Appendix 1 to the report

Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2024

Trends and benchmarking of livestock farms and veterinarians

SDa-expertpanel
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Autoriteit Diergeneesmiddelen

Contents

$DDDA_{NAT}$ summary

Table A1. $DDDA_{NAT}$ values for the 2020-2024 period, by livestock sector and pharmacotherapeutic group

	Broiler farming sector					Turkey farming sector					Pig farming sector				
Pharmacotherapeutic group	**2020**	**2021**	**2022**	**2023**	**2024**	**2020**	**2021**	**2022**	**2023**	**2024**	**2020**	**2021**	**2022**	**2023**	**2024**
1st-choice antibiotics	**2.55**	**1.75**	**1.56**	**1.86**	**1.75**	**8.32**	**6.73**	**4.86**	**2.76**	**5.12**	**6.46**	**5.47**	**3.93**	**4.03**	**4.36**
As a proportion of overall AB use	**27.5%**	**27.7%**	**26.7%**	**27.0%**	**33.7%**	**61.1%**	**51.8%**	**52.6%**	**45.4%**	**58.8%**	**73.7%**	**72.3%**	**68.2%**	**68.1%**	**65.9%**
Amphenicols	*	*	*	*	*	*	*	*	*	*	0.32	0.33	0.32	0.33	0.33
Macrolides/lincosamides	0.05	0.06	0.03	0.03	0.01	*	*	*	*	*	0.80	0.44	0.32	0.34	0.43
Other	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Penicillins	0.88	0.58	0.39	0.56	0.53	0.82	0.95	0.66	0.95	0.48	0.53	0.53	0.48	0.45	0.46
Pleuromutilins	*	*	*	*	*	*	0.09	*	*	*	0.04	0.03	0.03	0.03	0.04
Tetracyclines	1.00	0.60	0.63	0.89	0.87	7.10	5.36	4.03	1.49	4.51	3.77	3.18	2.11	2.05	2.38
Trimethoprim/sulfonamides	0.62	0.52	0.50	0.39	0.35	0.40	0.33	0.18	0.31	0.13	1.00	0.97	0.68	0.82	0.72
2nd-choice antibiotics	**6.63**	**4.55**	**4.23**	**4.97**	**3.37**	**4.83**	**5.88**	**4.15**	**3.08**	**3.32**	**1.92**	**1.77**	**1.58**	**1.67**	**2.07**
As a proportion of overall AB use	**71.6%**	**71.9%**	**72.4%**	**72.0%**	**65.0%**	**35.5%**	**45.2%**	**45.0%**	**50.6%**	**38.1%**	**21.9%**	**23.4%**	**27.4%**	**28.2%**	**31.2%**
Aminoglycosides	0.00	0.00	0.00	0.01	0.04	0.00	*	*	*	*	0.02	0.02	0.02	0.01	0.01
Aminopenicillins	4.90	3.20	2.87	3.39	2.25	3.97	3.79	2.87	2.55	2.25	1.41	1.25	1.08	1.17	1.36
1st- and 2nd-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quinolones	1.57	1.23	1.16	1.43	0.83	*	0.32	0.06	0.18	*	0.03	0.01	0.00	0.01	0.01
Fixed-dose combinations	0.01	0.01	0.04	0.04	0.14	*	*	*	*	*	0.02	0.02	0.02	0.02	0.09
Long-acting macrolides	*	*	*	*	*	*	*	*	*	*	0.45	0.46	0.46	0.46	0.46
Macrolides/lincosamides	0.15	0.11	0.16	0.10	0.12	0.86	1.77	1.23	0.35	1.07	*	*	*	*	0.14
3rd-choice antibiotics	**0.08**	**0.02**	**0.05**	**0.07**	**0.07**	**0.46**	**0.38**	**0.23**	**0.24**	**0.27**	**0.39**	**0.33**	**0.25**	**0.22**	**0.19**
As a proportion of overall AB use	**0.9%**	**0.4%**	**0.9%**	**1.0%**	**1.3%**	**3.4%**	**3.0%**	**2.4%**	**4.0%**	**3.1%**	**4.5%**	**4.4%**	**4.4%**	**3.7%**	**2.9%**
3rd- and 4th-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Fluoroquinolones	0.03	0.01	0.02	0.03	0.02	0.46	0.38	0.23	0.15	0.27	0.00	0.00	0.00	0.00	0.00
Polymyxins	0.05	0.01	0.03	0.03	0.05	*	*	*	0.09	*	0.39	0.33	0.25	0.22	0.19
Overall antibiotic use	**9.26**	**6.33**	**5.84**	**6.89**	**5.19**	**13.62**	**12.99**	**9.24**	**6.08**	**8.71**	**8.77**	**7.57**	**5.77**	**5.92**	**6.62**

0.00 refers to a usage level <0.005 $DDDA_{NAT}$; * refers to no use.

Table A1 (continued)

Pharmacotherapeutic group	Dairy cattle farming sector					Veal farming sector					Non-dairy cattle farming sector				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1st-choice antibiotics	**2.66**	**2.67**	**2.54**	**2.58**	**2.62**	**12.88**	**13.39**	**13.17**	**13.87**	**13.55**	**0.65**	**0.62**	**0.34**	**0.18**	**0.18**
As a proportion of overall AB use	**80.5%**	**80.6%**	**80.2%**	**80.3%**	**80.3%**	**84.6%**	**86.4%**	**86.2%**	**84.4%**	**85.4%**	**83.7%**	**82.5%**	**80.1%**	**72.8%**	**72.4%**
Amphenicols	0.05	0.05	0.05	0.05	0.04	1.10	1.09	1.04	1.06	0.97	0.07	0.06	0.04	0.04	0.03
Macrolides/lincosamides	0.08	0.09	0.09	0.09	0.10	2.73	2.88	2.95	3.13	3.11	0.10	0.10	0.05	0.01	0.01
Other	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Penicillins	1.96	1.98	1.89	1.93	1.94	0.34	0.33	0.30	0.25	0.24	0.09	0.09	0.08	0.08	0.08
Pleuromutilins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tetracyclines	0.32	0.30	0.26	0.25	0.26	7.74	8.14	7.90	8.15	7.89	0.35	0.33	0.15	0.04	0.05
Trimethoprim/sulfonamides	0.26	0.26	0.25	0.26	0.27	0.97	0.96	0.98	1.28	1.34	0.04	0.04	0.02	0.01	0.01
2nd-choice antibiotics	**0.64**	**0.64**	**0.62**	**0.63**	**0.64**	**2.32**	**2.10**	**2.09**	**2.53**	**2.30**	**0.12**	**0.13**	**0.09**	**0.07**	**0.07**
As a proportion of overall AB use	**19.3%**	**19.2%**	**19.6%**	**19.5%**	**19.5%**	**15.3%**	**13.5%**	**13.7%**	**15.4%**	**14.5%**	**15.8%**	**16.8%**	**19.6%**	**26.9%**	**27.3%**
Aminoglycosides	0.01	0.01	0.01	0.01	0.01	0.13	0.17	0.19	0.15	0.15	0.00	0.00	0.00	0.00	0.00
Aminopenicillins	0.28	0.30	0.26	0.30	0.31	1.52	1.37	1.20	1.60	1.45	0.06	0.06	0.03	0.02	0.02
1st- and 2nd-gen. cephalosporins	0.02	0.02	0.02	0.02	0.02	*	*	*	*	*	0.00	0.00	0.00	0.00	0.00
Quinolones	0.00	0.00	0.00	*	0.00	0.45	0.33	0.43	0.44	0.33	0.02	0.01	0.00	0.00	0.00
Fixed-dose combinations	0.31	0.29	0.30	0.28	0.28	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02
Long-acting macrolides	0.01	0.02	0.02	0.02	0.02	0.23	0.22	0.27	0.33	0.31	0.02	0.02	0.02	0.02	0.02
Macrolides/lincosamides	*	*	*	*	0.00	*	*	*	*	0.05	*	*	*	*	0.00
3rd-choice antibiotics	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.04**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
As a proportion of overall AB use	**0.2%**	**0.2%**	**0.2%**	**0.2%**	**0.2%**	**0.2%**	**0.0%**	**0.1%**	**0.3%**	**0.1%**	**0.5%**	**0.7%**	**0.2%**	**0.2%**	**0.2%**
3rd- and 4th-gen. cephalosporins	0.00	0.00	0.00	0.00	0.00	*	*	*	*	*	0.00	0.00	*	0.00	0.00
Fluoroquinolones	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00
Polymyxins	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Overall antibiotic use	**3.31**	**3.32**	**3.16**	**3.21**	**3.26**	**15.23**	**15.50**	**15.27**	**16.44**	**15.86**	**0.78**	**0.75**	**0.43**	**0.25**	**0.25**

0.00 refers to a usage level <0.005 $DDDA_{NAT}$; * refers to no use.

Table A1 (continued)

Pharmacotherapeutic group	Rabbit farming sector 2020	2021	2022	2023	2024
1st-choice antibiotics	**35.27**	**29.54**	**20.87**	**21.58**	**17.94**
As a proportion of overall AB use	**83.3%**	**84.2%**	**88.0%**	**83.9%**	**79.5%**
Amphenicols	*	*	*	*	*
Macrolides/lincosamides	3.93	6.74	6.22	9.15	7.07
Other	12.54	11.00	9.08	8.39	5.97
Penicillins	*	*	*	*	0.00
Pleuromutilins	3.86	2.74	3.08	1.89	2.09
Tetracyclines	11.22	3.23	2.11	2.00	2.06
Trimethoprim/sulfonamides	3.73	5.82	0.38	0.16	0.75
2nd-choice antibiotics	**7.09**	**5.53**	**2.84**	**4.14**	**4.63**
As a proportion of overall AB use	**16.7%**	**15.8%**	**12.0%**	**16.1%**	**20.5%**
Aminoglycosides	6.97	5.09	2.48	3.59	4.04
Aminopenicillins	*	*	*	*	*
1st- and 2nd-gen. cephalosporins	*	*	*	*	*
Quinolones	0.12	0.44	0.35	0.54	0.53
Fixed-dose combinations	*	*	*	*	*
Long-acting macrolides	*	*	*	0.01	0.06
Macrolides/lincosamides	*	*	*	*	*
3rd-choice antibiotics	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
As a proportion of overall AB use	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
3rd- and 4th-gen. cephalosporins	*	*	*	*	*
Fluoroquinolones	*	*	*	*	*
Polymyxins	*	*	*	*	*
Overall antibiotic use	**42.35**	**35.07**	**23.71**	**25.71**	**22.57**

0.00 refers to a usage level <0.005 $DDDA_{NAT}$; * refers to no use.

Table A2. Reductions in the amount of antibiotics used in agricultural livestock, compared to 2009 levels (only livestock sectors with available $DDDA_{NAT}$ values for 2009 are included)

Livestock sector	$DDDA_{NAT}$ 2009	Reduction from the 2009 level, in % '15	'16	'17	'18	'19	'20	'21	'22	'23	'24
Broiler farming sector	36.76	60	72	74	72	73	75	83	84	81	86
Pig farming sector	20.51	56	57	58	58	61	57	63	72	71	68
Dairy cattle farming sector	5.78	46	48	47	47	48	43	43	45	44	44
Veal farming sector*	33.80	35	38	40	45	53	55	54	55	51	53

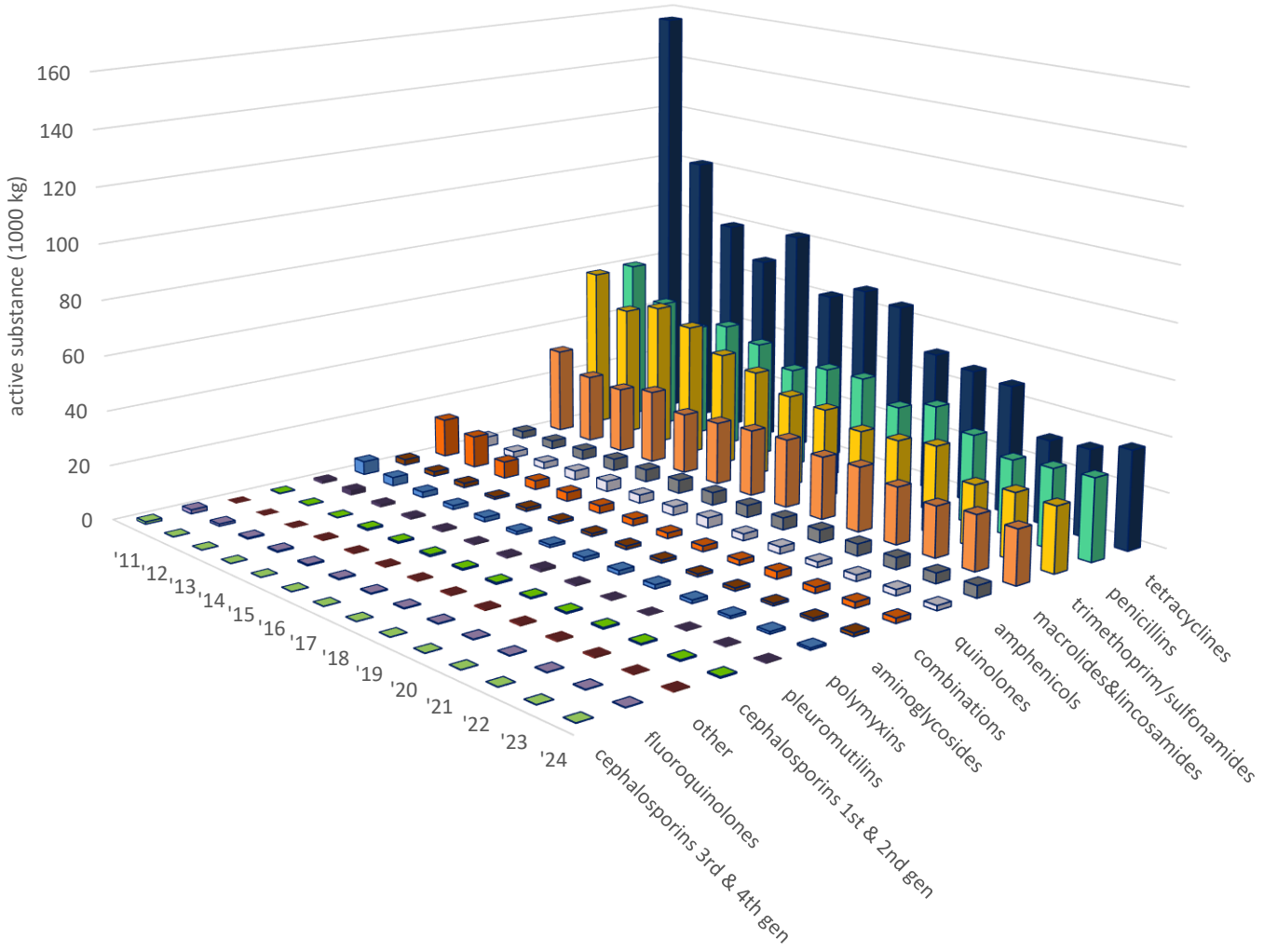
* In 2024, the reduction from its 2007 level amounted to 58%.

Mass balance

Table A3. Kilograms of antibiotics used (by livestock sector and for all livestock sectors combined) and sold in 2023. by pharmacotherapeutic group

Pharmacotherapeutic group	Kilograms used, according to delivery records										Kilograms sold
	Broiler farming sector	Turkey farming sector	Pig farming sector	Dairy cattle farming sector	Veal farming sector	Non-dairy cattle farming sector	Rabbit farming sector	Other chicken farming subsectors	Duck farming sector	All livestock sectors combined	
1st-choice antibiotics	**1,874**	**666**	**29,969**	**9,686**	**37,714**	**828**	**118**	**2,461**	**0**	**83,317**	**94,611**
As a proportion of overall AB use/sales	**42.0%**	**84.0%**	**73.5%**	**79.8%**	**82.9%**	**76.8%**	**58.6%**	**76.0%**	**26.6%**	**77.0%**	**78.1%**
Amphenicols	0	0	1.375	396	1.648	146	0	0	0	3.564	4.353
Fixed-dose combinations	0	0	0	0	0	0	0	0	0	0	297
Macrolides/lincosamides	252	278	3,331	669	13,269	87	45	916	0	18,847	19,692
Other	0	0	0	0	0	0	23	0	0	23	486
Penicillins	347	25	3,350	3,479	295	224	0	754	0	8,475	9,223
Pleuromutilins	0	0	229	0	0	0	19	95	0	344	436
Tetracyclines	671	351	13,366	1,357	15,182	230	11	549	0	31,718	36,183
Trimethoprim/sulfonamides	604	11	8,319	3,785	7,321	141	19	147	0	20,346	23,942
2nd-choice antibiotics	**2,573**	**118**	**10,292**	**2,440**	**7,750**	**249**	**83**	**628**	**1**	**24,133**	**25,756**
As a proportion of overall AB use/sales	**57.7%**	**14.9%**	**25.3%**	**20.1%**	**17.0%**	**23.1%**	**41.4%**	**19.4%**	**73.4%**	**22.3%**	**21.3%**
Aminoglycosides	163	0	181	397	643	23	79	440	0	1,926	1,197
Aminopenicillins	1.811	118	9.222	1.369	6.062	100	0	104	1	18,787	20,834
1st- and 2nd-gen. cephalosporins	0	0	0	14	0	0	0	0	0	14	370
Quinolones	327	0	44	2	1.015	2	4	83	1	1,476	1,731
Fixed-dose combinations	272	0	762	654	12	120	0	0	0	1,820	1,469
Long-acting macrolides	0	0	84	5	18	4	0	0	0	111	156
3rd-choice antibiotics	**15**	**8**	**487**	**17**	**9**	**1**	**0**	**152**	**0**	**690**	**801**
As a proportion of overall AB use/sales	**0.3%**	**1.1%**	**1.2%**	**0.1%**	**0.0%**	**0.1%**	**0.0%**	**4.7%**	**0.0%**	**0.6%**	**0.7%**
3rd- and 4th-gen. cephalosporins	0	0	0	0	0	0	0	0	0	0	3
Fluoroquinolones	8	8	0	15	7	1	0	25	0	64	124
Polymyxins	7	0	487	2	3	0	0	127	0	626	674
Overall	**4,461**	**792**	**40,749**	**12,143**	**45,474**	**1,078**	**201**	**3,240**	**2**	**108,141**	**121,168**

Figure A1. Trends kilograms of active substances sold over the 2011-2024 period, by pharmacotherapeutic group



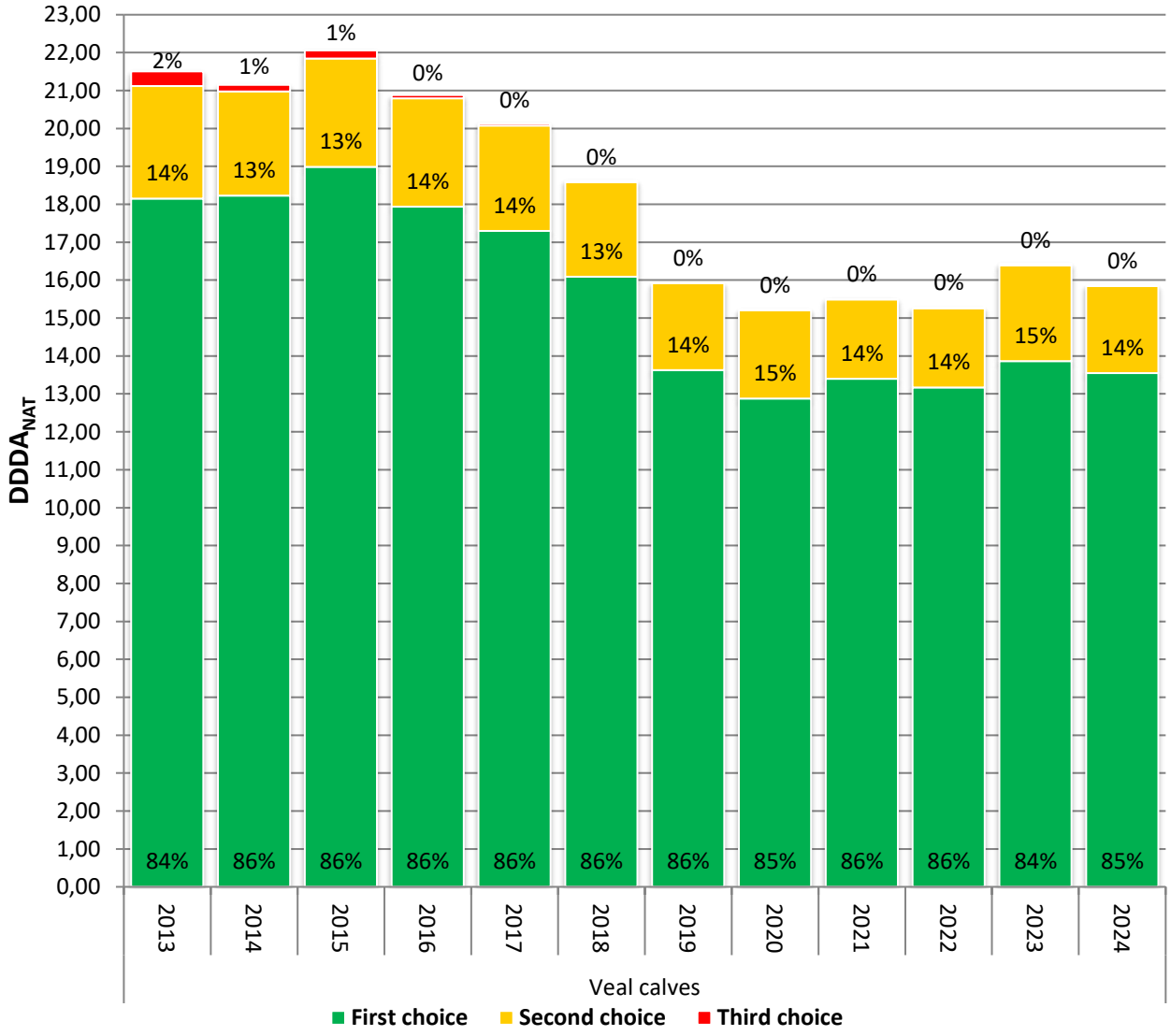
Detailed antibiotic usage data by livestock sector

Big food producing livestock sectors

Veal farming sector

1. $DDDA_{NAT}$

Figure A2. $DDDA_{NAT}$ trends in the veal farming sector over the 2013-2024 period, by antibiotics category



2. DDDA$_F$

2.1 White veal farms

Number of farms: 707
Number of farms with DDDA$_F$ = 0: 0 (0.0%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 101 (14.3%)
Number of farms that used polymyxins: 11 (1.6%)

Table A4. Antibiotic use in DDDA$_F$ at white veal farms from 2011 to 2024*

Year	N	Mean	Median	P75	P90
2011	934	41.1	33.2	44.9	57.8
2012	904	33.6	30.7	40.1	50.9
2013	862	31.4	26.2	35.1	45.2
2014	864	24.5	23.4	31.0	37.8
2015	855	25.1	24.3	31.7	38.3
2016	857	23.7	23.0	29.0	35.6
2017	838	23.0	22.2	27.0	33.1
2018	855	20.1	19.3	24.6	30.0
2019	782	20.0	19.2	23.9	29.8
2020	776	19.8	18.7	23.9	29.3
2021	771	20.2	19.8	24.0	29.0
2022	752	19.4	18.5	23.3	27.9
2023	747	19.5	19.5	23.8	28.5
2024	707	20.0	19.1	24.2	29.1

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A3. 2011 and 2024 DDDA$_F$ distributions for white veal farms

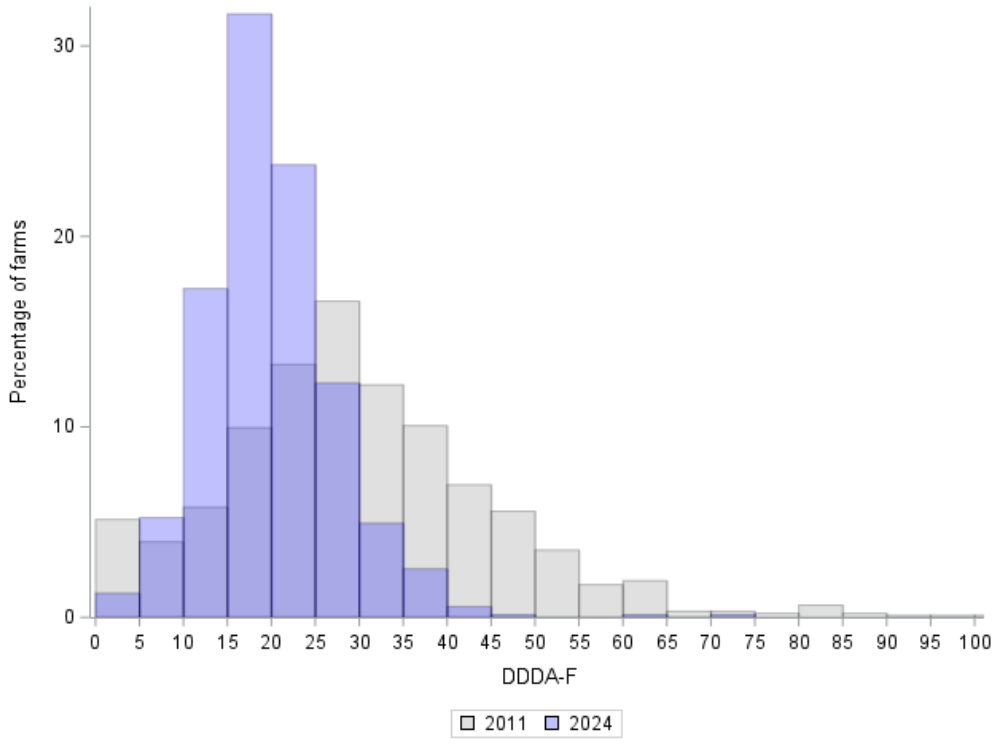


Figure A4. Scatter plot of 2023 and 2024 $DDDA_F$ values for white veal farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-left corner of the scatter plot. Here $DDDA_F$ on an annual basis are shown, for the benchmarking of veal calf farmers a $DDDA_F$ over a 1.5 year period is used

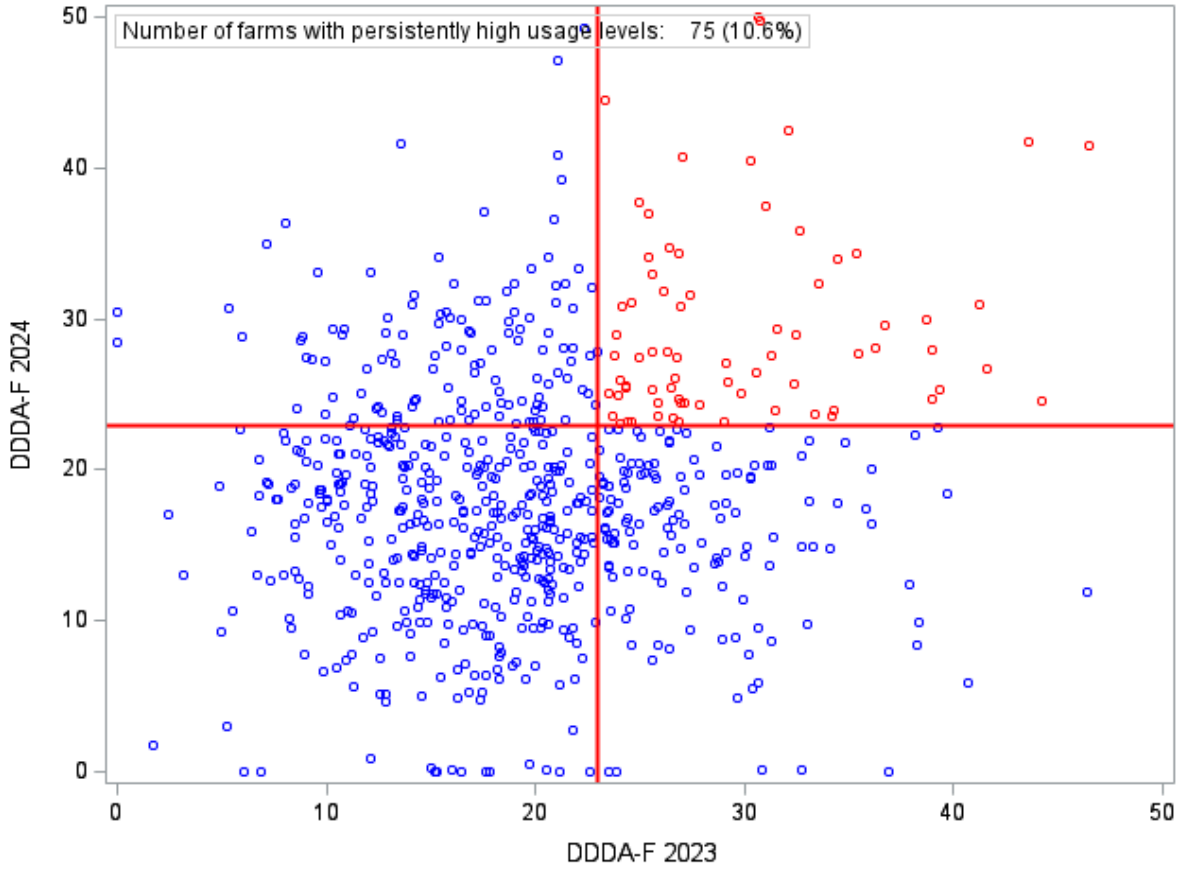


Table A5. Antibiotic use in $DDDA_F$ at white veal farms in 2023. by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	0.7%	0.82	1.30	0.99
1	Macrolides/lincosamides	Oral	1.6%	3.74	4.70	3.87
1	Macrolides/lincosamides	Parenteral	34.4%	0.01	0.06	0.09
1	Penicillins	Parenteral	6.2%	0.22	0.39	0.30
1	Tetracyclines	Oral	0.6%	9.73	12.59	10.35
1	Tetracyclines	Parenteral	52.1%	0.00	0.05	0.05
1	Trimethoprim/sulfonamides	Oral	49.8%	0.04	1.84	1.09
1	Trimethoprim/sulfonamides	Parenteral	32.1%	0.02	0.06	0.04
2	Aminoglycosides	Oral	31.0%	0.02	0.06	0.14
2	Aminoglycosides	Parenteral	54.2%	0.00	0.06	0.05
2	Aminopenicillins	Oral	33.1%	1.01	3.15	1.99
2	Aminopenicillins	Parenteral	6.6%	0.12	0.20	0.17
2	Quinolones	Oral	77.4%	0.00	0.00	0.49
2	Fixed-dose combinations	Parenteral	79.3%	0.00	0.00	0.01
2	Long-acting macrolides	Parenteral	19.9%	0.21	0.44	0.33
3	Fluoroquinolones	Oral	99.6%	0.00	0.00	0.00
3	Fluoroquinolones	Parenteral	85.9%	0.00	0.00	0.01
3	Polymyxins	Oral	99.6%	0.00	0.00	0.00
3	Polymyxins	Parenteral	98.4%	0.00	0.00	0.00

2.2 Rosé veal starter farms

Number of farms: 202
Number of farms with $DDDA_F$ = 0: 1 (0.5%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 42 (20.8%)
Number of farms that used polymyxins: 6 (3.0%)

Table A6. Antibiotic use in $DDDA_F$ at rosé veal starter farms from 2011 to 2024*

Year	N	Mean	Median	P75	P90
2011	207	120.0	94.4	127.8	171.5
2012	189	97.5	84.2	107.1	143.1
2013	264	115.6	80.9	102.2	131.0
2014	260	79.6	77.7	97.2	113.9
2015	247	82.7	83.0	101.5	115.1
2016	240	83.9	83.2	100.0	111.6
2017	238	83.0	83.1	102.0	113.3
2018	256	79.9	79.3	96.1	115.6
2019	225	71.5	70.4	90.7	106.5
2020	210	68.4	69.4	85.5	98.1
2021	198	71.6	71.2	88.9	104.7
2022	201	70.6	69.7	88.1	103.2
2023	201	73.7	72.7	91.3	109.4
2024	202	76.2	73.9	99.2	118.3

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A5. 2011 and 2024 $DDDA_F$ distributions for rosé veal starter farms

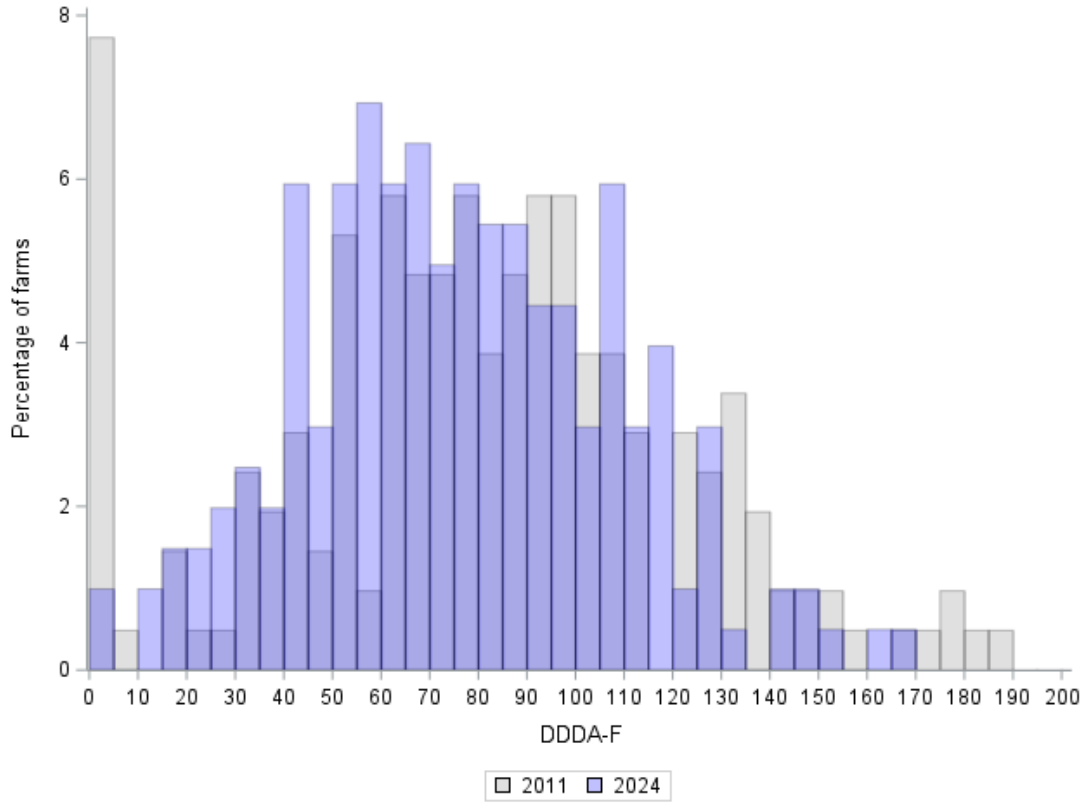


Figure A6. Scatter plot of 2023 and 2024 $DDDA_F$ values for rosé veal starter farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-left corner of the scatter plot. Here $DDDA_F$ on an annual basis are shown, for the benchmarking of veal calf farmers a $DDDA_F$ over a 1.5 year period is used

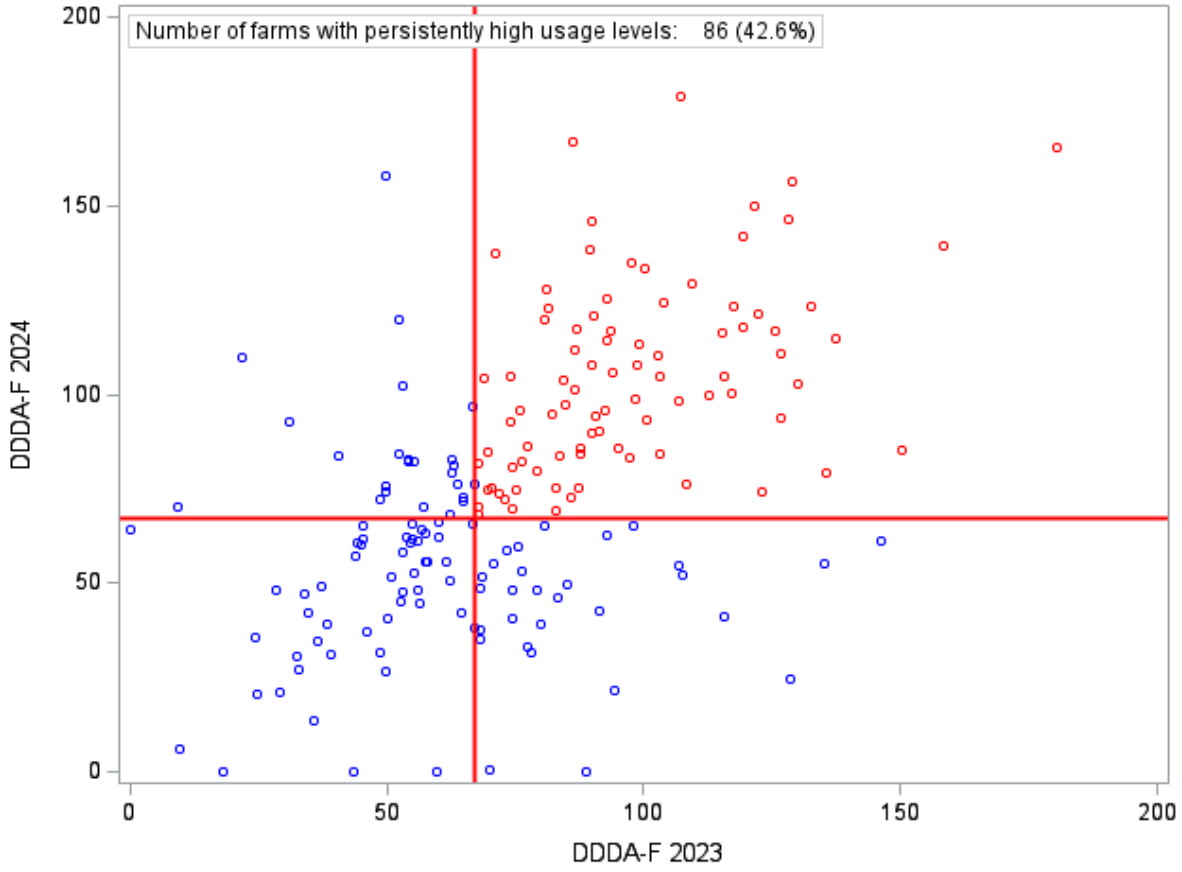


Table A7. Antibiotic use in $DDDA_F$ at rosé veal starter farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	0.5%	3.88	6.87	5.44
1	Macrolides/lincosamides	Oral	5.9%	18.05	21.48	16.50
1	Macrolides/lincosamides	Parenteral	37.1%	0.05	0.31	0.41
1	Penicillins	Intramammary for dry cow therapy	99.5%	0.00	0.00	0.00
1	Penicillins	Parenteral	13.4%	0.60	1.23	1.07
1	Tetracyclines	Oral	2.0%	36.76	47.03	36.59
1	Tetracyclines	Parenteral	55.9%	0.00	0.17	0.22
1	Trimethoprim/sulfonamides	Oral	23.8%	6.31	12.83	8.65
1	Trimethoprim/sulfonamides	Parenteral	35.1%	0.07	0.24	0.27
2	Aminoglycosides	Oral	50.5%	0.00	0.30	0.61
2	Aminoglycosides	Parenteral	50.0%	0.00	0.37	0.28
2	Aminopenicillins	Oral	61.4%	0.00	4.49	2.71
2	Aminopenicillins	Parenteral	13.9%	0.36	0.76	0.53
2	Quinolones	Oral	79.2%	0.00	0.00	1.11
2	Fixed-dose combinations	Intramammary	99.5%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	85.1%	0.00	0.00	0.02
2	Long-acting macrolides	Parenteral	27.2%	0.80	2.01	1.44
2	Macrolides/lincosamides	Parenteral	89.1%	0.00	0.00	0.22
3	Fluoroquinolones	Parenteral	79.2%	0.00	0.00	0.04
3	Polymyxins	Oral	99.5%	0.00	0.00	0.02
3	Polymyxins	Parenteral	97.5%	0.00	0.00	0.00

2.3 Rosé veal fattening farms

Number of farms: 464
Number of farms with $DDDA_F$ = 0: 39 (8.4%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 20 (4.3%)
Number of farms that used polymyxins: 1 (0.2%)

Table A8. Antibiotic use in $DDDA_F$ at rosé veal fattening farms from 2011 to 2024*

Year	N	Mean	Median	P75	P90
2011	671	7.8	1.5	6.6	14.5
2012	717	5.8	2.3	7.3	15.5
2013	723	5.2	1.4	5.4	10.8
2014	663	3.4	1.2	4.5	9.5
2015	638	2.7	1.0	4.0	7.3
2016	602	2.8	0.9	3.9	8.1
2017	580	3.0	1.6	4.1	7.8
2018	601	2.7	1.2	3.8	6.4
2019	718	4.0	1.9	6.0	10.7
2020	675	4.0	1.7	6.1	11.0
2021	575	4.0	1.8	6.3	11.5
2022	536	3.9	1.7	6.6	11.5
2023	509	4.0	1.6	6.9	11.6
2024	464	4.4	2.0	8.0	12.4

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A7. 2011 and 2024 $DDDA_F$ distributions for rosé veal fattening farms

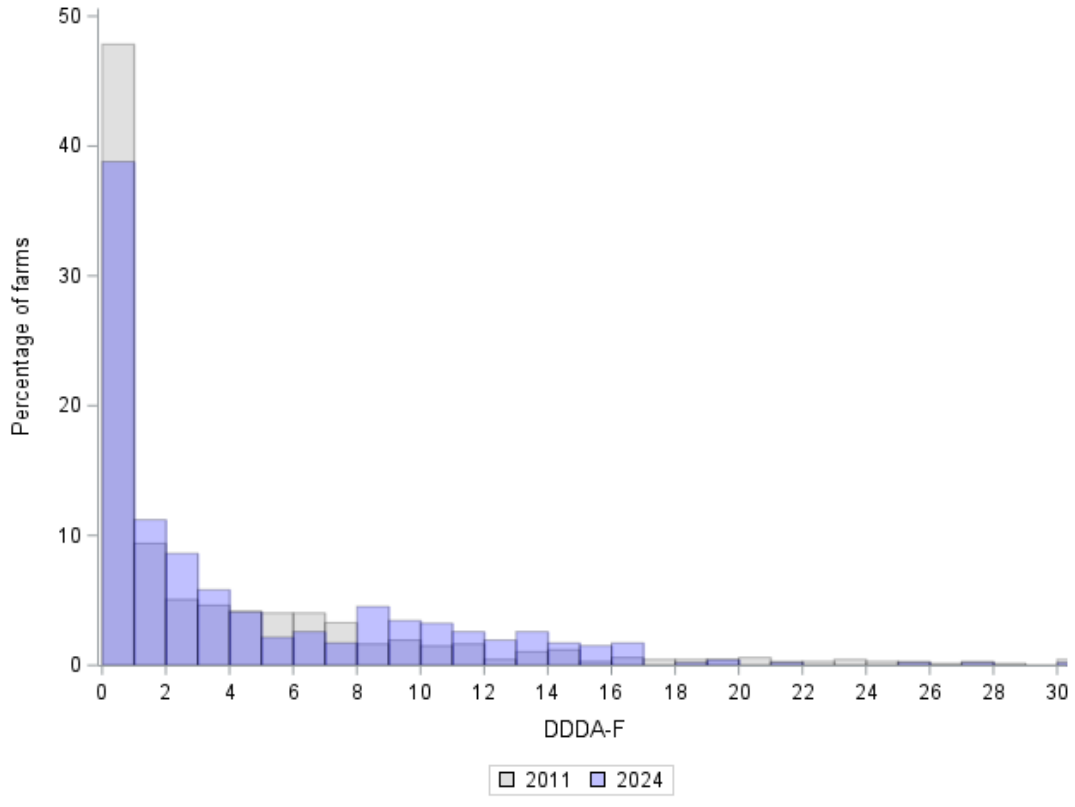


Figure A8. Scatter plot of 2023 and 2024 $DDDA_F$ values for rosé veal fattening farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot. Here $DDDA_F$ on an annual basis are shown, for the benchmarking of veal calf farmers a $DDDA_F$ over a 1.5 year period is used

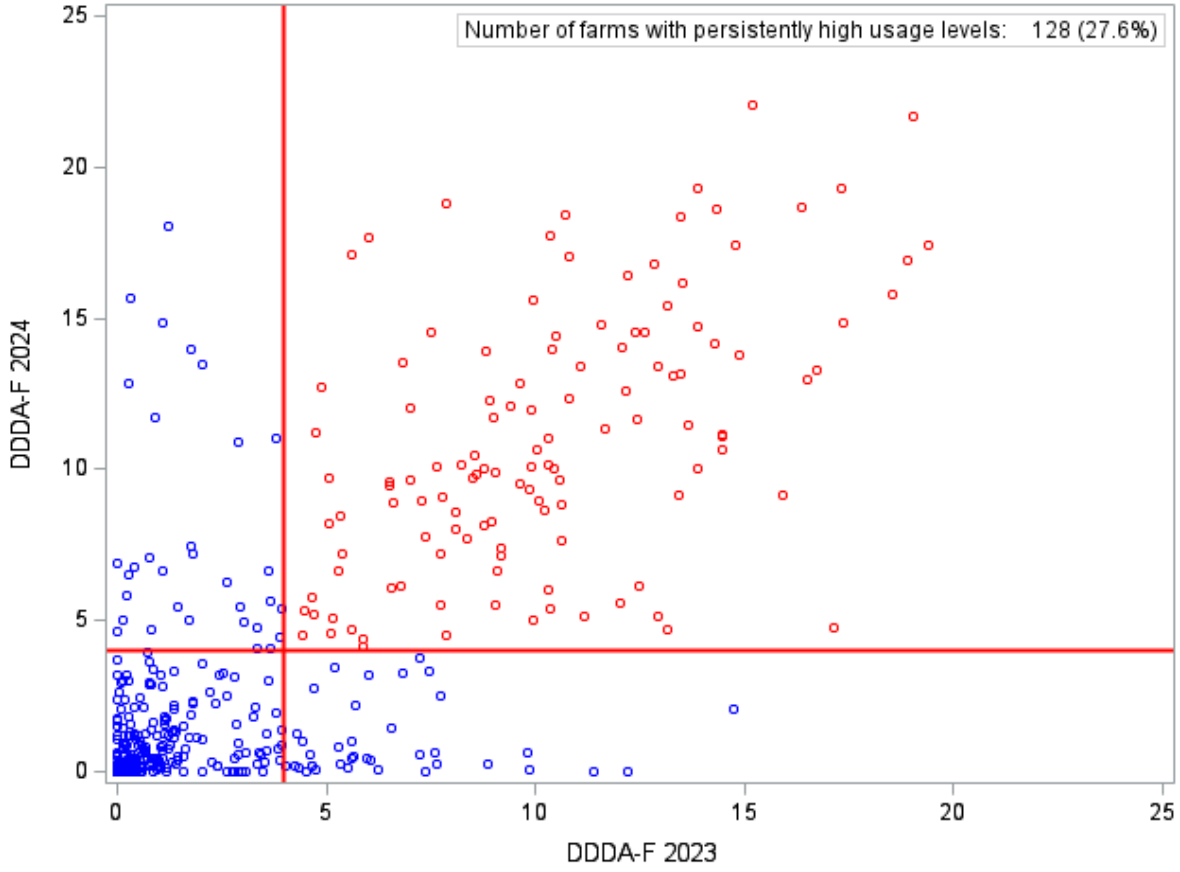


Table A9. Antibiotic use in $DDDA_F$ at rosé veal fattening farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	16.4%	0.30	0.64	0.49
1	Macrolides/lincosamides	Oral	72.6%	0.00	0.61	0.62
1	Macrolides/lincosamides	Parenteral	73.1%	0.00	0.00	0.03
1	Penicillins	Parenteral	39.4%	0.05	0.19	0.13
1	Tetracyclines	Oral	49.1%	0.13	3.52	2.03
1	Tetracyclines	Parenteral	77.2%	0.00	0.00	0.02
1	Tetracyclines	Intrauterine	99.8%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Oral	61.2%	0.00	0.81	0.63
1	Trimethoprim/sulfonamides	Parenteral	67.5%	0.00	0.01	0.01
2	Aminoglycosides	Oral	89.0%	0.00	0.00	0.01
2	Aminoglycosides	Parenteral	89.7%	0.00	0.00	0.01
2	Aminopenicillins	Oral	88.6%	0.00	0.00	0.10
2	Aminopenicillins	Parenteral	41.2%	0.02	0.10	0.08
2	Quinolones	Oral	95.0%	0.00	0.00	0.03
2	Fixed-dose combinations	Parenteral	90.1%	0.00	0.00	0.00
2	Long-acting macrolides	Parenteral	56.7%	0.00	0.18	0.20
2	Macrolides/lincosamides	Parenteral	92.7%	0.00	0.00	0.03
3	Fluoroquinolones	Parenteral	95.7%	0.00	0.00	0.00
3	Polymyxins	Parenteral	99.8%	0.00	0.00	0.00

2.4 Rosé veal combination farms

Number of farms: 64
Number of farms with $DDDA_F$ = 0: 2 (3.1%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 12 (18.8%)
Number of farms that used polymyxins: 1 (1.6%)

Table A10. Antibiotic use in $DDDA_F$ at rosé veal combination farms from 2011 to 2024*

Year	N	Mean	Median	P75	P90
2011	313	34.6	17.3	29.7	45.7
2012	365	21.5	13.2	23.7	37.4
2013	276	11.7	10.1	16.2	23.8
2014	215	13.0	12.0	17.1	21.9
2015	238	11.8	11.2	16.2	21.4
2016	229	11.1	11.3	16.6	20.6
2017	212	12.8	12.6	17.3	22.6
2018	186	14.8	14.1	18.1	21.9
2019	70	16.1	14.1	21.9	31.4
2020	68	16.0	15.6	21.7	27.7
2021	64	16.3	14.0	21.1	30.5
2022	65	16.7	14.5	22.1	31.7
2023	68	16.5	13.9	21.5	37.4
2024	64	17.6	17.2	20.7	34.4

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A9. 2011 and 2024 $DDDA_F$ distributions for rosé veal combination farms

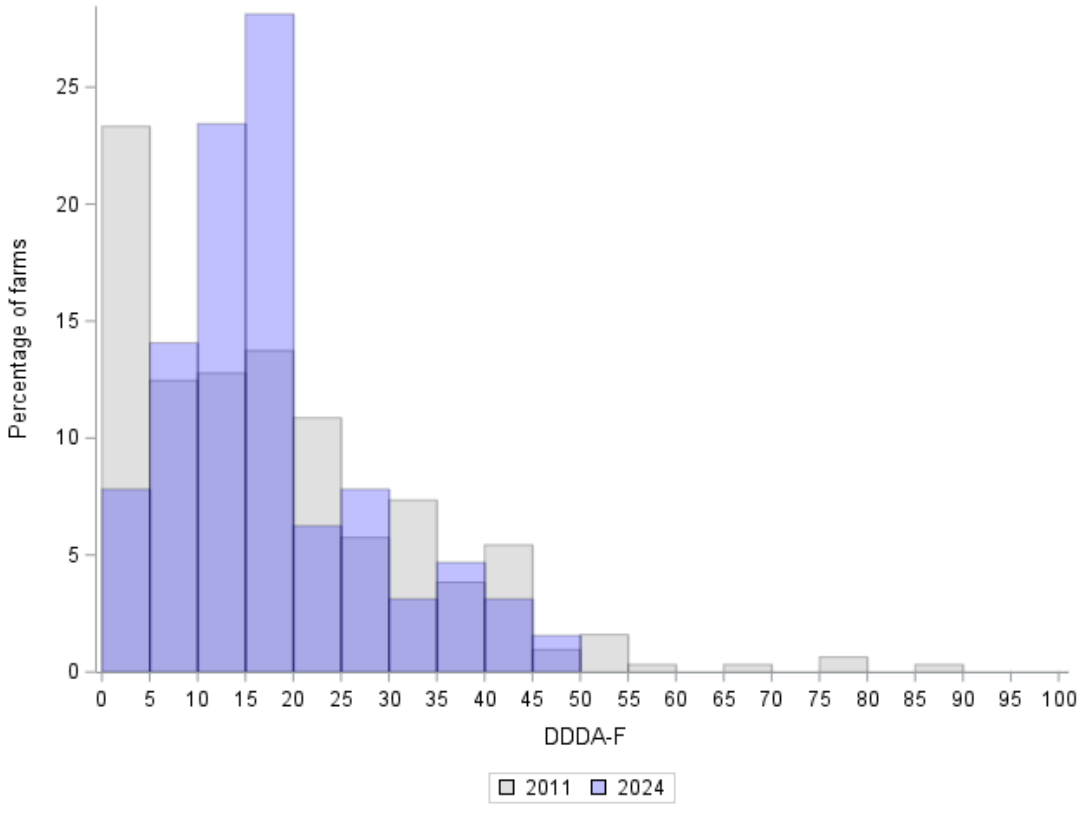


Figure A10. Scatter plot of 2023 and 2024 $DDDA_F$ values for rosé veal combination farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot. Here $DDDA_F$ on an annual basis are shown, for the benchmarking of veal calf farmers a $DDDA_F$ over a 1.5 year period is used

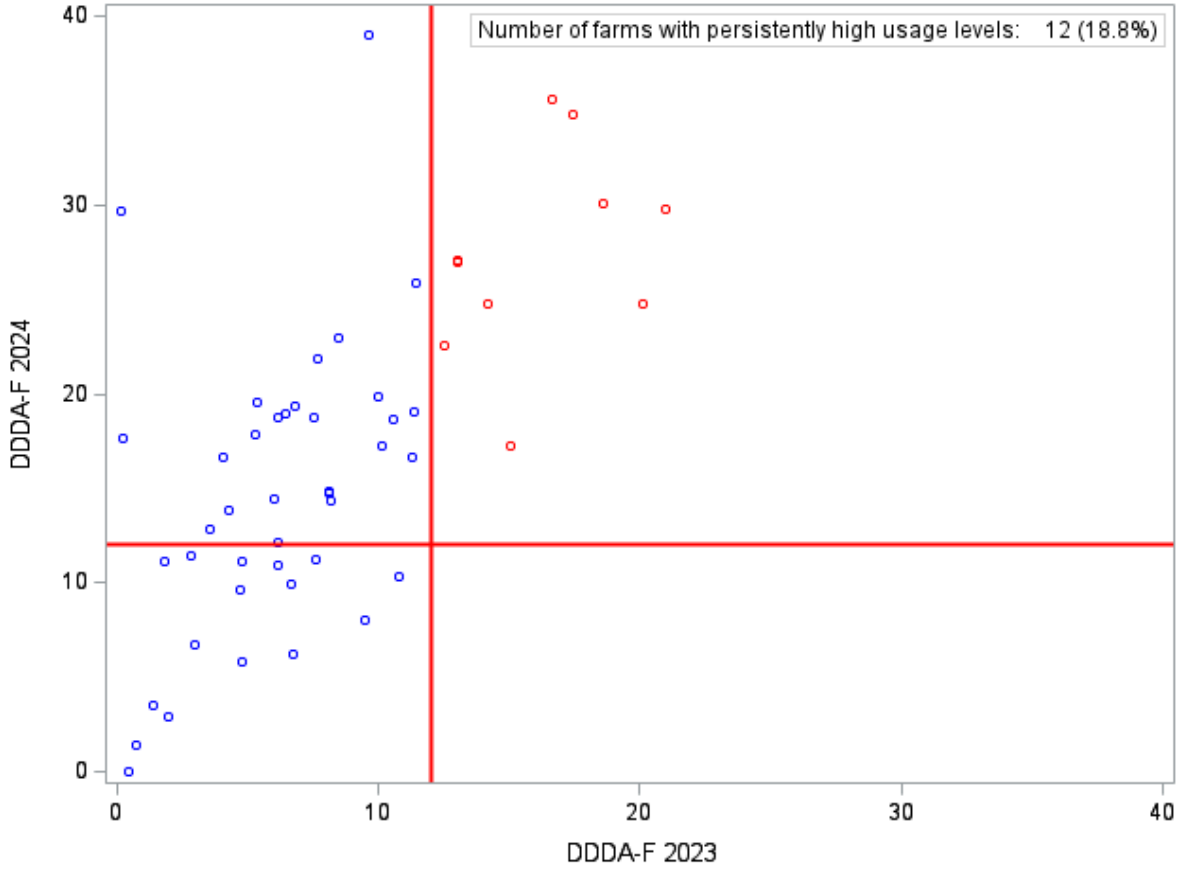


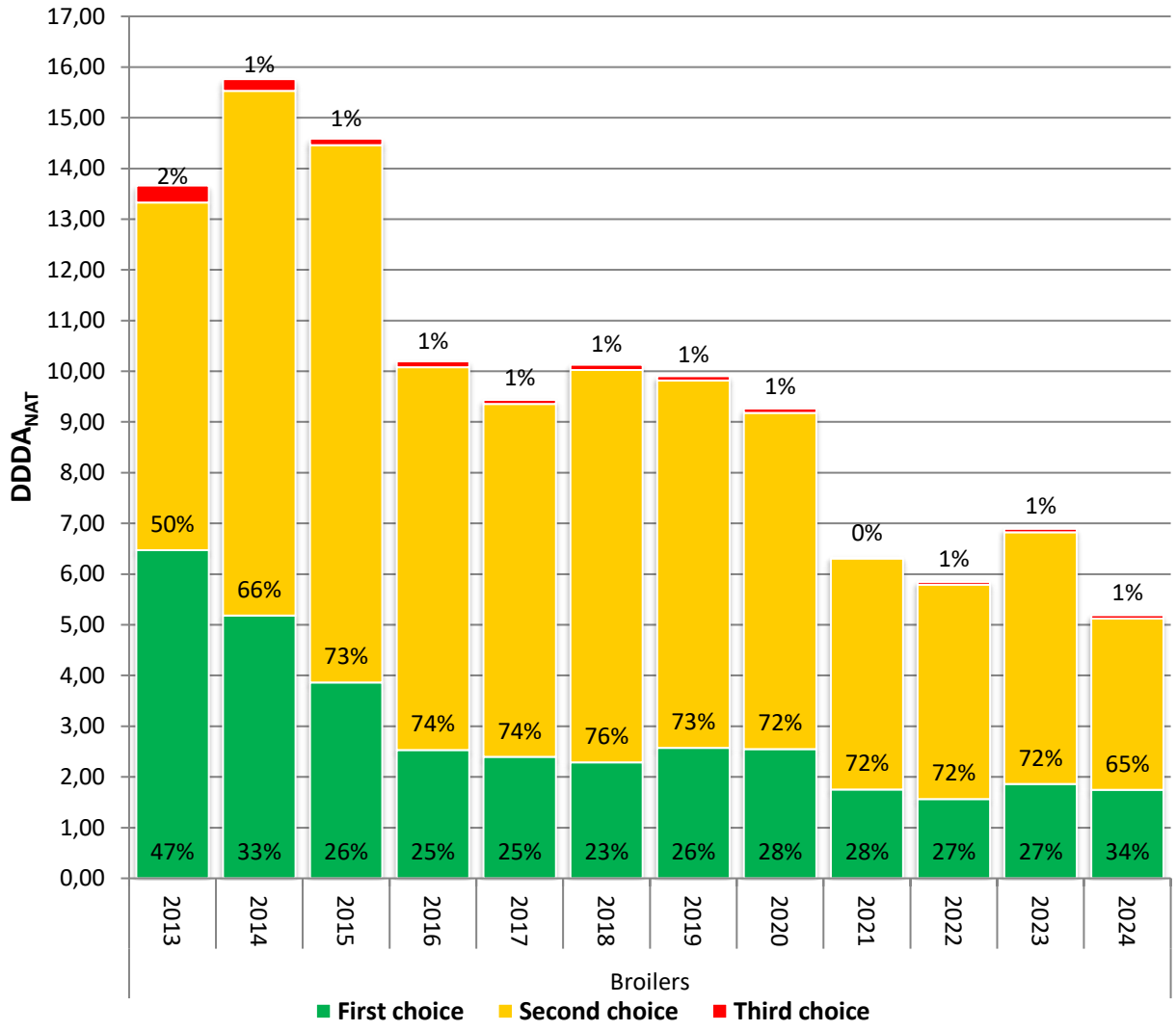
Table A11. Antibiotic use in $DDDA_F$ at rosé veal combination farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	3.1%	0.92	1.64	1.33
1	Macrolides/lincosamides	Oral	10.9%	2.92	3.98	3.29
1	Macrolides/lincosamides	Parenteral	28.1%	0.02	0.06	0.08
1	Penicillins	Parenteral	17.2%	0.14	0.32	0.23
1	Tetracyclines	Oral	6.3%	7.56	11.54	8.67
1	Tetracyclines	Parenteral	54.7%	0.00	0.05	0.04
1	Tetracyclines	Intrauterine	26.6%	0.79	2.80	1.79
1	Trimethoprim/sulfonamides	Oral	37.5%	0.01	0.03	0.04
1	Trimethoprim/sulfonamides	Parenteral	40.6%	0.01	0.06	0.11
2	Aminoglycosides	Oral	54.7%	0.00	0.02	0.04
2	Aminoglycosides	Parenteral	48.4%	0.09	1.69	0.92
2	Aminopenicillins	Oral	9.4%	0.12	0.22	0.17
2	Aminopenicillins	Parenteral	67.2%	0.00	0.69	0.43
2	Quinolones	Oral	73.4%	0.00	0.01	0.01
2	Fixed-dose combinations	Parenteral	20.3%	0.27	0.58	0.43
2	Long-acting macrolides	Parenteral	98.4%	0.00	0.00	0.01
2	Macrolides/lincosamides	Parenteral	81.3%	0.00	0.00	0.03
3	Fluoroquinolones	Parenteral	98.4%	0.00	0.00	0.00

Broiler farming sector

1. DDDA$_{NAT}$

Figure A11. DDDA$_{NAT}$ trends in the broiler farming sector over the 2013-2024 period, by antibiotics category



2. $DDDA_F$

2.1 All breeds

Number of farms: 792*
Number of farms with $DDDA_F$ = 0: 447 (56.4%)
Number of farms that used third- and fourth-generation cephalosporins**: 0 (0.0%)
Number of farms that used fluoroquinolones: 8 (1.0%)
Number of farms that used polymyxins: 4 (0.5%)

Table A12. Antibiotic use in $DDDA_F$ at broiler farms from 2016 to 2024***

Year	N	Mean	Median	P75	P90
2016	853	8.6	4.8	12.5	22.2
2017	852	8.3	4.1	12.9	21.9
2018	834	8.3	4.9	12.4	22.5
2019	819	8.6	3.4	13.6	24.0
2020	816	7.0	2.3	10.0	21.5
2021	805	5.0	1.1	7.4	15.6
2022	788	4.8	0.0	7.0	14.9
2023	783	4.6	0.0	6.6	14.1
2024	792	3.9	0.0	5.0	13.1

* This number also includes broiler farms with both conventional and slower growing breeds. As a result, the number of broiler farms with conventional breeds and broiler farms with slower growing breeds combined, differs from the total number of broiler farms stated above.
** These antibiotics are not authorized for use in poultry.
*** Only years for which similar $DDDA_F$ calculation methods were used have been included.

Figure A12. 2016 and 2024 $DDDA_F$ distributions for broiler farms

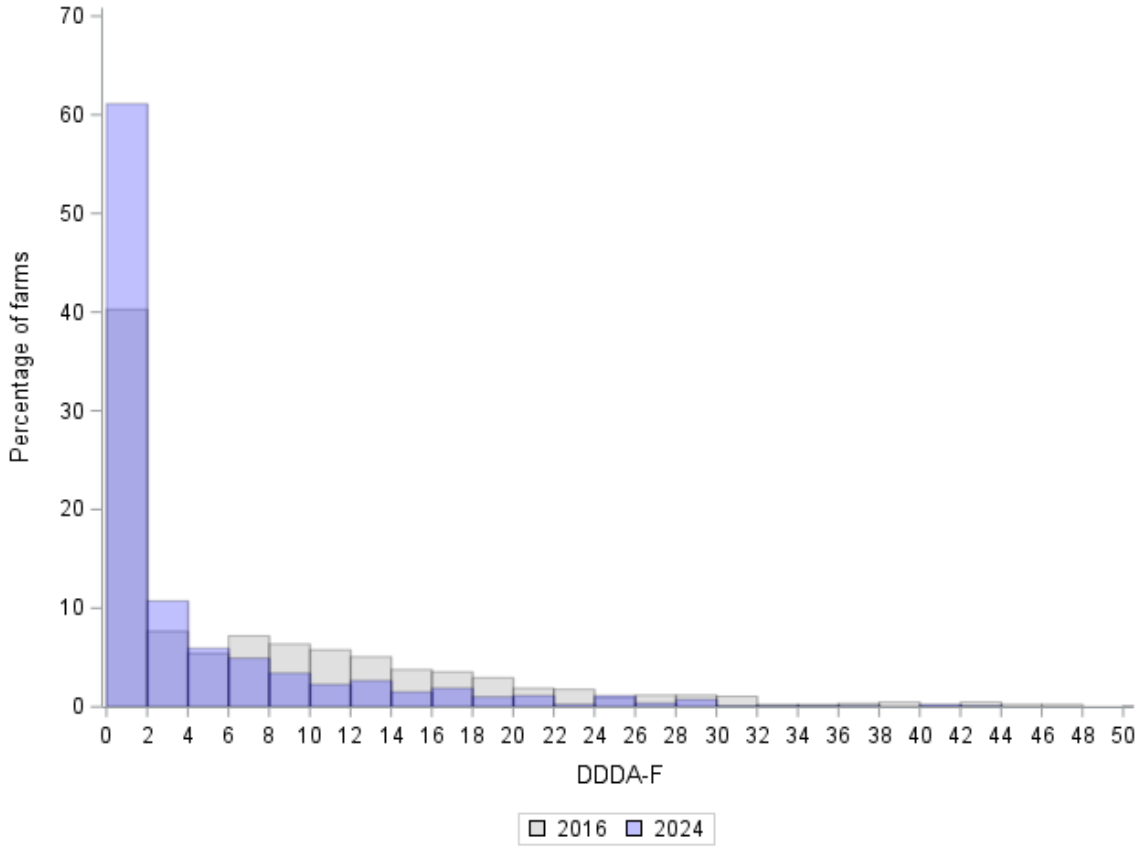


Table A13. Antibiotic use in $DDDA_F$ at broiler farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Macrolides/lincosamides	Oral	99.4%	0.00	0.00	0.02
1	Penicillins	Oral	91.2%	0.00	0.00	0.34
1	Tetracyclines	Oral	85.0%	0.00	0.00	0.54
1	Trimethoprim/sulfonamides	Oral	71.3%	0.00	1.35	1.39
2	Aminoglycosides	Oral	99.0%	0.00	0.00	0.01
2	Aminopenicillins	Oral	81.4%	0.00	0.00	0.86
2	Quinolones	Oral	89.5%	0.00	0.00	0.33
2	Fixed-dose combinations	Oral	96.2%	0.00	0.00	0.30
2	Macrolides/lincosamides	Oral	96.2%	0.00	0.00	0.06
3	Fluoroquinolones	Oral	99.0%	0.00	0.00	0.02
3	Polymyxins	Oral	99.5%	0.00	0.00	0.01

2.2 Broiler farms with conventional breeds

Number of farms: 280
Number of farms with $DDDA_F$ = 0: 85 (30.4%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 7 (2.5%)
Number of farms that used polymyxins: 4 (1.4%)

Table A14. Antibiotic use in $DDDA_F$ at broiler farms with conventional breeds from 2016 to 2024**

Year	N	Mean	Median	P75	P90
2016	570	12.3	8.5	17.5	29.7
2017	487	13.9	9.3	19.5	33.3
2018	498	14.3	10.1	20.0	34.0
2019	455	13.1	10.1	19.2	30.4
2020	394	13.4	10.2	19.7	30.9
2021	363	10.7	7.5	15.5	23.6
2022	357	12.4	7.5	17.8	31.0
2023	306	11.7	8.9	16.6	26.7
2024	280	12.4	6.3	16.3	27.7

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A13. 2016 and 2024 $DDDA_F$ distributions for broiler farms with conventional breeds

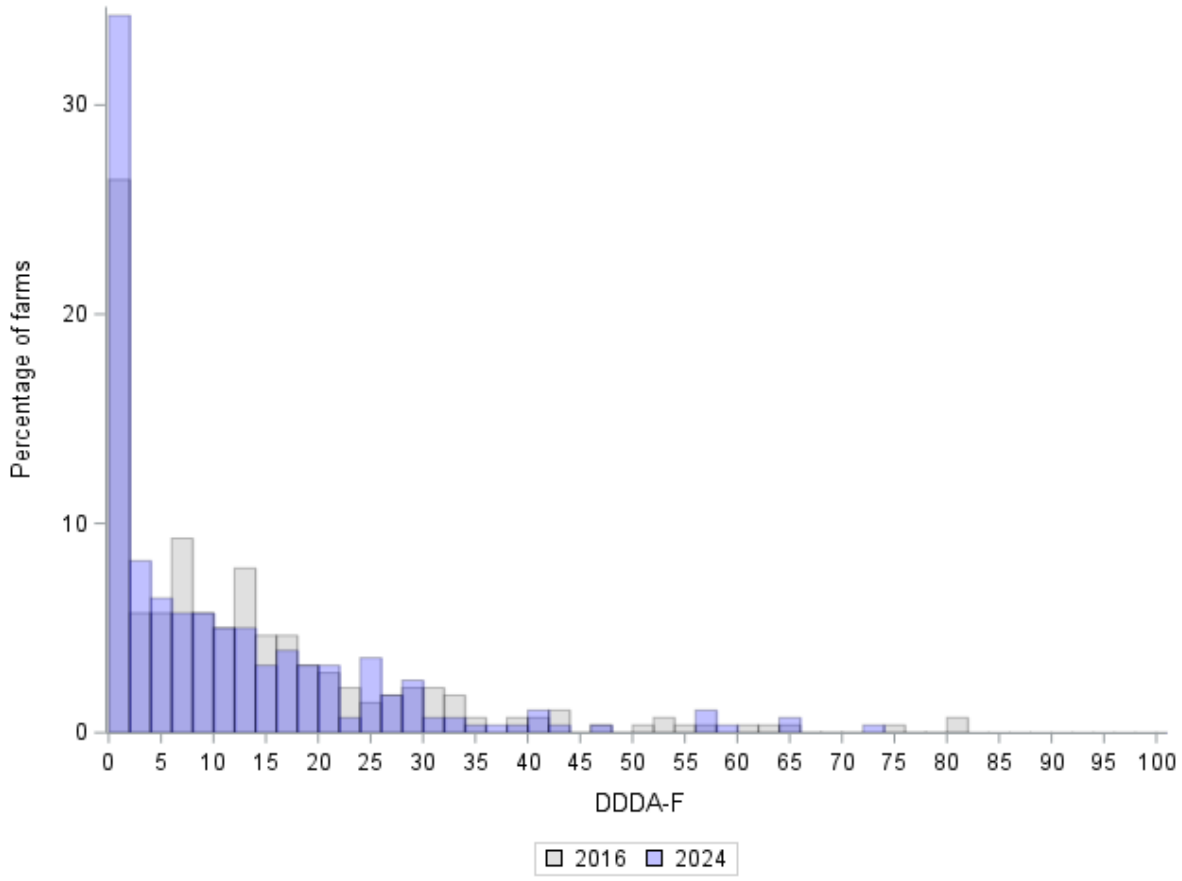


Figure A14. Scatter plot of 2023 and 2024 $DDDA_F$ values for broiler farms with conventional breeds. The red solid lines represent the action threshold defined by the SDa. The red dotted lines represent the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

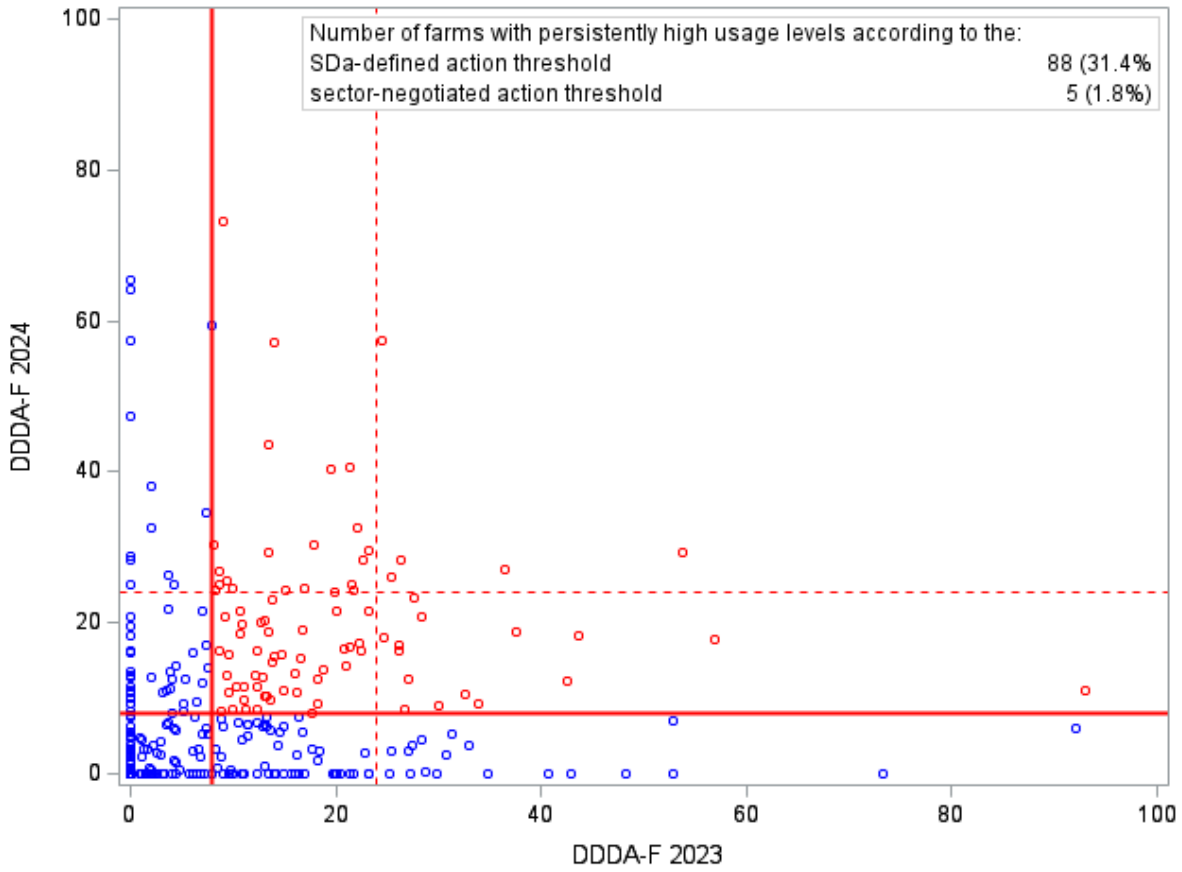


Table A15. Antibiotic use in $DDDA_F$ at broiler farms with conventional breeds in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Macrolides/lincosamides	Oral	98.2%	0.00	0.00	0.08
1	Penicillins	Oral	82.9%	0.00	0.00	0.93
1	Tetracyclines	Oral	71.1%	0.00	0.69	1.82
1	Trimethoprim/sulfonamides	Oral	54.6%	0.00	3.59	3.01
2	Aminoglycosides	Oral	97.1%	0.00	0.00	0.04
2	Aminopenicillins	Oral	59.6%	0.00	3.04	2.60
2	Quinolones	Oral	74.6%	0.00	0.44	1.23
2	Fixed-dose combinations	Oral	89.3%	0.00	0.00	2.44
2	Macrolides/lincosamides	Oral	90.0%	0.00	0.00	0.16
3	Fluoroquinolones	Oral	97.5%	0.00	0.00	0.05
3	Polymyxins	Oral	98.6%	0.00	0.00	0.03

2.3 Broiler farms with slower growing breeds

Number of farms: 593
Number of farms with $DDDA_F$ = 0: 429 (72.3%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 1 (0.2%)
Number of farms that used polymyxins: 0 (0.0%)

Table A16. Antibiotic use in $DDDA_F$ at broiler farms with slower growing breeds from 2016 to 2024**

Year	N	Mean	Median	P75	P90
2016	461	3.6	0.0	3.8	11.9
2017	493	4.1	0.0	5.0	12.6
2018	475	3.6	0.0	4.9	10.6
2019	471	2.3	0.0	2.8	7.8
2020	525	2.1	0.0	2.3	6.9
2021	560	1.7	0.0	1.9	5.4
2022	599	1.4	0.0	0.0	4.1
2023	595	1.6	0.0	0.0	5.1
2024	593	1.5	0.0	1.2	5.1

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A15. 2016 and 2024 $DDDA_F$ distributions for broiler farms with slower growing breeds

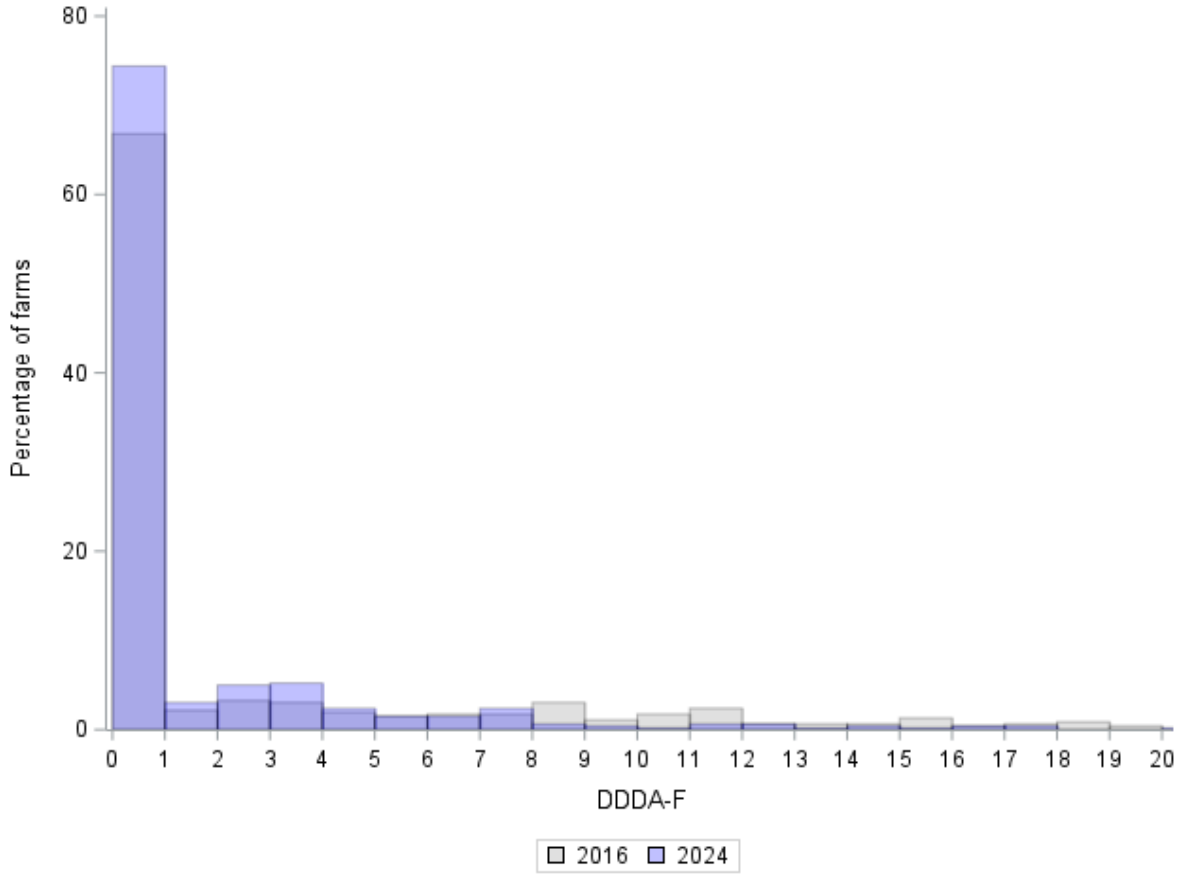


Figure A16. Scatter plot of 2023 and 2024 $DDDA_F$ values for broiler farms with slower growing breeds. The red solid lines represent the action threshold defined by the SDa. The red dotted lines represent the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-left corner of the scatter plot

Table A17. Antibiotic use in $DDDA_F$ at broiler farms with slower growing breeds in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	96.0%	0.00	0.00	0.14
1	Tetracyclines	Oral	93.1%	0.00	0.00	0.21
1	Trimethoprim/sulfonamides	Oral	82.6%	0.00	0.00	0.77
2	Aminopenicillins	Oral	94.3%	0.00	0.00	0.22
2	Quinolones	Oral	98.0%	0.00	0.00	0.10
2	Macrolides/lincosamides	Oral	99.7%	0.00	0.00	0.01
3	Fluoroquinolones	Oral	99.8%	0.00	0.00	0.01

Broiler parent/grandparent stock farming sector

2.4 Parent/grandparent stock rearing farms

Number of farms: 88
Number of farms with $DDDA_F$ = 0: 29 (33.0%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 1 (1.1%)
Number of farms that used polymyxins: 2 (2.3%)

Table A18. Antibiotic use in $DDDA_F$ at parent/grandparent stock rearing farms from 2017 to 2024**

Year	N	Mean	Median	P75	P90
2017	116	13.3	8.6	17.0	27.8
2018	99	15.7	10.6	22.8	35.2
2019	103	14.5	10.8	19.9	30.5
2020	100	9.6	7.9	13.9	18.1
2021	90	7.2	5.6	12.0	15.9
2022	90	6.4	4.9	7.8	12.6
2023	86	5.0	3.4	7.5	13.2
2024	88	5.4	2.7	8.1	13.9

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A17. 2017 and 2024 $DDDA_F$ distributions for parent/grandparent stock rearing farms

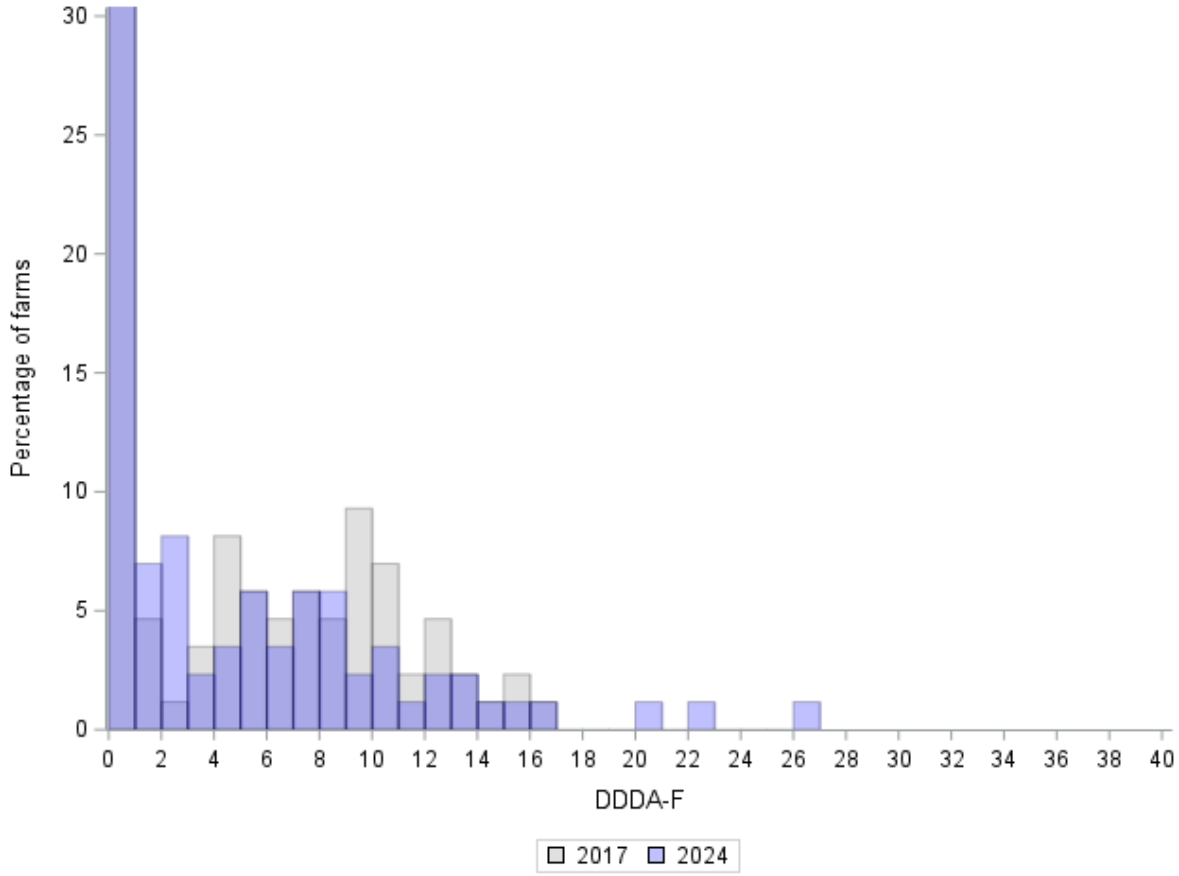


Table A19. Antibiotic use in $DDDA_F$ at parent/grandparent stock rearing farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	65.0%	0.00	1.28	1.28
1	Tetracyclines	Oral	86.3%	0.00	0.00	0.75
1	Trimethoprim/sulfonamides	Oral	42.5%	1.01	3.17	2.00
2	Aminopenicillins	Oral	72.5%	0.00	1.51	1.61
2	Quinolones	Oral	97.5%	0.00	0.00	0.13
2	Macrolides/lincosamides	Oral	96.3%	0.00	0.00	0.03
3	Fluoroquinolones	Oral	98.8%	0.00	0.00	0.02
3	Polymyxins	Oral	97.5%	0.00	0.00	0.08

2.5 Parent/grandparent stock production farms

Number of farms: 181
Number of farms with $DDDA_F$ = 0: 112 (61.9%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 11 (6.1%)
Number of farms that used polymyxins: 1 (0.6%)

Table A20. Antibiotic use in $DDDA_F$ at parent/grandparent stock production farms from 2017 to 2024**

Year	N	Mean	Median	P75	P90
2017	250	2.8	0.0	3.7	9.2
2018	215	2.7	0.0	3.9	8.5
2019	224	2.0	0.0	1.6	7.5
2020	220	4.3	0.0	2.4	8.2
2021	209	1.6	0.0	0.8	6.6
2022	200	1.5	0.0	0.6	4.9
2023	192	2.6	0.0	1.0	7.6
2024	181	2.4	0.0	3.9	7.5

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A18. 2017 and 2024 $DDDA_F$ distributions for parent/grandparent stock production farms

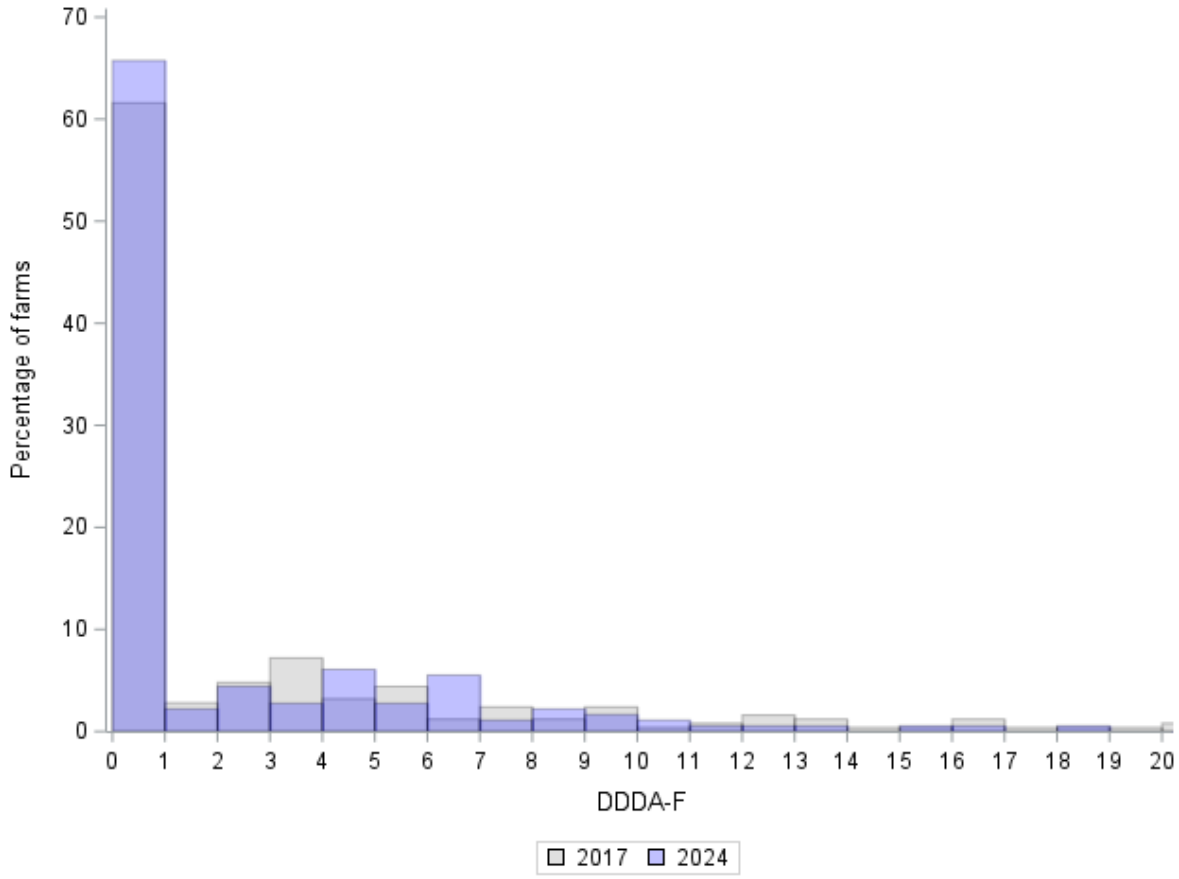


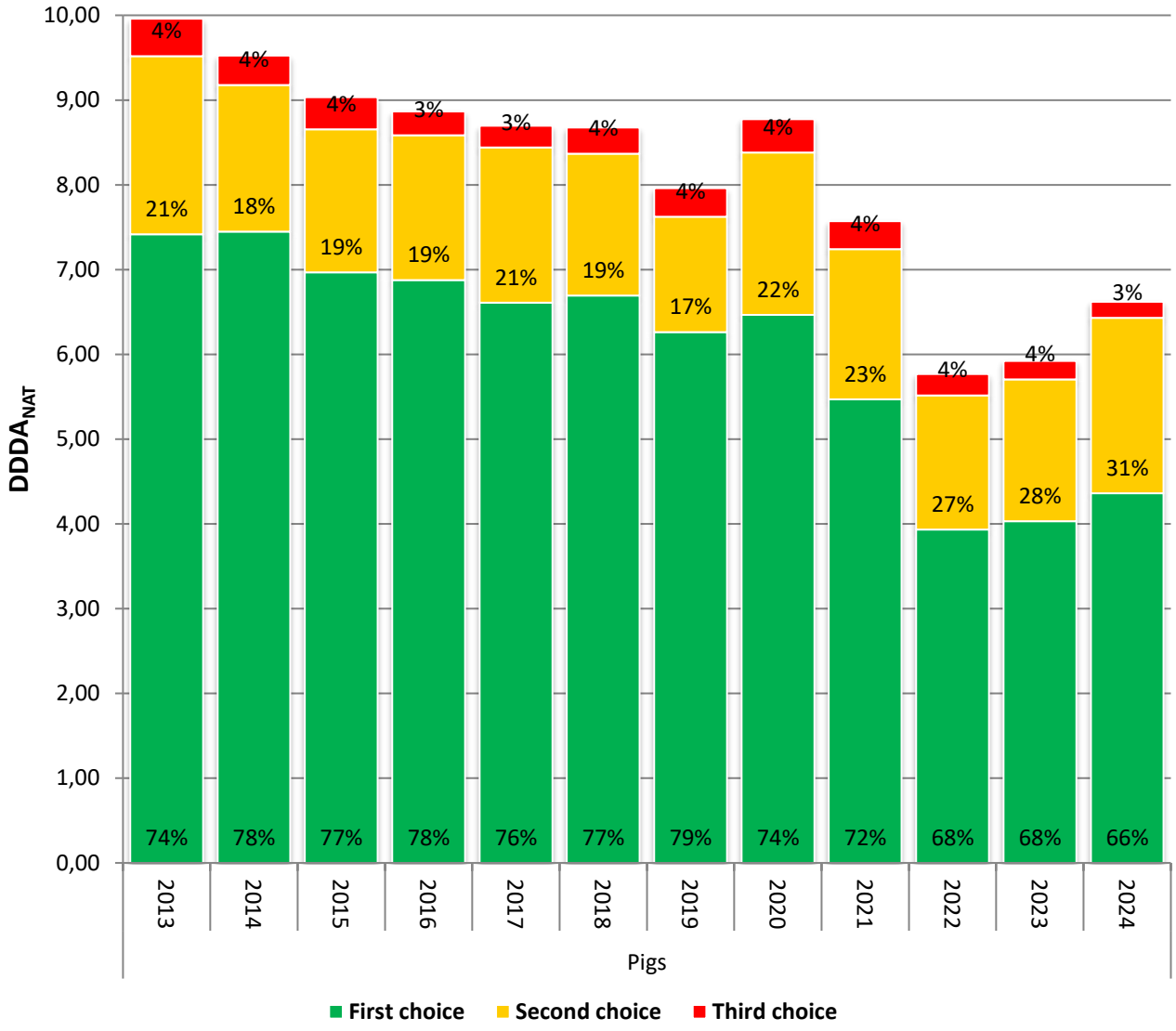
Table A21. Antibiotic use in $DDDA_F$ at parent/grandparent stock production farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Tetracyclines	Oral	75.7%	0.00	0.00	1.25
1	Trimethoprim/sulfonamides	Oral	96.7%	0.00	0.00	0.13
2	Aminoglycosides	Oral	99.4%	0.00	0.00	0.01
2	Aminopenicillins	Oral	98.3%	0.00	0.00	0.05
2	Quinolones	Oral	92.3%	0.00	0.00	0.50
2	Macrolides/lincosamides	Oral	98.3%	0.00	0.00	0.02
3	Fluoroquinolones	Oral	93.9%	0.00	0.00	0.15
3	Polymyxins	Oral	99.4%	0.00	0.00	0.03

Pig farming sector

1. $DDDA_{NAT}$

Figure A19. $DDDA_{NAT}$ trends in the pig farming sector over the 2013-2024 period, by antibiotics category



2. $DDDA_F$

2.1 Farms with sows and suckling piglets

Number of farms: 1.198
Number of farms with $DDDA_F$ = 0: 50 (4.2%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 2 (0.2%)
Number of farms that used polymyxins: 278 (23.3%)

Table A22. Antibiotic use in $DDDA_F$ at farms with sows and suckling piglets from 2015 to 2024*

Year	N	Mean	Median	P75	P90
2015	2.109	5.4	3.1	6.8	12.8
2016	1.919	3.5	2.3	4.7	8.1
2017	1.853	3.7	2.2	4.7	8.2
2018	1.780	3.8	2.1	4.5	8.6
2019	1.659	3.5	2.1	4.6	8.2
2020	1.572	3.6	2.2	4.5	7.7
2021	1.498	3.2	2.0	4.2	6.9
2022	1.318	2.8	1.9	3.9	5.6
2023	1.250	3.0	2.2	4.0	5.7
2024	1.198	3.2	2.1	4.2	5.9

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A20. 2015 and 2024 $DDDA_F$ distributions for farms with sows and suckling piglets

Figure A21. Scatter plot of 2023 and 2024 $DDDA_F$ values for farms with sows and suckling piglets. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

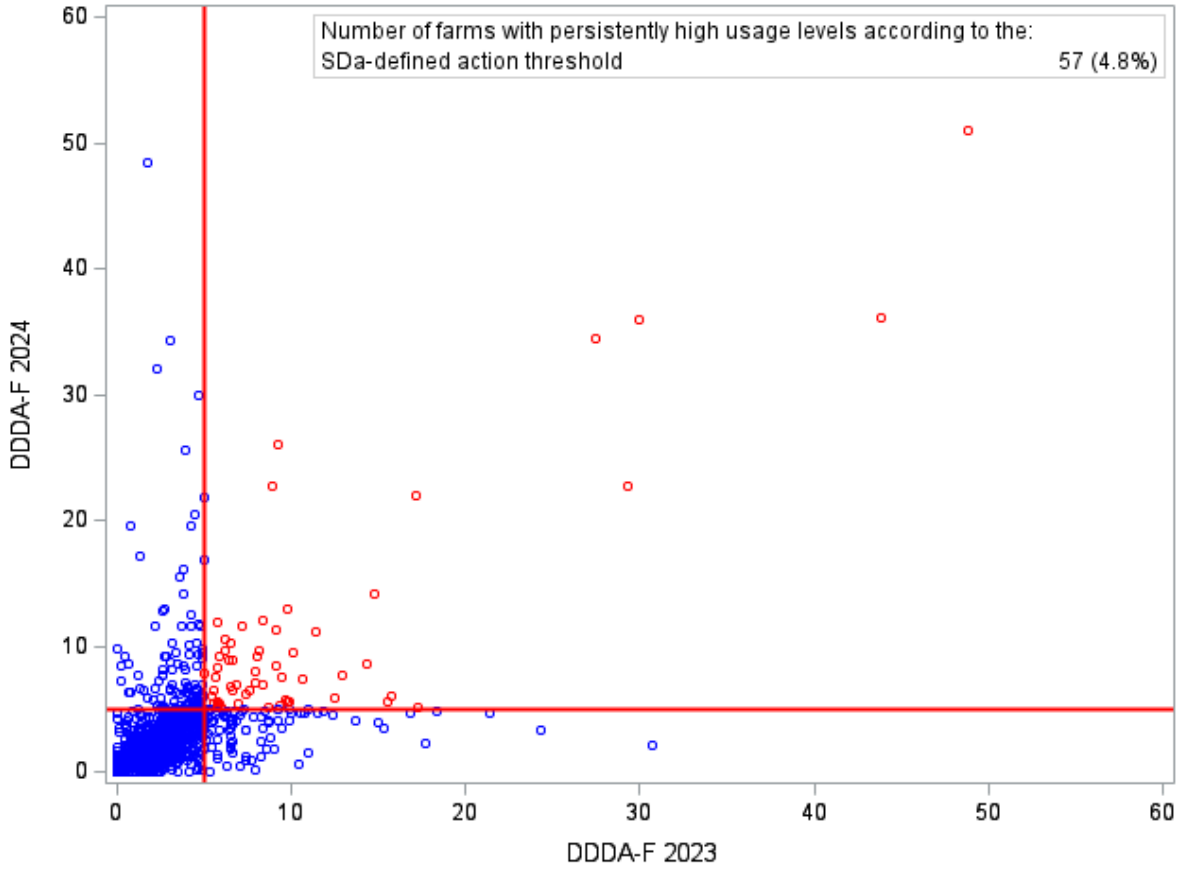


Table A23. Antibiotic use in $DDDA_F$ at farms with sows and suckling piglets in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	70.1%	0.00	0.09	0.20
1	Macrolides/lincosamides	Oral	96.2%	0.00	0.00	0.14
1	Macrolides/lincosamides	Parenteral	88.9%	0.00	0.00	0.02
1	Penicillins	Parenteral	18.4%	0.39	0.92	0.70
1	Pleuromutilins	Oral	99.2%	0.00	0.00	0.03
1	Pleuromutilins	Parenteral	96.0%	0.00	0.00	0.01
1	Tetracyclines	Oral	87.1%	0.00	0.00	0.35
1	Tetracyclines	Parenteral	45.0%	0.03	0.33	0.29
1	Trimethoprim/sulfonamides	Oral	90.9%	0.00	0.00	0.14
1	Trimethoprim/sulfonamides	Parenteral	36.3%	0.08	0.32	0.25
2	Aminoglycosides	Oral	89.1%	0.00	0.00	0.01
2	Aminopenicillins	Oral	94.8%	0.00	0.00	0.05
2	Aminopenicillins	Parenteral	42.2%	0.06	0.53	0.33
2	Quinolones	Oral	99.9%	0.00	0.00	0.01
2	Fixed-dose combinations	Oral	99.0%	0.00	0.00	0.03
2	Fixed-dose combinations	Parenteral	80.5%	0.00	0.00	0.03
2	Long-acting macrolides	Parenteral	73.0%	0.00	0.15	0.43
2	Macrolides/lincosamides	Parenteral	94.6%	0.00	0.00	0.09
3	Fluoroquinolones	Parenteral	99.8%	0.00	0.00	0.00
3	Polymyxins	Oral	95.7%	0.00	0.00	0.02
3	Polymyxins	Parenteral	79.0%	0.00	0.00	0.03

2.2 Farms with weaner pigs

Number of farms: 1.336
Number of farms with $DDDA_F$ = 0: 202 (15.1%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 0 (0.0%)
Number of farms that used polymyxins: 306 (22.9%)

Table A24. Antibiotic use in $DDDA_F$ at farms with weaner pigs from 2015 to 2024*

Year	N	Mean	Median	P75	P90
2015	2.276	19.6	7.6	24.4	52.2
2016	2.088	24.2	11.9	29.1	57.2
2017	2.037	21.7	10.6	25.5	52.9
2018	1.941	19.8	10.1	23.5	44.0
2019	1.833	16.8	8.1	20.7	38.3
2020	1.759	20.5	9.5	21.3	41.3
2021	1.668	20.5	6.9	18.1	32.8
2022	1.463	14.6	7.1	16.8	28.4
2023	1.392	16.0	7.6	17.4	30.7
2024	1.336	16.1	6.9	17.2	29.7

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A22. 2015 and 2024 $DDDA_F$ distributions for farms with weaner pigs

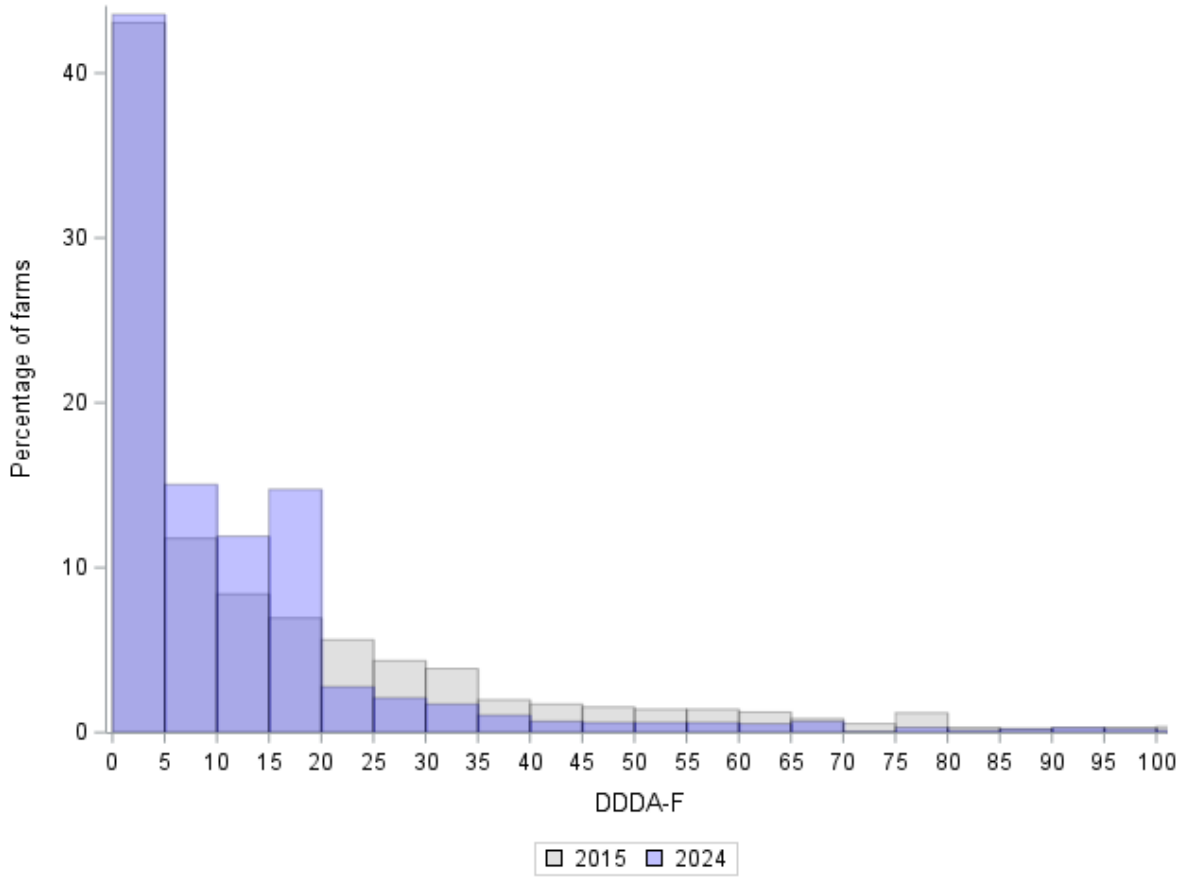


Figure A23. Scatter plot of 2023 and 2024 $DDDA_F$ values for farms with weaner pigs. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

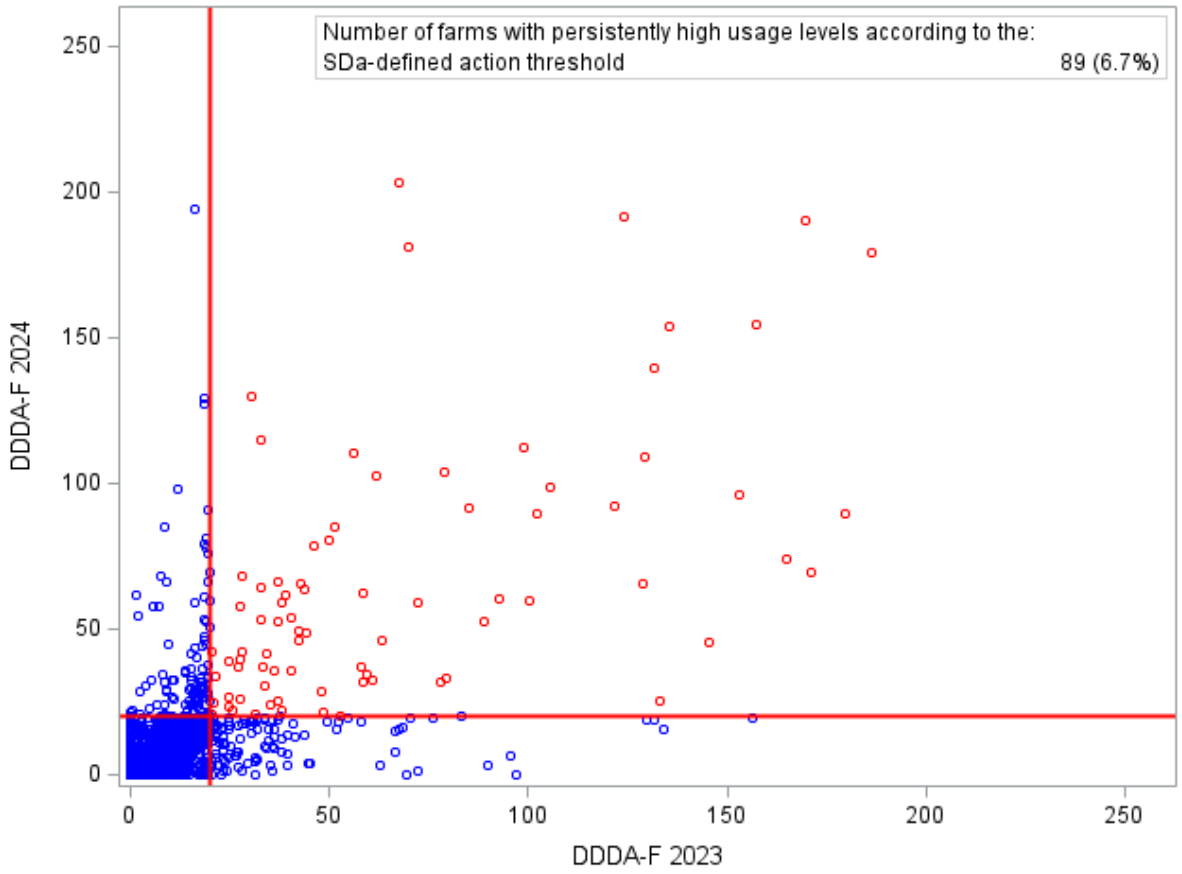


Table A25. Antibiotic use in $DDDA_F$ at farms with weaner pigs in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Oral	99.8%	0.00	0.00	0.00
1	Amphenicols	Parenteral	82.0%	0.00	0.00	0.42
1	Macrolides/lincosamides	Oral	89.7%	0.00	0.00	0.62
1	Macrolides/lincosamides	Parenteral	94.9%	0.00	0.00	0.02
1	Penicillins	Parenteral	60.6%	0.00	0.55	0.61
1	Pleuromutilins	Oral	99.3%	0.00	0.00	0.05
1	Pleuromutilins	Parenteral	98.1%	0.00	0.00	0.03
1	Tetracyclines	Oral	68.6%	0.00	2.61	4.09
1	Tetracyclines	Parenteral	78.3%	0.00	0.00	0.42
1	Trimethoprim/sulfonamides	Oral	69.0%	0.00	1.12	1.99
1	Trimethoprim/sulfonamides	Parenteral	88.1%	0.00	0.00	0.07
2	Aminoglycosides	Oral	95.1%	0.00	0.00	0.05
2	Aminopenicillins	Oral	76.2%	0.00	0.00	4.21
2	Aminopenicillins	Parenteral	59.7%	0.00	0.54	0.71
2	Quinolones	Oral	99.9%	0.00	0.00	0.00
2	Fixed-dose combinations	Oral	98.7%	0.00	0.00	0.08
2	Fixed-dose combinations	Parenteral	91.5%	0.00	0.00	0.04
2	Long-acting macrolides	Parenteral	77.9%	0.00	0.00	1.48
2	Macrolides/lincosamides	Parenteral	95.7%	0.00	0.00	0.32
3	Polymyxins	Oral	83.3%	0.00	0.00	0.80
3	Polymyxins	Parenteral	88.9%	0.00	0.00	0.07

2.3 Farms with fattening pigs

Number of farms: 2.697
Number of farms with $DDDA_F$ = 0: 649 (24.1%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 0 (0.0%)
Number of farms that used polymyxins: 49 (1.8%)

Table A26. Antibiotic use in $DDDA_F$ at farms with fattening pigs from 2015 to 2024*

Year	N	Mean	Median	P75	P90
2015	5.072	4.1	1.6	5.4	10.2
2016	4.701	4.0	1.7	5.7	10.1
2017	4.580	3.8	1.7	5.4	9.8
2018	4.323	3.9	1.8	5.4	9.9
2019	4.005	3.8	1.6	5.5	10.2
2020	3.650	3.5	1.2	4.8	9.0
2021	3.142	2.8	1.2	4.1	6.9
2022	2.931	2.2	1.0	3.3	5.3
2023	2.820	2.4	1.0	3.1	5.1
2024	2.697	2.3	0.8	3.2	5.2

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A24. 2015 and 2024 $DDDA_F$ distributions for farms with fattening pigs

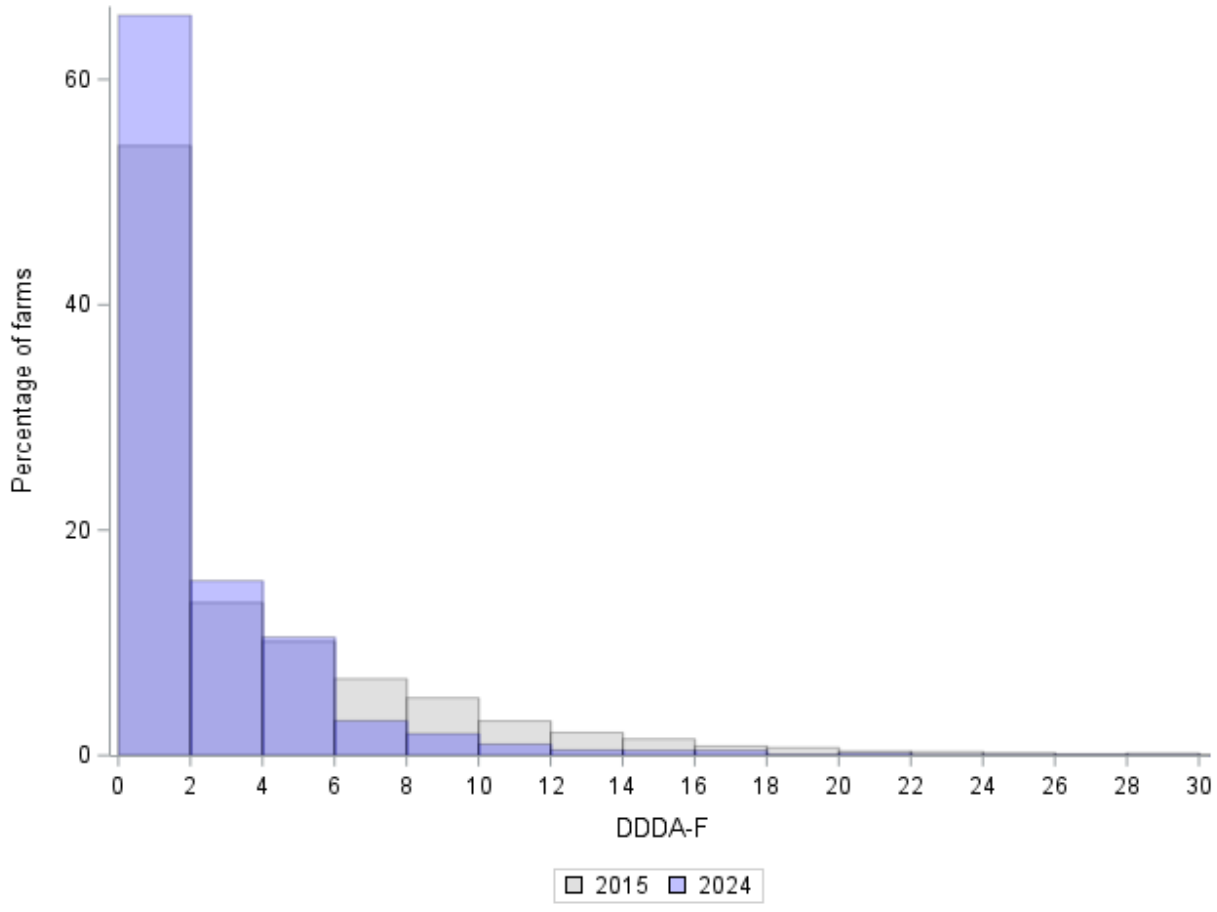


Figure A25. Scatter plot of 2023 and 2024 $DDDA_F$ values for farms with fattening pigs. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

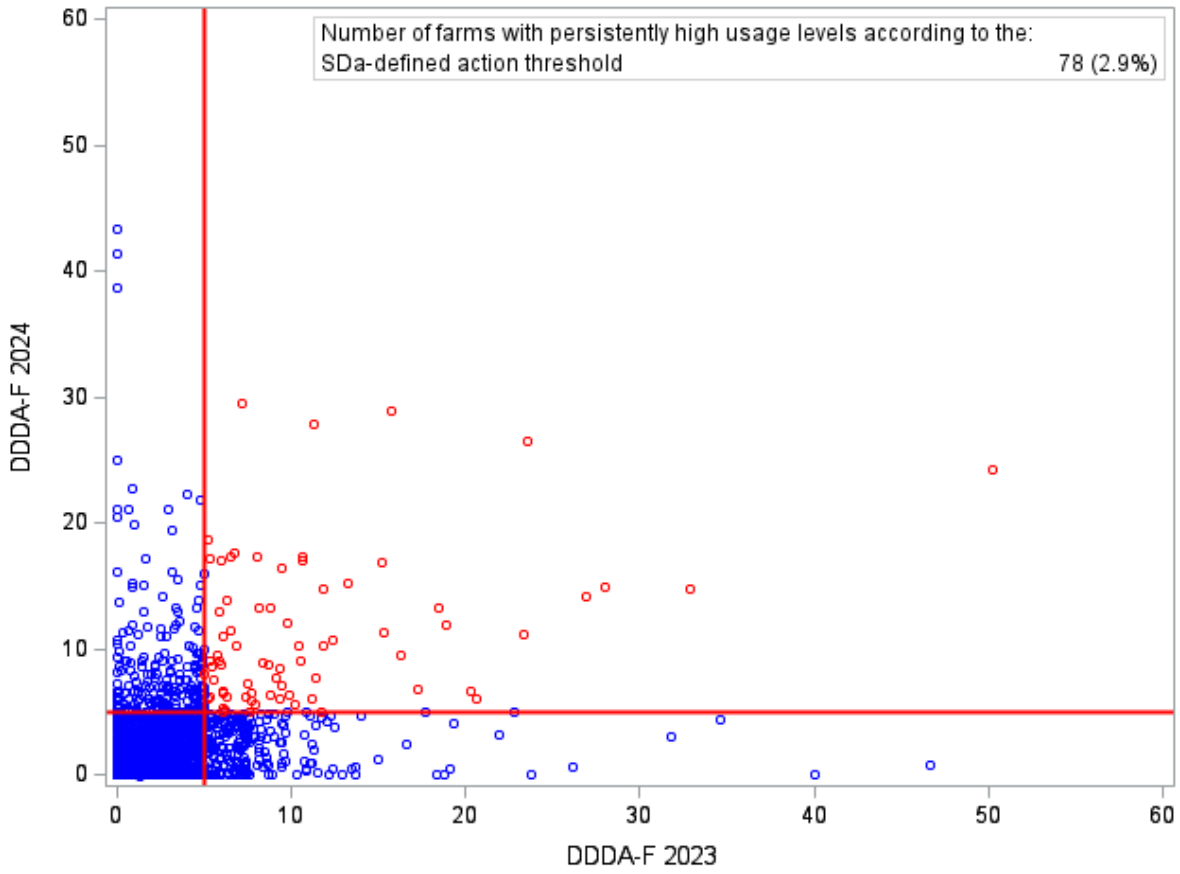


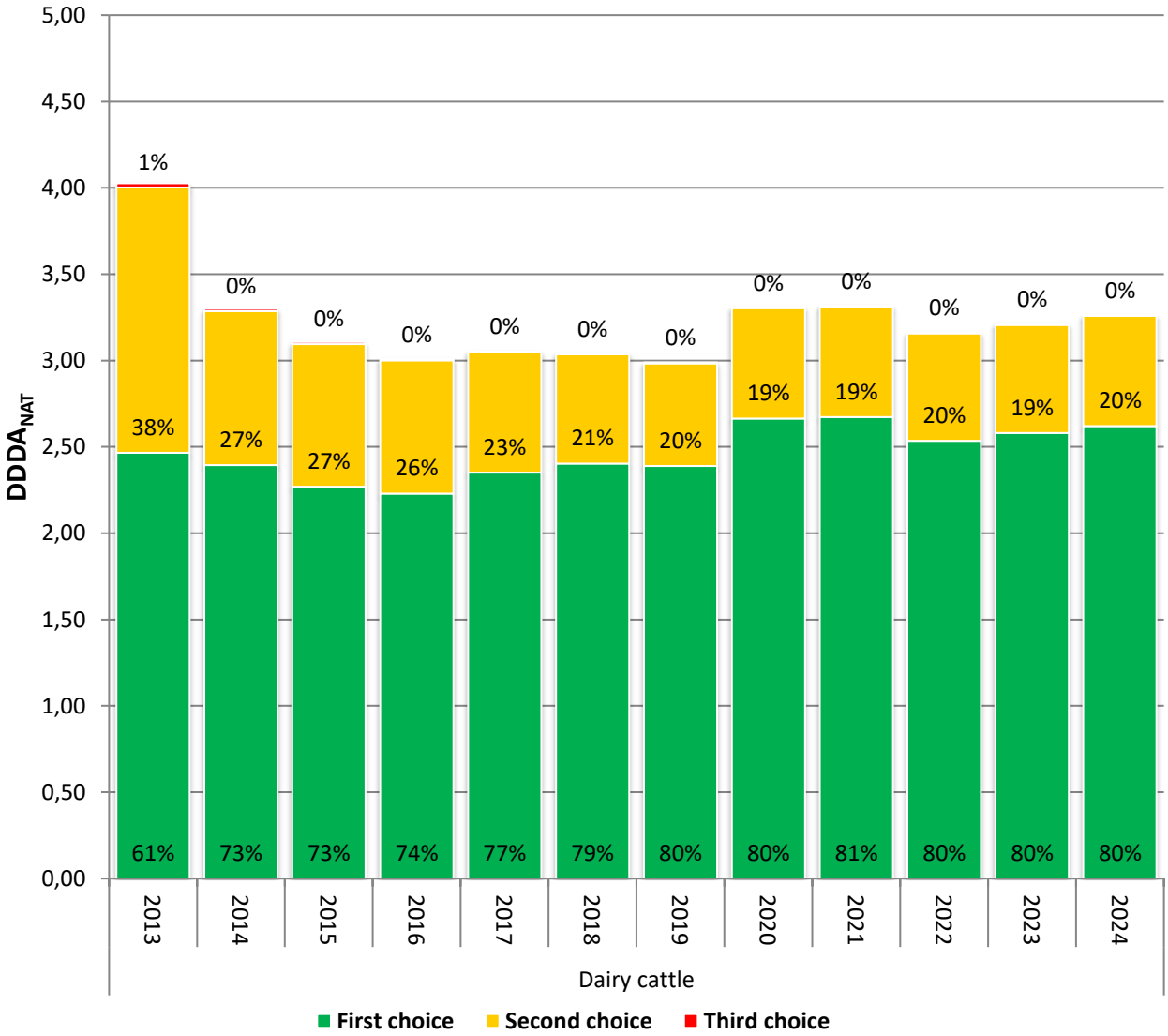
Table A27. Antibiotic use in $DDDA_F$ at farms with fattening pigs in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Oral	99.9%	0.00	0.00	0.00
1	Amphenicols	Parenteral	68.7%	0.00	0.10	0.21
1	Macrolides/lincosamides	Oral	84.5%	0.00	0.00	0.26
1	Macrolides/lincosamides	Parenteral	84.1%	0.00	0.00	0.02
1	Penicillins	Parenteral	40.5%	0.05	0.25	0.24
1	Pleuromutilins	Oral	98.8%	0.00	0.00	0.01
1	Pleuromutilins	Parenteral	96.4%	0.00	0.00	0.01
1	Tetracyclines	Oral	68.0%	0.00	0.88	1.02
1	Tetracyclines	Parenteral	64.8%	0.00	0.07	0.12
1	Trimethoprim/sulfonamides	Oral	84.6%	0.00	0.00	0.22
1	Trimethoprim/sulfonamides	Parenteral	98.7%	0.00	0.00	0.00
2	Aminoglycosides	Oral	99.7%	0.00	0.00	0.00
2	Aminopenicillins	Oral	95.8%	0.00	0.00	0.06
2	Aminopenicillins	Parenteral	86.8%	0.00	0.00	0.03
2	Quinolones	Oral	99.9%	0.00	0.00	0.00
2	Fixed-dose combinations	Oral	99.7%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	97.3%	0.00	0.00	0.00
2	Long-acting macrolides	Parenteral	97.0%	0.00	0.00	0.03
2	Macrolides/lincosamides	Parenteral	99.3%	0.00	0.00	0.01
3	Polymyxins	Oral	98.8%	0.00	0.00	0.01
3	Polymyxins	Parenteral	99.2%	0.00	0.00	0.00

Dairy cattle farming sector

1. $DDDA_{NAT}$

Figure A26. $DDDA_{NAT}$ trends in the dairy cattle farming sector over the 2013-2024 period, by antibiotics category



2. $DDDA_F$

Number of farms: 13.739
Number of farms with $DDDA_F$ = 0: 302 (2.2%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 944 (6.9%)
Number of farms that used polymyxins: 47 (0.3%)

Table A28. Antibiotic use at dairy cattle farms, presented as overall antibiotic use from 2012 to 2023 (A), use of dry cow (intramammary) antibiotics (B), use of mastitis injectors (C), and use of oral antibiotics in calves (D)

A **Overall antibiotic use, in $DDDA_F$***

Year	N	Mean	Median	P75	P90
2012	18.053	2.9	2.7	3.8	4.9
2013	18.005	2.8	2.8	3.7	4.7
2014	17.747	2.3	2.2	3.0	3.9
2015	17.737	2.2	2.1	2.9	3.7
2016	17.529	2.1	2.1	2.9	3.7
2017	17.121	2.1	2.1	2.9	3.8
2018	16.499	2.1	2.1	2.9	3.8
2019	15.871	2.2	2.1	3.0	3.9
2020	15.522	2.4	2.3	3.3	4.2
2021	15.379	2.3	2.3	3.2	4.2
2022	14.474	2.3	2.2	3.1	4.0
2023	14.080	2.3	2.2	3.1	4.0
2024	13.739	2.3	2.2	3.2	4.1

* Only years for which similar $DDDA_F$ calculation methods were used have been included.

B **Use of dry cow (intramammary) antibiotics, in $DDDA_F$ (animals >2 years of age)**

N	Mean	Median	P75	P90
13.739	1.2	1.1	1.8	2.4

C **Use of mastitis injectors, in $DDDA_F$ (animals >2 years of age)**

N	Mean	Median	P75	P90
13.739	0.6	0.5	0.9	1.4

D **Use of oral antibiotics in calves, in $DDDA_F$ (animals <56 days of age)**

N	Mean	Median	P75	P90
13.739	1.9	0.0	0.0	4.7

Figure A27. 2012 and 2024 $DDDA_F$ distributions for dairy cattle farms

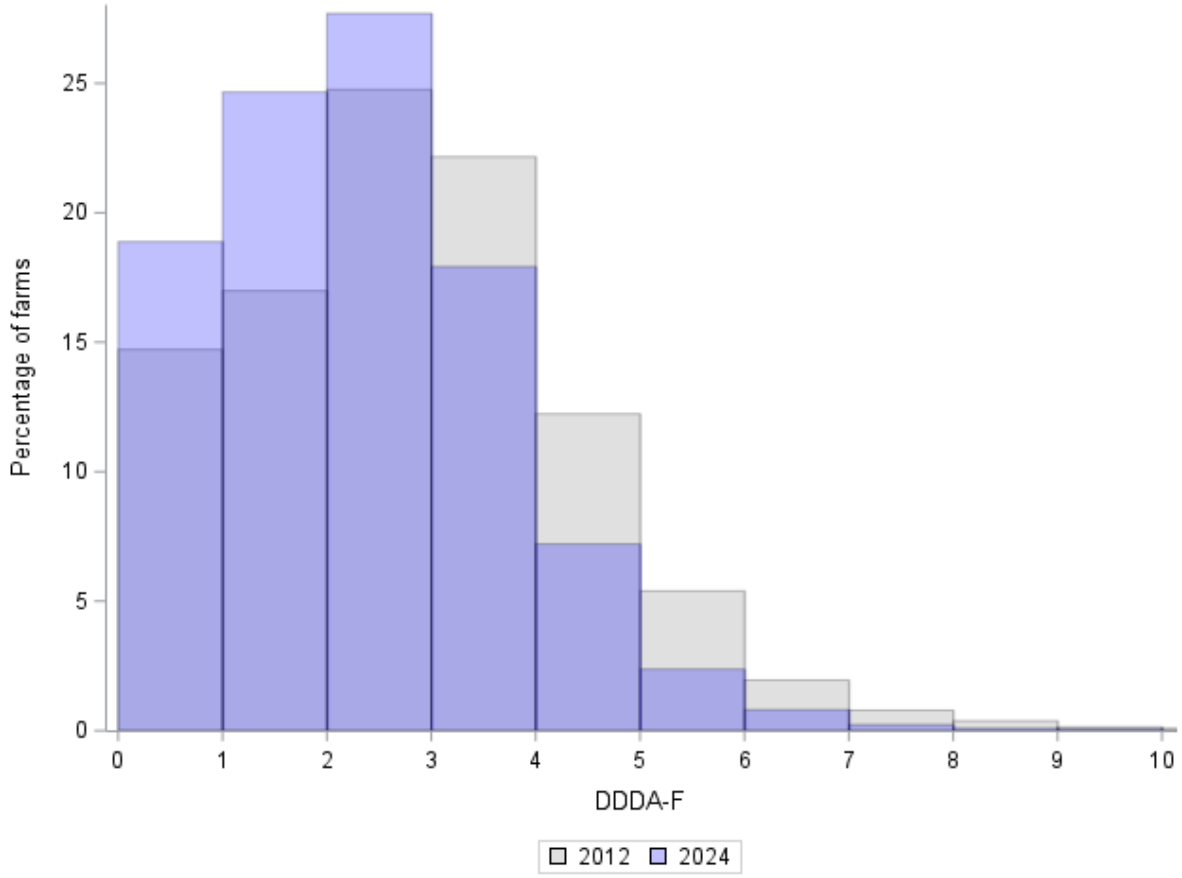


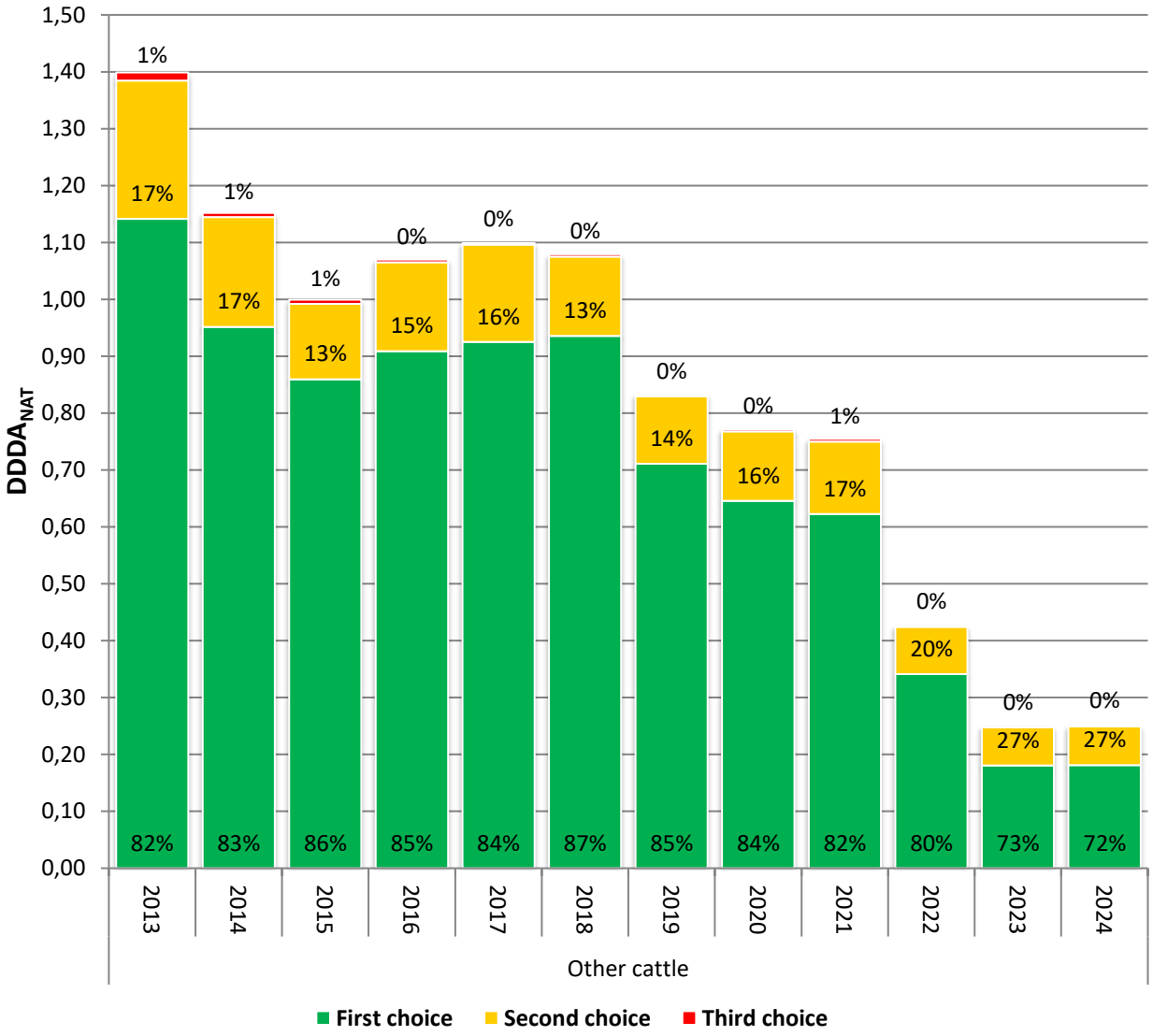
Table A29. Antibiotic use in $DDDA_F$ at dairy cattle farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	58.1%	0.00	0.04	0.03
1	Macrolides/lincosamides	Oral	99.9%	0.00	0.00	0.00
1	Macrolides/lincosamides	Parenteral	59.4%	0.00	0.06	0.07
1	Penicillins	Intramammary	61.1%	0.00	0.27	0.20
1	Penicillins	Intramammary for dry cow therapy	19.4%	0.88	1.42	0.92
1	Penicillins	Parenteral	20.0%	0.14	0.36	0.26
1	Tetracyclines	Oral	98.7%	0.00	0.00	0.00
1	Tetracyclines	Parenteral	23.0%	0.08	0.20	0.14
1	Tetracyclines	Intrauterine	59.3%	0.00	0.06	0.04
1	Trimethoprim/sulfonamides	Oral	99.1%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Parenteral	18.1%	0.12	0.26	0.19
2	Aminoglycosides	Oral	79.6%	0.00	0.00	0.01
2	Aminoglycosides	Parenteral	97.1%	0.00	0.00	0.00
2	Aminopenicillins	Intramammary	37.3%	0.08	0.24	0.16
2	Aminopenicillins	Oral	99.9%	0.00	0.00	0.00
2	Aminopenicillins	Parenteral	37.7%	0.03	0.10	0.08
2	1st- and 2nd-gen. cephalosporins	Intramammary	96.7%	0.00	0.00	0.01
2	1st- and 2nd-gen. cephalosporins	Intrauterine	81.4%	0.00	0.00	0.00
2	Quinolones	Oral	100%	0.00	0.00	0.00
2	Fixed-dose combinations	Intramammary	55.7%	0.00	0.17	0.14
2	Fixed-dose combinations	Intramammary for dry cow therapy	96.8%	0.00	0.00	0.02
2	Fixed-dose combinations	Parenteral	64.2%	0.00	0.04	0.03
2	Long-acting macrolides	Parenteral	83.8%	0.00	0.00	0.01
3	3rd- and 4th-gen. cephalosporins	Intramammary	99.8%	0.00	0.00	0.00
3	3rd- and 4th-gen. cephalosporins	Parenteral	99.8%	0.00	0.00	0.00
3	Fluoroquinolones	Oral	100.0%	0.00	0.00	0.00
3	Fluoroquinolones	Parenteral	93.1%	0.00	0.00	0.00
3	Polymyxins	Oral	99.9%	0.00	0.00	0.00
3	Polymyxins	Parenteral	99.8%	0.00	0.00	0.00

Non-dairy cattle farming sector

1. $DDDA_{NAT}$

Figure A28. $DDDA_{NAT}$ trends in the non-dairy cattle farming sector over the 2013-2024 period, by antibiotics category



2. $DDDA_F$

2.1 Rearing farms

Number of farms: 569
Number of farms with $DDDA_F$ = 0: 435 (76.4%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 2 (0.4%)
Number of farms that used polymyxins: 0 (0.0%)

Table A30. Antibiotic use in $DDDA_F$ at rearing farms from 2012 to 2024*

Year	N	Mean	Median	P75	P90
2012**	-	-	-	-	-
2013	472	1.1	0.0	0.2	2.3
2014	474	1.4	0.0	0.2	1.8
2015	470	0.8	0.0	0.2	1.7
2016	435	0.8	0.0	0.1	1.3
2017	520	1.0	0.0	0.0	1.6
2018	544	1.0	0.0	0.0	1.4
2019	573	1.0	0.0	0.1	1.5
2020	634	0.9	0.0	0.2	1.6
2021	664	0.8	0.0	0.2	1.2
2022	713	0.6	0.0	0.2	1.2
2023	694	0.5	0.0	0.0	0.8
2024	569	0.6	0.0	0.0	1.9

* Only years for which similar DDDAF calculation methods were used have been included.
** Rearing and beef farms were grouped together for 2012, as the available data did not allow for categorization based on sex.

Figure A29. 2013 and 2024 $DDDA_F$ distributions for rearing farms

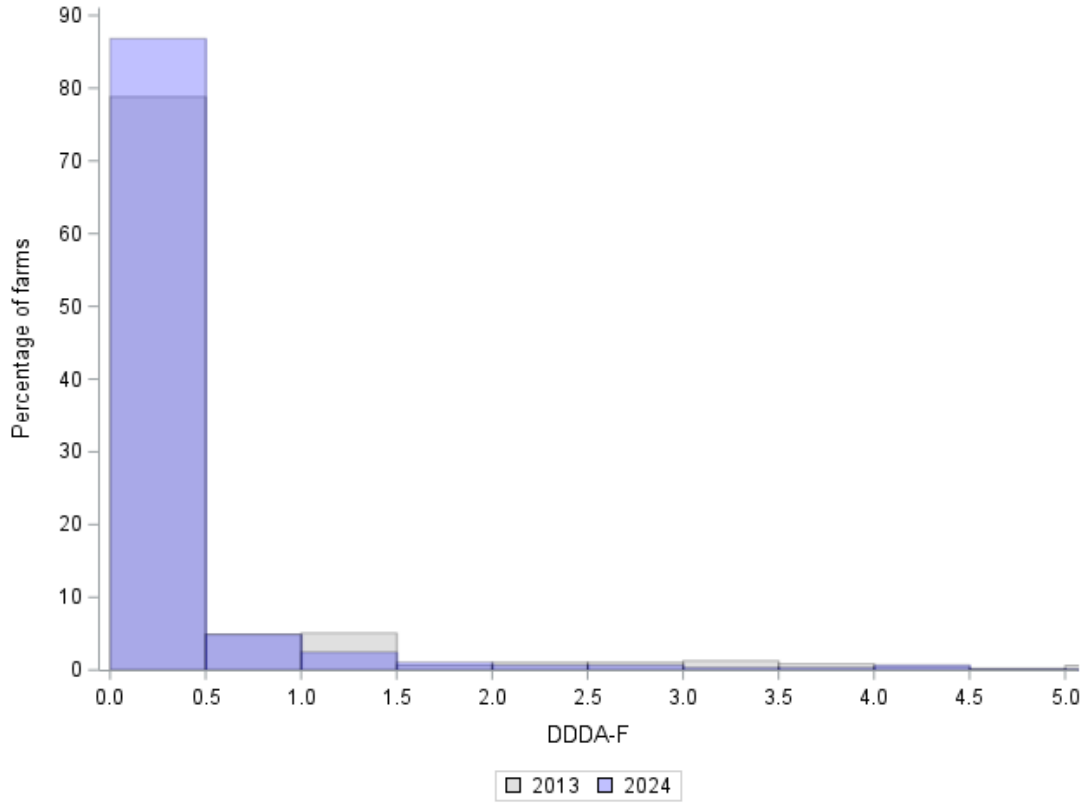


Table A31. Antibiotic use in $DDDA_F$ at rearing farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	88.0%	0.00	0.00	0.11
1	Macrolides/lincosamides	Oral	99.1%	0.00	0.00	0.05
1	Macrolides/lincosamides	Parenteral	97.2%	0.00	0.00	0.00
1	Penicillins	Intramammary for dry cow therapy	99.6%	0.00	0.00	0.00
1	Penicillins	Parenteral	89.8%	0.00	0.00	0.07
1	Tetracyclines	Oral	97.9%	0.00	0.00	0.21
1	Tetracyclines	Parenteral	96.3%	0.00	0.00	0.02
1	Trimethoprim/sulfonamides	Oral	98.8%	0.00	0.00	0.04
1	Trimethoprim/sulfonamides	Parenteral	95.1%	0.00	0.00	0.01
2	Aminoglycosides	Oral	99.3%	0.00	0.00	0.03
2	Aminoglycosides	Parenteral	99.3%	0.00	0.00	0.01
2	Aminopenicillins	Intramammary	99.6%	0.00	0.00	0.00
2	Aminopenicillins	Oral	99.6%	0.00	0.00	0.01
2	Aminopenicillins	Parenteral	94.6%	0.00	0.00	0.01
2	Quinolones	Oral	99.8%	0.00	0.00	0.00
2	Fixed-dose combinations	Intramammary	99.6%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	98.6%	0.00	0.00	0.00
2	Long-acting macrolides	Parenteral	94.9%	0.00	0.00	0.04
3	Fluoroquinolones	Parenteral	99.6%	0.00	0.00	0.00

2.2 Suckler cow farms

Number of farms: 7.833
Number of farms with $DDDA_F$ = 0: 4.220 (53.9%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 69 (1.6%)
Number of farms that used polymyxins: 9 (0.2%)

Table A32. Antibiotic use in $DDDA_F$ at suckler cow farms from 2012 to 2024*

Year	N	Mean	Median	P75	P90
2012	11.927	0.9	0.0	0.6	2.0
2013	9.857	0.7	0.1	0.8	2.2
2014	9.588	0.7	0.1	0.7	2.0
2015	9.305	0.6	0.1	0.7	2.0
2016	9.067	0.6	0.1	0.7	1.9
2017	9.351	0.5	0.0	0.6	1.7
2018	8.932	0.6	0.0	0.6	1.8
2019	8.263	0.6	0.0	0.6	1.9
2020	7.914	0.6	0.0	0.6	2.0
2021	7.540	0.6	0.0	0.6	1.9
2022	7.876	0.5	0.0	0.5	1.7
2023	7.937	0.5	0.0	0.5	1.6
2024	7.833	0.5	0.0	0.5	1.6

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A30. 2012 and 2024 $DDDA_F$ distributions for suckler cow farms

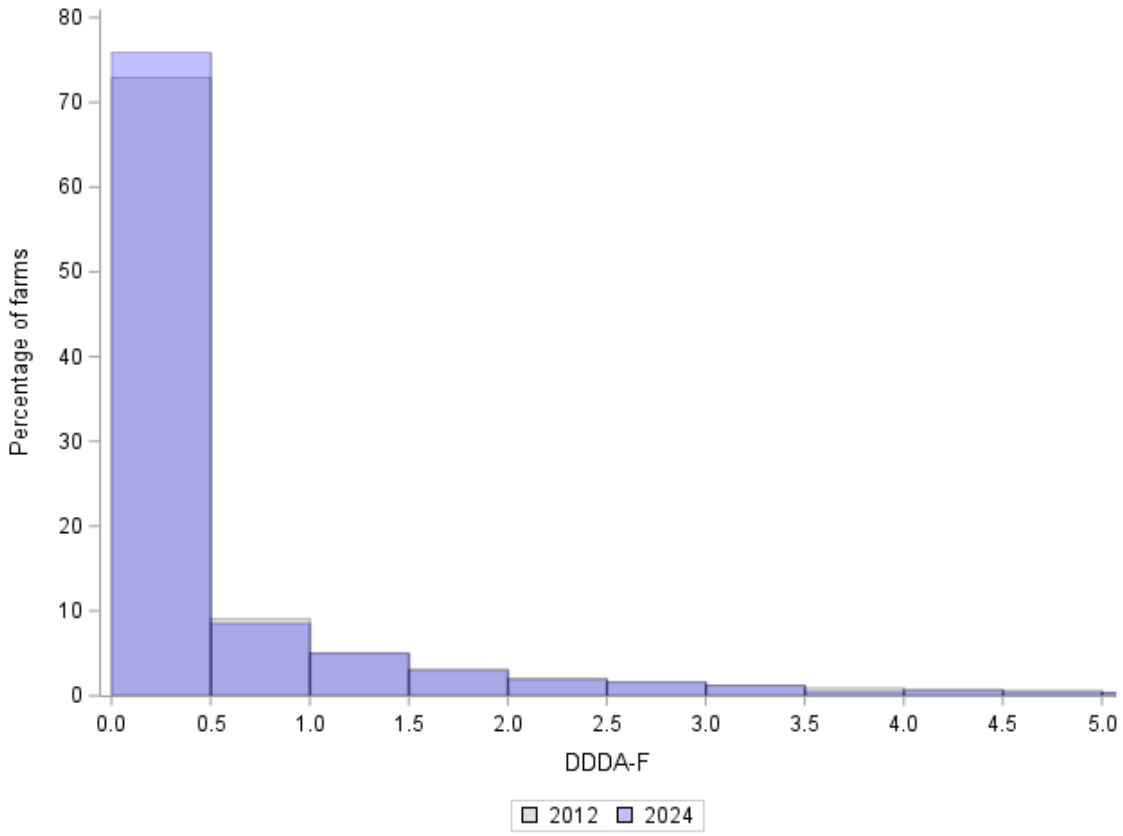


Table A33. Antibiotic use in $DDDA_F$ at suckler cow farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	87.5%	0.00	0.00	0.03
1	Macrolides/lincosamides	Oral	99.9%	0.00	0.00	0.00
1	Macrolides/lincosamides	Parenteral	94.8%	0.00	0.00	0.01
1	Penicillins	Intramammary	99.0%	0.00	0.00	0.01
1	Penicillins	Intramammary for dry cow therapy	97.5%	0.00	0.00	0.03
1	Penicillins	Parenteral	76.4%	0.00	0.00	0.17
1	Tetracyclines	Oral	99.4%	0.00	0.00	0.01
1	Tetracyclines	Parenteral	85.8%	0.00	0.00	0.05
1	Tetracyclines	Intrauterine	92.1%	0.00	0.00	0.02
1	Trimethoprim/sulfonamides	Oral	99.7%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Parenteral	90.3%	0.00	0.00	0.02
2	Aminoglycosides	Oral	98.2%	0.00	0.00	0.00
2	Aminoglycosides	Parenteral	99.0%	0.00	0.00	0.00
2	Aminopenicillins	Intramammary	97.4%	0.00	0.00	0.01
2	Aminopenicillins	Oral	100.0%	0.00	0.00	0.00
2	Aminopenicillins	Parenteral	84.7%	0.00	0.00	0.06
2	1st- and 2nd-gen. cephalosporins	Intramammary	99.9%	0.00	0.00	0.00
2	1st- and 2nd-gen. cephalosporins	Intrauterine	99.2%	0.00	0.00	0.00
2	Quinolones	Oral	100.0%	0.00	0.00	0.00
2	Fixed-dose combinations	Intramammary	98.4%	0.00	0.00	0.01
2	Fixed-dose combinations	Intramammary for dry cow therapy	99.8%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	88.1%	0.00	0.00	0.07
2	Long-acting macrolides	Parenteral	93.5%	0.00	0.00	0.03
3	3rd- and 4th-gen. cephalosporins	Intramammary	100.0%	0.00	0.00	0.00
3	3rd- and 4th-gen. cephalosporins	Parenteral	100.0%	0.00	0.00	0.00
3	Fluoroquinolones	Parenteral	99.1%	0.00	0.00	0.00
3	Polymyxins	Oral	99.9%	0.00	0.00	0.00
3	Polymyxins	Parenteral	99.9%	0.00	0.00	0.00

2.3 Beef farms

Number of farms: 2.493
Number of farms with $DDDA_F$ = 0: 1.885 (75.6%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 11 (0.4%)
Number of farms that used polymyxins: 1 (0.0%)

Table A34. Antibiotic use in DDDAF at beef farms from 2012 to 2024*

Year	N	Mean	Median	P75	P90
2012**	-	-	-	-	-
2013	3.316	1.8	0.0	0.6	4.2
2014	3.297	1.7	0.0	0.5	4.4
2015	3.196	1.5	0.0	0.4	2.9
2016	3.046	1.6	0.0	0.4	2.9
2017	2.919	1.3	0.0	0.3	2.3
2018	2.852	1.3	0.0	0.3	2.2
2019	2.778	1.0	0.0	0.2	1.5
2020	2.728	0.9	0.0	0.2	1.4
2021	2.589	1.1	0.0	0.2	1.6
2022	2.614	0.6	0.0	0.2	1.2
2023	2.579	0.3	0.0	0.0	0.7
2024	2.493	0.3	0.0	0.0	1.5

* Only years for which similar DDDAF calculation methods were used have been included.
** Rearing and beef farms were grouped together for 2012, as the available data did not allow for categorization based on sex.

Figure A31. 2013 and 2024 $DDDA_F$ distributions for beef farms

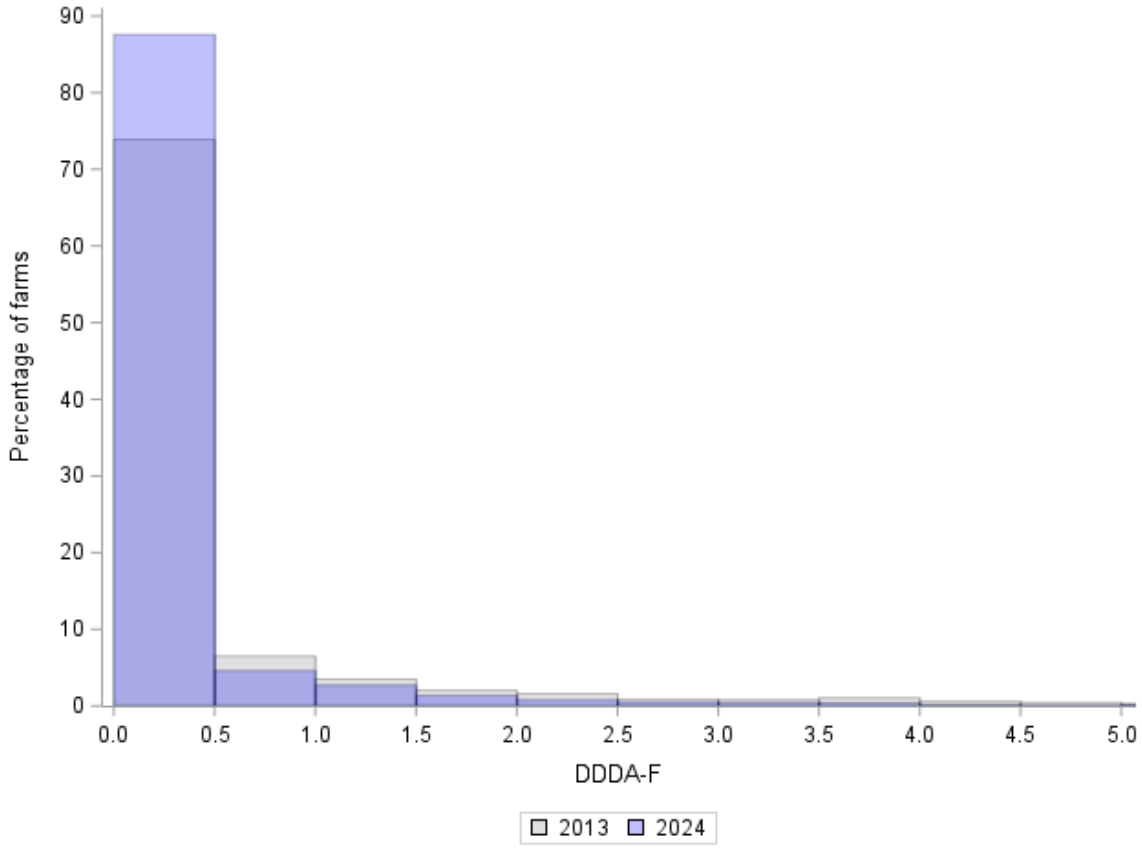


Table A35. Antibiotic use in $DDDA_F$ at beef farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Amphenicols	Parenteral	88.4%	0.00	0.00	0.05
1	Macrolides/lincosamides	Oral	99.7%	0.00	0.00	0.01
1	Macrolides/lincosamides	Parenteral	96.0%	0.00	0.00	0.01
1	Penicillins	Intramammary	99.8%	0.00	0.00	0.00
1	Penicillins	Intramammary for dry cow therapy	99.4%	0.00	0.00	0.00
1	Penicillins	Parenteral	89.5%	0.00	0.00	0.05
1	Tetracyclines	Oral	98.4%	0.00	0.00	0.04
1	Tetracyclines	Parenteral	92.5%	0.00	0.00	0.02
1	Tetracyclines	Intrauterine	98.1%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Oral	99.4%	0.00	0.00	0.01
1	Trimethoprim/sulfonamides	Parenteral	96.4%	0.00	0.00	0.00
2	Aminoglycosides	Oral	99.0%	0.00	0.00	0.00
2	Aminoglycosides	Parenteral	99.3%	0.00	0.00	0.00
2	Aminopenicillins	Intramammary	99.5%	0.00	0.00	0.00
2	Aminopenicillins	Parenteral	89.8%	0.00	0.00	0.03
2	1st- and 2nd-gen. cephalosporins	Intrauterine	99.9%	0.00	0.00	0.00
2	Fixed-dose combinations	Intramammary	99.6%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	95.5%	0.00	0.00	0.01
2	Long-acting macrolides	Parenteral	93.3%	0.00	0.00	0.05
2	Macrolides/lincosamides	Parenteral	99.4%	0.00	0.00	0.00
3	Fluoroquinolones	Parenteral	99.6%	0.00	0.00	0.00
3	Polymyxins	Oral	100.0%	0.00	0.00	0.00

Layer farming sector

1. $DDDA_F$

1.1 Layer farms

Number of farms: 811
Number of farms with $DDDA_F$ = 0: 622 (76.7%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 0 (0.0%)
Number of farms that used polymyxins: 75 (9.2%)

Table A36. Antibiotic use in $DDDA_F$ at layer farms from 2017 to 2024**

Year	N	Mean	Median	P75	P90
2017	875	0.9	0.0	0.0	3.1
2018	844	1.6	0.0	0.8	6.1
2019	844	1.8	0.0	1.0	6.6
2020	818	1.7	0.0	1.2	5.9
2021	824	1.4	0.0	0.0	5.1
2022	816	1.0	0.0	0.0	2.0
2023	814	1.5	0.0	0.0	5.4
2024	811	1.8	0.0	0.0	5.3

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A33. 2017 and 2024 $DDDA_F$ distributions for layer farms

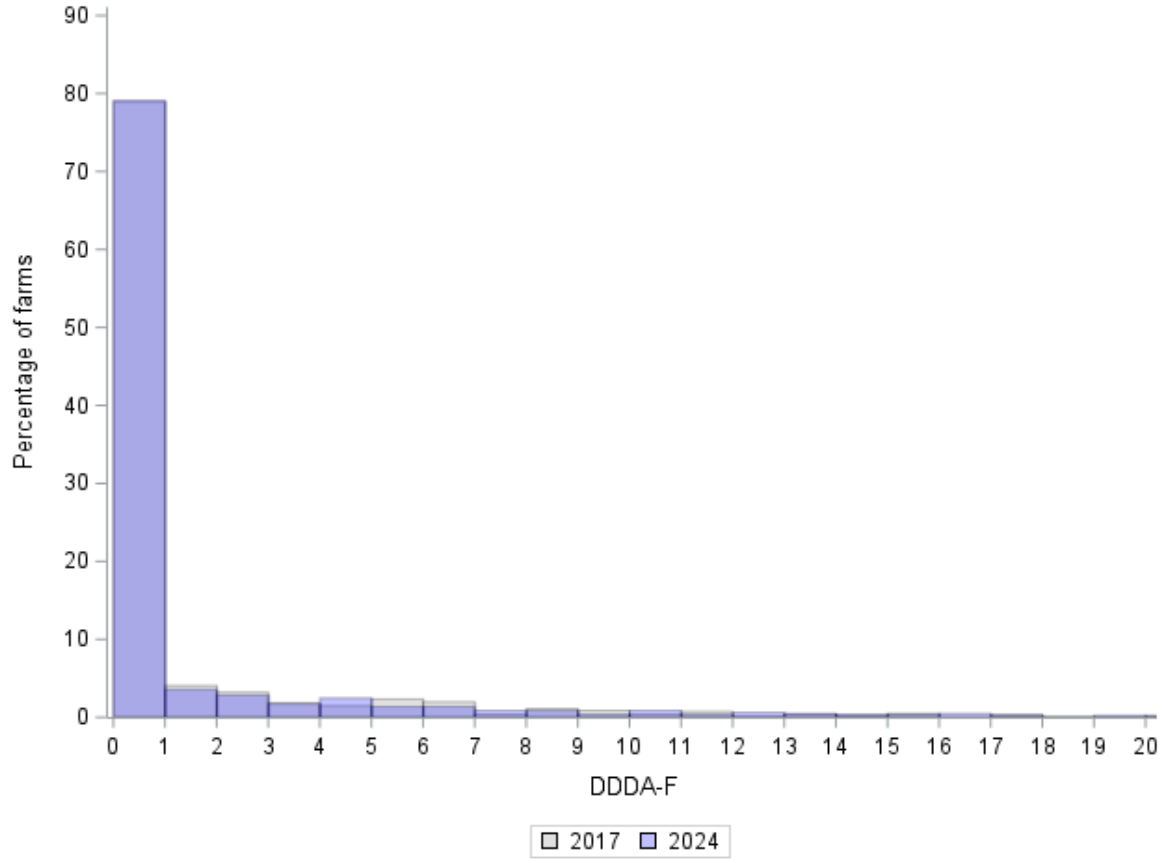


Table A37. Antibiotic use in $DDDA_F$ at layer farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	94.8%	0.00	0.00	0.58
1	Pleuromutilins	Oral	97.5%	0.00	0.00	0.13
2	Aminoglycosides	Oral	94.6%	0.00	0.00	0.37
2	Macrolides/lincosamides	Oral	89.6%	0.00	0.00	0.20
3	Polymyxins	Oral	90.8%	0.00	0.00	0.51

Layer pullet and layer parent/grandparent stock farming sectors

1.2 Pullet rearing farms

Number of farms: 158
Number of farms with $DDDA_F$ = 0: 91 (76.7%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 1 (0.0%)
Number of farms that used polymyxins: 2 (9.2%)

Table A38. Antibiotic use in $DDDA_F$ at pullet rearing farms from 2017 to 2024**

Year	N	Mean	Median	P75	P90
2017	187	2.4	0.0	3.6	5.9
2018	176	2.3	0.0	2.7	5.8
2019	177	2.0	0.0	2.9	6.0
2020	175	1.8	0.0	2.7	5.8
2021	175	1.7	0.0	2.4	5.0
2022	169	1.8	0.0	2.8	6.3
2023	166	2.3	0.0	3.0	6.5
2024	158	2.3	0.0	3.4	8.3

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A33. 2017 and 2024 $DDDA_F$ distributions for pullet rearing farms

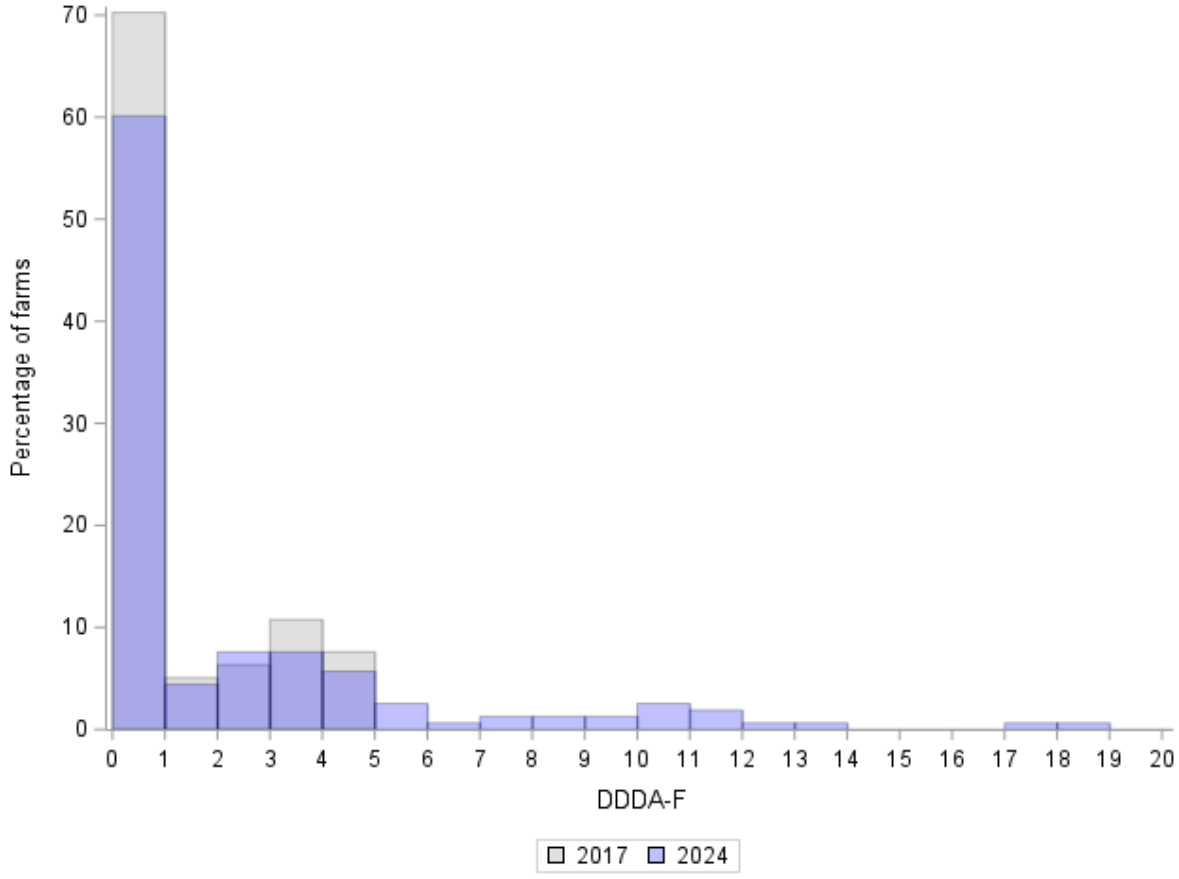


Table A39. Antibiotic use in $DDDA_F$ at pullet rearing farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	72.8%	0.00	1.03	1.33
1	Tetracyclines	Oral	89.9%	0.00	0.00	0.52
2	Aminoglycosides	Oral	99.4%	0.00	0.00	0.03
2	Aminopenicillins	Oral	98.7%	0.00	0.00	0.06
2	Quinolones	Oral	97.5%	0.00	0.00	0.17
2	Macrolides/lincosamides	Oral	88.0%	0.00	0.00	0.23

1.3 Parent/grandparent stock rearing farms

Number of farms: 38
Number of farms with $DDDA_F$ = 0: 25 (65.7%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 0 (0.0%)
Number of farms that used polymyxins: 0 (0.0%)

Table A40. Antibiotic use in $DDDA_F$ at parent/grandparent stock rearing farms from 2017 to 2024**

Year	N	Mean	Median	P75	P90
2017	20	4.1	0.0	8.6	13.1
2018	20	7.2	0.0	10.8	25.5
2019	19	6.4	0.0	10.5	20.9
2020	17	5.3	0.0	8.7	14.8
2021	21	10.7	0.0	14.4	21.2
2022	24	8.2	0.0	13.5	23.5
2023	25	8.1	0.0	16.3	25.4
2024	38	17.6	0.0	11.6	30.6

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A34. 2017 and 2024 $DDDA_F$ distributions for parent/grandparent stock rearing farms

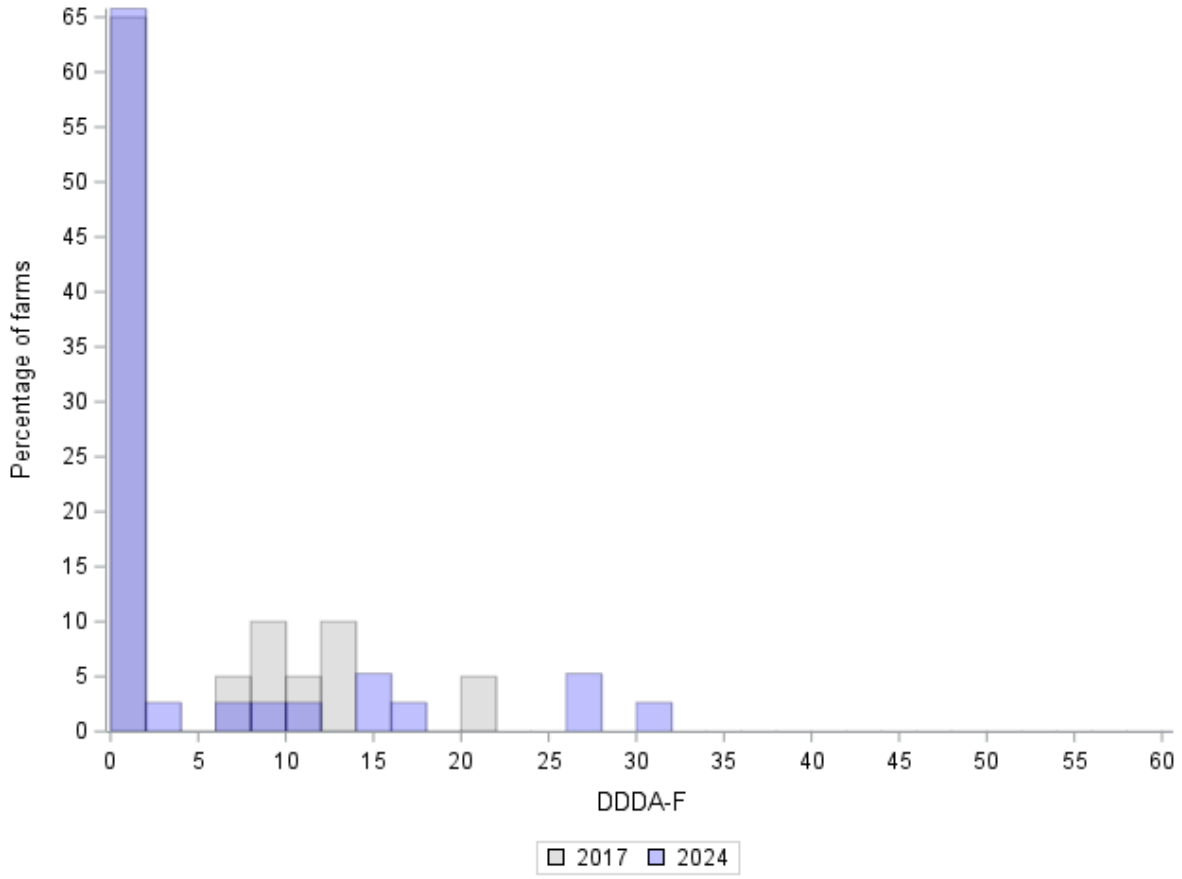


Table A41. Antibiotic use in $DDDA_F$ at parent/grandparent stock rearing farms in 2023, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	84.2%	0.00	0.00	1.68
1	Tetracyclines	Oral	94.7%	0.00	0.00	1.05
1	Trimethoprim/sulfonamides	Oral	94.7%	0.00	0.00	1.61
2	Aminoglycosides	Oral	97.4%	0.00	0.00	0.72
2	Aminopenicillins	Oral	84.2%	0.00	0.00	9.84
2	Quinolones	Oral	94.7%	0.00	0.00	2.65
2	Macrolides/lincosamides	Oral	97.4%	0.00	0.00	0.09

1.4 Parent/grandparent stock production farms

Number of farms: 48
Number of farms with $DDDA_F$ = 0: 33 (68.8%)
Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)
Number of farms that used fluoroquinolones: 1 (2.1%)
Number of farms that used polymyxins: 2 (4.1%)

Table A42. Antibiotic use in $DDDA_F$ at parent/grandparent stock production farms from 2017 to 2024**

Year	N	Mean	Median	P75	P90
2017	43	3.3	0.0	5.9	9.6
2018	43	3.2	0.0	5.5	9.7
2019	51	3.5	0.0	2.8	10.5
2020	48	3.0	0.3	4.0	8.9
2021	53	1.9	0.0	2.5	5.9
2022	54	1.6	0.0	1.1	6.4
2023	50	1.2	0.0	0.0	4.6
2024	48	2.0	0.0	1.6	9.4

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A35. 2017 and 2024 $DDDA_F$ distributions for parent/grandparent stock production farms

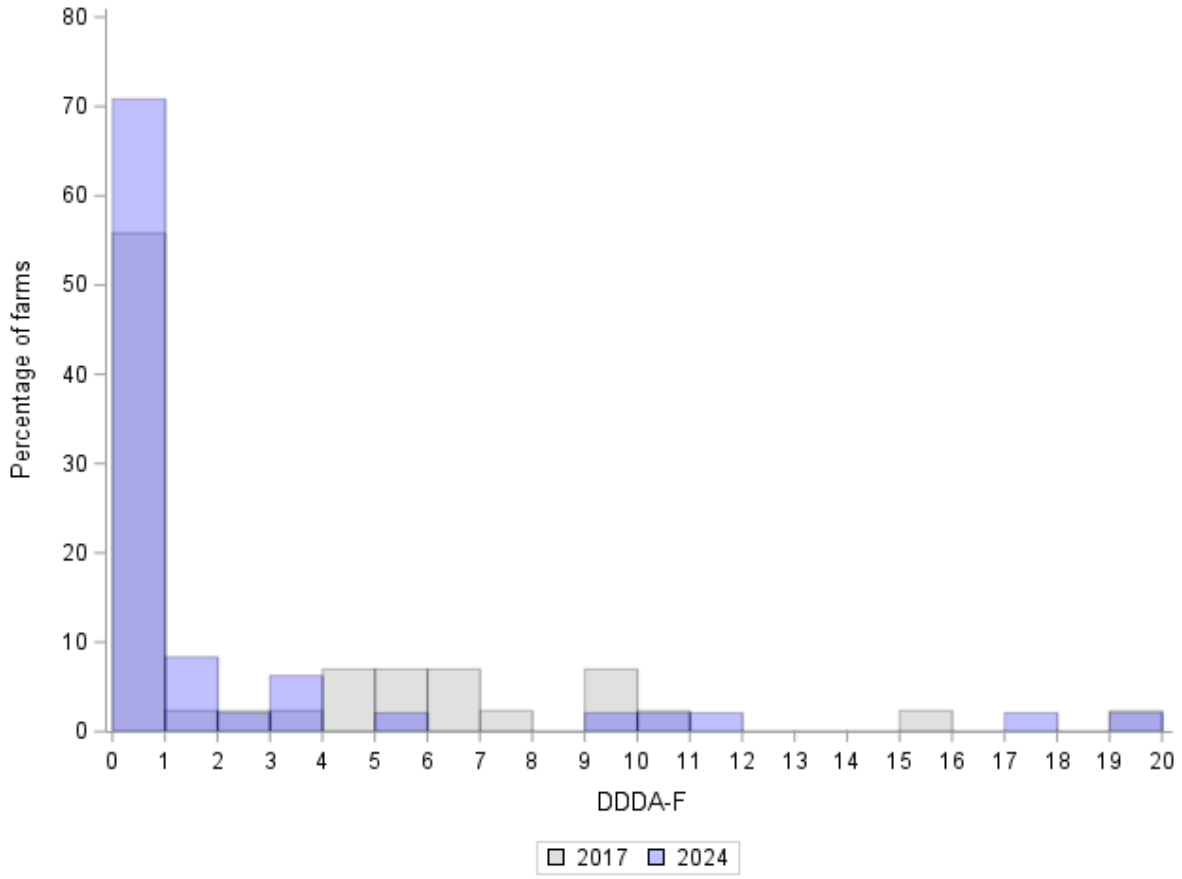


Table A43. Antibiotic use in $DDDA_F$ at parent/grandparent stock production farms in 2024, by pharmacotherapeutic group and route of administration

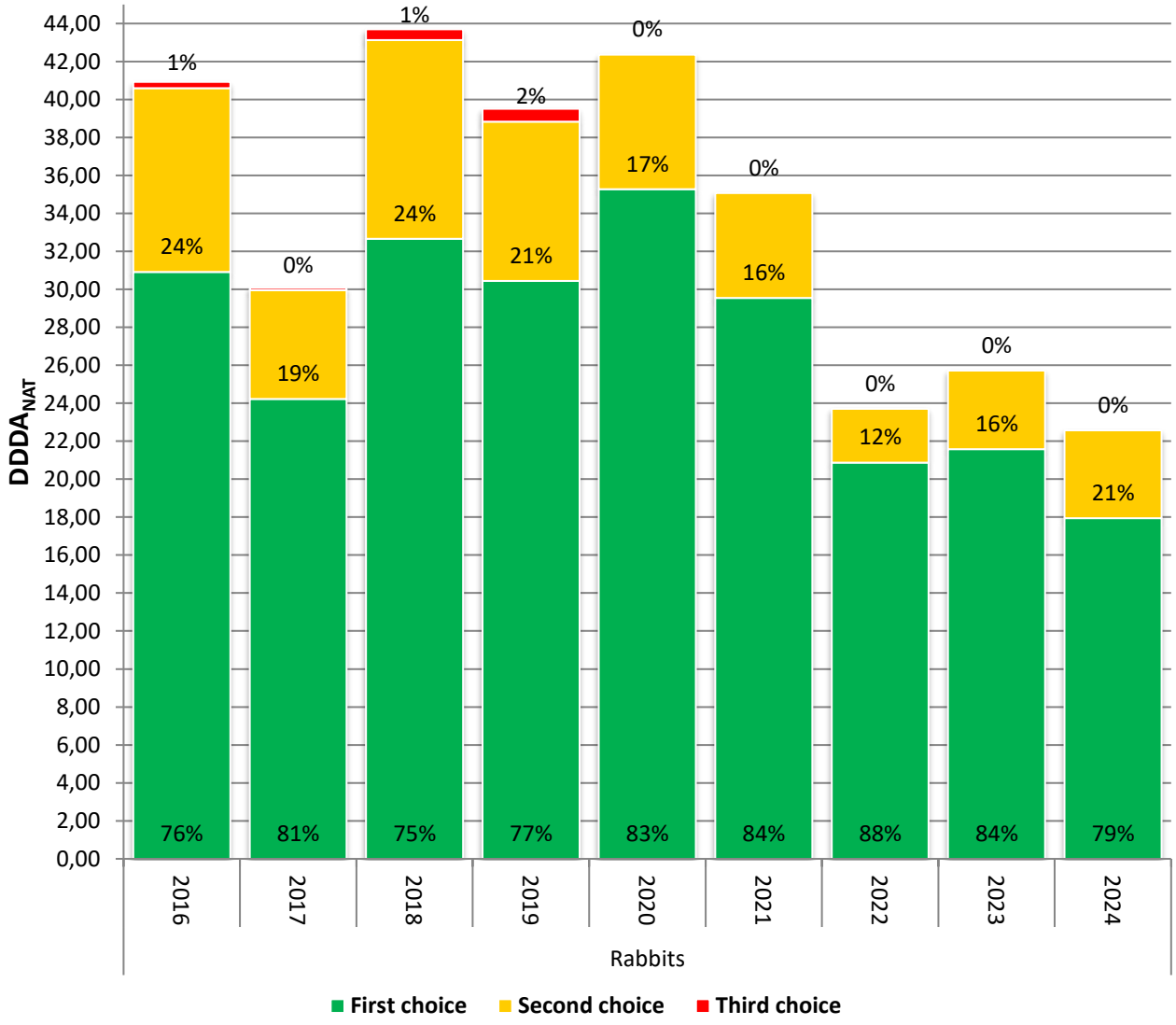
Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	95.8%	0.00	0.00	0.12
1	Tetracyclines	Oral	87.5%	0.00	0.00	0.48
2	Aminoglycosides	Oral	95.8%	0.00	0.00	0.16
2	Aminopenicillins	Oral	95.8%	0.00	0.00	0.14
2	Quinolones	Oral	93.8%	0.00	0.00	0.41
2	Macrolides/lincosamides	Oral	87.5%	0.00	0.00	0.23
3	Polymyxins	Oral	95.8%	0.00	0.00	0.27

Small food producing livestock sectors

Rabbit farming sector

1. $DDDA_{NAT}$

Figure A36. $DDDA_{NAT}$ trends in the rabbit farming sector over the 2016-2024 period, by antibiotics category



2. $DDDA_F$

Number of farms: 31
Number of farms with $DDDA_F$ = 0: 4 (12.9%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 0 (0.0%)
Number of farms that used polymyxins: 0 (0.0%)

Table A44. Antibiotic use in DDDAF at rabbit farms from 2016 to 2024*

Year	N	Mean	Median	P75	P90
2016	41	40.9	31.8	60.3	84.4
2017	49	25.4	21.7	37.9	49.4
2018	40	47.9	44.2	61.1	96.3
2019	36	42.5	40.4	60.8	75.9
2020	35	53.5	39.9	75.3	124.4
2021	31	43.4	30.7	58.8	80.9
2022	31	24.7	26.3	35.0	45.2
2023	31	24.7	24.3	31.8	40.5
2024	31	20.8	21.2	28.4	44.9

* Only years for which similar DDDAF calculation methods were used have been included.

Figure A37. 2016 and 2024 $DDDA_F$ distributions for rabbit farms

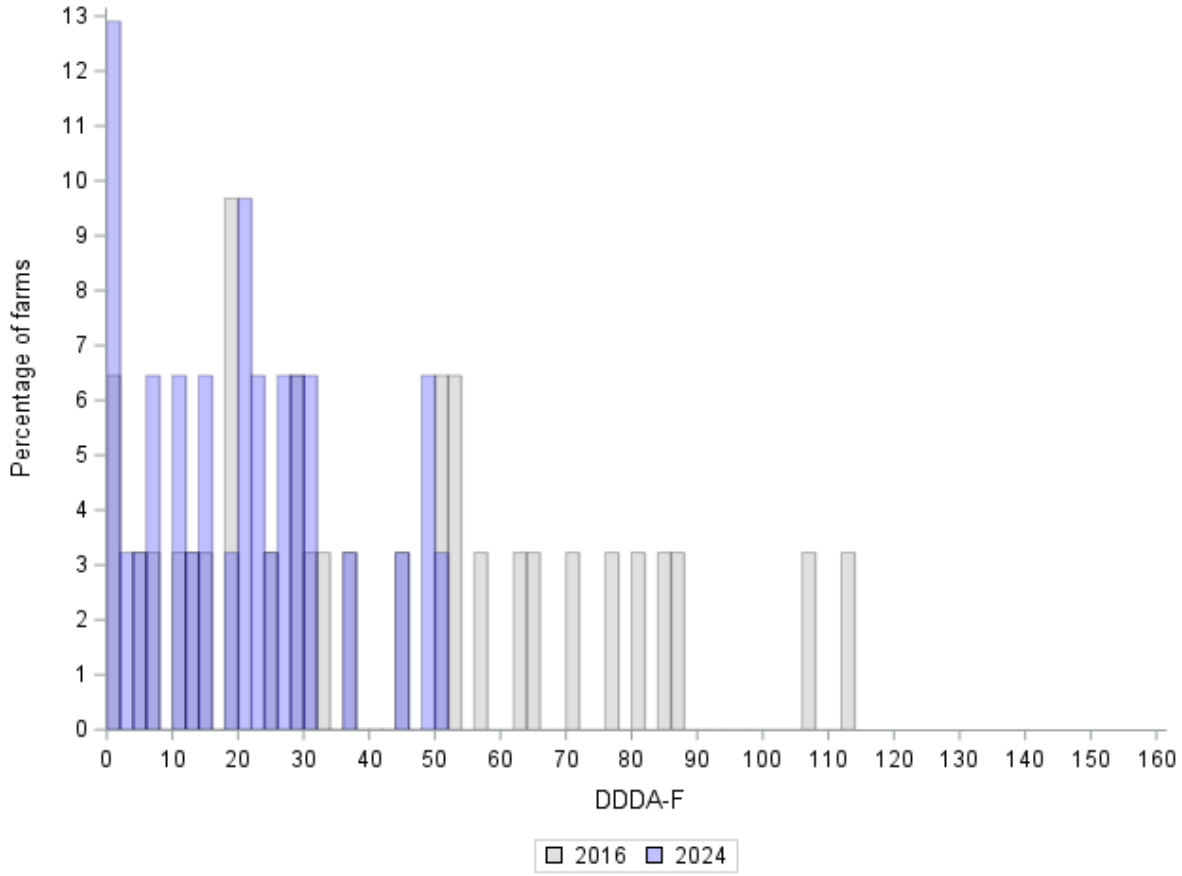


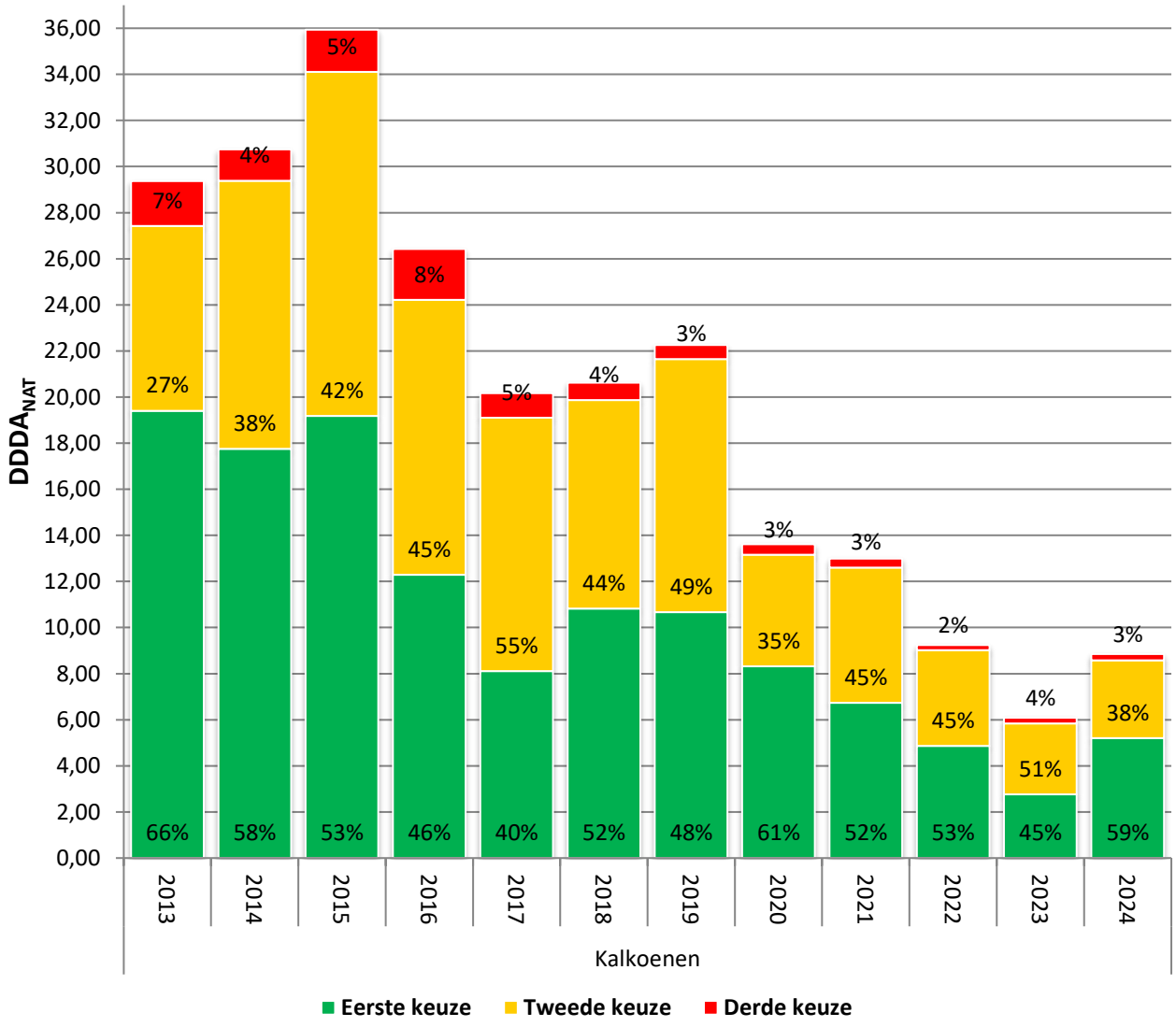
Table A45. Antibiotic use in $DDDA_F$ at rabbit farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Macrolides/lincosamides	Oral	58.1%	0.00	16.97	6.69
1	Macrolides/lincosamides	Parenteral	96.8%	0.00	0.00	0.03
1	Other	Oral	48.4%	0.99	6.01	4.49
1	Penicillins	Parenteral	96.8%	0.00	0.00	0.00
1	Pleuromutilins	Oral	77.4%	0.00	0.00	1.73
1	Tetracyclines	Oral	80.6%	0.00	0.00	1.59
1	Tetracyclines	Parenteral	41.9%	0.50	1.55	0.80
1	Trimethoprim/sulfonamides	Oral	83.9%	0.00	0.00	0.82
2	Aminoglycosides	Oral	48.4%	1.03	4.67	3.99
2	Aminoglycosides	Parenteral	96.8%	0.00	0.00	0.02
2	Quinolones	Oral	83.9%	0.00	0.00	0.66
2	Long-acting macrolides	Parenteral	93.5%	0.00	0.00	0.02

Turkey farming sector

1. $DDDA_{NAT}$

Figure A38. $DDDA_{NAT}$ trends in the turkey farming sector over the 2013-2024 period, by antibiotics category



2. $DDDA_F$

Number of farms: 30
Number of farms with $DDDA_F$ = 0: 7 (23.3%)
Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)
Number of farms that used fluoroquinolones: 7 (23.3%)
Number of farms that used polymyxins: 0 (0.0%)

Table A46. Antibiotic use in $DDDA_F$ at turkey farms from 2016 to 2024**

Year	N	Mean	Median	P75	P90
2016	46	28.0	19.3	34.2	72.8
2017	45	18.7	10.4	25.5	59.8
2018	38	20.9	11.6	24.1	49.7
2019	43	18.7	13.2	21.5	40.1
2020	43	9.3	6.1	15.7	22.2
2021	39	11.1	8.0	13.2	26.3
2022	38	11.6	5.7	13.7	28.1
2023	33	7.5	2.8	12.3	17.5
2024	30	9.3	5.5	12.6	27.6

* These antibiotics are not authorized for use in poultry.
** Only years for which similar DDDAF calculation methods were used have been included.

Figure A39. 2016 and 2024 $DDDA_F$ distributions for turkey farms

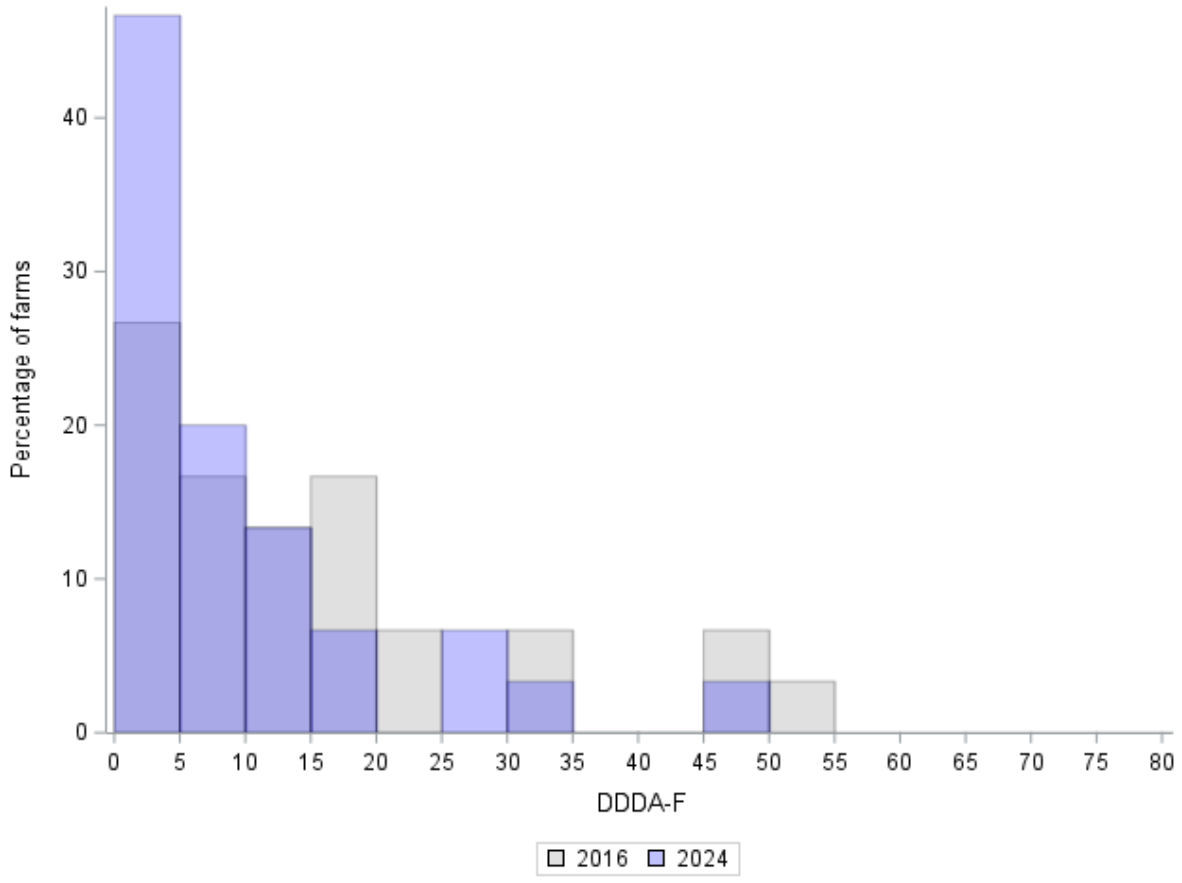


Figure A40. Scatter plot of 2023 and 2024 $DDDA_F$ values for turkey farms. The red solid lines represent the action thresholds defined by the SDa. The red dotted lines represent the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

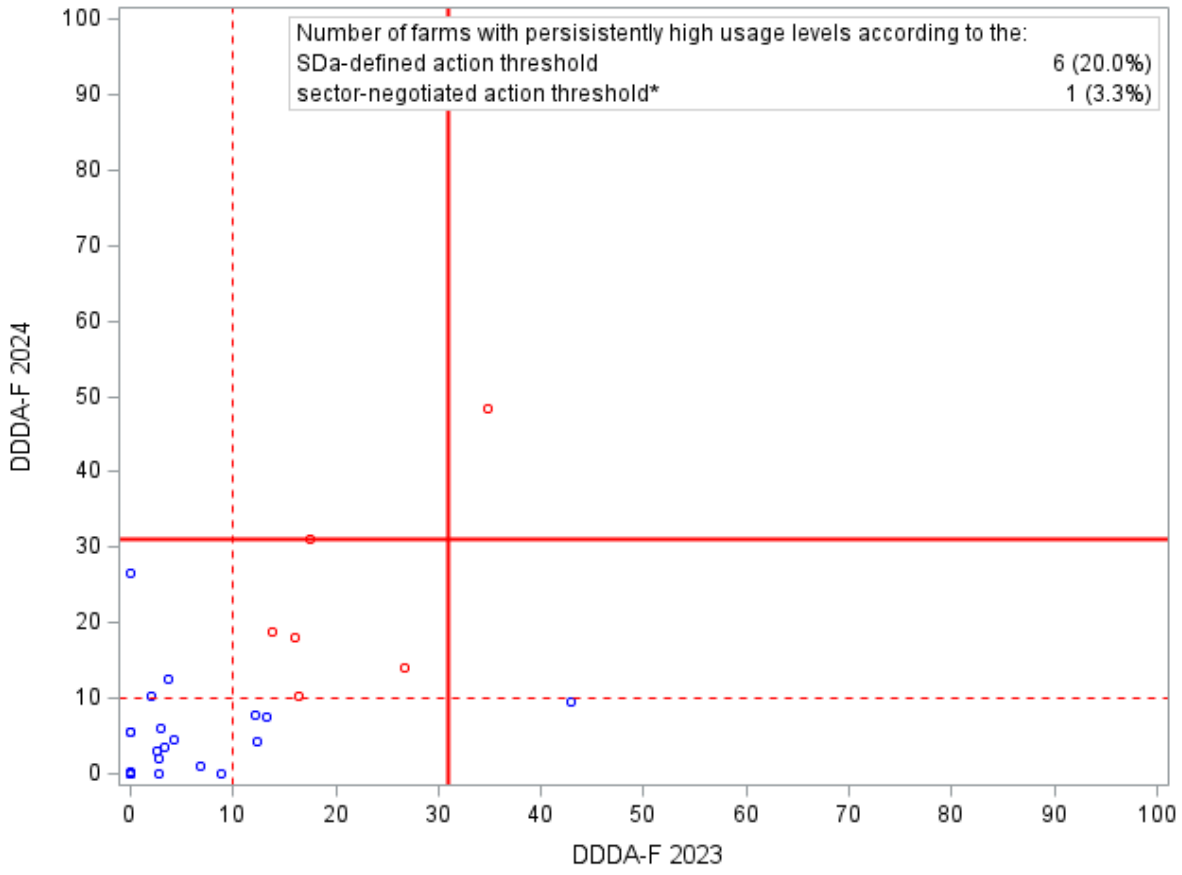


Table A47. Antibiotic use in $DDDA_F$ at turkey farms in 2024, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F$=0	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	76.7%	0.00	0.00	0.92
1	Tetracyclines	Oral	43.3%	1.89	3.08	3.33
1	Trimethoprim/sulfonamides	Oral	93.3%	0.00	0.00	0.13
2	Aminopenicillins	Oral	63.3%	0.00	1.48	3.39
2	Macrolides/lincosamides	Oral	46.7%	0.27	1.76	1.06
3	Fluoroquinolones	Oral	76.7%	0.00	0.00	0.47

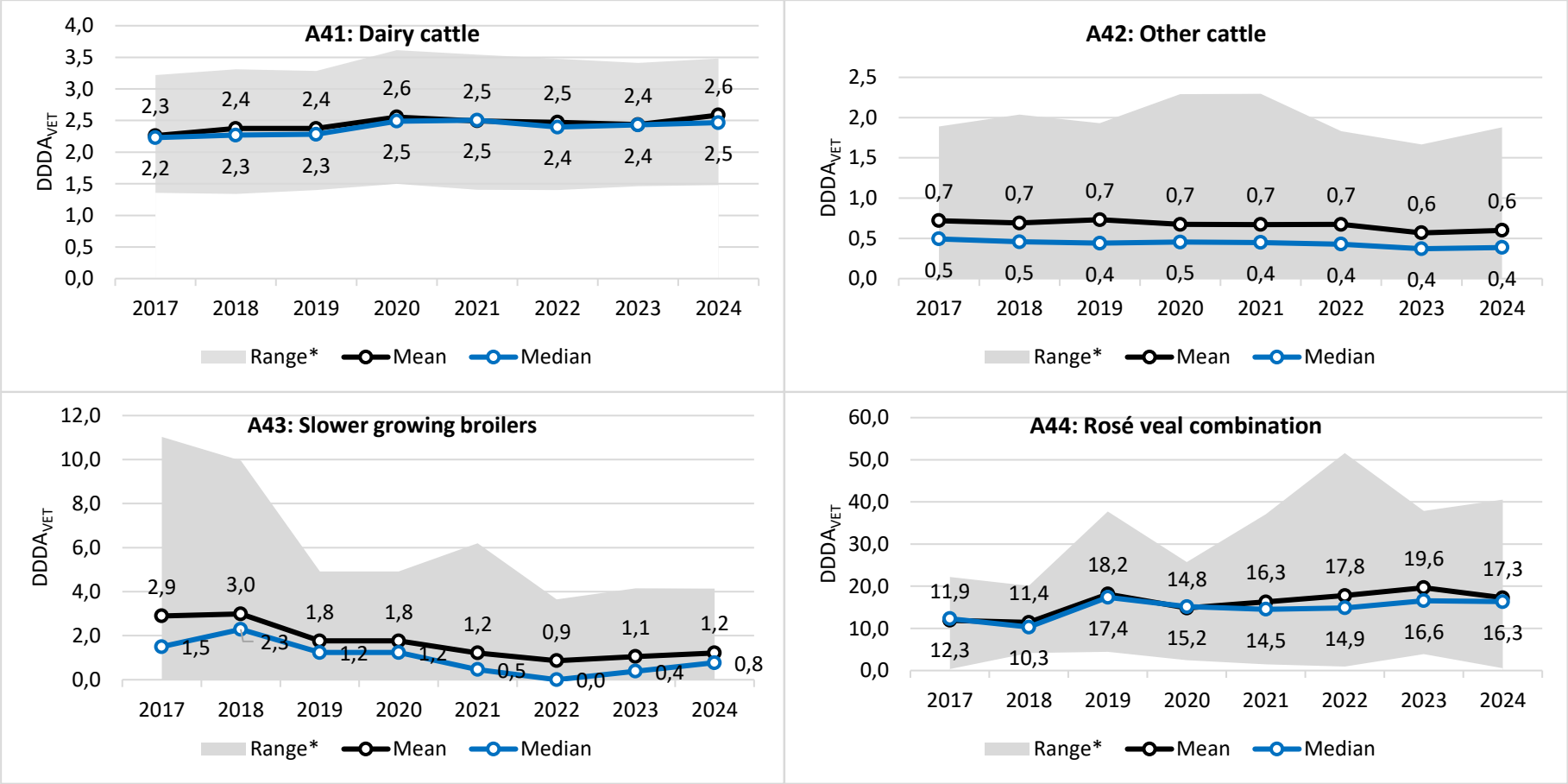
Colistin usage data

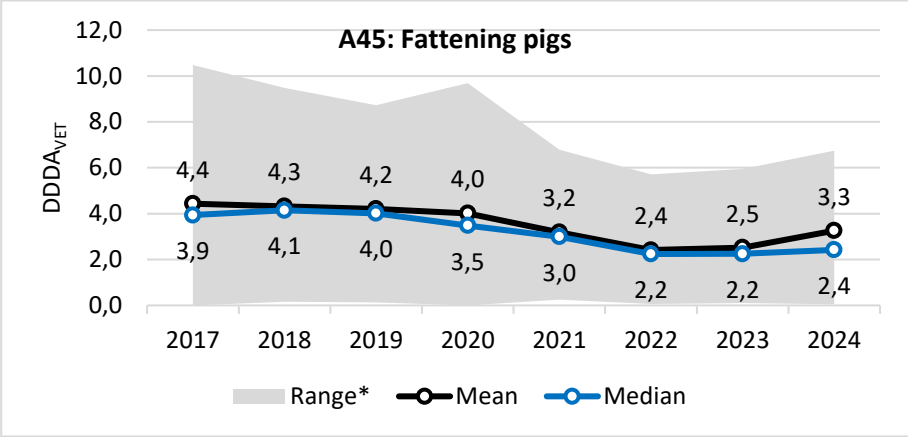
Table A48. Colistin usage data in $DDDA_F$ for 2024, by type of farm/production category. Descriptive statistics are provided for the livestock farms that used colistin, and for all livestock farms combined.

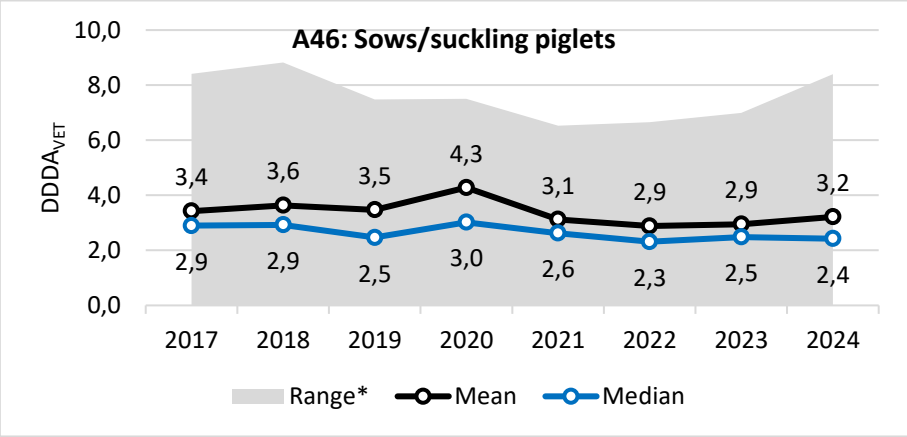
Livestock sector	Type of farm/production category	% of livestock farms that used colistin	Usage data for livestock farms that used colistin				Usage data for all livestock farms combined			
			N	Mean	Median	P95	N	Mean	Median	P95
Broiler farming sector	Broiler farms	0.5%	4	1.98	2.13	3.04	792	0.01	0.00	0.00
	- Farms with conventional breeds	1.4%	4	1.98	2.13	3.04	280	0.03	0.00	0.00
	- Farms with slower growing breeds	0.0%	0	0.00	0.00	0.00	280	0.00	0.00	0.00
	Parent/grandparent stock rearing farms	2.3%	2	3.16	3.16	3.96	88	0.07	0.00	0.00
	Parent/grandparent stock production farms	0.6%	1	5.78	5.78	5.78	181	0.03	0.00	0.00
Layer farming sector	Layer farms	9.2%	75	5.56	4.01	18.28	811	0.51	0.00	3.87
	Pullet rearing farms	0.0%	0	0.00	0.00	0.00	158	0.00	0.00	0.00
	Parent/grandparent stock rearing farms	0.0%	0	0.00	0.00	0.00	38	0.00	0.00	0.00
	Parent/grandparent stock production farms	4.2%	2	6.39	6.39	10.21	48	0.27	0.00	0.00
Turkey farming sector	Turkey farms	0.0%	0	0.00	0.00	0.00	30	0.00	0.00	0.00
Pig farming sector	Sows/suckling piglets	23.1%	277	0.25	0.09	1.01	1.198	0.06	0.00	0.26
	Weaner pigs	22.9%	306	3.81	1.62	14.77	1.336	0.87	0.00	5.39
	Fattening pigs	1.8%	49	0.50	0.19	1.43	2.697	0.01	0.00	0.00
Veal farming sector	White veal farms	1.6%	11	0.46	0.03	2.09	707	0.01	0.00	0.00
	Rosé veal starter farms	3.0%	6	1.23	0.11	7.00	202	0.04	0.00	0.00
	Rosé veal fattening farms	0.2%	1	0.07	0.07	0.07	464	0.00	0.00	0.00
	Rosé veal combination farms	1.6%	1	0.03	0.03	0.03	64	0.00	0.00	0.00
Cattle farming sector	Dairy cattle farms	0.3%	47	0.06	0.01	0.28	13.739	0.00	0.00	0.00
	Rearing farms	0.1%	9	0.16	0.05	0.69	7.833	0.00	0.00	0.00
	Suckler cow farms	0.0%	1	0.01	0.01	0.01	2.493	0.00	0.00	0.00
	Beef farms	0.0%	0	0.00	0.00	0.00	569	0.00	0.00	0.00
Rabbit farming sector	Rabbit farms	0.0%	0	0.00	0.00	0.00	31	0.00	0.00	0.00

Veterinarians' prescription patterns

Figures A41 t/m A46. Long term $DDDA_{VET}$ trends by production category. Each production category has its own figure, the production category concerned is shown in the heading of the figure. Here shown are the mean and median $DDDA_{VET}$ values and the $DDDA_{VET}$ ranges. * $DDDA_{VET}$ ranges represent the middle 90% of farms, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.




A45: Fattening pigs
DDDA$_{VET}$
12,0
10,0
8,0
6,0
4,0
2,0
0,0
4,4
4,3
4,2
4,0
3,2
2,4
2,5
3,3
3,9
4,1
4,0
3,5
3,0
2,2
2,2
2,4
2017
2018
2019
2020
2021
2022
2023
2024
Range*
Mean
Median


A46: Sows/suckling piglets
DDDA$_{VET}$
10,0
8,0
6,0
4,0
2,0
0,0
3,4
3,6
3,5
4,3
3,1
2,9
2,9
3,2
2,9
2,9
2,5
3,0
2,6
2,3
2,5
2,4
2017
2018
2019
2020
2021
2022
2023
2024
Range*
Mean
Median

VBI distributions of veterinarians

Table A47. 2024 VBI data, by type of farm/production category. Livestock farms with persistently high usage levels (i.e., $DDDA_F$ values that have exceeded the benchmark threshold for the type of farm/production category concerned two years in a row) according to their 2023 benchmark thresholds, were not included in the VBI calculations

Livestock sector	Type of farm/ production category	SDa-defined benchmark threshold	N	Mean	Median	P75	P90
Broiler farming sector	Farms with conventional breeds	8	55	5.7	4.0	7.2	11.3
	Farms with slower growing breeds	8	63	1.1	0.7	1.8	2.9
Turkey farming sector	Turkey farms	10	8	6.2	4.0	7.7	26.4
Pig farming sector	Sows/suckling piglets	5	154	2.9	2.4	3.6	5.2
	Weaner pigs	20	155	10.3	8.7	14.8	20.3
	Fattening pigs	5	184	3.0	2.2	2.9	4.3
Veal farming sector	White veal farms	23	58	17.4	16.1	18.9	22.4
	Rosé veal starter farms	67	53	50.1	45.6	64.0	73.7
	Rosé veal fattening farms	4	79	2.4	1.2	2.5	5.0
	Rosé veal combination farms	12	23	11.0	9.7	15.0	19.0
Cattle farming sector	Dairy cattle farms	5	669	2.5	2.4	2.8	3.1
	Non-dairy cattle farms	2	662	0.4	0.3	0.6	1.0

Table A50. 2024 VBI data for veterinarians active in livestock sectors with transitional benchmark thresholds, by type of farm/production category. Livestock farms with persistently high usage levels (i.e., $DDDA_F$ values that have exceeded the benchmark threshold for the type of farm/production category concerned two years in a row) according to their transitional benchmark thresholds, were not included in the VBI calculations. As transitional benchmark thresholds are higher than SDa-defined benchmark thresholds, fewer livestock farms are excluded from VBI calculations when VBI data are based on transitional benchmark thresholds.

Livestock sector	Type of farm/ production category	Transitional benchmark threshold(s)*	N	Mean	Median	P75	P90
Broiler farming sector	Farms with conventional breeds	12 and 24	61	8.7	6.2	12.5	17.6
	Farms with slower growing breeds	8 and 12	63	1.2	0.7	1.8	2.9
Turkey farming sector	Turkey farms	12 and 16	8	7.1	5.6	8.7	24.7

* This column lists the action thresholds and, if applicable, the (lower) signaling threshold

Numbers of animals in the Dutch livestock sector

Table A51. Numbers of agricultural livestock (x1,000) in the Netherlands from 2010 to 2024, according to data provided by CBS (for poultry, veal calves, meat rabbits and goats) and EUROSTAT (for the other types of livestock)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Piglets (<20 kg)	4,649	4,797	4,993	4,920	5,116	5,408	4,986	5,522	5,287	5,002	4,883	4,773	4,444	4,542	4,577
Sows	1,098	1,106	1,081	1,095	1,106	1,053	1,022	1,066	967	1,047	926	910	888	915	783
Fattening pigs	4,419	4,179	4,189	4,209	4,087	4,223	4,140	3,967	4,032	4,163	4,032	3,632	3,827	3,548	3,370
Other pigs	2,040	2,021	1,841	1,789	1,765	1,769	1,733	1,741	1,623	1,709	1,697	1,557	1,547	1,466	1,452
Turkeys	1,036	990	827	841	794	863	762	671	556	532	585	604	576	588	517
Broilers	43,352	44,358	43,285	44,748	47,020	49,107	48,378	48,237	48,971	48,684	49,229	47,056	45,903	40,809	39,501
Laying hens	47,904	44,460	42,810	44,816	46,570	47,684	46,212	46,442	47,302	44,319	43,166	43,160	42,239	42,856	40,470
Veal calves	928	906	908	925	921	909	956	953	1,017	1,066	1,071	1,047	1,042	1,024	1,006
All cattle	3,039	2,993	3,045	3,064	3,230	3,360	3,353	3,082	2,634	2,679	2,689	2,683	2,729	2,701	2,612
Dairy cattle	1,518	1,504	1,541	1,597	1,610	1,717	1,794	1,665	1,552	1,590	1,569	1,554	1,570	1,546	1,521
Goats	353	380	397	413	431	470	500	533	588	615	633	643	645	647	636
Sheep	1,211	1,113	1,093	1,074	1,070	1,032	1,040	1,015	743	758	708	729	724	662	604
Weaned meat rabbits	260	262	284	270	278	333	318	300	291	289	297	283	266	235	231
Breeding does	39	39	43	41	43	48	45	43	41	48	38	38	35	30	32

Antibiotic use in terms of DDD_{VET}/animal-year

Table A52. Antibiotic use in terms of DDD_{VET}/animal-year from 2020 to 2024, by livestock sector (intramammary and intrauterine use of antibiotics not included)

	Broiler farming sector					Turkey farming sector					Pig farming sector				
Pharmacotherapeutic group	**2020**	**2021**	**2022**	**2023**	**2024**	**2020**	**2021**	**2022**	**2023**	**2024**	**2020**	**2021**	**2022**	**2023**	**2024**
1st-choice antibiotics	**3.76**	**2.73**	**2.47**	**2.76**	**2.54**	**12.83**	**10.21**	**7.48**	**3.57**	**8.23**	**6.47**	**5.49**	**3.76**	**4.21**	**4.42**
As a proportion of overall AB use	**35.62%**	**37.15%**	**36.67%**	**35.12%**	**41.60%**	**71.14%**	**62.48%**	**63.34%**	**53.12%**	**68.10%**	**74.58%**	**72.45%**	**68.78%**	**68.49%**	**63.29%**
Amphenicols	*	*	*	*	*	*	*	*	*	*	0.24	0.25	0.23	0.25	0.25
Macrolides/lincosamides	0.11	0.15	0.08	0.06	0.01	*	*	*	*	*	0.90	0.49	0.33	0.38	0.48
Penicillins	0.87	0.57	0.39	0.55	0.51	0.81	0.94	0.64	0.94	0.48	0.52	0.52	0.46	0.46	0.46
Pleuromutilins	*	*	*	*	*	*	0.13	*	*	*	0.04	0.03	0.03	0.04	0.04
Tetracyclines	1.32	0.77	0.78	1.14	1.12	11.83	8.98	6.75	2.49	7.69	3.12	2.63	1.57	1.71	1.98
Trimethoprim/sulfonamides	1.46	1.25	1.22	1.02	0.90	0.19	0.16	0.09	0.14	0.06	1.64	1.58	1.13	1.37	1.21
2nd-choice antibiotics	**6.73**	**4.60**	**4.22**	**5.04**	**3.52**	**4.74**	**5.75**	**4.11**	**2.94**	**3.58**	**1.76**	**1.70**	**1.43**	**1.66**	**2.33**
As a proportion of overall AB use	**63.76%**	**62.60%**	**62.67%**	**64.15%**	**57.53%**	**26.30%**	**35.17%**	**34.75%**	**43.64%**	**29.62%**	**20.25%**	**22.39%**	**26.17%**	**27.06%**	**33.41%**
Aminoglycosides	0.00	0.00	0.00	0.02	0.05	0.02	*	*	*	*	0.01	0.01	0.01	0.02	0.01
Aminopenicillins	5.49	3.63	3.28	3.91	2.81	3.79	3.61	2.73	2.42	2.41	1.04	0.95	0.70	0.90	1.05
1st- and 2nd-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quinolones	1.12	0.88	0.83	1.02	0.58	*	0.23	0.04	0.13	*	0.02	0.01	0.00	0.00	0.00
Fixed-dose combinations	0.02	0.02	*	0.03	*	*	*	*	*	*	0.02	0.02	0.04	0.04	0.34
Long-acting macrolides	*	*	*	*	*	*	*	*	*	*	0.67	0.65	0.68	0.70	0.71
Macrolides/lincosamides	0.10	0.07	0.11	0.07	0.08	0.93	1.91	1.33	0.38	1.17	*	0.05	*	*	0.22
3rd-choice antibiotics	**0.07**	**0.02**	**0.04**	**0.06**	**0.05**	**0.46**	**0.38**	**0.23**	**0.22**	**0.28**	**0.45**	**0.39**	**0.28**	**0.27**	**0.23**
As a proportion of overall AB use	**0.62%**	**0.25%**	**0.66%**	**0.74%**	**0.87%**	**2.56%**	**2.35%**	**1.91%**	**3.25%**	**2.28%**	**5.17%**	**5.16%**	**5.05%**	**4.45%**	**3.31%**
3rd- and 4th-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Fluoroquinolones	0.03	0.01	0.02	0.03	0.02	0.46	0.38	0.23	0.15	0.28	0.00	0.00	0.00	0.00	0.00
Polymyxins	0.03	0.01	0.02	0.02	0.03	*	*	*	0.07	*	0.45	0.39	0.28	0.27	0.23
Overall antibiotic use	**10.56**	**7.36**	**6.73**	**7.86**	**6.11**	**18.03**	**16.34**	**11.81**	**6.73**	**12.08**	**8.67**	**7.58**	**5.46**	**6.14**	**6.98**

Table A52 (continued)

Pharmacotherapeutic group	Dairy cattle farming sector					Veal farming sector					Non-dairy cattle farming sector				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1st-choice antibiotics	**0.92**	**0.89**	**0.83**	**0.86**	**0.88**	**13.11**	**13.60**	**13.42**	**14.12**	**13.90**	**0.61**	**0.58**	**0.29**	**0.11**	**0.12**
As a proportion of overall AB use	**85.08%**	**83.32%**	**82.75%**	**81.62%**	**81.80%**	**85.76%**	**87.66%**	**87.63%**	**85.53%**	**86.91%**	**84.81%**	**83.32%**	**81.46%**	**69.99%**	**72.47%**
Amphenicols	0.04	0.04	0.04	0.03	0.03	0.85	0.84	0.80	0.81	0.75	0.05	0.05	0.03	0.02	0.02
Macrolides/lincosamides	0.05	0.05	0.05	0.05	0.06	3.18	3.36	3.45	3.63	3.63	0.11	0.11	0.05	0.01	0.01
Penicillins	0.19	0.18	0.17	0.18	0.19	0.19	0.18	0.17	0.14	0.13	0.04	0.04	0.03	0.03	0.03
Pleuromutilins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tetracyclines	0.23	0.22	0.19	0.19	0.20	7.33	7.69	7.41	7.55	7.31	0.35	0.31	0.13	0.04	0.04
Trimethoprim/sulfonamides	0.42	0.41	0.38	0.40	0.39	1.57	1.54	1.60	1.99	2.09	0.07	0.07	0.04	0.02	0.02
2nd-choice antibiotics	**0.15**	**0.17**	**0.17**	**0.19**	**0.19**	**2.15**	**1.88**	**1.87**	**2.34**	**2.08**	**0.11**	**0.11**	**0.06**	**0.05**	**0.04**
As a proportion of overall AB use	**14.11%**	**15.99%**	**16.64%**	**17.81%**	**17.77%**	**14.07%**	**12.11%**	**12.19%**	**14.20%**	**13.01%**	**14.60%**	**15.90%**	**18.19%**	**29.59%**	**27.17%**
Aminoglycosides	0.01	0.01	0.01	0.01	0.01	0.06	0.07	0.08	0.16	0.18	0.00	0.00	0.00	0.00	0.00
Aminopenicillins	0.11	0.12	0.12	0.13	0.13	1.38	1.25	1.10	1.46	1.32	0.06	0.06	0.03	0.02	0.02
1st- and 2nd-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quinolones	0.00	0.00	0.00	*	0.00	0.58	0.43	0.56	0.57	0.42	0.02	0.02	0.01	0.00	0.00
Fixed-dose combinations	0.02	0.04	0.03	0.03	0.04	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.02	0.02
Long-acting macrolides	0.01	0.01	0.01	0.01	0.01	0.13	0.12	0.13	0.16	0.14	0.01	0.01	0.01	0.01	0.01
Macrolides/lincosamides	*	*	*	*	0.00	*	*	*	*	0.02	*	*	*	*	0.00
3rd-choice antibiotics	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.03**	**0.04**	**0.03**	**0.04**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**
As a proportion of overall AB use	**0.81%**	**0.69%**	**0.61%**	**0.57%**	**0.43%**	**0.16%**	**0.23%**	**0.18%**	**0.27%**	**0.08%**	**0.59%**	**0.78%**	**0.35%**	**0.43%**	**0.36%**
3rd- and 4th-gen. cephalosporins	0.00	0.00	0.00	0.00	0.00	*	*	*	*	*	*	0.00	*	*	0.00
Fluoroquinolones	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Polymyxins	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Overall antibiotic use	**1.09**	**1.07**	**1.01**	**1.05**	**1.07**	**15.29**	**15.52**	**15.32**	**16.51**	**15.99**	**0.72**	**0.69**	**0.35**	**0.16**	**0.16**

Phased implementation of the new benchmark thresholds

Table A53. The transitional benchmark thresholds for broiler farms with conventional breeds agreed between the broiler farming sector and the Ministry of Agriculture, Nature and Food Quality*

Phase	Signaling threshold	Action threshold
1	14	26
2	12	24
3	10	20

* The proposed phases for the transitional period are as follows: Phase 1: second half of 2019 + 2020 + 2021; Phase 2: 2022 + 2023; Phase 3: 2024 + 2025. The specified periods are not set in stone. At the end of each phase, evaluation will take place to determine whether it is feasible for broiler farms with conventional breeds to enter the next phase.

Table A54. The transitional benchmark thresholds for broiler farms with slower growing breeds agreed between the broiler farming sector and the Ministry of Agriculture, Nature and Food Quality*

Phase	Signaling threshold	Action threshold
1	8	15
2 and 3	8	12

* The proposed phases for the transitional period are as follows: Phase 1: second half of 2019 + 2020 + 2021; Phase 2: 2022 + 2023; Phase 3: 2024 + 2025. The specified periods are not set in stone. At the end of each phase, evaluation will take place to determine whether it is feasible for broiler farms with slower growing breeds to enter the next phase.

Table A55. The transitional benchmark thresholds for turkey farms agreed between the turkey farming sector and the Ministry of Agriculture, Nature and Food Quality*

Phase	Signaling threshold	Action threshold
1	14	20
2	12	16
3	10	12
4	-	10

* The specified periods are not set in stone. At the end of each phase, evaluation will take place to determine whether it is feasible for turkey farms to enter the next phase.

Table A56. The transitional benchmark thresholds for rabbit farms agreed between the rabbit farming sector and the Ministry of Agriculture, Nature and Food Quality

Year	Signaling threshold	Action threshold
2022	30	40
2023	30	40
2024	-	30

Livestock sectors' progress towards government-defined reduction targets

Table A57. Livestock sectors' progress towards their government-defined reduction targets. The reduction targets were introduced to reduce the number of farms with usage levels exceeding their livestock sector's 2018 signaling threshold (in the case of the pig farming sector) or 2018 action threshold (in the case of the broiler, turkey and veal farming sectors) by 50% over the 2017-2024 period. The table includes both unadjusted percentages and percentages adjusted for changes in the number of active livestock farms

Livestock sector	Type of farm/production category	Percentage change in the number of livestock farms exceeding their signaling/action threshold*						Percentage change in the number of livestock farms exceeding their signaling/action threshold* (adjusted for the number of active livestock farms)					
		2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
Broiler farming sector	Broiler farms	11.4%	-13.6%	-75.0%	-56.8%	-70.5%	-84.1%	15.9%	-9.8%	-73.5%	-53.3%	-67.9%	-82.9%
Turkey farming sector	Turkey farms	-44.4%	-88.9%	-77.8%	-66.7%	-77.8%	-77.8%	-41.9%	-88.4%	-74.4%	-60.5%	-69.7%	-66.7%
Pig farming sector	Sows/suckling piglets	-24.3%	-36.0%	-57.4%	-70.6%	-73.5%	-68.4%	-15.4%	-24.6%	-47.2%	-58.6%	-60.8%	-51.1%
	Weaner pigs	-25.3%	-24.1%	-45.0%	-64.1%	-67.5%	-69.2%	-17.0%	-12.1%	-32.8%	-50.0%	-52.4%	-53.1%
	Fattening pigs	-5.7%	-34.9%	-68.1%	-82.9%	-83.4%	-79.7%	7.8%	-18.3%	-53.5%	-73.3%	-73.0%	-65.6%
Veal farming sector	White veal farms	-73.5%	-73.5%	-73.5%	-85.3%	-76.5%	-64.7%	-71.6%	-71.4%	-71.2%	-83.6%	-73.6%	-58.2%
	Rosé veal starter farms	-52.9%	-58.8%	-67.6%	-61.8%	-41.2%	-2.9%	-50.2%	-53.3%	-61.1%	-54.7%	-30.3%	14.4%
	Rosé veal fattening farms	147.9%	134.2%	104.1%	97.3%	89.0%	87.7%	100.3%	101.3%	105.9%	113.5%	115.4%	134.6%

* Reduction targets are based on the number of farms with usage levels exceeding their livestock sector's 2018 signaling threshold (in the case of the pig farming sector) or 2018 action threshold (in the case of the broiler, turkey and veal farming sectors).

Standardized body weights

Table A58. Standardized average body weights used for determining $DDDA_{NAT}$ values, by livestock sector and production category

Livestock sector	Production category	Standardized body weight in kg[1]
Veal farming sector	Veal calves	172
Pig farming sector	Piglets (<20 kg)	10
	Sows	220
	Fattening pigs	70.2
	Other pigs	70
Broiler farming sector	Broilers	1
Turkey farming sector	Turkeys	6
Cattle farming sector	Dairy cattle	600
	Non-dairy cattle	500
Rabbit farming sector	Weaned meat rabbits	1.8
	Breeding does with kits	8.4

[1] Body weights as defined by LEI Wageningen UR, determined at the start of the agricultural census in the Netherlands. The standardized body weights are to be multiplied by the numbers of animals reported by CBS/EUROSTAT.

Table A59. Standardized average body weights used by the SDa for determining $DDDA_F$ values, by livestock sector and production category

Livestock sector	Production category	Age group	Standardized body weight in kg[1]
Veal farming sector	Calves at white veal farms	0 - 222 days	160
	Calves at rosé veal starter farms	0 - 98 days	77.5
	Calves at rosé veal fattening farms	98 - 256 days	232.5
	Calves at rosé veal combination farms	0 - 256 days	205
Pig farming sector	Sows (all females that have been inseminated), breeding boars and heat-check boars		220
	Suckling piglets	0 - 25 days	4.5
	Replacement gilts	7 months - 1st insemination	135
	Weaned piglets	25 - 74 days	17.5
	Fattening pigs	Until ready for slaughter	70
	Gilts	74 days - 7 months	70
Broiler farming sector[2]	Conventional broilers	0 - 45 days	n/a
	Slower growing broiler breeds	0 - 70 days	n/a
	Parent stock at rearing farms	0 - 20 weeks	n/a
	Grandparent stock at rearing farms	0 - 20 weeks	n/a
	Parent stock at production farms	>20 weeks	3
	Grandparent stock at production farms	>20 weeks	3
Layer farming sector[2]	Layers	>18 weeks	1.6
	Layer pullets at rearing farms	0 - 18 weeks	n/a
	Parent stock at rearing farms	0 - 18 weeks	n/a
	Grandparent stock at rearing farms	0 - 18 weeks	n/a
	Parent stock at production farms	>18 weeks	1.9
	Grandparent stock at production farms	>18 weeks	1.9
Turkey farming sector[2]	Toms		n/a
	Hens		n/a
Rundvee[3] Cattle farming sector[3]	Dairy cattle	>2 years	600
	Heifers	1 - 2 years	440
	Yearlings	56 days - 1 year	235
	Calves (female)	<56 days	56.5
	Beef bulls	>2 years	800
	Beef bulls	1-2 years	628
	Beef bulls	56 days - 1 year	283
	Calves (male)	<56 days	79
Rabbit farming sector	Breeding does/kits	>4 months and <4.5 weeks	8.4
	Weaned meat rabbits	4.5 - 12 weeks	1.8
	Replacement breeding does	12 weeks - 4 months	3.4
Goat farming sector		<60 days	11.5
		60 days – 1 year	42
		>1 year	75
Ducks[2]			n/a

[1] Body weights (in kilograms) as determined in consultation with the livestock sectors concerned. They may be adjusted if deemed necessary (e.g., in order to refine the benchmarking method).

[2] As of 2017, the body weights used for determining poultry farms' $DDDA_F$ values are based on the age of the animals at the time of treatment, unless a standardized body weight has been defined for the production category concerned.

[3] Livestock farms in the cattle farming sector are categorized based on whether or not they produce milk. They are classified as either dairy cattle farms or non-dairy cattle farms. Non-dairy cattle farms include rearing farms (with <40% of cattle present being male and none of the animals being over 2 years of age), suckler cow farms (with <40% of cattle present being male and some of the animals being over 2 years of age), and beef farms (with >40% of cattle present being male).

Computational basis for Figure 5: Long-term developments in antibiotic use

- Until 2010, defined daily doses animal were based on data reported by LEI Wageningen UR (DD/AY data). From 2011 onwards, SDa-reported defined daily doses animal ($DDDA_F$ data) have been used.
- The 2011 $DDDA_{NAT}$ values were estimated as follows:
    - For the veal and pig farming sectors: by means of the 2011:2012 $DDDA_F$ ratio (with weighting based on the average number of kilograms present at individual farms);
    - For the dairy cattle farming sector: by means of the 2011:2012 DD/AY ratio;
    - For the broiler farming sector: by means of the 2011:2012 treatment days ratio (with weighting based on the number of animal-days at individual farms).
- Data on the overall number of kilograms of animal in a particular livestock sector, required for calculating the $DDDA_{NAT}$ values, were provided by EUROSTAT (for the pig and dairy cattle farming sectors) and Statistics Netherlands (for the broiler, turkey and veal farming sectors).
- 95% confidence intervals were based on the corresponding confidence intervals for the weighted $DDDA_F$ values.

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Appendix 1 to the report Usage of Antibiotics in Agricultural Livestock in the Netherlands in 20234
Trends and benchmarking of livestock farms and veterinarians
SDa/1164/2025
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