

Course schedule: Plant biology for breeding and protection VT2025 (B11296)

	Scheduled time	Lectures	Teachers	Online OR Lecture room (Ultuna OR Alnarp)	Mandatory	Literature
Week 4	Mon 20-jan 13-15	Introduction to the course	SRS/MD (13-14)	Alnarp/Uppsala	Mandatory	
	Tue 21-jan 10-11	Introduction to plant breeding	MG	Alnarp/Uppsala		Ortiz_1; Ortiz_2; Ortiz_3
	Tue 21-jan 11-12	Crop domestication	CH	Alnarp/Uppsala		Fernie and Yan 2019; Purugganan 2019
	Tue 21-jan 13-15	Introduction and history of plant protection biology + intro seminars	SRS	Alnarp/Uppsala		Tronsmo Ch 1+2; Denis Murphy Ch 7, section 7.5 + Ch 9, sections 9.1-9.3
	Tue 21-jan 15-16	Participatory domestication	AM	Alnarp/Uppsala		Leakey et al. 2022, Franzel et al. 1996
	Wed 22-jan 10-12	Breeding methods for cereals	AC	Online		Tee et al. 1975; El-Hosarya et al. (2014). George Acquah Ch 16
	Thu 23-jan 10-12	Crop phenotyping and phenomics	AC	Alnarp/Uppsala		George Acquah Ch 12
Thu 23-jan 13-15	Introduction to Bioinformatics	LP	Alnarp/Uppsala	Mandatory		
Fri 24-jan 13-15	Study Day					
Week 5	Mon 27-jan 10-12	Breeding for grain and product quality	RK	Alnarp/Uppsala		Trocconi et al 2000; Nuttall et al 2017; Guzman et al 2016
	Mon 27-jan 13-15	Breeding for horticultural crops	LG	Alnarp/Uppsala		Nocker and Gardiner 2014
	Mon 27-jan 15-16	Breeding for biotic-stress resistance	MR	Alnarp/Uppsala		Buerstmayr et al 2019
	Tue 28-jan 10-12	Phenotyping of climate resilience	ER	Online		Rosenqvist 2022
	Tue 28-jan 13-15	Challenges in potato breeding	MA	Online		
	Wed 29-jan	Study Day				
	Thu 30-jan 10-12	Bioinformatics Step 2	Amrei (SLUBI)	Alnarp/Uppsala	Mandatory	<a href="https://doi.org/10.1016/j.molp.2022.03.009">https://doi.org/10.1016/j.molp.2022.03.009</a>
	Thu 30-jan 13-14	Breeding for oil crops	CH	Alnarp/Uppsala		Rahman and Jiménez 2016
	Fri 31-jan 10-11	Biotechnology - tissue culture and genome editing methods	LZ	Alnarp/Uppsala		Songstad et al 2017; Zhu et al 2020; Li et al 2021
	Fri 31-jan 11-12	Biotechnology for enhanced nutritional quality	SK	Alnarp/Uppsala		
Fri 31-jan 13-16	Plant genetic resources - Nordgen visit - Alnarp and Advanced Lab and plant growth facility visit - Uppsala	JS/MD	Alnarp/Uppsala		NordGen, Växthusvägen 12, SE 234 56 Alnarp	
Week 6	Mon 03-feb 10-12	Microbe assisted breeding	RV	Alnarp/Uppsala		
	Mon 03-feb 13-15	Introduction to quantitative genetics	MG	Alnarp/Uppsala		
	Tue 04-feb 10-12	Quantitative genetics and plant breeding	MG	Alnarp/Uppsala		Bazakos 2017; Nordborg and Weigel 2008; Hill 2010
	Tue 04-feb 13-15	Genome-wide association analysis in crops	AA	Alnarp/Uppsala		A Guide to Genome-Wide Association Mapping in Plants (Burghardt et al. 2017)
	Wed 05-feb	Study Day				
	Thu 06-feb 10-12	Seminar 1: Breeding and Phenotyping	SRS/MD	Alnarp/Uppsala	Mandatory	
	Thu 06-feb 13-15	Forestry breeding	TK	Alnarp/Uppsala		<a href="https://www.skogforsk.se/the-status-of-tree-breeding-low.pdf">the-status-of-tree-breeding-low.pdf (skogforsk.se)</a>
	Fri 07-feb 9-11	Introduction to bioinformatics exercise and SBL Introduction and discussion	SRS,AC,ÅL, AM	Online	Mandatory	
Week 7	Mon 10-feb 10-12	Methods for Marker Assisted Selection (MAS)	PV/JÅ	Online		
	Mon 10-feb 13-15	Bioinformatics tools for plant breeding	AC	Online		
	Tue 11-feb 10-12	Crop traits of importance for IPM	JAS	Alnarp/Uppsala		Stenberg 2017
	Tue 11-feb 13-15	Bioinformatics lab	LP/Amrei (SLUBI)	Alnarp/Uppsala	Mandatory	
	Wed 12-feb 10-11	Bioinformatics lab	LP	Online	Mandatory	
	Thu 13-feb 10-11	Bioinformatics lab	LP	Online	Mandatory	
	Fri 14-feb 9-10	Monitoring pests and pathogens	SRS	Alnarp/Uppsala		Maes et al 2018; Tedersoo et al 2018
	Fri 14-feb 10-12	Overview plant pests and pathogens	SRS	Alnarp/Uppsala		Tronsmo Ch 3-8; Dean et al 2012; Newton et al 2010
	Fri 14-feb 13-14	Viruses	AK	Alnarp/Uppsala		Tronsmo Ch 7; Scholthof et al 2011
Fri 14-feb 14-16	Fungi and oomycetes	RV	Alnarp/Uppsala		Tronsmo Ch4+5	
Week 8	Mon 17-feb 9-16	Bioinformatics lab, reporting	LP/SRS	Online	Mandatory	
	Tue 18-feb 9-10	Bacteria	RV	Alnarp/Uppsala		Tronsmo Ch 6; van der Does and Rep 2017; Fawke et al 2015; Whisson et al 2016; Mansfield et al 2012
	Tue 18-feb 10-12	Seed pathogens and disease management in seed crops	QK	Alnarp/Uppsala		Tronsmo Ch4+6
	Tue 18-feb 13-15	Exploring oomycete-pea interactions for disease resistance breeding	MD	Alnarp/Uppsala		Kälin et., 2023 Front.PlantSci.14:1114408; Desgroux et al., 2018 Front. Plant Sci. 8:2195.
	Wed 19-feb 10-12	Challenges in South Africa: Stem rust in wheat and Biofortification of crops	WB/AB	Online		Pretorius et al., 2020; Terefe et al., 2023
	Thu 20-feb 10-12	Postharvest pathology: Anthracnose of avocado and citrus black spot	QK	Alnarp/Uppsala		Plant Pathology by George Agrios;
	Thu 20-feb 13-16	Microscopy lab	RV/MD	BÖL/Mikroskopisal	Mandatory	
	Fri 21-feb 10-11	What a Plant Health company needs you to know - (Tentative)	BC	Online		
	Fri 21-feb 11-12	What is SLU Grogrund? + SBL questions	SM + SRS/AM/ÅL/AC	Online	Mandatory	
	Week 9	Mon 24-feb 10-12	Plant innate immunity and defence 1	EAnd	Alnarp/Uppsala	
Mon 24-feb 13-15		Plant innate immunity and defence 2	EAnd	Alnarp/Uppsala		Lenman et al 2015
Tue 25-feb 10-12		Epidemiology and plant-pathogen interaction in cultivated and wild study systems	ÅL	Alnarp/Uppsala		Berg and Koskella 2018; Karasov et al 2018; Jousimo et al. 2014
Tue 25-feb 13-15		Pest insects - plant-insect interactions, resistance problems and invasive species	KKG	Alnarp/Uppsala		Tabashnik et al 2008; Izzo et al 2014; Goergen et al 2016
Wed 26-feb		Study Day				
Thu 27-feb 10-12		Seminar 2: Pests and pathogens	SRS/MD	Alnarp/Uppsala	Mandatory	Tronsmo Ch 10-12; Taiz and Zeiger Ed 6 Ch 23; Su et al 2018; Saijo et al 2018
Thu 27-feb 13-16		Preliminary: Infection lab, Uppsala and Alnarp	MD, SRS	Alnarp Lab/Uppsala Lab		
Fri 28-feb 10-12		International regulations on access to plant genetic resources	DE	Alnarp/Uppsala		
Fri 28-feb 13-16	Combined stresses on plant health and Plant protection under climate change	SRS	Alnarp/Uppsala		Rivero et al., 2022; Venkatesgowda and Senthil-Kumar, 2015; Choudhary and Senthil-Kumar, 2021; Mahalingam et al., 2021, Mikkel:	
Week 10	Mon 03-mar 10-12	Induced resistance	SR	Alnarp/Uppsala		Bengtsson et al 2014; Balmer et al 2013; Sandroni et al 2020
	Mon 03-mar 13-15	Pesticides and biologicals	SR	Alnarp/Uppsala		Tronsmo Ch 16; Shafi et al 2017; Pandin et al 2017
	Tue 04-mar 10-12	Seminar 3: Host resistance	SRS/MD	Alnarp/Online	Mandatory	Rayapurama et al 2020; Ngou et al 2021; Arora et al 2019
	Tue 04-mar 14-16	Preliminary: Observation infection lab	MD, SRS	Alnarp Lab/Uppsala Lab		
	Wed 05-mar 10-12	Determinants of plant-plant communications in wheat intraspecific mixtures.	EB	Online		
	Thu 06-mar 10-12	Invasive pests and pathogens and their impacts in our nature (forest as an example)	PS	Online		
	Thu 06-mar 13-15	Plant biotech for plant protection and future protection strategies	SRS	Online		Tronsmo Ch 19; Murphy Ch 9, sections 9.4-9.6
Fri 07-mar	Study day					
Week 11	Mon 10-mar 10-12	Overview of vining pea breeding	AB	Alnarp/Uppsala		
	Mon 10-mar 13-15	Seminar 4: monitoring, prediction, epidemiology and climate change	SRS	Alnarp/Uppsala	Mandatory	Ramsak et al 2018; Karasov et al 2017; Courbier et al 2020
	Tue 11-mar 10-11	Bioinformatics Recap	LP	Online		
	Tue 11-mar 11-12	Preliminary: Presentation infection lab results	MD, SRS	Online		
	Wed 12-mar	Study day				
	Thu 13-mar	Hand-in of SBL group latest 17:00 CET				
Fri 14-mar 9-12	SBL group discussions and oral presentations	SRS	Online			
Week 12	Mon 17-mar 9-10	Questions before exam	SRS	Online		
	Tue 18-mar	Study day				
	Wed 19-mar	Study day				
	Thu 20-mar	Study day				
	Fri 21-mar 8-12	Exam	SRS, MG			
Week 13	Mon 24-mar	Course evaluation	SRS			

Protection

**Teachers**

AA Admas Alemu Abebe  
AC Aakash Chawade  
AK Anders Kvarnheden  
AM Anna Manourova  
CH Cecilia Hammenhag  
DE Dennis Eriksson  
EAnd Erik Andreasson  
EB Elsa Ballini  
JAS Johan A Stenberg  
KKG Kristina Karlsson-Green  
LG Larisa Gustavsson  
LP Lizel Potgieter  
LZ Lihua Zhu  
MD Mukesh Dubey  
MG Mulatu Geleta  
MR Mahbubjon Rahmatov  
PS Patrick Sherwood  
RK Ramune Kuktaite  
RV Ramesh Vetukuri  
SM Salla Marttila  
SK Selvaraju Kanagarajan  
SR Svante Resjö  
SRS Sajeevan Radha Sivarajan  
ÅL Åsa Lankinen  
AMR Amrei Binzer-Panchal (SLUBI)  
TK Thomas Kraft, Skogforsk  
WB Willem Boshoff, Univerity of the Free State, South Africa  
QK Quenton Kritzinger, University of Pretoria, South Africa  
AB Angeline Van Biljon, University of the Free State, South Africa  
ER Eva Rosenqvist, University of Copenhagen  
MA Muath Alsheikh, Graminor  
PV Pernilla Vallenback, Lantmännen  
AB Agnese Brantestam, Findus  
JS Jan Svensson, NordGen  
BC Belén Cotes, FMC

Breeding  
Bioinformatics  
SBL  
Study day  
Seminars























