Supplementary tables to:

In-vitro antimicrobial resistance of *Escherichia coli, Serratia marcescens, Klebsiella oxytoca* and *Klebsiella pneumoniae* on Bavarian dairy farms between 2014-2022

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Supplemental Table S1. Distribution of MIC, MIC50 and MIC90 for *Escherichia coli* of quarter milk samples by antimicrobial and year. Vertical lines indicate breakpoints. The MIC50 and MIC90 (M50/90) denote the MIC where 50% and 90% of isolates were susceptible to tested antibiotics, respectively.

Antimicrobial	Year	MIC (µg/mL)			
		<=4/2	8/4	16/8	>=32/16
Amoxicillin/ clavulanate	all	86.2% M50	7.7% M90	4.2%	1.9%
	2014	80%	8%	7%	5%
	2015	85%	7%	5%	3%
	2016	87%	7%	4%	2%
	2017	88%	5%	5%	2%
	2018	88%	7%	3%	2%
	2019	86%	9%	3%	2%
	2020	86%	7%	5%	2%
	2021	84%	10%	4%	2%
	2022	87%	8%	4%	1%
		<=4/0.4	8/0.8	16/1.6	>32/3.2
Kanamycin/ cefalexin	all	89.6% M50	2.4% M90	0.6%	7.4%
	2014	88%	4%	1%	7%
	2015	89%	4%	1%	6%
	2016	90%	3%	1%	6%
	2017	92%	2%	1%	5%
	2018	91%	2%	1%	6%
	2019	91%	2%	-	7%
	2020	90%	2%	-	8%
	2021	87%	2%	1%	10%
	2022	88%	2%	-	10%
		<=4	8	16	>=32
Cefazolin	all	91.0% M59/90	2.3%	1.1%	5.6%
	2014	90%	2%	1%	7%
	2015	87%	4%	2%	7%
	2016	88%	2%	2%	8%
	2017	89%	2%	2%	7%
	2018	91%	3%	1%	6%
	2019	92%	2%	-	6%
	2020	93%	2%	1%	4%
	2021	92%	2%	1%	5%
	2022	95%	2%	1%	2%
		<=2	4	8	>=16
Cefoperazone	all	90.9% M50/90	2.5%	1.0%	5.6%
	2014	89%	4%	-	7%
	2015	88%	2%	2%	8%
	2016	90%	3%	1%	7%
	2017	91%	2%	1%	6%
	2018	91%	2%	1%	6%
	2019	93%	2%	1%	4%
	2020	93%	3%	1%	3%
	2021	90%	3%	1%	6%

		2022	92%	3%	2%	4%

		<=1	2	4	>8
Cefquinome	all	93.0% M50/90	2.6%	0.8%	3.6%
	2014	93%	3%	-	4%
	2015	92%	3%	1%	4%
	2016	91%	4%	1%	4%
	2017	92%	3%	-	5%
	2018	94%	2%	-	4%
	2019	94%	3%	-	3%
	2020	94%	3%	1%	2%
	2021	91%	4%	1%	4%
	2022	95%	2%	1%	2%

		<=0.25	0.5	1	>2
Marbofloxacin	all	89.0% M50	4.7% M90	1.2%	5.1%
	2014	87%	6%	2%	5%
	2015	87%	6%	2%	5%
	2016	87%	5%	2%	6%
	2017	86%	7%	2%	5%
	2018	89%	5%	1%	5%
	2019	91%	3%	1%	5%
	2020	90%	4%	1%	5%
	2021	90%	4%	1%	5%
	2022	91%	4%	1%	4%

Supplemental Table S2. Distribution of MIC, MIC50 and MIC90 for *Klebsiella oxytoca* of quarter milk samples by antimicrobial and year, vertical lines indicate breakpoints. The MIC50 and MIC90 (M50/90) denote the MIC where 50% and 90% of isolates were susceptible to tested antibiotics, respectively.

Antimicrobial	Year	MIC (µg/mL)			
		<=4/2	8/4	16/8	>=32/16
Amoxicillin/ clavulanate	all	96.2% [M50/90]	1.8%	0.8%	1.2%
	2014	88%	7%	2%	3%
	2015	93%	3%	1%	3%
	2016	99%	1%	-	-
	2017	97%	-	1%	2%
	2018	96%	2%	-	2%
	2019	98%	1%	1%	-
	2020	99%	-	1%	-
	2021	96%	2%	2%	-
	2022	97%	2%	-	1%
		<=4/0.4	8/0.8	16/1.6	>32/3.2
Kanamycin/ cefalexin	all	84.8% [M50]	7.4% [M90]	6.7%	1.1%
	2014	84%	9%	7%	-
	2015	92%	3%	3%	2%
	2016	92%	6%	1%	1%
	2017	86%	7%	7%	-
	2018	85%	5%	8%	2%
	2019	90%	5%	5%	-
	2020	78%	8%	11%	3%
	2021	73%	18%	9%	-
	2022	85%	6%	7%	2%
		<=4	8	16	>=32
Cefazolin	all	79.0% [M50]	11.4% [M90]	4.7%	4.9%
	2014	66%	14%	12%	8%
	2015	75%	14%	8%	3%
	2016	77%	16%	4%	3%
	2017	78%	8%	4%	8%
	2018	79%	9%	5%	7%
	2019	85%	9%	3%	3%
	2020	86%	6%	3%	5%
	2021	81%	14%	3%	2%
	2022	78%	13%	3%	6%
		<=2	4	8	>=16
Cefoperazone	all	89.4% [M50]	6.1% [M90]	1.3%	3.2%
	2014	79%	5%	4%	12%
	2015	86%	7%	2%	5%
	2016	89%	10%	1%	-
	2017	80%	12%	2%	6%
	2018	92%	6%	-	2%
	2019	93%	4%	-	3%
	2020	90%	8%	2%	-
	2021	94%	4%	1%	1%
	2022	92%	2%	2%	4%

Cefquinome		<=1	2	4	>8
	all	**95.4%** [M50/90]	**4,0%**	**0.3%**	**0.3%**
	2014	83%	17%	-	-
	2015	94%	4%	1%	1%
	2016	99%	1%	-	-
	2017	96%	4%	-	-
	2018	95%	5%	-	-
	2019	99%	1%	-	-
	2020	95%	5%	-	-
	2021	96%	4%	-	-
	2022	97%	1%	1%	1%

Marbofloxacin		<=0.25	0.5	1	>2
	all	**95.4%** [M50/90]	**3.2%**	**0.8%**	**0.6%**
	2014	93%	7%	-	-
	2015	90%	8%	-	-
	2016	97%	3%	-	-
	2017	95%	4%	1%	-
	2018	95%	2%	3%	-
	2019	98%	2%	-	-
	2020	97%	1%	2%	-
	2021	96%	3%	-	1%
	2022	97%	2%	-	1%

Supplemental Table S3. Distribution of MIC, MIC50 and MIC90 for *Klebsiella pneumoniae* of quarter milk samples by antimicrobial and year, vertical lines indicate breakpoints. The MIC50 and MIC90 (M50/90) denote the MIC where 50% and 90% of isolates were susceptible to tested antibiotics, respectively.

Antimicrobial	Year	MIC (µg/mL)			
		<=4/2	8/4	16/8	>=32/16
Amoxicillin/ clavulanate	all	94.8% M50/90	2.8%	1.1%	1.3%
	2014	83%	12%	5%	-
	2015	88%	4%	4%	4%
	2016	93%	-	-	7%
	2017	95%	3%	1%	1%
	2018	94%	3%	-	3%
	2019	96%	3%	1%	-
	2020	93%	4%	2%	1%
	2021	96%	3%	1%	-
	2022	98%	1%	-	1%
		<=4/0.4	8/0.8	16/1.6	>32/3.2
Kanamycin/ cefalexin	all	96.8% M50/90	0.7%	0.4%	2.1%
	2014	100%	-	-	-
	2015	94%	4%	2%	-
	2016	96%	2%	-	2%
	2017	92%	3%	1%	4%
	2018	94%	-	2%	4%
	2019	99%	-	-	1%
	2020	95%	1%	-	4%
	2021	97%	-	-	3%
	2022	100%	-	-	-
		<=4	8	16	>=32
Cefazolin	all	94.8% M50/90	0.9%	0.6%	3.7%
	2014	93%	3%	2%	2%
	2015	85%	2%	-	13%
	2016	89%	4%	-	7%
	2017	92%	-	-	8%
	2018	96%	1%	-	3%
	2019	98%	-	1%	1%
	2020	93%	2%	1%	4%
	2021	95%	1%	1%	3%
	2022	98%	-	-	2%
		<=2	4	8	>=16
Cefoperazone	all	93.9% M50/90	1.7%	0.7%	3.7%
	2014	98%	-	2%	-
	2015	92%	-	-	8%
	2016	89%	4%	-	7%
	2017	90%	7%	-	3%
	2018	93%	2%	2%	3%
	2019	100%	-	-	-
	2020	90%	2%	1%	7%
	2021	94%	2%	1%	3%
	2022	95%	1%	1%	3%

Cefquinome		<=1	2	4	>8
	all	**96.1%** M50/90	**2.3%**	**0.4%**	**1.2%**
	2014	100%	-	-	-
	2015	94%	-	2%	4%
	2016	98%	2%	-	-
	2017	97%	1%	1%	1%
	2018	96%	2%	-	2%
	2019	99%	-	1%	-
	2020	97%	1%	1%	1%
	2021	93%	4%	-	3%
	2022	97%	3%	-	-

Marbofloxacin		<=0.25	0.5	1	>2
	all	**93.3%** M50/90	**4.1%**	**1.8%**	**0.8%**
	2014	90%	5%	5%	-
	2015	86%	8%	6%	-
	2016	89%	9%	2%	-
	2017	93%	6%	1%	-
	2018	93%	4%	2%	1%
	2019	94%	4%	-	2%
	2020	96%	3%	1%	-
	2021	92%	5%	2%	1%
	2022	96%	2%	1%	1%

Supplemental Table S4. Distribution of MIC, MIC50 and MIC90 for *Serratia marcescens* of quarter milk samples by antimicrobial and year, vertical lines indicate breakpoints. The MIC50 and MIC90 (M50/90) denote the MIC where 50% and 90% of isolates were susceptible to tested antibiotics, respectively.

Antimicrobial	Year	MIC (µg/mL)			
		<=4/0.4	8/0.8	16/1.6	>32/3.2
Kanamycin/ cefalexin	all	92.9% [M50/90]	4.3%	1.0%	1.8%
	2014	83%	13%	4%	-
	2015	94%	5%	1%	-
	2016	95%	3%	1%	1%
	2017	93%	4%	1%	2%
	2018	94%	4%	1%	1%
	2019	94%	4%	1%	1%
	2020	91%	5%	2%	2%
	2021	92%	4%	2%	2%
	2022	93%	4%	1%	2%
		<=2	4	8	>=16
Cefoperazone	all	85.6% [M50]	6.8% [M90]	1.8%	5.8%
	2014	79%	13%	-	8%
	2015	86%	8%	2%	4%
	2016	88%	8%	1%	3%
	2017	83%	8%	3%	6%
	2018	91%	5%	2%	2%
	2019	88%	7%	1%	3%
	2020	85%	7%	2%	6%
	2021	81%	8%	2%	9%
	2022	85%	5%	1%	9%
		<=1	2	4	>8
Cefquinome	all	91.4% [M50/90]	4.9%	1.6%	2.1%
	2014	96%	4%	-	-
	2015	92%	4%	1%	3%
	2016	93%	6%	-	1%
	2017	91%	5%	2%	2%
	2018	95%	4%	1%	-
	2019	93%	4%	1%	2%
	2020	91%	5%	2%	2%
	2021	89%	6%	3%	2%
	2022	89%	5%	2%	4%
		<=0.25	0.5	1	>2
Marbofloxacin	all	93.0% [M50/90]	4.4%	1.3%	1.3%
	2014	96%	4%	-	-
	2015	95%	4%	1%	-
	2016	95%	3%	1%	1%
	2017	92%	5%	1%	2%
	2018	94%	5%	1%	-
	2019	95%	3%	1%	1%
	2020	92%	5%	1%	2%
	2021	91%	5%	2%	2%
	2022	93%	4%	1%	2%