

Course schedule: Plant biology for breeding and protection VT2023 (BI1296)

	Scheduled time	Lectures	Teachers	Online OR Lecture room (Ulluna OR Alnar)	Mandatory	Literature
Week 3	Mon 16-jan 9-10	Introduction to the course	EALex	Plantan/Sal H	Mandatory	
	Mon 16-jan 10-12	Introduction plant protection biology and history of plant protection	EALex	Plantan/Sal H		Tronsmo Ch 1+2; Denis Murphy Ch 7, section 7.5 + Ch 9, sections 9.1-9.3
	Mon 16-jan 13-15	Scenario Based learning (SBL) introduction and assignments	AC, Ealex	Online	Mandatory	
	Tue 17-jan 13-14	Introduction to plant breeding	MG	Online		Ortiz_1; Ortiz_2; Ortiz_3
	Tue 17-jan 14-15	Crop domestication	CH	Online		Fernie and Yan 2019; Purugganan 2019
	Tue 17-jan 15-16	Domestication of tropical trees	AM	Online		
	Wed 18-jan 10-12	Breeding methods for cereals	AC	Plantan		Tee et al. 1975; El-Hosarya et al. (2014). George Acquah Ch 16
	Thu 19-jan 13-15	Bioinformatics introduction	LP	Online		
Week 4	Fri 20-jan 13-15	Phenotyping and phenomics	AC	Plantan		George Acquah Ch 12
	Mon 23-jan 10-12	Breeding for grain and product quality	RK	Plantan		Troccoli et al 2000; Nuttall et al 2017; Guzman et al 2016
	Mon 23-jan 13-15	Phenotyping of climate resilience	ER	Online		Rosenqvist 2022
	Tue 24-jan	Study day				
	Wed 25-jan 9-11	Horticulture breeding	LG	Online		Nocker and Gardiner 2014
	Thu 26-jan 10-12	Challenges in potato breeding	MA	Online		
	Fri 27-jan 10-11	Breeding for oil crops	CH	Plantan		Rahman and Jiménez 2016
	Fri 27-jan 11-12	Overview of vining pea breeding	AB	Plantan		
Week 5	Mon 30-jan 13-16	Phenotyping data analysis lab	AC	Plantan	Mandatory	
	Tue 31-jan 9-10	Biotechnology - tissue culture and genome editing methods	LZ	Online		Songstad et al 2017; Zhu et al 2020; Li et al 2021
	Wed 01-feb 10-12	Introduction to quantitative genetics	MG	Plantan		Bazakos 2017; Nordborg and Weigel 2008; Hill 2010
	Wed 01-feb 13-15	Plant genetic resources	JS	Plantan		
	Thu 02-feb 13-15	Crop traits of importance for IPM	JAS	Plantan		Stenberg 2017
	Thu 02-feb 15-16	Resistance breeding	MR	Plantan		Buerstmayr et al 2019
	Fri 03-feb 10-12	Bioinformatics tools for plant breeding	AC	Online		
	Fri 03-feb 13-15	SBL discussion and introduction to bioinformatics exercise	AC, ÅL, AM, Ealex	Online	Mandatory	
Week 6	Mon 06-feb 10-12	Methods for Marker Assisted Selection (MAS)	PV	Online		
	Mon 06-feb 13-16	GWAS introduction and lab	AA	Online		A Guide to Genome-Wide Association Mapping in Plants (Burghardt et al. 2017)
	Tue 07-feb 10-12	Phenotyping the hidden half of the plant to identify traits for edaphic stress tolerance	TC	Sal Q, Uppsala		Bishop and Lynch, 2015, Nature Plants
	Wed 08-feb 10-12	Bioinformatics lab	LP/Ealex	Online	Mandatory	
	Thu 09-feb 10-12	Bioinformatics lab	LP/Ealex	Online	Mandatory	
	Fri 10-feb 10-12	Forestry breeding	TK	Plantan		the-status-of-tree-breeding-low.pdf (skogforsk.se)
Week 7	Mon 13-feb 9-16	Bioinformatics lab, reporting	LP/EALex	Online	Mandatory	
	Tue 14-feb 13-15	Bioinformatics gene expression + introduction to seminars	EALex	Online	Mandatory	Ramsak et al 2018
	Wed 15-feb 8-10	Challenges in South Africa: Biofortification of crops and Stem rust in wheat	WB/AB	Online		
	Wed 15-feb 10-12	Overview plant pests and pathogens	EALex	Online		Tronsmo Ch 3-8; Dean et al 2012; Newton et al 2010
	Thu 16-feb 11-12	Seminar: Challenges in South Africa	EALex	Online		
	Thu 16-feb 13-14	Viruses	AK	Plantan/Sal Q		Tronsmo Ch 7; Scholthof et al 2011
	Thu 16-feb 14-15	Bacteria	RV	Plantan/Sal Q		Tronsmo Ch 6; van der Does and Rep 2017; Fawke et al 2015; Whisson et al 2016; Mansfield et al 2012
	Fri 17-feb 9-10	Fungi and oomycetes	RV	Stora Sessionssalen		Tronsmo Ch4+5
	Fri 17-feb 10-12	Pest insects - plant-insect interactions, resistance problems and invasive species	KKG	Stora Sessionssalen		Tabashnik et al 2008; Izzo et al 2014; Goergen et al 2016
	Fri 17-feb 13-16	Microscopy lab	RV/MD	BÖL/Mikroskopisal	Mandatory	
Week 8	Mon 20-feb 11-12	Impact of combined Abiotic and Pathogen stress on plant growth	SRS	Online		
	Mon 20-feb 13-14	What a Plant Health company needs you to know	BC	Stora sessionssalen		
	Tue 21-feb 9-10	Monitoring pests and pathogens	EALex	Plantan		Maes et al 2018; Tedersoo et al 2018
	Tue 21-feb 10-12	Seminar: Pests and pathogens	EALex	Plantan	Mandatory	Dean et al 2012; Mansfield et al 2012; Schothof et al 2011; Izzo et al 2014
	Tue 21-feb 13-15	Plant innate immunity and defence 1	EALex	Plantan		Tronsmo Ch 10-12; Taiz and Zeiger Ed 6 Ch 23; Su et al 2018; Saijo et al 2018
	Wed 22-feb 9-10	Plant innate immunity and defence 2	EAnd	Plantan		Lenman et al 2015
	Wed 22-feb 10-12	Access and Benefit-sharing of Plant Genetic Resources	AS	Online		
	Thu 23-feb	Study day				
Fri 24-feb	Study day					
Week 9	Mon 27-feb 10-12	Epidemiology and plant-pathogen interaction in cultivated and wild study systems	ÅL	Plantan		Berg and Koskella 2018; Karasov et al 2018; Jousimo et al. 2014
	Mon 27-feb 13-15	Pesticides and biologicals	SR	Plantan		Tronsmo Ch 16; Shafi et al 2017; Pandin et al 2017
	Tue 28-feb 10-12	Induced resistance	EALex	Plantan		Bengtsson et al 2014; Balmer et al 2013; Sandroni et al 2020
	Tue 28-feb 13-15	Plant biotech for plant protection and future protection strategies	EALex	Plantan		Tronsmo Ch 19; Murphy Ch 9, sections 9.4-9.6
	Wed 01-mar 10-12	Seminar: host resistance	EALex	Online	Mandatory	Rayapurama et al 2020; Ngou et al 2021; Arora et al 2019
	Thu 02-mar 9-11	Plant protection and climate change	EALex	Online		Mikkelsen et al 2015; Lehsten et al 2017
	Thu 02-mar 11-12	SBL discussions	Ealex, ÅL, AM	Online		
	Fri 03-mar 9-12	Using mathematical modelling to manage plant resistance and pathogen evolution	LR	Online	Mandatory	Rimbaud L., Fabre F., Papaix J., Moury B., Lannou C., Barrett L. G. and Thrall P. H. (2021). Models of plant resi
	Fri 03-mar 13-15	Seminar: monitoring, prediction, epidemiology and climate change	EALex	Online	Mandatory	Ramsak et al 2018; Karasov et al 2017; Courbier et al 2020
	Week 10					