Table S1: The pre-ensiled maize composition, the number of observations (N. obs), the minimum value (Min), the maximum value (Max), the first to third quartile (I Q, II Q, and III Q), the mean and the standard deviation (St.Dev.) of the dataset

	N. obs	Min	Max	I Q	II Q	III Q	Mean	St.Dev.
Dry matter (DM, g/kg)	88	252	437	291	324	365	334	51.3
Ash (g/kg of the DM)	88	32.0	45.6	36.0	37.0	39.6	37.7	2.54
Crude protein (g/kg of the DM)	88	57.0	70.1	62.0	64.2	66.5	64.1	3.11
Fat (g/kg of the DM)	88	22.8	33.0	26.4	27.8	28.0	27.5	2.05
aNDF (g/kg of the DM)	88	364	482	389	428	458	423	34.0
ADF (g/kg of the DM)	88	197	280	214	241	263	239	25.5
Lignin (g/kg of the DM)	88	22.0	31.8	25.0	28.0	30.9	27.7	3.09
Starch (g/kg of the DM)	88	240	394	290	303	323	307	34.3
Water soluble carbohydrates (g/kg of the DM)	88	43	91	56	68	76	66	12.5
Density (kg/m^3)	88	141	226	164	179	200	182	22.0
Porosity (decimals)	88	0.44	0.63	0.50	0.53	0.57	0.53	0.05

Table S2: The means for pre-ensiled chemical traits of harvested maize in 2018, 2019, and 2020, the means for pre-ensiled chemical traits of silages performed (event =1) or not (event = 0) the event of aerobic instability.

	Outcomes				Years			
	0	1	P		2018	2019	2020	P
Dry matter (DM, g/kg)	334	334	0.99		321b	297b	373a	< 0.001
Ash (g/kg of the DM)	37.3	38.1	0.1		40.2a	38.2b	36.0c	< 0.001
Crude protein (g/kg of the DM)	64.0	64.3	0.73		66.0a	66.0a	61.6b	< 0.001
Fat (g/kg of the DM)	27.6	27.3	0.41		25.7c	27.3b	28.6a	< 0.001
aNDF (g/kg of the DM)	424	421	0.75		457a	446b	387c	< 0.001
ADF (g/kg of the DM)	240	236	0.54		262a	257a	212b	< 0.001
Lignin (g/kg of the DM)	240	237	0.54		262a	257a	212b	< 0.001
Starch (g/kg of the DM)	308	306	0.81		266c	301b	331a	< 0.001
Water soluble carbohydrates (g/kg of the DM)	63.3	71.7	0.003		66.3	66.6	65.3	0.91
Density (kg/m^3)	181	185	0.44		161b	168b	204a	< 0.001
Porosity (decimals)	0.53	0.54	0.25		0.50b	0.52b	0.56a	< 0.001

Table S3: Univariate Cox Model for the event of aerobic instability, evaluated for qualitative variables. The use of inoculant (inoculant = 1) for *Lactobacillus buchneri* (Lb), compared with the control (pure water); the time of silos sealing delays of 6 and 20 h, compared with 1 h delay; the harvesting years 2019 and 2020, compared with 2018. Univariable Cox Model for the event of aerobic instability evaluated for density and porosity.

	Hazard ratio	Lower 95%CI	Upper 95%CI	p.value	P (cox.zph)
Incoculant = 1	0.76	0.35	1.62	0.47	0.27
delay 6	1.40	0.58	3.38	0.45	0.19
delay 20	1.77	0.75	4.17	0.19	0.19
Year 2019	10.0	1.33	75.6	0.02	0.11
Year 2020	5.72	0.74	44.0	0.09	0.11
Density (kg/m^3)	1.01	0.99	1.02	0.50	0.52
Porosity (decimals)	32.34	0.03	39980	0.34	0.25

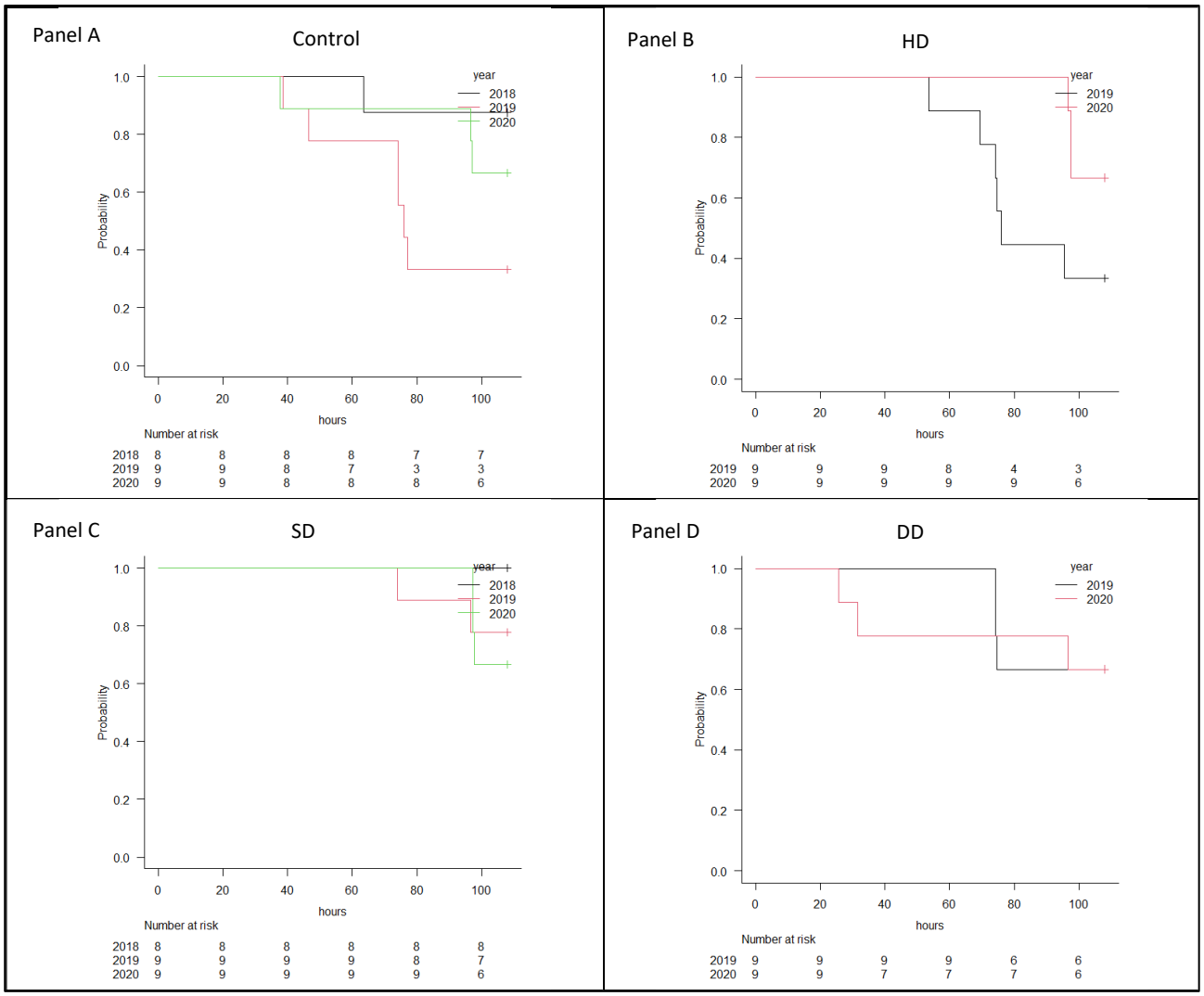

Figure S1. The Kaplan-Meier stratified per *Lactobacillus buchneri* (Lb) dosage for the different years (2018, 2019, and 2020). Panel A, the Kaplan-Meier curve for the probability of aerobic instability onset of maize silage exposed to air right-censored at 108 h, using pure water (inoculant = 0, control, $p = 0.05$). Panel B, C and D, the Kaplan Meier curve for the probability of aerobic instability onset of maize silage exposed to air right-censored at 108 h, for the use of Lb (inoculant = 1) for maize treated with a half dosage (HD, $p = 0.05$), standard dosage (SD, $p = 0.26$), or double dosage (DD, $p = 0.92$), respectively.

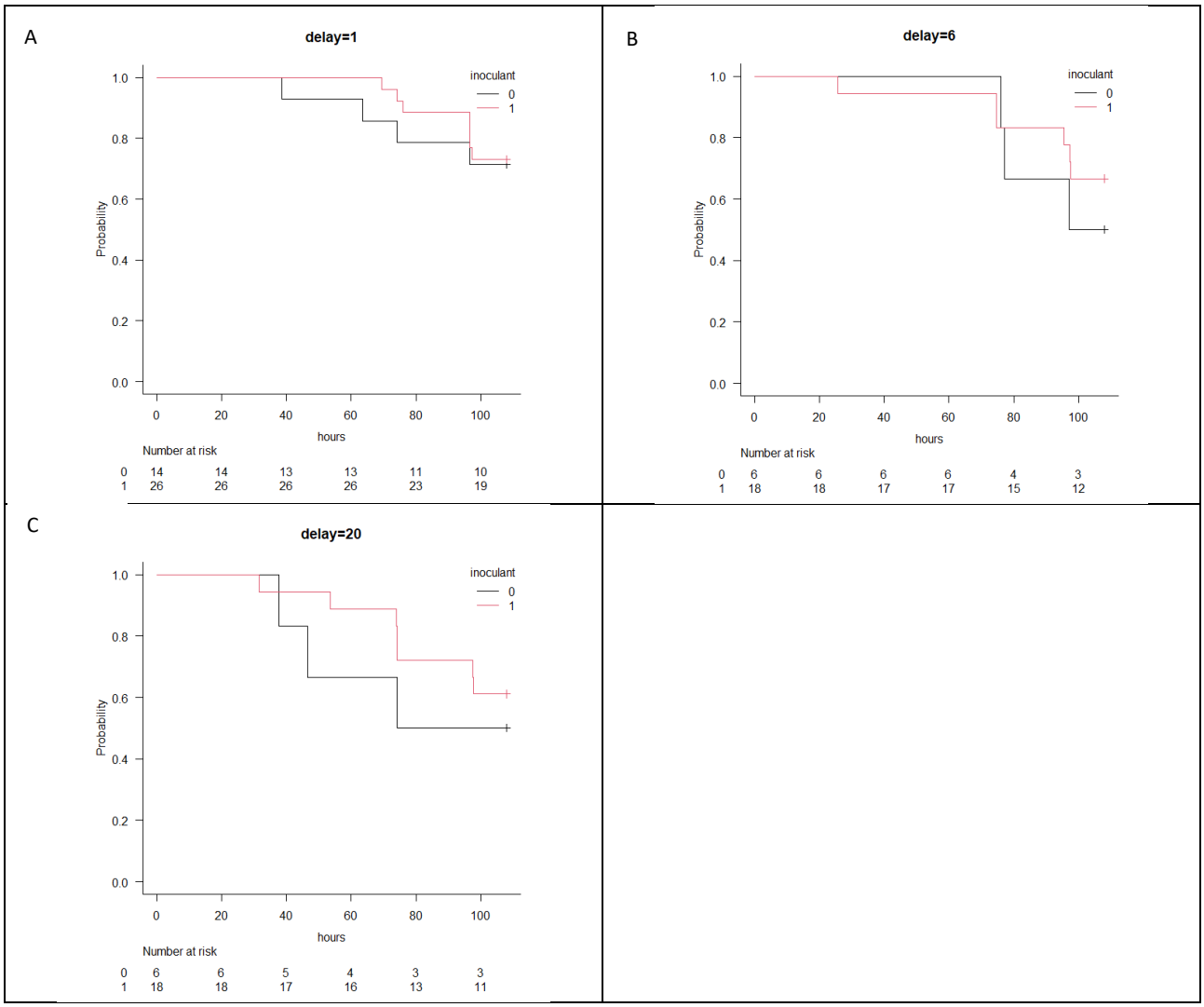

Figure S2. The Kaplan Meier stratified per delays for *Lactobacillus buchneri* (Lb). (**A**), (**B**) and (**C**), the Kaplan Meier curve for the probability of aerobic instability onset of maize silage exposed to air right-censored at 108 h, using pure water (inoculant = 0, control) or with the use of Lb (inoculant = 1, regardless of the dosage) at silos sealing delay of 1 h ($p = 0.79$), 6 h ($p = 0.48$) and 20 h ($p = 0.50$), respectively.