

APPENDIX 1. Probabilities of predictors used in the final models for prediction of animal-based Welfare Quality® indicators. Indicators were not used as potential predictors when they belonged to the same assessment method as the outcome variable (indicated in grey).

Predictor:	Animal-based Welfare Quality® indicator (outcome variable):																				
	ADF index	QBA index	QBA index + 10	Freq. head butts/cow/h	Freq. displacements/cow/h	Mean time to lie down (s)	% of cows:	- colliding with stall	- lying outside lying area	- dirty hind legs	- dirty udder	- dirty hind quarters	- ocular discharge	- nasal discharge	- diarrhoea	- vulvar discharge	- very lean	- lame	- severely lame	- hairless patches	- lesions/swellings
Herd size																	*				
ADF index	***		**														**	**	**		*
QBA index	***		**														**	**	**		+
Freq. head butts/cow/h				**						*											
Freq. displacements/cow/h		*															+				
Freq.																					
coughing/cow/15minutes																					
Mean time to lie down (s)																		*	***		
% of cows:																					
- colliding with stall	*																				*
- lying outside lying area	*	*																			
- dirty hind legs	*			**			~		*											**	**
- dirty udder																					
- dirty hindquarters				*																	
- ocular discharge							*														
- nasal discharge							*														
- diarrhoea								**													
- vulvar discharge									+												

- hampered respiration														
- very lean														
- lame	**	*	*		**	*		***						
- severely lame			**											
- hairless patches			**											
- lesions/swellings					*		***							
- SCC > 400 000		+							*	*			~	
- dystocia														
- dead on-farm		*										*		+
Type of housing			**			**		*						
Sufficient drinkers (y/n)		*										+	**	*
≥2 drinkers/cow (y/n)											*			~
Access to pasture (y/n)									+		*		**	+
Dehorning young stock (y/n)												*		***

~ P < 0.25
 + P < 0.10
 * P < 0.05
 ** P < 0.01
 *** P < 0.001