

SABRAO JOURNAL OF BREEDING AND GENETICS

Volume 57 Number 4 | August 2025



SEAMEO
SEARCA

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, Konyaalti-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



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

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: The present research aimed to determine the factors affecting the yield and quality of local melon cultivars and to achieve its sustainable production and reliable provision of the population with dietary and high vitamin food in Southeast Kazakhstan. The sandy loamy gray soils of pre-mountain-steppe zone of the Southeast Kazakhstan were found to be the most favorable for growth and development of the melon plants. In soils with heavy mechanical composition, the quantitative and qualitative parameters of Central Asian melon cultivars were sharply decreased in comparison with soils with light mechanical composition. The most optimal established sowing dates were I and II decades of May. Information regarding the present investigations can be found in the research manuscript of Taishibayeva *et al.* (2025). Taishibayeva E, Mamyrbekov J, Makhmadjanov S, Nussupova A, Nurbayeva E, Ibragimova G, Manabayeva U, Aitbayeva A, Jantassova A, Zorzhannov B (2025). Effect of soil, environmental conditions, and agrotechnical practices on the yield and quality of melon (*Cucumis melo* L.) in Southeast Kazakhstan. *SABRAO J. Breed. Genet.* 57(4): 1699-1707.
<http://doi.org/10.54910/sabrao2025.57.4.36>.

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 4

August 2025

<http://doi.org/10.54910/sabrazo2025.57.4>

CONTENTS

Desti, Mastuti R, Azrianingsih R, Arumingtyas EL (2025). Population, habitat, and phytochemical properties of Nibung (*Oncosperma tigillarium* [Jack] Ridl.) in Riau, Indonesia. *SABRAO J. Breed. Genet.* 57(4): 1343-1354.
<http://doi.org/10.54910/sabrazo2025.57.4.1>.

Aryunis, Tafzi F, Nurhasanah (2025). Genetic and phenotypic diversity of upland rice in bungo regency for climate-resilient breeding. *SABRAO J. Breed. Genet.* 57(4): 1355-1365. <http://doi.org/10.54910/sabrazo2025.57.4.2>.

Terryana RT, Karjadi AK, Aswani N, Saidah, Murtiningsih RRR, Mulya K, Nugroho K, Satyawan D, Basuki RS, Prihaningsih A, Sudarmonowati E, Lestari P (2025). Genetic stability in local garlic (*Allium sativum* L.) Through *in vitro* propagated plantlets using SSR and ISSR markers. *SABRAO J. Breed. Genet.* 57(4): 1366-1376. <http://doi.org/10.54910/sabrazo2025.57.4.3>.

Yuniastuti E, Zakaria I, Parjanto, Masailla APD (2025). Molecular identification of pineapple (*Ananas comosus*) accessions based on random amplified polymorphic DNA markers. *SABRAO J. Breed. Genet.* 57(4): 1377-1388. <http://doi.org/10.54910/sabrazo2025.57.4.4>.

Khan M, Akhtar N, Arshad M, Kausar M, Gul S, Saleem U, Yousaf MI (2025). Genetic diversity in maize (*Zea mays* L.) genotypes against salinity tolerance at seedling stage. *SABRAO J. Breed. Genet.* 57(4): 1389-1398. <http://doi.org/10.54910/sabrazo2025.57.4.5>.

- Makhmadjanov SP, Amirov BM, Tabynbayeva LK, Kostakov AK, Kulymbet KK, Tagaev AM, Makhmadjanov DS (2025). Cotton cultivar M-5027 with agrotechnology and its relationship with productivity in the Turkestan Region, Kazakhstan. *SABRAO J. Breed. Genet.* 57(4): 1399-1410. <http://doi.org/10.54910/sabrawo2025.57.4.6>.
- Firdausi, Wahyu Y, Syukur M, Ritonga AW (2025). Combining ability analysis for yield-related traits in sweet corn across the diverse environments. *SABRAO J. Breed. Genet.* 57(4): 1411-1421. <http://doi.org/10.54910/sabrawo2025.57.4.7>.
- Raza H, Khan SA, Afridi K, Ali N, Hussain I, Ali S, Khan J, Ullah I, Ali A (2025). Heterosis and inbreeding depression in f_1 and F_2 populations of bread wheat for quantitative traits. *SABRAO J. Breed. Genet.* 57(4): 1422-1432. <http://doi.org/10.54910/sabrawo2025.57.4.8>.
- Muzzazinah, Hariri MR, Rinanto Y (2025). DNA barcoding and genetic diversity assessment of *Indigofera longeracemosa* from Java, Indonesia. *SABRAO J. Breed. Genet.* 57(4): 1433-1444. <http://doi.org/10.54910/sabrawo2025.57.4.9>.
- Purnomo DW, Parari TY, Karamang S, Limbongan YL, Chadikun P, Mawikire NL, Syaranamual S, Wibawati Z, Nurlailah, Ayuningtias N, Rahim S (2025). Molecular characterization of advanced rice lines tolerant to low temperature in the highlands. *SABRAO J. Breed. Genet.* 57(4): 1445-1457. <http://doi.org/10.54910/sabrawo2025.57.4.10>.
- Areche-Mansilla DY, Areche FO, Flores DDC, Yapias RJM, Dominuez JAJ, Poma WAC, Surichaqui ERA, Molina JDL, Miranda CF, López FP, Rodríguez JQ, García JZ, Rojas JCA (2025). New plant breeding techniques to boost resilience of food system. *SABRAO J. Breed. Genet.* 57(4): 1458-1470. <http://doi.org/10.54910/sabrawo2025.57.4.11>.
- Khidirova U, Feofanova NA, Alikulov BS, Axanbayev S, Akramov I, Mamashukurov A, Norboev M, Tillaeva Z, Abduganiyeva D, Gulyamova T (2025). Sustainable cultivation of different crops under drought-stress conditions: biotechnological strategies. *SABRAO J. Breed. Genet.* 57(4): 1471-1479. <http://doi.org/10.54910/sabrawo2025.57.4.12>.
- Abduganiyeva D, Alikulov B, Ruziyev K, Eshbekova G, Sultonova K, Ismailov Z, Gulyamova T, Mamadiyarov M (2025). Standardization of the microclonal propagation process in *Aronia melanocarpa* from seeds. *SABRAO J. Breed. Genet.* 57(4): 1480-1490. <http://doi.org/10.54910/sabrawo2025.57.4.13>.
- Al-Talab NN, Bashi AD, Esho KB, Al-Mathidy AM (2025). Molecular classification of some species of family Fabaceae using RAPD markers. *SABRAO J. Breed. Genet.* 57 (4) 1491-1500. <http://doi.org/10.54910/sabrawo2025.57.4.14>.
- Taher AM, Al-Rashidy FM, Saeed IO (2025). Physiological response and heavy metals accumulation in celery (*Apium graveolens*) and radish (*Raphanus sativus*) irrigated with wastewater. *SABRAO J. Breed. Genet.* 57(4): 1501-1509. <http://doi.org/10.54910/sabrawo2025.57.4.15>.

- Al-Rikabi GZK, Fadalah LT, Jewar AS (2025). Management of cucumber (*Cucumis sativus* L.) In integration with biostimulant Atonik based on physical and biochemical properties. *SABRAO J. Breed. Genet.* 57(4): 1510-1517. <http://doi.org/10.54910/sabao2025.57.4.16>.
- Sobirova ZS, Dalimova SN, Umarova GB, Kucharova ISH, Boltayeva NO, Sobirova KG, Abdurashitova YE, Akhmadaliev BJ, Fayziev VB (2025). Characterization of MDMV under ecological conditions of Uzbekistan. *SABRAO J. Breed. Genet.* 57(4): 1518-1527. <http://doi.org/10.54910/sabao2025.57.4.17>.
- Kamalova LK, Mirzakhmedov MK, Ayubov MS, Yusupov AN, Mamajonov BO, Obidov NS, Bashirxonov ZH, Murodov AA, Buriev ZT, Abdurakhmonov IY (2025). Management of drought, salt, and extreme temperature tolerance in maize (*Zea mays* L.) using CRISPR-Cas systems. *SABRAO J. Breed. Genet.* 57(4): 1528-1534. <http://doi.org/10.54910/sabao2025.57.4.18>.
- Abdalrahman ASH, Suliaman SQ (2025). Molecular identification and phylogenetic analysis of wild mushrooms in Sulaimani Province, Iraq. *SABRAO J. Breed. Genet.* 57(4): 1535-1544. <http://doi.org/10.54910/sabao2025.57.4.19>.
- Lukmanasari P, Purwantoro A, Sulistyaningsih E, Setiawan AB, Zulkifli (2025). Sex determination in *Nepenthes sumatrana* (Miq.) Beck based on morphological traits and molecular markers. *SABRAO J. Breed. Genet.* 57(4): 1545-1555. <http://doi.org/10.54910/sabao2025.57.4.20>.
- Hasan SA, Abdullah RM, Jaber HA (2025). Gene action analysis in the half-diallel crosses of bread wheat (*Triticum aestivum* L.). *SABRAO J. Breed. Genet.* 57(4): 1556-1563. <http://doi.org/10.54910/sabao2025.57.4.21>.
- Afrillah M, Lizmah SF, Siregar MPA, Junita D (2025). Agroecological model employment with intercropping between maize and soybean. *SABRAO J. Breed. Genet.* 57(4): 1564-1574. <http://doi.org/10.54910/sabao2025.57.4.22>.
- Azimov A, Khatamov A, Nabiev S, Shavkiev J, Khamdullaev S, Kuziev SH, Sultonova D, Maimaiti T (2025). Dominance and heterotic effects for boll number and boll weight in upland cotton hybrids. *SABRAO J. Breed. Genet.* 57(4): 1575-1583. <http://doi.org/10.54910/sabao2025.57.4.23>.
- Eshonkulov O, Allaberdiyev R, Babakhanova D, Madatova N, Isabekova M (2025). UV-rays and electromagnetic field influence on the seed germination of essential oil plants under natural harsh conditions. *SABRAO J. Breed. Genet.* 57(4): 1584-1591. <http://doi.org/10.54910/sabao2025.57.4.24>.
- Al-Nema QS, Al-Mallah MK, Ramadan NA (2025). Assessment of *GUS*-labeled *Gluconacetobacter diazotrophicus* interaction with sugar beet (*Beta vulgaris* L.). *SABRAO J. Breed. Genet.* 57(4): 1592-1600. <http://doi.org/10.54910/sabao2025.57.4.25>.
- Anggraheni YGD, Devi AF, Mulyaningsih ES, Adi EBM, Sulistyowati Y, Perdani AY, Nuro F, Deswina P (2025). Grain quality assessment of rice grown in Merauke, Indonesia. *SABRAO J. Breed. Genet.* 57(4): 1601-1611. <http://doi.org/10.54910/sabao2025.57.4.26>.

- Lestari P, Karis L, Bintang M, Mulya K, Salma S, Terryana RT, Nugroho K, Wahyuno D, Manohara D, Amirhusin B (2025). Identification and screening of *Trichoderma* spp. as antagonistic agents against phytopathogens, *Colletotrichum* sp. and *rhizoctonia solani* kühn. *SABRAO J. Breed. Genet.* 57(4): 1612-1624. <http://doi.org/10.54910/sabrawo2025.57.4.27>.
- Ramazanova R, Zhumagulova M, Tanirbergenov S, Sharypova T (2025). Effectiveness of foliar fertilization with amino acids and humic fertilizers in winter wheat and soybean under low-fertility soils. *SABRAO J. Breed. Genet.* 57(4): 1625-1633. <http://doi.org/10.54910/sabrawo2025.57.4.28>.
- Mirzezadeh RI, Ramazanova FM, Hasanova TA, Mammadova GI, Asgarova GF (2025). Assessment of variations caused by biological activities in the Greater Caucasus forest soils used for agriculture. *SABRAO J. Breed. Genet.* 57(4): 1634-1643. <http://doi.org/10.54910/sabrawo2025.57.4.29>.
- Khodjayeva N, Fayziyev V, Amanov B, Muminov KH, Buronov A, Omonov O, Tursunova N, Usmanova M (2025). Physiological and biochemical characteristics of the broad bean (*Vicia faba* L.). *SABRAO J. Breed. Genet.* 57(4): 1644-1651. <http://doi.org/10.54910/sabrawo2025.57.4.30>.
- Al-Taie AT, Mahboba BA, Al-Hadeethi MA (2025). Stomata structure on the fruit epidermis in wild fruit species. *SABRAO J. Breed. Genet.* 57(4): 1652-1659. <http://doi.org/10.54910/sabrawo2025.57.4.31>.
- Al-Miah FHR, Al-Jaf IHM (2025). Molecular characterization of the date palm (*Phoenix dactylifera* L.). *SABRAO J. Breed. Genet.* 57(4): 1660-1667. <http://doi.org/10.54910/sabrawo2025.57.4.32>.
- Pakhomova, J, Tesalovsky A, Abdullayev I, Dudynov S, Maslennikova N, Shelygov A, Khatsenko A, Shichiyakh R (2025). GIS technologies for cadastral monetary valuation of urban land. *SABRAO J. Breed. Genet.* 57(4): 1668-1678. <http://doi.org/10.54910/sabrawo2025.57.4.33>.
- Ahmadova AB, Sultanova NH, Isayeva KK, Aliyev FT, Khalilov TA (2025). Wastewater use in growing ornamental plants in Azerbaijan. *SABRAO J. Breed. Genet.* 57(4): 1679-1687. <http://doi.org/10.54910/sabrawo2025.57.4.34>.
- Mustafayev MG, Alizade SHV, Mustafayev FM, Akhundov AY, Hasanova AKH (2025). Anthropogenic impact on the soil salinization and its management in irrigated areas of the Mughan Plains, Azerbaijan. *SABRAO J. Breed. Genet.* 57(4): 1688-1698. <http://doi.org/10.54910/sabrawo2025.57.4.35>.
- Taishibayeva E, Mamyrbekov J, Makhmadjanov S, Nussupova A, Nurbayeva E, Ibragimova G, Manabayeva U, Aitbayeva A, Jantassova A, Zorzhanov B (2025). Effect of soil, environmental conditions, and agrotechnical practices on the yield and quality of melon (*Cucumis melo* L.) in Southeast Kazakhstan. *SABRAO J. Breed. Genet.* 57(4): 1699-1707. <http://doi.org/10.54910/sabrawo2025.57.4.36>.

- Bulekova A, Gumarova ZH, Gubasheva B, Limanskaya V, Satayev A, Maidanova M, Kairgalieva G, Sungatkyzy S, Akkereyeva E, Sharafieva ZH MA (2025). Environmental factors influence on the productivity of cultivated plants. *SABRAO J. Breed. Genet.* 57(4): 1708-1717. <http://doi.org/10.54910/sabrawo2025.57.4.37>.
- Al-Jobori NHJ, Matloob AAH (2025). Biological management of the fungi causing root rot disease in cowpea (*Vigna unguiculata* L.). *SABRAO J. Breed. Genet.* 57(4): 1718-1727. <http://doi.org/10.54910/sabrawo2025.57.4.38>.
- Alajili HA, Almosawy AN (2025). Seaweed extract and balanced fertilizer effect on the medicinal compounds of roselle (*Hibiscus sabdariffa* L.). *SABRAO J. Breed. Genet.* 57(4): 1728-1735. <http://doi.org/10.54910/sabrawo2025.57.4.39>.
- Jasim SK, Mohammed KH, Ibrahim MA (2025). Effect of planting locations and biostimulants on growth traits of the banana (*Musa* spp.). *SABRAO J. Breed. Genet.* 57(4): 1736-1746. <http://doi.org/10.54910/sabrawo2025.57.4.40>.
- Al-Rashedy, NAN Al-Baker RAH, Najam LA (2025). Biosynthesis and characterization of silver nanoparticles obtained from *Portulaca oleracea* callus and its antibacterial activity. *SABRAO J. Breed. Genet.* 57(4): 1747-1755. <http://doi.org/10.54910/sabrawo2025.57.4.41>.
- Mahmood RM, Saeed IO, Darwesh DA, Yousif BMY (2025). Phytoremediation potential of the wild plants: A study on selected species. *SABRAO J. Breed. Genet.* 57(4): 1756-1765. <http://doi.org/10.54910/sabrawo2025.57.4.42>.
- Atiyah SS, Saeed IO (2025). Effect of irrigation with industrial wastewater, groundwater, and bioaugmented bacteria on growth and heavy metal accumulation in radish. *SABRAO J. Breed. Genet.* 57(4): 1766-1773. <http://doi.org/10.54910/sabrawo2025.57.4.43>.
- Abd NA, Abdullah KM (2025). Tarragon (*Artemisia dracunculus* L.) response to fish emulsion and vermicompost fertilizers. *SABRAO J. Breed. Genet.* 57(4): 1774-1780. <http://doi.org/10.54910/sabrawo2025.57.4.44>.
- Rasheed HH, Ismail MH, Outhman NY, Abd NT, Abdulhameed SH (2025). Response of tomato (*Solanum lycopersicum* L.) to biofertilizers and biostimulants in vegetative growth and nutritional status. *SABRAO J. Breed. Genet.* 57(4): 1781-1788. <http://doi.org/10.54910/sabrawo2025.57.4.45>.

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. Prakit 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: tplaude@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, Andhra 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, Khon Kaen, 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. Prakit 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-Empelo

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: editorsabroo@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. Thiyyagu Bin Devarajan

Industrial Crop Research Centre

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

Email: thiyyagu@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

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 of USD 200**. 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.