Supplementary Files:

Table S1: Bacterial growth on the four different sugars, indicated as good (+) where clear visible bacterial growth was observed, moderate (/) where faint bacterial growth was observed and no growth (-) where no growth was observed, in comparison with 10 % MRS + glucose, for the Study group: non-engineered environmental *L. lactis* strains used in this study.

DPC Code*	Species/subspecies (ssp)	Isolation source	MRS +Glucose	MRS +Galactose	MRS +Arabinose	MRS +Xylose
-	*Pediococcus acidilactici*	Barley	+	+	+	+
KF147	*Lactococcus lactis* ssp. *lactis*	Mung bean sprouts	+	+	+	+
6754	*Lactococcus lactis* ssp. *lactis*	Green peas	+	+	+	+
6755	*Lactococcus lactis* ssp. *lactis*	Green peas	+	+	+	+
6756	*Lactococcus lactis* ssp. *lactis*	Green peas	+	+	+	+
6757	*Lactococcus lactis* ssp. *lactis*	Green peas	+	+	/	+
6758	*Lactococcus lactis* ssp. *lactis*	Green peas	+	+	+	+
6759	*Lactococcus lactis* ssp. *lactis*	Green peas	+	+	+	+
6760	*Lactococcus lactis* ssp. *lactis*	Grass	+	+	+	+
6761	*Lactococcus lactis* ssp. *lactis*	Grass	+	+	+	/
6762	*Lactococcus lactis* ssp. *lactis*	Baby corn	+	+	+	+
6763	*Lactococcus lactis* ssp. *lactis*	Grass	+	+	+	+
6764	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	+	+
6765	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	+	+
6853	*Lactococcus lactis* ssp. *lactis*	Corn	+	+	-	/
6854	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	-	-
6855	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	-	-
6856	*Lactococcus lactis* ssp. *cremoris*	Rumen	+	+	-	-
6857	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	-	/
6858	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	-	/
6859	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	-	/
6860	*Lactococcus lactis* ssp. *cremoris*	Grass	+	+	-	/

*DPC CC is the Teagasc DPC Culture Collection housed at the Teagasc Food Research Centre, Moorepark, Fermoy, Cork, Ireland.

Table S2: Bacterial growth on the four different sugars, indicated as good (+) where clear visible bacterial growth was observed, moderate (/) where faint bacterial growth was observed and no growth (-) where no growth was observed, in comparison with 10 % MRS + glucose for other species/subspecies with proven lignocellulose metabolization potential used in this study for comparison to our study group.

DPC Code*	Species/subspecies (ssp)	Isolation source	MRS +Glucose	MRS +Galactose	MRS +Arabinose	MRS +Xylose
6417	*Lactobacillus plantarum*	Teat rinse	+	+	-	/
6421	*Lactobacillus plantarum*	Bovine faeces	+	+	+	/
6427	*Levilactobacillus brevis*	Silage	+	+	+	+
6428	*Lactobacillus plantarum*	Silage	+	/	-	/
6429	*Lactobacillus plantarum*	Hand rinse	+	+	+	+
6430	*Lactobacillus plantarum*	Water milking yard	+	+	/	/
6606	*Lactiplantibacillus pentosus*	Olives	+	+	+	+
6607	*Lactiplantibacillus pentosus*	Olives	+	-	-	/
6608	*Lactiplantibacillus pentosus*	Olives	+	+	/	+
6609	*Lactiplantibacillus pentosus*	Olives	+	+	-	/
6616	*Lactiplantibacillus pentosus*	Silage	+	+	+	+
6617	*Lactiplantibacillus pentosus*	Silage	+	+	/	/
6618	*Lactiplantibacillus pentosus*	Silage	+	+	/	/
6619	*Lactiplantibacillus pentosus*	Silage	+	+	+	+
6620	*Lactiplantibacillus pentosus*	Olives	+	+	+	+
6622	*Lactiplantibacillus pentosus*	Olives	+	+	+	+
6623	*Lactiplantibacillus pentosus*	Olives	+	+	+	+
6624	*Lactiplantibacillus pentosus*	Olives	+	+	/	-
6625	*Lactiplantibacillus pentosus*	Olives	+	+	+	/
6627	*Lactiplantibacillus pentosus*	Olives	+	+	/	+
6628	*Lactiplantibacillus pentosus*	Olives	+	+	-	/
6667	*Lactobacillus plantarum*	Silage	+	+	+	/
6672	*Lactobacillus plantarum*	Silage	+	+	-	/
6682	*Lactobacillus plantarum*	Japanese pickles	+	/	-	/
6730	*Levilactobacillus brevis*	Japanese pickles	+	+	+	+
7020	*Lactobacillus plantarum*	Rumen	+	+	+	/

*DPC CC is the Teagasc DPC Culture Collection housed at the Teagasc Food Research Centre, Moorepark, Fermoy, Cork, Ireland.

Table S3: All the bacterial strains used in this study, including their isolation source and the main tests performed in this study. Pentose utilization test refers to (+) when the strain was able to grow in all

four sugars (glucose, galactose, arabinose and xylose). MRS + Glucose, MRS + Galactose, MRS + Arabinose and MRS + Xylose refers to the mean of the growth rates (OD600 µmax (h-1)). Cellulolytic activity refers to the mean of the DNS-based assay (mg ml-1 min).

Strain number	Species/subspecies (ssp)	Isolation source	Pentose utilization test	MRS+ Glucose	MRS+ Galactose	MRS+ Arabinose	MRS+ Xylose	CMC agar	Cellulolytic activity
KF147	*L. lactis*	Mung bean sprouts	+	0.075	0.064	0.051	0.031	+	0.714
DPC 6754	*L. lactis* ssp. *lactis*	Green peas	+	0.16	0.062	0.053	0.034	+	0.555
DPC 6755	*L. lactis* ssp. *lactis*	Green peas	+	0.159	0.05	0.051	0.035	+	0.427
DPC 6756	*L. lactis* ssp. *lactis*	Green peas	+	0.089	0.044	0.048	0.026	+	0.677
DPC 6757	*L. lactis* ssp. *lactis*	Green peas	-	nd*	nd	nd	nd	-	nd
DPC 6758	*L. lactis* ssp. *lactis*	Green peas	+	0.174	0.074	0.081	0.035	+	0.34
DPC 6759	*L. lactis* ssp. *lactis*	Green peas	+	0.103	0.039	0.018	0.018	-	nd
DPC 6760	*L. lactis* ssp. *lactis*	Grass	+	0.085	0.13	0.064	0.033	+	0.755
DPC 6761	*L. lactis* ssp. *lactis*	Grass	-	nd	nd	nd	nd	+	0.839
DPC 6762	*L. lactis* ssp. *lactis*	Baby corn	+	0.091	0.027	0.078	0.029	-	nd
DPC 6763	*L. lactis* ssp. *lactis*	Grass	+	0.17	0.111	0.056	0.035	-	nd
DPC 6764	*L. lactis* ssp. *cremoris*	Grass	+	0.18	0.072	0.076	0.046	-	nd
DPC 6765	*L. lactis* ssp. *cremoris*	Grass	+	0.096	0.051	0.014	0.018	-	nd
DPC 6853	*L. lactis* ssp. *lactis*	Corn	-	nd	nd	nd	nd	-	nd
DPC 6854	*L. lactis* ssp. *cremoris*	Grass	-	nd	nd	nd	nd	-	nd
DPC 6855	*L. lactis* ssp. *cremoris*	Grass	-	nd	nd	nd	nd	+	0.522
DPC 6856	*L. lactis* ssp. *cremoris*	Rumen	-	nd	nd	nd	nd	-	nd
DPC 6857	*L. lactis* ssp. *cremoris*	Grass	-	nd	nd	nd	nd	-	nd
DPC 6858	*L. lactis* ssp. *cremoris*	Grass	-	nd	nd	nd	nd	+	0.69
DPC 6859	*L. lactis* ssp. *cremoris*	Grass	-	nd	nd	nd	nd	-	nd
DPC 6860	*L. lactis* ssp. *cremoris*	Grass	-	nd	nd	nd	nd	+	0.403
DPC 6606	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6607	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6608	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6609	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6616	*Lactiplantibacillus pentosus*	Silage	+	0.137	0.046	0.049	0.02	-	nd
DPC 6617	*Lactiplantibacillus pentosus*	Silage	-	nd	nd	nd	nd	-	nd
DPC 6618	*Lactiplantibacillus pentosus*	Silage	-	nd	nd	nd	nd	-	nd
DPC 6619	*Lactiplantibacillus pentosus*	Silage	+	0.217	0.139	0.095	0.064	-	nd
DPC 6620	*Lactiplantibacillus pentosus*	Olives	+	0.209	0.133	0.085	0.043	-	nd
DPC 6622	*Lactiplantibacillus pentosus*	Olives	+	0.223	0.135	0.097	0.06	-	nd
DPC 6623	*Lactiplantibacillus pentosus*	Olives	+	0.211	0.128	0.089	0.056	-	nd
DPC 6624	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6625	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6627	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6628	*Lactiplantibacillus pentosus*	Olives	-	nd	nd	nd	nd	-	nd
DPC 6417	*Lactobacillus plantarum*	Teat rinse	-	nd	nd	nd	nd	-	nd
DPC 6421	*Lactobacillus plantarum*	Bovine faeces	-	nd	nd	nd	nd	-	nd
DPC 6428	*Lactobacillus plantarum*	Silage	-	nd	nd	nd	nd	-	nd
DPC 6429	*Lactobacillus plantarum*	Hand rinse	+	0.115	0.052	0.055	0.037	-	nd

DPC 6430	*Lactobacillus plantarum*	Water milking yard	-	nd	nd	nd	nd	-	nd
DPC 6667	*Lactobacillus plantarum*	Silage	-	nd	nd	nd	nd	-	nd
DPC 6672	*Lactobacillus plantarum*	Silage	-	nd	nd	nd	nd	-	nd
DPC 6682	*Lactobacillus plantarum*	Japanese pickles	-	nd	nd	nd	nd	-	nd
DPC 7020	*Lactobacillus plantarum*	Rumen	-	nd	nd	nd	nd	-	nd
DPC 6427	*Levilactobacillus brevis*	Silage	+	0.041	0.05	0.077	0.077	-	nd
DPC 6730	*Levilactobacillus brevis*	Japanese pickles	+	0.071	0.017	0.018	0.028	-	nd
DSM 20284	*Pediococcus acidilactici*	Barley	+	0.181	0.129	0.086	0.062	-	nd

nd*: Not determined (due to a negative result in a preliminary qualitative test)