



Tenth Annual Report

July 2020- June 2021

PlantLink is a network platform for plant science in Southern Sweden. It was formed in 2011 as an alliance between Lund University (LU) and the Swedish University of Agricultural Sciences in Alnarp (SLU Alnarp) with initial support from the Skåne Regional Council (Region Skåne). Our ambition is to stimulate, unite and promote plant research and higher education in the region.

PlantLink wants to bridge the gap between basic and applied plant research with the objective to provide plants as part of a sustainable plant production for healthy food, future climate, medication, energy and new green materials. PlantLink gathers around 40 research groups and provides a platform for interactions between industry and universities in Southern Sweden as well as in Denmark.

PlantLink strives to increase the interest and competence in plant science through education and information. Our goal is to create an environment that excels plant research and innovation and that leads to dynamic interactions between the universities, private companies and the general public.

Research

PlantLink Focus Areas

- Plant Breeding and engineering
- 'Post-harvest' – quality and new products
- Abiotic stress
- Biotic interactions
- Modelling and informatics
- Plants, People and Society

Major research projects associated with researchers in PlantLink

- C4F
- CropBooster-P
- EMPHASIS
- ERASMUS+ ESCAPAdE
- MSCA-ITN PROTECTA PhD program
- NordPlant (NordForsk)
- Resilient Northern Crop Network - Nord-Crop (NKJ)
- ScanOats (SSF)
- SLU GroGrund
- STEPS (Mistra)
- The Human Aspect of Invasive Alien Plants – the paradox of plants, people and personal preferences (Pufendorf IAS)

Pufendorf theme ends

The Pufendorf Institute is an interdisciplinary institute at Lund University hosting different advanced study groups and themes. During 2020 to 2021, the theme "Perspective on Invasive Plants" was realised. Researchers from four faculties at Lund University and from SLU Alnarp participated, several of whom are linked to PlantLink's focus area "Plants, People and Society". The purpose of the theme was to explore the relation between plants and humans, especially considering invasive alien plants. This was done, among other things, through interviews with invited guests and by two questionnaires. The outcomes of this work were presented as an outdoor exhibition "Vem ska bort – en utställning om invasiva främmande växter" during the Sustainability Week 2021 in Lund. The Pufendorf theme provided an opportunity for interdisciplinary work with free discussions on a relatively new research area from a Swedish perspective. The work led to deeper insights into the perceptions of alien and native plants, and ultimately pointed at what nature to be protected from invasive alien plants.

PlantLink assistant director steps down



Tina D'Hertefeldt, who has been the assistant director for PlantLink since July 2016 stepped down at the end of June 2021. Apart from sending out the popular PlantLink newsletter, Tina has been in charge of the sixth focus area of PlantLink "Plants, People and Society" and engaged in the Pufendorf theme "Perspective on Invasive Plants" (see text above). Tina was PlantLink's „researchers in the spotlight" summer 2021 and in this interview talks about her inte-

rest in how plants respond to their environment and how we can apply ecophysiological thinking in our control methods for invasive species. The full text is found at our homepage.

During the coming year both a director and assistant director will be recruited as Erik Alexandersson's term as director ends June 2022.

PlantLink supported publications 2020-2021*

Hammenhag C., Saripella G.V., Ortiz R., & Geleta M. QTL Mapping for Domestication-Related Characteristics in Field Cress (*Lepidium campestre*)—A Novel Oil Crop for the Subarctic Region. (2020) *Genes* (2020), 11 (1223).

Juma I., Geleta M., ... & Ortiz R. (2020) Genetic diversity of avocado from the southern highlands of Tanzania as revealed by microsatellite markers. *Hereditas* 157 (40)

Kushwaha S.K., Vetukuri R. R., ... & Chawade A. (2020) Differential Gene Expression Analysis of Wheat Breeding Lines Reveal Molecular Insights in Yellow Rust Resistance under Field Conditions *Agronomy* 10 (12)

Møller I.M., Igamberdiev A.U., ... & Schwarzländer M. (2020) Matrix redox physiology governs the regulation of plant mitochondrial metabolism through posttranslational protein modifications. *Plant cell*, 32 (3) 573-594

Schmidt J., Dotson B.R., ... & Rasmusson A.G. (2020) Substrate and plant genotype strongly influence the growth and gene expression response to trichoderma afroharzianum T22 in sugar beet

Plants, 9(8), 1-14

Vetukuri R.R., Kalyandurg P.B., ... & Savenkov E. I. (2020) Effect of RNA silencing suppression activity of chrysanthemum virus B p12 protein on small RNA species. *Arch Virol* 165 (12) 2953-295

Garnier S., Harakalova M., ... & Charron P. (2021) Genome-wide association analysis in dilated cardiomyopathy reveals two new players in systolic heart failure on chromosomes 3p25.1 and 22q11.23 *European Heart Journal* 42 (20) 2000-2011

Hederström V., Rundlöf M., ... & Lankinen Å. (2021) Do plant ploidy and pollinator tongue length interact to cause low seed yield in red clover? *Ecosphere* 12 (3)

Juma I., Geleta M., ... & Ortiz, R. (2021) Comparison of Morphological and Genetic Characteristics of Avocados Grown in Tanzania. *Genes* 12 (63)

Morange P-E., Peiretti F., ... & Coutaraut F. (2021) A rare coding mutation in the MAST2 gene causes venous thrombosis in a French family with unexplained thrombophilia: The Breizh MAST2 Arg89Gln variant *PLOS genetics* 17(1)

**Either with seed money or bioinformatics support*

PlantLink enters its third and final period

The second term of PlantLink started in 2016 and came to an end in June 2021. A new contract between the universities has now been signed until the end of 2023. This will mark the end of PlantLink in its current form. At the end of the second term we did an evaluation where we assigned Per Gardeström, professor emeritus at Umeå University as an external reviewer and performed individual interviews with a panel representing 16 external stakeholders to obtain a broader, and more objective view of PlantLink's activities. It also summarises PlantLink's performance and assess its influence on plant research in the southern Swedish region from the start in 2011. The report is available in print and online at www.plantlink.se.

As part of the third contract period, PlantLink will undergo changes, and then stop as the joint LU-SLU Alnarp network. The plan after 2023 is for parts of PlantLink's activities to continue as integrated parts of other structures of LU and SLU Alnarp. We aim for PlantLink to keep being relevant, and that we will live up to our new motto, that was developed as part of the 10 year evaluation:

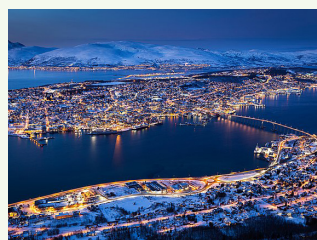
PlantLink – strengthening plant research, education, and innovation in Southern Sweden for a sustainable society

This autumn we celebrate 10 years of PlantLink, with a special annual day summing up the last 10 years as well as looking forward with a focus on plant research. It will be held on the 27th of September in Lund marking the exact date 10 years ago PlantLink was inaugurated at SLU Alnarp.

NordPlant prolonged until end of 2023

We are very happy to announce that NordPlant's was granted a second round of funding for 2021-2023 from NordForsk. NordPlant is a Nordic University Hub run by five Nordic universities including LU and SLU focusing on modelling and plant phenomics for agriculture and forest production in future Nordic climates. This means that several collaborative projects can continue such as the common data standards initiative and the facility managers' forum. 25-26

November 2021 the third NordPlant annual meeting "Successful Plant Modelling and Phenotyping for the Nordic Countries – What is Needed?" will be held in Tromsø, Norway. More information can be found at www.nordplant.org.

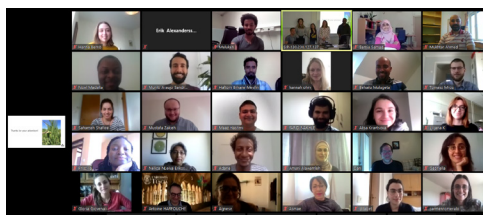


Tromsø in winter

Education

The number of courses were restricted in 2020-2021 due to Covid-19. Still, the cooperation between the LTV faculty and the Post Graduate Courses in Life Science (PCLS) at Lund University went on. It is now well established, and currently continues for an eight time during the autumn 2021, giving PhD students at SLU Alnarp full access to about 15 PhD-courses in molecular biology at Lund University with some courses also given at SLU Alnarp. Part of PCLS, the PlantLink sponsored the course „Microscopy methods in biological research“ 7-11th of December, 2020.

During the last year, PlantLink also supported the PhD Course MSc/PhD course “Plant Protection Biology to meet the UN’s Sustainable Development Goals”, August 3 – 14, Alnarp at SLU Alnarp. The course was organized by the LTV faculty and MSCA-ITN PROTECTA.



The PlantLink sponsored MSc course “Accelerating climate resilient plant breeding by applying-omics and artificial intelligence” had to be moved online because of Covid-19

ESCAPAdE ends, what’s ahead?

The seven partners of the Erasmus+ ESCAPAdE aim to promote and improve the curricula in Applied Plant Sciences for graduate students and to facilitate student mobility. This three year project supported by PlantLink is coming to an end with a MSc course, multiplier event in the form of a job fair, and a translational meeting, all hosted at SLU Alnarp in August 2021.

One of the achievements of ESCAPAdE is the creation of an online search tool to help students to find European university courses in applied plant sciences. More information at www.escapade-erasmus.eu. PlantLink will continue the collaborations established during ESCAPAdE and hope to develop it into future initiatives within applied plant education



Budget and organization

PlantLink had a budget of 1,85 million SEK over the year, with SLU and LU contributing ca 1,1 million and 0,5 million SEK each. From July 2020 to June 2021 the total salary costs were 1,1 million SEK. Positions funded were one director (30-40% - 20-25% PlantLink and 10-15% NordPlant), one assistant director (25%), one coordinator (50%), and one NordPlant administrator (20%).

Other costs include information and outreach events, seminars, website and travels. NordForsk funding contribute with 269,000 SEK/year for coordination of the project NordPlant.

PlantLink Personnel 2020-2021

Erik Alexandersson (director)

Tina D'Hertefeldt (assistant director)

Sofia Marmon (coordinator)

Svante Resjö (NordPlant administrative coordinator)

Thomas Welwert (economy administrator), until March 2021

Andreas Gustavsson Fredlund (economy administrator), from April 2021

Steering committee, 2020-2021

Thomas Moritz, University of Copenhagen and SLU Umeå, chair

Erik Andreasson, SLU

Mariette Andersson, SLU

Jean Yong, SLU

Leif Bülow, LTH

Rajni Hatti-Kaul, LU

Allan Rasmusson, LU

Annette Olesen (until 2020) Lantmännen Lantbruk

Alf Ceplitis (from 2021) Lantmännen Lantbruk

Jenny Bergsten, Region Skåne

Linnea Stridh, PhD representative, SLU

Gróa Valgerdur Ingimundardottir, PhD representative, LU

Permanent observatory member:

Svend Christensen, University of Copenhagen

Steering committee meetings

14 October 2020, Alnarp/online

7 December 2020, Alnarp/online

8 March 2021, online

17 May 2020, online



Tsedeka Abate, Speaker at the webinar „Africa's Compelling Case for a Different Mode of Partnership in Agricultural Research and Development“, see Events, p 8.



Outreach

Social media

PlantLink has continued its extensive work with social media for the spreading of plant science news, information, and upcoming events. On Twitter we have more than 1400 followers representing many important organizations in plant science. Over 2100 people like our Facebook page. Nine newsletters are distributed per year and our homepage (www.plantlink.se), which carries information on PlantLink's work and structure, associated researchers, relevant courses etc., was visited by over 4000 unique visitors. Since 2018 we administrate NordPlant's new homepage (www.nordplant.org) and bi-annual newsletter.

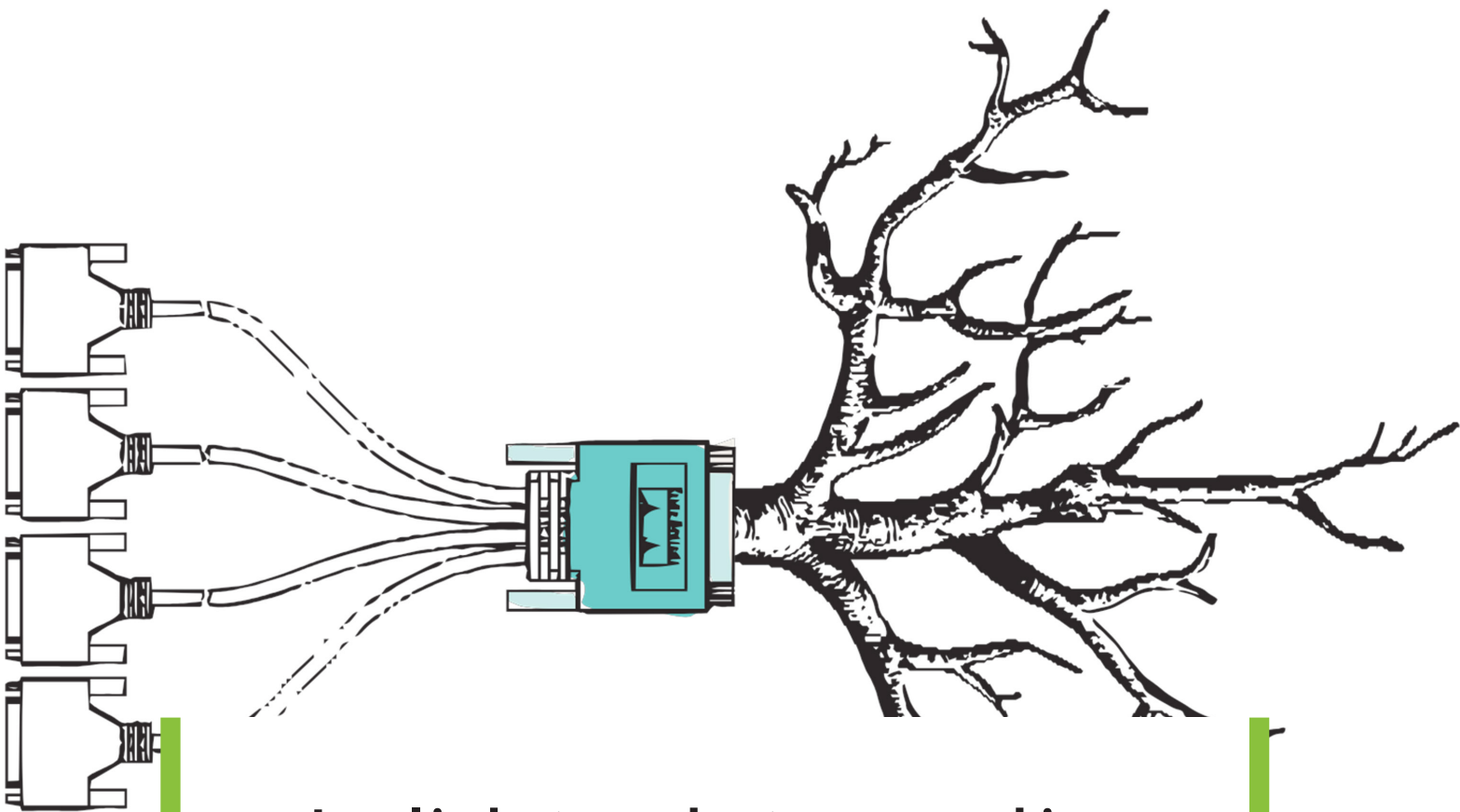
Interactions

PlantLink interacts with several partners. Our collaboration with PLEN at University of Copenhagen continues. We have an active dialogue with The Linnean Centre for Plant Biology, Umeå Plant Science Center, EPSO, Mistra Biotech, EMPHASIS and CropBooster-P. In collaboration with "Forskningsnätet Skåne" 1 high school student did a summer internship in 2021 related to plant research visiting Alfredo Zambrano at ScanOats.

PlantLink launched lunch series

During the spring of 2021, PlantLink initiated a bi-weekly, online lunch seminar series. This gave the chance for plant-related organisations to introduce themselves and take questions from the audience. The purpose is to introduce and make networks and organizations relevant to plant researchers in the region more visible. The organisations presented during the first series were NordGen, LUCSUS, LU Land, Partnership Alnarp, Sweden-Central America network, Food Tech Link and Tankesmedjan Movium at SLU. All the recordings are available at PlantLink's homepage.





Local industry and entrepreneurship

Several of PlantLink's research activities are in close collaboration with local businesses, for example, in crop protection and plant breeding.

NordPlant engaged Nordic companies by for example arranging company tech corners during the annual day and through SLU Holding producing a survey of Swedish companies using AI for agriculture. Our support for SLU Alnarp and Lund University-membership in the Plant Biologicals Network Southern Scandinavian (PBN) is continued.

In spring 2021 a fifth round of the PlantLink industrial mentorship program was announced.

PlantLink supported events 2020 - 2021

(approximate number of attendees in brackets)

- MSc/PhD course "Plant Protection Biology to meet the UN's Sustainable Development Goals", August 3 – 14, Alnarp (30)
- NordPlant literature webinar, 22 September, online (10)
- Webinar "Plant Biotechnology in sub-Saharan Africa" 23-24 September, online (35)
- PlantLink Day, 14 October, online (100)
- NordPlant annual meeting 4-6th of November, online (75)
- Book discussion and meet the author of „Africa's Gene Revolution“, 3 December, online (10)
- Webinar - „Africa's Compelling case for a different Mode of Partnership in Agricultural Research and Development, 9 February, online
- Plantlink Network webinar series, biweekly 24 March-16 June (40)
- ESCAPAdE Webinar on stakeholders expectations, 11 May (50)
- Biotron virtual tour, 27 May, Online (30)

Upcoming events 2021

- **ELLS and ESCAPAdE MSc summer school**, Host Plant Resistance Breeding as a part of Integrated Pest Management, 3.0 ECTS, 17-21 August in Alnarp
- **ESCAPAdE and PlantLink JobFair**, 23-24 August, Alnarp and online
- **PlantLink Day and 10 year celebrations**, 27 September, in Lund and online
- **NordPlant Annual Meeting**, 25-26 November, Tromsö and online

Contact and more information

Follow us on Facebook and Twitter to get continuous updates from PlantLink.
For more information check our homepage: www.plantlink.se

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