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ADAPT project comes to an end after four important and productive years of potato research

- **Since July 2020, the Horizon 2020 EU project Accelerated Development of multiple-stress tolerAnt PoTato (ADAPT) has focused its research activity in understanding how potato plants acclimate to single and combined abiotic stresses to make this crop more resilient to climate change.**

- **After four intense and productive years of cooperation amongst the partners of the project, today marks the last day of the project, producing several important results for the potato sector in Europe and beyond.**

Vienna, 28 October 2024 - The ADAPT project ("*Accelerated Development of multiple-stress tolerAnt PoTato*"), is today officially coming to an end. Launched in July 2020 with a total budget of 5 million Euro from the EU Horizon 2020 program *(No GA 2020 862-858),* the international consortium of ADAPT has intensively worked with the aim of developing new strategies to make potatoes fit for the challenging growth conditions of the future based on a detailed understanding of molecular processes of stress acclimation.

The ADAPT project brought together the complementary expertise of ten leading academic research institutions, four potato breeders, a screening technology developer, a government agency and a non-profit EU association to investigate the mechanisms underlying multi-stress resilience in potato.

Potato is one of the most important food crops worldwide. However, a major threat to tuber yield security for this staple food crop is its vulnerability to environmental stresses; particularly to combinations of heat and drought, which are becoming increasingly prevalent due to climate change. Often these conditions are also followed by seasonal flooding, which can ruin the entire harvest within a few days. While there was already some knowledge of responses to multiple stresses from model plant species such as *Arabidopsis*, similar knowledge in potato was lacking.

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Through the past four years, the project has achieved significant results, including:

1. **Understanding potato stress acclimation:** Gained insights into how potatoes react to heat, drought, and waterlogging.
2. **Potato stress resilience:** Learned how different potato genotypes handle combined abiotic stress occurring under real field conditions.
3. **Advanced phenotyping and field trials:** High-throughput phenotyping in glass houses and field trials using drones and environmental sensors.
4. **Detailed insights into stress adaptation in potato:** Monitoring critical moments during potato growth and tuber formation revealed specific signatures and molecular responses to be explored in future breeding.
5. **Powerful data analysis pipelines:** Established analysis pipelines for processing and analysis of huge data sets from field trials and high-throughput studies covering a large set of commercial potato varieties.
6. **Using the new knowledge networks:** Improved understanding of stress reactions as a basis for fine-phenotyping and marker development for future potato breeding.

For further details regarding main outcomes from each project's work package, please check the ADAPT's website.

Dr. Markus Teige from the Faculty of Life Sciences of the University of Vienna, and leader of the project, indicates that the ADAPT project kicked of novel collaborations between distinct research areas - that have rather been isolated before - by combining the complementary expertise in stress physiology with molecular plant breeding and technology development together with bioinformatics and the end-user's perspective. "*It was this combination that enabled us to tackle these complex challenges at such a sophisticated level building on the needs of the community/stakeholders. In my view this is the way to go for future research towards more climate resilient crops and should be followed in future projects*", points out Dr. Teige.

To this end, the consortium is already working on follow-up proposals, for example to train the next generation of researchers in such an interdisciplinary setting and also to take advantage of the unique expert knowledge and available tools that have been developed to bring the research results from this project into practice in breeding programs at the breeders or recommendations for farmers.

Group picture of the entire consortium at the last project's meeting held in Bonn on 29-30 May 2024

Disclaimer

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Visit the official project's website (adapt.univie.ac.at) and Twitter account (@eu_Adapt) for more information

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