

PERSONAL
INFORMATION

Muhammad Ilyas

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Sex: Male | Date of birth: 13/10/1988 | Nationality: Pakistan

WORK EXPERIENCE

MAY 2019 – MAY 2020

Assistant Professor

International Islamic University Islamabad. Pakistan

Department of Biological Science, Faculty of Basic & Applied Sciences.
New Campus, Sector H-10, Islamabad. Pakistan.

I was involved in teaching the undergraduate level students about Cell signalling, Biochemical Engineering, Biodiversity, Ecology and Evolution, Plant Biology, Food Biotechnology. I also had a master level student in my co-supervision. I was also involved in various administrative activities like admission test preparation, conduction of admission tests and result compilation etc. During my appointment period, I also managed to secure a start-up research grant from HEC Pakistan.

[University Teaching & Research](#)

SEPT 2017 - FEB 2019

Visiting Teacher

International Islamic University Islamabad. Pakistan

Department of Biological Science, Faculty of Basic & Applied Sciences.
New Campus, Sector H-10, Islamabad. Pakistan.

I was engaged in teaching the undergraduate level students about Cell signalling, Biochemical Engineering, Biodiversity, Ecology and Evolution, Plant Biology, Food Biotechnology.

JULY 2016 - DEC 2016

Visiting Researcher

Crop Genetics Department, John Innes Centre (JIC), United Kingdom.

Norwich Research Park, Norwich, NR4 7UH, UK
Phone: +44(0)1603 450000 <http://www.jic.ac.uk>

During my 6 months period at John Innes Centre. I was involved in project "Fruit development in oilseed rape and Arabidopsis". I characterised the pod shatter resistance of a diverse population of Brassica napus grown at JIC utilising the random impact test methodology. All data was analysed using the Genstat statistical packages before genetic analysis via an associative transcriptomics (AT) pipeline. This involved learning to use software such as TASSEL and R. Interpreting the data identified several candidate genes for which one was followed up by observation of mutants with the model plant, Arabidopsis. To further examine differences between the material, I performed microscopy techniques, learning to prepare, section and image plant tissue for both light microscopes and SEM. My work at JIC have given me an authorship of research article ([https:// doi: 10.1007/s00497-019-00374-9](https://doi.org/10.1007/s00497-019-00374-9)).

[Agriculture Research & Development](#)

OCT 2013 - JUN 2016

Research Assistant

Plants Genetics Resources Institute (PGRI), National Agriculture Research Centre, Islamabad. (NARC)

Park Road, Islamabad - Pakistan: 44000
Fax: +92-51 9255034 <http://www.parc.gov.pk>

As a part of the research team, I was engaged in various projects comprising morphological evaluation of different Brassica species for their characterization, biochemical and molecular evaluation a large set of brassica species. I was also responsible to help research students in the Germplasm evaluation laboratory. It include carrying out research trials of various crops DNA isolation, PCR and Gel Electrophoresis, research data recording, analyzing the data using statistical tools and software's for molecular works, preparation of literature review, report preparation. Other work includes the preparation of the research reports, data management, and laboratory maintenance.

[Agriculture Research & Development](#)

JAN 2011 - JUN 2011

Intern**Plants Genetics Resources Institute (PGRI), National Agriculture Research Centre, Islamabad. (NARC)**Park Road, Islamabad - Pakistan: 44000
Fax: +92-51 9255034 <http://www.parc.gov.pk>

During these six months of internship program, I learned about different laboratory techniques required for Molecular and Biochemical Evaluation of Plant germplasm.

Agriculture Research & Development

EDUCATIONAL BACKGROUND

2013-2018

Doctor of Philosophy Plant Breeding & Genetics

Department of Plant Breeding & Genetics, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi Pakistan.

Thesis: Association mapping of important traits in Brassica napus L.**Summary:** Brassica napus is an important cultivated oilseed crop famous for good quality oil (Canola oil) yet its production is insufficient to meet the domestic demands. Consequently, huge foreign exchange is spent on the import of edible oil to meet domestic requirements. One of the problems due to which reduction in yield occurs, is pod shattering at maturity and during harvesting. Enhanced inherent shatter resistance is the best solution for this problem. The phenotypic variation of such complex trait can be studied through association mapping. My PhD research was based on (i) Diversity analysis of a large population set of Brassica napus, (ii) Delineation of marker-trait associations by using simple sequence repeats (SSRs) markers, (iii) Genome wide association studies for pod shatter using single nucleotide polymorphisms (SNPs) and (iv) Functional profiling of a candidate gene for pod shattering. Four experiments were conducted to achieve these objectives. Brassica napus accessions identified as less prone to pod shattering may be tested in further yield and quality trials. The SSR markers, found highly associated to various traits, may be utilized in MAS of Brassica napus in breeding programs to reduce varietal development time whereas, a major SNP difference found for pod shatter resistance in the A3 copy of PIF4 is recommended for use in MAS of breeding pod shatter resistance lines. Pod lignin quantification of B. napus is recommended to differentiate between weak and strong pod genotypes, of Brassica napus.**Master of Science (Honors) Plant Breeding & Genetics**

Department of Plant Breeding & Genetics, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi Pakistan.

2011 - 2013

Thesis: Inter-relationship of drought related traits in different wheat genotypes.**Summary:** I investigated the interrelationship of morpho-physio traits among 30 wheat genotypes through correlation analysis. Wheat genotypes were sown during 2012-13 following RCBD, both under rain shelter and field conditions. Results revealed highly significant ($p < 0.01$) differences among genotypes. A significant positive correlation (0.97) was recorded between days to heading and maturity days as well as between number of fertile tillers/plant and total grain yield/plant (0.38) under normal field conditions. Under rain-shelter conditions the relative water content (0.48) and chlorophyll contents (0.34) showed a significant ($p < 0.05$) and positive correlation with grain yield/plant and number of grains per spike. Hence, it was suggested that traits including number of heading days, number of maturity days, number of fertile tillers per plant, grain yield/plant, relative water content, chlorophyll contents and total number of grains per spike may be used in selection strategy to develop drought tolerant wheat genotypes.**CGPA:** 3.57 / 4.00

2007 - 2011

Bachelor of Science (Honors) Plant Breeding & Genetics

Department of Plant Breeding & Genetics, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi Pakistan.

Final Year Project: Morphological characterization of synthetic hexaploid wheat genotypes.**Summary:** A germplasm set of synthetic hexaploid wheat genotypes was characterized based of their morphological traits.**CGPA:** 3.57 / 4.00

ADDITIONAL INFORMATION

RESEARCH PUBLICATIONS

- Aftab M., S. Fatima, H. Qamar, M. Hassan, M. Zubair, A. Arshad, T. Mahmood, S. Ali, S. Shahazad, M. R. Khurshid, M. K. Malik, A. Mohyo-Din, N. A. Maan and **M. Ilyas**. 2020. Study of Morphological Characters Give an Insight into the Genetic Variation Present in Brassica napus L. Germplasm. Life Science Journal. 17(3):56-61. ISSN: 1097-8135 (Print) / ISSN: 2372-613X (Online). <http://www.lifesciencesite.com>. 7. doi:10.7537/marslsj170320.07.
- Qamar, H., G. Shabbir, **M. Ilyas**, A. Arshad, S. I. Malik, T. Mahmood and H. S. B. Mustafa. 2020. Studies on Genetic Divergence of Rapeseed Genotypes using SSR markers. Pak. J. Bot., 52(1): [http://dx.doi.org/10.30848/PJB2020-1\(23\)](http://dx.doi.org/10.30848/PJB2020-1(23))
- Stephenson P., N. Stacey, M. Brüser, N. Pullen, **M. Ilyas**, C. O'Neill, R. Wells and Østergaard L. 2019. The power of model-to-crop translation illustrated by reducing seed loss from pod shatter in oilseed rape. Plant Reproduction. <https://doi.org/10.1007/s00497-019-00374-9>
- **Ilyas, M.**, G. Shabbir, M. A. Rabbani, S. I. Malik, N.M Cheema, M. Ansar and S. A. Jan. 2018. Genetic Divergence in Brassica napus L. Germplasm as determined by Quantitative Attributes. Pak. J. Bot., 50(3): 1039-1045.
- **Ilyas, M.**, G. Shabbir, S. A. Jan, M. A. Rabbani, S. I. Malik, M. Ansar, M. I. Ibrahim and H. Khurshid. 2018. Estimation of linkage disequilibrium and population structure among brassica napus genotypes for association mapping. Fresenius Environmental Bulletin, 27(9): 5980-5986.
- Nasim, S., G. Shabbir, **M. Ilyas**, N. M. Cheema and M. K. N. Shah. 2017. Contemplation of Wheat Genotypes for Enhanced Antioxidant Enzyme Activity. Pak. J. Bot., 49(2): 647-653.
- Jan, S. A., Z. K. Shinwari, M. A. Rabbani, H. Khurshid, M. I. Ibrahim, M. Adil and **M. Ilyas**. 2017. Comparison of electrophoretic protein profiles of Brassica rapa sub-species brown sarson through SDS-PAGE method. GENETIKA, 49(1): 95-104.
- Ibrahim, M. I., F. M. Abbasi, M. A. Rabbani, A. Qayyum, S. A. Jan, S. A. Khan, H. Khurshid, **M. Ilyas**, A. Khan, N. Khan, S. H. Shah, M. Z. Kiani and Y. Khan. 2016. Genotyping of rice germplasm for bacterial blight resistant gene (Xa7). International Journal of Biosciences. 8(4): 28-35.
- Khan, Q., A. S. Mumtaz, H. Khurshid, S. A. Jan, N. Ahmad, S. A. Khan, N. Saleem, S. H. Shah, M. I. Ibrahim, **M. Ilyas** and M. Arif. 2016. Exploring durable genetic resistance against leaf rust through phenotypic characterization and LR34 linked STS marker in wheat germplasm. Biosci. J., Uberlândia, 32(4): 986-998.
- **Ilyas, M.**, G. Shabbir, M. Ansar and M. K. N. Shah. 2018. Inter-relationship of drought related morpho-physio traits in wheat genotypes. Pakistan Journal of Science. 70(2): 162-168.
- Ibrahim, M. I., F. M. Abbasi, M. A. Rabbani, Inamullah, S. A. Jan, **M. Ilyas** and H. Khurshid. 2017. Evaluation of Genetic Variation among Indian Mustard (Brassica juncea L.) Genotypes by SDS-PAGE Method. Proceedings of the Pakistan Academy of Sciences: B. Life and Environmental Sciences 54 (4): 333-339.
- Nowsherwan, I., G. Shabbir, S. I. Malik, **M. Ilyas** and N. M. Cheema. 2017. Selection of Wheat Genotype(S) for Drought Stress Based on Physiological Traits. International Journal of Plant & Soil Science, 17(3): 1-7.
- Jan, S. A., Z. K. Shinwari, M. A. Rabbani, S. H. Shah, M. I. Ibrahim and **M. Ilyas**. 2016. Optimization of an efficient SDS-PAGE protocol for protein analysis of Brassica rapa. Journal of Biodiversity and Environmental Sciences. 9(2):17-24.
- Saleem, N., S. A. Jan, M. J. Atif, H. Khurshid, S. A. Khan, M. Abdullah, M. Jahanzaib, H. Ahmed, S. F. Ullah, A. Iqbal, S. Naqi, **M. Ilyas**, N. Ali, M. A. Rabbani. 2017. Multivariate Based Variability within Diverse Indian Mustard (Brassica juncea L.) Genotypes. Open Journal of Genetics, 7: 69-83
- Khan, A. H., M. A. Rabbani, **M. Ilyas**, A. Iqbal, I. Iqbal, Z. Ahmed and T. Shehzad. 2016. Study of genetic diversity in rapeseed (Brassica napus) by biochemical methods using SDS-PAGE analysis. International Journal of Agriculture and Applied Science. 8(1): 95-100.
- Arif, M., H. Khurshid, S. U. Siddiqui, S. A. Jatoi, S. A. Jan, **M. Ilyas**, S. A. Khan, A. Khan, M. I. Ibrahim, N. Saleem and A. Ghafoor. 2015. Estimating Spatial Population Structure through Quantification of Oil Content and Phenotypic Diversity in Pakistani Castor Bean (Ricinus communis L.) Germplasm. Science, Technology and Development 34(3): 147-154.
- Murtaza, N., G. Shabbir, T. Mahmood, M. Ansar, M.I. Tabassum and **M. Ilyas**. 2014. Criterion for the selection of high yielding Maize (Zea mays) Genotypes. J. Agric. Res., 52:2, 177-183.
- Khan, A. H., N. M. Minhas, M. J. Asad, A. Iqbal, **M. Ilyas** and R. T. Mahmood. 2014. Estimation of protein, carbohydrates, starch and oil contents of indigenous maize (Zea mays L.) germplasm. European Academic Research. 2(4): 5230-5240.

REVIEW PUBLICATIONS

- Qamar H., **M. Ilyas**, S. A. Jan, H. S. B. Mustafa, A. Arshad, M. S. Yar, M. Ahmed, S. Hussain, R. Wells, H. Khurshid, Z. K. Shinwari and T. Mehmood. 2020. Recent trends in molecular breeding and biotechnology for the genetic improvement of brassica species against drought stress. *Fresenius Environmental Bulletin*. 29(1); 19-25.
- Qamar, H., **M. Ilyas**, G. Shabbir, G. Irshad, F. Nisar, S. M. Abbas, M. Ghias and A. Arshad. 2019. Flax: Ancient to modern food. *Pure Appl. Biol.*, 8(4): 2269-2276. <http://dx.doi.org/10.19045/bspab.2019.80173>
- Afzal, M., G. Shabbir, **M. Ilyas**, S. S. Ahmad Jan and S. A. Jan. 2018. Impact of climate change on crop adaptation: current challenges and future perspectives. *Pure and Applied Biology*. <http://dx.doi.org/10.19045/bspab.2018.700115>
- Jan, S. A., Z. K. Shinwari, M. Malik and **M. Ilyas**. 2018. Antioxidant and anticancer activities of Brassica rapa: a review. *MOJ Biology and Medicine*, 3(5): 175-178.

CONFERENCES

- 7th International and 16th National Conference on "Plant Resources: Current Trends, Challenges and Solutions" March 23-26, 2018, Peshawar. Islamia College University, Peshawar and Pakistan Botanical Science Society.
- OREGIN Stakeholder Forum 2016, "Breeding for resistance to pests and diseases; approaches and advances". 31st October 2016, Fowden Conference Hall, Rothamsted Research, Harpenden, Hertfordshire. United Kingdom
- Annual Science Meeting, John Innes Centre, Norwich. United Kingdom 12-14 October 2016.
- 5th International Conference on "Agriculture, Food Security and Climate Change" Sep. 09-11, 2014, Rawalakot, University of Poonch Rawalakot and Pakistan Agricultural Scientist's Forum.

CERTIFICATES

- Certificate of Merit (1st Position) for English Debate (Against) by Fauji Foundation Directorate Frontier Region Peshawar. 30-11-2004.
- Training course on "Fisheries and Aquarium Management". National Vocational & Technical Education Commission, Prime Minister's Secretariat, Government of Pakistan. May 05, 2008 to October 31, 2008.
- Training course on "Water management in Agriculture sector in Pakistan". Conducted by National Center for Rural Development (NCRD), Islamabad. 3rd-7th March, 2014.
- Training course on "Plant Tissue Culture Techniques". Conducted by Department of Horticulture, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi in collaboration with Agribusiness Support Fund, 03rd-20th August 2009.

AWARDS

- Awarded with the HEC Merit based scholarship during masters studies at PMAS-Arid Agriculture University Rawalpindi. Pakistan. 2011-12.
- Awarded with the Laptop on merit basis under "Shahbaz Sharif Youth Initiative Program", Government of Punjab. April, 2012.

MAJOR COURSES STUDIED

- Biometrical Genetics, 6 months (3 Credit Hours) PMAS Arid Agriculture University.
- Genetics of Plant Disease and Insect Resistance, 6 months (3 Credit Hours) PMAS Arid Agriculture University.
- Advanced Genetics, 6 months (3 Credit Hours) PMAS Arid Agriculture University.
- Breeding of Horticultural Crops, 6 months (3 Credit Hours) PMAS Arid Agriculture University.
- Genetic Engineering and Biotechnology, 6 months (3 Credit Hours) PMAS Arid Agriculture University.
- Plant Tissue Culture, 6 months (3 Credit Hours) PMAS Arid Agriculture University

COMMUNICATION SKILLS

Achieved good communication skills working with different organizations including International Islamic University, John Innes Centre, National Agriculture Research Centre and interaction with the farmers for arranging workshops and seminars.

JOB-RELATED SKILLS

Keen observer, Hard worker, Statistical analysis, Characterization of germplasm, Survey and Sampling, Plant Tissue culture, Molecular analysis (PCR), Report preparation.

COMPUTER SKILLS

Proficient knowledge of Microsoft Office (Word, PowerPoint, Excel), TASSEL, STRUCTURE.

OTHER SKILLS

- Computer Hardware: Proficient knowledge of Computer Hardware.

NATIVE LANGUAGE

Pashto, Urdu

OTHER LANGUAGE(S)

English: Proficient

REFERENCE

Professor Lars Ostergaard
 Group Leader, Genes in the Environment
 Crop Genetics Department, John Innes Centre
 Norwich Research Park, Norwich United Kingdom. NR4 7UH.
 Email: lars.ostergaard@jic.ac.uk