BELIS Course · Genotyping and Phenotyping in Legumes: tools, data and decisions for legume breeding

Córdoba (Spain), 12–16 April 2027 · 6 contact hours per day · 27 h in total

Calendar — draft v05, September 2026. Numbers refer to the modules of the programme.

Time	MONDAY 12 APRIL *Genotyping I*	TUESDAY 13 APRIL *Genotyping II*	WEDNESDAY 14 APRIL *Phenotyping I*	THURSDAY 15 APRIL *Phenotyping II + field demonstration*	FRIDAY 16 APRIL *Wrap -up and closure*
09:15–10:15	**1.** Official opening. Course presentation, objectives, participants & working approach *Course organisers*	**3.2** Practical session: designing and validating a diagnostic marker *P. Castro, N. Gutiérrez*	**4.1** Introduction to phenotyping in legume breeding *D. Rubiales*	**5.1** Remote sensing in grain and forage legume breeding *P. Lootens*	**6.1** Group work and final debate: designing a combined genotyping and phenotyping strategy for a given breeding objective and budget *All lecturers*
10:15–11:15	**2.1** Overview of genotyping and sequencing technologies (1/2) *TBC*	**3.3** Including genomic selection into perennial and grain legume breeding scheme *P. Annicchiarico*	**4.2** Case study, biotic #1: Soil pathogens *M. González* **4.3** Case study, biotic #2: Aphids & Weevils *E. Barilli*	**5.2** Spectral, spatial and AI concepts in (UAV) imagery *A. Kasprzak, P. Lootens*	
11:15–11:45	**COFFEE BREAK**				
11:45–12:45	**2.1** Overview of genotyping and sequencing technologies (2/2) *TBC* **2.2** From raw sequence data to usable marker data (1/2) *TBC*	**3.4** Genomic selection in forage and grain legume breeding (1/2) *M. Pégard*	**4.4** Case study, biotic #3: Red clover *H. Muylle* **4.5** Abiotic stress (1/2) *A. Visioni*	**5.3** Case study: Pixels to phenotypes: the lucerne case. *B. Julier* **5.4** Counting flowers using drone images to predict seed yield in red clover *A. Kasprzak*	**6.2** Closing session
12:45–14:00	**LUNCH**				
14:00–15:00	**2.2** From raw sequence data to usable marker data (2/2) *TBC*	**3.4** Genomic selection in forage and grain legume breeding (2/2) *M. Pégard*	**4.5** Abiotic stress (2/2) *A. Visioni* **4.6** Case study, abiotic #1: Drought *A. Visioni*	**5.5** Practical session: from images to trait values *A. Kasprzak, P. Lootens*	
15:00–16:00	**2.3** Guided debate & case study: which genotyping platform for which breeding objective? *TBC*	**3.5** Phenomic selection in pea: NIRS-based prediction as a low-cost complement or alternative to genotyping *M. Pégard*	**4.7** Case study, abiotic #2: Cold *P. Annicchiarico* **4.8** Use of spectroscopy for quality related traits evaluation on legumes (1/2) *B. Julier*	**FIELD DEMONSTRATION ACTIVITY** *(description to be provided)* *D. Rubiales*	
16:00–16:15	**BREAK**	**BREAK**	**BREAK**		
16:15–17:15	**3.1** KASP markers linked to key agronomic traits for chickpea breeding *P. Castro, N. Gutiérrez*	**3.6** Is artificial intelligence revolutionising bioinformatics analyses? *TBC*	**4.8** Use of spectroscopy for quality related traits evaluation on legumes (2/2) *B. Julier* **4.9** Case study, quality *J. M. Rojas*		

Genotyping block
Modules 1, 2 and 3 — 12 h

Phenotyping block
Modules 4 and 5 — 10 h

Technical field visit
Thursday afternoon — 2 h

Wrap -up and closure
Friday — 3 h

Breaks and lunch
Not counted as contact hours