SEARCA

Dr. Sajjad Hussain Qureshi

MEPCO-WAPDA, Sahiwal, Punjab, PAKISTAN

Dr. Anita Restu Puji Raharjeng

Islamic State University of Raden Fatah Palembang, South Sumatera, INDONESIA

Dr. Irma Jamaluddin

Hasanuddin University, Makassar, South Sulawesi, INDONESIA

Dr. Qasim Hussein Ahmed

University of Baghdad, Baghdad, IRAQ

Dr. Tabynbaeva Laila

Kazakh Research Institute of Agriculture and Plant Growing, Almaty, KAZAKHSTAN

Dr. Hida Arliani Nur Anisa

Sumatra Institute of Technology, South Lampung, Lampung, INDONESIA

Dr. Thiyagu Bin Devarajan

Malaysian Agricultural Research and Development Institute, Selangor, MALAYSIA

Dr. Fitri Nadifah

Guna Bangsa College of Health Sciences, Yogyakarta, INDONESIA

Dr. Yudithia Maxiselly

Padjadjaran University, Bandung, INDONESIA

Prof. Dr. Laila Nazirah

Malikussaleh University, North Aceh, INDONESIA

SABRAO Publishing Team

Ms. Leah Lyn D. Domingo

Advisory Editor, SEARCA, College, Laguna, PHILIPPINES

Mr. Joseph "Otep" Vicente

SABRAO Editor, Laguna, PHILIPPINES

Ms. Maria Rowena M. Baltazar

SABRAO Editor, Laguna, PHILIPPINES

Mr. Nelson A. Tresballes

Web Manager, SEARCA, Laguna, PHILIPPINES

Ms. Jenine F. Gamil

Knowledge Resources Associate, SEARCA, Laguna, PHILIPPINES



SABRAO

Society for the Advancement
of Breeding Research in Asia
and Oceania

<http://sabraojournal.org>
ISSN 1029-7073 | eISSN 2224-8978

Description: Fruit morphology and molecular analysis are essential tools for improving mango (*Mangifera indica* L.) quality, especially considering the diverse consumer preferences. Ten mango accessions were evaluated at the Agricultural Technology Research and Assessment Installation (ATRAI) in Cukurgondang, East Java, Indonesia. Morphological observations revealed considerable variations among the accessions in terms of fruit shape, aroma, color, and taste. The molecular analysis using RAPD and SSR markers provided insights about the genetic distance among the accessions. The mango accessions Madu Segoro 127 and Delima 209 revealed the highest genetic purity and can be used as cross-breeding material representing large-sized mangoes. Crosses between large and small mango accessions are expected to yield medium-sized fruits with vibrant coloration and enhanced aroma. Further details of this study are available in the research manuscript by Tasliah *et al.* (2025): Tasliah, Mahrup, Karsinah, Prasetyono J (2025). Genetic relationship of mango (*Mangifera indica* L.) accessions based on fruit traits and molecular markers. *SABRAO J. Breed. Genet.* 57(5): 1883-1896. <http://doi.org/10.54910/sabrao2025.57.5.10>.

New articles should be submitted directly to the Editor-in-Chief (Prof. Dr. Naqib Ullah Khan) by email: nukmarwat@gmail.com, nukmarwat@aup.edu.pk



SABRAO JOURNAL of BREEDING and GENETICS

pISSN 1029-7073; eISSN 2224-8978

Volume 57 Number 5
October 2025

<http://doi.org/10.54910/sabrao2025.57.5>

CONTENTS

Maheen S, Jan SA, Jan SU, Bibi A, Sattar TA, Khan SU, Khan MAS, Khalid I, Shamsi SMOH (2025). Genome-wide identification and characterization of nodule inception-like protein (*NLP*) gene family in Mungbean (*Vigna radiata* L.). *SABRAO J. Breed. Genet.* 57(5): 1789-1798. <http://doi.org/10.54910/sabrao2025.57.5.1>.

Fayzieva NB, Yuldashev EI, Sultanov DF, Tuychiboye JI, Temirov AA, Bekmatova EE, Mutalov KA, Vakhobov AH (2025). Bean common mosaic virus (BCMV) identification using protein coat gene and phylogenetic analysis. *SABRAO J. Breed. Genet.* 57(5): 1799-1808. <http://doi.org/10.54910/sabrao2025.57.5.2>.

Fadhli N, Musa Y, Dariati T, Dunga NE, Farid M, Azrai M, Nur A, Efendi R, Anshori MF, Novianti F (2025). Characterization of maize germplasm and promising genotypes selection based on morphological traits, heritability, and multivariate analysis. *SABRAO J. Breed. Genet.* 57(5): 1809-1817. <http://doi.org/10.54910/sabrao2025.57.5.3>.

Makhmadjanov SP, Tokhetova LA, Aliev AI, Tabynbayeva LK, Kostakov AK, Makhmadjanov DS, Tagaev AM (2025). Genetic potential of new promising cotton (*Gossypium hirsutum* L.) cultivars in Kazakhstan. *SABRAO J. Breed. Genet.* 57(5): 1818-1829. <http://doi.org/10.54910/sabrao2025.57.5.4>.

Narimanov A, Azimov A, Shadmanova A, Umarova G, Hakimov A, Ziyaev Z, Elmurodov A, Musirmanov D, T. Makhmudov, Shavkiev J (2025). Multivariate analysis in exotic mung bean (*Vigna radiata* L.) genotypes for yield attributes. *SABRAO J. Breed. Genet.* 57(5): 1830-1837. <http://doi.org/10.54910/sabrao2025.57.5.5>.

- Sari BK, Hartanto NR, Mandiri LH, Rahayu T, Munawaroh R, Fawwaz M, Purwono B, Sidiq Y (2025). Genetic makeup of the medicinal plant, *Vitex sp.*, based on DNA barcoding: An in-silico analysis. *SABRAO J. Breed. Genet.* 57(5): 1838-1850. <http://doi.org/10.54910/sabrao2025.57.5.6>.
- Rasheed S, Mahroof S, Gul S, Khan SU, Arshad M, Jatoi SA (2025). Assessment of genetic variation and traits association in garlic (*Allium sativum* L.). *SABRAO J. Breed. Genet.* 57(5): 1851-1861. <http://doi.org/10.54910/sabrao2025.57.5.7>.
- Setiawan E, Pratami MP, Kurniyanto IR, Fendiyanto MH (2025). Correlation analysis of the plant growth, leaf characters, and lipid metabolite markers in *Jatropha curcas*. *SABRAO J. Breed. Genet.* 57(5): 1862-1869. <http://doi.org/10.54910/sabrao2025.57.5.8>.
- Didorenko SV, Iskakov RK, Tynyspaeva BI, Zinchenko AV, Sidorik IV, Kushanova RZH, Kassenov RZH (2025). Breeding research work status and development on flax crop in Kazakhstan. *SABRAO J. Breed. Genet.* 57(5): 1870-1882. <http://doi.org/10.54910/sabrao2025.57.5.9>.
- Tasliah, Mahrup, Karsinah, Prasetyono J (2025). Genetic relationship of mango (*Mangifera indica* L.) accessions based on fruit traits and molecular markers. *SABRAO J. Breed. Genet.* 57(5): 1883-1896. <http://doi.org/10.54910/sabrao2025.57.5.10>.
- Perdani AY, Syukur M, Wahyuni Y, Ritonga AW, Maharijaya A, Wahyuni S, Sulistyowati Y, Paradisa YB (2025). Chili (*Capsicum sp.*) Shelf life and genetic variability analyses in fruit cells' structure. *SABRAO J. Breed. Genet.* 57(5): 1897-1907. <http://doi.org/10.54910/sabrao2025.57.5.11>.
- Shavkiev J, Azimov A, Makamov A, Namazov SH, Matyokubov S, Absamatov T, Tangriev T, Hamrayev S, Malikov M, Maimaiti T (2025). Drought tolerance assessment in upland cotton using multivariate analysis. *SABRAO J. Breed. Genet.* 57(5): 1908-1918. <http://doi.org/10.54910/sabrao2025.57.5.12>.
- Normurodov SH, Muminov KH, Amanov B, Abdukadirov M, Nurmetov KH, Bektaeva KH, Shodiyeva O, Pulatov S, Alikulov H, Pardayev O (2025). The genus *Gossypium* L.: Comparative analysis of its physiological traits in some species and introgressive lines. *SABRAO J. Breed. Genet.* 57(5): 1919-1926. <http://doi.org/10.54910/sabrao2025.57.5.13>.
- Wicaksono AF, Ariffin A, Ardiarini NR, Erika NP, Roviq M, Adiredjo AL (2025). Preliminary yield assessment of the rice (*Oryza sativa* L.) F7 promising lines at a low altitude. *SABRAO J. Breed. Genet.* 57(5): 1927-1937. <http://doi.org/10.54910/sabrao2025.57.5.14>.
- Zulfahmi, Rosmaina, Damayanti R, Gulnara A, Baytelieva A, Jaxybayeva S, Nazgul K (2025). Mutagenesis through gamma irradiation in chili (*Capsicum annuum* L. and *Capsicum frutescens* L.). *SABRAO J. Breed. Genet.* 57(5): 1938-1949. <http://doi.org/10.54910/sabrao2025.57.5.15>.

- Feng J, Gins MS, Gins VK, Baikov AA, Motyleva SM, Khasanova SD, Zhang H (2025). *Amaranthus hypochondriacus* L. cv. 'Kizlyarets' response to hydrogen peroxide, ascorbic, and succinic acids in growth under drought conditions. *SABRAO J. Breed. Genet.* 57(5): 1950-1961. <http://doi.org/10.54910/sabrao2025.57.5.16>.
- Hamed MS, Razzaq HK, Al-Silmawwy NAJ (2025). Effect of organic waste fertilizers on the soil structure. *SABRAO J. Breed. Genet.* 57(5): 1962-1970. <http://doi.org/10.54910/sabrao2025.57.5.17>.
- Syahrir MAK, Saptadi D (2025). Colchicine role in enhancing phenotypic variations in various traits of shallot (*Allium ascalonicum* L.). *SABRAO J. Breed. Genet.* 57(5): 1971-1982. <http://doi.org/10.54910/sabrao2025.57.5.18>.
- Jantassova AS, Nusupova AO, Tokbergenova JA, Ibragimova GM, Tayshibaeva EU, Jantassov SK (2025). Introduction of leafy cabbage kale (*Brassica oleracea* var. *Sabellica*) in Southeast Kazakhstan. *SABRAO J. Breed. Genet.* 57(5): 1983-1993. <http://doi.org/10.54910/sabrao2025.57.5.19>.
- Malitskaya NV, Kusnetzova MA, Ashirbekov MZH, Ostretzova IB, Nurmukhametova NN, Zhumabayeva SE, Kiru SD, Shoykin OD (2025). Evaluation of early maturing maize hybrids for yield-related traits in Akmola Region, Kazakhstan. *SABRAO J. Breed. Genet.* 57(5): 1994-2003. <http://doi.org/10.54910/sabrao2025.57.5.20>.
- Friska M, Wahyuni SH, Amnah R, Suleman AR (2025). Characterization of Salak Sidimpuan (*Salacca sumatrana* Becc.) based on phenotypic characters and RAPD markers in south Tapanuli Regency, Indonesia. *SABRAO J. Breed. Genet.* 57(5): 2004-2014. <http://doi.org/10.54910/sabrao2025.57.5.21>.
- Mammadova RB, Akparov ZI, Alizade SA, Amrahov NR, Abdulaliyeva GS (2025). Verticillium wilt effect on fiber production and its quality traits in upland cotton (*Gossypium hirsutum* L.). *SABRAO J. Breed. Genet.* 57(5): 2015-2023. <http://doi.org/10.54910/sabrao2025.57.5.22>.
- Audina Z, Syamsuardi, Mildawati, Nurainas, Christy P (2025). Haplotype diversity of *Uncaria gambir* (W. Hunter) Roxb. landraces in West Sumatra, Indonesia, based on internal transcribed spacer (ITS) markers. *SABRAO J. Breed. Genet.* 57(5): 2024-2035. <http://doi.org/10.54910/sabrao2025.57.5.23>.
- Martanti D, Ahmad F, Poerba YS, Herlina (2025). Sterile wild banana (*Musa acuminata* var. *microcarpa* Becc.) occurrence Indonesia. *SABRAO J. Breed. Genet.* 57(5): 2036-2046. <http://doi.org/10.54910/sabrao2025.57.5.24>.
- Darmawan M, Musa Y, Riadi M, Yassi A (2025). Gorontalo local rice evaluation for drought tolerance at the early growth stage. *SABRAO J. Breed. Genet.* 57(5): 2047-2056. <http://doi.org/10.54910/sabrao2025.57.5.25>.

- Asadudin D, Mahfut, Wahyuningsih S, Nurcahyani N, Lumbanraja FR, Irawan B (2025). Morphological characteristics of the pitcher plant (*Nepenthes* spp.) in Lampung, Indonesia. *SABRAO J. Breed. Genet.* 57(5): 2057-2068. <http://doi.org/10.54910/sabrao2025.57.5.26>.
- Earsakul S, Pornsopin N, Techawongstien S, Lapjit C, Jeeatid N, Suwor P, Nawae W, Tarinta T (2025). Characterizing the density and type of leaf trichomes in tomato for resistance to yellow leaf curl disease. *SABRAO J. Breed. Genet.* 57(5): 2069-2079. <http://doi.org/10.54910/sabrao2025.57.5.27>.
- Sijabat OS, Purba E, Marheni, Rahmawati N (2025). Refugia plants with volatile compounds in oil palm plantation areas using GC-MS analysis. *SABRAO J. Breed. Genet.* 57(5): 2080-2089. <http://doi.org/10.54910/sabrao2025.57.5.28>.
- Wai TS, Aminah NS, Ramadhan R, Kristanti AN, Musa A, Naing TTSP, Takaya Y (2025). Phytochemical investigation of Engkabang (*Shorea macrophylla*): Characterization and potential significance of 1-octadecanol. *SABRAO J. Breed. Genet.* 57(5): 2090-2096. <http://doi.org/10.54910/sabrao2025.57.5.29>.
- Rysbekova AM, Taishikov MA, Fazylbekov RR, Beknazarova ZB, Boltayev MD, Alpysbayeva KA, Nikonorov AP, Usmanov UT (2025). Automated UAV-based system development to establish encapsulated entomophages for pest control in Kazakhstan. *SABRAO J. Breed. Genet.* 57(5): 2097-2105. <http://doi.org/10.54910/sabrao2025.57.5.30>.
- Abo-Hegazy SRE, Soliman AM, Abdalla MA (2025). Effect of ethyl methanesulfonate and sodium azide on the performance and yield components of faba beans. *SABRAO J. Breed. Genet.* 57(5): 2106-2114. <http://doi.org/10.54910/sabrao2025.57.5.31>.
- Hanum C, Hanafiah DS, Haryati, H Prayogi R, Pusparini N, Ariantono JY (2025). Vegetative and generative growth and yield of upland rice Situ Bagendit variety with NPK and silica fertilizers on Oldeman's climate zone-E. *SABRAO J. Breed. Genet.* 57(5): 2115-2126. <http://doi.org/10.54910/sabrao2025.57.5.32>.
- Setiyowati PAI, v. Lim V, Hayati A, Maghfuroh L, Ramadani AH (2025). Phytochemical analysis of lotus (*Nelumbo nucifera* L.) rhizomes in Joto Reservoir, East Java, Indonesia. *SABRAO J. Breed. Genet.* 57(5): 2127-2138. <http://doi.org/10.54910/sabrao2025.57.5.33>.
- Ahmadova MA, Mustafaev MG, Gafarbayli KA, Nurieva KQ, Kulieva YN, Ahmadova AR (2025). Diagnostic specifics of the chemical elemental composition of the meadow-gray soils in the Mughan Steppe, Azerbaijan. *SABRAO J. Breed. Genet.* 57(5): 2139-2146. <http://doi.org/10.54910/sabrao2025.57.5.34>.
- Mustafayev MG, Sadigov RA, Mirsalahov MM, Gurbanov EA, Jalilova LZ, Mustafayev FM, Ahmadova AR (2025). Salts deposition and groundwater mineralization effect on soil salinization in the Shirvan Plain and Ganja-Gazakh Massif, Azerbaijan. *SABRAO J. Breed. Genet.* 57(5): 2147-2155. <http://doi.org/10.54910/sabrao2025.57.5.35>.

- Kristamtini, Widyayanti S, Purwaningsih H, Widodo S, Hanifa AP, Sutardi, Pustika AB, Muazam A, Ginting RCB, Susanto U, Nugraha Y (2025). Soil amendments role in enhancing rice Fe and Zn content: A pathway to sustainable soil health and biofortification. *SABRAO J. Breed. Genet.* 57(5): 2156-2165. <http://doi.org/10.54910/sabrao2025.57.5.36>.
- Shehzad I, Sarwar G, Mahmood A, Manzoor MZ, Luqman M, Usman M, Peerzado MB, Ashraf M, Gul S (2025). Characterization of different types of biochars and their modified forms. *SABRAO J. Breed. Genet.* 57(5): 2166-2176. <http://doi.org/10.54910/sabrao2025.57.5.37>.
- Gurbanov EA, Ganiyeva SA, Danziyev RM, Gafarbayli KA, Mehdiyev CT, Verdiyev SB, Mammadova LV (2025). Arid zone land management in the southern and southeastern parts of the Greater Caucasus. *SABRAO J. Breed. Genet.* 57(5): 2177-2185. <http://doi.org/10.54910/sabrao2025.57.5.38>.
- Al-Katib MA, Al-Dulymi FI, Khorshed BH, Saber AA (2025). Synergistic antibacterial effect of *Mentha spicata* and *Cladophora glomerata* against some pathogenic bacteria. *SABRAO J. Breed. Genet.* 57(5): 2186-2195. <http://doi.org/10.54910/sabrao2025.57.5.39>.
- Khalid KF, Hasan SAR, Al-Hadeethi MAH, Khaleel RH, Abdulrahman S MA (2025). Morphochemical and anatomical study of *Coleus scutellarioides* (L.) Benth. (Lamiaceae) in Iraq. *SABRAO J. Breed. Genet.* 57(5): 2196-2202. <http://doi.org/10.54910/sabrao2025.57.5.40>.
- Keitan MA, Hadi AAA (2025). Effect of bio-fermented organic fertilizer and foliar application of some plant extracts on the grape (*Vitis vinifera* L.). *SABRAO J. Breed. Genet.* 57(5): 2203-2212. <http://doi.org/10.54910/sabrao2025.57.5.41>.
- Radhi LS (2025). Nano- and bio-fertilization effects on the growth traits of orange seedlings. *SABRAO J. Breed. Genet.* 57(5): 2213-2218. <http://doi.org/10.54910/sabrao2025.57.5.42>.
- Riaz N, Usman M, Fatima B, Bokhari SAM, Rana MA, Shahid M (2025) Physico-chemical diversity in white-fleshed round guava germplasm and implications for breeding. *SABRAO J. Breed. Genet.* 57(5): 2219-2231. <http://doi.org/10.54910/sabrao2025.57.5.43>.
- Neamah SS, Naser SM, Almosawi AMM (2025). Effect of humic acid and chelated iron on the growth and nutritional content of apple (*Malus domestica* L.). *SABRAO J. Breed. Genet.* 57(5): 2232-2239. <http://doi.org/10.54910/sabrao2025.57.5.44>.
- Al-Taee ZT, Aljasim KSA, Al-Zaidi AAMA (2025). Effects of irrigation methods and compound fertilizer on the vegetative growth of passion fruit (*Passiflora edulis* Sims). *SABRAO J. Breed. Genet.* 57(5): 2240-2247. <http://doi.org/10.54910/sabrao2025.57.5.45>.

SABRAO
THE SOCIETY FOR THE ADVANCEMENT OF BREEDING
RESEARCH IN ASIA AND OCEANIA
Visit our new website at:
<http://sabraojournal.org/>

SABRAO JOURNAL OF BREEDING AND GENETICS

pISSN 1029-7073; eISSN 2224-8978

SABRAO Journal of Breeding and Genetics is an international journal of plant breeding and genetics research and is the official publication of the Society for the Advancement of Breeding Research in Asia and Oceania (SABRAO). The journal was first published in 1969. Its objective is to promote the international exchange of research information on plant breeding and genetics by describing new research findings or ideas of a basic or practical nature. It also provides a medium for the exchange of ideas and news regarding members of the Society.

Priority is given to articles that are of direct relevance to plant breeders with an emphasis on the Asian region. Research articles, short communications, methods, reviews, commentaries, and opinion articles will be accepted or invited for publication. Scientific contributions will be refereed and edited to international standards.

The journal mainly publishes articles for SABRAO members, and it is strongly preferred that at least one author should be a current member of the society. However, SABRAO non-members may also publish in the journal. In 2016, the journal became an electronic journal with open access. Although a publication fee is charged for all articles, the journal operates on a not-for-profit basis.

SABRAO WEBSITE

<http://sabraojournal.org/>

This website contains the most recent and past articles of the *SABRAO Journal of Breeding and Genetics* in addition to the details of the Editorial Board and publishing team. The website also contains up-to-date information about the Society, information about current officers and regional secretaries, upcoming congresses, and general matters concerning the society.

SABRAO - Executive Officers 2024-2026

President

Prof. Chen Xin
Institute of Industrial Crops
Jiangsu Academy of Agricultural Sciences, CHINA
Email: cx@jaas.ac.cn, jaascx@sohu.com

First Vice President

Prof. Desta Wirnas
Bogor Agricultural University, Bogor, INDONESIA
Email: dwirnas@gmail.com

Second Vice President

Dr. B.P. Mallikarjuna Swamy
International Rice Research Institute
Los Baños, PHILIPPINES
Email: m.swamy@irri.org

Third Vice President

Dr. Joong Hyoun Chin
Sejong University, Seoul, KOREA
Email: jhchin@sejong.ac.kr

Secretary General

Dr. Prakrit Somta
Kasetsart University, Nakhon Pathom, THAILAND
Email: agrpks@ku.ac.th

Dr M. Fuad Anshori
Universitas Hasanuddin, INDONESIA
Email: fuad.anshori@unhas.ac.id

Treasurer

Dr. Tonette P. Laude
University of the Philippines Los Baños,
College, Laguna, PHILIPPINES
Email: tplaud@up.edu.ph

Editor-in-Chief

Prof. Naqib Ullah Khan
PAKISTAN
Email: nukmarwat@yahoo.com

Deputy Editor-in-Chief

Dr. Sanun Jogloy
THAILAND
Email: sjogloy@gmail.com

Ex-Officio Members

Prof. Glenn Gregorio
SEARCA/UPLB, PHILIPPINES
Email: gbg@searca.org

Prof. Ahn Sang-Nag
Chungnam National University, KOREA
Email: ahnsn@cnu.ac.kr

REGIONAL SECRETARIES

Regional Secretaries are elected by the members in each country. They play an indispensable role in the operations of the Society by

- notifying members of Society announcements;
- recruiting new members;
- organizing other activities, such as local meetings;
- keeping books of account and sending an audited statement to the Treasurer annually;
- providing the Secretary-General with a list of financial members in their region each year.

In 2021, the Regional Secretaries are as follows:

AUSTRALIA

Dr. Bertrand (Bert) Collard
NSW Department of Primary Industries, AUSTRALIA
Email: sabraojournal.editingteam@gmail.com

BANGLADESH

Prof. Dr. Abul Kashem Chowdhury
Department of Genetics and Plant Breeding
Patuakhali Science and Technology University, Patuakhali, Bangladesh
Email: kashempstu@yahoo.com

CHINA (PEOPLES' REPUBLIC OF)

Prof. Cheng Xuzhen
Institute of Crop Sciences
Chinese Academy of Agricultural Sciences, Bai Shi Qiao Road, Beijing, China
Email: chengxuzhen@caas.cn

INDIA

Dr. Ramakrishnan M. Nair
Global Plant Breeder - Legumes
World Vegetable Center-South Asia/Central Asia
ICRISAT Campus, Patancheru, Hyderabad, ndhra Pradesh, India
Email: ramakrishnan.nair@worldveg.org

INDONESIA

Dr. Desta Wirnas
Plant Genetics and Breeding Division
Department of Agronomy and Horticulture
Bogor Agricultural University, Bogor, Indonesia
Email: dwirnas@gmail.com

KOREA

Dr. Joong-Hyoun Chin
Sejong University, South Korea
Email: Joonghyoun.chin@gmail.com

MALAYSIA

Dr. Abdul Rahim Bin Harun
Malaysian Nuclear Agency
Bangi, Kajang, Selangor, Malaysia
Email: rahim6313@yahoo.com

PAKISTAN

Prof. Naqib Ullah Khan
Department of Plant Breeding and Genetics
University of Agriculture, Peshawar, Pakistan
Email: nukmarwat@yahoo.com, nukmarwat@aup.edu.pk

PHILIPPINES

Prof. Teresita H. Borromeo
Crop Science Cluster
University of the Philippines Los Baños College, Laguna, Philippines
Email: thborromeo@yahoo.com

SRI LANKA

Prof. D.P.S.T.G. (Thilak) Attanayaka
Faculty of Agriculture and Plantation Management Wayamba
University of Sri Lanka, Makandura, Gonawila (NWP), Sri Lanka
Email: dpstga@yahoo.com

TAIWAN, REPUBLIC OF CHINA

Dr. Hsun Tu
Rural Development Foundation, Roosevelt Road, Taipei, Taiwan
Email: rdf@ms4.hinet.net

THAILAND

Dr. Suchila Techawongstien
Department of Plant Science and Agricultural Resources
Khon Kaen University, KhonKaen, Thailand
Email: suctec.kku@gmail.com

TURKEY

Dr. Kamile Ulukapi
Department of Plant and Animal Production
Vocational School of Technical Sciences
Akdeniz University, Konyaaltı-Antalya, TURKEY
Email: kamileonal@akdeniz.edu.tr

USA/NORTH & SOUTH AMERICA

Dr. Thomas H. Tai
USDA, UC Davis, USA
Email: Thomas.Tai@ars.usda.gov

SABRAO EDITORIAL BOARD

EDITOR-IN-CHIEF

Prof. Dr. Naqib Ullah Khan

Department of Plant Breeding and Genetics
University of Agriculture, Peshawar, PAKISTAN
Email: nukmarwat@yahoo.com, nukmarwat@aup.edu.pk
Area of expertise: Breeding Fiber and Cereal Crops, Quantitative Genetics

DEPUTY EDITOR-IN-CHIEF

Dr. Sanun Jogloy

Department of Plant Science and Agricultural Resources
Khon Kaen University, Khon Kaen, THAILAND
Email: sjogloy@gmail.com
Area of expertise: Plant Breeding, Quantitative Genetics, Physiological Traits

ASSOCIATE EDITORS

Dr. Ramakrishnan M. Nair

AVRDC-The World Vegetable Center ICRISAT Campus
Patancheru 502 324, Hyderabad, Andhra Pradesh, INDIA
Email: ramakrishnan.nair@worldveg.org
Area of expertise: Plant Breeding and Genetics Research on Pulses and Pasture Legumes

Dr. Arbind K. Choudhary

ICAR Research Complex for Eastern Region Patna, Bihar, INDIA
Email: akicar1968@gmail.com; akiipr23@yahoo.com
Area of expertise: Genetics and Breeding of Legumes

Dr. Desta Wirnas

Department of Agronomy and Horticulture
Bogor Agricultural University, Bogor, INDONESIA
Email: dwirnas@gmail.com; desta@ipb.ac.id
Area of expertise: Plant Breeding and Genetics, Quantitative Genetics, Rice, Soybean, and Sorghum

Dr. Akshaya Kumar Biswal

Asst. Research Scientist
Department of Horticulture, Institute of Plant Breeding
Genetics and Genomics (IPBGG), The Plant Center
University of Georgia, Tifton, USA
Email: akbiswal@uga.edu, akbiswal@hotmail.com
Area of expertise: Plant Molecular Genetics and Biology

Dr. Samrin Gul

Department of Plant Breeding and Genetics
University of Sargodha, Sargodha, Punjab, PAKISTAN
E-mail: samringulpbg@gmail.com
Area of expertise: Breeding Oilseed Crops, Quantitative Genetics

Dr. Himmah Rustiami

Research Center for Biology, Indonesian Institute of Sciences,
Cibinong Science Center, Jin Raya Jakarta Bogor, Cibinong, Bogor, INDONESIA
Email: hrustiami@gmail.com
Area of expertise: Plant Systematics, Ethno-Botany

Prof. Dr. Bambang Sapta Purwoko

Department of Agronomy and Horticulture
Bogor Agricultural University, INDONESIA
Email: bspurwoko@apps.ipb.ac.id
Area of expertise: Breeding for Abiotic Stress, Plant Tissue Culture

Prof. Dr. Kwon, Soon-Wook

Department of Plant Bioscience
Pusan National University, Miryang, KOREA
Email: swkwon@pusan.ac.kr
Area of expertise: Rice Genetics

Dr. Prakrit Somta

Department of Agronomy,
Kasetsart University, Nakhon Pathom, THAILAND
Email: agrpks@ku.ac.th
Area of Expertise: Genetics and (Conventional and Molecular),
Breeding of Legume Crops

Dr. Aris Hairmansis

Research Center for Food Crops, Research Organization for Agriculture
and Food National Research and Innovation Agency (BRIN), Bogor, INDONESIA
Email: aris.hairmansis@brin.go.id, a.hairmansis@gmail.com
Area of Expertise: Plant Breeding, Genetics, Molecular Breeding

Dr. Gwen Iris Descalsota-Empleo

Plant Breeding and Genetics Division
University of Southern Mindanao, Kabacan, North Cotabato, PHILIPPINES
Email: gidescalsota@gmail.com, gidempleo@usm.edu.ph
Area of expertise: Rice and Cacao Breeding and Genetics, QTL Mapping

Dr. Kamile Ulukapi

Department of Plant and Animal Production
Vocational School of Technical Sciences
Akdeniz University, Konyaaltı-Antalya, TURKEY
Email: kamileonal@akdeniz.edu.tr
Area of expertise: Vegetable Production and Breeding, Common Bean

Dr. B.P. Mallikarjuna Swamy

International Rice Research Institute (IRRI),
Los Baños, Laguna, PHILIPPINES
Email: m.swamy@irri.org
Area of expertise: Rice Molecular Breeding, Genetics, and Genomics

Prof. Dr. P.I. Prasanthi Perera

Department of Horticulture and Landscape Gardening
Wayamba University of Sri Lanka, Makandura, Gonawila, SRI LANKA
Email: panawalageindra@gmail.com, prasanthi@wyb.ac.lk
Area of expertise: Plant Breeding, Plant Tissue Culture, Reproductive Biology

Prof. Dr. Clara R. Azzam

Department of Cell Research
Field Crops Research Institute, Agricultural Research Center, Giza, EGYPT
Email: clara.azzam@arc.sci.eg
Area of expertise: Plant Breeding, Mutation and Molecular Breeding, Plant Tissue Culture

Dr. Tonette P. Laude

University of the Philippines Los Banos, Laguna, PHILIPPINES
Email: tplaude@up.edu.ph
Area of expertise: Applied Plant Breeding and Genetics, Maize

Dr. Quaid Hussain

Zhejiang A & F University
666 Wusu St, Hangzhou, CHINA
Email: quaid_hussain@yahoo.com
Area of expertise: Crop Genetics and Breeding, Genome-wide analysis

Dr. A.N. Farhood

Department of Field Crops
University of Kerbala, Kerbala, IRAQ
E-mail: ali.nazem@uokerbala.edu.iq, ali.nazem1987@gmail.com
Area of expertise: Plant production, Genetics, Breeding, Biotechnology

Prof. Dr. Zahoor Ahmad Soomro

Department of Plant Breeding and Genetics
Sindh Agricultural University, Tandojam Sindh, PAKISTAN
E-mail: zasoomro@sau.edu.pk, zasoomro_cap@hotmail.com
Area of expertise: Crops Breeding, Quantitative Genetics, Stress Physiology

Dr. Khundej Suriharn

Department of Agronomy
Khon Kaen University, Khon Kaen, THAILAND
E-mail: sphala@kku.ac.th, bsuriharn@gmail.com
Area of expertise: Corn Breeding

Prof. Dr. Ijaz Rasool Noorka

Department of Plant Breeding and Genetics
College of Agriculture, University of Sargodha, Sargodha, Punjab, PAKISTAN
E-mail: editorsabirao@gmail.com, ijazphd@yahoo.com
Area of expertise: Plant Breeding & Genetics, Biodiversity and Germplasm Conservation

Dr. Sajjad Hussain Qureshi

Ph.D (PBG), Ph.D (IT), MBA (HRM)
Department of Management Information System
MEPCO-WAPDA, Sahiwal, Punjab, PAKISTAN
E-mail: sajjads2002@yahoo.com
Area of expertise: Plant Breeding & Genetics, Precision Agriculture

Dr. Anita Restu Puji Raharjeng

Department of Biology,
Faculty of Science and Technology
Islamic State University of Raden Fatah Palembang, South Sumatera, INDONESIA
Email: anitaraharjeng_uin@radenfatah.ac.id.
Area of expertise: Plant Breeding, Plant tissue Culture, Plant Physiology, Genetics

Dr. Irma Jamaluddin

Department of Agrotechnology
Faculty of Agriculture, Hasanuddin University, Makassar, South Sulawesi, INDONESIA
E-mail: jamaluddinirma@gmail.com, i741005m@mails.cc.ehime-u.ac.jp
Area of expertise: Plant Molecular Biology, Plant Tissue Culture, Plant Breeding, Genetics

Dr. Qasim Hussein Ahmed

Department of Plant Protection

College of Agricultural Engineering Sciences, University of Baghdad, Baghdad, IRAQ

Email: qasim@uob.edu.iq, qasim.h@coagri.uobaghdad.edu.iq

Area of expertise: Entomology, Biological control, Integrated pest management

Dr. Tabynbaeva Laila

Sugar Beet Laboratory

Kazakh Research Institute of Agriculture and Plant Growing, Almaty, KAZAKHSTAN

e-mail: tabynbaeva.lyaylya@mail.ru, layla.klim.01@gmail.com

Area of expertise: Plant Breeding, Sugar beet breeding, Plant growing, Irrigated agriculture

Dr. Hida Arliani Nur Anisa

Department of Biology, Faculty of Science,

Sumatra Institute of Technology, South Lampung, Lampung, INDONESIA

Email: hida.anisa@bi.itera.ac.id

Area of expertise: Plant Physiology, Plant Biotechnology & Molecular, Metabolites

Dr. Thiyagu Bin Devarajan

Industrial Crop Research Centre

Malaysian Agricultural Research and Development Institute, Serdang, Selangor, MALAYSIA

Email: thiyagu@mardi.gov.my

Area of expertise: Plant Breeding, Quantitative Genetics

Dr. Fitri Nadifah

Study Program of Medical Laboratory Technology

Guna Bangsa College of Health Sciences, Yogyakarta, INDONESIA

Email: fitri@gunabangsa.ac.id

Area of expertise: Plant Genetics, Molecular Biology, Basic Botany, Biotechnology

Dr. Yudithia Maxiselly

Department of Agronomy

Faculty of Agriculture, Padjadjaran University, Bandung, INDONESIA

Email: yudithia.maxiselly@unpad.ac.id

Area of expertise: Crop Production, Plant Breeding, Coffee, Metabolites

Prof. Dr. Laila Nazirah

Department of Agroecotechnology, Faculty of Agriculture

Malikussaleh University, North Aceh, Indonesia

Email: lailanazirah@unimal.ac.id

Expertise: Plant breeding, Rice breeding

SABRAO PUBLISHING TEAM

Ms. Leah Lyn D. Domingo

Advisory Editor

Head, Applied Knowledge Resources Unit, SEARCA, College, Laguna, PHILIPPINES

E-mail: llbd@searca.org

Area of expertise: Strategic and Science Communication, Development Management

Mr. Joseph 'Otep' Vicente

Editor

Laguna, PHILIPPINES

Email: sabraojournal.editingteam2@gmail.com

Ms. Maria Rowena M. Baltazar

Editor

Laguna, PHILIPPINES

Email: rbaltazar929@gmail.com

Mr. Nelson A. Tresballes

Web Manager

SEARCA, College, Laguna, PHILIPPINES

Email: nat@searca.org

Ms. Jenine F. Gamil

Knowledge Resources Associate

SEARCA, College, Laguna, PHILIPPINES

Email: jfgamil@searca.org

PUBLICATION FEE STRUCTURE

Please note that there is a publication fee FOR ALL ARTICLES—including articles from SABRAO members—which must be paid after publication of the article. This requirement covers journal processing costs and website maintenance. Payment can be made to the Regional Secretary (details available above or on SABRAO website) in the local currency equivalent or by contacting the Editor-in-Chief.

In 2025 and onwards, the fee structure will be as follows:

Category	Amount
SABRAO Life Member*	US\$ 150
SABRAO Non-Member	US\$ 200

***At least one author should be a 'LIFE' SABRAO Member.**

The official language of the Journal is English. Manuscripts may be written in British or US English provided the style is consistent throughout the article. Authors are requested to ensure a high standard of English and use professional editing services if necessary.

At first submission of the manuscript, if the standard of English is not satisfactory, SABRAO will use its own editing service before sending for review **and will charge a minimum mandatory fee**. This additional fee is required because manuscripts are sent to external English editing services.

The philosophy of the journal is that publication fees will be kept minimal to ensure publication is available to scientists in developing countries. Therefore, journal publication fees are reviewed annually.

ACKNOWLEDGEMENTS

The Editor-in-Chief would sincerely like to thank the many reviewers for their time and efforts. An updated list of reviewers is maintained on the website.

Thanks to the publishing team for their countless hours of work for this issue.