ANNAMALAI UNIVERSITY

(A State University Accredited with „A+" Grade by NAAC)

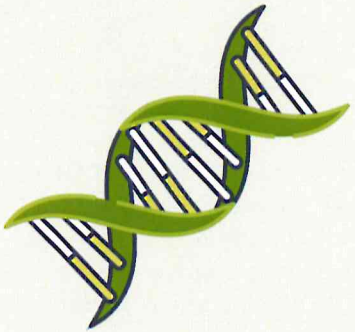
FACULTY OF AGRICULTURE

(Accredited by ICAR)

Two days Hands-on Workshop on

GENOME WIDE ASSOCIATION ANALYSIS (GWAS) AND MARKER-ASSISTED SELECTION FOR CROP IMPROVEMENT

(05.01.2026 & 06.01.2026)



Last date for Registration
26.12.2025

Venue: Dr. C.N. Sambandam, Hi-Tech Hall, Dept. of GPB

Organized by

Department of Genetics and Plant Breeding
Annamalai University
Annamalai Nagar – 608 002
Tamil Nadu

Annamalai University

Annamalai University, one of the largest Universities in terms of disciplinary diversity and student enrolment, is also one of the oldest universities in around South India. Sprawling over a vast and sylvan campus of 1000 acres, the University houses about 50 Departments of Study under Eight Faculties. Founded by the legendary philanthropist and farsighted visionary, Rajah Sir Annamalai Chettiar in 1929, Annamalai University has played a key role in social, cultural, and economic upliftof the people across the rungs of societyfor nearly a century. Annamalai nagar, the University Town, is located just to the east of Chidambaram, the Abode of the Cosmic Dancer, Lord Nataraja. The University, which remained "unitary" in status until 2021, was made an "affiliating" one with Mayiladuthurai, Cuddalore, Villupuram and Kallakurichi districts as its jurisdictionand 81 colleges are affiliated to the University now.

Annamalai University has also been a forerunner in making education accessible to countless citizensthrough distance education mode. All the programmes offered by the Directorate of Distance education (DDE) are approved and accredited by the Distance Education Board (DEB). The on-campus programmes are duly approved/accredited by the competent bodies such as NAAC, NBA, AICTE, NCTE, ICAR, etc. In 2022, the University is accredited with 'A'' Grade by NAAC in the fourth cycle of accreditation.

Faculty of Agriculture

The Faculty of Agriculture at Annamalai University, Annamalai Nagar, is a distinguished centre for excellence in agricultural education and research. Offering comprehensive programmes in Agriculture and Horticulture, the Faculty integrates modern science with traditional wisdom to promote sustainable farming. Under the leadership of Prof. Dr. A. Angayarkanni, it fosters innovation across key disciplines such as Genetics and Plant Breeding, Agronomy, Soil Science, and Agricultural Extension. With a strong focus on resilience, innovation, and farmer-oriented development, the faculty continues to contribute significantly to the growth of sustainable agriculture in India.

Department of Genetics and Plant Breeding

The Department of Genetics & Plant Breeding at Annamalai University is a leading academic and research unit dedicated to crop improvement and seed science. Established originally as the Department of Agricultural Botany in 1980, it now offers advanced programmes including M.Sc (Ag.) in Genetics & Plant Breeding and and a doctoral programme in Genetics and Biotechnological disciplines. With a strong focus on varietal development, molecular Plant breeding and seed technology, the department fosters innovation and contributes to sustainable agriculture in line with current challenges. Its comprehensive approach to teaching, research and impact ensures that graduates are equipped to drive resilience and innovation in agricultural systems.

The Workshop

Genome-Wide Association Analysis (GWAS) and Marker-Assisted Selection (MAS) are important tools in modern crop improvement. GWAS helps identify the precise genetic regions and markers associated with specific target traits such as yield, stress tolerance, disease resistance, and quality. MAS then uses these markers to guide breeders in selecting plants more accurately and efficiently. Together, these approaches make it possible to understand complex traits, speed up breeding programs, and develop improved crop varieties suited to current agricultural needs. This workshop helps participants learn the key concepts, practical steps, and real-world applications of GWAS and MAS, enabling them to use these genomic tools effectively in research and breeding for sustainable crop improvement

Outcomes of the workshop:

- Understanding different molecular marker systems such as RFLP, RAPD, SSR and SNP.
- Hands-on skills in DNA extraction, quantification and PCR handling.
- Ability to perform marker scoring and apply Marker Assisted Selection (MAS)
- Identifying key genomic regions and markers associated with important crop traits through GWAS

Major Theme Areas:

- Marker – Assisted Selection (MAS) for accurate and efficient breeding decisions.
- Application of DNA Fingerprinting, Marker Assisted Selection and GWAS in developing improved, resilient crop varieties
- Genome Wide Association Analysis (GWAS) for identifying trait – linked genes and markers.

THEORETICAL SESSIONS

Module - I

Introduction to Molecular Markers (RFLP, RAPD, AFLP, ISSR, SSR, SCAR, SNP, InDel markers, VNTR). Applications of Molecular Markers in Crop Improvement and Marker-Assisted Selection (MAS)

Module - II

Genome-Wide Association Studies for Trait Mapping (GWAS)

PRACTICAL SESSIONS

Module - I

Genotyping and marker validation. Preparation of Genotypic and Phenotypic Data Files for Mapping Populations Analysis and Marker-Assisted Selection for Trait

Module - II

Introduction to GWAS Analysis

Specs:

Windows or Mac laptop with at least 8GB RAM and 10 GB of free storage space.

Software:

R studio and Tassel

Participation and Registration Details:

- **Faculty members, Scientists, Research scholars (PG & Ph.D.) are eligible to attend the workshop.**
- **Number of Participants (Max. 50) shall be based on First Come, First Served**
- **Participants are requested to fill the online registration form provided in the following link**

https://shorturl.at/SUXBI

CLICK HERE!

Registration Fee

Faculty members: Rs.1500

Scientists: Rs.1500

Research scholars and students: Rs.1000

Resource Persons:

Eminent experts from reputed institutions in Tamil Nadu and other states will handle the sessions.

1.ICAR – Indian Institute of Groundnut Research, Junagadh, Gujarat
2.Annamalai University, Annamalai Nagar
3.Amrita Vishwa Vidyapetham, Coimbatore
4.Mother Terasa College of Agriculture, Pudukkottai

Organizing Committee

Chief Patron
Dr. S. Arivudainambi
Member, VC Convenor Committee
Annamalai University

Patron
Dr. R. Singaravel
The Registrar (i/c),
Annamalai University

Co Patron
Dr. A. Angayarkanni
Dean, Faculty of Agriculture

Director
Dr. Y. Anbu Selvam,
Professor & Head, Dept. of GPB

Organizing Secretaries
Dr.M.Prakash, Professor
Dr.S.Murugan, Professor
Dr.N.Senthilkumar, Professor

Advisory Committee members
Dr. P.Senthilkumar, Professor
Dr. S. Padmavathi, Professor
Dr. P. Thangavel, Professor
Dr. K. Saravanan, Professor

Technical Support:
Mr. D.S.Manojkumar, Ph.D. Scholar (Mob:9788239712)
Mr. S. Jayasurya, Ph.D. Scholar (Mob:7845981750)
Mr. N. Laleethkumar, Ph.D scholar (Mob:7010598616)
Mr. T. Vignesh, Ph.D. Scholar (Mob: 7339326856)
Ms. R. Janani, Ph.D. Scholar (Mob: 9361034407)
Student Volunteers: Ph.D. Scholars.

CONTACT
Dr. Y. Anbu Selvam
Professor & Head
Dept. of Genetics and Plant Breeding
Faculty of Agriculture, Annamalai University
Ph: 9787069501