Supplementary Table S1. Main results of the analysis of variance (ANOVA) for the effects of stage of harvest (SH), nitrogen rate (NR), cropping system (CS) and their interactions on concentration (%) of crude protein, ether extracts, ash, neutral-detergent fiber, acid-detergent fiber, non-fibrous carbohydrate, total digestible nutrients, and relative feed value of barley, field bean and combined forage.

Parameter	SH	N	CS	SHxN	SHxCS	NxCS	SHxNxC
			Barley				
CP (%)	*	**	**	ns	ns	ns	ns
EE (%)	*	**	ns	ns	ns	ns	ns
Ash (%)	*	**	**	ns	ns	ns	ns
NDF (%)	**	**	**	ns	ns	ns	ns
ADF (%)	**	**	**	ns	ns	ns	ns
ADL (%)	ns	ns	**	ns	**	ns	ns
NFC (%)	**	**	**	ns	ns	ns	ns
TDN (%)	**	**	**	ns	ns	ns	ns
RFV (%)	**	**	**	ns	ns	ns	ns
			Field bean				
CP (%)	*	ns	**	ns	ns	ns	ns
EE (%)	ns	*	**	ns	ns	ns	ns
Ash (%)	**	**	**	ns	ns	ns	ns
NDF (%)	**	ns	*	ns	ns	ns	ns
ADF (%)	ns	*	ns	ns	ns	ns	ns
ADL (%)	**	*	**	ns	**	ns	ns
NFC (%)	**	ns	**	ns	ns	ns	ns
TDN (%)	*	*	ns	ns	ns	ns	ns
RFV (%)	**	*	*	ns	ns	ns	ns
			Combined forage				
CP (%)	*	ns	**	ns	ns	ns	ns
EE (%)	*	**	**	ns	ns	ns	ns
Ash (%)	*	ns	*	ns	ns	ns	ns
NDF (%)	**	**	ns	ns	ns	ns	ns
ADF (%)	**	*	**	ns	*	ns	ns
ADL (%)	**	ns	**	ns	**	ns	ns
NFC (%)	**	**	*	ns	ns	ns	ns
TDN (%)	**	*	**	ns	ns	ns	ns
RFV (%)	**	**	ns	ns	ns	ns	ns

**: $p \leq 0.01$; *: $p \leq 0.05$; ns: not significant ($p > 0.05$).

CP: crude protein concentration; EE: ether extract concentration; NDF: neutral-detergent fiber concentration; ADF: acid-detergent fiber concentration; NFC: non-fibrous carbohydrate concentration; TDN: total digestible nutrient concentration.

Supplementary Table S2. Main results of the analysis of variance (ANOVA) for the effects of stage of harvest (SH), nitrogen rate (NR), cropping system (CS) and their interactions on yields (g m^{-2}) of crude protein, ether extracts, ash, neutral-detergent fiber, acid-detergent fiber, non-fibrous carbohydrate, and total digestible nutrients, field bean and combined forage.

Parameter	SH	N	CS	SHxN	SHxCS	NxCS	SHxNxC
			Barley				
CPY (g m^{-2})	*	**	ns	ns	ns	ns	ns
EEY (g m^{-2})	*	**	**	ns	**	**	ns
NDFY (g m^{-2})	*	**	**	ns	ns	**	ns
ADFY (g m^{-2})	*	**	**	ns	ns	**	ns
NFCY (g m^{-2})	**	**	**	ns	ns	**	ns
TDNY (g m^{-2})	*	**	**	ns	**	**	ns
			Field bean				
CPY (g m^{-2})	*	*	**	ns	ns	ns	ns
EEY (g m^{-2})	*	*	**	ns	ns	ns	ns
NDFY (g m^{-2})	*	**	**	ns	ns	ns	ns
ADFY (g m^{-2})	*	*	**	ns	ns	ns	ns
NFCY (g m^{-2})	**	*	**	ns	ns	ns	ns
TDNY (g m^{-2})	**	*	**	ns	ns	ns	ns
			Combined forage				
CPY (g m^{-2})	*	**	**	ns	ns	ns	ns
EEY (g m^{-2})	*	**	**	ns	ns	ns	ns
NDFY (g m^{-2})	*	**	**	ns	ns	ns	ns
ADFY (g m^{-2})	*	**	**	ns	ns	ns	ns
NFCY (g m^{-2})	**	**	**	ns	ns	ns	ns
TDNY (g m^{-2})	**	**	**	ns	ns	ns	ns

**: $p \leq 0.01$; *: $p \leq 0.05$; ns: not significant ($p > 0.05$).

CPY: crude protein yield; EEY ether extract yield; NDFY: neutral-detergent fiber yield; ADFY: acid-detergent fiber yield; NFCY: non-fibrous carbohydrate yield; TDNY: total digestible nutrient yield.