BI1295 – Sustainable Plant Production – from Molecular to Field Scale

Course year 2021

Literature list

Notes

- The literature is listed with reference to the lecture date, teacher's initials and session title, in order of occurrence
- Unless otherwise indicated, all the readings are compulsory. In some cases, supporting (more basic) readings and additional (more advanced) readings are also listed (and clearly indicated)
- All compulsory literature will be made available to the students enrolled through the course Canvas page. Files are named based on the first author and year and they appear in the session folder (in folders named as below, followed by 'Main')
- Also the Supporting and Additional readings are made available through Canvas, in folders indicated as Supporting readings and Additional readings. The only exception in Klug (any edition) which is available at SLU libraries

25/3 RG – The scientific method

Grogan P (2005), The use of hypothesis in ecology, Bulletin of the British Ecological Society, 361, 43-45

26/3 AM – Bibliometric analysis

Aria M (2017), bibliometrix: An R-tool for comprehensive science mapping analysis, Journal of Informetrics, 11, 959–975

07/04 AM – Introductory lecture: The concept of sustainability across scales

Clark et al. (2020), Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets. Science, 370, 705–708.

08/04 MW - Photosynthesis from scratch to crop production in northern latitudes

Lambers H, Chapin FS III, Pons TL (2008), Plant Physiological Ecology, Springer (part of chapter 2)

Larcher W (2003) Physiological Plant Ecology, Springer, page 111-119

Peltonen-Sainio P, Rajala A, Känkänen H, Hakala K (2009), Improving farming systems in Northern European conditions, in Sadras V and Calderini D (Eds), Crop physiology – Applications for genetic improvement and agronomy

Xu D-Q and Shen Y-K (2002) Photosynthetic efficiency and crop yield, in Pessarakli M (Ed), Handbook of plant and crop physiology, Marcel Dekker

Supporting reading

OpenStax Biology Chapter 8 Photosynthesis (http://openstaxcollege.org/l/photosynthesis)

Additional readings

Eisenhut M and Weber APM (2019), Improving crop yield, Science

Weih M (2003), Trade-offs in plants and the prospects for breeding using modern biotechnology, New Phytologist

09/04 MW - Effects of climate change on crop production

Bonosi L, Ghelardini L, Weih M (2013), Towards making willows potential bio-resources in the South: Northern Salix hybrids can cope with warm and dry climate when irrigated, Biomass and Bioenergy, 51: 136-144

Lavalle C, Micale F, et al (2009), Climate change in Europe. 3. Impact on agriculture and forestry. A review. Agronomy for Sustainable Development, Springer Verlag/EDP Sciences/INRA, 29(3)

Mäkinen H, Kaseva J et al (2018), Sensitivity of European wheat to extreme weather, Field Crop Research, 222: 209-217

12/04 GV – Modelling – the basics

Ludwig F., Asseng S. (2010), Potential benefits of early vigor and changes in phenology in wheat to adapt to warmer and drier climates. Agricultural Systems 103, 127–136

Smith and Smith 2007 Environmental modelling - An introduction Oxford Univ Press (Ch 1 and 2)

13/04 GV – Modelling – leaf to plant-level

Additional reading

Abrahamsen and Hansen (2000) Daisy: an open soil-crop-atmosphere system model, Environmental Modelling and Software 15, 313-330 (only pages 313-317)

14/04, 15/04 – PI Where do cultivated plants come from?

Doebley JF, Gaut BS, Smith BD (2006), The molecular genetics of crop domestication, Cell, 127(7)

Kole C et al. (2015) Application of genomics-assisted breeding for generation of climate resilient crops: progress and prospects. Frontiers in plant science. 6, 563.

Supporting reading

Klug WS, Cummings MR and Spencer CA Essentials of Genetics (available at the SLU libraries; Ch 3, 21, 22

16/04 AM – Weed biology

Monaco TJ, Weller SC, Ashton FM (2002), Weed Science – Principles and practices, Wiley (Ch 1 and 2)

19/04 IK – Plant microbe interactions – harmful effects

Raaijmakers J M et al (2008), The Rhizosphere: A Playground and Battlefield for Soilborne Pathogens and Beneficial Microorganisms, Plant and Soil, 321 (1–2), 341–61

Ritpitakphong U et al (2016), The Microbiome of the Leaf Surface of Arabidopsis Protects against a Fungal Pathogen, New Phytologist, 210 (3), 1033–43

Supporting reading:

Guest D I (2017), Plant Pathology Principles, In Encyclopedia of Applied Plant Sciences (Second Edition), edited by Brian Thomas, Brian G Murray, and Denis J Murphy, 129–36, Oxford: Academic Press

Tör M et al (2017), Fungal and Oomycete Diseases, In Encyclopedia of Applied Plant Sciences, 77–82. Elsevier

20/04 JM – Plant microbe interactions – plant defense

Pieterse et al (2014), Induced systemic resistance by beneficial microbes, Annual Review in Phytopathology 52, 347

Supporting reading:

Han G-Z (2019), Origin and evolution of the plant immune system. New Phytologist 222, 70

21/04 JM – Plant microbe interactions – beneficial interactions

Lugtenberg B and Kamilova F (2009), Plant-growth promoting rhizobacteria. Annual Review of Microbiology 63, 541

Finkel et al (2017), Understanding and exploiting plant beneficial microbes. Current Opinion in Plant Biology 38, 155

Supporting reading:

Bhattacharyya PN and Jha DK (2009), Plant growth-promoting rhizobacteria (PGPR): emergence in agriculture, World Journal of Microbiology and Biotechnology, 28, 1327 (Figures and tables)

22/04 SH - Soil microbial nitrogen cycling

Coskun D, Britto DT, Shi W, Kronzucker HJ (2017), How plant root exudates shape the nitrogen cycle, Trends in Plant Science

Philippot L and Hallin S (2011), Towards food, feed and energy crops mitigating climate change, Trends in Plant Science

Supporting reading

Robertson and Groffman (2014), Chapter 14: Nitrogen transformations, in Eldor P (Ed), Soil Microbiology, Ecology and Biochemistry, Academic Press

Additional readings

Kuypers MMM, Marchant HK, Kartal B (2018), The microbial nitrogen-cycling network, Nature Reviews Microbial Microbiology

Philippot L, Raaijmaker JM, Lemanceau P (2013), Going back to the roots: the microbial ecology of the rhizosphere, Nature Reviews Microbiology

23/04 RG – Integrated Pest Management

Godfray CJ et al (2010) Food Security: The Challenge of Feeding 9 Billion People. Science 327, 812 (DOI: 10.1126/science.1185383

Additional readings

Khan Z et al (2014) Achieving food security for one million sub-Saharan African poor through push–pull innovation by 2020. Phil Trans Royal Soc B 369 (1639)

Prinsloo, G., Ninkovic, V., van der Linde, T. C., van der Westhuizen A. J, Pettersson J. and Glinwood R. (2007) Test of semiochemicals and a resistant wheat variety for Russian wheat aphid management in South Africa. Journal of Applied Entomology 131: 637-644

26/04 – MW+POL - Plant nutrient use efficiency across scales

Lopez-Arredondo DL, Sanchez-Calderon L, Yong-Villalobos L (2017), Molecular and genetic basis of plant macronutrient use efficiency: concepts, opportunities, and challenges, Hossain MA et al (Eds), Plant macronutrient use efficiency – Molecular and genomic perspectives in crop plants, Elsevier

Weih M, Westerbergh A, Lundquist P-O (2017), Role of nutrient-efficient plants for improving crop yields: bridging plant ecology, physiology, and molecular biology, Hossain MA et al (Eds), Plant macronutrient use efficiency – Molecular and genomic perspectives in crop plants, Elsevier

27/04 AM – Weed ecology

MacLaren et al. (2020), An ecological future for weed science to sustain crop production and the environment. A review. Agronomy for Sustainable Development, 40:24.

29/04 GB – Field scale implications

Cassman KG, Dobermann AR, Walters DT (2002) Agroecosystems, nitrogen-use efficiency, and nitrogen management, Agronomy & Horticulture – Faculty Publications

Slafer GA, Kantolic AG et al (2014) Genetic and environmental effects on crop development determining adaptation and yield, Ch 12

29/04 AL – Field scale implications

https://jordbruksverket.se/jordbruket-miljon-och-klimatet/giftfri-miljo#h-Riskernamedvaxtskyddsmedelskaminska

03/05 ML – Field scale implications

Altieri et al. (2015) Agroecology and the design of climate change-resilient farming systems. Agronomz for Sustainable Development, DOI 10.1007/s13593-015-0285-2.

06/05 GV – Sustainability from a system perspective

Springmann M et al (2018), Options for keeping the food system within environmental limits, Nature, 562, 519–525

Weiner 2017 Applying plant ecological knowledge to increase agricultural sustainability, Journal of Ecology, 105, 865-870